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KENNAMETAL®



MASTER CATALOG 2018

VOLUME TWO | **ROTATING** TOOLS



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

KENNAMETAL



The Perfect Fusion of a Solid Carbide and an Indexable Drill

The new modular drill KenTIP™ FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

KenTIP™ FS

See pages H6–H28.

Since its inception in 1938, Kennametal has understood precisely how to improve manufacturing performance and profitability — by introducing unparalleled products and services to reduce operating costs and lead times.

These 2000+ pages bring you the latest in milling and holemaking products and superior services — specifically engineered to enhance overall productivity, even in the most challenging metalworking applications.

Rely on Kennametal to significantly boost manufacturing competitiveness. To learn more, contact your Kennametal Representative or Authorized Kennametal Distributor.

Visit us at **kennametal.com**.

POWERED BY NOVO™

Volume II • Rotating Tools

This Catalog Consists of Two Volumes — Vol. I: Turning Tools / Vol. II: Rotating Tools

Rotating Tools

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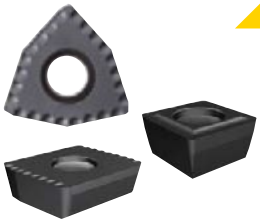
Holemaking

PRODUCT HIGHLIGHTS



DRILL FIX™ DFSP™

INDEXABLE DRILLS WITH DS AND LP INSERTS

See section J (Volume II) for more details.

DFSP is the renamed expanded Drill Fix DFS™ indexable drilling platform. The standard diameter range is now .551–2.125" (14–55mm) in L/D ratios 2 x D, 3 x D, 4 x D, and 5 x D. The DFSP platform combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert. These indexable drills offer increased metal removal rates and high surface quality and hole straightness.

Use new DS and LP chipbreaker insert designs with Drill Fix DFSP, DFT™, and HTS indexable drills, and KSEM PLUS™ modular drills. These inserts enable excellent chip formation on low-carbon steels and other long-chipping materials.

KENTIP™ FS

THE PERFECT FUSION OF A SOLID CARBIDE AND AN INDEXABLE DRILL

See section H (Volume II) for more details.

The new modular drill KenTIP FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

- 3-point geometries, 3 high-performance grades, 3 different shank styles.
- 6–26mm diameter range.
- Up to 12 x D drilling depths.
- Applicable in steel, stainless steel, and cast iron.

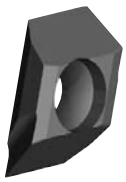




COUNTERFIX MICRO

SMALL INSERTS THAT MAKE A BIG DIFFERENCE!

See section H (Volume II) for more details.



New CounterFix Micro (CFM) tangential inserts offer a new way to enhance drilling, chamfering, and counterboring operations. They enable very small incremental steps on tailor-made step drills, longer tool life per edge, and improved surface finish.

CFM inserts can be used on KenTIP, KSEM™, and Drill Fix products, as well as for made-to-order indexable countersinking tools.

CounterFix Micro will be available for KenTIP FS tailor-made drills in 2018 upon request.

NEW SGL DRILLS WITH THROUGH COOLANT FOR STAINLESS STEEL

See section G (Volume II) for more details.

The all-new B21_SGL series solid carbide drills are designed specifically for stainless steel applications, offering high performance and long tool life in high-temperature alloys and regular steel, also.

By combining unique Kennametal features, such as the all-new SGL-point-geometry with patented gashing, a unique flute design, and a best-in-class coating into one tool, the B21*SGL drill is the ultimate high-volume production tool.

The all-new B27_SGL series is designed specifically for deep-hole drilling up to 40 x D applications in stainless steel and high-temperature alloys.









NEW KMH DRILLS FOR HARD MATERIALS

See section G (Volume II) for more details.

The all-new KMH solid carbide drills are engineered for hard material applications up to 65 HRC. The B94_drill series without through coolant is specifically designed to machine hardened and surface-hardened materials using flood coolant. With its 145° point angle, it is also perfectly suited as a pilot drill for the B95_drill series with through coolant and 140° point for deeper applications.

Both series come with an increased core to strengthen the drill, feature a curved cutting edge with corner chamfer to avoid chipping on the margin lands and increased tool life in these challenging materials.



RMR™ AND RHR™ DISC-STYLE REAMERS

See section K (Volume II) for more details.

Performance, quality, and regrindability, like solid carbide reamers for diameters .5512–1.6732" (14–42,5mm).

Common reamers have single tips brazed onto a steel body. The new Kennametal RMR and RHR reamers have a solid carbide disc brazed onto the steel body. This enables more regrinds than a regular tipped reamer, reducing the cost-per-hole significantly. The new KCU05 coating holds the surface finish more than twice as long as conventional reamer coatings, depending on the workpiece material.



GOTAP™

MULTIPURPOSE HSS-E TAPS

See section M (Volume II) for more details.

GOtap is our multipurpose line of taps that include optimized geometries and PVD coatings capable of tapping a wide range of ductile materials, such as stainless steels, carbon and alloy steels, cast aluminum, and ductile iron. GOtap taps versatility extends beyond the part, as it can be used in a wide range of machine tools and application conditions. The new GOtap TC mulitpurpose taps enable blind-hole tapping with tension/compression holders without sizing problems due to over-feeding. The versatility of GOtap taps means lower inventory costs with no loss of productivity, consistent tool life, and high-quality thread finish.

Solid End Milling

PRODUCT HIGHLIGHTS

DUO-λOCK®

See section O for more details.

Duo-Lock™ is a revolutionary new coupling for solid carbide end milling applications. This replaceable-head design combines high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface for challenging milling applications.

- **Up to 1 x D full slotting increases metal removal rates for significantly higher productivity.**
- **1.5 x D standard cutting edge length enables fewer passes.**
- **Cutting data and tool life comparable to high-performance solid carbide tools.**



DUO-λOCK®
by HAIMER® and Kennametal



HARVI™ III FAMILY

See section P for more details.

HARVI III end mills are the first choice for high-temperature alloy machining, profiling, semi-finishing, and finishing. Beyond grade KCSM15™ delivers maximum metal removal rates and exceptional tool life in titanium and stainless steel, as well as excellent surface finishes.

- **Taper ball nose for complex 5-axis machining.**
- **Ball nose for 3D profiling.**
- **Square end for semi-finishing/finishing operations.**

beyond



BEYOND™ EADE SOLID CERAMIC END MILLS

See section P for more details.

Beyond™ EADE solid ceramic end mills offer higher productivity in roughing nickel-based high-temperature alloys. With reduced machining time, EADE ceramic end mills also achieve significantly longer tool life compared to carbide tooling.

— Beyond grade KYS40™ enables cutting speeds up to 3.300 SFM.



beyond



GOMILL™ GP PLATFORM

See section Q for more details.

GOmill GP tools enable plunging, slotting, and profiling, plus longer tool life, on a wide range of workpiece materials. They are designed to provide higher metal removal rates (MRR) and good surface finishes at an excellent cost-benefit ratio.

— Roughing and finishing with one tool.
— Excellent cost-benefit ratio.
— Multilayer KC633M™ grades for longer tool life.

Indexable Milling

PRODUCT HIGHLIGHTS

MILL 4-11™ AND MILL 4-15™

See section T for more details.

The Mill 4-11™ and Mill 4-15™ series tools are specially engineered to achieve excellent surface quality and higher metal removal rates in shoulder milling applications. The unique design enables multiple passes (stepping down) with outstanding results.

Use Mill 4-11 in roughing to finishing applications in steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys. Use Mill 4-15 for roughing to finishing in steel, cast iron, stainless steel, and titanium.

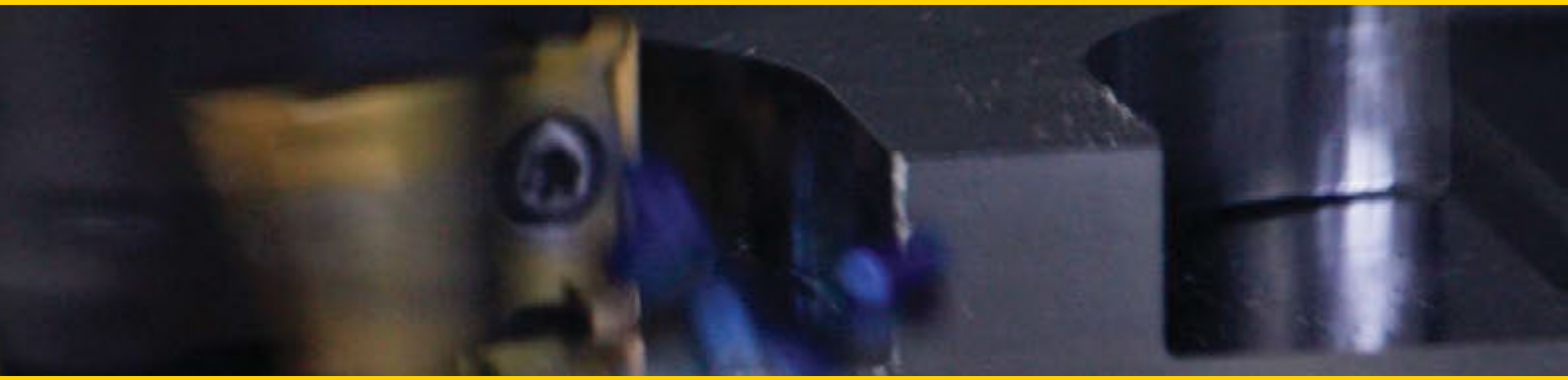




MILL 16™

See section S for more details.

The new Mill 16™ series is a tailor-made platform for rough milling of components like engine heads and blocks, housings and gear boxes in cast iron materials (CGI, DCI, GCI), and all other cast iron face milling jobs.



KCSM40™

NEW MILLING GRADE FOR TITANIUM MACHINING

Breakthrough indexable milling grade for roughing and semi-finishing operations in titanium and stainless steels — S40, M30 application range.

Available in these indexable milling platforms: Mill 1-10™, Mill 1-14™, Mill 1-18™, Mill 4-11™, Mill 4-15™, Dodeka™ Mini, Dodeka, Dodeka MAX™, MEGA™, KSOM™ Mini, KSOM™, KSRM™, NGE™, KSSM™ 90, KSSM8+™, Rodeka™, Stellram® 5230, Stellram 7713, and Stellram 7792.





STELLRAM® 7792VX HIGH-FEED SERIES

See section V for more details.

The 7792VX cutter series is designed for high-feed milling applications with superior surface generation. The 7792VX cutters are designed for a wide range of applications, including facing, pocketing, ramping, helical interpolation, and plunging. They are capable of machining all materials, including steel, stainless steel, cast iron, and high-temperature and aluminum alloys.

Turning

PRODUCT HIGHLIGHTS

BEYOND™ EVOLUTION™

See section C (Volume I) for more details.

Kennametal proudly introduces the Beyond™ Evolution™ platform. This innovative platform is built on simplicity and challenges today's approach to grooving and cut-off. Selecting the right tool is easy with the Beyond™ Evolution™ platform because this high-performance system is versatile and flexible. It is the first portfolio in the market to compete in all grooving and cut-off applications, with up to 35% less tooling than current competitors.

The proprietary coolant delivery system directs coolant precisely to the cutting edges underneath the chip, which is the best method for heat removal in grooving and cut-off applications.



beyond™ EVOLUTION™

BEYOND™ DRIVE™

See section B (Volume I) for more details.

Beyond™ Drive™ ISO turning inserts provide up to 50% improved insert edge utilization. The advanced surface treatment reduces coating stress and improves coating adhesion. The bronze outer layer simplifies wear detection and increases insert utilization. PVD grades KCU10™ and KCU25™ with Beyond™ technology resist the high temperatures of machining in tough alloys. Achieve up to 30–40% longer tool life for more profitability in general engineering, transportation, aerospace, energy, and earthworks markets. The PVD coating helps to maintain consistent chip control and minimize insert edge wear in turning, grooving, and cut-off operations in a wide range of materials and applications.



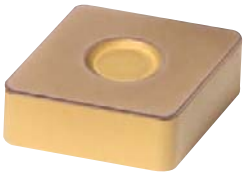
beyond™ DRIVE™



CAST IRON TURNING WITH KBK45™

See section B (Volume I) for more details.

KBK45 is a new high-content PcBN grade designed for high-performance machining of gray cast iron, such as brake discs and fly wheels. It is designed for reducing waste of unused corners, reducing cost-per-part (CPP) by maintaining tool changes between shifts, and enhancing output by using more reliable products. KBK45 grade provides an excellent CPP value.



HARD TURNING WITH KBH20™

See section B (Volume I) for more details.

KBH20 is the ideal PcBN hard turning grade in continuous to lightly interrupted applications with up to medium-severity interruption. The structure and different edge preparations enable tight and repeatable workpiece tolerances, excellent surface finishes, and surface integrity — even at elevated speeds.

KBH20 grade is a new substrate for applications like case-hardened components, including gears, shafts, and other drive-train components.

The nano-composite coating enhances speed capabilities and tool life. The improved edge preparation promotes longer tool life, reliable performance, and better surface finish.



Tooling Systems

PRODUCT HIGHLIGHTS

ERICKSON™

Visit **kennametal.com** or **kennametal.com/novo** for more details.

Kennametal proudly offers premium quality ERICKSON™ toolholder products, so you can be sure that you're buying the best the industry has to offer. The entire portfolio — including steep taper, HSK, straight shank extensions, collets, sleeves, and accompanying products — offers high productivity, increased accuracy, and application flexibility. Designed for both manual and automatic tool changing, ERICKSON interfaces are ideally suited for most machine tools and feature a compact and rigid construction guaranteed to handle high torque and deliver optimal metal removal rates.

Machinists have relied on the ERICKSON name for more than 60 years. With one of the broadest product offerings in the industry, ERICKSON tools can be used on all types of machine tools and in applications ranging from low-speed, heavy-milling jobs to high-speed operations greater than 20,000 RPM.





KM4X™

Visit **kennametal.com** or **kennametal.com/novo** for more details.

The KM4X spindle interface is designed for heavy-duty machining applications. It's especially suited for machining large structural components. These rotating and static tool adapters handle 3x more bending capacity than similar competitive models.

- Rigid configuration through higher clamping force.
- Design enables front-loaded spindle configurations.
- High spindle speed capability.
- Designed for use in most applications.
- Use in a wide range of high and low speeds and torques.
- Can upgrade to the KM4X system on spindles which use HSK format.
- Maintain taper contact in higher speeds.



HYDROFORCE™ HYDRAULIC CHUCKS

Visit **kennametal.com** or **kennametal.com/novo** for more details.

Our most advanced and universal hydraulic chuck is your first choice for milling, drilling, and reaming applications. HydroForce hydraulic chucks require only two sizes for all tooling applications. Reducer sleeves are applied for all other diameters. We offer ERICKSON™ Safe-Lock™ Smart Coolant reducer sleeves, specially designed for secure clamping when used with end mills featuring Safe-Lock™ tool shanks. The special drive feature in the reducer sleeve and grooves in the tool shank prevent the end mill from spinning and pulling out of the sleeve during extreme machining conditions.



- High rigidity.
- Enables higher cutting parameters.
- Provides better surface quality.
- Up to 50% longer tool life and improved workpiece surface quality.
- More productivity at higher cutting speed.
- Consistently reliable clamping.
- No overtorque.
- No torque wrench required.
- Reduced toolholder inventory.
- Maximum flexibility.
- Minimum cost.



NOVO™ WITH MACHINE ADAPTER ADVISOR

Visit **kennametal.com/novo** for more details.

Let the NOVO Machine Adapter Advisor help you build the right assembly. With NOVO applications, simply select a rotating tool (end mill, drill, reamer, or tap), then use the Machine Adapter Advisor to build an entire assembly from machine spindle to cutting tool with minimal data input. This new feature reduces a tool configuration build from minutes to seconds, regardless of gage length. Previously, it was a manual process to select a tool then individually filter and pick one adapter after another. Now, NOVO applications make it easy.

Kennametal on the Web

kennametal.com

FIND THE LATEST PRODUCT INFORMATION

Whether your operation is turning, milling, or holemaking, Kennametal brands are the high-performance tooling you need. We offer standard and custom solutions for a wide range of applications.

Find information about our most current campaigns and catalogs.

Register on Konnect for the full functionality of the Kennametal online ordering website.



CONTACT US

Our customers are important to us. We want to provide you the best customer service in the industry. If you have a comment or question, please send it to us. We strive to respond to all inquiries within 24 hours.

FIND A LOCAL AUTHORIZED DISTRIBUTOR IN YOUR AREA

Kennametal offers world-class products and services globally. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of Kennametal to work for you — in your industry, in your region, and for your business.

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

Scan a Kennametal tool package barcode or search a product catalog number to access complete product information.

Product information includes tool image, dimensions, grades, and product highlights.

View product availability at global locations.

Get speed and feed information in inch and metric values for all metalcutting products.

View tech tips for helpful solutions to common machining questions.

Contact Customer Support directly from the app.

MACHINING CALCULATORS

View data for milling and drilling applications.

Inch and metric values calculated.

ORDERING

Login using your Konnect credentials to complete a purchase.

WHERE TO FIND IT

Download the free app today from iTunes® or the Google Play™ store.

ANDROID APP ON Google play

Available on the App Store

Service and Support

Customer Application Support (CAS)

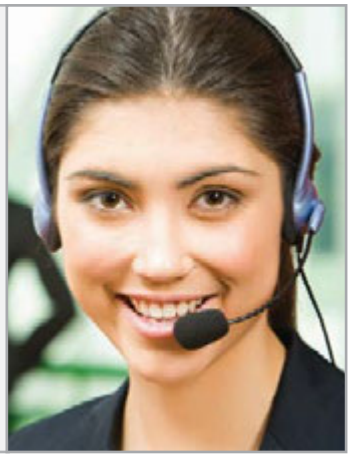
Get Fast and Reliable Answers to Your Toughest Metalcutting Problems

Our Customer Application Support (CAS) Team is the metalworking industry's leading help desk resource for tooling application solutions and problem resolution.

Easy Access to Proven Metalworking Expertise!

Kennametal Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of Kennametal tooling.

SERVICE LEVEL EXCELLENCE	Fast telephone response. Quick technical solutions. Efficient case management.
SERVICES	Operating parameters. Process optimization. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



Holemaking

Holemaking Introduction F2–F10

Solid Carbide Drills G1–G145

Modular Drills H1–H133

Combination Tools I1–I30

Indexable Drills J1–J117

Hole Finishing K1–K220



Holemaking Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorized Kennametal Distributor, or visit **kennametal.com**.

SOLID CARBIDE DRILLS

See Section G for more details.

GOdrill™
TF Drills
Beyond™ Drills
Deep-Hole Drills
Y-TECH™ Drills
TX Drills
CFRP Drills
Flat-Bottom Drills
NEW! KMH Drills
Kenna Universal™ Drills
NC Spot Drills

MODULAR DRILLS

See Section H for more details.

NEW! KenTIP™ FS
KenTIP™
KSEM™
KSEM PLUS™





COMBINATION TOOLS

See Section I for more details.

BF Combination Drilling System
SEFAS™ Combination Drilling System



INDEXABLE DRILLS

See Section J for more details.

Drill Fix™ DFR™, DFSP™, and DFT™
HTS™ Series Indexable Deep-Hole Drilling System
Indexable Drill Inserts
CTR Counterboring Tools
Counterboring Inserts

HOLE FINISHING

See Section K for more details.

Reaming Tools
SIF™ Steerable Toolholders
Romicron™ Fine-Boring System
ModBORE™ Boring System
PCD Customized Tooling



TAPS

See Section L and M for more details.

Beyond™ High-Performance Solid Carbide Taps
High-Performance HSS-E-PM Taps
GOtap™ Multipurpose Taps
General-Purpose Taps
High-Performance Solid Carbide Thread Mills

Select the Correct Holemaking Solution for Your Application

Added Value for Your Performance

Increase of Productivity and Efficiency

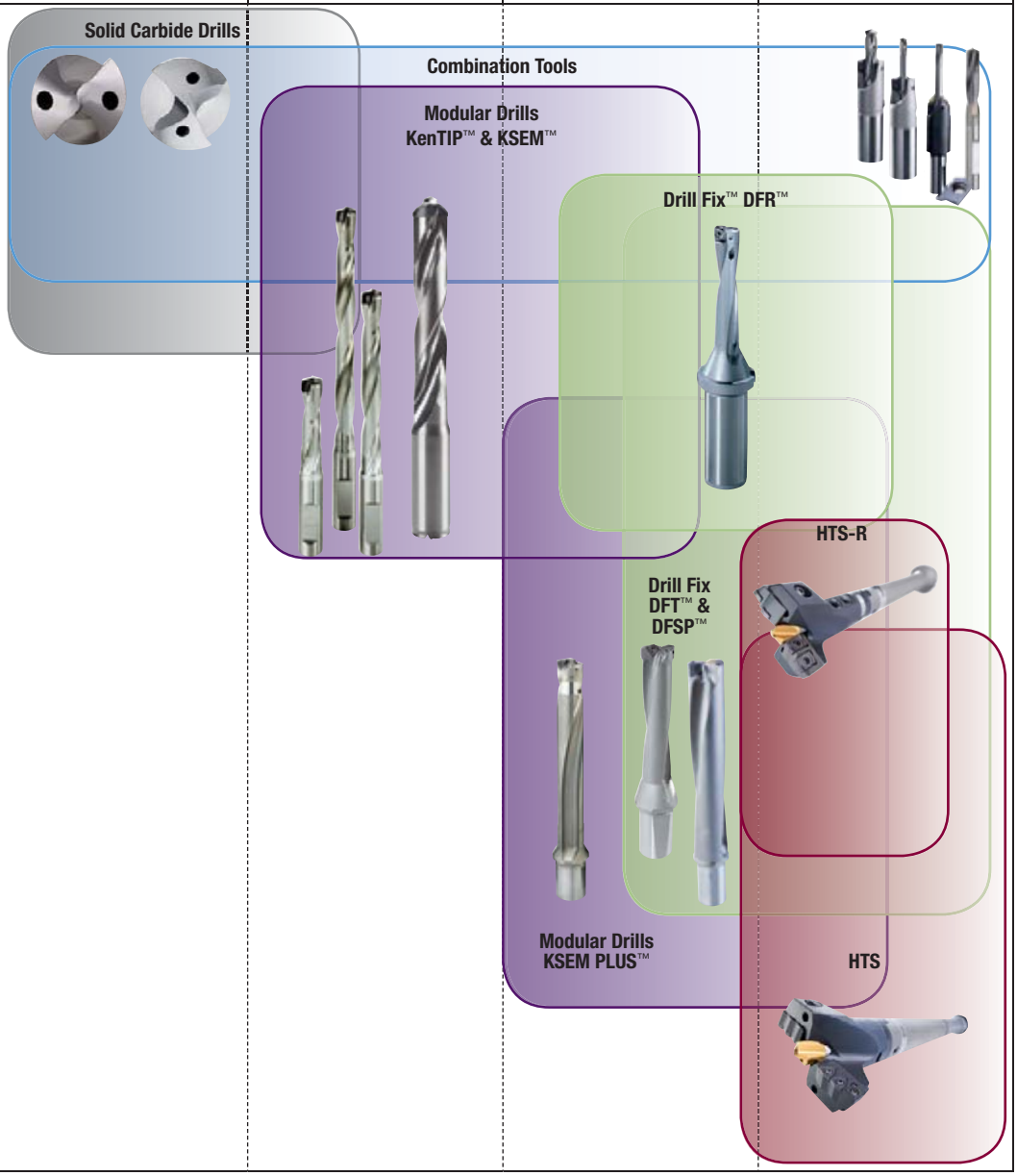
- Material and application-specific solutions.
- Maximum metal removal rates and repeatability.
- Standardized design platforms for special tools based on “proven solutions” for individual optimizations and combination tools.

Control of Total Tooling Costs

- High tool utilization through material and application-specific solutions.
- Process-safe regrinding service.
- Reduction of stocks through efficient modular concepts.
- Multiple platforms per application to achieve the most cost-efficient solution.

Solid Drilling

diameter		hourly rate			
		high to normal	normal (M/C)	normal to low	low (rough)
		precision			
mm	inch	IT8	IT9	IT10	IT11
1,0	0.0393				
3,0	0.1181				
6,0	0.2362				
9,0	0.3543				
12,0	0.4724				
15,0	0.5906				
18,0	0.7087				
21,0	0.8268				
24,0	0.9449				
27,0	1.0630				
30,0	1.1811				
33,0	1.2992				
36,0	1.4173				
39,0	1.5354				
42,0	1.6535				
45,0	1.7717				
48,0	1.8898				
51,0	2.0079				
54,0	2.1260				
57,0	2.2441				
60,0	2.3622				
70,0	2.7559				
80,0	3.1496				
90,0	3.5433				
100,0	3.9370				
150,0	5.9055				
200,0	7.8740				
250,0	9.8425				
270,0	10				



(continued)

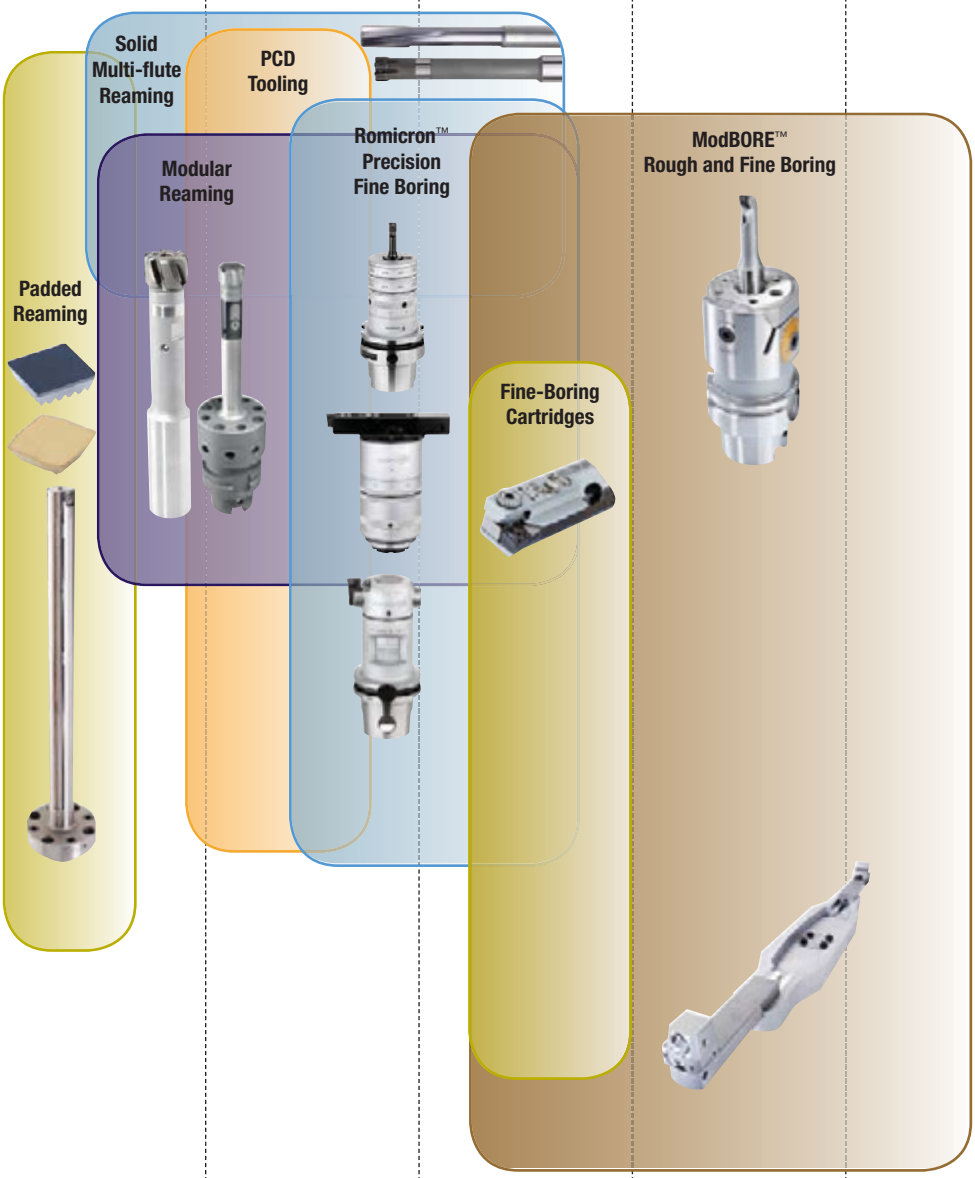
Select the Correct Holemaking Solution for Your Application *(continued)*

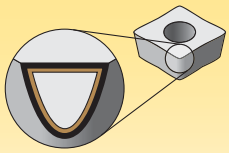
Optimized Purchase

- Broad selection of holemaking tools.
- Integrated into a full range of cutting tools and service offers.
- Onsite service for an efficient development and implementation of machining solutions.

Hole Finishing

diameter		hourly rate				
			very high	high (fine)	high to normal	normal (M/C)
		precision				
mm	inch	IT5	IT6	IT7	IT8	IT9
1,0	0.0393					
3,0	0.1181					
6,0	0.2362					
9,0	0.3543					
12,0	0.4724					
15,0	0.5906					
18,0	0.7087					
21,0	0.8268					
24,0	0.9449					
27,0	1.0630					
30,0	1.1811					
33,0	1.2992					
36,0	1.4173					
39,0	1.5354					
42,0	1.6535					
45,0	1.7717					
48,0	1.8898					
50,0	1.9685					
100,0	3.937					
150,0	5.9055					
200,0	7.878					
250,0	9.8425					
300,0	11.811					
400,0	15.748					
500,0	19.685					
1000,0	39.3701					
1500,0	59.0551					
2000,0	78.7402					
2500,0	98.4252					





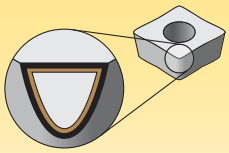
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

wear resistance ⟷ toughness

Solid Carbide Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KN15	**Composition:** Uncoated, highly wear-resistant fine-grain carbide. **Application:** Highly polished chip flute surfaces ensure superior chip evacuation and reduce tendency for built-up edges. First choice for non-ferrous materials.	N									
		S									
		C									
KN25	**Composition:** Uncoated, highly wear-resistant ultra-fine-grain carbide. **Application:** Highly polished chip flute surfaces ensure superior chip evacuation and reduce tendency for built-up edges. First choice for deep-hole drilling of non-ferrous materials.	N									
K10	**Composition:** Uncoated, highly wear-resistant fine-grain carbide with enhanced hot hardness properties. **Application:** Best suited for dry and external flood coolant applications in aerospace materials like high-temperature resistant materials and wrought aluminum alloys. Due to its high wear-resistance, this grade is also applicable for cast iron machining at low to medium speeds.	K									
		N									
		S									
KCPK15	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide with superior surface finish. **Application:** First choice for alloyed and high-alloyed steel and cast iron. A state-of-the-art surface condition enables superior chip evacuation and offers highest level of wear resistance at enhanced material removal rates.	P									
		K									
KCPK20	**Composition:** Multilayered PVD AlCrN-based coated ultra-fine-grain carbide with superior surface finish. **Application:** First choice for deep-hole drilling applications in steel and cast iron. Due to the uniquely developed coating combined with the state-of-the-art surface condition, this grade offers extraordinary wear resistance and superior chip evacuation.	P									
		K									
KCK10	**Composition:** Multilayered PVD AlCrN-based coated fine-grain carbide with superior surface finish. **Application:** First choice for cast iron. Due to the uniquely developed coating combined with the state-of-the-art surface condition, this grade offers extraordinary wear resistance in abrasive materials at elevated cutting conditions.	K									
KCMS15	**Composition:** Monolayer PVD AlTiN coated fine-grain carbide with superior surface finish. **Application:** First choice for stainless steel and high-temperature-resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties increasing its applicability also to MQL machining of steel.	P									
		M									
		S									



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M	Stainless Steel
K	Cast Iron
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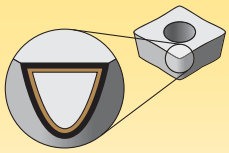
wear resistance ← → toughness

Solid Carbide Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCMS20	**Composition:** Monolayer PVD AlTiN coated ultra-fine-grain carbide with superior surface finish. **Application:** First choice for deep-hole drilling of stainless steel and high-temperature resistant materials. Due to the coating's enhanced high-temperature properties, this grade can also be applied to MQL applications in steel.	P			■	■	■				
		M			■	■	■				
		S			■	■	■				
KCH10	**Composition:** PVD AlTiN coated, ultra-fine-grain carbide. **Application:** First choice for hardened steels >55 HRC up to 5 x D.										
		H	■	■	■						
KCH15	**Composition:** PVD AlTiN coated, fine-grain carbide. **Application:** First choice for hardened steels between 48 and 55 HRC as well as case-hardened workpieces with hole depths >3 x D.										
		H		■	■	■					
KC7315	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide **Application:** Applicable for steel, cast iron, and hardened materials. This grade offers excellent wear resistance and reliability at intermediate to elevated cutting speeds.	P			■	■					
		K				■	■				
		H				■	■				
KC7325	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide with a TiN top layer for better wear identification. **Application:** This multipurpose grade has been combined with a unique general-purpose cutting geometry to offer high versatility and reliability across all material groups at intermediate cutting conditions.	P				■	■	■			
		M					■	■			
		K				■	■	■			
		N		■	■	■					
		S				■	■				
		H				■	■				
KDF400	**Composition:** CVD diamond coated fine-grain carbide. **Application:** First choice for machining carbon-fiber reinforced polymers (CFRPs). The crystalline diamond-coated grade offers a high degree of abrasive wear resistance. Paired with sharp cutting geometries and low-axial thrust point geometries, this grade is perfectly suited to machine most CFRPs.										
		C	■	■							



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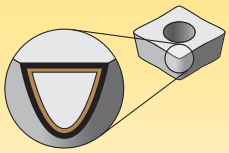
wear resistance ⟷ toughness

Modular Drill Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCP15	**Composition:** Monolayer PVD AlTiN coated fine-grain carbide. **Application:** First choice for steel and second choice for cast iron. This AlTiN coating offers the perfect combination of enhanced high-temperature properties and optimized toughness for high-performance modular drilling applications.	P		■	■	■					
		K			■	■	■				
KCP15A	**Composition:** Monolayer PVD AlTiN coated fine-grain carbide **Application:** First choice for steel and second choice for cast iron. This grade consists of an updated AlTiN coating offering improved high-temperature properties on top of the proven fine-grain carbide substrate offering required toughness for modular drilling applications.	P		■	■	■					
		K			■	■	■				
KC7135	**Composition:** PVD TiCN/TiN coated medium-grain carbide with high toughness. **Application:** Used for KSEM™ PC pre-centering inserts in most materials. The highly wear-resistant TiCN coating combined with a tough carbide substrate are perfectly suited to help with pre-centering operations in metastable machining conditions.	P								■	■
		M							■	■	
		K							■	■	
		S					■	■			
KC7315	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide. **Application:** Applicable for steel and cast iron. This grade offers excellent wear resistance and reliability at intermediate to elevated cutting speeds.	P			■	■	■				
		K				■	■	■			
KC7320	**Composition:** Monolayer PVD AlTiN coated fine-grain carbide. **Application:** First choice for stainless steel and high-temperature-resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties.	M		■	■	■					
		S		■	■	■					
KC7410	**Composition:** Multilayered PVD AlCrN-based coated fine-grain carbide. **Application:** First choice for cast iron. Due to the uniquely developed coating, this grade exhibits extraordinary wear resistance in abrasive materials offering the highest material removal rates.	K	■	■	■	■					
KCPM45	**Composition:** Multilayered PVD TiN-TiAlN coated medium-grain carbide. **Application:** Applicable for steel and cast iron. This grade offers excellent wear resistance and reliability at intermediate cutting speeds. Due to the medium-grain carbide, it offers superior chipping resistance in metastable machining conditions.	P						■	■	■	■
		M						■	■	■	



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

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H	Hardened Materials
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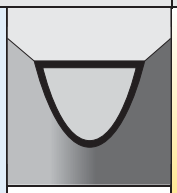
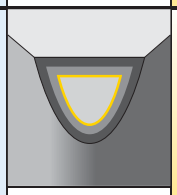
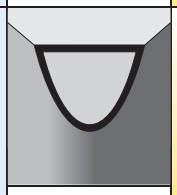
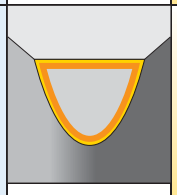
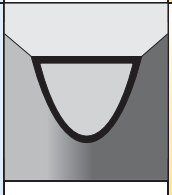
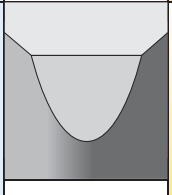
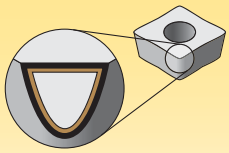
wear resistance ◄——► **toughness**

Modular Drill Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCMS35		**Composition:** Monolayer PVD AlTiN coated medium-grain carbide. **Application:** Applicable for stainless steel and high-temperature resistant materials. The coating offers high hardness and excellent wear resistance as well as enhanced high-temperature properties. In combination with its tough substrate, this grade offers superior chipping resistance and is best suited for metastable machining conditions.	M									
			S									
KCU25		**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a tough carbide substrate. **Application:** First choice for steel, stainless steel, and cast iron. This grade offers adequate deformation resistance, excellent edge strength, and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.	P									
			M									
			K									
KCU40		**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide. **Application:** First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As a grade developed for high toughness applications, it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P									
			M									
			K									
			S									
KC7140		**Composition:** PVD TiCN/TiN coated medium-grain carbide with high toughness. **Application:** Best suited for machining of steel and stainless steel. This exceptionally tough grade is perfectly suited for metastable machining conditions offering excellent tool life.	P									
			M									
			S									
KC7225		**Composition:** PVD TiAlN coated fine-grain carbide with enhanced toughness. **Application:** Best suited for machining of most materials. This grade offers excellent process reliability in metastable conditions due to enhanced carbide toughness. The TiAlN coating improves wear resistance for use at intermediate cutting conditions.	M									
			K									
			N									
			S									
K715		**Composition:** Uncoated, highly wear-resistant fine-grain carbide. **Application:** For use on KenTIP™ and KSEM™ made-to-order inserts when a sharp cutting edge is needed. Non-coated, polished carbide for drilling aluminum, titanium, and non-ferrous materials.	N									
			S									



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
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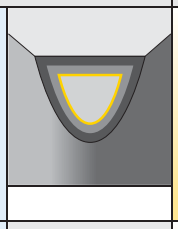
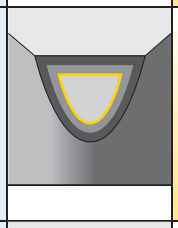
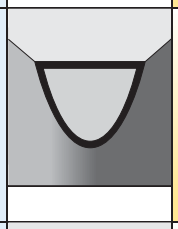
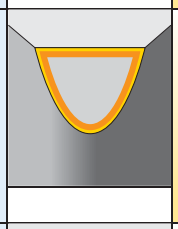
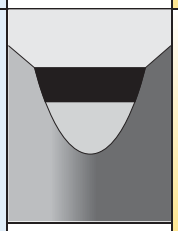
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

wear resistance ⟷ **toughness**

Indexable Drill Grades

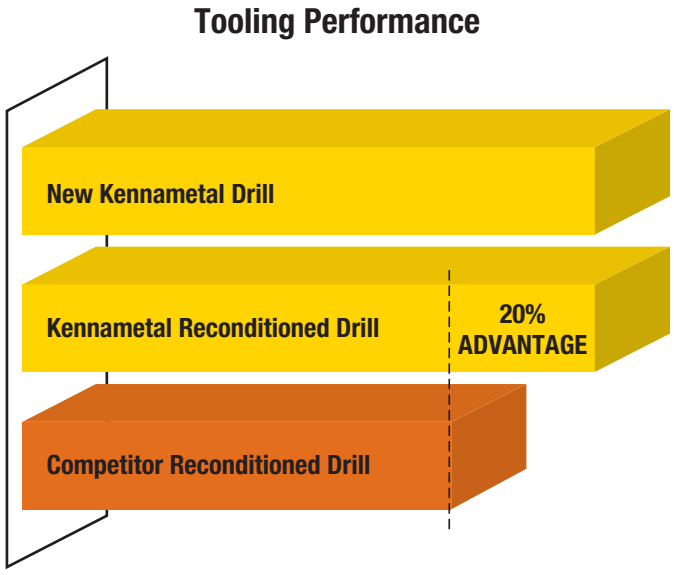
Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCPK10 	**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a cobalt-enriched carbide substrate. **Application:** The KCPK10 grade offers a balanced combination of deformation resistance and edge toughness leading to outstanding abrasion and crater wear resistance for high-speed machining of steel and cast iron. Use for very high cutting speeds with low to medium feed rates.	P	■	■	■	■					
		K	■	■	■	■					
KCU25 	**Composition:** Advanced CVD TiCN-Al_2O_3 coating combined with a tough carbide substrate. **Application:** First choice for steel, stainless steel, and cast iron. This grade offers adequate deformation resistance, excellent edge strength, and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.	P				■	■	■	■		
		M			■	■	■	■			
		K			■	■	■	■			
KCU40 	**Composition:** Multilayered PVD TiN-TiAlN coated fine-grain carbide. **Application:** First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As a grade developed for high toughness applications, it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P						■	■	■	■
		M					■	■	■	■	
		K				■	■	■	■		
KC7140 	**Composition:** PVD TiCN/TiN coated medium-grain carbide with high toughness. **Application:** Best suited for machining of steel and stainless steel. This exceptionally tough grade is perfectly suited for metastable machining conditions offering excellent tool life.	P							■	■	■
		M						■	■	■	
KD1425 	**Composition:** A multimodal PCD grade with a range of grain sizes brazed on carbide substrate. **Application:** Engineered for excellent abrasion resistance combined with good edge strength for demanding applications. An ideal choice for high-silicon aluminum alloys, MMCs, carbon fiber reinforced plastics, and other abrasive non-ferrous materials.	N			■	■	■				
		C	■	■							

Why Reconditioning?

Reconditioning Services

Our Reconditioning Services optimize the value of your metalcutting tools by providing like-new performance to tools on-hand. Reconditioning tools is smart for business and the environment. You save money, reduce inventory, and avoid material waste.

Customers purchase Kennametal tooling for its high performance. Why not continue receiving that same high performance after each reconditioning cycle? Kennametal can help you reduce tooling costs by more than 50% versus purchasing new tools. Taking advantage of our innovative tooling designs provides even greater savings because the reconditioned tool continues to achieve the same like-new performance as the original purchase.



NOTE: Estimated value. Values vary based on machining conditions.

Kennametal keeps you performing at the highest productivity rates.

KENNAMETAL®

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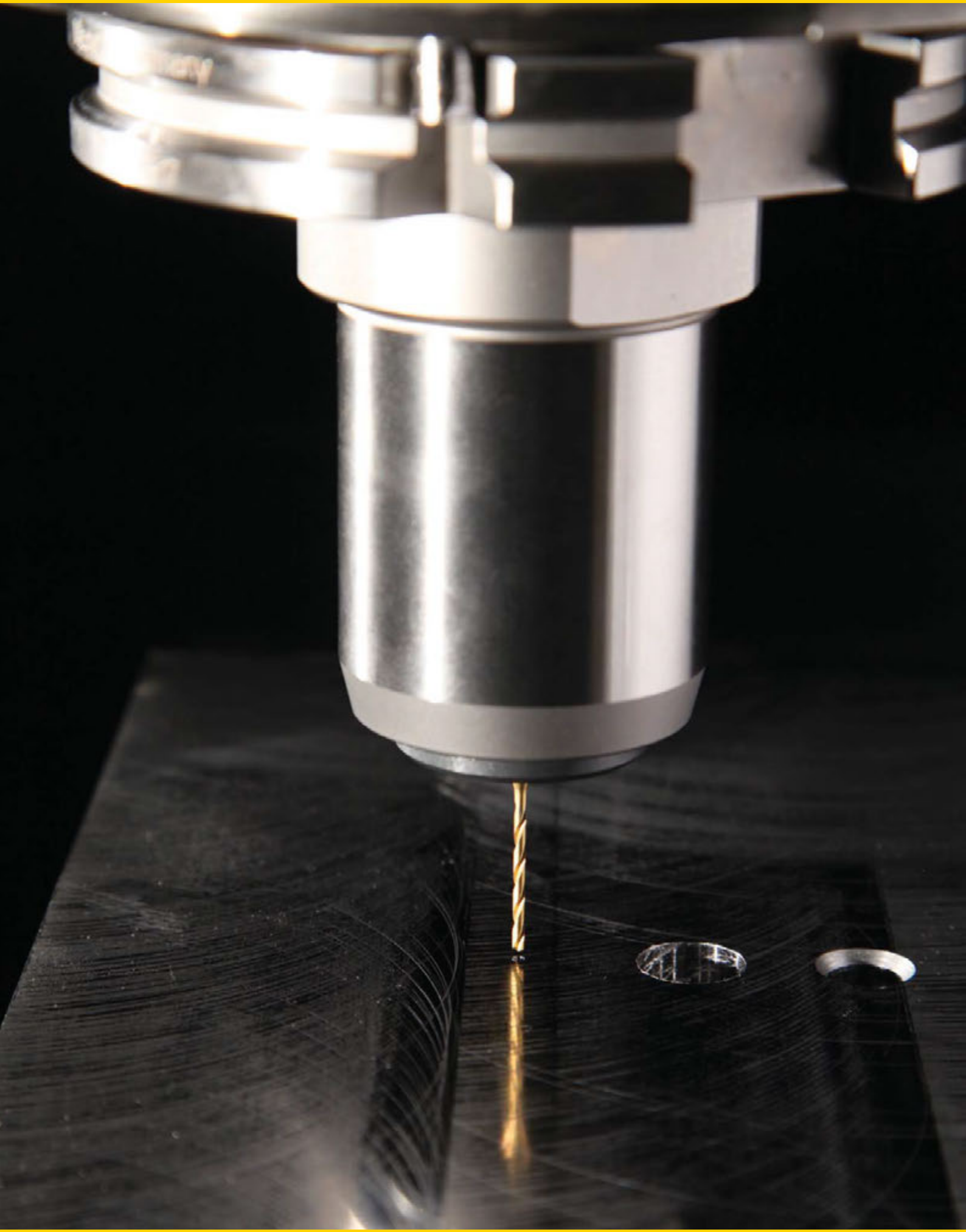


Solid Carbide Drills

Tool Selection Guide G2–G3

Solid Carbide Drills Dimension Tables and Recommendation Chart Foldout

GOdrill • Multiple Materials G6–G21

TF Drills • High Metal Removal Rates G22–G26

SGL Beyond Drills • Stainless Steel G28–G34

HP Beyond Drills • Steel G36–G49

YPC Beyond Drills • Iron Materials G50–G56

SE 4-Margin Drills • Steel G57–G59

HP Beyond 4-Margin, Long-Length Drills G60–G65

Deep-Hole Drills • Steel, Cast Iron, Stainless Steel, High-Temperature Alloys, and Non-Ferrous G66–G79

HPS Beyond Drills • Aluminum Machining G80–G85

Y-TECH Drills • Difficult-to-Machine Materials G86–G91

TX Drills • Close Tolerance Holes G92–G96

SPF Drills • CFRP G98–G101

DAL Drills • CFRP-Stacks G102–G107

Flat-Bottom Drills G108–G115

HP Beyond Step Drills G116–G120

KMH Drills • Hard Materials G122–G127

Kenna Universal Drills G128–G142

NC Spot Drills G144–G145

solid carbide drills for external coolant or dry machining		series	grade	standard* (● first choice ○ alternate choice) P	M	K	N	C	S	H	hole tolerance	standard range: diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
	GOdrill™ for Multiple Materials	B04_CPG	KC7325	●	●	●	●		●	○	IT9–IT10	1,0–20,0	.0394–.7874	3–5 x
	**TF Drill** for High Metal Removal Rates	B105	K10			●	●		○		IT9–IT10	3,0–21,0	.1130–.8101	5 x D
	**HP Drill** for Dry Applications or Flood Coolant	B221/B222_HP	KCPK15	●		●					IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**SPF Drill** for Composite (CFRP) Materials	B53_SPF	KDF400					●			IT9–IT10	3,2–12,7	.1260–.5010	3–5 x
	**DAL Drill** for CFRP — Metal Stack Materials	B551_DAL	KN15					●			IT9–IT10	4,763–15,875	.1875–.6250	3 x
	**NEW KMH Drill** for Hard Materials	B941	KCH10	○		○				●	IT9–IT10	2,5–14,0	.0984–.5512	3 x
	**KU Drill** for Universal Applications	B966/B967	KC7315	●		●	○				IT9–IT10	3,0–20,0	.1181–.7874	3–5 x
	**NC Spot Drill 120°** **NC Spot Drill 90°**	B501 B505	K10 K10	● ●	○ ○	● ●	○ ○		○ ○		– –	6,0–12,0 6,0–20,0	.2352–.4724 .2362–.7874	1 x D 1 x D

solid carbide drills with internal coolant channel		series	grade	standard* (● first choice ○ alternate choice) P	M	K	N	C	S	H	hole tolerance	standard range: diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
	GOdrill™ for Multiple Materials	B05_CPG	KC7325	●	●	●	●		●	○	IT9–IT10	1,0–20,0	.0394–.7874	3–8 x
	**NEW SGL Drill** for Stainless Steel	B21_SGL	KCMS15	○	●				●		IT9–IT10	3,0–20,5	.1181–.8071	3–8 x
	**HP Drill** for Steel	B224/B225_HP	KCPK15	●		○					IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**YPC Drill** for Cast Iron Materials	B25_YPC	KCK10			●					IT9–IT10	3,0–25,0	.1181–.9844	3–8 x
	**SE Drill** for Steel	B256	KC7315	●		○					IT9–IT10	5,0–16,0	.1969–.6299	8 x D
	Long-Length Drill for Steel, Iron, and Stainless Steel	B269_HP	KCPK15	●	○	○					IT9–IT10	3,0–20,0	.1181–.7874	12 x D
	**NEW Deep-Hole Drill** for Steel, Iron, and Non-Ferrous Materials for Stainless Steel and High-Temperature Alloys	B27_HPG B27_HPS B27_SGL	KCPK20 KN25 KCMS20	● ○ ○	○ ● ●	●	 ● 		 ● ●		IT9–IT10 IT9–IT10 IT9–IT10	2,4–16,0 2,4–16,0 2,4–16,0	.0938–.6299 .0938–.6299 .0938–.6299	15–40 x 15–40 x 15–40 x
	**HPS Drill** for Non-Ferrous Materials	B28_HPS	KN15				●				IT9–IT10	3,0–20,0	.1181–.7874	3–8 x
	**Y-TECH™ Drill** for High-Temperature Alloys	B29_YPL	KC7315	○	●				●		IT9–IT10	3,0–21,0	.1181–.8268	3–5 x
	**TX Drill** for Close Tolerance Holes	B411	KF1			●	●				IT8–IT9	3,2–25,0	.1250–.9843	5 x D
	**DAL Drill** for CFRP — Metal Stack Materials	B556_DAL	KN15					●			IT9–IT10	4,763–15,875	.1875–.6250	3 x
	**Flat-Bottom Drill** for Flat-Bottom Applications	B707_FBG B707_FBL B707_FBS	KC7315 KCMS15 KN15	● 	 ● 	●	 ●		 ● 		IT9–IT10 IT9–IT10 IT9–IT10	3,0–21,0 3,0–21,0 3,0–21,0	.1181–.8268 .1181–.8268 .1181–.8268	3 x D 3 x D 3 x D
	**HP Step Drill** for Steel and Iron	B73_HP	KCPK15	●		●					IT9–IT10	3,7–19,45	.1470–.7656	short, long
	**NEW KMH Drill** for Hard Materials	B951	KCH15	○		○				●	IT9–IT10	3,0–16,0	.1181–.6299	3 x
	**KU-Drill** for Universal Applications	B97_	KC7315	●	○	●	○		○		IT9–IT10	2,4–20,0	.0938–.7874	3–8 x

*In regard to coatings, anything is possible. If a specific drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

*1 Drills can be optimized for performance in specific applications. Ask your local Kennametal representative about Kennametal Custom Solutions service for special coatings, grades, or geometries to increase productivity.

*2 Step Drill Capability Guidelines: 5 steps maximum; 10 different shapes; at least 0,4mm difference in diameters; the largest diameter may not exceed the smallest diameter by more than 2x.

custom solution range			■ standard □ custom solution capabilities																				
diameter range																							
D1 mm	D1 in	drilling depth																					page(s)
min-max	min-max																						
1,0–20,0	.0394–.7874	1.5–12 x	■				■			■			□	□				□	■	■	□		G6
3,0–25,0	.1130–1.00	1.5–8 x	■	■			■			■			□	□		■		□	■	□			G22
3,0–25,0	.1181–1.00	1.5–8 x	■	■			■			■			□	□	■		□	□	■	□			G36
3,0–25,0	.1181–1.00	1.5–5 x	■	■			■			■			□	□				□	■	□			G98
3,0–25,0	.1181–1.00	1.5–5 x	■	■			■	□		■			□	□	■		□	□	■	□			G102
2,5–20,0	.0984–.7874	1.5–8 x	■				■			■			□		■		□	□	■	□			G122
3,0–25,0	.1181–1.00	1.5–8 x	■	■			■	■		■			□	□	□		■	■	■	■			G128
6,0–20,0 6,0–20,0	.2362–.7874 .2362–.7874	1 x D 1 x D	■ ■																				G144

custom solution range			■ standard □ custom solution capabilities																				
diameter range																							
D1 mm	D1 in	drilling depth																					page(s)
min-max	min-max																						
1,0–20,0	.0394–.7874	1.5–12 x			■	■	■			■			□	□				□	■	■	□		G14
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■			■			□	□	■		□	□	■	□			G28
3,0–25,0	.1181–1.00	1.5–5 x			■	■	■			■			□	□	■		□	□	■	□			G36
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■	■		■			□	□		■		■	■	□			G50
3,0–25,0	.1181–1.00	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	□			G57
3,0–25,0	.1181–.7874	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	□			G60
2,4–16,0 2,4–16,0 2,4–16,0	.0938–.6299 .0938–.6299 .0938–.6299	500mm 500mm 500mm			■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■		■ ■ ■					□ □ □		■ ■ ■	□ □ □	■ ■ ■	□ □ □			G66
3,0–25,0	.1181–.7874	3–8 x			■	■	■						□	□	■		□	□	■	□			G80
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■	■		■			□	□		■		□	■	□			G86
3,0–25,0	.1181–1.00	1.5–12 x			■	■	■	■	■	■	■		□	□	□		■	□	■	□			G92
3,0–25,0	.1181–1.00	1.5–5 x			■	■	■	□		■			□	□	■		□	□	■	□			G102
3,0–25,0 3,0–25,0 3,0–25,0	.1181–1.00 .1181–1.00 .1181–1.00	1.5–8 x 1.5–8 x 1.5–8 x			■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■		■ ■ ■	■ ■ ■	□ □ □	□ □ □	□ □ □		■ ■ ■	■ ■ ■	■ ■ ■	□ □ □			G108
3,0–25,0	.1181–1.00	1.5–8 x			■	■	■						■	■	■		□	□	■	□			G116
3,0–20,0	.1181–.7874	1.5–12 x			■		■	□		■			□	□	■		□	□	■	□			G122
2,4–25,0	.1181–1.00	1.5–12 x			■	■	■	■		■			□	□	□		■	□	■	■			G128

*3 Drill Shank Configuration Guidelines: shank diameter may be 2 “steps” larger than the standard shank in relation to the drill diameter or 1 step smaller than the standard shank. i.e. If the standard drill has 6mm shank, shank could be changed to 4mm, 8mm, or 10mm.

4 On symmetrical 2-fluted drills the following point geometries are possible: Split point (SP), Cone point (KM*), HP* point, SE* point, FB* point & FE* point; except for GOdrill™ which is limited to CP* point.

5 On asymmetrical 2-fluted drills (Y-TECH™) the Cone point and HP point are possible.

KENNAMETAL®



High-Performance Solid Carbide Drills

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**

Solid Carbide Drills • Recommendation Chart

Material Specific

standard first choice = bold alternate choice = regular simple special = gray	through coolant	flood coolant	MQL
P — Steels	**B224*HP** **B225*HP** B226*HP **B256**	**B221*HP** **B222*HP**	**B224*HP** **B225*HP** B226*HP **B256**
M — Stainless Steels	**B210*SGL** **B211*SGL** **B212*SGL**		
K — Cast Iron	**B254*YPC** **B255*YPC** **B256*YPC**	B105	**B254*YPC** **B255*YPC** **B256*YPC**
N — Non-Ferrous	**B284*HPS** **B285*HPS** **B286*HPS** **B411**	B105	**B284*HPS** **B285*HPS** **B286*HPS**
C1 — CFRP, CFRP/CFRP		**B531A** **B532A** B533A	
C2 — CFRP/Non-Ferrous C3 — CFRP/High-Temp C4 — CFRP/Stainless Steel	B546A/**B556A** B547A/B557A B548A/B558A	B541A/**B551A** B542A/B552A B543A/B553A	B546A/**B556A** B547A/B557A B548A/B558A
S — Heat-Resistant Alloys, Titanium Alloys	**B291*YPL** **B292*YPL**		
H — Hardened Materials	B951/**B952**/B953 B955/B956/B957/ B958/B959	B941/**B942**/B943 B945/B946/B947	

Application-Specific Solid Carbide Drills

Kennametal material-specific drills are targeted to end users with mass production and the need for very long tool life in a specific material, high cutting feeds and speeds, and reduced cost per part through time optimization with high metal removal rates.

Application-specific drills are designed to solve certain machining operations, such as deep-hole drilling or flat-bottom drilling, to save cycle times and costs.

HP Beyond™ Drill Series is available for different materials offering highest cutting parameters and long tool life. These ultimate high-volume production tools, such as the all-new drill for aluminum, are often platform for make-to-order or Custom Solutions.

Application Specific				Versatile
dry	**deep hole**	**flat bottom**	**drill and chamfer**	**universal**
B221*HP **B222*HP**	**B269*HP** **B271*HPG** **B272*HPG** **B273*HPG** **B274*HPG** **B275*HPG**	B706*FBG **B707*FBG** B708*FBG B709*FBG	**B731*HP** **B732*HP**	**B966, B967** **B976, B977, B978** **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
	B269*HP **B271*SGL** **B272*SGL** **B273*SGL** **B274*SGL** **B275*SGL**	B706*FBL **B707*FBL** B708*FBL B709*FBL		B966, B967 B976, B977, B978 **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
B105	**B269*HP** **B271*HPG** **B272*HPG** **B273*HPG** **B274*HPG** **B275*HPG**	B706*FBG **B707*FBG** B708*FBG B709*FBG	**B731*HP** **B732*HP**	**B966, B967** **B976, B977, B978** **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**
	B271*HPS **B272*HPS** **B273*HPS** **B274*HPS** **B275*HPS**	B706*FBS **B707*FBS** B708*FBS B709*FBS		B966, B967 B976, B977, B978 B041*CPG, B042*CPG B051*CPG, B052*CPG, B053*CPG
B531A **B532A** B533A				
B541A/**B551A** B542A/B552A B543A/B553A				
		B706*FBL **B707*FBL** B708*FBL B709*FBL		B966, B967 B976, B977, B978 **B041*CPG, B042*CPG** **B051*CPG, B052*CPG,** **B053*CPG**

Versatile Solid Carbide Drills

Kennametal versatile drills are targeted to end users with the need for long tool life in many materials, versatility and saving time for tool changes, and reducing the capital spent on a variety of SC Drill styles on the shelf.

The GOdrill™ is a multi-material drill. It addresses drilling operations in a diameter range of .0394–.7874" (1–20mm) in a broad variety of materials and applications, such as fuel systems or medical components. Due to its very unique design, the GOdrill expands the advantages of modular drills into the small diameter range, enabling the full utilization of the drill's tool life capacity.

The Kenna Universal™ Drill is a multi-purpose drill. it is engineered to deliver superior performance in steel, cast iron, and stainless steel applications, making it ideal for small- and medium-sized shops. The universal application profile reduces tool change times and the number of drills in inventory. Covering a large spectrum of off-the-shelf diameters and a broad range of applications makes Kenna Universal Drills an excellent alternative to other high-performance products.

Solid Carbide Drills • Dimension Tables

Dimensions for Kennametal Solid Carbide Drills (B_Series) • Metric

mm Ø		DIN 6535		SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D			EXTRA LONG** NEW 8 x D (SGL)		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
1,000	1,400	4	28	58	7	5	58	9	6	58	12	10	–	–	–
1,401	1,900	4	28	58	9	6	58	12	9	58	18	15	–	–	–
1,901	2,300	4	28	58	13	9	58	18	14	66	26	22	–	–	–
2,301	2,999	4	28	58	17	12	58	22	17	66	30	25	–	–	–
3,000	3,750	6	36	62	20	14	66	28	23	78	40	33	78	40	33
3,751	4,750	6	36	66	24	17	74	36	29	87	49	41	87	49	41
4,751	6,000	6	36	66	28	20	82	44	35	94	56	48	94	56	48
6,001	7,000	8	36	79	34	24	91	53	43	105	67	57	105	67	57
7,001	8,000	8	36	79	41	29	91	53	43	110	72	61	121	82	64
8,001	10,000	10	40	89	47	35	103	61	49	122	80	68	145	102	80
10,001	12,000	12	45	102	55	40	118	71	56	141	94	79	170	122	96
12,001	14,000	14	45	107	60	43	124	77	60	155	108	91	190	142	112
14,001	16,000	16	48	115	65	45	133	83	63	171	121	101	213	162	128
16,001	18,000	18	48	123	73	51	143	93	71	185	135	113	232	181	144
18,001	20,000	20	50	131	79	55	153	101	77	200	148	124	254	201	160
20,001	22,000	20	50	141	86	60	167	112	85	217	162	136	274	221	176
22,001	25,000	25	56	153	95	65	184	126	98	238	180	150	310	251	200

* D1<20mm to DIN 6537K
D1>20mm to factory standard
** To factory standard

NOTE: Solid Carbide Drills from Kennametal in short or regular lengths conform to DIN 6537.
Drills with long lengths conform to Kennametal factory standard.
Solid Carbide Drills with diameter D1>.787" (not DIN 6537) are also standardized to factory standard.

Dimensions for Kennametal Solid Carbide Drills (B_Series) • Inch

inch Ø		DIN 6535		SHORT* ~3 x D			LONG* ~5 x D			EXTRA LONG** ~8 x D			EXTRA LONG** NEW 8 x D (SGL)		
D1 min	D1 max	D	LS	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max	L	L3	L4 max
.0394	.0551	.1575	1.10	2.28	.28	.20	2.28	.35	.24	2.28	.47	.39	–	–	–
.0552	.0748	.1575	1.10	2.28	.35	.24	2.28	.47	.35	2.28	.71	.59	–	–	–
.0748	.0906	.1575	1.10	2.28	.51	.35	2.28	.71	.55	2.60	1.02	.87	–	–	–
.0906	.1177	.1575	1.10	2.28	.67	.47	2.28	.87	.67	2.60	1.18	.98	–	–	–
.1181	.1476	.2362	1.42	2.44	.79	.55	2.60	1.10	.91	3.07	1.57	1.30	3.07	1.57	1.30
.1477	.1870	.2362	1.42	2.60	.94	.67	2.91	1.42	1.14	3.43	1.93	1.61	3.43	1.93	1.61
.1870	.2362	.2362	1.42	2.60	1.10	.79	3.23	1.73	1.38	3.70	2.20	1.89	3.70	2.20	1.89
.2363	.2756	.3150	1.42	3.11	1.34	.94	3.58	2.09	1.69	4.13	2.64	2.24	4.13	2.64	2.24
.2756	.3150	.3150	1.42	3.11	1.61	1.14	3.58	2.09	1.69	4.33	2.83	2.40	4.76	3.23	2.52
.3150	.3937	.3937	1.57	3.50	1.85	1.38	4.06	2.40	1.93	4.80	3.15	2.68	5.71	4.02	3.15
.3937	.4724	.4724	1.77	4.02	2.17	1.57	4.65	2.80	2.20	5.55	3.70	3.11	6.69	4.80	3.78
.4725	.5512	.5512	1.77	4.21	2.36	1.69	4.88	3.03	2.36	6.10	4.25	3.58	7.48	5.59	4.41
.5512	.6299	.6299	1.89	4.53	2.56	1.77	5.24	3.27	2.48	6.73	4.76	3.98	8.39	6.38	5.04
.6300	.7087	.7087	1.89	4.84	2.87	2.01	5.63	3.66	2.80	7.28	5.32	4.45	9.13	7.13	5.67
.7087	.7874	.7874	1.97	5.16	3.11	2.17	6.02	3.98	3.03	7.87	5.83	4.88	10.00	7.91	6.30
.7874	.8661	.7874	1.97	5.55	3.39	2.36	6.57	4.41	3.35	8.54	6.38	5.35	10.79	8.70	6.93
.8662	.9843	.9843	2.20	6.02	3.74	2.56	7.24	4.96	3.86	9.37	7.09	5.91	12.20	9.88	7.87

* D1<20mm to DIN 6537K
D1>20mm to factory standard
** To factory standard

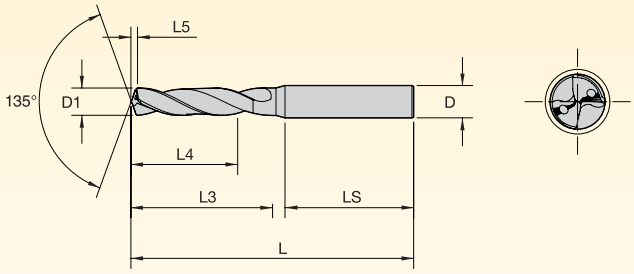
Shank designs to DIN 6535



Form HE,
2° angle
Design F



Form HA,
straight round
Design A

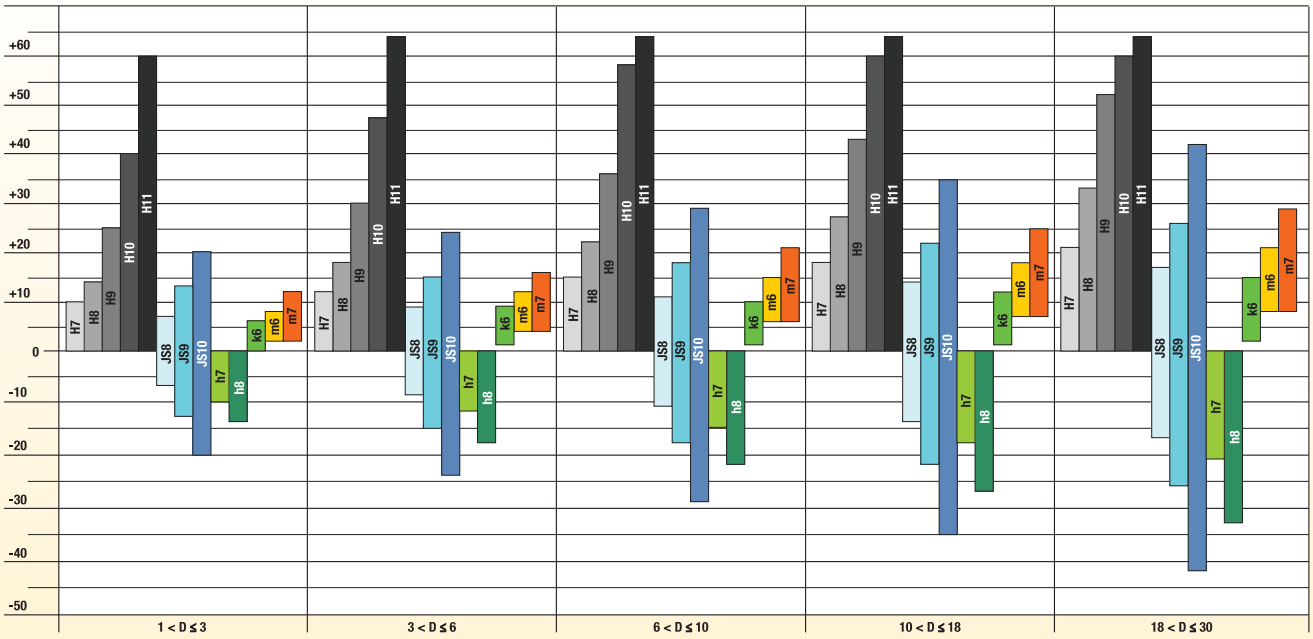


Holemaking Drilling Portfolio • Diameter Tolerances

Hole tolerances which can be achieved with solid carbide drills are listed in the table below.
Achievable tolerances depend on the application (machining conditions, material etc.) and may deviate from the list below.
Hole accuracy might decline with increasing drill length.
Other drilling tolerances require special solid carbide drill solutions.

drill type	drill tolerance	hole tolerance	hole tolerance (best*)	drill series
GO	h8	JS10	JS9	B04*CPG, B05*CPG ≤ .1181" (3mm)
	h7	JS9	JS8	B04*CPG, B05*CPG ≥ .1181" (3mm)
TF	m7	H9	H8	B105
HP/SGL	m7	H9	H8	B21*SGL, B22*HP, B269*HP
YPC	m7	H9	H8	B25*YPC
SE	m7	H9	H8	B256
HPG/SGL	h7	JS9	JS8	B27*HPG, B27*KMG, B27*SGL
HPS	h7	JS9	JS8	B27*HPS, B27*KMS
HPS	m7	H9	H8	B28*HPS
Y-TECH	m7	H9	H8	B29*YPL
BF	h7	JS9	JS8	B343
SPF	m7	H10	H9	B53*SPF
TX	k6	H8	H7	B41* ≤ 5 x D
	k6	H9	H8	B41* ≥ 5 x D
DAL	k6	H8	H7	B54*, B55* ≤ 5 x D
	k6	H9	H8	B54*, B55* ≥ 5 x D
FB*	m7	H11	H9	B70*FBG, B70*FBL
	m7	H10	H8	B70*FBS
KMH	m7	H9	H8	B94*, B95*
KU	m7	H9	H8	B96*; B97*

* Can be achieved in very good conditions.



Achievable hole tolerance in µm per diameter range (mm).
Tolerance table according to DIN EN ISO 286-1.

KENNAMETAL®

GOdrill™

For Multiple Materials

Primary Application

The GOdrill platform addresses drilling operations in a diameter range of 1–20mm (.0394–.7874") in a broad variety of materials and applications such as fuel systems or medical components. Due to its very unique design, the GOdrill platform expands the advantages of modular drills into the small diameter range: high-end grades, wear-indicator coating, and new, proprietary geometries enable full utilization of the drill's tool life capacity. The GOdrill platform qualifies as a very cost-effective, throwaway-type tool in the given diameter range.

Features and Benefits

GOdrill Design

- Marginless design for reduced friction and heat — thus longer tool life.
- Very versatile tool works in a wide range of materials.
- Cost-effective, no regrind logistics.
- No setup.
- Throw away or recycle.
- Through-coolant option down to diameter 1mm (.0394").

CPG Point

- Optimized gashing design for microdrilling ensures free flow of chips in the center of the drill.
- Excellent centering capabilities.
- Reduced axial forces.
- Good hole quality, roundness, and cylindricity for all materials.

The high-performance solid carbide drill tailored for very small- to medium-diameter drilling applications.

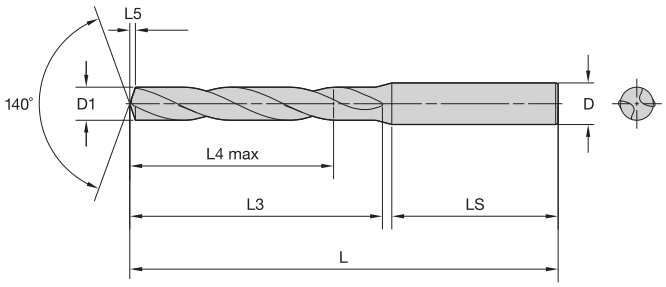


KC7325™ Grade

The grade contains a double coating:

- The multilayer, TiAlN-based coating with high hot hardness enables the drill to run at high cutting speeds as well as in MQL applications.
- A TiN top layer serves as wear indicator for easier monitoring on small drills, which can be difficult to see.
- Improved visibility of wear helps to utilize the tool's full tool life capacity.

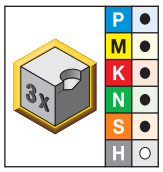


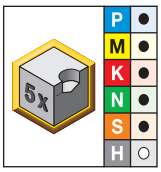




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B041A/B042A • ~3 x D/~5 x D



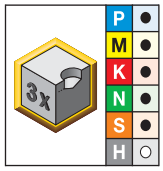


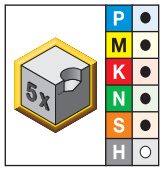
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A01000CPG	B042A01000CPG	1,000	.0394	–	–	0,1	28	4
B041A01016CPG	B042A01016CPG	1,016	.0400	–	–	0,1	28	4
B041A01041CPG	B042A01041CPG	1,041	.0410	–	–	0,2	28	4
B041A01067CPG	B042A01067CPG	1,067	.0420	–	–	0,2	28	4
B041A01092CPG	B042A01092CPG *	1,092	.0430	–	–	0,2	28	4
B041A01100CPG	B042A01100CPG	1,100	.0433	–	–	0,2	28	4
B041A01181CPG	B042A01181CPG	1,181	.0465	–	–	0,2	28	4
B041A01191CPG	B042A01191CPG	1,191	.0469	3/64	–	0,2	28	4
B041A01200CPG	B042A01200CPG	1,200	.0472	–	–	0,2	28	4
B041A01300CPG	B042A01300CPG	1,300	.0512	–	–	0,2	28	4
B041A01321CPG	B042A01321CPG	1,321	.0520	–	–	0,2	28	4
B041A01397CPG	B042A01397CPG	1,397	.0550	–	–	0,2	28	4
B041A01400CPG	B042A01400CPG	1,400	.0551	–	–	0,2	28	4
B041A01500CPG	B042A01500CPG	1,500	.0591	–	–	0,2	28	4
B041A01600CPG	B042A01600CPG	1,600	.0630	–	–	0,2	28	4
B041A01700CPG	B042A01700CPG	1,700	.0669	–	–	0,3	28	4
B041A01800CPG	B042A01800CPG	1,800	.0709	–	–	0,3	28	4
B041A01900CPG	B042A01900CPG	1,900	.0748	–	–	0,3	28	4
B041A01984CPG	B042A01984CPG	1,984	.0781	5/64	–	0,3	28	4
B041A02000CPG	B042A02000CPG	2,000	.0787	–	–	0,3	28	4
B041A02100CPG	B042A02100CPG	2,100	.0827	–	–	0,3	28	4
B041A02200CPG	B042A02200CPG	2,200	.0866	–	–	0,3	28	4
B041A02300CPG	B042A02300CPG	2,300	.0906	–	–	0,4	28	4
B041A02383CPG	B042A02383CPG	2,383	.0938	3/32	–	0,4	28	4
B041A02400CPG	B042A02400CPG	2,400	.0945	–	–	0,4	28	4
B041A02439CPG	B042A02439CPG	2,439	.0960	–	41	0,4	28	4
B041A02489CPG	B042A02489CPG	2,489	.0980	–	40	0,4	28	4
B041A02500CPG	B042A02500CPG	2,500	.0984	–	–	0,4	28	4
B041A02578CPG	B042A02578CPG	2,578	.1015	–	38	0,4	28	4
B041A02600CPG	B042A02600CPG	2,600	.1024	–	–	0,4	28	4
B041A02642CPG	B042A02642CPG	2,642	.1040	–	37	0,4	28	4
B041A02700CPG	B042A02700CPG	2,700	.1063	–	–	0,4	28	4

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



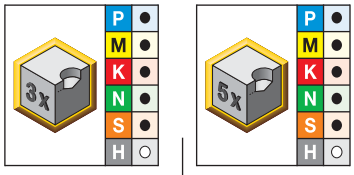


● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A02705CPG	B042A02705CPG	2,705	.1065	–	36	0,4	28	4
B041A02779CPG	B042A02779CPG	2,779	.1094	7/64	–	0,4	28	4
B041A02800CPG	B042A02800CPG	2,800	.1102	–	–	0,5	28	4
B041A02820CPG	B042A02820CPG	2,820	.1110	–	34	0,5	28	4
B041A02870CPG	B042A02870CPG	2,870	.1130	–	33	0,5	28	4
B041A02900CPG	B042A02900CPG	2,900	.1142	–	–	0,5	28	4
B041A02947CPG	B042A02947CPG	2,947	.1160	–	32	0,5	28	4
B041A03000CPG	B042A03000CPG	3,000	.1181	–	–	0,5	36	6
B041A03048CPG	B042A03048CPG	3,048	.1200	–	31	0,5	36	6
B041A03100CPG	B042A03100CPG	3,100	.1220	–	–	0,5	36	6
B041A03175CPG	B042A03175CPG	3,175	.1250	1/8	–	0,5	36	6
B041A03200CPG	B042A03200CPG	3,200	.1260	–	–	0,5	36	6
B041A03264CPG	B042A03264CPG	3,264	.1285	–	30	0,5	36	6
B041A03300CPG	B042A03300CPG	3,300	.1299	–	–	0,5	36	6
B041A03400CPG	B042A03400CPG	3,400	.1339	–	–	0,6	36	6
B041A03455CPG	B042A03455CPG	3,455	.1360	–	29	0,6	36	6
B041A03500CPG	B042A03500CPG	3,500	.1378	–	–	0,6	36	6
B041A03571CPG	B042A03571CPG	3,571	.1406	9/64	–	0,6	36	6
B041A03600CPG	B042A03600CPG	3,600	.1417	–	–	0,6	36	6
B041A03658CPG	B042A03658CPG	3,658	.1440	–	27	0,6	36	6
B041A03700CPG	B042A03700CPG	3,700	.1457	–	–	0,6	36	6
B041A03734CPG	B042A03734CPG	3,734	.1470	–	26	0,6	36	6
B041A03800CPG	B042A03800CPG	3,800	.1496	–	–	0,6	36	6
B041A03900CPG	B042A03900CPG	3,900	.1535	–	–	0,6	36	6
B041A03970CPG	B042A03970CPG	3,970	.1563	5/32	–	0,7	36	6
B041A04000CPG	B042A04000CPG	4,000	.1575	–	–	0,7	36	6
B041A04039CPG	B042A04039CPG	4,039	.1590	–	21	0,7	36	6
B041A04090CPG	B042A04090CPG	4,090	.1610	–	20	0,7	36	6
B041A04100CPG	B042A04100CPG	4,100	.1614	–	–	0,7	36	6
B041A04200CPG	B042A04200CPG	4,200	.1654	–	–	0,7	36	6
B041A04217CPG	B042A04217CPG	4,217	.1660	–	19	0,7	36	6
B041A04300CPG	B042A04300CPG	4,300	.1693	–	–	0,7	36	6
B041A04366CPG	B042A04366CPG	4,366	.1719	11/64	–	0,7	36	6
B041A04400CPG	B042A04400CPG	4,400	.1732	–	–	0,7	36	6
B041A04500CPG	B042A04500CPG	4,500	.1772	–	–	0,7	36	6
B041A04600CPG	B042A04600CPG	4,600	.1811	–	–	0,8	36	6
B041A04623CPG	B042A04623CPG	4,623	.1820	–	14	0,8	36	6
B041A04700CPG	B042A04700CPG	4,700	.1850	–	13	0,8	36	6
B041A04763CPG	B042A04763CPG	4,763	.1875	3/16	–	0,8	36	6
B041A04800CPG	B042A04800CPG	4,800	.1890	–	12	0,8	36	6
B041A04852CPG	B042A04852CPG	4,852	.1910	–	11	0,8	36	6
B041A04900CPG	B042A04900CPG	4,900	.1929	–	–	0,8	36	6
B041A05000CPG	B042A05000CPG	5,000	.1969	–	–	0,8	36	6
B041A05100CPG	B042A05100CPG	5,100	.2008	–	–	0,8	36	6
B041A05106CPG	B042A05106CPG	5,106	.2010	–	7	0,8	36	6
B041A05159CPG	B042A05159CPG	5,159	.2031	13/64	–	0,9	36	6
B041A05200CPG	B042A05200CPG	5,200	.2047	–	–	0,9	36	6
B041A05300CPG	B042A05300CPG	5,300	.2087	–	–	0,9	36	6
B041A05400CPG	B042A05400CPG	5,400	.2126	–	–	0,9	36	6
B041A05410CPG	B042A05410CPG	5,410	.2130	–	3	0,9	36	6
B041A05500CPG	B042A05500CPG	5,500	.2165	–	–	0,9	36	6
B041A05558CPG	B042A05558CPG	5,558	.2188	7/32	–	0,9	36	6

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)

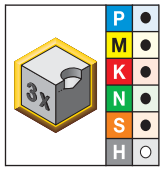


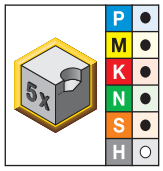
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A05600CPG	B042A05600CPG	5,600	.2205	–	–	0,9	36	6
B041A05616CPG	B042A05616CPG	5,616	.2211	–	2	0,9	36	6
B041A05700CPG	B042A05700CPG	5,700	.2244	–	–	1,0	36	6
B041A05800CPG	B042A05800CPG	5,800	.2283	–	–	1,0	36	6
B041A05900CPG	B042A05900CPG	5,900	.2323	–	–	1,0	36	6
B041A05954CPG	B042A05954CPG	5,954	.2344	15/64	–	1,0	36	6
B041A06000CPG	B042A06000CPG	6,000	.2362	–	–	1,0	36	6
B041A06100CPG	B042A06100CPG	6,100	.2402	–	–	1,0	36	8
B041A06200CPG	B042A06200CPG	6,200	.2441	–	–	1,0	36	8
B041A06300CPG	B042A06300CPG	6,300	.2480	–	–	1,1	36	8
B041A06350CPG	B042A06350CPG	6,350	.2500	1/4	E	1,1	36	8
B041A06400CPG	B042A06400CPG	6,400	.2520	–	–	1,1	36	8
B041A06500CPG	B042A06500CPG	6,500	.2559	–	–	1,1	36	8
B041A06528CPG	B042A06528CPG	6,528	.2570	–	F	1,1	36	8
B041A06600CPG	B042A06600CPG	6,600	.2598	–	–	1,1	36	8
B041A06630CPG	B042A06630CPG	6,630	.2610	–	G	1,1	36	8
B041A06700CPG	B042A06700CPG	6,700	.2638	–	–	1,1	36	8
B041A06746CPG	B042A06746CPG	6,746	.2656	17/64	–	1,1	36	8
B041A06800CPG	B042A06800CPG	6,800	.2677	–	–	1,1	36	8
B041A06900CPG	B042A06900CPG	6,900	.2717	–	–	1,2	36	8
B041A07000CPG	B042A07000CPG	7,000	.2756	–	–	1,2	36	8
B041A07100CPG	B042A07100CPG	7,100	.2795	–	–	1,2	36	8
B041A07145CPG	B042A07145CPG	7,145	.2813	9/32	–	1,2	36	8
B041A07200CPG	B042A07200CPG	7,200	.2835	–	–	1,2	36	8
B041A07300CPG	B042A07300CPG	7,300	.2874	–	–	1,2	36	8
B041A07400CPG	B042A07400CPG	7,400	.2913	–	–	1,3	36	8
B041A07500CPG	B042A07500CPG	7,500	.2953	–	–	1,3	36	8
B041A07541CPG	B042A07541CPG	7,541	.2969	19/64	–	1,3	36	8
B041A07600CPG	B042A07600CPG	7,600	.2992	–	–	1,3	36	8
B041A07700CPG	B042A07700CPG	7,700	.3031	–	–	1,3	36	8
B041A07800CPG	B042A07800CPG	7,800	.3071	–	–	1,3	36	8
B041A07900CPG	B042A07900CPG	7,900	.3110	–	–	1,3	36	8
B041A07938CPG	B042A07938CPG	7,938	.3125	5/16	–	1,3	36	8
B041A08000CPG	B042A08000CPG	8,000	.3150	–	–	1,4	36	8
B041A08100CPG	B042A08100CPG	8,100	.3189	–	–	1,4	40	10
B041A08200CPG	B042A08200CPG	8,200	.3228	–	–	1,4	40	10
B041A08300CPG	B042A08300CPG	8,300	.3268	–	–	1,4	40	10
B041A08334CPG	B042A08334CPG	8,334	.3281	21/64	–	1,4	40	10
B041A08400CPG	B042A08400CPG	8,400	.3307	–	–	1,4	40	10
B041A08433CPG	B042A08433CPG	8,433	.3320	–	Q	1,4	40	10
B041A08500CPG	B042A08500CPG	8,500	.3346	–	–	1,4	40	10
B041A08600CPG	B042A08600CPG	8,600	.3386	–	–	1,5	40	10
B041A08700CPG	B042A08700CPG	8,700	.3425	–	–	1,5	40	10
B041A08733CPG	B042A08733CPG	8,733	.3438	11/32	–	1,5	40	10
B041A08800CPG	B042A08800CPG	8,800	.3465	–	–	1,5	40	10
B041A08900CPG	B042A08900CPG	8,900	.3504	–	–	1,5	40	10
B041A09000CPG	B042A09000CPG	9,000	.3543	–	–	1,5	40	10
B041A09100CPG	B042A09100CPG	9,100	.3583	–	–	1,5	40	10
B041A09129CPG	B042A09129CPG	9,129	.3594	23/64	–	1,6	40	10
B041A09200CPG	B042A09200CPG	9,200	.3622	–	–	1,6	40	10
B041A09300CPG	B042A09300CPG	9,300	.3661	–	–	1,6	40	10
B041A09347CPG	B042A09347CPG	9,347	.3680	–	U	1,6	40	10

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



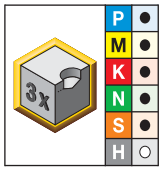


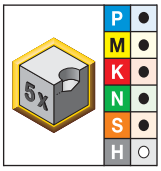
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A09400CPG	B042A09400CPG	9,400	.3701	–	–	1,6	40	10
B041A09500CPG	B042A09500CPG	9,500	.3740	–	–	1,6	40	10
B041A09525CPG	B042A09525CPG	9,525	.3750	3/8	–	1,6	40	10
B041A09600CPG	B042A09600CPG	9,600	.3780	–	–	1,6	40	10
B041A09700CPG	B042A09700CPG	9,700	.3819	–	–	1,7	40	10
B041A09800CPG	B042A09800CPG	9,800	.3858	–	–	1,7	40	10
B041A09900CPG	B042A09900CPG	9,900	.3898	–	–	1,7	40	10
B041A09921CPG	B042A09921CPG	9,921	.3906	25/64	–	1,7	40	10
B041A10000CPG	B042A10000CPG	10,000	.3937	–	–	1,7	40	10
B041A10100CPG	B042A10100CPG	10,100	.3976	–	–	1,7	45	12
B041A10200CPG	B042A10200CPG	10,200	.4016	–	–	1,7	45	12
B041A10300CPG	B042A10300CPG	10,300	.4055	–	–	1,8	45	12
B041A10320CPG	B042A10320CPG	10,320	.4063	13/32	–	1,8	45	12
B041A10400CPG	B042A10400CPG	10,400	.4094	–	–	1,8	45	12
B041A10500CPG	B042A10500CPG	10,500	.4134	–	–	1,8	45	12
B041A10600CPG	B042A10600CPG	10,600	.4173	–	–	1,8	45	12
B041A10700CPG	B042A10700CPG	10,700	.4213	–	–	1,8	45	12
B041A10716CPG	B042A10716CPG	10,716	.4219	27/64	–	1,8	45	12
B041A10800CPG	B042A10800CPG	10,800	.4252	–	–	1,8	45	12
B041A10900CPG	B042A10900CPG	10,900	.4291	–	–	1,9	45	12
B041A11000CPG	B042A11000CPG	11,000	.4331	–	–	1,9	45	12
B041A11100CPG	B042A11100CPG	11,100	.4370	–	–	1,9	45	12
B041A11113CPG	B042A11113CPG	11,113	.4375	7/16	–	1,9	45	12
B041A11200CPG	B042A11200CPG	11,200	.4409	–	–	1,9	45	12
B041A11300CPG	B042A11300CPG	11,300	.4449	–	–	1,9	45	12
B041A11400CPG	B042A11400CPG *	11,400	.4488	–	–	2,0	45	12
B041A11500CPG	B042A11500CPG	11,500	.4528	–	–	2,0	45	12
B041A11509CPG	B042A11509CPG	11,509	.4531	29/64	–	2,0	45	12
B041A11600CPG	B042A11600CPG	11,600	.4567	–	–	2,0	45	12
B041A11700CPG	B042A11700CPG	11,700	.4606	–	–	2,0	45	12
B041A11800CPG	B042A11800CPG	11,800	.4646	–	–	2,0	45	12
B041A11900CPG	B042A11900CPG	11,900	.4685	–	–	2,0	45	12
B041A11908CPG	B042A11908CPG	11,908	.4688	15/32	–	2,0	45	12
B041A12000CPG	B042A12000CPG	12,000	.4724	–	–	2,1	45	12
B041A12100CPG	B042A12100CPG	12,100	.4764	–	–	2,1	45	14
B041A12200CPG	B042A12200CPG	12,200	.4803	–	–	2,1	45	14
B041A12300CPG	B042A12300CPG	12,300	.4843	–	–	2,1	45	14
B041A12304CPG	B042A12304CPG	12,304	.4844	31/64	–	2,1	45	14
B041A12400CPG	B042A12400CPG *	12,400	.4882	–	–	2,1	45	14
B041A12500CPG	B042A12500CPG	12,500	.4921	–	–	2,1	45	14
B041A12600CPG	B042A12600CPG	12,600	.4961	–	–	2,2	45	14
B041A12700CPG	B042A12700CPG	12,700	.5000	1/2	–	2,2	45	14
B041A12800CPG	B042A12800CPG	12,800	.5039	–	–	2,2	45	14
B041A12900CPG	B042A12900CPG	12,900	.5079	–	–	2,2	45	14
B041A13000CPG	B042A13000CPG	13,000	.5118	–	–	2,2	45	14
B041A13096CPG	B042A13096CPG	13,096	.5156	33/64	–	2,3	45	14
B041A13100CPG	B042A13100CPG	13,100	.5157	–	–	2,3	45	14
B041A13200CPG	B042A13200CPG	13,200	.5197	–	–	2,3	45	14
B041A13300CPG	B042A13300CPG	13,300	.5236	–	–	2,3	45	14
B041A13400CPG	B042A13400CPG	13,400	.5276	–	–	2,3	45	14
B041A13500CPG	B042A13500CPG	13,500	.5315	–	–	2,3	45	14
B041A13600CPG	B042A13600CPG	13,600	.5354	–	–	2,3	45	14

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



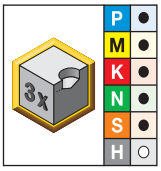


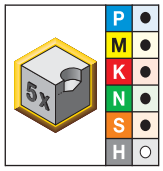
● first choice
○ alternate choice

short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A13700CPG	B042A13700CPG	13,700	.5394	–	–	2,4	45	14
B041A13800CPG	B042A13800CPG	13,800	.5433	–	–	2,4	45	14
B041A13891CPG	B042A13891CPG	13,891	.5469	35/64	–	2,4	45	14
B041A13900CPG	B042A13900CPG	13,900	.5472	–	–	2,4	45	14
B041A14000CPG	B042A14000CPG	14,000	.5512	–	–	2,4	45	14
B041A14100CPG	B042A14100CPG	14,100	.5551	–	–	2,4	48	16
B041A14200CPG	B042A14200CPG	14,200	.5591	–	–	2,5	48	16
B041A14288CPG	B042A14288CPG	14,288	.5625	9/16	–	2,5	48	16
B041A14300CPG	B042A14300CPG	14,300	.5630	–	–	2,5	48	16
B041A14400CPG	B042A14400CPG	14,400	.5669	–	–	2,5	48	16
B041A14500CPG	B042A14500CPG	14,500	.5709	–	–	2,5	48	16
B041A14600CPG	B042A14600CPG	14,600	.5748	–	–	2,5	48	16
B041A14684CPG	B042A14684CPG	14,684	.5781	37/64	–	2,5	48	16
B041A14700CPG	B042A14700CPG	14,700	.5787	–	–	2,5	48	16
B041A14800CPG	B042A14800CPG	14,800	.5827	–	–	2,6	48	16
B041A14900CPG	B042A14900CPG	14,900	.5866	–	–	2,6	48	16
B041A15000CPG	B042A15000CPG	15,000	.5906	–	–	2,6	48	16
B041A15083CPG	B042A15083CPG	15,083	.5938	19/32	–	2,6	48	16
B041A15100CPG	B042A15100CPG	15,100	.5945	–	–	2,6	48	16
B041A15200CPG	B042A15200CPG	15,200	.5984	–	–	2,6	48	16
B041A15300CPG	B042A15300CPG	15,300	.6024	–	–	2,6	48	16
B041A15400CPG	B042A15400CPG	15,400	.6063	–	–	2,7	48	16
B041A15479CPG	B042A15479CPG	15,479	.6094	39/64	–	2,7	48	16
B041A15500CPG	B042A15500CPG	15,500	.6102	–	–	2,7	48	16
B041A15600CPG	B042A15600CPG	15,600	.6142	–	–	2,7	48	16
B041A15700CPG	B042A15700CPG	15,700	.6181	–	–	2,7	48	16
B041A15800CPG	B042A15800CPG	15,800	.6220	–	–	2,7	48	16
B041A15875CPG	B042A15875CPG	15,875	.6250	5/8	–	2,7	48	16
B041A15900CPG	B042A15900CPG	15,900	.6260	–	–	2,8	48	16
B041A16000CPG	B042A16000CPG	16,000	.6299	–	–	2,8	48	16
B041A16100CPG	B042A16100CPG	16,100	.6339	–	–	2,8	48	18
B041A16200CPG	B042A16200CPG	16,200	.6378	–	–	2,8	48	18
B041A16271CPG	B042A16271CPG	16,271	.6406	41/64	–	2,8	48	18
B041A16300CPG	B042A16300CPG	16,300	.6417	–	–	2,8	48	18
B041A16400CPG	B042A16400CPG	16,400	.6457	–	–	2,8	48	18
B041A16500CPG	B042A16500CPG	16,500	.6496	–	–	2,9	48	18
B041A16600CPG	B042A16600CPG	16,600	.6535	–	–	2,9	48	18
B041A16670CPG	B042A16670CPG	16,670	.6563	21/32	–	2,9	48	18
B041A16700CPG	B042A16700CPG	16,700	.6575	–	–	2,9	48	18
B041A16800CPG	B042A16800CPG	16,800	.6614	–	–	2,9	48	18
B041A16900CPG	B042A16900CPG	16,900	.6654	–	–	2,9	48	18
B041A17000CPG	B042A17000CPG	17,000	.6693	–	–	2,9	48	18
B041A17100CPG	B042A17100CPG	17,100	.6732	–	–	3,0	48	18
B041A17200CPG	B042A17200CPG	17,200	.6772	–	–	3,0	48	18
B041A17300CPG	B042A17300CPG	17,300	.6811	–	–	3,0	48	18
B041A17400CPG	B042A17400CPG	17,400	.6850	–	–	3,0	48	18
B041A17463CPG	B042A17463CPG	17,463	.6875	11/16	–	3,0	48	18
B041A17500CPG	B042A17500CPG	17,500	.6890	–	–	3,0	48	18
B041A17600CPG	B042A17600CPG	17,600	.6929	–	–	3,1	48	18
B041A17700CPG	B042A17700CPG	17,700	.6969	–	–	3,1	48	18
B041A17800CPG	B042A17800CPG	17,800	.7008	–	–	3,1	48	18
B041A17859CPG	B042A17859CPG	17,859	.7031	45/64	–	3,1	48	18

(continued)

(B041A/B042A • ~3 x D/~5 x D — continued)



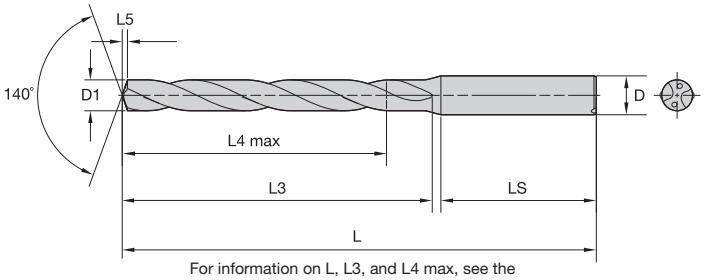


● first choice
○ alternate choice

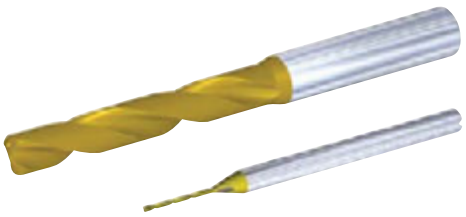
short • KC7325	long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B041A17900CPG	B042A17900CPG	17,900	.7047	–	–	3,1	48	18
B041A18000CPG	B042A18000CPG	18,000	.7087	–	–	3,1	48	18
B041A18100CPG	B042A18100CPG	18,100	.7126	–	–	3,1	50	20
B041A18200CPG	B042A18200CPG	18,200	.7165	–	–	3,2	50	20
B041A18258CPG	B042A18258CPG	18,258	.7188	23/32	–	3,2	50	20
B041A18300CPG	B042A18300CPG	18,300	.7205	–	–	3,2	50	20
B041A18400CPG	B042A18400CPG	18,400	.7244	–	–	3,2	50	20
B041A18500CPG	B042A18500CPG	18,500	.7283	–	–	3,2	50	20
B041A18600CPG	B042A18600CPG	18,600	.7323	–	–	3,2	50	20
B041A18654CPG	B042A18654CPG	18,654	.7344	47/64	–	3,2	50	20
B041A18700CPG	B042A18700CPG	18,700	.7362	–	–	3,2	50	20
B041A18800CPG	B042A18800CPG	18,800	.7402	–	–	3,3	50	20
B041A18900CPG	B042A18900CPG	18,900	.7441	–	–	3,3	50	20
B041A19000CPG	B042A19000CPG	19,000	.7480	–	–	3,3	50	20
B041A19050CPG	B042A19050CPG	19,050	.7500	3/4	–	3,3	50	20
B041A19100CPG	B042A19100CPG	19,100	.7520	–	–	3,3	50	20
B041A19200CPG	B042A19200CPG	19,200	.7559	–	–	3,3	50	20
B041A19300CPG	B042A19300CPG	19,300	.7598	–	–	3,4	50	20
B041A19400CPG	B042A19400CPG	19,400	.7638	–	–	3,4	50	20
B041A19500CPG	B042A19500CPG	19,500	.7677	–	–	3,4	50	20
B041A19600CPG	B042A19600CPG	19,600	.7717	–	–	3,4	50	20
B041A19700CPG	B042A19700CPG	19,700	.7756	–	–	3,4	50	20
B041A19800CPG	B042A19800CPG	19,800	.7795	–	–	3,4	50	20
B041A19900CPG	B042A19900CPG	19,900	.7835	–	–	3,5	50	20
B041A20000CPG	B042A20000CPG	20,000	.7874	–	–	3,5	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

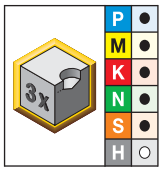


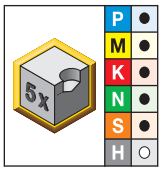


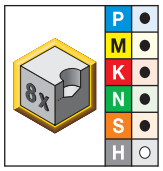
For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.



B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D





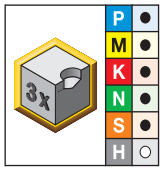


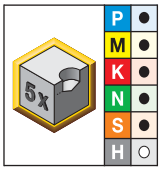
● first choice
○ alternate choice

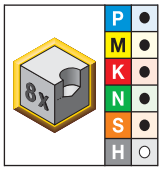
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	–	B053A01000CPG	1,000	.0394	–	–	0,1	28	4
–	–	B053A01016CPG	1,016	.0400	–	60	0,1	28	4
–	–	B053A01067CPG	1,067	.0420	–	58	0,2	28	4
–	–	B053A01100CPG	1,100	.0433	–	–	0,2	28	4
–	–	B053A01181CPG	1,181	.0465	–	56	0,2	28	4
–	–	B053A01191CPG	1,191	.0469	3/64	–	0,2	28	4
–	–	B053A01200CPG	1,200	.0472	–	–	0,2	28	4
–	–	B053A01300CPG	1,300	.0512	–	–	0,2	28	4
–	–	B053A01321CPG	1,321	.0520	–	55	0,2	28	4
–	–	B053A01397CPG	1,397	.0550	–	54	0,2	28	4
–	–	B053A01400CPG	1,400	.0551	–	–	0,2	28	4
B051A01500CPG	B052A01500CPG	B053A01500CPG	1,500	.0591	–	–	0,2	28	4
B051A01600CPG	B052A01600CPG	B053A01600CPG	1,600	.0630	–	–	0,2	28	4
B051A01700CPG	B052A01700CPG	B053A01700CPG	1,700	.0669	–	–	0,3	28	4
B051A01800CPG	B052A01800CPG	B053A01800CPG	1,800	.0709	–	–	0,3	28	4
B051A01900CPG	B052A01900CPG	B053A01900CPG	1,900	.0748	–	–	0,3	28	4
B051A01984CPG	B052A01984CPG	B053A01984CPG	1,984	.0781	5/64	–	0,3	28	4
B051A02000CPG	B052A02000CPG	B053A02000CPG	2,000	.0787	–	–	0,3	28	4
B051A02100CPG	B052A02100CPG	B053A02100CPG	2,100	.0827	–	–	0,3	28	4
B051A02200CPG	B052A02200CPG	B053A02200CPG	2,200	.0866	–	–	0,3	28	4
B051A02300CPG	B052A02300CPG	B053A02300CPG	2,300	.0906	–	–	0,4	28	4
B051A02383CPG	B052A02383CPG	B053A02383CPG	2,383	.0938	3/32	–	0,4	28	4
B051A02400CPG	B052A02400CPG	B053A02400CPG	2,400	.0945	–	–	0,4	28	4
B051A02439CPG	B052A02439CPG	B053A02439CPG	2,439	.0960	–	41	0,4	28	4
B051A02489CPG	B052A02489CPG	B053A02489CPG	2,489	.0980	–	40	0,4	28	4
B051A02500CPG	B052A02500CPG	B053A02500CPG	2,500	.0984	–	–	0,4	28	4
B051A02578CPG	B052A02578CPG	B053A02578CPG	2,578	.1015	–	38	0,4	28	4
B051A02600CPG	B052A02600CPG	B053A02600CPG	2,600	.1024	–	–	0,4	28	4
B051A02642CPG	B052A02642CPG	B053A02642CPG	2,642	.1040	–	37	0,4	28	4
B051A02700CPG	B052A02700CPG	B053A02700CPG	2,700	.1063	–	–	0,4	28	4
B051A02705CPG	B052A02705CPG	B053A02705CPG	2,705	.1065	–	36	0,4	28	4
B051A02779CPG	B052A02779CPG	B053A02779CPG	2,779	.1094	7/64	–	0,4	28	4
B051A02800CPG	B052A02800CPG	B053A02800CPG	2,800	.1102	–	–	0,5	28	4
B051A02820CPG	B052A02820CPG	B053A02820CPG	2,820	.1110	–	34	0,5	28	4
B051A02870CPG	B052A02870CPG	B053A02870CPG	2,870	.1130	–	33	0,5	28	4
B051A02900CPG	B052A02900CPG	B053A02900CPG	2,900	.1142	–	–	0,5	28	4

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





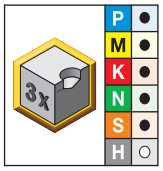


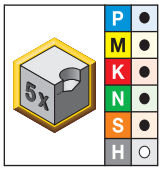
● first choice
○ alternate choice

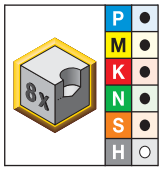
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B051A02947CPG	B052A02947CPG	B053A02947CPG	2,947	.1160	–	32	0,5	28	4
B051A03000CPG	B052A03000CPG	B053A03000CPG	3,000	.1181	–	–	0,5	36	6
B051A03048CPG	B052A03048CPG	B053A03048CPG	3,048	.1200	–	31	0,5	36	6
B051A03100CPG	B052A03100CPG	B053A03100CPG	3,100	.1220	–	–	0,5	36	6
B051A03175CPG	B052A03175CPG	B053A03175CPG	3,175	.1250	1/8	–	0,5	36	6
B051A03200CPG	B052A03200CPG	B053A03200CPG	3,200	.1260	–	–	0,5	36	6
B051A03264CPG	B052A03264CPG	B053A03264CPG	3,264	.1285	–	30	0,5	36	6
B051A03300CPG	B052A03300CPG	B053A03300CPG	3,300	.1299	–	–	0,5	36	6
B051A03400CPG	B052A03400CPG	B053A03400CPG	3,400	.1339	–	–	0,6	36	6
B051A03455CPG	B052A03455CPG	B053A03455CPG	3,455	.1360	–	29	0,6	36	6
B051A03500CPG	B052A03500CPG	B053A03500CPG	3,500	.1378	–	–	0,6	36	6
B051A03571CPG	B052A03571CPG	B053A03571CPG	3,571	.1406	9/64	–	0,6	36	6
B051A03600CPG	B052A03600CPG	B053A03600CPG	3,600	.1417	–	–	0,6	36	6
B051A03658CPG	B052A03658CPG	B053A03658CPG	3,658	.1440	–	27	0,6	36	6
B051A03700CPG	B052A03700CPG	B053A03700CPG	3,700	.1457	–	–	0,6	36	6
B051A03734CPG	B052A03734CPG	B053A03734CPG	3,734	.1470	–	26	0,6	36	6
B051A03800CPG	B052A03800CPG	B053A03800CPG	3,800	.1496	–	–	0,6	36	6
B051A03900CPG	B052A03900CPG	B053A03900CPG	3,900	.1535	–	–	0,6	36	6
B051A03970CPG	B052A03970CPG	B053A03970CPG	3,970	.1563	5/32	–	0,7	36	6
B051A04000CPG	B052A04000CPG	B053A04000CPG	4,000	.1575	–	–	0,7	36	6
B051A04039CPG	B052A04039CPG	B053A04039CPG	4,039	.1590	–	21	0,7	36	6
B051A04090CPG	B052A04090CPG	B053A04090CPG	4,090	.1610	–	20	0,7	36	6
B051A04100CPG	B052A04100CPG	B053A04100CPG	4,100	.1614	–	–	0,7	36	6
B051A04200CPG	B052A04200CPG	B053A04200CPG	4,200	.1654	–	–	0,7	36	6
B051A04217CPG	B052A04217CPG	B053A04217CPG	4,217	.1660	–	19	0,7	36	6
B051A04300CPG	B052A04300CPG	B053A04300CPG	4,300	.1693	–	–	0,7	36	6
B051A04366CPG	B052A04366CPG	B053A04366CPG	4,366	.1719	11/64	–	0,7	36	6
B051A04400CPG	B052A04400CPG	B053A04400CPG	4,400	.1732	–	–	0,7	36	6
B051A04500CPG	B052A04500CPG	B053A04500CPG	4,500	.1772	–	–	0,7	36	6
B051A04600CPG	B052A04600CPG	B053A04600CPG	4,600	.1811	–	–	0,8	36	6
B051A04623CPG	B052A04623CPG	B053A04623CPG	4,623	.1820	–	14	0,8	36	6
B051A04700CPG	B052A04700CPG	B053A04700CPG	4,700	.1850	–	13	0,8	36	6
B051A04763CPG	B052A04763CPG	B053A04763CPG	4,763	.1875	3/16	–	0,8	36	6
B051A04800CPG	B052A04800CPG	B053A04800CPG	4,800	.1890	–	12	0,8	36	6
B051A04852CPG	B052A04852CPG	B053A04852CPG	4,852	.1910	–	11	0,8	36	6
B051A04900CPG	B052A04900CPG	B053A04900CPG	4,900	.1929	–	–	0,8	36	6
B051A05000CPG	B052A05000CPG	B053A05000CPG	5,000	.1969	–	–	0,8	36	6
B051A05100CPG	B052A05100CPG	B053A05100CPG	5,100	.2008	–	–	0,8	36	6
B051A05106CPG	B052A05106CPG	B053A05106CPG	5,106	.2010	–	7	0,8	36	6
B051A05159CPG	B052A05159CPG	B053A05159CPG	5,159	.2031	13/64	–	0,9	36	6
B051A05200CPG	B052A05200CPG	B053A05200CPG	5,200	.2047	–	–	0,9	36	6
B051A05300CPG	B052A05300CPG	B053A05300CPG	5,300	.2087	–	–	0,9	36	6
B051A05400CPG	B052A05400CPG	B053A05400CPG	5,400	.2126	–	–	0,9	36	6
B051A05410CPG	B052A05410CPG	B053A05410CPG	5,410	.2130	–	3	0,9	36	6
B051A05500CPG	B052A05500CPG	B053A05500CPG	5,500	.2165	–	–	0,9	36	6
B051A05558CPG	B052A05558CPG	B053A05558CPG	5,558	.2188	7/32	–	0,9	36	6
B051A05600CPG	B052A05600CPG	B053A05600CPG	5,600	.2205	–	–	0,9	36	6
B051A05616CPG	B052A05616CPG	B053A05616CPG	5,616	.2211	–	2	0,9	36	6
B051A05700CPG	B052A05700CPG	B053A05700CPG	5,700	.2244	–	–	1,0	36	6
B051A05800CPG	B052A05800CPG	B053A05800CPG	5,800	.2283	–	–	1,0	36	6
B051A05900CPG	B052A05900CPG	B053A05900CPG	5,900	.2323	–	–	1,0	36	6
B051A05954CPG	B052A05954CPG	B053A05954CPG	5,954	.2344	15/64	–	1,0	36	6

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





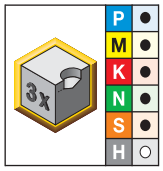


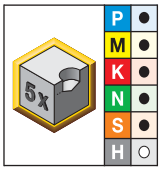
● first choice
○ alternate choice

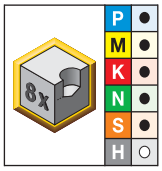
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B051A06000CPG	B052A06000CPG	B053A06000CPG	6,000	.2362	—	—	1,0	36	6
B051A06100CPG	B052A06100CPG	B053A06100CPG	6,100	.2402	—	—	1,0	36	8
B051A06200CPG	B052A06200CPG	B053A06200CPG	6,200	.2441	—	—	1,0	36	8
B051A06300CPG	B052A06300CPG	B053A06300CPG	6,300	.2480	—	—	1,1	36	8
B051A06350CPG	B052A06350CPG	B053A06350CPG	6,350	.2500	1/4	E	1,1	36	8
B051A06400CPG	B052A06400CPG	B053A06400CPG	6,400	.2520	—	—	1,1	36	8
B051A06500CPG	B052A06500CPG	B053A06500CPG	6,500	.2559	—	—	1,1	36	8
B051A06528CPG	B052A06528CPG	B053A06528CPG	6,528	.2570	—	F	1,1	36	8
B051A06600CPG	B052A06600CPG	B053A06600CPG	6,600	.2598	—	—	1,1	36	8
B051A06630CPG	B052A06630CPG	B053A06630CPG	6,630	.2610	—	G	1,1	36	8
B051A06700CPG	B052A06700CPG	B053A06700CPG	6,700	.2638	—	—	1,1	36	8
B051A06746CPG	B052A06746CPG	B053A06746CPG	6,746	.2656	17/64	—	1,1	36	8
B051A06800CPG	B052A06800CPG	B053A06800CPG	6,800	.2677	—	—	1,1	36	8
B051A06900CPG	B052A06900CPG	B053A06900CPG	6,900	.2717	—	—	1,2	36	8
B051A07000CPG	B052A07000CPG	B053A07000CPG	7,000	.2756	—	—	1,2	36	8
B051A07100CPG	B052A07100CPG	B053A07100CPG	7,100	.2795	—	—	1,2	36	8
B051A07145CPG	B052A07145CPG	B053A07145CPG	7,145	.2813	9/32	—	1,2	36	8
B051A07200CPG	B052A07200CPG	B053A07200CPG	7,200	.2835	—	—	1,2	36	8
B051A07300CPG	B052A07300CPG	B053A07300CPG	7,300	.2874	—	—	1,2	36	8
B051A07400CPG	B052A07400CPG	B053A07400CPG	7,400	.2913	—	—	1,3	36	8
B051A07500CPG	B052A07500CPG	B053A07500CPG	7,500	.2953	—	—	1,3	36	8
B051A07541CPG	B052A07541CPG	B053A07541CPG	7,541	.2969	19/64	—	1,3	36	8
B051A07600CPG	B052A07600CPG	B053A07600CPG	7,600	.2992	—	—	1,3	36	8
B051A07700CPG	B052A07700CPG	B053A07700CPG	7,700	.3031	—	—	1,3	36	8
B051A07800CPG	B052A07800CPG	B053A07800CPG	7,800	.3071	—	—	1,3	36	8
B051A07900CPG	B052A07900CPG	B053A07900CPG	7,900	.3110	—	—	1,3	36	8
B051A07938CPG	B052A07938CPG	B053A07938CPG	7,938	.3125	5/16	—	1,3	36	8
B051A08000CPG	B052A08000CPG	B053A08000CPG	8,000	.3150	—	—	1,4	36	8
B051A08100CPG	B052A08100CPG	B053A08100CPG	8,100	.3189	—	—	1,4	40	10
B051A08200CPG	B052A08200CPG	B053A08200CPG	8,200	.3228	—	—	1,4	40	10
B051A08300CPG	B052A08300CPG	B053A08300CPG	8,300	.3268	—	—	1,4	40	10
B051A08334CPG	B052A08334CPG	B053A08334CPG	8,334	.3281	21/64	—	1,4	40	10
B051A08400CPG	B052A08400CPG	B053A08400CPG	8,400	.3307	—	—	1,4	40	10
B051A08433CPG	B052A08433CPG	B053A08433CPG	8,433	.3320	—	Q	1,4	40	10
B051A08500CPG	B052A08500CPG	B053A08500CPG	8,500	.3346	—	—	1,4	40	10
B051A08600CPG	B052A08600CPG	B053A08600CPG	8,600	.3386	—	—	1,5	40	10
B051A08700CPG	B052A08700CPG	B053A08700CPG	8,700	.3425	—	—	1,5	40	10
B051A08733CPG	B052A08733CPG	B053A08733CPG	8,733	.3438	11/32	—	1,5	40	10
B051A08800CPG	B052A08800CPG	B053A08800CPG	8,800	.3465	—	—	1,5	40	10
B051A08900CPG	B052A08900CPG	B053A08900CPG	8,900	.3504	—	—	1,5	40	10
B051A09000CPG	B052A09000CPG	B053A09000CPG	9,000	.3543	—	—	1,5	40	10
B051A09100CPG	B052A09100CPG	B053A09100CPG	9,100	.3583	—	—	1,5	40	10
B051A09129CPG	B052A09129CPG	B053A09129CPG	9,129	.3594	23/64	—	1,6	40	10
B051A09200CPG	B052A09200CPG	B053A09200CPG	9,200	.3622	—	—	1,6	40	10
B051A09300CPG	B052A09300CPG	B053A09300CPG	9,300	.3661	—	—	1,6	40	10
B051A09347CPG	B052A09347CPG	B053A09347CPG	9,347	.3680	—	U	1,6	40	10
B051A09400CPG	B052A09400CPG	B053A09400CPG	9,400	.3701	—	—	1,6	40	10
B051A09500CPG	B052A09500CPG	B053A09500CPG	9,500	.3740	—	—	1,6	40	10
B051A09525CPG	B052A09525CPG	B053A09525CPG	9,525	.3750	3/8	—	1,6	40	10
B051A09600CPG	B052A09600CPG	B053A09600CPG	9,600	.3780	—	—	1,6	40	10
B051A09700CPG	B052A09700CPG	B053A09700CPG	9,700	.3819	—	—	1,7	40	10
B051A09800CPG	B052A09800CPG	B053A09800CPG	9,800	.3858	—	—	1,7	40	10

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





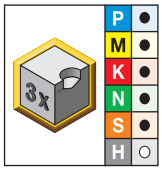


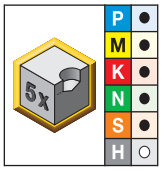
● first choice
○ alternate choice

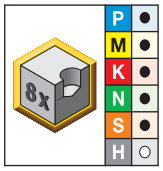
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B051A09900CPG	B052A09900CPG	B053A09900CPG	9,900	.3898	–	–	1,7	40	10
B051A09921CPG	B052A09921CPG	B053A09921CPG	9,921	.3906	25/64	–	1,7	40	10
B051A10000CPG	B052A10000CPG	B053A10000CPG	10,000	.3937	–	–	1,7	40	10
B051A10100CPG	B052A10100CPG	B053A10100CPG	10,100	.3976	–	–	1,7	45	12
B051A10200CPG	B052A10200CPG	B053A10200CPG	10,200	.4016	–	–	1,7	45	12
B051A10300CPG	B052A10300CPG	B053A10300CPG	10,300	.4055	–	–	1,8	45	12
B051A10320CPG	B052A10320CPG	B053A10320CPG	10,320	.4063	13/32	–	1,8	45	12
B051A10400CPG	B052A10400CPG	B053A10400CPG	10,400	.4094	–	–	1,8	45	12
B051A10500CPG	B052A10500CPG	B053A10500CPG	10,500	.4134	–	–	1,8	45	12
B051A10600CPG	B052A10600CPG	B053A10600CPG	10,600	.4173	–	–	1,8	45	12
B051A10700CPG	B052A10700CPG	B053A10700CPG	10,700	.4213	–	–	1,8	45	12
B051A10716CPG	B052A10716CPG	B053A10716CPG	10,716	.4219	27/64	–	1,8	45	12
B051A10800CPG	B052A10800CPG	B053A10800CPG	10,800	.4252	–	–	1,8	45	12
B051A10900CPG	B052A10900CPG	B053A10900CPG	10,900	.4291	–	–	1,9	45	12
B051A11000CPG	B052A11000CPG	B053A11000CPG	11,000	.4331	–	–	1,9	45	12
B051A11100CPG	B052A11100CPG	B053A11100CPG	11,100	.4370	–	–	1,9	45	12
B051A11113CPG	B052A11113CPG	B053A11113CPG	11,113	.4375	7/16	–	1,9	45	12
B051A11200CPG	B052A11200CPG	B053A11200CPG	11,200	.4409	–	–	1,9	45	12
B051A11300CPG	B052A11300CPG	B053A11300CPG	11,300	.4449	–	–	1,9	45	12
B051A11400CPG	B052A11400CPG	B053A11400CPG	11,400	.4488	–	–	2,0	45	12
B051A11500CPG	B052A11500CPG	B053A11500CPG	11,500	.4528	–	–	2,0	45	12
B051A11509CPG	B052A11509CPG	B053A11509CPG	11,509	.4531	29/64	–	2,0	45	12
B051A11600CPG	B052A11600CPG	B053A11600CPG	11,600	.4567	–	–	2,0	45	12
B051A11700CPG	B052A11700CPG	B053A11700CPG	11,700	.4606	–	–	2,0	45	12
B051A11800CPG	B052A11800CPG	B053A11800CPG	11,800	.4646	–	–	2,0	45	12
B051A11900CPG	B052A11900CPG	B053A11900CPG	11,900	.4685	–	–	2,0	45	12
B051A11908CPG	B052A11908CPG	B053A11908CPG	11,908	.4688	15/32	–	2,0	45	12
B051A12000CPG	B052A12000CPG	B053A12000CPG	12,000	.4724	–	–	2,1	45	12
B051A12100CPG	B052A12100CPG	B053A12100CPG	12,100	.4764	–	–	2,1	45	14
B051A12200CPG	B052A12200CPG	B053A12200CPG	12,200	.4803	–	–	2,1	45	14
B051A12300CPG	B052A12300CPG	B053A12300CPG	12,300	.4843	–	–	2,1	45	14
B051A12304CPG	B052A12304CPG	B053A12304CPG	12,304	.4844	31/64	–	2,1	45	14
B051A12400CPG	B052A12400CPG	B053A12400CPG	12,400	.4882	–	–	2,1	45	14
B051A12500CPG	B052A12500CPG	B053A12500CPG	12,500	.4921	–	–	2,1	45	14
B051A12600CPG	B052A12600CPG	B053A12600CPG	12,600	.4961	–	–	2,2	45	14
B051A12700CPG	B052A12700CPG	B053A12700CPG	12,700	.5000	1/2	–	2,2	45	14
B051A12800CPG	B052A12800CPG	B053A12800CPG	12,800	.5039	–	–	2,2	45	14
B051A12900CPG	B052A12900CPG	B053A12900CPG	12,900	.5079	–	–	2,2	45	14
B051A13000CPG	B052A13000CPG	B053A13000CPG	13,000	.5118	–	–	2,2	45	14
B051A13096CPG	B052A13096CPG	B053A13096CPG	13,096	.5156	33/64	–	2,3	45	14
B051A13100CPG	B052A13100CPG	B053A13100CPG	13,100	.5157	–	–	2,3	45	14
B051A13200CPG	B052A13200CPG	B053A13200CPG	13,200	.5197	–	–	2,3	45	14
B051A13300CPG	B052A13300CPG	B053A13300CPG	13,300	.5236	–	–	2,3	45	14
B051A13400CPG	B052A13400CPG	B053A13400CPG	13,400	.5276	–	–	2,3	45	14
B051A13500CPG	B052A13500CPG	B053A13500CPG	13,500	.5315	–	–	2,3	45	14
B051A13600CPG	B052A13600CPG	B053A13600CPG	13,600	.5354	–	–	2,3	45	14
B051A13700CPG	B052A13700CPG	B053A13700CPG	13,700	.5394	–	–	2,4	45	14
B051A13800CPG	B052A13800CPG	B053A13800CPG	13,800	.5433	–	–	2,4	45	14
B051A13891CPG	B052A13891CPG	B053A13891CPG	13,891	.5469	35/64	–	2,4	45	14
B051A13900CPG	B052A13900CPG	B053A13900CPG	13,900	.5472	–	–	2,4	45	14
B051A14000CPG	B052A14000CPG	B053A14000CPG	14,000	.5512	–	–	2,4	45	14
B051A14100CPG	B052A14100CPG	B053A14100CPG	14,100	.5551	–	–	2,4	48	16

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)





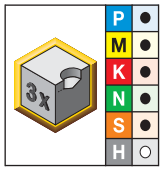


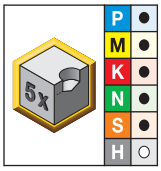
● first choice
○ alternate choice

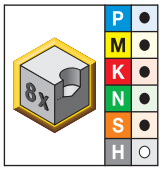
short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B051A14200CPG	B052A14200CPG	B053A14200CPG	14,200	.5591	–	–	2,5	48	16
B051A14288CPG	B052A14288CPG	B053A14288CPG	14,288	.5625	9/16	–	2,5	48	16
B051A14300CPG	B052A14300CPG	B053A14300CPG	14,300	.5630	–	–	2,5	48	16
B051A14400CPG	B052A14400CPG	B053A14400CPG	14,400	.5669	–	–	2,5	48	16
B051A14500CPG	B052A14500CPG	B053A14500CPG	14,500	.5709	–	–	2,5	48	16
B051A14600CPG	B052A14600CPG	B053A14600CPG	14,600	.5748	–	–	2,5	48	16
B051A14684CPG	B052A14684CPG	B053A14684CPG	14,684	.5781	37/64	–	2,5	48	16
B051A14700CPG	B052A14700CPG	B053A14700CPG	14,700	.5787	–	–	2,5	48	16
B051A14800CPG	B052A14800CPG	B053A14800CPG	14,800	.5827	–	–	2,6	48	16
B051A14900CPG	B052A14900CPG	B053A14900CPG	14,900	.5866	–	–	2,6	48	16
B051A15000CPG	B052A15000CPG	B053A15000CPG	15,000	.5906	–	–	2,6	48	16
B051A15083CPG	B052A15083CPG	B053A15083CPG	15,083	.5938	19/32	–	2,6	48	16
B051A15100CPG	B052A15100CPG	B053A15100CPG	15,100	.5945	–	–	2,6	48	16
B051A15200CPG	B052A15200CPG	B053A15200CPG	15,200	.5984	–	–	2,6	48	16
B051A15300CPG	B052A15300CPG	B053A15300CPG	15,300	.6024	–	–	2,6	48	16
B051A15400CPG	B052A15400CPG	B053A15400CPG	15,400	.6063	–	–	2,7	48	16
B051A15479CPG	B052A15479CPG	B053A15479CPG	15,479	.6094	39/64	–	2,7	48	16
B051A15500CPG	B052A15500CPG	B053A15500CPG	15,500	.6102	–	–	2,7	48	16
B051A15600CPG	B052A15600CPG	B053A15600CPG	15,600	.6142	–	–	2,7	48	16
B051A15700CPG	B052A15700CPG	B053A15700CPG	15,700	.6181	–	–	2,7	48	16
B051A15800CPG	B052A15800CPG	B053A15800CPG	15,800	.6220	–	–	2,7	48	16
B051A15875CPG	B052A15875CPG	B053A15875CPG	15,875	.6250	5/8	–	2,7	48	16
B051A15900CPG	B052A15900CPG	B053A15900CPG	15,900	.6260	–	–	2,8	48	16
B051A16000CPG	B052A16000CPG	B053A16000CPG	16,000	.6299	–	–	2,8	48	16
B051A16100CPG	B052A16100CPG	B053A16100CPG	16,100	.6339	–	–	2,8	48	18
B051A16200CPG	B052A16200CPG	B053A16200CPG	16,200	.6378	–	–	2,8	48	18
B051A16271CPG	B052A16271CPG	B053A16271CPG	16,271	.6406	41/64	–	2,8	48	18
B051A16300CPG	B052A16300CPG	B053A16300CPG	16,300	.6417	–	–	2,8	48	18
B051A16400CPG	B052A16400CPG	B053A16400CPG	16,400	.6457	–	–	2,8	48	18
B051A16500CPG	B052A16500CPG	B053A16500CPG	16,500	.6496	–	–	2,9	48	18
B051A16600CPG	B052A16600CPG	B053A16600CPG	16,600	.6535	–	–	2,9	48	18
B051A16670CPG	B052A16670CPG	B053A16670CPG	16,670	.6563	21/32	–	2,9	48	18
B051A16700CPG	B052A16700CPG	B053A16700CPG	16,700	.6575	–	–	2,9	48	18
B051A16800CPG	B052A16800CPG	B053A16800CPG	16,800	.6614	–	–	2,9	48	18
B051A16900CPG	B052A16900CPG	B053A16900CPG	16,900	.6654	–	–	2,9	48	18
B051A17000CPG	B052A17000CPG	B053A17000CPG	17,000	.6693	–	–	2,9	48	18
B051A17100CPG	B052A17100CPG	B053A17100CPG	17,100	.6732	–	–	3,0	48	18
B051A17200CPG	B052A17200CPG	B053A17200CPG	17,200	.6772	–	–	3,0	48	18
B051A17300CPG	B052A17300CPG	B053A17300CPG	17,300	.6811	–	–	3,0	48	18
B051A17400CPG	B052A17400CPG	B053A17400CPG	17,400	.6850	–	–	3,0	48	18
B051A17463CPG	B052A17463CPG	B053A17463CPG	17,463	.6875	11/16	–	3,0	48	18
B051A17500CPG	B052A17500CPG	B053A17500CPG	17,500	.6890	–	–	3,0	48	18
B051A17600CPG	B052A17600CPG	B053A17600CPG	17,600	.6929	–	–	3,1	48	18
B051A17700CPG	B052A17700CPG	B053A17700CPG	17,700	.6969	–	–	3,1	48	18
B051A17800CPG	B052A17800CPG	B053A17800CPG	17,800	.7008	–	–	3,1	48	18
B051A17859CPG	B052A17859CPG	B053A17859CPG	17,859	.7031	45/64	–	3,1	48	18
B051A17900CPG	B052A17900CPG	B053A17900CPG	17,900	.7047	–	–	3,1	48	18
B051A18000CPG	B052A18000CPG	B053A18000CPG	18,000	.7087	–	–	3,1	48	18
B051A18100CPG	B052A18100CPG	B053A18100CPG	18,100	.7126	–	–	3,1	50	20
B051A18200CPG	B052A18200CPG	B053A18200CPG	18,200	.7165	–	–	3,2	50	20
B051A18258CPG	B052A18258CPG	B053A18258CPG	18,258	.7188	23/32	–	3,2	50	20
B051A18300CPG	B052A18300CPG	B053A18300CPG	18,300	.7205	–	–	3,2	50	20

(continued)

(B051A/B052A/B053A • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KC7325	long • KC7325	extra long • KC7325	D1 diameter mm	in	fraction	wire size	L5	LS	D
B051A18400CPG	B052A18400CPG	B053A18400CPG	18,400	.7244	—	—	3,2	50	20
B051A18500CPG	B052A18500CPG	B053A18500CPG	18,500	.7283	—	—	3,2	50	20
B051A18600CPG	B052A18600CPG	B053A18600CPG	18,600	.7323	—	—	3,2	50	20
B051A18654CPG	B052A18654CPG	B053A18654CPG	18,654	.7344	47/64	—	3,2	50	20
B051A18700CPG	B052A18700CPG	B053A18700CPG	18,700	.7362	—	—	3,2	50	20
B051A18800CPG	B052A18800CPG	B053A18800CPG	18,800	.7402	—	—	3,3	50	20
B051A18900CPG	B052A18900CPG	B053A18900CPG	18,900	.7441	—	—	3,3	50	20
B051A19000CPG	B052A19000CPG	B053A19000CPG	19,000	.7480	—	—	3,3	50	20
B051A19050CPG	B052A19050CPG	B053A19050CPG	19,050	.7500	3/4	—	3,3	50	20
B051A19100CPG	B052A19100CPG	B053A19100CPG	19,100	.7520	—	—	3,3	50	20
B051A19200CPG	B052A19200CPG	B053A19200CPG	19,200	.7559	—	—	3,3	50	20
B051A19300CPG	B052A19300CPG	B053A19300CPG	19,300	.7598	—	—	3,4	50	20
B051A19400CPG	B052A19400CPG	B053A19400CPG	19,400	.7638	—	—	3,4	50	20
B051A19500CPG	B052A19500CPG	B053A19500CPG	19,500	.7677	—	—	3,4	50	20
B051A19600CPG	B052A19600CPG	B053A19600CPG	19,600	.7717	—	—	3,4	50	20
B051A19700CPG	B052A19700CPG	B053A19700CPG	19,700	.7756	—	—	3,4	50	20
B051A19800CPG	B052A19800CPG	B053A19800CPG	19,800	.7795	—	—	3,4	50	20
B051A19900CPG	B052A19900CPG	B053A19900CPG	19,900	.7835	—	—	3,5	50	20
B051A20000CPG	B052A20000CPG	B053A20000CPG	20,000	.7874	—	—	3,5	50	20

NOTE: GOdrills with a D1 <.0591" (1,5mm) have coolant exiting the shank.

Tolerance • Inch

nominal size range	D1 tolerance	D tolerance h6
.0394–.1181	.0000/-.0006 (h8)	.0000/-.0002
>.1181–.2362	.0000/-.0005 (h7)	.0000/-.0003
>.2362–.3937	.0000/-.0006 (h7)	.0000/-.0004
>.3937–.7087	.0000/-.0007 (h7)	.0000/-.0004
>.7087–.7874	.0000/-.0008 (h7)	.0000/-.0005

Tolerance • Metric

nominal size range	D1 tolerance	D tolerance h6
1–3	0,000/-0,014 (h8)	0,000/-0,006
>3–6	0,000/-0,012 (h7)	0,000/-0,008
>6–10	0,000/-0,015 (h7)	0,000/-0,009
>10–18	0,000/-0,018 (h7)	0,000/-0,011
>18–20	0,000/-0,021 (h7)	0,000/-0,013

GOdrill™ • B04_CPG Series • Grade KC7325™ • Flood Coolant • Drill Diameters 1–20mm (.0394–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**80**	115	mm/r	0,03–0,08	0,04–0,09	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	60	**70**	100	mm/r	0,04–0,09	0,05–0,11	0,06–0,13	0,09–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	80	**90**	100	mm/r	0,04–0,09	0,05–0,11	0,06–0,13	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	50	**70**	90	mm/r	0,05–0,11	0,06–0,13	0,07–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**70**	100	mm/r	0,04–0,12	0,05–0,13	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	30	**40**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
	6	30	**40**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	30	**40**	50	mm/r	0,02–0,06	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	20	**30**	40	mm/r	0,02–0,05	0,03–0,06	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**130**	170	mm/r	0,09–0,18	0,10–0,20	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	90	**110**	120	mm/r	0,06–0,13	0,08–0,15	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	130	mm/r	0,05–0,11	0,06–0,13	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
N	1	90	**230**	270	mm/r	0,05–0,12	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**220**	270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	225	mm/r	0,10–0,13	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**130**	270	mm/r	0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	20	**25**	30	mm/r	0,01–0,04	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	20	**25**	40	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	20	**25**	50	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
H	1	10	**15**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	2	10	**10**	30	mm/r	0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 3/64 .047	5/64 .078	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	200	**230**	330	IPR	.001–.003	.002–.004	.002–.004	.003–.005	.004–.007	.004–.009	.005–.010	.006–.012	.007–.014	.009–.018
	1	200	**230**	330	IPR	.002–.004	.002–.004	.002–.005	.004–.006	.004–.009	.005–.010	.006–.012	.007–.014	.009–.017	.011–.021
	2	260	**300**	330	IPR	.002–.004	.002–.004	.002–.005	.003–.006	.005–.009	.006–.010	.007–.012	.008–.014	.009–.017	.012–.021
	3	160	**230**	300	IPR	.002–.004	.002–.005	.003–.006	.004–.007	.005–.009	.006–.011	.008–.013	.009–.015	.010–.019	.013–.023
	4	160	**230**	330	IPR	.002–.005	.002–.005	.002–.006	.003–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.011–.023
	5	100	**130**	200	IPR	.001–.002	.002–.002	.002–.003	.002–.004	.003–.006	.004–.007	.005–.009	.006–.009	.007–.013	.009–.016
	6	100	**130**	200	IPR	.001–.002	.002–.002	.002–.003	.002–.004	.003–.006	.004–.007	.005–.009	.006–.009	.007–.013	.009–.016
M	1	70	**100**	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	2	100	**130**	160	IPR	.001–.002	.001–.003	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	3	70	**100**	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	1	260	**430**	560	IPR	.004–.007	.004–.008	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	2	300	**360**	390	IPR	.002–.005	.003–.006	.004–.007	.005–.008	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	3	260	**360**	430	IPR	.002–.004	.002–.005	.003–.006	.004–.008	.005–.010	.006–.012	.007–.014	.008–.016	.010–.019	.012–.024
N	1	300	**750**	890	IPR	.002–.005	.002–.005	.003–.006	.004–.006	.005–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.019
	2	300	**720**	890	IPR	.002–.003	.002–.005	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.017	.013–.021
	3	300	**590**	740	IPR	.004–.005	.004–.006	.005–.006	.005–.006	.006–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.017
	4	300	**430**	890	IPR	.002–.003	.002–.005	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.016	.013–.019
S	1	70	**80**	100	IPR	.000–.002	.001–.002	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	2	30	**70**	100	IPR	.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	3	70	**80**	130	IPR	.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	4	70	**80**	160	IPR	.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
H	1	30	**50**	100	IPR	.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	2	30	**30**	100	IPR	.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006

GOdrill™ • B05_CPG Series • Grade KC7325™ • Through Coolant • Drill Diameters 1–20mm (.0394–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		1,0	2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	80	115	mm/r		0,03–0,08	0,04–0,09	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	70	100	140	mm/r		0,04–0,09	0,05–0,12	0,07–0,14	0,08–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	90	120	140	mm/r		0,04–0,09	0,05–0,12	0,07–0,14	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	60	80	100	mm/r		0,05–0,10	0,06–0,13	0,08–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	80	100	mm/r		0,05–0,10	0,06–0,13	0,07–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	50	70	mm/r		0,03–0,05	0,04–0,06	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
	6	40	50	70	mm/r		0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	20	30	40	mm/r		0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	30	40	50	mm/r		0,02–0,06	0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	20	30	40	mm/r		0,02–0,05	0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	120	170	mm/r		0,08–0,16	0,09–0,17	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	80	110	140	mm/r		0,10–0,14	0,11–0,15	0,12–0,16	0,13–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	100	130	mm/r		0,05–0,13	0,07–0,15	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	1	90	230	315	mm/r		0,05–0,12	0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	225	270	mm/r		0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	180	270	mm/r		0,10–0,13	0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	135	180	mm/r		0,04–0,08	0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	10	25	30	mm/r		0,01–0,04	0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	20	25	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	10	25	30	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	10	25	40	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
H	1	10	15	30	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	2	10	10	30	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		3/64 .047	5/64 .078	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	230	260	380	IPR		.001–.003	.002–.004	.002–.004	.003–.005	.004–.007	.004–.009	.005–.010	.006–.012	.007–.014	.009–.018
	1	230	330	460	IPR		.002–.004	.002–.005	.003–.006	.003–.006	.004–.009	.005–.010	.006–.012	.007–.014	.009–.017	.011–.021
	2	300	390	460	IPR		.002–.004	.002–.005	.003–.006	.003–.006	.005–.009	.006–.010	.007–.012	.008–.014	.009–.017	.012–.021
	3	200	260	330	IPR		.002–.004	.002–.005	.003–.006	.004–.007	.005–.009	.006–.011	.008–.013	.009–.015	.010–.019	.013–.023
	4	160	260	330	IPR		.002–.004	.002–.005	.003–.006	.003–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.011–.023
	5	130	160	230	IPR		.001–.002	.002–.002	.002–.003	.002–.004	.003–.006	.004–.007	.005–.009	.006–.009	.007–.013	.009–.016
	6	130	160	230	IPR		.001–.002	.002–.002	.002–.003	.002–.004	.003–.006	.004–.007	.005–.009	.006–.009	.007–.013	.009–.016
M	1	70	100	130	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	2	100	130	160	IPR		.001–.002	.001–.003	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	3	70	100	130	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	1	260	390	560	IPR		.003–.006	.004–.007	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.024	.015–.029
	2	260	360	460	IPR		.004–.006	.004–.006	.005–.006	.005–.008	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	3	260	330	430	IPR		.002–.005	.003–.006	.003–.007	.004–.008	.005–.010	.006–.012	.007–.014	.008–.016	.009–.019	.012–.024
N	1	300	750	1030	IPR		.002–.005	.002–.005	.003–.006	.004–.006	.005–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.019
	2	300	740	890	IPR		.002–.003	.002–.005	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.017	.013–.021
	3	300	590	890	IPR		.004–.005	.004–.006	.005–.006	.005–.006	.006–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.017
	4	300	440	590	IPR		.002–.003	.002–.005	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.016	.013–.019
S	1	30	80	100	IPR		.000–.002	.001–.002	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	2	30	70	80	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	3	30	80	100	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	4	30	80	130	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
H	1	30	50	100	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	2	30	30	100	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006

TF Drill for High Metal Removal Rates

Primary Application

B105 solid carbide drills are ideal for high metal removal rates and excellent hole quality in short chipping materials such as gray cast iron, ductile iron, and aluminum as well as in short-hole titanium applications.

Features and Benefits

Three Cutting Edges

- Higher feed rates than with two-edged drills.

Three Spacious Flutes

- Rapid chip evacuation.
- Three-margin lands deliver better hole quality and straightness than two-flute drills.

Wear-Resistant Carbide Grade

- High tool life in abrasive materials such as cast iron and aluminum die cast alloys.



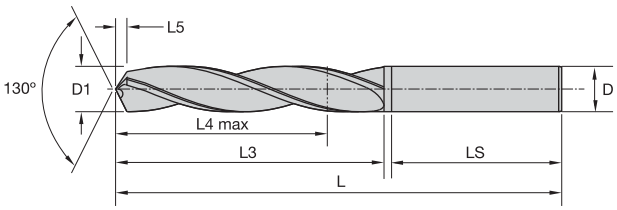
Uncoated K10™ Grade

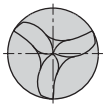
- The uncoated grade helps to prevent built-up edge in drilling aluminum and high-temp alloys.

Customization

- Intermediate diameters available as engineered solutions.
- Length variations and step drills available as custom solutions.

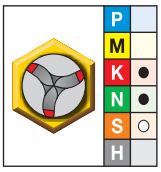








B105 • ~5 x D

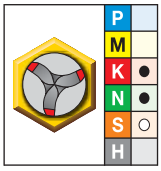


● first choice
○ alternate choice

K10	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B105A03000	3,000	.1181	–	–	66	28	23	0,7	36	6
B105A03100	3,100	.1220	–	–	66	28	23	0,8	36	6
B105A03200	3,200	.1260	–	–	66	28	23	0,8	36	6
B105A03300	3,300	.1299	–	–	66	28	23	0,8	36	6
B105A03400	3,400	.1339	–	–	66	28	23	0,8	36	6
B105A03500	3,500	.1378	–	–	66	28	23	0,9	36	6
B105A03600	3,600	.1417	–	–	66	28	23	0,9	36	6
B105A03700	3,700	.1457	–	–	66	28	23	0,9	36	6
B105A03800	3,800	.1496	–	–	74	36	29	0,9	36	6
B105A03900	3,900	.1535	–	–	74	36	29	1,0	36	6
B105A04000	4,000	.1575	–	–	74	36	29	1,0	36	6
B105A04100	4,100	.1614	–	–	74	36	29	1,0	36	6
B105A04200	4,200	.1654	–	–	74	36	29	1,0	36	6
B105A04300	4,300	.1693	–	–	74	36	29	1,1	36	6
B105A04500	4,500	.1772	–	–	74	36	29	1,1	36	6
B105A04600	4,600	.1811	–	–	74	36	29	1,1	36	6
B105A04650	4,650	.1831	–	–	74	36	29	1,2	36	6
B105A04700	4,700	.1850	–	13	74	36	29	1,2	36	6
B105A04800	4,800	.1890	–	12	82	44	35	1,2	36	6
B105A04900	4,900	.1929	–	–	82	44	35	1,2	36	6
B105A05000	5,000	.1969	–	–	82	44	35	1,2	36	6
B105A05100	5,100	.2008	–	–	82	44	35	1,3	36	6
B105A05200	5,200	.2047	–	–	82	44	35	1,3	36	6
B105A05400	5,400	.2126	–	–	82	44	35	1,3	36	6
B105A05500	5,500	.2165	–	–	82	44	35	1,4	36	6
B105A05550	5,550	.2185	–	–	82	44	35	1,4	36	6
B105A05600	5,600	.2205	–	–	82	44	35	1,4	36	6
B105A05700	5,700	.2244	–	–	82	44	35	1,4	36	6
B105A05800	5,800	.2283	–	–	82	44	35	1,4	36	6
B105A06000	6,000	.2362	–	–	82	44	35	1,5	36	6
B105A06100	6,100	.2402	–	–	91	53	43	1,5	36	8
B105A06200	6,200	.2441	–	–	91	53	43	1,5	36	8
B105A06300	6,300	.2480	–	–	91	53	43	1,6	36	8
B105A06350	6,350	.2500	1/4	–	91	53	43	1,6	36	8
B105A06400	6,400	.2520	–	–	91	53	43	1,6	36	8
B105A06500	6,500	.2559	–	–	91	53	43	1,6	36	8

(continued)

(B105 • ~5 x D — continued)



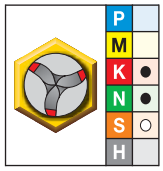
● first choice
○ alternate choice

D1 diameter

K10	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B105A06600	6,600	.2598	–	–	91	53	43	1,6	36	8
B105A06700	6,700	.2638	–	–	91	53	43	1,7	36	8
B105A06800	6,800	.2677	–	–	91	53	43	1,7	36	8
B105A07000	7,000	.2756	–	–	91	53	43	1,7	36	8
B105A07100	7,100	.2795	–	–	91	53	43	1,8	36	8
B105A07400	7,400	.2913	–	–	91	53	43	1,8	36	8
B105A07500	7,500	.2953	–	–	91	53	43	1,9	36	8
B105A07600	7,600	.2992	–	–	91	53	43	1,9	36	8
B105A07800	7,800	.3071	–	–	91	53	43	1,9	36	8
B105A08000	8,000	.3150	–	–	91	53	43	2,0	36	8
B105A08100	8,100	.3189	–	–	103	61	49	2,0	40	10
B105A08200	8,200	.3228	–	–	103	61	49	2,0	40	10
B105A08300	8,300	.3268	–	–	103	61	49	2,1	40	10
B105A08400	8,400	.3307	–	–	103	61	49	2,1	40	10
B105A08500	8,500	.3346	–	–	103	61	49	2,1	40	10
B105A08600	8,600	.3386	–	–	103	61	49	2,1	40	10
B105A08700	8,700	.3425	–	–	103	61	49	2,2	40	10
B105A08800	8,800	.3465	–	–	103	61	49	2,2	40	10
B105A09000	9,000	.3543	–	–	103	61	49	2,2	40	10
B105A09100	9,100	.3583	–	–	103	61	49	2,3	40	10
B105A09300	9,300	.3661	–	–	103	61	49	2,3	40	10
B105A09500	9,500	.3740	–	–	103	61	49	2,4	40	10
B105A09700	9,700	.3819	–	–	103	61	49	2,4	40	10
B105A09800	9,800	.3858	–	–	103	61	49	2,4	40	10
B105A10000	10,000	.3937	–	–	103	61	49	2,5	40	10
B105A10100	10,100	.3976	–	–	118	71	56	2,5	45	12
B105A10200	10,200	.4016	–	–	118	71	56	2,5	45	12
B105A10300	10,300	.4055	–	–	118	71	56	2,6	45	12
B105A10400	10,400	.4094	–	–	118	71	56	2,6	45	12
B105A10500	10,500	.4134	–	–	118	71	56	2,6	45	12
B105A10700	10,700	.4213	–	–	118	71	56	2,7	45	12
B105A10800	10,800	.4252	–	–	118	71	56	2,7	45	12
B105A11000	11,000	.4331	–	–	118	71	56	2,7	45	12
B105A11100	11,100	.4370	–	–	118	71	56	2,8	45	12
B105A11200	11,200	.4409	–	–	118	71	56	2,8	45	12
B105A11500	11,500	.4528	–	–	118	71	56	2,9	45	12
B105A11700	11,700	.4606	–	–	118	71	56	2,9	45	12
B105A11800	11,800	.4646	–	–	118	71	56	2,9	45	12
B105A12000	12,000	.4724	–	–	118	71	56	3,0	45	12
B105A12100	12,100	.4764	–	–	124	77	60	3,0	45	14
B105A12500	12,500	.4921	–	–	124	77	60	3,1	45	14
B105A12700	12,700	.5000	1/2	–	124	77	60	3,2	45	14
B105A12800	12,800	.5039	–	–	124	77	60	3,2	45	14
B105A13000	13,000	.5118	–	–	124	77	60	3,2	45	14
B105A13100	13,100	.5157	–	–	124	77	60	3,3	45	14
B105A13500	13,500	.5315	–	–	124	77	60	3,4	45	14
B105A13800	13,800	.5433	–	–	124	77	60	3,4	45	14
B105A14000	14,000	.5512	–	–	124	77	60	3,5	45	14

(continued)

(B105 • ~5 x D — continued)



● first choice
○ alternate choice

K10	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B105A14200	14,200	.5591	—	—	133	83	63	3,5	48	16
B105A14500	14,500	.5709	—	—	133	83	63	3,6	48	16
B105A15000	15,000	.5906	—	—	133	83	63	3,7	48	16
B105A15100	15,100	.5945	—	—	133	83	63	3,8	48	16
B105A15500	15,500	.6102	—	—	133	83	63	3,9	48	16
B105A15800	15,800	.6220	—	—	133	83	63	3,9	48	16
B105A16000	16,000	.6299	—	—	133	83	63	4,0	48	16
B105A16500	16,500	.6496	—	—	143	93	71	4,1	48	18
B105A17000	17,000	.6693	—	—	143	93	71	4,2	48	18
B105A17500	17,500	.6890	—	—	143	93	71	4,4	48	18
B105A18000	18,000	.7087	—	—	143	93	71	4,5	48	18
B105A18500	18,500	.7283	—	—	153	101	77	4,6	50	20
B105A19000	19,000	.7480	—	—	153	101	77	4,7	50	20
B105A19500	19,500	.7677	—	—	153	101	77	4,9	50	20
B105A20000	20,000	.7874	—	—	153	101	77	5,0	50	20
B105A20500	20,500	.8071	—	—	167	112	85	5,1	50	20
B105A21000	21,000	.8268	—	—	167	112	85	5,2	50	20

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Application Data

TF Drills • B105 Series • Grade K10™ • Flood Coolant • Drill Diameters 3–20mm (.1181–.7874")

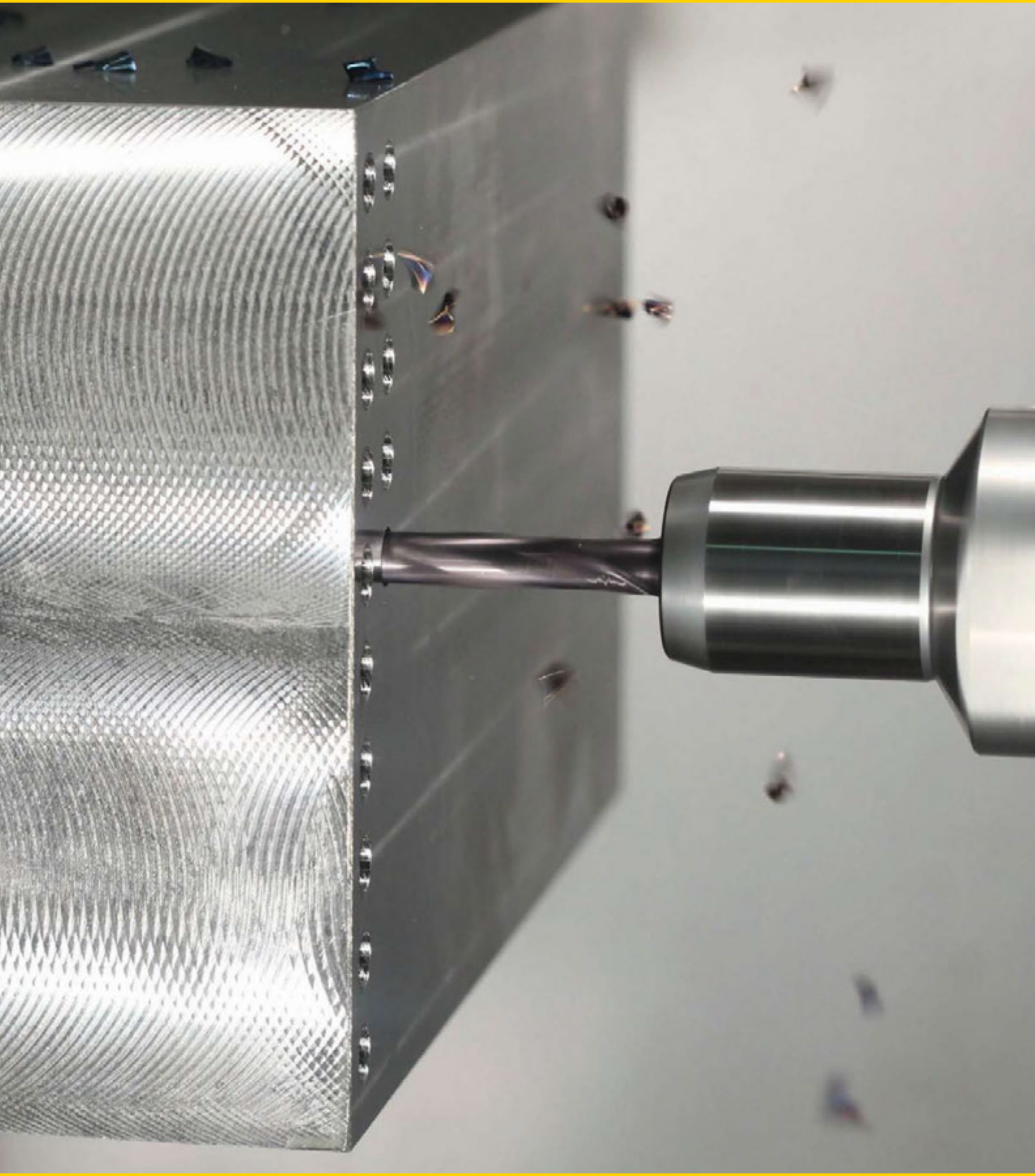




Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K	1	60	**85**	110	mm/r	0,11–0,20	0,12–0,20	0,16–0,28	0,20–0,35	0,22–0,42	0,24–0,50	0,28–0,61	0,30–0,68
	2	70	**70**	90	mm/r	0,11–0,20	0,12–0,20	0,16–0,28	0,20–0,35	0,22–0,42	0,24–0,50	0,28–0,61	0,30–0,68
	3	50	**50**	70	mm/r	0,09–0,18	0,10–0,18	0,14–0,26	0,18–0,33	0,02–0,40	0,22–0,48	0,26–0,59	0,28–0,66
N	1	100	**210**	410	mm/r	0,09–0,15	0,10–0,20	0,18–0,33	0,20–0,38	0,25–0,43	0,03–0,51	0,43–0,58	0,64–0,79
	2	100	**250**	250	mm/r	0,10–0,19	0,12–0,21	0,18–0,33	0,25–0,42	0,30–0,50	0,35–0,58	0,44–0,74	0,52–0,88
	3	100	**180**	400	mm/r	0,09–0,16	0,10–0,20	0,12–0,26	0,16–0,36	0,20–0,40	0,24–0,45	0,30–0,50	0,34–0,60
	4	60	**170**	250	mm/r	0,08–0,15	0,13–0,18	0,18–0,33	0,20–0,36	0,23–0,38	0,33–0,46	0,38–0,48	0,58–0,76
S	4	20	**20**	50	mm/r	0,03–0,05	0,04–0,07	0,07–0,09	0,09–0,12	0,11–0,15	0,13–0,18	0,17–0,24	0,22–0,30

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
K	1	200	**280**	360	IPR	.004–.008	.005–.008	.006–.011	.008–.014	.009–.017	.009–.020	.011–.024	.012–.027
	2	230	**230**	300	IPR	.004–.008	.005–.008	.006–.011	.008–.014	.009–.017	.009–.020	.011–.024	.012–.027
	3	160	**160**	230	IPR	.004–.007	.004–.007	.006–.010	.007–.013	.001–.016	.009–.019	.010–.023	.011–.026
N	1	330	**690**	1340	IPR	.004–.006	.004–.008	.007–.013	.008–.015	.010–.017	.001–.020	.017–.023	.025–.031
	2	330	**820**	820	IPR	.004–.008	.005–.008	.007–.013	.010–.017	.012–.020	.014–.023	.017–.029	.021–.035
	3	330	**590**	1310	IPR	.004–.006	.004–.008	.005–.010	.006–.014	.008–.016	.009–.018	.012–.020	.013–.024
	4	200	**560**	820	IPR	.003–.006	.005–.007	.007–.013	.008–.014	.009–.015	.013–.018	.015–.019	.023–.030
S	4	70	**70**	160	IPR	.001–.002	.002–.003	.003–.004	.004–.005	.004–.006	.005–.007	.007–.009	.009–.012

KENNAMETAL®



New SGL Drills with Through Coolant for Stainless Steel

Primary Application

The all-new B21_SGL series solid carbide drills are designed specifically for stainless steel applications, offering high performance and long tool life in high-temperature alloys and regular steel, also.

By combining unique Kennametal features, such as the all-new SGL-point-geometry with patented gashing, a unique flute design, and a best-in-class coating into one tool, the B21*SGL drill is the ultimate high-volume production tool.

Features and Benefits

New SGL Point Design

- Improved web thinning and patented gashing which migrates in a straight cutting edge, enables high cutting parameters (feeds).
- Creates controlled chips, which lead to a reliable performance.
- Improved centering capabilities for better positioning accuracy and improved hole quality.

Unique Flute Design

- Large chip-flute cross-section and small web diameter improve the chip evacuation and the capability to drill deeper holes in difficult-to-machine materials.
- The highly-polished surface ensures superior chip evacuation, even when low-pressure coolant is applied.

New KCMS15™ Beyond Grade

- A monolayer PVD AlTiN-coated fine-grain carbide with superior surface finish.
- First choice for stainless steel and high-temperature resistant materials for longer tool life.
- The coating offers high hardness and excellent abrasive and adhesive wear resistance, as well as enhanced high-temperature properties, increasing its applicability, also, to MQL machining of steel.

Specifically for stainless steel applications.

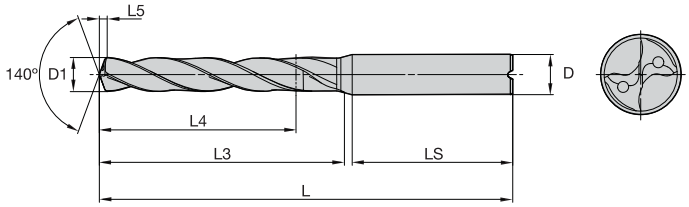


Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- High step diameter ratios and very complex step drill geometries are not recommended for austenitic stainless steel.
- Using Kennametal slim line hydraulic chucks is recommended if workpiece contours need to be bypassed.





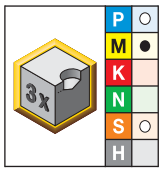


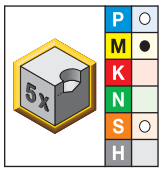


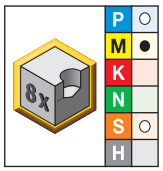
For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D





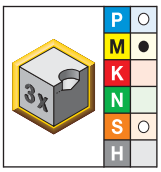


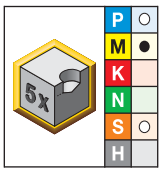
● first choice
○ alternate choice

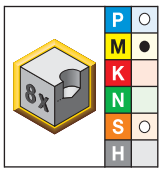
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B210Z02500SGL	–	–	2,500	.0984	–	–	0,4	28	3
B210A03000SGL	B211A03000SGL	B212A03000SGL	3,000	.1181	–	–	0,4	36	6
B210A03048SGL	B211A03048SGL	–	3,048	.1200	–	31	0,5	36	6
–	B211A03100SGL	–	3,100	.1220	–	–	0,5	36	6
B210A03175SGL	B211A03175SGL	B212A03175SGL	3,175	.1250	1/8	–	0,5	36	6
B210A03200SGL	B211A03200SGL	B212A03200SGL	3,200	.1260	–	–	0,5	36	6
B210A03264SGL	–	B212A03264SGL	3,264	.1285	–	30	0,5	36	6
B210A03300SGL	B211A03300SGL	B212A03300SGL	3,300	.1299	–	–	0,5	36	6
B210A03400SGL	B211A03400SGL	–	3,400	.1339	–	–	0,5	36	6
B210A03455SGL	B211A03455SGL	B212A03455SGL	3,455	.1360	–	–	0,5	36	6
B210A03500SGL	B211A03500SGL	B212A03500SGL	3,500	.1378	–	–	0,5	36	6
–	B211A03571SGL	B212A03571SGL	3,571	.1406	9/64	–	0,5	36	6
–	B211A03600SGL	–	3,600	.1417	–	–	0,5	36	6
–	B211A03658SGL	B212A03658SGL	3,658	.1440	–	–	0,5	36	6
–	B211A03700SGL	B212A03700SGL	3,700	.1457	–	–	0,5	36	6
B210A03700SGL	–	–	3,700	.1457	–	–	0,6	36	6
–	B211A03734SGL	–	3,734	.1470	–	26	0,6	36	6
B210A03800SGL	B211A03800SGL	B212A03800SGL	3,800	.1496	–	–	0,6	36	6
–	B211A03861SGL	–	3,861	.1520	–	24	0,6	36	6
–	B211A03900SGL	–	3,900	.1535	–	–	0,6	36	6
B210A04000SGL	B211A04000SGL	B212A04000SGL	4,000	.1575	–	–	0,6	36	6
–	B211A04039SGL	B212A04039SGL	4,039	.1590	–	–	0,6	36	6
B210A04100SGL	B211A04100SGL	B212A04100SGL	4,100	.1614	–	–	0,6	36	6
B210A04200SGL	B211A04200SGL	B212A04200SGL	4,200	.1654	–	–	0,6	36	6
–	B211A04217SGL	–	4,217	.1660	–	–	0,6	36	6
B210A04300SGL	B211A04300SGL	B212A04300SGL	4,300	.1693	–	–	0,6	36	6
–	B211A04366SGL	B212A04366SGL	4,366	.1719	–	–	0,6	36	6
B210A04366SGL	–	–	4,366	.1719	–	–	0,7	36	6
–	B211A04400SGL	–	4,400	.1732	–	–	0,7	36	6
B210A04500SGL	B211A04500SGL	B212A04500SGL	4,500	.1772	–	–	0,7	36	6
–	B211A04600SGL	–	4,600	.1811	–	–	0,7	36	6
B210A04700SGL	B211A04700SGL	B212A04700SGL	4,700	.1850	–	–	0,7	36	6

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)





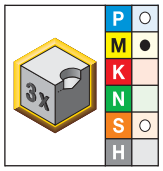


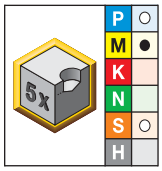
● first choice
○ alternate choice

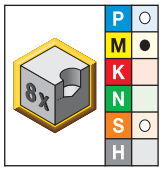
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	B211A04763SGL	–	4,763	.1875	3/16	–	0,7	36	6
B210A04800SGL	B211A04800SGL	B212A04800SGL	4,800	.1890	–	–	0,7	36	6
–	B211A04852SGL	B212A04852SGL	4,852	.1910	–	–	0,7	36	6
B210A04900SGL	B211A04900SGL	–	4,900	.1929	–	–	0,7	36	6
B210A05000SGL	B211A05000SGL	B212A05000SGL	5,000	.1969	–	–	0,7	36	6
B210A05100SGL	B211A05100SGL	B212A05100SGL	5,100	.2008	–	–	0,8	36	6
B210A05106SGL	B211A05106SGL	–	5,106	.2010	–	–	0,8	36	6
B210A05159SGL	B211A05159SGL	–	5,159	.2031	–	–	0,8	36	6
B210A05200SGL	B211A05200SGL	B212A05200SGL	5,200	.2047	–	–	0,8	36	6
B210A05300SGL	B211A05300SGL	–	5,300	.2087	–	–	0,8	36	6
B210A05400SGL	B211A05400SGL	–	5,400	.2126	–	–	0,8	36	6
B210A05500SGL	B211A05500SGL	B212A05500SGL	5,500	.2165	–	–	0,8	36	6
–	B211A05558SGL	–	5,558	.2188	–	–	0,8	36	6
–	B211A05600SGL	–	5,600	.2205	–	–	0,8	36	6
B210A05616SGL	–	–	5,616	.2211	–	2	0,8	36	6
–	B211A05700SGL	–	5,700	.2244	–	–	0,8	36	6
B210A05800SGL	B211A05800SGL	B212A05800SGL	5,800	.2283	–	–	0,9	36	6
–	B211A05900SGL	–	5,900	.2323	–	–	0,9	36	6
B210A05954SGL	B211A05954SGL	–	5,954	.2344	15/64	–	0,9	36	6
B210A06000SGL	B211A06000SGL	B212A06000SGL	6,000	.2362	–	–	0,9	36	6
B210A06100SGL	B211A06100SGL	–	6,100	.2402	–	–	0,9	36	8
B210A06200SGL	B211A06200SGL	–	6,200	.2441	–	–	0,9	36	8
B210A06300SGL	B211A06300SGL	–	6,300	.2480	–	–	0,9	36	8
B210A06350SGL	B211A06350SGL	B212A06350SGL	6,350	.2500	1/4	–	0,9	36	8
–	B211A06400SGL	–	6,400	.2520	–	–	0,9	36	8
B210A06400SGL	–	–	6,400	.2520	–	–	1,0	36	8
B210A06500SGL	B211A06500SGL	B212A06500SGL	6,500	.2559	–	–	1,0	36	8
–	B211A06600SGL	–	6,600	.2598	–	–	1,0	36	8
–	B211A06630SGL	B212A06630SGL	6,630	.2610	–	–	1,0	36	8
B210A06700SGL	B211A06700SGL	–	6,700	.2638	–	–	1,0	36	8
B210A06800SGL	B211A06800SGL	B212A06800SGL	6,800	.2677	–	–	1,0	36	8
B210A06900SGL	B211A06900SGL	–	6,900	.2717	–	–	1,0	36	8
B210A07000SGL	B211A07000SGL	B212A07000SGL	7,000	.2756	–	–	1,0	36	8
B210A07100SGL	B211A07100SGL	–	7,100	.2795	–	–	1,1	36	8
B210A07145SGL	–	–	7,145	.2813	9/32	–	1,1	36	8
–	B211A07200SGL	–	7,200	.2835	–	–	1,1	36	8
–	B211A07300SGL	–	7,300	.2874	–	–	1,1	36	8
B210A07400SGL	B211A07400SGL	–	7,400	.2913	–	–	1,1	36	8
B210A07500SGL	B211A07500SGL	–	7,500	.2953	–	–	1,1	36	8
–	–	B212A07500SGL	7,500	.2953	–	–	1,1	74	8
–	B211A07600SGL	–	7,600	.2992	–	–	1,1	36	8
–	B211A07700SGL	–	7,700	.3031	–	–	1,1	36	8
B210A07800SGL	B211A07800SGL	B212A07800SGL	7,800	.3071	–	–	1,2	36	8
–	B211A07900SGL	–	7,900	.3110	–	–	1,2	36	8
B210A07938SGL	B211A07938SGL	–	7,938	.3125	5/16	–	1,2	36	8
B210A08000SGL	B211A08000SGL	B212A08000SGL	8,000	.3150	–	–	1,2	36	8
B210A08100SGL	B211A08100SGL	–	8,100	.3189	–	–	1,2	40	10
B210A08200SGL	B211A08200SGL	–	8,200	.3228	–	–	1,2	40	10
B210A08400SGL	B211A08400SGL	B212A08400SGL	8,400	.3307	–	–	1,2	40	10
B210A08433SGL	–	–	8,433	.3320	–	–	1,3	40	10
B210A08500SGL	B211A08500SGL	B212A08500SGL	8,500	.3346	–	–	1,3	40	10
B210A08600SGL	B211A08600SGL	–	8,600	.3386	–	–	1,3	40	10

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)





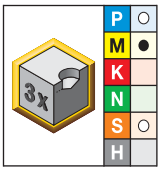


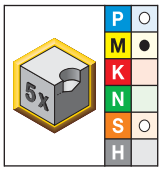
● first choice
○ alternate choice

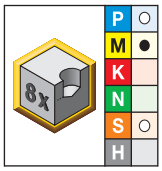
short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B210A08700SGL	B211A08700SGL	–	8,700	.3425	–	–	1,3	40	10
B210A08800SGL	B211A08800SGL	B212A08800SGL	8,800	.3465	–	–	1,3	40	10
–	B211A08900SGL	–	8,900	.3504	–	–	1,3	40	10
B210A09000SGL	B211A09000SGL	B212A09000SGL	9,000	.3543	–	–	1,3	40	10
B210A09093SGL	–	–	9,093	.3580	–	–	1,4	40	10
–	B211A09100SGL	–	9,100	.3583	–	–	1,3	40	10
–	B211A09200SGL	–	9,200	.3622	–	–	1,4	40	10
–	B211A09300SGL	–	9,300	.3661	–	–	1,4	40	10
–	B211A09400SGL	–	9,400	.3701	–	–	1,4	40	10
B210A09500SGL	B211A09500SGL	B212A09500SGL	9,500	.3740	–	–	1,4	40	10
–	B211A09525SGL	–	9,525	.3750	3/8	–	1,4	40	10
–	B211A09600SGL	–	9,600	.3780	–	–	1,4	40	10
B210A09700SGL	B211A09700SGL	–	9,700	.3819	–	–	1,4	40	10
B210A09800SGL	B211A09800SGL	–	9,800	.3858	–	–	1,5	40	10
–	B211A09900SGL	–	9,900	.3898	–	–	1,5	40	10
B210A09921SGL	–	–	9,921	.3906	25/64	–	1,5	40	10
B210A10000SGL	B211A10000SGL	B212A10000SGL	10,000	.3937	–	–	1,5	40	10
–	B211A10100SGL	–	10,100	.3976	–	–	1,5	45	12
B210A10200SGL	B211A10200SGL	B212A10200SGL	10,200	.4016	–	–	1,5	45	12
–	B211A10300SGL	–	10,300	.4055	–	–	1,5	45	12
B210A10400SGL	B211A10400SGL	–	10,400	.4094	–	–	1,5	45	12
B210A10500SGL	B211A10500SGL	B212A10500SGL	10,500	.4134	–	–	1,6	45	12
–	B211A10700SGL	–	10,700	.4213	–	–	1,6	45	12
B210A10716SGL	–	–	10,716	.4219	–	–	1,6	45	12
B210A10800SGL	B211A10800SGL	–	10,800	.4252	–	–	1,6	45	12
B210A11000SGL	B211A11000SGL	B212A11000SGL	11,000	.4331	–	–	1,6	45	12
–	B211A11100SGL	–	11,100	.4370	–	–	1,6	45	12
–	B211A11113SGL	–	11,113	.4375	7/16	–	1,6	45	12
B210A11200SGL	B211A11200SGL	–	11,200	.4409	–	–	1,7	45	12
–	B211A11400SGL	–	11,400	.4488	–	–	1,7	45	12
B210A11500SGL	B211A11500SGL	–	11,500	.4528	–	–	1,7	45	12
B210A11509SGL	–	–	11,509	.4531	–	–	1,7	45	12
–	B211A11700SGL	–	11,700	.4606	–	–	1,7	45	12
–	B211A11800SGL	B212A11800SGL	11,800	.4646	–	–	1,7	45	12
B210A12000SGL	B211A12000SGL	B212A12000SGL	12,000	.4724	–	–	1,8	45	12
–	B211A12100SGL	–	12,100	.4764	–	–	1,8	45	14
B210A12200SGL	B211A12200SGL	–	12,200	.4803	–	–	1,8	45	14
–	B211A12300SGL	–	12,300	.4843	–	–	1,8	45	14
B210A12304SGL	–	–	12,304	.4844	31/64	–	1,8	45	14
B210A12500SGL	B211A12500SGL	B212A12500SGL	12,500	.4921	–	–	1,9	45	14
B210A12700SGL	B211A12700SGL	–	12,700	.5000	1/2	–	1,9	45	14
B210A12800SGL	B211A12800SGL	–	12,800	.5039	–	–	1,9	45	14
–	B211A12900SGL	–	12,900	.5079	–	–	1,9	45	14
B210A13000SGL	B211A13000SGL	B212A13000SGL	13,000	.5118	–	–	1,9	45	14
–	B211A13100SGL	–	13,100	.5157	–	–	1,9	45	14
–	B211A13200SGL	–	13,200	.5197	–	–	2,0	45	14
–	B211A13300SGL	–	13,300	.5236	–	–	2,0	45	14
B210A13495SGL	–	–	13,495	.5313	17/32	–	2,0	45	14
B210A13500SGL	B211A13500SGL	B212A13500SGL	13,500	.5315	–	–	2,0	45	14
–	B211A13800SGL	–	13,800	.5433	–	–	2,0	45	14
B210A14000SGL	B211A14000SGL	B212A14000SGL	14,000	.5512	–	–	2,1	45	14
B210A14100SGL	B211A14100SGL	–	14,100	.5551	–	–	2,1	48	16

(continued)

(B210/B211/B212_SGL • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KCMS15	long • KCMS15	extra long • KCMS15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B210A14200SGL	–	–	14,200	.5591	–	–	2,1	48	16
–	B211A14300SGL	–	14,300	.5630	–	–	2,1	48	16
–	B211A14400SGL	–	14,400	.5669	–	–	2,1	48	16
–	B211A14500SGL	–	14,500	.5709	–	–	2,1	48	16
B210A14500SGL	–	–	14,500	.5709	–	–	2,2	48	16
–	B211A14600SGL	–	14,600	.5748	–	–	2,2	48	16
–	B211A14800SGL	–	14,800	.5827	–	–	2,2	48	16
B210A15000SGL	B211A15000SGL	–	15,000	.5906	–	–	2,2	48	16
–	B211A15100SGL	–	15,100	.5945	–	–	2,2	48	16
–	B211A15300SGL	–	15,300	.6024	–	–	2,3	48	16
B210A15500SGL	B211A15500SGL	–	15,500	.6102	–	–	2,3	48	16
–	B211A15700SGL	–	15,700	.6181	–	–	2,3	48	16
B210A15875SGL	B211A15875SGL	–	15,875	.6250	5/8	–	2,4	48	16
B210A16000SGL	B211A16000SGL	–	16,000	.6299	–	–	2,4	48	16
–	B211A16100SGL	–	16,100	.6339	–	–	2,4	48	18
B210A16129SGL	–	–	16,129	.6350	–	–	2,4	48	18
B210A16500SGL	B211A16500SGL	–	16,500	.6496	–	–	2,4	48	18
B210A16670SGL	–	–	16,670	.6563	21/32	–	2,5	48	18
B210A17000SGL	B211A17000SGL	–	17,000	.6693	–	–	2,5	48	18
B210A17500SGL	B211A17500SGL	–	17,500	.6890	–	–	2,6	48	18
–	B211A17700SGL	–	17,700	.6969	–	–	2,6	48	18
B210A18000SGL	B211A18000SGL	–	18,000	.7087	–	–	2,7	48	18
B210A18500SGL	B211A18500SGL	–	18,500	.7283	–	–	2,7	50	20
–	B211A19000SGL	–	19,000	.7480	–	–	2,8	50	20
B210A19050SGL	–	–	19,050	.7500	3/4	–	2,8	50	20
–	B211A19159SGL	–	19,159	.7543	–	–	2,8	50	20
–	B211A19300SGL	–	19,300	.7598	–	–	2,9	50	20
B210A19500SGL	–	–	19,500	.7677	–	–	2,9	50	20
B210A20000SGL	–	–	20,000	.7874	–	–	3,0	50	20
–	B211A20500SGL	–	20,500	.8071	–	–	3,0	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181 to .2362	.0002/.0006	.0000/-.0003
>.2362 to .3937	.0002/.0008	.0000/-.0004
>.3937 to .7087	.0003/.0010	.0000/-.0004
>.7087 to 1.0000	.0003/.0011	.0000/-.0005

HP Drills • B21_SGL Series • Grade KCMS15 • Through Coolant



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Rev	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	110	**160**	210	mm/r	0,05–0,13	0,08–0,19	0,11–0,24	0,14–0,30	0,16–0,35	0,18–0,39	0,20–0,46	0,23–0,51
	2	130	**170**	210	mm/r	0,05–0,13	0,08–0,17	0,11–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,37	0,23–0,41
	3	110	**150**	190	mm/r	0,08–0,13	0,12–0,19	0,14–0,24	0,17–0,30	0,20–0,35	0,22–0,39	0,26–0,46	0,29–0,51
	4	80	**120**	150	mm/r	0,08–0,12	0,11–0,18	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
	5	60	**80**	90	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,14–0,24	0,16–0,26
	6	70	**120**	170	mm/r	0,05–0,11	0,08–0,14	0,11–0,17	0,13–0,21	0,15–0,24	0,17–0,27	0,19–0,33	0,22–0,36
M	1	60	**80**	90	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
	2	50	**70**	90	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
	3	50	**60**	80	mm/r	0,05–0,14	0,06–0,15	0,08–0,17	0,10–0,19	0,12–0,21	0,13–0,22	0,16–0,25	0,18–0,27
S	1	10	**20**	30	mm/r	0,03–0,08	0,04–0,09	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	2	10	**20**	30	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	3	20	**30**	40	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,11	0,08–0,14	0,11–0,16	0,14–0,19	0,16–0,21
	4	30	**40**	50	mm/r	0,03–0,04	0,04–0,05	0,06–0,08	0,08–0,10	0,11–0,13	0,13–0,15	0,14–0,18	0,16–0,20

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate per Rev	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	1	360	**520**	690	IPR	.002–.005	.003–.008	.004–.009	.006–.012	.006–.014	.007–.015	.008–.018	.009–.020
	2	430	**560**	690	IPR	.002–.005	.003–.007	.004–.008	.006–.009	.006–.011	.007–.013	.008–.015	.009–.016
	3	360	**490**	620	IPR	.003–.005	.005–.008	.006–.009	.007–.012	.008–.014	.009–.015	.010–.018	.011–.020
	4	260	**390**	490	IPR	.003–.005	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.010–.019
	5	200	**260**	300	IPR	.001–.004	.002–.004	.002–.004	.002–.006	.003–.007	.004–.008	.006–.009	.006–.010
	6	230	**390**	560	IPR	.002–.004	.003–.006	.004–.007	.005–.008	.006–.009	.007–.011	.008–.013	.009–.014
M	1	200	**260**	300	IPR	.002–.006	.002–.006	.003–.007	.004–.008	.005–.008	.005–.009	.006–.010	.007–.011
	2	160	**230**	300	IPR	.002–.006	.002–.006	.003–.007	.004–.008	.005–.008	.005–.009	.006–.010	.007–.011
	3	160	**200**	260	IPR	.002–.006	.002–.006	.003–.007	.004–.008	.005–.008	.005–.009	.006–.010	.007–.011
S	1	30	**70**	100	IPR	.001–.003	.002–.004	.002–.004	.002–.004	.003–.006	.004–.006	.006–.008	.006–.008
	2	30	**70**	100	IPR	.001–.004	.002–.004	.002–.004	.002–.004	.003–.006	.004–.006	.006–.008	.006–.008
	3	70	**100**	130	IPR	.001–.004	.002–.004	.002–.004	.002–.004	.003–.006	.004–.006	.006–.008	.006–.008
	4	100	**130**	160	IPR	.001–.002	.002–.002	.002–.003	.003–.004	.004–.005	.005–.006	.006–.007	.006–.008

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HP Beyond™ Drills for Steel

Primary Application

B221_HP series solid carbide drills offer the highest metal removal rates and longest tool life in steel and iron materials when dry cutting or using external flood coolant. Dry drilling up to 5 x D possible.

B224_HP series solid carbide drills are ideal for super high-speed drilling of unalloyed and alloyed steel. Achieve 100% higher cutting speed without compromising tool life. Operate these drills with standard through coolant or MQL.

By combining unique Kennametal technologies, such as the HP-point, flute geometry, and a new Beyond grade technology into one tool, the B22_HP Beyond is the ultimate high-volume production tool.

Features and Benefits

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.

Unique Flute Design

- Improved chip evacuation in dry and mid L/D drilling operations.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. High cutting speeds enable use in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.
- The average metal removal rate and tool life performance improved dramatically (10–30%).

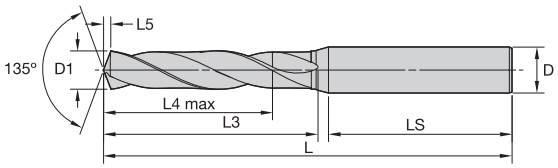
B22_HP Beyond™ drills are the ultimate high-volume production tool.



Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- For holes deeper than 5 x D, internal coolant is recommended.
- Using Kennametal slim line hydraulic chucks together with standard B22_HP is recommended if workpiece contours need to be bypassed.





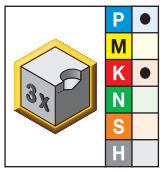


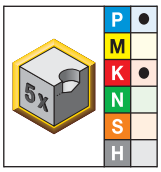


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B221/B222_HP • ~3 x D/~5 x D



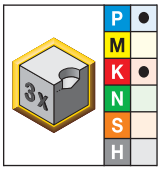


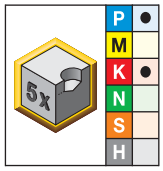
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B221A03000HP	B222A03000HP	3,000	.1181	–	–	0,6	36	6
B221A03048HP	B222A03048HP	3,048	.1200	–	31	0,6	36	6
B221A03100HP	–	3,100	.1220	–	–	0,6	36	6
B221A03175HP	B222A03175HP	3,175	.1250	1/8	–	0,6	36	6
B221A03200HP	–	3,200	.1260	–	–	0,6	36	6
B221A03264HP	B222A03264HP	3,264	.1285	–	30	0,6	36	6
B221A03300HP	B222A03300HP	3,300	.1299	–	–	0,6	36	6
B221A03400HP	–	3,400	.1339	–	–	0,6	36	6
B221A03455HP	B222A03455HP	3,455	.1360	–	29	0,7	36	6
B221A03500HP	B222A03500HP	3,500	.1378	–	–	0,7	36	6
B221A03571HP	B222A03571HP	3,571	.1406	9/64	–	0,7	36	6
B221A03600HP	–	3,600	.1417	–	–	0,7	36	6
B221A03700HP	B222A03700HP	3,700	.1457	–	–	0,7	36	6
B221A03734HP *	–	3,734	.1470	–	26	0,7	36	6
B221A03800HP	B222A03800HP	3,800	.1496	–	–	0,7	36	6
B221A03900HP	–	3,900	.1535	–	–	0,7	36	6
B221A03970HP	B222A03970HP	3,970	.1563	5/32	–	0,7	36	6
B221A04000HP	B222A04000HP	4,000	.1575	–	–	0,8	36	6
B221A04039HP	–	4,039	.1590	–	21	0,8	36	6
B221A04090HP	–	4,090	.1610	–	20	0,8	36	6
B221A04100HP	–	4,100	.1614	–	–	0,8	36	6
B221A04200HP	B222A04200HP	4,200	.1654	–	–	0,8	36	6
B221A04217HP *	–	4,217	.1660	–	19	0,8	36	6
B221A04300HP	–	4,300	.1693	–	–	0,8	36	6
B221A04366HP	B222A04366HP	4,366	.1719	11/64	–	0,8	36	6
B221A04400HP	–	4,400	.1732	–	–	0,8	36	6
B221A04500HP	B222A04500HP	4,500	.1772	–	–	0,8	36	6
B221A04600HP	B222A04600HP	4,600	.1811	–	–	0,9	36	6
B221A04623HP *	–	4,623	.1820	–	14	0,9	36	6
B221A04700HP	–	4,700	.1850	–	13	0,9	36	6
B221A04763HP	B222A04763HP	4,763	.1875	3/16	–	0,9	36	6
B221A04800HP	B222A04800HP	4,800	.1890	–	12	0,9	36	6
B221A04852HP	–	4,852	.1910	–	11	0,9	36	6
B221A04900HP	–	4,900	.1929	–	–	0,9	36	6
B221A05000HP	B222A05000HP	5,000	.1969	–	–	0,9	36	6
B221A05100HP	B222A05100HP	5,100	.2008	–	–	1,0	36	6
B221A05106HP	B222A05106HP	5,106	.2010	–	7	1,0	36	6
B221A05159HP	B222A05159HP	5,159	.2031	13/64	–	1,0	36	6
B221A05200HP	–	5,200	.2047	–	–	1,0	36	6
B221A05300HP	–	5,300	.2087	–	–	1,0	36	6

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)



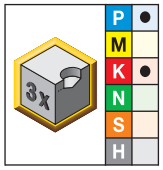


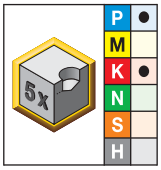
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B221A05400HP	–	5,400	.2126	–	–	1,0	36	6
B221A05410HP *	B222A05410HP *	5,410	.2130	–	3	1,0	36	6
B221A05500HP	B222A05500HP	5,500	.2165	–	–	1,0	36	6
B221A05558HP	B222A05558HP *	5,558	.2188	7/32	–	1,0	36	6
B221A05600HP	–	5,600	.2205	–	–	1,1	36	6
B221A05616HP *	–	5,616	.2211	–	2	1,1	36	6
B221A05700HP	–	5,700	.2244	–	–	1,1	36	6
B221A05800HP	B222A05800HP	5,800	.2283	–	–	1,1	36	6
B221A05900HP	–	5,900	.2323	–	–	1,1	36	6
–	B222A05954HP	5,954	.2344	15/64	–	1,1	36	6
B221A06000HP	B222A06000HP	6,000	.2362	–	–	1,1	36	6
B221A06100HP	–	6,100	.2402	–	–	1,1	36	8
B221A06200HP	–	6,200	.2441	–	–	1,2	36	8
B221A06300HP	–	6,300	.2480	–	–	1,2	36	8
B221A06350HP	B222A06350HP	6,350	.2500	1/4	–	1,2	36	8
B221A06400HP	–	6,400	.2520	–	–	1,2	36	8
B221A06500HP	B222A06500HP	6,500	.2559	–	–	1,2	36	8
B221A06528HP	B222A06528HP	6,528	.2570	–	–	1,2	36	8
B221A06600HP	–	6,600	.2598	–	–	1,2	36	8
B221A06630HP *	–	6,630	.2610	–	–	1,2	36	8
B221A06700HP	B222A06700HP	6,700	.2638	–	–	1,3	36	8
B221A06746HP	B222A06746HP	6,746	.2656	17/64	–	1,3	36	8
B221A06800HP	B222A06800HP	6,800	.2677	–	–	1,3	36	8
B221A06900HP	–	6,900	.2717	–	–	1,3	36	8
B221A07000HP	B222A07000HP	7,000	.2756	–	–	1,3	36	8
B221A07100HP	–	7,100	.2795	–	–	1,3	36	8
B221A07145HP *	B222A07145HP	7,145	.2813	9/32	–	1,3	36	8
B221A07200HP	–	7,200	.2835	–	–	1,3	36	8
B221A07300HP	–	7,300	.2874	–	–	1,4	36	8
B221A07400HP	–	7,400	.2913	–	–	1,4	36	8
B221A07500HP	B222A07500HP	7,500	.2953	–	–	1,4	36	8
B221A07541HP *	B222A07541HP	7,541	.2969	19/64	–	1,4	36	8
B221A07600HP *	–	7,600	.2992	–	–	1,4	36	8
B221A07700HP	–	7,700	.3031	–	–	1,4	36	8
B221A07800HP	B222A07800HP	7,800	.3071	–	–	1,5	36	8
B221A07900HP	–	7,900	.3110	–	–	1,5	36	8
B221A07938HP	B222A07938HP	7,938	.3125	5/16	–	1,5	36	8
B221A08000HP	B222A08000HP	8,000	.3150	–	–	1,5	36	8
B221A08100HP	–	8,100	.3189	–	–	1,5	40	10
B221A08200HP	B222A08200HP	8,200	.3228	–	–	1,5	40	10
B221A08300HP	–	8,300	.3268	–	–	1,6	40	10
B221A08334HP	B222A08334HP	8,334	.3281	21/64	–	1,6	40	10
B221A08400HP	–	8,400	.3307	–	–	1,6	40	10
B221A08433HP *	B222A08433HP	8,433	.3320	–	–	1,6	40	10
B221A08500HP	B222A08500HP	8,500	.3346	–	–	1,6	40	10
B221A08600HP	–	8,600	.3386	–	–	1,6	40	10
B221A08700HP	–	8,700	.3425	–	–	1,6	40	10
B221A08733HP *	B222A08733HP	8,733	.3438	11/32	–	1,6	40	10
B221A08800HP	B222A08800HP	8,800	.3465	–	–	1,6	40	10
B221A08900HP	–	8,900	.3504	–	–	1,7	40	10
B221A09000HP	B222A09000HP	9,000	.3543	–	–	1,7	40	10
B221A09100HP	–	9,100	.3583	–	–	1,7	40	10

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)



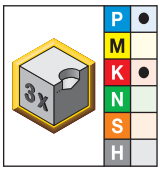


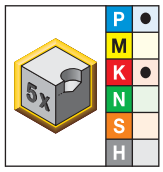
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B221A09129HP	B222A09129HP	9,129	.3594	23/64	–	1,7	40	10
B221A09200HP	–	9,200	.3622	–	–	1,7	40	10
B221A09300HP	B222A09300HP	9,300	.3661	–	–	1,7	40	10
B221A09347HP	–	9,347	.3680	–	–	1,7	40	10
B221A09400HP	–	9,400	.3701	–	–	1,8	40	10
B221A09500HP	B222A09500HP	9,500	.3740	–	–	1,8	40	10
B221A09525HP	B222A09525HP	9,525	.3750	3/8	–	1,8	40	10
B221A09600HP	–	9,600	.3780	–	–	1,8	40	10
B221A09700HP	–	9,700	.3819	–	–	1,8	40	10
B221A09800HP	B222A09800HP	9,800	.3858	–	–	1,8	40	10
B221A09900HP	–	9,900	.3898	–	–	1,8	40	10
B221A09921HP	B222A09921HP	9,921	.3906	25/64	–	1,9	40	10
B221A10000HP	B222A10000HP	10,000	.3937	–	–	1,9	40	10
B221A10100HP	–	10,100	.3976	–	–	1,9	45	12
B221A10200HP	B222A10200HP	10,200	.4016	–	–	1,9	45	12
B221A10300HP	–	10,300	.4055	–	–	1,9	45	12
B221A10320HP	B222A10320HP	10,320	.4063	13/32	–	1,9	45	12
B221A10400HP	–	10,400	.4094	–	–	1,9	45	12
B221A10500HP	B222A10500HP	10,500	.4134	–	–	2,0	45	12
B221A10600HP	–	10,600	.4173	–	–	2,0	45	12
B221A10700HP	–	10,700	.4213	–	–	2,0	45	12
B221A10716HP	B222A10716HP	10,716	.4219	27/64	–	2,0	45	12
B221A10800HP	B222A10800HP	10,800	.4252	–	–	2,0	45	12
B221A10900HP *	–	10,900	.4291	–	–	2,0	45	12
B221A11000HP	B222A11000HP	11,000	.4331	–	–	2,1	45	12
B221A11100HP	–	11,100	.4370	–	–	2,1	45	12
B221A11113HP	B222A11113HP	11,113	.4375	7/16	–	2,1	45	12
B221A11200HP	–	11,200	.4409	–	–	2,1	45	12
B221A11300HP	–	11,300	.4449	–	–	2,1	45	12
B221A11400HP	–	11,400	.4488	–	–	2,1	45	12
B221A11500HP	B222A11500HP	11,500	.4528	–	–	2,1	45	12
B221A11509HP *	B222A11509HP	11,509	.4531	29/64	–	2,1	45	12
B221A11600HP *	–	11,600	.4567	–	–	2,2	45	12
B221A11700HP	–	11,700	.4606	–	–	2,2	45	12
B221A11800HP	–	11,800	.4646	–	–	2,2	45	12
B221A11900HP	–	11,900	.4685	–	–	2,2	45	12
B221A11908HP	B222A11908HP	11,908	.4688	15/32	–	2,2	45	12
B221A12000HP	B222A12000HP	12,000	.4724	–	–	2,2	45	12
B221A12100HP	–	12,100	.4764	–	–	2,3	45	14
B221A12200HP	–	12,200	.4803	–	–	2,3	45	14
B221A12300HP	–	12,300	.4843	–	–	2,3	45	14
–	B222A12304HP	12,304	.4844	31/64	–	2,3	45	14
B221A12400HP	–	12,400	.4882	–	–	2,3	45	14
B221A12500HP	B222A12500HP *	12,500	.4921	–	–	2,3	45	14
B221A12600HP	–	12,600	.4961	–	–	2,3	45	14
B221A12700HP	B222A12700HP	12,700	.5000	1/2	–	2,4	45	14
B221A12800HP	–	12,800	.5039	–	–	2,4	45	14
B221A12900HP	–	12,900	.5079	–	–	2,4	45	14
B221A13000HP	B222A13000HP	13,000	.5118	–	–	2,4	45	14
B221A13100HP	–	13,100	.5157	–	–	2,4	45	14
B221A13200HP	–	13,200	.5197	–	–	2,5	45	14
B221A13300HP	–	13,300	.5236	–	–	2,5	45	14

(continued)

(B221/B222_HP • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B221A13500HP	B222A13500HP	13,500	.5315	–	–	2,5	45	14
B221A13600HP	–	13,600	.5354	–	–	2,5	45	14
B221A13700HP	–	13,700	.5394	–	–	2,6	45	14
B221A13800HP	–	13,800	.5433	–	–	2,6	45	14
B221A13891HP	–	13,891	.5469	35/64	–	2,6	45	14
B221A14000HP	B222A14000HP	14,000	.5512	–	–	2,6	45	14
B221A14100HP	–	14,100	.5551	–	–	2,6	48	16
B221A14200HP	–	14,200	.5591	–	–	2,6	48	16
B221A14288HP	B222A14288HP	14,288	.5625	9/16	–	2,7	48	16
B221A14300HP	–	14,300	.5630	–	–	2,7	48	16
B221A14400HP	–	14,400	.5669	–	–	2,7	48	16
B221A14500HP	B222A14500HP	14,500	.5709	–	–	2,7	48	16
B221A14600HP	–	14,600	.5748	–	–	2,7	48	16
B221A14684HP *	–	14,684	.5781	37/64	–	2,7	48	16
B221A14700HP	–	14,700	.5787	–	–	2,7	48	16
B221A14800HP	–	14,800	.5827	–	–	2,8	48	16
B221A14900HP	–	14,900	.5866	–	–	2,8	48	16
B221A15000HP	B222A15000HP	15,000	.5906	–	–	2,8	48	16
B221A15083HP	–	15,083	.5938	19/32	–	2,8	48	16
B221A15100HP	–	15,100	.5945	–	–	2,8	48	16
B221A15200HP	–	15,200	.5984	–	–	2,8	48	16
B221A15300HP	–	15,300	.6024	–	–	2,8	48	16
B221A15400HP *	–	15,400	.6063	–	–	2,9	48	16
B221A15479HP	–	15,479	.6094	39/64	–	2,9	48	16
B221A15500HP	B222A15500HP	15,500	.6102	–	–	2,9	48	16
B221A15600HP	–	15,600	.6142	–	–	2,9	48	16
B221A15700HP	–	15,700	.6181	–	–	2,9	48	16
B221A15800HP	–	15,800	.6220	–	–	2,9	48	16
B221A15875HP	B222A15875HP	15,875	.6250	5/8	–	3,0	48	16
B221A15900HP *	–	15,900	.6260	–	–	3,0	48	16
B221A16000HP	B222A16000HP	16,000	.6299	–	–	3,0	48	16
B221A16500HP	B222A16500HP	16,500	.6496	–	–	3,1	48	18
B221A17000HP	B222A17000HP	17,000	.6693	–	–	3,2	48	18
B221A17463HP	B222A17463HP	17,463	.6875	11/16	–	3,2	48	18
B221A17500HP	B222A17500HP	17,500	.6890	–	–	3,3	48	18
B221A17700HP	–	17,700	.6969	–	–	3,3	48	18
B221A18000HP	B222A18000HP	18,000	.7087	–	–	3,3	48	18
B221A18500HP	B222A18500HP *	18,500	.7283	–	–	3,4	50	20
B221A19000HP	B222A19000HP	19,000	.7480	–	–	3,5	50	20
B221A19050HP	B222A19050HP	19,050	.7500	3/4	–	3,5	50	20
B221A19500HP	–	19,500	.7677	–	–	3,6	50	20
B221A20000HP	B222A20000HP	20,000	.7874	–	–	3,7	50	20
B221A20500HP	–	20,500	.8071	–	–	3,8	50	20
B221A21000HP	–	21,000	.8268	–	–	3,9	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

HP Drills • B221_HP, B222_HP Series • Grade KCPK15™ • Flood Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (fz) by Diameter								
						3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	**110**	170	mm/r	0,06–0,14	0,06–0,14	0,07–0,20	0,08–0,25	0,09–0,30	0,12–0,36	0,18–0,42	0,21–0,49
	1	70	**110**	150	mm/r	0,07–0,16	0,07–0,17	0,08–0,24	0,09–0,29	0,09–0,35	0,12–0,42	0,25–0,50	0,33–0,58
	2	90	**120**	160	mm/r	0,07–0,15	0,07–0,17	0,12–0,23	0,14–0,31	0,16–0,33	0,20–0,40	0,25–0,50	0,31–0,58
	3	60	**90**	120	mm/r	0,09–0,16	0,09–0,17	0,14–0,24	0,15–0,33	0,19–0,35	0,24–0,44	0,27–0,50	0,34–0,60
	4	50	**80**	120	mm/r	0,08–0,16	0,08–0,17	0,13–0,25	0,16–0,33	0,17–0,33	0,21–0,44	0,24–0,50	0,30–0,60
	6	50	**80**	120	mm/r	0,06–0,11	0,07–0,13	0,09–0,17	0,13–0,24	0,15–0,24	0,18–0,30	0,23–0,40	0,28–0,49
K	1	70	**100**	120	mm/r	0,11–0,21	0,09–0,18	0,14–0,28	0,16–0,37	0,20–0,40	0,22–0,45	0,28–0,58	0,36–0,71
	2	70	**120**	120	mm/r	0,11–0,19	0,09–0,16	0,14–0,23	0,16–0,32	0,19–0,32	0,22–0,37	0,28–0,47	0,36–0,60
	3	50	**90**	130	mm/r	0,08–0,17	0,07–0,14	0,12–0,25	0,13–0,27	0,16–0,29	0,18–0,39	0,25–0,48	0,29–0,58

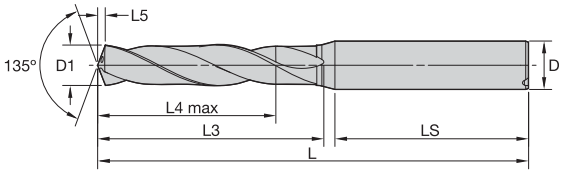
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter								
						1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	260	**360**	560	IPR	.002–.006	.002–.006	.003–.008	.003–.010	.004–.012	.005–.014	.007–.017	.008–.019
	1	230	**360**	490	IPR	.003–.006	.003–.007	.003–.009	.004–.011	.004–.014	.005–.017	.010–.020	.013–.023
	2	300	**390**	520	IPR	.003–.006	.003–.007	.005–.009	.006–.012	.006–.013	.008–.016	.010–.020	.012–.023
	3	200	**300**	390	IPR	.004–.006	.004–.007	.006–.009	.006–.013	.008–.014	.009–.017	.011–.020	.013–.024
	4	160	**260**	390	IPR	.003–.006	.003–.007	.005–.010	.006–.013	.007–.013	.008–.017	.009–.020	.012–.024
	6	160	**260**	390	IPR	.002–.004	.003–.005	.004–.007	.005–.009	.006–.009	.007–.012	.009–.016	.011–.019
K	1	230	**330**	390	IPR	.004–.008	.004–.007	.006–.011	.006–.015	.008–.016	.009–.018	.011–.023	.014–.028
	2	230	**390**	390	IPR	.004–.008	.004–.006	.006–.009	.006–.013	.008–.013	.009–.015	.011–.019	.014–.024
	3	160	**300**	430	IPR	.003–.007	.003–.006	.005–.010	.005–.011	.006–.011	.007–.015	.010–.019	.011–.023

HP Drills • B221HP, B222HP Series • Grade KCPK15™ • Dry Applications • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (fz) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	**90**	140	mm/r	0,06–0,10	0,06–0,12	0,11–0,18	0,14–0,24	0,17–0,30	0,21–0,36	0,29–0,43	0,36–0,59
	1	60	**90**	120	mm/r	0,07–0,12	0,07–0,14	0,13–0,21	0,17–0,28	0,20–0,35	0,25–0,42	0,34–0,50	0,42–0,69
	2	60	**90**	120	mm/r	0,07–0,13	0,07–0,14	0,13–0,21	0,17–0,28	0,20–0,35	0,25–0,42	0,34–0,50	0,42–0,69
	3	60	**80**	90	mm/r	0,05–0,07	0,07–0,13	0,11–0,19	0,14–0,21	0,18–0,28	0,21–0,33	0,28–0,42	0,36–0,53
	4	60	**80**	90	mm/r	0,08–0,12	0,11–0,18	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
	6	60	**80**	90	mm/r	0,05–0,07	0,07–0,13	0,11–0,19	0,14–0,21	0,18–0,28	0,21–0,33	0,28–0,42	0,36–0,53
Material Group		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate (fz) by Diameter								
		min	Starting Value	max		0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
P	0	230	**300**	460	IPR	.002–.004	.002–.005	.004–.007	.006–.009	.007–.012	.008–.014	.011–.017	.014–.023
	1	200	**300**	390	IPR	.003–.005	.003–.006	.005–.008	.007–.011	.008–.014	.010–.017	.013–.020	.017–.027
	2	200	**300**	390	IPR	.003–.005	.003–.006	.005–.008	.007–.011	.008–.014	.010–.017	.013–.020	.017–.027
	3	200	**260**	300	IPR	.002–.003	.003–.005	.004–.008	.006–.008	.007–.011	.008–.013	.011–.017	.014–.021
	4	200	**260**	300	IPR	.003–.005	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.010–.019
	6	200	**260**	300	IPR	.002–.003	.003–.005	.004–.008	.006–.008	.007–.011	.008–.013	.011–.017	.014–.021





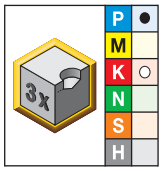


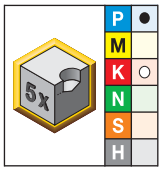


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B224/B225_HP • ~3 x D/~5 x D



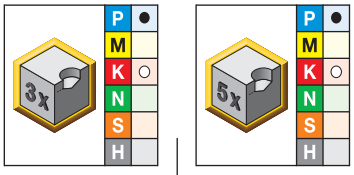


● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B224A03000HP	B225A03000HP	3,000	.1181	–	–	0,6	36	6
B224A03048HP	B225A03048HP	3,048	.1200	–	31	0,6	36	6
B224A03100HP	B225A03100HP	3,100	.1220	–	–	0,6	36	6
B224A03175HP	B225A03175HP	3,175	.1250	1/8	–	0,6	36	6
B224A03200HP	B225A03200HP	3,200	.1260	–	–	0,6	36	6
B224A03264HP *	B225A03264HP	3,264	.1285	–	30	0,6	36	6
B224A03300HP	B225A03300HP	3,300	.1299	–	–	0,6	36	6
B224A03400HP	B225A03400HP	3,400	.1339	–	–	0,6	36	6
B224A03455HP	B225A03455HP	3,455	.1360	–	29	0,7	36	6
B224A03500HP	B225A03500HP	3,500	.1378	–	–	0,7	36	6
–	B225A03571HP	3,571	.1406	9/64	–	0,7	36	6
B224A03600HP	B225A03600HP	3,600	.1417	–	–	0,7	36	6
B224A03658HP	–	3,658	.1440	–	27	0,7	36	6
B224A03700HP *	B225A03700HP	3,700	.1457	–	–	0,7	36	6
B224A03734HP *	–	3,734	.1470	–	26	0,7	36	6
–	B225A03797HP	3,797	.1495	–	25	0,7	36	6
B224A03800HP	B225A03800HP	3,800	.1496	–	–	0,7	36	6
B224A03900HP	B225A03900HP	3,900	.1535	–	–	0,7	36	6
B224A03970HP	B225A03970HP	3,970	.1563	5/32	–	0,7	36	6
B224A04000HP	B225A04000HP	4,000	.1575	–	–	0,8	36	6
B224A04039HP *	–	4,039	.1590	–	21	0,8	36	6
B224A04090HP	–	4,090	.1610	–	20	0,8	36	6
B224A04100HP	B225A04100HP	4,100	.1614	–	–	0,8	36	6
B224A04200HP	B225A04200HP	4,200	.1654	–	–	0,8	36	6
B224A04217HP *	–	4,217	.1660	–	19	0,8	36	6
–	B225A04300HP	4,300	.1693	–	–	0,8	36	6
B224A04366HP	B225A04366HP	4,366	.1719	11/64	–	0,8	36	6
–	B225A04400HP	4,400	.1732	–	–	0,8	36	6
B224A04496HP	B225A04496HP	4,496	.1770	–	16	0,8	36	6
–	B225A04500HP	4,500	.1772	–	–	0,8	36	6
–	B225A04600HP	4,600	.1811	–	–	0,9	36	6
B224A04623HP	–	4,623	.1820	–	14	0,9	36	6
B224A04700HP *	B225A04700HP	4,700	.1850	–	13	0,9	36	6
B224A04763HP	B225A04763HP	4,763	.1875	3/16	–	0,9	36	6
–	B225A04800HP	4,800	.1890	–	12	0,9	36	6
B224A04852HP	–	4,852	.1910	–	11	0,9	36	6

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)

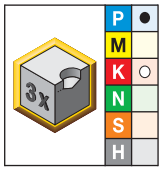


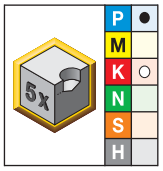
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	B225A04900HP	4,900	.1929	–	–	0,9	36	6
B224A05000HP	B225A05000HP	5,000	.1969	–	–	0,9	36	6
B224A05050HP	–	5,050	.1988	–	–	0,9	36	6
B224A05100HP	B225A05100HP	5,100	.2008	–	–	1,0	36	6
B224A05106HP	B225A05106HP	5,106	.2010	–	7	1,0	36	6
B224A05159HP	B225A05159HP	5,159	.2031	13/64	–	1,0	36	6
–	B225A05200HP	5,200	.2047	–	–	1,0	36	6
–	B225A05300HP	5,300	.2087	–	–	1,0	36	6
–	B225A05400HP	5,400	.2126	–	–	1,0	36	6
B224A05410HP	B225A05410HP	5,410	.2130	–	3	1,0	36	6
B224A05500HP	B225A05500HP	5,500	.2165	–	–	1,0	36	6
B224A05558HP	B225A05558HP	5,558	.2188	7/32	–	1,0	36	6
B224A05600HP	B225A05600HP	5,600	.2205	–	–	1,1	36	6
B224A05616HP *	–	5,616	.2211	–	2	1,1	36	6
–	B225A05700HP	5,700	.2244	–	–	1,1	36	6
B224A05791HP	B225A05791HP	5,791	.2280	–	1	1,1	36	6
–	B225A05800HP	5,800	.2283	–	–	1,1	36	6
–	B225A05900HP	5,900	.2323	–	–	1,1	36	6
B224A05944HP *	B225A05944HP	5,944	.2340	–	–	1,1	36	6
B224A05954HP *	B225A05954HP	5,954	.2344	15/64	–	1,1	36	6
B224A06000HP	B225A06000HP	6,000	.2362	–	–	1,1	36	6
–	B225A06100HP	6,100	.2402	–	–	1,1	36	8
–	B225A06200HP	6,200	.2441	–	–	1,2	36	8
–	B225A06300HP	6,300	.2480	–	–	1,2	36	8
B224A06350HP	B225A06350HP	6,350	.2500	1/4	–	1,2	36	8
–	B225A06400HP	6,400	.2520	–	–	1,2	36	8
B224A06500HP	B225A06500HP	6,500	.2559	–	–	1,2	36	8
B224A06528HP *	B225A06528HP	6,528	.2570	–	–	1,2	36	8
–	B225A06600HP	6,600	.2598	–	–	1,2	36	8
B224A06630HP	–	6,630	.2610	–	–	1,2	36	8
B224A06700HP *	B225A06700HP	6,700	.2638	–	–	1,3	36	8
B224A06746HP *	B225A06746HP	6,746	.2656	17/64	–	1,3	36	8
B224A06800HP	B225A06800HP	6,800	.2677	–	–	1,3	36	8
–	B225A06900HP	6,900	.2717	–	–	1,3	36	8
B224A06909HP	B225A06909HP	6,909	.2720	–	–	1,3	36	8
B224A07000HP	B225A07000HP	7,000	.2756	–	–	1,3	36	8
–	B225A07100HP	7,100	.2795	–	–	1,3	36	8
B224A07145HP	B225A07145HP	7,145	.2813	9/32	–	1,3	36	8
–	B225A07200HP	7,200	.2835	–	–	1,3	36	8
–	B225A07300HP	7,300	.2874	–	–	1,4	36	8
B224A07366HP *	B225A07366HP	7,366	.2900	–	–	1,4	36	8
B224A07400HP	B225A07400HP	7,400	.2913	–	–	1,4	36	8
B224A07500HP	B225A07500HP	7,500	.2953	–	–	1,4	36	8
B224A07541HP	B225A07541HP	7,541	.2969	19/64	–	1,4	36	8
–	B225A07600HP	7,600	.2992	–	–	1,4	36	8
–	B225A07700HP	7,700	.3031	–	–	1,4	36	8
–	B225A07800HP	7,800	.3071	–	–	1,5	36	8
–	B225A07900HP	7,900	.3110	–	–	1,5	36	8
B224A07938HP	B225A07938HP	7,938	.3125	5/16	–	1,5	36	8
B224A08000HP	B225A08000HP	8,000	.3150	–	–	1,5	36	8
–	B225A08100HP	8,100	.3189	–	–	1,5	40	10
B224A08200HP	B225A08200HP	8,200	.3228	–	–	1,5	40	10

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)



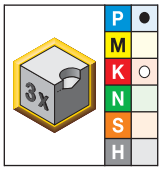


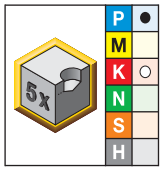
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	B225A08300HP	8,300	.3268	–	–	1,6	40	10
B224A08334HP	B225A08334HP	8,334	.3281	21/64	–	1,6	40	10
–	B225A08400HP	8,400	.3307	–	–	1,6	40	10
B224A08433HP	B225A08433HP	8,433	.3320	–	–	1,6	40	10
B224A08500HP	B225A08500HP	8,500	.3346	–	–	1,6	40	10
–	B225A08600HP	8,600	.3386	–	–	1,6	40	10
B224A08700HP	B225A08700HP	8,700	.3425	–	–	1,6	40	10
B224A08733HP	B225A08733HP	8,733	.3438	11/32	–	1,6	40	10
B224A08800HP	B225A08800HP	8,800	.3465	–	–	1,6	40	10
B224A08839HP *	B225A08839HP	8,839	.3480	–	–	1,7	40	10
–	B225A08900HP	8,900	.3504	–	–	1,7	40	10
B224A09000HP	B225A09000HP	9,000	.3543	–	–	1,7	40	10
B224A09093HP *	B225A09093HP	9,093	.3580	–	–	1,7	40	10
–	B225A09100HP	9,100	.3583	–	–	1,7	40	10
B224A09129HP	B225A09129HP	9,129	.3594	23/64	–	1,7	40	10
–	B225A09200HP	9,200	.3622	–	–	1,7	40	10
–	B225A09300HP	9,300	.3661	–	–	1,7	40	10
–	B225A09347HP	9,347	.3680	–	–	1,7	40	10
B224A09400HP	B225A09400HP	9,400	.3701	–	–	1,8	40	10
B224A09500HP	B225A09500HP	9,500	.3740	–	–	1,8	40	10
B224A09525HP	B225A09525HP	9,525	.3750	3/8	–	1,8	40	10
–	B225A09600HP	9,600	.3780	–	–	1,8	40	10
–	B225A09700HP	9,700	.3819	–	–	1,8	40	10
–	B225A09800HP	9,800	.3858	–	–	1,8	40	10
–	B225A09900HP	9,900	.3898	–	–	1,8	40	10
B224A09921HP *	B225A09921HP	9,921	.3906	25/64	–	1,9	40	10
B224A10000HP	B225A10000HP	10,000	.3937	–	–	1,9	40	10
–	B225A10100HP	10,100	.3976	–	–	1,9	45	12
B224A10200HP	B225A10200HP	10,200	.4016	–	–	1,9	45	12
B224A10300HP	B225A10300HP	10,300	.4055	–	–	1,9	45	12
B224A10320HP	B225A10320HP	10,320	.4063	13/32	–	1,9	45	12
B224A10400HP	B225A10400HP	10,400	.4094	–	–	1,9	45	12
B224A10500HP	B225A10500HP	10,500	.4134	–	–	2,0	45	12
–	B225A10600HP	10,600	.4173	–	–	2,0	45	12
–	B225A10700HP	10,700	.4213	–	–	2,0	45	12
B224A10716HP	B225A10716HP	10,716	.4219	27/64	–	2,0	45	12
B224A10800HP	B225A10800HP	10,800	.4252	–	–	2,0	45	12
–	B225A10900HP	10,900	.4291	–	–	2,0	45	12
B224A11000HP	B225A11000HP	11,000	.4331	–	–	2,1	45	12
–	B225A11100HP	11,100	.4370	–	–	2,1	45	12
B224A11113HP	B225A11113HP	11,113	.4375	7/16	–	2,1	45	12
–	B225A11200HP	11,200	.4409	–	–	2,1	45	12
–	B225A11300HP	11,300	.4449	–	–	2,1	45	12
–	B225A11400HP	11,400	.4488	–	–	2,1	45	12
B224A11500HP	B225A11500HP	11,500	.4528	–	–	2,1	45	12
B224A11509HP	B225A11509HP	11,509	.4531	29/64	–	2,1	45	12
–	B225A11600HP	11,600	.4567	–	–	2,2	45	12
–	B225A11700HP	11,700	.4606	–	–	2,2	45	12
–	B225A11800HP	11,800	.4646	–	–	2,2	45	12
–	B225A11900HP	11,900	.4685	–	–	2,2	45	12
B224A11908HP	B225A11908HP	11,908	.4688	15/32	–	2,2	45	12
B224A12000HP	B225A12000HP	12,000	.4724	–	–	2,2	45	12

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)



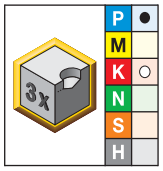


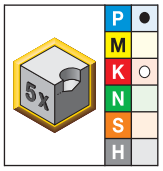
● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	B225A12100HP	12,100	.4764	–	–	2,3	45	14
–	B225A12200HP	12,200	.4803	–	–	2,3	45	14
B224A12300HP	B225A12300HP	12,300	.4843	–	–	2,3	45	14
B224A12304HP *	B225A12304HP	12,304	.4844	31/64	–	2,3	45	14
–	B225A12400HP	12,400	.4882	–	–	2,3	45	14
B224A12500HP	B225A12500HP	12,500	.4921	–	–	2,3	45	14
–	B225A12600HP	12,600	.4961	–	–	2,3	45	14
B224A12700HP	B225A12700HP	12,700	.5000	1/2	–	2,4	45	14
B224A12800HP *	B225A12800HP	12,800	.5039	–	–	2,4	45	14
–	B225A12900HP	12,900	.5079	–	–	2,4	45	14
B224A13000HP	B225A13000HP	13,000	.5118	–	–	2,4	45	14
B224A13096HP *	–	13,096	.5156	33/64	–	2,4	45	14
B224A13100HP	B225A13100HP	13,100	.5157	–	–	2,4	45	14
–	B225A13200HP	13,200	.5197	–	–	2,5	45	14
–	B225A13300HP	13,300	.5236	–	–	2,5	45	14
–	B225A13400HP	13,400	.5276	–	–	2,5	45	14
B224A13495HP	B225A13495HP	13,495	.5313	17/32	–	2,5	45	14
B224A13500HP	B225A13500HP	13,500	.5315	–	–	2,5	45	14
–	B225A13600HP	13,600	.5354	–	–	2,5	45	14
–	B225A13700HP	13,700	.5394	–	–	2,6	45	14
–	B225A13800HP	13,800	.5433	–	–	2,6	45	14
B224A13891HP	B225A13891HP *	13,891	.5469	35/64	–	2,6	45	14
–	B225A13900HP	13,900	.5472	–	–	2,6	45	14
B224A14000HP	B225A14000HP	14,000	.5512	–	–	2,6	45	14
–	B225A14100HP	14,100	.5551	–	–	2,6	48	16
B224A14200HP *	B225A14200HP	14,200	.5591	–	–	2,6	48	16
B224A14288HP	B225A14288HP	14,288	.5625	9/16	–	2,7	48	16
–	B225A14300HP	14,300	.5630	–	–	2,7	48	16
–	B225A14400HP	14,400	.5669	–	–	2,7	48	16
B224A14500HP	B225A14500HP	14,500	.5709	–	–	2,7	48	16
–	B225A14600HP	14,600	.5748	–	–	2,7	48	16
B224A14684HP	B225A14684HP *	14,684	.5781	37/64	–	2,7	48	16
–	B225A14700HP	14,700	.5787	–	–	2,7	48	16
–	B225A14800HP	14,800	.5827	–	–	2,8	48	16
–	B225A14900HP *	14,900	.5866	–	–	2,8	48	16
–	B225A15000HP	15,000	.5906	–	–	2,8	48	16
B224A15083HP *	B225A15083HP *	15,083	.5938	19/32	–	2,8	48	16
–	B225A15100HP	15,100	.5945	–	–	2,8	48	16
–	B225A15200HP	15,200	.5984	–	–	2,8	48	16
–	B225A15300HP	15,300	.6024	–	–	2,8	48	16
–	B225A15400HP	15,400	.6063	–	–	2,9	48	16
–	B225A15479HP *	15,479	.6094	39/64	–	2,9	48	16
B224A15500HP	B225A15500HP	15,500	.6102	–	–	2,9	48	16
B224A15600HP	B225A15600HP	15,600	.6142	–	–	2,9	48	16
–	B225A15700HP	15,700	.6181	–	–	2,9	48	16
–	B225A15800HP	15,800	.6220	–	–	2,9	48	16
B224A15875HP	B225A15875HP	15,875	.6250	5/8	–	3,0	48	16
–	B225A15900HP *	15,900	.6260	–	–	3,0	48	16
B224A16000HP	B225A16000HP	16,000	.6299	–	–	3,0	48	16
–	B225A16100HP	16,100	.6339	–	–	3,0	48	18
B224A16500HP	B225A16500HP	16,500	.6496	–	–	3,1	48	18
–	B225A16670HP	16,670	.6563	21/32	–	3,1	48	18

(continued)

(B224/B225_HP • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KCPK15	long • KCPK15	D1 diameter mm	D1 diameter in	D1 diameter fraction	D1 diameter wire size	L5	LS	D
B224A17000HP	**B225A17000HP**	17,000	.6693	–	–	3,2	48	18
B224A17463HP	**B225A17463HP**	17,463	.6875	11/16	–	3,2	48	18
B224A17500HP	**B225A17500HP**	17,500	.6890	–	–	3,3	48	18
–	**B225A17700HP**	17,700	.6969	–	–	3,3	48	18
B224A18000HP	**B225A18000HP**	18,000	.7087	–	–	3,3	48	18
–	**B225A18500HP**	18,500	.7283	–	–	3,4	50	20
B224A19000HP	**B225A19000HP**	19,000	.7480	–	–	3,5	50	20
B224A19050HP *	**B225A19050HP**	19,050	.7500	3/4	–	3,5	50	20
–	**B225A19200HP**	19,200	.7559	–	–	3,6	50	20
–	**B225A19250HP**	19,250	.7579	–	–	3,6	50	20
–	**B225A19300HP**	19,300	.7598	–	–	3,6	50	20
–	**B225A19500HP**	19,500	.7677	–	–	3,6	50	20
B224A20000HP	**B225A20000HP**	20,000	.7874	–	–	3,7	50	20
–	**B225A20500HP**	20,500	.8071	–	–	3,8	50	20
–	**B225A21000HP**	21,000	.8268	–	–	3,9	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

HP Drills • B224_HP, B225_HP Series • Grade KCPK15™ • Through Coolant or MQL (Minimum Quantity Lubricant) • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	140	**240**	290	mm/r	0,08–0,15	0,09–0,18	0,12–0,21	0,14–0,29	0,15–0,33	0,17–0,37	0,19–0,43	0,22–0,49
P	1	130	**240**	290	mm/r	0,09–0,18	0,11–0,21	0,14–0,25	0,16–0,34	0,18–0,39	0,20–0,43	0,22–0,51	0,26–0,58
P	2	190	**230**	270	mm/r	0,09–0,18	0,11–0,21	0,14–0,25	0,16–0,34	0,18–0,39	0,20–0,43	0,26–0,51	0,32–0,58
P	3	130	**160**	190	mm/r	0,10–0,18	0,12–0,21	0,14–0,26	0,16–0,34	0,19–0,39	0,24–0,46	0,27–0,51	0,34–0,60
P	4	110	**150**	170	mm/r	0,07–0,16	0,09–0,18	0,14–0,26	0,16–0,34	0,17–0,36	0,22–0,45	0,25–0,52	0,30–0,60
P	5	60	**80**	90	mm/r	0,06–0,14	0,08–0,16	0,10–0,20	0,14–0,25	0,16–0,28	0,18–0,32	0,22–0,40	0,26–0,48
P	6	110	**150**	190	mm/r	0,07–0,13	0,11–0,16	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
K	1	120	**150**	200	mm/r	0,08–0,11	0,14–0,20	0,20–0,28	0,25–0,35	0,29–0,40	0,32–0,43	0,36–0,50	0,40–0,55
K	2	80	**120**	160	mm/r	0,08–0,11	0,13–0,17	0,19–0,26	0,23–0,30	0,25–0,36	0,30–0,40	0,34–0,46	0,37–0,50
K	3	60	**80**	120	mm/r	0,07–0,10	0,10–0,14	0,15–0,21	0,19–0,26	0,22–0,30	0,24–0,33	0,28–0,38	0,30–0,41

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	460	**790**	950	IPR	.003–.006	.004–.007	.005–.008	.006–.011	.006–.013	.007–.015	.008–.017	.009–.019
P	1	430	**790**	950	IPR	.004–.007	.004–.008	.006–.010	.006–.013	.007–.015	.008–.017	.009–.020	.010–.023
P	2	620	**750**	890	IPR	.004–.007	.004–.008	.006–.010	.006–.013	.007–.015	.008–.017	.010–.020	.013–.023
P	3	430	**520**	620	IPR	.004–.007	.005–.008	.006–.010	.006–.013	.008–.015	.009–.018	.011–.020	.013–.024
P	4	360	**490**	560	IPR	.003–.006	.004–.007	.006–.010	.006–.013	.007–.014	.009–.018	.010–.021	.012–.024
P	5	200	**260**	300	IPR	.002–.006	.003–.006	.004–.008	.006–.010	.006–.011	.007–.013	.009–.016	.010–.019
P	6	360	**490**	620	IPR	.003–.005	.004–.006	.005–.008	.006–.011	.007–.013	.008–.015	.009–.017	.010–.019
K	1	390	**490**	660	IPR	.003–.004	.006–.008	.008–.011	.010–.014	.011–.016	.013–.017	.014–.020	.016–.022
K	2	260	**390**	520	IPR	.003–.004	.005–.007	.008–.010	.009–.012	.010–.014	.012–.016	.013–.018	.015–.020
K	3	200	**260**	390	IPR	.003–.004	.004–.006	.006–.008	.008–.010	.009–.012	.009–.013	.011–.015	.012–.016

YPC Beyond™ Solid Carbide Drills with Through Coolant for Iron

beyond

Primary Application

The B25_YPC series solid carbide drills are specifically engineered to deliver best-in-class hole quality and longest tool life in cast iron, ductile iron, CGI, and ADI. Operate these drills with standard through coolant or MQL.

The B25_YPC Beyond solid carbide drill combines unique Kennametal technologies, such as the Y-TECH™ flute spacing, the HP-point geometry, the KCK10™ Beyond grade, and the latest, proprietary post-coat treatment technology into one tool.

Features and Benefits

Y-TECH Technology with Uneven Flute-to-Flute Angle

- Unbalanced forces by design avoid chipping on margin lands.

Three-Margin Lands

- Reduce pendulum motion by directing forces towards third margin for superior hole accuracy (cylindricity, constant diameter, hole straightness).

New HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.
- Highest possible feed rates.

Corner Chamfer

- Avoids breakout when drilling through holes in gray iron.
- Significantly increases tool life at elevated speeds and feeds.

KCK10 Beyond Grade

- The grade contains multiple layers of PVD coating offering outstanding wear resistance for the drilling of cast irons.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant or MQL is applied.

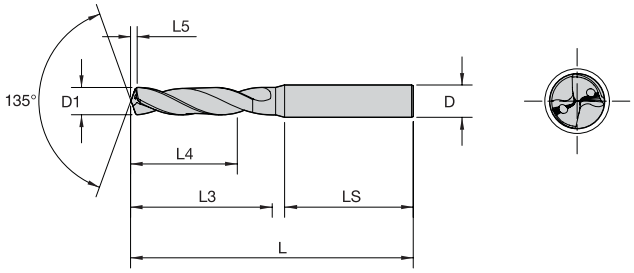
Y-TECH™ technology for superior hole quality.



Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Using Kennametal slim line hydraulic chucks together with standard B25_YPC is recommended if workpiece contours need to be bypassed.



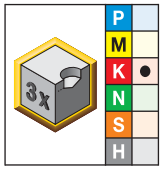


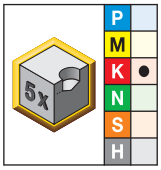


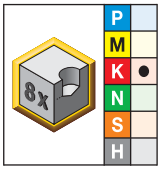
For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

beyond

B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D





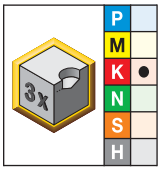


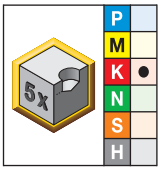
● first choice
○ alternate choice

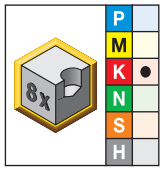
short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	in	fraction	wire size	L5	LS	D
B254A03000YPC	B255A03000YPC	B256A03000YPC	3,000	.1181	–	–	0,9	36	6
B254A03048YPC *	B255A03048YPC	–	3,048	.1200	–	31	0,9	36	6
–	B255A03175YPC *	B256A03175YPC	3,175	.1250	1/8	–	0,9	36	6
B254A03200YPC	B255A03200YPC	–	3,200	.1260	–	–	0,9	36	6
–	B255A03250YPC	–	3,250	.1280	–	–	0,9	36	6
–	–	B256A03264YPC	3,264	.1285	–	30	0,9	36	6
B254A03300YPC *	B255A03300YPC	–	3,300	.1299	–	–	0,9	36	6
–	B255A03400YPC *	–	3,400	.1339	–	–	1,0	36	6
B254A03454YPC *	–	–	3,454	.1360	–	29	1,0	36	6
B254A03500YPC	B255A03500YPC *	B256A03500YPC	3,500	.1378	–	–	1,0	36	6
B254A03600YPC *	B255A03600YPC *	–	3,600	.1417	–	–	1,0	36	6
–	B255A03700YPC	B256A03700YPC *	3,700	.1457	–	–	1,0	36	6
–	B255A03797YPC	–	3,797	.1495	–	25	1,1	36	6
B254A03800YPC *	B255A03800YPC	B256A03800YPC *	3,800	.1496	–	–	1,1	36	6
B254A03861YPC *	B255A03861YPC *	–	3,861	.1520	–	24	1,1	36	6
–	B255A03970YPC *	–	3,970	.1563	5/32	–	1,1	36	6
B254A04000YPC	B255A04000YPC	B256A04000YPC	4,000	.1575	–	–	1,1	36	6
B254A04039YPC	B255A04039YPC	–	4,039	.1590	–	21	1,1	36	6
B254A04100YPC	B255A04100YPC	B256A04100YPC	4,100	.1614	–	–	1,1	36	6
B254A04200YPC	B255A04200YPC	B256A04200YPC	4,200	.1654	–	–	1,2	36	6
–	B255A04217YPC	–	4,217	.1660	–	19	1,2	36	6
–	B255A04300YPC	B256A04300YPC *	4,300	.1693	–	–	1,2	36	6
–	B255A04366YPC *	B256A04366YPC *	4,366	.1719	11/64	–	1,2	36	6
B254A04500YPC	B255A04500YPC	B256A04500YPC	4,500	.1772	–	–	1,2	36	6
B254A04572YPC	B255A04572YPC	–	4,572	.1800	–	15	1,3	36	6
–	B255A04600YPC *	–	4,600	.1811	–	–	1,3	36	6
–	–	B256A04623YPC	4,623	.1820	–	14	1,3	36	6
–	B255A04700YPC *	B256A04700YPC	4,700	.1850	–	13	1,3	36	6
B254A04763YPC *	–	–	4,763	.1875	3/16	–	1,3	36	6
B254A04800YPC	B255A04800YPC	B256A04800YPC	4,800	.1890	–	12	1,3	36	6
–	–	B256A04852YPC *	4,852	.1910	–	11	1,3	36	6
–	B255A04900YPC *	–	4,900	.1929	–	–	1,3	36	6

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)





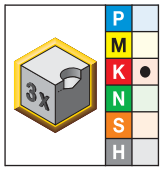


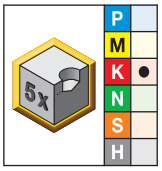
● first choice
○ alternate choice

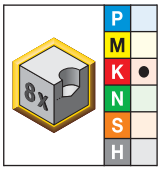
short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	in	fraction	wire size	L5	LS	D
B254A05000YPC	B255A05000YPC	B256A05000YPC	5,000	.1969	–	–	1,4	36	6
B254A05055YPC	B255A05055YPC	–	5,055	.1990	–	8	1,4	36	6
B254A05100YPC	B255A05100YPC	B256A05100YPC	5,100	.2008	–	–	1,4	36	6
B254A05106YPC *	–	–	5,106	.2010	–	7	1,4	36	6
–	B255A05159YPC *	–	5,159	.2031	13/64	–	1,4	36	6
–	B255A05200YPC	B256A05200YPC *	5,200	.2047	–	–	1,4	36	6
–	B255A05250YPC	–	5,250	.2067	–	–	1,4	36	6
B254A05300YPC *	B255A05300YPC *	–	5,300	.2087	–	–	1,4	36	6
–	B255A05400YPC *	–	5,400	.2126	–	–	1,5	36	6
–	B255A05410YPC *	–	5,410	.2130	–	3	1,5	36	6
B254A05500YPC *	B255A05500YPC	B256A05500YPC	5,500	.2165	–	–	1,5	36	6
B254A05558YPC *	B255A05558YPC *	–	5,558	.2188	7/32	–	1,5	36	6
–	B255A05600YPC	B256A05600YPC	5,600	.2205	–	–	1,5	36	6
–	B255A05700YPC *	–	5,700	.2244	–	–	1,5	36	6
B254A05791YPC	B255A05791YPC *	–	5,791	.2280	–	1	1,6	36	6
B254A05800YPC	B255A05800YPC	B256A05800YPC	5,800	.2283	–	–	1,6	36	6
–	–	B256A05900YPC	5,900	.2323	–	–	1,6	36	6
B254A06000YPC	B255A06000YPC	B256A06000YPC	6,000	.2362	–	–	1,6	36	6
B254A06100YPC *	B255A06100YPC *	–	6,100	.2402	–	–	1,6	36	8
B254A06200YPC *	B255A06200YPC	B256A06200YPC	6,200	.2441	–	–	1,7	36	8
–	B255A06300YPC	–	6,300	.2480	–	–	1,7	36	8
–	B255A06350YPC *	B256A06350YPC	6,350	.2500	1/4	–	1,7	36	8
–	B255A06400YPC	B256A06400YPC	6,400	.2520	–	–	1,7	36	8
B254A06500YPC *	B255A06500YPC	B256A06500YPC	6,500	.2559	–	–	1,7	36	8
B254A06528YPC	–	–	6,528	.2570	–	–	1,7	36	8
B254A06600YPC *	B255A06600YPC	B256A06600YPC *	6,600	.2598	–	–	1,8	36	8
–	B255A06630YPC	–	6,630	.2610	–	–	1,8	36	8
B254A06700YPC *	B255A06700YPC *	B256A06700YPC *	6,700	.2638	–	–	1,8	36	8
B254A06746YPC *	B255A06746YPC	–	6,746	.2656	17/64	–	1,8	36	8
B254A06800YPC	B255A06800YPC	B256A06800YPC	6,800	.2677	–	–	1,8	36	8
B254A06900YPC *	B255A06900YPC	–	6,900	.2717	–	–	1,8	36	8
–	B255A06909YPC *	–	6,909	.2720	–	–	1,8	36	8
B254A07000YPC	B255A07000YPC	B256A07000YPC	7,000	.2756	–	–	1,9	36	8
B254A07100YPC *	–	–	7,100	.2795	–	–	1,9	36	8
–	B255A07145YPC *	–	7,145	.2813	9/32	–	1,9	36	8
–	B255A07200YPC	–	7,200	.2835	–	–	1,9	36	8
–	–	B256A07300YPC *	7,300	.2874	–	–	1,9	36	8
B254A07366YPC *	–	–	7,366	.2900	–	–	1,9	36	8
–	B255A07400YPC	–	7,400	.2913	–	–	2,0	36	8
B254A07493YPC *	B255A07493YPC *	–	7,493	.2950	–	–	2,0	36	8
B254A07500YPC	B255A07500YPC *	B256A07500YPC	7,500	.2953	–	–	2,0	36	8
–	B255A07541YPC	–	7,541	.2969	19/64	–	2,0	36	8
B254A07600YPC *	B255A07600YPC *	B256A07600YPC	7,600	.2992	–	–	2,0	36	8
–	B255A07700YPC	–	7,700	.3031	–	–	2,0	36	8
B254A07800YPC	B255A07800YPC	B256A07800YPC	7,800	.3071	–	–	2,1	36	8
–	B255A07900YPC	–	7,900	.3110	–	–	2,1	36	8
B254A07938YPC	B255A07938YPC	–	7,938	.3125	5/16	–	2,1	36	8
B254A08000YPC	B255A08000YPC	B256A08000YPC	8,000	.3150	–	–	2,1	36	8
B254A08100YPC	B255A08100YPC *	–	8,100	.3189	–	–	2,1	40	10
B254A08200YPC	B255A08200YPC	B256A08200YPC	8,200	.3228	–	–	2,1	40	10
–	B255A08300YPC	B256A08300YPC	8,300	.3268	–	–	2,2	40	10
B254A08334YPC *	–	–	8,334	.3281	21/64	–	2,2	40	10

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)





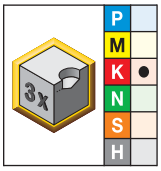


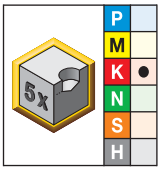
● first choice
○ alternate choice

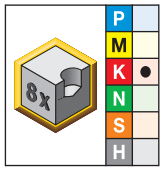
short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	in	fraction	wire size	L5	LS	D
B254A08400YPC	–	–	8,400	.3307	–	–	2,2	40	10
B254A08433YPC *	B255A08433YPC	–	8,433	.3320	–	–	2,2	40	10
B254A08500YPC	B255A08500YPC	B256A08500YPC	8,500	.3346	–	–	2,2	40	10
B254A08600YPC	B255A08600YPC	B256A08600YPC	8,600	.3386	–	–	2,2	40	10
B254A08700YPC	B255A08700YPC	B256A08700YPC *	8,700	.3425	–	–	2,3	40	10
B254A08800YPC	B255A08800YPC	B256A08800YPC	8,800	.3465	–	–	2,3	40	10
B254A08839YPC *	B255A08839YPC *	–	8,839	.3480	–	–	2,3	40	10
–	B255A08900YPC *	–	8,900	.3504	–	–	2,3	40	10
B254A09000YPC	B255A09000YPC	B256A09000YPC	9,000	.3543	–	–	2,3	40	10
–	B255A09093YPC *	–	9,093	.3580	–	–	2,4	40	10
B254A09100YPC *	B255A09100YPC	B256A09100YPC	9,100	.3583	–	–	2,4	40	10
–	B255A09129YPC *	–	9,129	.3594	23/64	–	2,4	40	10
B254A09200YPC	B255A09200YPC *	–	9,200	.3622	–	–	2,4	40	10
–	B255A09300YPC	B256A09300YPC	9,300	.3661	–	–	2,4	40	10
–	–	B256A09347YPC	9,347	.3680	–	–	2,4	40	10
B254A09400YPC *	B255A09400YPC	–	9,400	.3701	–	–	2,4	40	10
B254A09500YPC	B255A09500YPC	B256A09500YPC	9,500	.3740	–	–	2,5	40	10
B254A09525YPC *	B255A09525YPC *	–	9,525	.3750	3/8	–	2,5	40	10
–	B255A09600YPC	B256A09600YPC	9,600	.3780	–	–	2,5	40	10
–	B255A09700YPC	B256A09700YPC *	9,700	.3819	–	–	2,5	40	10
B254A09800YPC	B255A09800YPC *	B256A09800YPC	9,800	.3858	–	–	2,5	40	10
B254A09921YPC *	B255A09921YPC	–	9,921	.3906	25/64	–	2,6	40	10
B254A10000YPC	B255A10000YPC	B256A10000YPC	10,000	.3937	–	–	2,6	40	10
B254A10200YPC	B255A10200YPC	B256A10200YPC	10,200	.4016	–	–	2,6	45	12
B254A10262YPC	B255A10262YPC *	–	10,262	.4040	–	–	2,6	45	12
B254A10300YPC	B255A10300YPC	B256A10300YPC	10,300	.4055	–	–	2,6	45	12
B254A10320YPC	B255A10320YPC *	–	10,320	.4063	13/32	–	2,7	45	12
–	B255A10400YPC *	B256A10400YPC	10,400	.4094	–	–	2,7	45	12
B254A10490YPC *	–	–	10,490	.4130	–	–	2,7	45	12
B254A10500YPC	B255A10500YPC	B256A10500YPC	10,500	.4134	–	–	2,7	45	12
–	B255A10600YPC	–	10,600	.4173	–	–	2,7	45	12
B254A10700YPC	–	B256A10700YPC	10,700	.4213	–	–	2,7	45	12
–	B255A10716YPC	–	10,716	.4219	27/64	–	2,7	45	12
B254A10800YPC	B255A10800YPC	B256A10800YPC	10,800	.4252	–	–	2,8	45	12
–	B255A10900YPC *	–	10,900	.4291	–	–	2,8	45	12
B254A11000YPC	B255A11000YPC	B256A11000YPC	11,000	.4331	–	–	2,8	45	12
B254A11100YPC *	B255A11100YPC	–	11,100	.4370	–	–	2,8	45	12
B254A11113YPC *	B255A11113YPC	–	11,113	.4375	7/16	–	2,8	45	12
B254A11200YPC	B255A11200YPC	B256A11200YPC	11,200	.4409	–	–	2,9	45	12
–	–	B256A11300YPC *	11,300	.4449	–	–	2,9	45	12
B254A11500YPC	B255A11500YPC	B256A11500YPC	11,500	.4528	–	–	2,9	45	12
–	–	B256A11600YPC	11,600	.4567	–	–	3,0	45	12
–	B255A11700YPC	–	11,700	.4606	–	–	3,0	45	12
B254A11800YPC	B255A11800YPC	B256A11800YPC	11,800	.4646	–	–	3,0	45	12
–	B255A11900YPC	B256A11900YPC	11,900	.4685	–	–	3,0	45	12
B254A11908YPC *	B255A11908YPC *	–	11,908	.4688	15/32	–	3,0	45	12
B254A12000YPC	B255A12000YPC	B256A12000YPC	12,000	.4724	–	–	3,1	45	12
–	B255A12100YPC	–	12,100	.4764	–	–	3,1	45	14
B254A12200YPC	B255A12200YPC	B256A12200YPC	12,200	.4803	–	–	3,1	45	14
–	B255A12251YPC	–	12,251	.4823	–	–	3,1	45	14
–	B255A12300YPC *	B256A12300YPC	12,300	.4843	–	–	3,1	45	14
B254A12304YPC *	B255A12304YPC *	–	12,304	.4844	31/64	–	3,1	45	14

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)





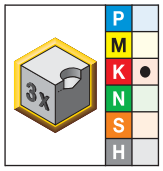


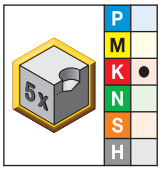
● first choice
○ alternate choice

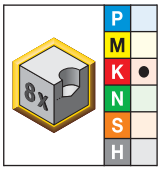
short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	–	B256A12400YPC *	12,400	.4882	–	–	3,1	45	14
B254A12500YPC	B255A12500YPC	B256A12500YPC	12,500	.4921	–	–	3,2	45	14
–	B255A12700YPC	B256A12700YPC	12,700	.5000	1/2	–	3,2	45	14
B254A12800YPC	–	B256A12800YPC	12,800	.5039	–	–	3,2	45	14
B254A13000YPC	B255A13000YPC	B256A13000YPC	13,000	.5118	–	–	3,3	45	14
–	B255A13096YPC *	B256A13096YPC	13,096	.5156	33/64	–	3,3	45	14
B254A13100YPC	–	–	13,100	.5157	–	–	3,3	45	14
B254A13200YPC	–	B256A13200YPC	13,200	.5197	–	–	3,3	45	14
–	B255A13495YPC	B256A13495YPC	13,495	.5313	17/32	–	3,4	45	14
B254A13500YPC	B255A13500YPC	B256A13500YPC	13,500	.5315	–	–	3,4	45	14
–	–	B256A13700YPC	13,700	.5394	–	–	3,5	45	14
B254A13800YPC	–	B256A13800YPC	13,800	.5433	–	–	3,5	45	14
B254A13891YPC *	–	B256A13891YPC *	13,891	.5469	35/64	–	3,5	45	14
B254A14000YPC	B255A14000YPC	B256A14000YPC	14,000	.5512	–	–	3,5	45	14
B254A14100YPC *	B255A14100YPC *	–	14,100	.5551	–	–	3,6	48	16
B254A14288YPC	B255A14288YPC	–	14,288	.5625	9/16	–	3,6	48	16
B254A14500YPC	B255A14500YPC	B256A14500YPC	14,500	.5709	–	–	3,6	48	16
–	B255A14600YPC *	–	14,600	.5748	–	–	3,7	48	16
–	B255A14684YPC	B256A14684YPC *	14,684	.5781	37/64	–	3,7	48	16
B254A14800YPC	–	B256A14800YPC	14,800	.5827	–	–	3,7	48	16
B254A15000YPC	B255A15000YPC	B256A15000YPC	15,000	.5906	–	–	3,8	48	16
–	B255A15083YPC	B256A15083YPC *	15,083	.5938	19/32	–	3,8	48	16
B254A15200YPC	–	B256A15200YPC	15,200	.5984	–	–	3,8	48	16
B254A15250YPC *	B255A15250YPC	–	15,250	.6004	–	–	3,8	48	16
–	–	B256A15300YPC	15,300	.6024	–	–	3,8	48	16
B254A15400YPC	B255A15400YPC *	–	15,400	.6063	–	–	3,9	48	16
B254A15500YPC	B255A15500YPC *	B256A15500YPC	15,500	.6102	–	–	3,9	48	16
B254A15800YPC	B255A15800YPC	B256A15800YPC *	15,800	.6220	–	–	4,0	48	16
–	B255A15875YPC *	–	15,875	.6250	5/8	–	4,0	48	16
B254A16000YPC	B255A16000YPC	B256A16000YPC	16,000	.6299	–	–	4,0	48	16
–	B255A16300YPC	B256A16300YPC	16,300	.6417	–	–	4,1	48	18
B254A16500YPC	B255A16500YPC	B256A16500YPC	16,500	.6496	–	–	4,1	48	18
B254A16670YPC *	B255A16670YPC	–	16,670	.6563	21/32	–	4,2	48	18
B254A16800YPC	B255A16800YPC	B256A16800YPC	16,800	.6614	–	–	4,2	48	18
B254A17000YPC	B255A17000YPC	B256A17000YPC	17,000	.6693	–	–	4,2	48	18
–	B255A17200YPC *	–	17,200	.6772	–	–	4,3	48	18
B254A17463YPC *	B255A17463YPC	–	17,463	.6875	11/16	–	4,3	48	18
B254A17500YPC	B255A17500YPC	B256A17500YPC	17,500	.6890	–	–	4,3	48	18
B254A17800YPC	B255A17800YPC	B256A17800YPC	17,800	.7008	–	–	4,4	48	18
B254A17859YPC *	B255A17859YPC	–	17,859	.7031	45/64	–	4,4	48	18
B254A18000YPC	B255A18000YPC	B256A18000YPC	18,000	.7087	–	–	4,5	48	18
B254A18200YPC *	–	–	18,200	.7165	–	–	4,5	50	20
B254A18258YPC *	B255A18258YPC	B256A18258YPC *	18,258	.7188	23/32	–	4,5	50	20
B254A18500YPC *	B255A18500YPC	B256A18500YPC	18,500	.7283	–	–	4,6	50	20
B254A18800YPC	B255A18800YPC	B256A18800YPC	18,800	.7402	–	–	4,7	50	20
B254A19000YPC	B255A19000YPC	B256A19000YPC	19,000	.7480	–	–	4,7	50	20
B254A19050YPC *	–	–	19,050	.7500	3/4	–	4,7	50	20
–	B255A19500YPC	B256A19500YPC	19,500	.7677	–	–	4,8	50	20
–	B255A19700YPC	–	19,700	.7756	–	–	4,9	50	20
B254A19800YPC	B255A19800YPC	B256A19800YPC	19,800	.7795	–	–	4,9	50	20
B254A20000YPC	B255A20000YPC	B256A20000YPC	20,000	.7874	–	–	4,9	50	20
–	B255A20500YPC	–	20,500	.8071	–	–	5,1	50	20

(continued)

(B254/B255/B256_YPC • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KCK10	long • KCK10	extra long • KCK10	D1 diameter mm	in	fraction	wire size	L5	LS	D
B254A20638YPC *	B255A20638YPC	B256A20638YPC	20,638	.8125	13/16	–	5,1	50	20
B254A21000YPC *	B255A21000YPC *	–	21,000	.8268	–	–	5,2	50	20
B254A22000YPC	B255A22000YPC	B256A22000YPC	22,000	.8661	–	–	5,4	50	20
B254A22225YPC *	B255A22225YPC *	B256A22225YPC *	22,225	.8750	7/8	–	5,5	56	25
B254A23416YPC	B255A23416YPC *	–	23,416	.9219	59/64	–	5,7	56	25
–	B255A24000YPC *	–	24,000	.9449	–	–	5,9	56	25
B254A25000YPC *	B255A25000YPC *	–	25,000	.9843	–	–	6,1	56	25
–	–	B256A25004YPC *	25,004	.9844	63/64	–	6,1	56	25

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

Application Data

YPC Drills • B25_YPC • Grade KCK10™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
					Recommended Feed Rate (f) by Diameter								
K	1	130	**160**	210	mm/r	0,12–0,22	0,14–0,25	0,16–0,32	0,22–0,44	0,30–0,46	0,34–0,50	0,38–0,62	0,42–0,74
	2	90	**130**	180	mm/r	0,12–0,22	0,14–0,25	0,16–0,32	0,22–0,44	0,30–0,46	0,34–0,50	0,38–0,62	0,42–0,74
	3	70	**90**	130	mm/r	0,11–0,17	0,12–0,22	0,22–0,34	0,24–0,46	0,26–0,48	0,28–0,50	0,30–0,62	0,34–0,74

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
					Recommended Feed Rate (f) by Diameter								
K	1	430	**520**	690	IPR	.005–.009	.006–.010	.006–.013	.009–.017	.012–.018	.013–.020	.015–.024	.017–.029
	2	300	**430**	590	IPR	.005–.009	.006–.010	.006–.013	.009–.017	.012–.018	.013–.020	.015–.024	.017–.029
	3	230	**300**	430	IPR	.004–.007	.005–.009	.009–.013	.009–.018	.010–.019	.011–.020	.012–.024	.013–.029

SE 4-Margin Drills with Through Coolant for Steel

High-performance platform for mid-L/D applications in steel.



Primary Application

B256 series solid carbide drills are the high-performance platform for mid-L/D applications in steel that require high accuracy and consistent hole straightness combined with excellent metal removal rates and long tool life.

Features and Benefits

SE Drill-Point Design

- Sculptured edge enables high feed rates.



Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes.

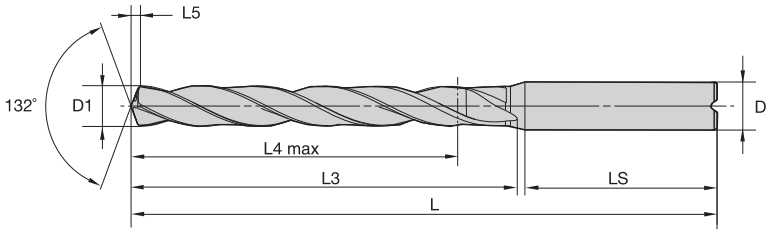
KC7315™ Grade

- Multilayer, TiAlN-based coating with high hot hardness allows 30% higher cutting speeds and constant tool life.
- Optimized tool surface finish ensures chip evacuation when drilling deeper holes.

Customization

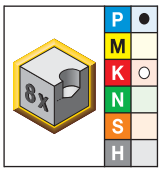
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- For follow-up operations, such as machining screw holes in connecting rods, the point angle of the step drill for the screw head should be adjusted.







B256 • ~8 x D



● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B256A05000	5,000	.1969	—	—	94	56	48	1,0	36	6
B256A05100	5,100	.2008	—	—	94	56	48	1,0	36	6
B256A05500	5,500	.2165	—	—	94	56	48	1,1	36	6
B256A05800	5,800	.2283	—	—	94	56	48	1,2	36	6
B256A06000	6,000	.2362	—	—	94	56	48	1,2	36	6
B256A06500	6,500	.2559	—	—	105	67	57	1,3	36	8
B256A06800	6,800	.2677	—	—	105	67	57	1,4	36	8
B256A07000	7,000	.2756	—	—	105	67	57	1,4	36	8
B256A07800	7,800	.3071	—	—	110	72	61	1,6	36	8
B256A08000	8,000	.3150	—	—	110	72	61	1,6	36	8
B256A08400	8,400	.3307	—	—	122	80	68	1,7	40	10
B256A08500	8,500	.3346	—	—	122	80	68	1,7	40	10
B256A08800	8,800	.3465	—	—	122	80	68	1,8	40	10
B256A09000	9,000	.3543	—	—	122	80	68	1,8	40	10
B256A09500	9,500	.3740	—	—	122	80	68	1,9	40	10
B256A10000	10,000	.3937	—	—	122	80	68	2,0	40	10
B256A10200	10,200	.4016	—	—	141	94	79	2,0	45	12
B256A10500	10,500	.4134	—	—	141	94	79	2,1	45	12
B256A11000	11,000	.4331	—	—	141	94	79	2,2	45	12
B256A11800	11,800	.4646	—	—	141	94	79	2,3	45	12
B256A12000	12,000	.4724	—	—	141	94	79	2,4	45	12
B256A12500	12,500	.4921	—	—	155	108	91	2,5	45	14
B256A13000	13,000	.5118	—	—	155	108	91	2,6	45	14
B256A13500	13,500	.5315	—	—	155	108	91	2,7	45	14
B256A14000	14,000	.5512	—	—	155	108	91	2,8	45	14
B256A15000	15,000	.5906	—	—	171	121	101	3,0	48	16
B256A16000	16,000	.6299	—	—	171	121	101	3,2	48	16

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181 to .2362	.0002/.0006	.0000/-.0003
>.2362 to .3937	.0002/.0008	.0000/-.0004
>.3937 to .7087	.0003/.0010	.0000/-.0004
>.7087 to 1.0000	.0003/.0011	.0000/-.0005

SE Drills • B256 Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm (.1181– .7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter								
						3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	130	**145**	200	mm/r	0,07–0,09	0,08–0,13	0,09–0,13	0,11–0,16	0,11–0,19	0,13–0,23	0,15–0,28	0,19–0,31
	1	120	**145**	175	mm/r	0,08–0,11	0,09–0,15	0,11–0,15	0,13–0,19	0,13–0,22	0,15–0,27	0,18–0,33	0,22–0,37
	2	80	**100**	120	mm/r	0,08–0,11	0,08–0,13	0,09–0,17	0,15–0,21	0,16–0,25	0,18–0,33	0,22–0,42	0,26–0,50
	3	80	**90**	120	mm/r	0,08–0,11	0,09–0,15	0,11–0,15	0,13–0,19	0,13–0,22	0,15–0,27	0,18–0,33	0,22–0,37
	4	60	**70**	80	mm/r	0,06–0,09	0,07–0,13	0,09–0,13	0,11–0,15	0,11–0,17	0,13–0,22	0,15–0,27	0,17–0,30
K	1	120	**150**	200	mm/r	0,08–0,11	0,14–0,20	0,20–0,28	0,25–0,35	0,29–0,40	0,32–0,43	0,36–0,50	0,40–0,55
	2	80	**120**	160	mm/r	0,08–0,11	0,13–0,17	0,19–0,26	0,23–0,30	0,25–0,36	0,30–0,40	0,34–0,46	0,37–0,50
	3	60	**80**	120	mm/r	0,07–0,10	0,10–0,14	0,15–0,21	0,19–0,26	0,22–0,30	0,24–0,33	0,28–0,38	0,30–0,41

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter								
						1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	430	**480**	660	IPR	.003–.004	.003–.005	.004–.005	.004–.006	.004–.008	.005–.009	.006–.011	.008–.012
	1	390	**480**	570	IPR	.003–.004	.004–.006	.004–.006	.005–.008	.005–.009	.006–.011	.007–.013	.009–.015
	2	260	**330**	390	IPR	.003–.004	.003–.005	.004–.007	.006–.008	.006–.010	.007–.013	.009–.017	.010–.020
	3	260	**300**	390	IPR	.003–.004	.004–.006	.004–.006	.005–.008	.005–.009	.006–.011	.007–.013	.009–.015
	4	200	**230**	260	IPR	.002–.004	.003–.005	.004–.005	.004–.006	.004–.007	.005–.009	.006–.011	.007–.012
K	1	390	**490**	660	IPR	.003–.004	.006–.008	.008–.011	.010–.014	.011–.016	.013–.017	.014–.020	.016–.022
	2	260	**390**	520	IPR	.003–.004	.005–.007	.008–.010	.009–.012	.010–.014	.012–.016	.013–.018	.015–.020
	3	200	**260**	390	IPR	.003–.004	.004–.006	.006–.008	.008–.010	.009–.012	.009–.013	.011–.015	.012–.016

HP Beyond™ 4-Margin Long-Length Drills with Through Coolant

Primary Application

B269_HP series solid carbide drills are 12 x D, long-length drills, closing the gap between 8 x D drill (B256_SE) and 15 x D (B271_HP). They are designed for deep-hole applications without pilot drill in steel, cast iron, and stainless steel materials. Operate these drills with standard through coolant or MQL. The drills have a standard A-shank according to DIN 6535 HA (round cylindrical with 2mm steps).

Features and Benefits

Four-Margin Lands

- Improves hole straightness.
- Improves hole alignment when drilling through cross holes or inclined exits.

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.
- Eliminates the need for pilot drilling.

Unique Flute Design

- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. It enables highest cutting speeds and enables the use in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.

Designed for deep-hole applications without pilot drill.

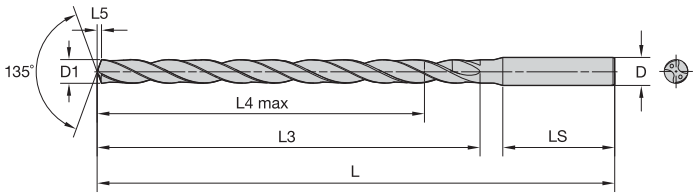


Customization

- Intermediate diameters available as engineered solutions.
- Length variations and step drills available as engineered solutions.



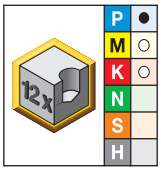






beyond

B269_HP • ~12 x D

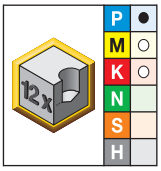


● first choice
○ alternate choice

			D1 diameter							
extra long • KCPK15	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B269A02400KMG	2,400	.0945	–	–	75	42	35	0,5	28	4
B269A02500KMG	2,500	.0984	–	–	75	42	35	0,5	28	4
B269A02600KMG	2,600	.1024	–	–	75	42	35	0,5	28	4
B269A02800KMG	2,800	.1102	–	–	75	43	36	0,6	28	4
B269A02900KMG	2,900	.1142	–	–	75	43	36	0,6	28	4
B269A03000HP	3,000	.1181	–	–	93	52	44	0,6	36	6
B269A03175HP	3,175	.1250	1/8	–	93	52	44	0,6	36	6
B269A03264HP	3,264	.1285	–	30	93	53	44	0,6	36	6
B269A03300HP	3,300	.1299	–	–	93	53	44	0,6	36	6
B269A03400HP *	3,400	.1339	–	–	93	53	44	0,6	36	6
B269A03500HP	3,500	.1378	–	–	93	53	44	0,7	36	6
B269A03600HP	3,600	.1417	–	–	93	54	45	0,7	36	6
B269A03700HP	3,700	.1457	–	–	93	54	45	0,7	36	6
B269A03800HP	3,800	.1496	–	–	107	65	55	0,7	36	6
B269A03970HP	3,970	.1563	5/32	–	107	66	56	0,7	36	6
B269A04000HP	4,000	.1575	–	–	107	66	56	0,8	36	6
B269A04100HP	4,100	.1614	–	–	107	66	55	0,8	36	6
B269A04200HP	4,200	.1654	–	–	107	67	56	0,8	36	6
B269A04300HP	4,300	.1693	–	–	107	67	56	0,8	36	6
B269A04500HP	4,500	.1772	–	–	107	67	56	0,8	36	6
B269A04550HP	4,550	.1791	–	–	107	68	57	0,9	36	6
B269A04600HP	4,600	.1811	–	–	107	68	57	0,9	36	6
B269A04700HP	4,700	.1850	–	13	107	68	57	0,9	36	6
B269A04763HP	4,763	.1875	3/16	–	125	82	69	0,9	36	6
B269A04800HP	4,800	.1890	–	12	125	82	69	0,9	36	6
B269A05000HP	5,000	.1969	–	–	125	83	70	0,9	36	6
B269A05100HP	5,100	.2008	–	–	125	83	70	1,0	36	6
B269A05200HP	5,200	.2047	–	–	125	83	70	1,0	36	6
B269A05300HP	5,300	.2087	–	–	125	84	71	1,0	36	6
B269A05410HP	5,410	.2130	–	3	125	84	71	1,0	36	6
B269A05500HP	5,500	.2165	–	–	125	84	71	1,0	36	6
B269A05558HP	5,558	.2188	7/32	–	125	84	71	1,0	36	6
B269A05600HP	5,600	.2205	–	–	125	85	72	1,1	36	6
B269A05700HP	5,700	.2244	–	–	125	85	72	1,1	36	6
B269A05800HP	5,800	.2283	–	–	125	85	71	1,1	36	6
B269A06000HP	6,000	.2362	–	–	125	86	72	1,1	36	6

(continued)

(B269_HP • ~12 x D — continued)

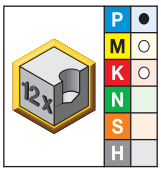


● first choice
○ alternate choice

extra long • KCPK15	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B269A06100HP	6,100	.2402	–	–	139	97	82	1,1	36	8
B269A06200HP	6,200	.2441	–	–	139	97	82	1,2	36	8
B269A06350HP	6,350	.2500	1/4	–	139	98	83	1,2	36	8
B269A06400HP	6,400	.2520	–	–	139	98	83	1,2	36	8
B269A06500HP	6,500	.2559	–	–	139	98	83	1,2	36	8
B269A06528HP	6,528	.2570	–	–	139	98	83	1,2	36	8
B269A06600HP	6,600	.2598	–	–	139	99	84	1,2	36	8
B269A06746HP	6,746	.2656	17/64	–	139	99	83	1,3	36	8
B269A06800HP	6,800	.2677	–	–	139	99	83	1,3	36	8
B269A06909HP	6,909	.2720	–	–	139	100	84	1,3	36	8
B269A07000HP	7,000	.2756	–	–	139	100	84	1,3	36	8
B269A07145HP	7,145	.2813	9/32	–	153	111	94	1,3	36	8
B269A07500HP	7,500	.2953	–	–	153	112	95	1,4	36	8
B269A07541HP	7,541	.2969	19/64	–	153	112	95	1,4	36	8
B269A07700HP	7,700	.3031	–	–	153	113	96	1,4	36	8
B269A07800HP	7,800	.3071	–	–	153	113	95	1,5	36	8
B269A07938HP	7,938	.3125	5/16	–	153	114	96	1,5	36	8
B269A08000HP	8,000	.3150	–	–	153	114	96	1,5	36	8
B269A08100HP	8,100	.3189	–	–	185	136	116	1,5	40	10
B269A08200HP	8,200	.3228	–	–	185	136	116	1,5	40	10
B269A08334HP	8,334	.3281	21/64	–	185	137	117	1,6	40	10
B269A08433HP	8,433	.3320	–	–	185	137	117	1,6	40	10
B269A08500HP	8,500	.3346	–	–	185	137	117	1,6	40	10
B269A08600HP	8,600	.3386	–	–	185	138	118	1,6	40	10
B269A08700HP	8,700	.3425	–	–	185	138	118	1,6	40	10
B269A08733HP	8,733	.3438	11/32	–	185	138	117	1,6	40	10
B269A09000HP	9,000	.3543	–	–	185	139	118	1,7	40	10
B269A09100HP	9,100	.3583	–	–	185	139	118	1,7	40	10
B269A09129HP *	9,129	.3594	23/64	–	185	139	118	1,7	40	10
B269A09500HP	9,500	.3740	–	–	185	140	119	1,8	40	10
B269A09525HP	9,525	.3750	3/8	–	185	140	119	1,8	40	10
B269A09800HP	9,800	.3858	–	–	185	141	119	1,8	40	10
B269A09921HP	9,921	.3906	25/64	–	185	142	120	1,9	40	10
B269A10000HP	10,000	.3937	–	–	185	142	120	1,9	40	10
B269A10200HP	10,200	.4016	–	–	218	164	140	1,9	45	12
B269A10300HP	10,300	.4055	–	–	218	165	141	1,9	45	12
B269A10320HP	10,320	.4063	13/32	–	218	165	141	1,9	45	12
B269A10400HP	10,400	.4094	–	–	218	165	141	1,9	45	12
B269A10500HP	10,500	.4134	–	–	218	165	141	2,0	45	12
B269A10716HP	10,716	.4219	27/64	–	218	166	142	2,0	45	12
B269A10800HP	10,800	.4252	–	–	218	166	141	2,0	45	12
B269A11000HP	11,000	.4331	–	–	218	167	142	2,1	45	12
B269A11113HP	11,113	.4375	7/16	–	218	167	142	2,1	45	12
B269A11200HP	11,200	.4409	–	–	218	167	142	2,1	45	12
B269A11500HP	11,500	.4528	–	–	218	168	143	2,1	45	12
B269A11800HP	11,800	.4646	–	–	218	169	143	2,2	45	12
B269A12000HP	12,000	.4724	–	–	218	170	144	2,2	45	12
B269A12100HP	12,100	.4764	–	–	246	192	164	2,3	45	14
B269A12200HP	12,200	.4803	–	–	246	192	164	2,3	45	14
B269A12304HP	12,304	.4844	31/64	–	246	193	165	2,3	45	14
B269A12500HP	12,500	.4921	–	–	246	193	165	2,3	45	14
B269A12700HP	12,700	.5000	1/2	–	246	194	166	2,4	45	14

(continued)

(B269_HP • ~12 x D — continued)



● first choice
○ alternate choice

	D1 diameter									
extra long • KCPK15	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B269A13000HP	13,000	.5118	—	—	246	195	166	2,4	45	14
B269A13100HP	13,100	.5157	—	—	246	195	166	2,4	45	14
B269A13500HP	13,500	.5315	—	—	246	196	167	2,5	45	14
B269A13800HP *	13,800	.5433	—	—	246	197	168	2,6	45	14
B269A14000HP	14,000	.5512	—	—	246	198	168	2,6	45	14
B269A14100HP *	14,100	.5551	—	—	277	220	188	2,6	48	16
B269A14288HP	14,288	.5625	9/16	—	277	220	188	2,7	48	16
B269A14500HP	14,500	.5709	—	—	277	221	189	2,7	48	16
B269A14600HP *	14,600	.5748	—	—	277	221	189	2,7	48	16
B269A14684HP	14,684	.5781	37/64	—	277	222	190	2,7	48	16
B269A15000HP	15,000	.5906	—	—	277	223	190	2,8	48	16
B269A15200HP *	15,200	.5984	—	—	277	223	190	2,8	48	16
B269A15500HP	15,500	.6102	—	—	277	224	191	2,9	48	16
B269A15875HP	15,875	.6250	5/8	—	277	225	192	3,0	48	16
B269A16000HP	16,000	.6299	—	—	277	226	192	3,0	48	16
B269A16500HP	16,500	.6496	—	—	305	249	213	3,1	48	18
B269A17000HP	17,000	.6693	—	—	305	250	214	3,2	48	18
B269A17100HP	17,100	.6732	—	—	305	251	214	3,2	48	18
B269A17463HP	17,463	.6875	11/16	—	305	252	215	3,2	48	18
B269A17500HP	17,500	.6890	—	—	305	252	215	3,3	48	18
B269A17600HP *	17,600	.6929	—	—	305	252	215	3,3	48	18
B269A18000HP	18,000	.7087	—	—	305	253	216	3,3	48	18
B269A18500HP	18,500	.7283	—	—	334	277	237	3,4	50	20
B269A18600HP *	18,600	.7323	—	—	334	277	237	3,5	50	20
B269A19000HP	19,000	.7480	—	—	334	278	238	3,5	50	20
B269A19050HP	19,050	.7500	3/4	—	334	279	239	3,5	50	20
B269A19500HP	19,500	.7677	—	—	334	280	239	3,6	50	20
B269A20000HP	20,000	.7874	—	—	334	281	240	3,7	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

HP Drills • B269_HP Series • Grade KCPK15™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	110	**140**	170	mm/r		0,10–0,14	0,12–0,20	0,14–0,20	0,17–0,25	0,25–0,28	0,20–0,35	0,23–0,43	0,28–0,48
	1	100	**140**	150	mm/r		0,12–0,17	0,14–0,23	0,17–0,23	0,20–0,29	0,29–0,33	0,23–0,41	0,27–0,50	0,33–0,56
	2	70	**100**	110	mm/r		0,12–0,17	0,12–0,20	0,14–0,26	0,23–0,32	0,24–0,38	0,27–0,50	0,33–0,63	0,39–0,75
	3	70	**90**	110	mm/r		0,12–0,17	0,14–0,23	0,17–0,23	0,20–0,29	0,29–0,33	0,23–0,41	0,27–0,50	0,33–0,56
	4	60	**70**	90	mm/r		0,09–0,14	0,11–0,20	0,14–0,20	0,17–0,23	0,17–0,26	0,20–0,33	0,23–0,41	0,26–0,45
	5	60	**80**	90	mm/r		0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,14–0,24	0,16–0,26
	6	80	**150**	160	mm/r		0,07–0,13	0,11–0,11	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,48
M	1	50	**60**	80	mm/r		0,04–0,08	0,06–0,13	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,22	0,15–0,24	0,18–0,28
	2	40	**50**	80	mm/r		0,04–0,08	0,06–0,13	0,08–0,16	0,10–0,18	0,12–0,20	0,13–0,22	0,15–0,24	0,18–0,28
	3	40	**50**	70	mm/r		0,03–0,07	0,05–0,10	0,06–0,14	0,08–0,16	0,10–0,18	0,12–0,20	0,14–0,22	0,16–0,26
K	1	90	**150**	150	mm/r		0,10–0,15	0,14–0,20	0,20–0,30	0,22–0,36	0,26–0,42	0,30–0,45	0,36–0,59	0,40–0,72
	2	80	**120**	120	mm/r		0,10–0,15	0,14–0,20	0,20–0,30	0,22–0,36	0,26–0,42	0,30–0,45	0,36–0,59	0,40–0,72
	3	80	**80**	140	mm/r		0,11–0,15	0,15–0,21	0,22–0,32	0,22–0,39	0,26–0,45	0,28–0,50	0,30–0,60	0,34–0,72

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	360	**460**	560	IPR		.004–.006	.005–.008	.006–.008	.007–.010	.010–.011	.008–.014	.009–.017	.011–.019
	1	330	**470**	490	IPR		.005–.007	.006–.009	.007–.009	.008–.011	.011–.013	.009–.016	.011–.020	.013–.022
	2	230	**330**	360	IPR		.005–.007	.005–.008	.006–.010	.009–.013	.009–.015	.011–.020	.013–.025	.015–.030
	3	230	**300**	360	IPR		.005–.007	.006–.009	.007–.009	.008–.011	.011–.013	.009–.016	.011–.020	.013–.022
	4	200	**230**	300	IPR		.004–.006	.004–.008	.006–.008	.007–.009	.007–.010	.008–.013	.009–.016	.010–.018
	5	200	**260**	300	IPR		.001–.004	.002–.004	.002–.004	.002–.006	.003–.007	.004–.008	.006–.009	.006–.010
	6	260	**490**	520	IPR		.003–.005	.004–.004	.005–.008	.006–.011	.007–.013	.008–.015	.009–.017	.010–.019
M	1	160	**200**	260	IPR		.002–.003	.002–.005	.003–.006	.004–.007	.005–.008	.005–.009	.006–.009	.007–.011
	2	130	**160**	260	IPR		.002–.003	.002–.005	.003–.006	.004–.007	.005–.008	.005–.009	.006–.009	.007–.011
	3	130	**160**	230	IPR		.001–.003	.002–.004	.002–.006	.003–.006	.004–.007	.005–.008	.006–.009	.006–.010
K	1	300	**490**	490	IPR		.004–.006	.006–.008	.008–.012	.009–.014	.010–.017	.012–.018	.014–.023	.016–.028
	2	260	**400**	400	IPR		.004–.006	.006–.008	.008–.012	.009–.014	.010–.017	.012–.018	.014–.023	.016–.028
	3	260	**260**	460	IPR		.004–.006	.006–.008	.009–.013	.009–.015	.010–.018	.011–.020	.012–.024	.013–.028

Beyond™ HP Solid Carbide Deep-Hole Drills

Primary Application

B27_HPG series solid carbide drills, made of the KCPK20™ grade, are the optimum platform for drilling holes up to 40 x D deep in steel and cast iron. The B27_HPG series drills deep holes up to 4x faster than conventional HSS and gun drills. The application of MQL is possible.

The B27_HPS in the new uncoated KN25™ grade offers the same advantages for drilling in non-ferrous materials, such as aluminum, copper, and brass.

The all new B27_SGL series is designed specifically for applications in stainless steel and high-temperature alloys.

The standard series is available from 2,383–16mm (.0938–.6299") diameter and in lengths from 15–40 x D. KMH-point geometry is available as a semi-standard, especially for crankshaft applications and interrupted cuts. Longer drills up to 550mm (21.65") are available as custom solution.



Features and Benefits

HP Drill-Point Design

- Low thrust.
- Excellent centering capabilities.
- Highest possible feed rates.

Four-Margin Lands

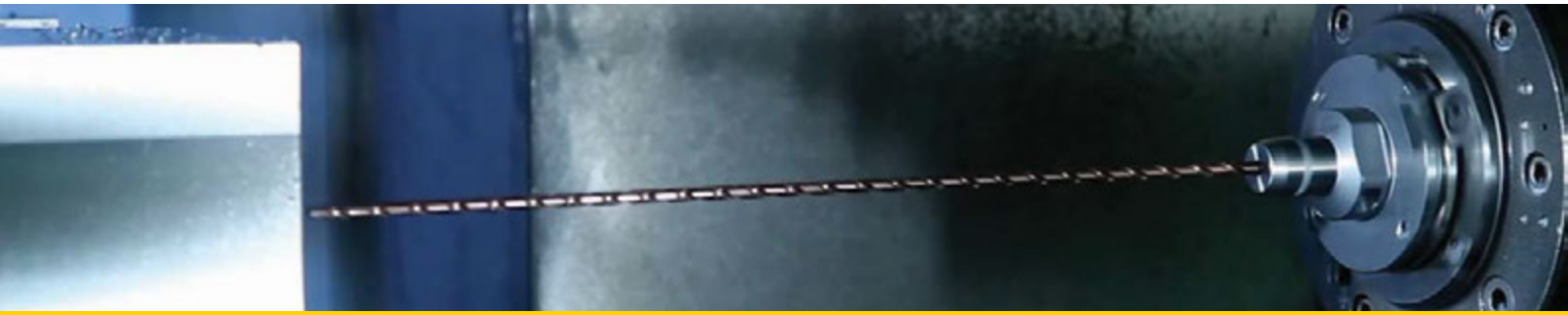
- Improves hole straightness.
- Improves hole alignment when drilling through cross holes.

Unique Flute Design

- The highly polished surface ensures superior chip evacuation even when low-pressure coolant or MQL is applied.
- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK20 Grade (B27_HPG)

- An AlCrN-TiAlN based coating on the head of the drill provides outstanding wear resistance.
- New ultra-fine-grain carbide ensures process reliability at high feed rates.



Solid carbide deep-hole drills run up to 4x faster than conventional HSS and gun drills.

KN25™ Grade (B27_HPS)

- Sharp cutting edge enables higher tool life in aluminum and other non-ferrous materials.
- The uncoated grade helps to prevent built-up edge in drilling aluminum and high-temp alloys.

New KCMS20 Grade (B27_SGL)

- Monolayer PVD AlTiN coated ultrafine grain carbide with superior surface finish.
- First choice for deep hole drilling of stainless steel and high-temperature resistant materials. Due to the coatings enhanced high temperature properties, this grade can also be applied for MQL applications in steel.

Customization

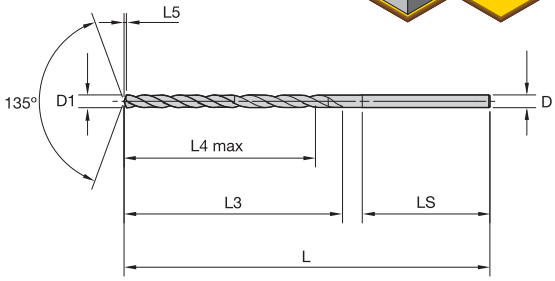
- Intermediate diameters available as semi-standards.
- Length variations, including even longer versions up to 550mm (21.65"), available as custom solutions.
- One-shot drilling of deep holes with a small step is possible.
- Maximum 2mm (.08") step range. Consult the custom solutions department for specific applications.
- Excellent surface finish and concentricity.



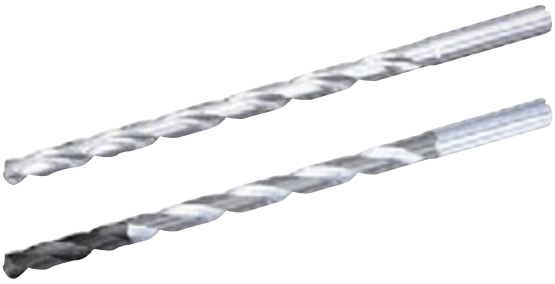




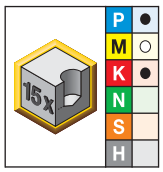


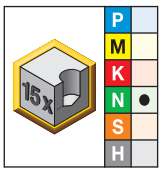


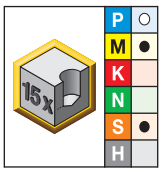
For information on L5, see B224_HP drills or B210_SGL drills.



B271Z_HPG/HPS/SGL • 15 x D





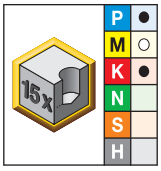


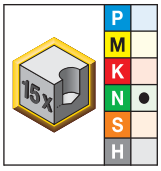
● first choice
○ alternate choice

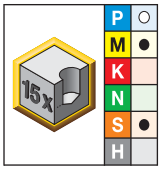
KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B271Z02383KMG	B271Z02383KMS	–	2,383	.0938	3/32	–	86	51	44	30	3
–	B271Z02400KMS	–	2,400	.0945	–	–	86	51	44	30	3
–	B271Z02439KMS	–	2,439	.0960	–	41	86	51	44	30	3
–	B271Z02489KMS	–	2,489	.0980	–	40	86	51	44	30	3
B271Z02500KMG	B271Z02500KMS	B271Z02500SGL	2,500	.0984	–	–	86	51	44	30	3
–	B271Z02578KMS	–	2,578	.1015	–	38	86	51	44	30	3
–	B271Z02600KMS	–	2,600	.1024	–	–	86	51	44	30	3
B271Z02642KMG	–	–	2,642	.1040	–	37	86	51	44	30	3
B271Z02705KMG	–	–	2,705	.1065	–	36	86	52	45	30	3
B271Z02779KMG	B271Z02779KMS *	–	2,779	.1094	7/64	–	86	52	45	30	3
–	B271Z02800KMS	–	2,800	.1102	–	–	86	52	45	30	3
B271Z02820KMG *	B271Z02820KMS *	–	2,820	.1110	–	34	86	52	45	30	3
–	B271Z02870KMS *	–	2,870	.1130	–	33	86	52	45	30	3
–	B271Z02900KMS	–	2,900	.1142	–	–	86	52	45	30	3
–	B271Z02947KMS *	–	2,947	.1160	–	32	86	52	45	30	3
B271Z03000HPG	B271Z03000HPS	B271Z03000SGL	3,000	.1181	–	–	86	52	45	30	3
B271Z03175HPG	B271Z03175HPS	B271Z03175SGL	3,175	.1250	1/8	–	105	67	58	32	4
B271Z03200HPG	B271Z03200HPS	–	3,200	.1260	–	–	105	67	58	32	4
B271Z03500HPG	B271Z03500HPS	B271Z03500SGL	3,500	.1378	–	–	105	68	59	32	4
B271Z03600HPG	–	–	3,600	.1417	–	–	105	68	59	32	4
B271Z03700HPG	–	–	3,700	.1457	–	–	105	69	60	32	4
B271Z03970HPG	B271Z03970HPS *	B271Z03970SGL	3,970	.1563	5/32	–	105	70	60	32	4
B271Z04000HPG	B271Z04000HPS	B271Z04000SGL	4,000	.1575	–	–	105	70	60	32	4
B271Z04500HPG	B271Z04500HPS	B271Z04500SGL	4,500	.1772	–	–	124	85	74	34	5
B271Z04623HPG	–	–	4,623	.1820	–	14	124	86	75	34	5
B271Z04763HPG	B271Z04763HPS	B271Z04763SGL	4,763	.1875	3/16	–	124	86	75	34	5
B271Z04800HPG	–	–	4,800	.1890	–	12	124	86	75	34	5
–	–	B271Z04800SGL	4,800	.1890	–	–	124	86	75	34	5
B271Z05000HPG	B271Z05000HPS	B271Z05000SGL	5,000	.1969	–	–	124	87	75	34	5
B271Z05060HPG	–	–	5,060	.1992	–	–	143	101	88	36	6
B271Z05260HPG	–	–	5,260	.2071	–	–	143	102	89	36	6
B271Z05410HPG	–	–	5,410	.2130	–	3	143	102	89	36	6
B271Z05500HPG	B271Z05500HPS	B271Z05500SGL	5,500	.2165	–	–	143	102	89	36	6
B271Z05558HPG	–	–	5,558	.2188	7/32	–	143	102	89	36	6
–	–	B271Z05558SGL	5,558	.2188	–	–	143	102	89	36	6
B271Z05800HPG	–	–	5,800	.2283	–	–	143	103	89	36	6
B271Z05900HPG	–	–	5,900	.2323	–	–	143	103	89	36	6
B271Z06000HPG	B271Z06000HPS	B271Z06000SGL	6,000	.2362	–	–	143	104	90	36	6
B271Z06200HPG	B271Z06200HPS	–	6,200	.2441	–	–	162	118	103	38	7
B271Z06350HPG	B271Z06350HPS	B271Z06350SGL	6,350	.2500	1/4	E	162	119	104	38	7

(continued)

(B271Z_HPG/HPS/SGL • 15 x D — continued)





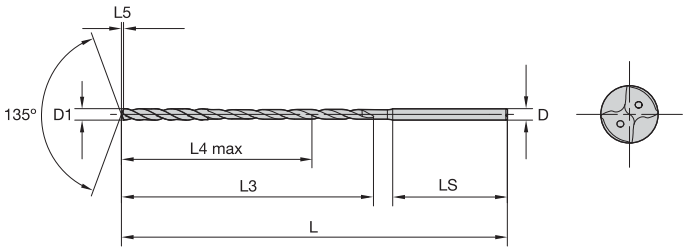


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B271Z06500HPG	B271Z06500HPS	B271Z06500SGL	6,500	.2559	—	—	162	119	104	38	7
B271Z06528HPG	—	—	6,528	.2570	—	F	162	119	104	38	7
B271Z06746HPG	B271Z06746HPS	B271Z06746SGL	6,746	.2656	17/64	—	162	120	104	38	7
B271Z06909HPG	—	—	6,909	.2720	—	I	162	121	105	38	7
B271Z07000HPG	B271Z07000HPS	B271Z07000SGL	7,000	.2756	—	—	162	121	105	38	7
B271Z07145HPG	B271Z07145HPS	B271Z07145SGL	7,145	.2813	9/32	—	181	135	118	40	8
B271Z07500HPG	B271Z07500HPS	B271Z07500SGL	7,500	.2953	—	—	181	136	119	40	8
B271Z07541HPG *	—	—	7,541	.2969	19/64	—	181	136	119	40	8
B271Z07938HPG	—	B271Z07938SGL	7,938	.3125	5/16	—	181	138	120	40	8
B271Z08000HPG	B271Z08000HPS	B271Z08000SGL	8,000	.3150	—	—	181	138	120	40	8
B271Z08200HPG	—	—	8,200	.3228	—	—	200	152	133	42	9
B271Z08334HPG	—	—	8,334	.3281	21/64	—	200	153	134	42	9
B271Z08500HPG	B271Z08500HPS	B271Z08500SGL	8,500	.3346	—	—	200	153	134	42	9
B271Z08733HPG	B271Z08733HPS	—	8,733	.3438	11/32	—	200	154	134	42	9
—	—	B271Z08733SGL	8,733	.3438	—	—	200	154	134	42	9
B271Z09000HPG	B271Z09000HPS	B271Z09000SGL	9,000	.3543	—	—	200	155	135	42	9
B271Z09100HPG	—	—	9,100	.3583	—	—	219	169	148	44	10
B271Z09200HPG *	—	—	9,200	.3622	—	—	219	169	148	44	10
B271Z09500HPG	B271Z09500HPS	—	9,500	.3740	—	—	219	170	149	44	10
B271Z09525HPG	B271Z09525HPS	B271Z09525SGL	9,525	.3750	3/8	—	219	170	149	44	10
B271Z09750HPG	—	—	9,750	.3839	—	—	219	171	149	44	10
B271Z10000HPG	B271Z10000HPS	B271Z10000SGL	10,000	.3937	—	—	219	172	150	44	10
B271Z10200HPG	B271Z10200HPS	—	10,200	.4016	—	—	238	186	163	46	11
—	—	B271Z10320SGL	10,320	.4063	13/32	—	238	187	164	46	11
B271Z10500HPG	B271Z10500HPS	B271Z10500SGL	10,500	.4134	—	—	238	187	164	46	11
B271Z10716HPG	—	—	10,716	.4219	27/64	—	238	188	165	46	11
—	B271Z10720HPS	—	10,720	.4220	—	—	238	188	165	46	11
B271Z10800HPG	—	—	10,800	.4252	—	—	238	188	164	46	11
B271Z11000HPG	B271Z11000HPS	B271Z11000SGL	11,000	.4331	—	—	238	189	165	46	11
—	—	B271Z11113SGL	11,113	.4375	7/16	—	257	203	178	48	12
B271Z11500HPG	B271Z11500HPS	B271Z11500SGL	11,500	.4528	—	—	257	204	179	48	12
B271Z12000HPG	B271Z12000HPS	B271Z12000SGL	12,000	.4724	—	—	257	206	180	48	12
B271Z12500HPG	B271Z12500HPS	—	12,500	.4921	—	—	276	221	194	50	13
B271Z12700HPG	B271Z12700HPS	B271Z12700SGL	12,700	.5000	1/2	—	276	222	195	50	13
B271Z13000HPG	B271Z13000HPS	—	13,000	.5118	—	—	276	223	195	50	13
B271Z13500HPG	B271Z13500HPS	—	13,500	.5315	—	—	295	238	209	52	14
B271Z14000HPG	B271Z14000HPS	B271Z14000SGL	14,000	.5512	—	—	295	240	210	52	14
B271Z14288HPG	—	—	14,288	.5625	9/16	—	314	255	224	54	15
—	B271Z14290HPS	—	14,290	.5626	—	—	314	255	224	54	15
B271Z14500HPG	—	B271Z14500SGL	14,500	.5709	—	—	314	255	224	54	15
B271Z15000HPG	—	B271Z15000SGL	15,000	.5906	—	—	314	257	225	54	15
B271Z15300HPG	—	—	15,300	.6024	—	—	333	272	239	56	16
—	B271Z15500HPS	—	15,500	.6102	—	—	333	272	239	56	16
—	B271Z15870HPS	—	15,870	.6248	—	—	333	273	240	56	16
B271Z15875HPG	—	—	15,875	.6250	5/8	—	333	273	240	56	16
B271Z16000HPG	B271Z16000HPS	B271Z16000SGL	16,000	.6299	—	—	333	274	240	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

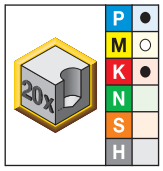


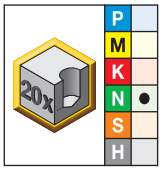


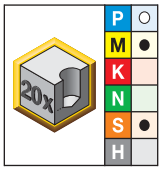
For information on L5, see B224_HP drills or B210_SGL drills.



B272Z_HPG/HPS/SGL • 20 x D





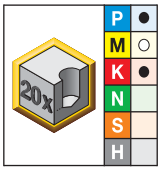


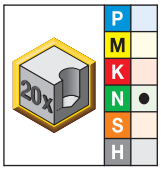
● first choice
○ alternate choice

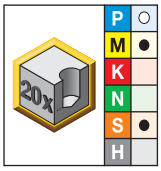
KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B272Z02383KMG	B272Z02383KMS	–	2,383	.0938	3/32	–	101	63	56	30	3
B272Z02400KMG	B272Z02400KMS *	–	2,400	.0945	–	–	101	63	56	30	3
–	B272Z02439KMS	–	2,439	.0960	–	41	101	63	56	30	3
B272Z02489KMG	B272Z02489KMS *	–	2,489	.0980	–	40	101	63	56	30	3
B272Z02500KMG	B272Z02500KMS	B272Z02500SGL	2,500	.0984	–	–	101	63	56	30	3
B272Z02779KMG	–	–	2,779	.1094	7/64	–	101	66	59	30	3
–	B272Z02800KMS	–	2,800	.1102	–	–	101	66	59	30	3
–	B272Z02947KMS *	–	2,947	.1160	–	32	101	67	60	30	3
B272Z03000HPG	B272Z03000HPS	B272Z03000SGL	3,000	.1181	–	–	101	67	60	30	3
B272Z03175HPG	B272Z03175HPS	B272Z03175SGL	3,175	.1250	1/8	–	125	83	74	32	4
B272Z03300HPG	B272Z03300HPS	–	3,300	.1299	–	–	125	84	75	32	4
B272Z03500HPG	B272Z03500HPS	B272Z03500SGL	3,500	.1378	–	–	125	86	77	32	4
B272Z03850HPG	–	–	3,850	.1516	–	–	125	88	79	32	4
B272Z03970HPG	B272Z03970HPS	B272Z03970SGL	3,970	.1563	5/32	–	125	89	79	32	4
B272Z04000HPG	B272Z04000HPS	B272Z04000SGL	4,000	.1575	–	–	125	90	80	32	4
B272Z04500HPG	B272Z04500HPS	B272Z04500SGL	4,500	.1772	–	–	149	108	97	34	5
B272Z04623HPG	–	–	4,623	.1820	–	14	149	109	98	34	5
B272Z04763HPG	B272Z04763HPS	B272Z04763SGL	4,763	.1875	3/16	–	149	110	99	34	5
–	–	B272Z04800SGL	4,800	.1890	–	–	149	110	99	34	5
B272Z05000HPG	B272Z05000HPS	B272Z05000SGL	5,000	.1969	–	–	149	112	100	34	5
B272Z05200HPG	–	–	5,200	.2047	–	–	173	127	114	36	6
B272Z05260HPG	–	–	5,260	.2071	–	–	173	128	115	36	6
B272Z05410HPG	–	–	5,410	.2130	–	3	173	129	116	36	6
B272Z05500HPG	B272Z05500HPS	B272Z05500SGL	5,500	.2165	–	–	173	130	117	36	6
B272Z05558HPG	–	–	5,558	.2188	7/32	–	173	130	117	36	6
–	–	B272Z05558SGL	5,558	.2188	–	–	173	130	117	36	6
B272Z05800HPG	–	B272Z05800SGL	5,800	.2283	–	–	173	132	118	36	6
B272Z06000HPG	B272Z06000HPS	B272Z06000SGL	6,000	.2362	–	–	173	134	120	36	6
B272Z06200HPG	B272Z06200HPS	–	6,200	.2441	–	–	197	149	134	38	7
B272Z06350HPG	B272Z06350HPS	B272Z06350SGL	6,350	.2500	1/4	E	197	151	136	38	7
–	B272Z06400HPS *	–	6,400	.2520	–	–	197	151	136	38	7
B272Z06500HPG	B272Z06500HPS	B272Z06500SGL	6,500	.2559	–	–	197	152	137	38	7
B272Z06528HPG	–	–	6,528	.2570	–	F	197	152	137	38	7
B272Z06746HPG	B272Z06746HPS	B272Z06746SGL	6,746	.2656	17/64	–	197	154	138	38	7
B272Z06800HPG	–	–	6,800	.2677	–	–	197	154	138	38	7
B272Z06909HPG	–	–	6,909	.2720	–	I	197	155	139	38	7

(continued)

(B272Z_HPG/HPS/SGL • 20 x D — continued)





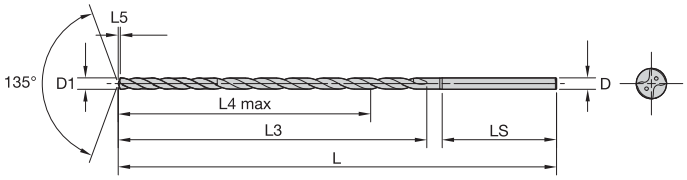


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B272Z07000HPG	B272Z07000HPS	B272Z07000SGL	7,000	.2756	—	—	197	156	140	38	7
B272Z07145HPG	B272Z07145HPS	B272Z07145SGL	7,145	.2813	9/32	—	221	171	154	40	8
B272Z07200HPG *	—	—	7,200	.2835	—	—	221	171	154	40	8
B272Z07500HPG	B272Z07500HPS	B272Z07500SGL	7,500	.2953	—	—	221	174	157	40	8
B272Z07541HPG *	—	—	7,541	.2969	19/64	—	221	174	157	40	8
B272Z07938HPG	—	B272Z07938SGL	7,938	.3125	5/16	—	221	177	159	40	8
B272Z08000HPG	B272Z08000HPS	B272Z08000SGL	8,000	.3150	—	—	221	178	160	40	8
B272Z08334HPG *	—	—	8,334	.3281	21/64	—	245	194	175	42	9
B272Z08433HPG	—	—	8,433	.3320	—	Q	245	195	176	42	9
B272Z08500HPG	B272Z08500HPS	B272Z08500SGL	8,500	.3346	—	—	245	196	177	42	9
B272Z08733HPG	B272Z08733HPS	—	8,733	.3438	11/32	—	245	198	178	42	9
—	—	B272Z08733SGL	8,733	.3438	—	—	245	198	178	42	9
B272Z09000HPG	B272Z09000HPS	B272Z09000SGL	9,000	.3543	—	—	245	200	180	42	9
B272Z09100HPG *	—	—	9,100	.3583	—	—	269	215	194	44	10
B272Z09500HPG	—	—	9,500	.3740	—	—	269	218	197	44	10
B272Z09525HPG	B272Z09525HPS	B272Z09525SGL	9,525	.3750	3/8	—	269	218	197	44	10
B272Z09750HPG	B272Z09750HPS	—	9,750	.3839	—	—	269	220	198	44	10
B272Z10000HPG	B272Z10000HPS	B272Z10000SGL	10,000	.3937	—	—	269	222	200	44	10
B272Z10200HPG	B272Z10200HPS	—	10,200	.4016	—	—	293	237	214	46	11
—	—	B272Z10320SGL	10,320	.4063	13/32	—	293	238	215	46	11
B272Z10500HPG	B272Z10500HPS	B272Z10500SGL	10,500	.4134	—	—	293	240	217	46	11
B272Z10716HPG	—	—	10,716	.4219	27/64	—	293	242	219	46	11
—	—	B272Z10716SGL	10,716	.4219	—	—	293	242	219	46	11
—	B272Z10720HPS	—	10,720	.4220	—	—	293	242	219	46	11
B272Z11000HPG	B272Z11000HPS	B272Z11000SGL	11,000	.4331	—	—	293	244	220	46	11
—	—	B272Z11113SGL	11,113	.4375	7/16	—	317	259	234	48	12
B272Z11500HPG	B272Z11500HPS	B272Z11500SGL	11,500	.4528	—	—	317	262	237	48	12
B272Z11800HPG	—	—	11,800	.4646	—	—	317	264	238	48	12
B272Z12000HPG	B272Z12000HPS	B272Z12000SGL	12,000	.4724	—	—	317	266	240	48	12
B272Z12500HPG	B272Z12500HPS	B272Z12500SGL	12,500	.4921	—	—	341	284	257	50	13
B272Z12700HPG	B272Z12700HPS	B272Z12700SGL	12,700	.5000	1/2	—	341	285	258	50	13
B272Z13000HPG	B272Z13000HPS	B272Z13000SGL	13,000	.5118	—	—	341	288	260	50	13
B272Z13100HPG	—	—	13,100	.5157	—	—	365	302	273	52	14
B272Z13500HPG	B272Z13500HPS	—	13,500	.5315	—	—	365	306	277	52	14
B272Z14000HPG	B272Z14000HPS	B272Z14000SGL	14,000	.5512	—	—	365	310	280	52	14
B272Z14500HPG	B272Z14500HPS	B272Z14500SGL	14,500	.5709	—	—	389	328	297	54	15
B272Z15000HPG	B272Z15000HPS	B272Z15000SGL	15,000	.5906	—	—	389	332	300	54	15
B272Z15500HPG	B272Z15500HPS	B272Z15500SGL	15,500	.6102	—	—	413	350	317	56	16
—	B272Z15870HPS	—	15,870	.6248	—	—	413	353	320	56	16
B272Z15875HPG	—	—	15,875	.6250	5/8	—	413	353	320	56	16
B272Z16000HPG	B272Z16000HPS	B272Z16000SGL	16,000	.6299	—	—	413	354	320	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

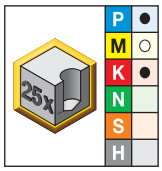


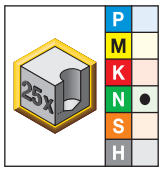


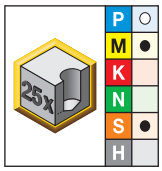
For information on L5, see B224_HP drills or B210_SGL drills.



B273Z_HPG/HPS/SGL • 25 x D





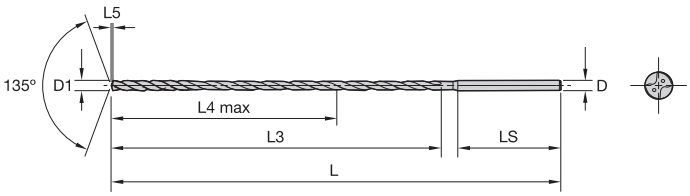


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B273Z02383KMG	B273Z02383KMS	–	2,383	.0938	3/32	–	116	74	67	30	3
–	B273Z02439KMS *	–	2,439	.0960	–	41	116	75	68	30	3
B273Z02500KMG	–	B273Z02500SGL	2,500	.0984	–	–	116	76	69	30	3
B273Z02600KMG *	–	–	2,600	.1024	–	–	116	77	70	30	3
–	B273Z02779KMS *	–	2,779	.1094	7/64	–	116	80	73	30	3
–	B273Z02800KMS *	–	2,800	.1102	–	–	116	80	73	30	3
–	B273Z02820KMS *	–	2,820	.1110	–	34	116	80	73	30	3
–	B273Z02870KMS *	–	2,870	.1130	–	33	116	81	74	30	3
–	B273Z02947KMS *	–	2,947	.1160	–	32	116	82	75	30	3
B273Z03000HPG	B273Z03000HPS	B273Z03000SGL	3,000	.1181	–	–	116	82	75	30	3
B273Z03175HPG	B273Z03175HPS	B273Z03175SGL	3,175	.1250	1/8	–	145	99	90	32	4
B273Z03500HPG *	B273Z03500HPS	B273Z03500SGL	3,500	.1378	–	–	145	103	94	32	4
B273Z04000HPG	B273Z04000HPS	B273Z04000SGL	4,000	.1575	–	–	145	110	100	32	4
B273Z04500HPG *	B273Z04500HPS *	B273Z04500SGL	4,500	.1772	–	–	174	130	119	34	5
B273Z05000HPG	B273Z05000HPS	B273Z05000SGL	5,000	.1969	–	–	174	137	125	34	5
B273Z05100HPG *	–	–	5,100	.2008	–	–	203	152	139	36	6
B273Z05500HPG	B273Z05500HPS	B273Z05500SGL	5,500	.2165	–	–	203	157	144	36	6
B273Z05800HPG *	–	–	5,800	.2283	–	–	203	161	147	36	6
B273Z06000HPG	B273Z06000HPS	B273Z06000SGL	6,000	.2362	–	–	203	164	150	36	6
B273Z06350HPG	B273Z06350HPS	–	6,350	.2500	1/4	E	232	182	167	38	7
B273Z06500HPG *	B273Z06500HPS	B273Z06500SGL	6,500	.2559	–	–	232	184	169	38	7
B273Z06746HPG	B273Z06746HPS *	–	6,746	.2656	17/64	–	232	187	171	38	7
B273Z07000HPG	B273Z07000HPS *	B273Z07000SGL	7,000	.2756	–	–	232	191	175	38	7
B273Z07500HPG	–	–	7,500	.2953	–	–	261	211	194	40	8
B273Z08000HPG	B273Z08000HPS	B273Z08000SGL	8,000	.3150	–	–	261	218	200	40	8
B273Z08500HPG	B273Z08500HPS *	B273Z08500SGL	8,500	.3346	–	–	290	238	219	42	9
B273Z08733HPG	B273Z08733HPS *	–	8,733	.3438	11/32	–	290	241	221	42	9
B273Z09000HPG	–	B273Z09000SGL	9,000	.3543	–	–	290	245	225	42	9
–	B273Z09525HPS *	–	9,525	.3750	3/8	–	319	266	245	44	10
B273Z10000HPG	B273Z10000HPS	B273Z10000SGL	10,000	.3937	–	–	319	272	250	44	10
B273Z10200HPG	–	–	10,200	.4016	–	–	348	288	265	46	11
B273Z10500HPG	B273Z10500HPS	–	10,500	.4134	–	–	348	292	269	46	11
B273Z11000HPG	B273Z11000HPS	B273Z11000SGL	11,000	.4331	–	–	348	299	275	46	11
B273Z11500HPG	B273Z11500HPS	–	11,500	.4528	–	–	377	319	294	48	12
B273Z12000HPG	B273Z12000HPS	B273Z12000SGL	12,000	.4724	–	–	377	326	300	48	12
B273Z12500HPG	B273Z12500HPS	–	12,500	.4921	–	–	406	346	319	50	13
B273Z12700HPG	–	–	12,700	.5000	1/2	–	406	349	322	50	13
B273Z13000HPG	B273Z13000HPS	B273Z13000SGL	13,000	.5118	–	–	406	353	325	50	13
–	B273Z13100HPS	–	13,100	.5157	–	–	435	368	339	52	14
B273Z13500HPG	–	B273Z13500SGL	13,500	.5315	–	–	435	373	344	52	14
B273Z14000HPG	B273Z14000HPS	B273Z14000SGL	14,000	.5512	–	–	435	380	350	52	14
B273Z14288HPG	–	–	14,288	.5625	9/16	–	464	397	366	54	15
–	B273Z14290HPS	–	14,290	.5626	–	–	464	397	366	54	15
B273Z14500HPG	B273Z14500HPS	–	14,500	.5709	–	–	464	400	369	54	15
B273Z15000HPG	–	B273Z15000SGL	15,000	.5906	–	–	464	407	375	54	15
B273Z16000HPG	B273Z16000HPS	B273Z16000SGL	16,000	.6299	–	–	493	434	400	56	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

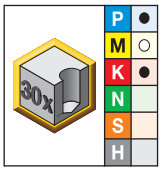


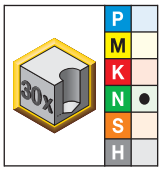


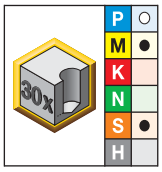
For information on L5, see B224_HP drills or B210_SGL drills.



B274Z_HPG/HPS/SGL • 30 x D





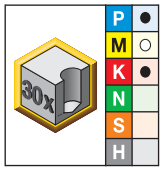


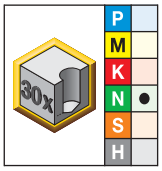
● first choice
○ alternate choice

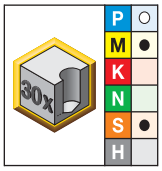
KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B274Z02383KMG	B274Z02383KMS	–	2,383	.0938	3/32	–	131	86	79	30	3
–	B274Z02400KMS	–	2,400	.0945	–	–	131	87	80	30	3
–	B274Z02439KMS *	–	2,439	.0960	–	41	131	87	80	30	3
B274Z02500KMG	B274Z02500KMS	B274Z02500SGL	2,500	.0984	–	–	131	88	81	30	3
B274Z02600KMG	B274Z02600KMS	–	2,600	.1024	–	–	131	90	83	30	3
–	B274Z02642KMS *	–	2,642	.1040	–	37	131	91	84	30	3
–	B274Z02779KMS *	–	2,779	.1094	7/64	–	131	94	87	30	3
B274Z02800KMG	B274Z02800KMS *	–	2,800	.1102	–	–	131	94	87	30	3
–	B274Z02870KMS *	–	2,870	.1130	–	33	131	95	88	30	3
–	B274Z02900KMS *	–	2,900	.1142	–	–	131	96	89	30	3
–	B274Z02947KMS *	–	2,947	.1160	–	32	131	97	90	30	3
B274Z03000HPG	B274Z03000HPS	B274Z03000SGL	3,000	.1181	–	–	131	97	90	30	3
B274Z03175HPG	B274Z03175HPS	B274Z03175SGL	3,175	.1250	1/8	–	165	115	106	32	4
B274Z03500HPG	B274Z03500HPS	B274Z03500SGL	3,500	.1378	–	–	165	121	112	32	4
B274Z03970HPG	–	B274Z03970SGL	3,970	.1563	5/32	–	165	129	119	32	4
B274Z04000HPG	B274Z04000HPS	B274Z04000SGL	4,000	.1575	–	–	165	130	120	32	4
B274Z04300HPG	–	–	4,300	.1693	–	–	199	149	138	34	5
B274Z04500HPG	B274Z04500HPS	B274Z04500SGL	4,500	.1772	–	–	199	153	142	34	5
B274Z04763HPG	–	B274Z04763SGL	4,763	.1875	3/16	–	199	157	146	34	5
B274Z05000HPG	B274Z05000HPS	B274Z05000SGL	5,000	.1969	–	–	199	162	150	34	5
B274Z05100HPG *	–	B274Z05100SGL	5,100	.2008	–	–	233	178	165	36	6
B274Z05500HPG	B274Z05500HPS *	B274Z05500SGL	5,500	.2165	–	–	233	185	172	36	6
–	–	B274Z05558SGL	5,558	.2188	–	–	233	186	173	36	6
B274Z05700HPG *	–	–	5,700	.2244	–	–	233	188	175	36	6
B274Z06000HPG	B274Z06000HPS	B274Z06000SGL	6,000	.2362	–	–	233	194	180	36	6
B274Z06350HPG	B274Z06350HPS	B274Z06350SGL	6,350	.2500	1/4	E	267	214	199	38	7
B274Z06500HPG	B274Z06500HPS	B274Z06500SGL	6,500	.2559	–	–	267	217	202	38	7
–	B274Z06746HPS *	B274Z06746SGL	6,746	.2656	17/64	–	267	221	205	38	7
B274Z06800HPG	–	–	6,800	.2677	–	–	267	222	206	38	7
B274Z07000HPG	B274Z07000HPS	B274Z07000SGL	7,000	.2756	–	–	267	226	210	38	7
–	–	B274Z07145SGL	7,145	.2813	9/32	–	301	242	225	40	8
–	–	B274Z07500SGL	7,500	.2953	–	–	301	249	232	40	8

(continued)

(B274Z_HPG/HPS/SGL • 30 x D — continued)





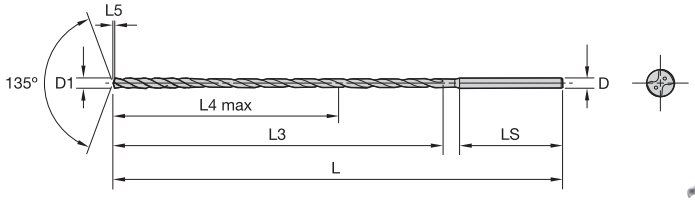


● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	D1 diameter in	D1 diameter fraction	D1 diameter wire size	L	L3	L4 max	LS	D
B274Z07700HPG *	—	—	7,700	.3031	—	—	301	252	235	40	8
B274Z07938HPG	—	B274Z07938SGL	7,938	.3125	5/16	—	301	257	239	40	8
B274Z08000HPG	B274Z08000HPS	B274Z08000SGL	8,000	.3150	—	—	301	258	240	40	8
B274Z08334HPG	—	—	8,334	.3281	21/64	—	335	278	259	42	9
B274Z08500HPG	B274Z08500HPS	B274Z08500SGL	8,500	.3346	—	—	335	281	262	42	9
B274Z08700HPG	—	—	8,700	.3425	—	—	335	284	264	42	9
—	B274Z08733HPS *	—	8,733	.3438	11/32	—	335	285	265	42	9
—	—	B274Z08733SGL	8,733	.3438	—	—	335	285	265	42	9
B274Z09000HPG	B274Z09000HPS *	B274Z09000SGL	9,000	.3543	—	—	335	290	270	42	9
—	—	B274Z09129SGL	9,129	.3594	23/64	—	369	306	285	44	10
B274Z09525HPG	B274Z09525HPS *	B274Z09525SGL	9,525	.3750	3/8	—	369	313	292	44	10
B274Z10000HPG	B274Z10000HPS	B274Z10000SGL	10,000	.3937	—	—	369	322	300	44	10
B274Z10200HPG	B274Z10200HPS	—	10,200	.4016	—	—	403	339	316	46	11
B274Z10500HPG *	—	B274Z10500SGL	10,500	.4134	—	—	403	345	322	46	11
B274Z10716HPG	—	—	10,716	.4219	27/64	—	403	349	326	46	11
B274Z11000HPG	B274Z11000HPS	B274Z11000SGL	11,000	.4331	—	—	403	354	330	46	11
B274Z11500HPG	B274Z11500HPS	B274Z11500SGL	11,500	.4528	—	—	437	377	352	48	12
B274Z11800HPG	—	—	11,800	.4646	—	—	437	382	356	48	12
B274Z12000HPG	B274Z12000HPS	B274Z12000SGL	12,000	.4724	—	—	437	386	360	48	12
B274Z12500HPG	B274Z12500HPS	—	12,500	.4921	—	—	471	409	382	50	13
B274Z12700HPG	—	B274Z12700SGL	12,700	.5000	1/2	—	471	412	385	50	13
B274Z13000HPG	B274Z13000HPS	B274Z13000SGL	13,000	.5118	—	—	471	418	390	50	13
B274Z13500HPG	B274Z13500HPS	B274Z13500SGL	13,500	.5315	—	—	505	441	412	52	14
B274Z14000HPG	B274Z14000HPS	B274Z14000SGL	14,000	.5512	—	—	505	450	420	52	14
B274Z15000HPG	B274Z15000HPS	B274Z15000SGL	15,000	.5906	—	—	539	482	450	54	15

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



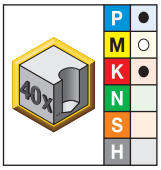


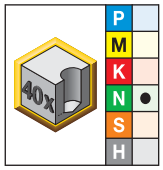
For information on L5, see B224_HP drills or B210_SGL drills.

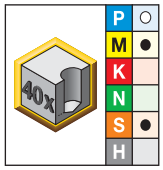


beyond

B275Z_HPG/HPS/SGL • 40 x D







● first choice
○ alternate choice

KCPK20	KN25	KCMS20	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B275Z02500KMG	B275Z02500KMS	B275Z02500SGL	2,500	.0984	–	–	161	113	106	30	3
B275Z03000KMG	B275Z03000HPS	B275Z03000SGL	3,000	.1181	–	–	161	127	120	30	3
B275Z03175HPG	B275Z03175HPS	B275Z03175SGL	3,175	.1250	1/8	–	205	146	137	32	4
B275Z03500HPG	B275Z03500HPS	B275Z03500SGL	3,500	.1378	–	–	205	156	147	32	4
B275Z03571HPG	B275Z03571HPS	B275Z03571SGL	3,571	.1406	9/64	–	205	158	149	32	4
B275Z03970HPG	B275Z03970HPS	B275Z03970SGL	3,970	.1563	5/32	–	205	169	159	32	4
B275Z04000HPG	B275Z04000HPS	B275Z04000SGL	4,000	.1575	–	–	205	170	160	32	4
B275Z04200HPG	B275Z04200HPS	B275Z04200SGL	4,200	.1654	–	–	249	189	178	34	5
–	B275Z04500HPS	B275Z04500SGL	4,500	.1772	–	–	249	198	187	34	5
B275Z04763HPG	B275Z04763HPS	B275Z04763SGL	4,763	.1875	3/16	–	249	205	194	34	5
B275Z05000HPG	B275Z05000HPS	B275Z05000SGL	5,000	.1969	–	–	249	212	200	34	5
B275Z05500HPG	B275Z05500HPS	B275Z05500SGL	5,500	.2165	–	–	293	240	227	36	6
B275Z05558HPG	B275Z05558HPS	B275Z05558SGL	5,558	.2188	–	–	293	241	228	36	6
B275Z06000HPG	B275Z06000HPS	B275Z06000SGL	6,000	.2362	–	–	293	254	240	36	6
B275Z06350HPG	B275Z06350HPS	B275Z06350SGL	6,350	.2500	1/4	E	337	278	263	38	7
B275Z06500HPG	B275Z06500HPS	B275Z06500SGL	6,500	.2559	–	–	337	282	267	38	7
B275Z06800HPG	B275Z06800HPS	B275Z06800SGL	6,800	.2677	–	–	337	290	274	38	7
B275Z07000HPG	B275Z07000HPS	B275Z07000SGL	7,000	.2756	–	–	337	296	280	38	7
B275Z07145HPG	B275Z07145HPS	B275Z07145SGL	7,145	.2813	9/32	–	381	314	297	40	8
B275Z07500HPG	B275Z07500HPS	B275Z07500SGL	7,500	.2953	–	–	381	324	307	40	8
B275Z07938HPG	B275Z07938HPS	B275Z07938SGL	7,938	.3125	5/16	–	381	336	318	40	8
B275Z08000HPG	B275Z08000HPS	B275Z08000SGL	8,000	.3150	–	–	381	338	320	40	8
–	B275Z08500HPS	B275Z08500SGL	8,500	.3346	–	–	425	366	347	42	9
B275Z08733HPG	B275Z08733HPS	B275Z08733SGL	8,733	.3438	–	–	425	372	352	42	9
B275Z09000HPG	B275Z09000HPS	B275Z09000SGL	9,000	.3543	–	–	425	380	360	42	9
B275Z09525HPG	B275Z09525HPS	B275Z09525SGL	9,525	.3750	3/8	–	469	408	387	44	10
B275Z10000HPG	B275Z10000HPS	B275Z10000SGL	10,000	.3937	–	–	469	422	400	44	10
B275Z10200HPG	B275Z10200HPS	B275Z10200SGL	10,200	.4016	–	–	513	441	418	46	11
B275Z10320HPG	B275Z10320HPS	B275Z10320SGL	10,320	.4063	13/32	–	513	445	422	46	11
B275Z11000HPG	B275Z11000HPS	B275Z11000SGL	11,000	.4331	–	–	513	464	440	46	11

Tolerance • Metric

nominal size range	D1 HPG/SGL tolerance h7	D1 HPS tolerance h8	D tolerance h6
1–3	0,000/-0,010	0,000/-0,014	0,000/-0,006
>3–6	0,000/-0,012	0,000/-0,018	0,000/-0,008
>6–10	0,000/-0,015	0,000/-0,022	0,000/-0,009
>10–18	0,000/-0,018	0,000/-0,027	0,000/-0,011

Tolerance • Inch

nominal size range	D1 HPG/SGL tolerance h7	D1 HPS tolerance h8	D tolerance h6
.0394–.1181	.0000/-.0004	.0000/-.0006	.0000/-.0002
>.1181–.2362	.0000/-.0005	.0000/-.0007	.0000/-.0003
>.2362–.3937	.0000/-.0006	.0000/-.0009	.0000/-.0004
>.3937–.7087	.0000/-.0007	.0000/-.0011	.0000/-.0004

Deep-Hole Drills • B27_HPG Series • Grade KCPK20™ • Through Coolant • Drill Diameters 3–16mm (.1181–.6300")





Material Group		Cutting Speed – vc Range – m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
P	0	100	**100**	125	mm/r	0,13–0,15	0,14–0,16	0,15–0,21	0,19–0,26	0,21–0,31	0,26–0,36	0,30–0,41	0,34–0,46
	1	90	**100**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	2	90	**100**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	3	80	**95**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	4	80	**90**	110	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	5	60	**80**	90	mm/r	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,12–0,22	0,14–0,24
	6	110	**150**	190	mm/r	0,07–0,13	0,09–0,15	0,12–0,20	0,15–0,28	0,17–0,33	0,19–0,37	0,20–0,40	0,22–0,43
M	1	40	**50**	60	mm/r	0,04–0,08	0,06–0,12	0,08–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18	0,14–0,19
	2	30	**40**	50	mm/r	0,04–0,08	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18
	3	30	**40**	50	mm/r	0,04–0,07	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18
K	1	80	**100**	120	mm/r	0,15–0,19	0,17–0,20	0,19–0,26	0,24–0,32	0,27–0,40	0,32–0,45	0,38–0,52	0,45–0,59
	2	80	**90**	100	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
	3	60	**90**	120	mm/r	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54

Material Group		Cutting Speed – vc Range – SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	0.551	5/8 .625
P	0	330	**330**	410	IPR	.005–.006	.006–.006	.006–.008	.008–.010	.008–.012	.010–.014	.012–.016	.013–.018
	1	300	**330**	360	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
	2	300	**330**	360	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
	3	260	**310**	360	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
	4	260	**300**	360	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
	5	200	**260**	300	IPR	.001–.004	.002–.004	.002–.004	.002–.006	.003–.007	.004–.008	.005–.009	.006–.009
	6	360	**490**	620	IPR	.003–.005	.004–.004	.005–.008	.006–.011	.007–.013	.008–.015	.008–.016	.009–.017
M	1	130	**160**	200	IPR	.002–.003	.002–.005	.003–.006	.004–.006	.004–.006	.005–.007	.005–.007	.006–.008
	2	100	**130**	160	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.004–.006	.005–.007	.005–.007
	3	100	**130**	160	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.004–.006	.005–.007	.005–.007
K	1	260	**330**	390	IPR	.006–.008	.007–.008	.008–.010	.009–.013	.011–.016	.013–.018	.015–.021	.018–.023
	2	260	**300**	330	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
	3	200	**300**	390	IPR	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021

Deep-Hole Drills • B27_HPS Series • Grade KN25™ • Through Coolant • Drill Diameters 3–16mm (.1181–.6300")





Material Group		Cutting Speed – vc Range – m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
N	1	120	**200**	300	mm/r	0,12–0,17	0,13–0,18	0,15–0,24	0,19–0,29	0,26–0,35	0,31–0,40	0,35–0,45	0,41–0,51
	2	120	**170**	300	mm/r	0,13–0,18	0,14–0,19	0,16–0,25	0,20–0,30	0,28–0,37	0,33–0,42	0,38–0,48	0,44–0,54
	3	100	**150**	300	mm/r	0,13–0,18	0,14–0,19	0,16–0,25	0,20–0,30	0,28–0,37	0,33–0,42	0,38–0,48	0,44–0,54
	4	80	**200**	300	mm/r	0,03–0,05	0,03–0,06	0,03–0,06	0,04–0,06	0,05–0,07	0,05–0,08	0,05–0,08	0,06–0,09

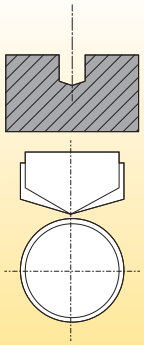
Material Group		Cutting Speed – vc Range – SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	0.551	5/8 .625
N	1	390	**660**	980	IPR	.005–.007	.005–.007	.006–.009	.008–.011	.010–.014	.012–.016	.014–.018	.016–.020
	2	390	**560**	980	IPR	.005–.007	.006–.008	.006–.010	.008–.012	.011–.015	.013–.017	.015–.019	.017–.021
	3	330	**490**	980	IPR	.005–.007	.006–.008	.006–.010	.008–.012	.011–.015	.013–.017	.015–.019	.017–.021
	4	260	**660**	980	IPR	.001–.002	.001–.002	.001–.002	.002–.002	.002–.003	.002–.003	.002–.003	.002–.004

Deep Hole Drills • B27_SGL Series • Grade KCMS20 • Through Coolant



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Rev	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
P	5	60	**80**	90	mm/r	0,03–0,06	0,04–0,06	0,05–0,06	0,05–0,09	0,08–0,13	0,11–0,16	0,12–0,17	0,14–0,18
	6	70	**120**	170	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20	0,18–0,22	0,20–0,24
M	1	40	**50**	60	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
	2	30	**40**	50	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
	3	30	**40**	50	mm/r	0,05–0,08	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15
S	1	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	2	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	3	20	**30**	40	mm/r	0,09–0,12	0,10–0,13	0,11–0,14	0,12–0,15	0,13–0,16	0,14–0,17	0,15–0,18	0,16–0,19
	4	20	**30**	40	mm/r	0,09–0,14	0,10–0,15	0,11–0,16	0,12–0,17	0,13–0,18	0,14–0,19	0,15–0,20	0,16–0,21

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate per Rev	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	.551	5/8 .625
P	1	200	**260**	300	IPR	.001-.002	.002-.002	.002-.002	.002-.004	.003-.005	.004-.006	.005-.007	.006-.007
	2	230	**390**	560	IPR	.002–.004	.003–.005	.004–.006	.005–.006	.006–.007	.006–.008	.007–.009	.008–.009
M	1	130	**160**	200	IPR	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.005	.004-.006	.005-.006
	2	100	**130**	160	IPR	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.005	.004–.006	.005–.006
	3	100	**130**	160	IPR	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.005	.004-.006	.005-.006
S	1	70	**100**	130	IPR	.004-.005	.004-.005	.004-.006	.005-.006	.005-.006	.006-.007	.006-.007	.006-.008
	2	70	**100**	130	IPR	.004–.005	.004–.005	.004–.006	.005–.006	.005–.006	.006–.007	.006–.007	.006–.008
	3	70	**100**	130	IPR	.004-.005	.004-.005	.004-.006	.005-.006	.005-.006	.006-.007	.006-.007	.006-.008
	4	70	**100**	130	IPR	.004–.006	.004–.006	.004–.006	.005–.007	.005–.007	.006–.008	.006–.008	.006–.008

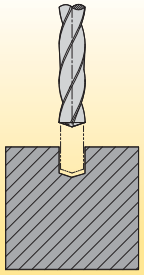


1) Pilot Drill Hole — IMPORTANT!

- The point angle of the pilot drill must be greater than the one of following deep-hole drill to protect its cutting corners.
- The diameter size of the pilot drill must be greater than the one of the deep-hole drill to enable easy fit and protect margin lands. The required difference in diameter is covered by design with the different position of tolerance.
- Drill Ø = nominal Ø up to nominal +.0004" (+0,010mm).
- Depth of pilot hole: minimum 2 x D.
- Deeper pilot holes are preferable.

Recommendations:

- Use a conical (B976_) or split-point drill to pilot (do not use a HP, TX, GOdrill™ or any competitive drill).
- Check the pilot drill for wear, which can lead to premature wear on the B27_ cutting edge and possibly catastrophic failure.
- B976_ and B977_KC7315 drills with a 140° point angle are recommended. B978_ is not recommended as the point angle is 135°.
- B70_ Flat Bottom Drill with a point angle of 180° is the alternate choice, especially on inclined entries, such as on crankshafts.

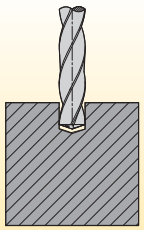


2) Feed B27_ into Pilot Hole

- Max 500 RPM and recommended feed rate; no rapid traverse.
- Run counter-clockwise, especially in horizontal applications to protect the cutting edge, when entering the pilot hole.
- Depth: .039" (1mm) above the bottom of pilot hole.

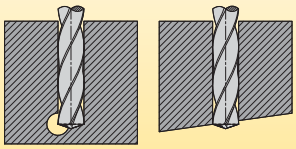
Recommendations:

- Reduce cutting speed to minimize imbalances in machine spindle/adapter!



3) Drill Hole

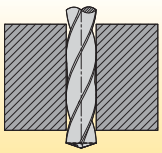
Cutting Parameters: Start recommended speed and feed rate at .039" (1mm) from the bottom of the pilot hole, clockwise.



Recommendations:

- DO NOT PECK OR DWELL up to 30 x D!
- With long-chipping steel materials, it may be necessary to increase feed rate by 10–20% to provide optimal chip control.
- For long-chipping aluminum materials, it may be necessary to decrease feed rate and increase speed.
- Reduce feed rate on angled exits and crossholes by 50–60%.

HP feed recommendations are usually higher than with competitive SC drills!



4) Drill Retraction

Cutting Parameters: 50–500 RPM and feed rate 2–6 m/min.

Recommendations:

To achieve the best tool performance, we recommend using the deep-hole drill with a hydraulic chuck.

Reduce cutting speed to minimize imbalances in machine spindle/adapter!





5) Vertical Applications

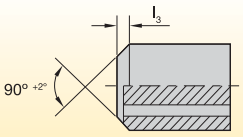
- If the pilot holes are close to each other, chips can fall into the neighboring hole.
- Do not enter a pilot hole that might contain chips with a deep hole drill to avoid chip jamming, wear, or breakage.
- If required holes are close to each other, use smart drilling strategies, make sure the pilot holes are getting properly cleaned, or switch to horizontal drilling.

Horizontal drilling process preferred for optimum chip evacuation



6) Coolant

- For increased stability, the coolant channels of the B27_ are smaller than on typical Kennametal drills.
- Steady supply of coolant delivered to the cutting edges necessary. If coolant supply is not steady or is unequal through both channels, check:
  - — Coolant filtering system.
  - — Sealing of adapter/spindle.
  - — Chips blocking the coolant hole on the drill shank.
- Make sure that the coolant supply reaches the cutting edge before drilling begins.
- Pressure by diameter: <5mm 40–50 bar maximum; >5mm 25 bar minimum.



MQL back end according to DIN 69090-3

7) Minimal Quantity Lubrication

- On MQL applications, make sure that the coolant is directly supplied from the chuck into the back end of the drill shank (without gap) to avoid leakage.
- Pressure should be between 1–10 bar depending on coolant hole size.
- Spray contains an amount of oil less than 50 ml/h.
- If required, the shank can be even optimized for MQL applications with enlarged 90° chamfer instead of 40°.



8) Shanks

- Other than normal SC drills, B27_ series have a “Z” shank, increasing with 1mm steps.
- For drills with uneven shank size, use reduction sleeves to adapt the shank to the customer's toolholder.
- The clamping force is better with increasing diameter.
- If required, DIN-shanks (even, 2mm steps) are available as custom solutions.

Achieve the best tool performance with hydraulic chucks.

	12mm hydraulic reducer sleeve		20mm hydraulic reducer sleeve		25mm hydraulic reducer sleeve		32mm hydraulic reducer sleeve		.500" hydraulic reducer sleeve		.750" hydraulic reducer sleeve	
D1	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number
3	3026450	12MHC030M	3026648	20MHC030M	3026662	25MHC030M	–	–	2248993	50HC030M	2248995	75HC030M
4	3026451	12MHC040M	3026649	20MHC040M	3026663	25MHC040M	–	–	1606050	50HC040M	2248996	75HC040M
5	3026452	12MHC050M	3026650	20MHC050M	3026664	25MHC050M	–	–	2248994	50HC050M	2248997	75HC050M
6	3026643	12MHC060M	3026651	20MHC060M	3026665	25MHC060M	3026675	32MHC060M	1606061	50HC060M	1093271	75HC060M
7	3026644	12MHC070M	3026652	20MHC070M	3026666	25MHC070M	3026676	32MHC070M	–	–	–	–
8	3026645	12MHC080M	3026653	20MHC080M	3026667	25MHC080M	3026677	32MHC080M	1606062	50HC080M	1093272	75HC080M
9	3026646	12MHC090M	3026654	20MHC090M	3026668	25MHC090M	3026678	32MHC090M	–	–	–	–
10	3026647	12MHC100M	3026655	20MHC100M	3026669	25MHC100M	3026679	32MHC100M	1606064	50HC100M	1093273	75HC100M
11	–	–	3026656	20MHC110M	–	–	3026680	32MHC110M	–	–	–	–
12	–	–	3026657	20MHC120M	3026669	25MHC120M	3026681	32MHC120M	–	–	1093524	75HC120M
13	–	–	3026658	20MHC130M	–	–	3026682	32MHC130M	–	–	–	–
14	–	–	3026659	20MHC140M	3026671	25MHC140M	3026683	32MHC140M	–	–	1093525	75HC140M
15	–	–	3026660	20MHC150M	–	–	3026684	32MHC150M	–	–	–	–
16	–	–	3026661	20MHC160M	3026672	25MHC160M	3026685	32MHC160M	–	–	1093526	75HC160M

HPS Beyond™ Drills for Aluminum Machining with MQL

Primary Application

B284/B285_HPS series solid carbide drills offer the highest metal removal rates and longest tool life in aluminum and other non-ferrous materials when MQL is applied. These drills can also be used with standard through coolant.

By combining the HP-Point geometry and the new KN15™ Beyond grade with the new Kennametal polishing technology and unique flute design into one tool, the B28_HPS is the ultimate production tool for aluminum workpiece applications — even when compared to PCD solutions. This drill family is a differentiated high-end and high-performance alternative to commoditized conventional carbide or PCD straight-fluted drills.

Features and Benefits

HPS Drill-Point Design

- Sharp cutting edge enables higher tool life in aluminum and other non-ferrous materials.
- Low cutting forces and less built-up edge.
- HP-point enables high feed rates by progressive rake angle and excellent centering capabilities.

Enlarged Flute Design

- Enables fast chip evacuation and high metal removal rates.

KN15 Beyond Grade

- The highly polished surface ensures superior chip evacuation, even when MQL coolant is applied.
- Specified, uncoated 9% Co fine-grain carbide.

“D” Shank Optimized for MQL Applications

- Enlarged chamfer on back end according to DIN 69090-3 (round cylindrical for MQL) to ensure optimum coolant flow without leakage.

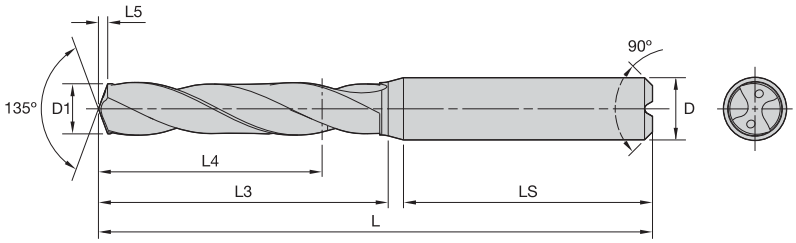
Much more cost-effective compared to PCD-tipped drills.



Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- Using Kennametal MQL chucks together with standard B28_HPS is recommended.
- Optional coatings available for applications in aluminum with Si>9%, based on TiB_2 and DLC.

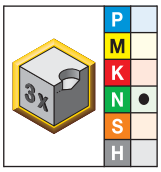


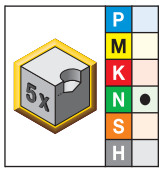


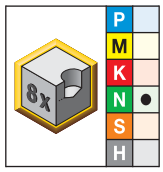


For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D





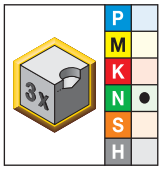


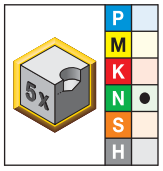
● first choice
○ alternate choice

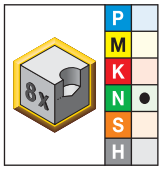
short • KN15	long • KN15	extra long • KN15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B284D03000HPS	B285D03000HPS	B286D03000HPS	3,000	.1181	–	–	0,6	36	6
B284D03100HPS	B285D03100HPS	B286D03100HPS	3,100	.1220	–	–	0,6	36	6
B284D03175HPS	B285D03175HPS	B286D03175HPS	3,175	.1250	1/8	–	0,6	36	6
B284D03200HPS	B285D03200HPS	B286D03200HPS	3,200	.1260	–	–	0,6	36	6
B284D03264HPS	B285D03264HPS	B286D03264HPS	3,264	.1285	–	30	0,6	36	6
B284D03300HPS	B285D03300HPS	B286D03300HPS	3,300	.1299	–	–	0,6	36	6
B284D03455HPS	B285D03455HPS	B286D03455HPS	3,455	.1360	–	29	0,6	36	6
B284D03500HPS	B285D03500HPS	B286D03500HPS	3,500	.1378	–	–	0,6	36	6
B284D03571HPS	B285D03571HPS	B286D03571HPS	3,571	.1406	9/64	–	0,7	36	6
B284D03700HPS	B285D03700HPS	B286D03700HPS	3,700	.1457	–	–	0,7	36	6
B284D03734HPS	B285D03734HPS	B286D03734HPS	3,734	.1470	–	26	0,7	36	6
B284D03900HPS	B285D03900HPS	B286D03900HPS	3,900	.1535	–	–	0,7	36	6
B284D03970HPS	B285D03970HPS	B286D03970HPS	3,970	.1563	5/32	–	0,7	36	6
B284D04000HPS	B285D04000HPS	B286D04000HPS	4,000	.1575	–	–	0,7	36	6
B284D04039HPS	B285D04039HPS	B286D04039HPS	4,039	.1590	–	21	0,7	36	6
B284D04100HPS	B285D04100HPS	B286D04100HPS	4,100	.1614	–	–	0,8	36	6
B284D04200HPS	B285D04200HPS	B286D04200HPS	4,200	.1654	–	–	0,8	36	6
B284D04305HPS	B285D04305HPS	B286D04305HPS	4,305	.1695	–	18	0,8	36	6
B284D04366HPS	–	–	4,366	.1719	11/64	–	0,8	36	6
B284D04400HPS	B285D04400HPS	B286D04400HPS	4,400	.1732	–	–	0,8	36	6
B284D04500HPS	B285D04500HPS	B286D04500HPS	4,500	.1772	–	–	0,8	36	6
B284D04600HPS	B285D04600HPS	B286D04600HPS	4,600	.1811	–	–	0,8	36	6
B284D04700HPS	B285D04700HPS	B286D04700HPS	4,700	.1850	–	13	0,9	36	6
B284D04763HPS	B285D04763HPS	B286D04763HPS	4,763	.1875	3/16	–	0,9	36	6
B284D04800HPS	B285D04800HPS	B286D04800HPS	4,800	.1890	–	12	0,9	36	6
B284D04900HPS	B285D04900HPS	B286D04900HPS	4,900	.1929	–	–	0,9	36	6
B284D05000HPS	B285D05000HPS	B286D05000HPS	5,000	.1969	–	–	0,9	36	6
B284D05100HPS	B285D05100HPS	B286D05100HPS	5,100	.2008	–	–	0,9	36	6
B284D05106HPS	B285D05106HPS	B286D05106HPS	5,106	.2010	–	7	0,9	36	6
B284D05159HPS	B285D05159HPS	B286D05159HPS	5,159	.2031	13/64	–	1,0	36	6
B284D05200HPS	B285D05200HPS	B286D05200HPS	5,200	.2047	–	–	1,0	36	6
B284D05300HPS	B285D05300HPS	B286D05300HPS	5,300	.2087	–	–	1,0	36	6
B284D05400HPS	B285D05400HPS	B286D05400HPS	5,400	.2126	–	–	1,0	36	6
B284D05410HPS	B285D05410HPS	B286D05410HPS	5,410	.2130	–	3	1,0	36	6
B284D05500HPS	B285D05500HPS	B286D05500HPS	5,500	.2165	–	–	1,0	36	6
B284D05558HPS	B285D05558HPS	B286D05558HPS	5,558	.2188	7/32	–	1,0	36	6

(continued)

(B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D — continued)





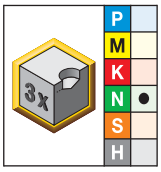


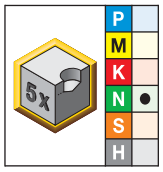
● first choice
○ alternate choice

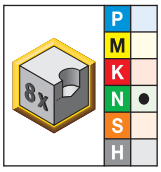
short • KN15	long • KN15	extra long • KN15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B284D05600HPS	B285D05600HPS	B286D05600HPS	5,600	.2205	–	–	1,0	36	6
B284D05791HPS	B285D05791HPS	B286D05791HPS	5,791	.2280	–	1	1,1	36	6
B284D05800HPS	–	–	5,800	.2283	–	–	1,1	36	6
B284D05954HPS	–	–	5,954	.2344	15/64	–	1,1	36	6
B284D06000HPS	B285D06000HPS	B286D06000HPS	6,000	.2362	–	–	1,1	36	6
B284D06200HPS	B285D06200HPS	B286D06200HPS	6,200	.2441	–	–	1,1	36	8
B284D06300HPS	B285D06300HPS	B286D06300HPS	6,300	.2480	–	–	1,2	36	8
B284D06350HPS	B285D06350HPS	B286D06350HPS	6,350	.2500	1/4	–	1,2	36	8
B284D06400HPS	B285D06400HPS	B286D06400HPS	6,400	.2520	–	–	1,2	36	8
B284D06500HPS	B285D06500HPS	B286D06500HPS	6,500	.2559	–	–	1,2	36	8
B284D06528HPS	B285D06528HPS	B286D06528HPS	6,528	.2570	–	–	1,2	36	8
B284D06600HPS	B285D06600HPS	B286D06600HPS	6,600	.2598	–	–	1,2	36	8
B284D06630HPS	B285D06630HPS	B286D06630HPS	6,630	.2610	–	–	1,2	36	8
B284D06700HPS	B285D06700HPS	B286D06700HPS	6,700	.2638	–	–	1,2	36	8
B284D06746HPS	B285D06746HPS	B286D06746HPS	6,746	.2656	17/64	–	1,2	36	8
B284D06800HPS	B285D06800HPS	B286D06800HPS	6,800	.2677	–	–	1,3	36	8
B284D06900HPS	B285D06900HPS	B286D06900HPS	6,900	.2717	–	–	1,3	36	8
B284D07000HPS	B285D07000HPS	B286D07000HPS	7,000	.2756	–	–	1,3	36	8
B284D07145HPS	B285D07145HPS	B286D07145HPS	7,145	.2813	9/32	–	1,3	36	8
B284D07300HPS	B285D07300HPS	B286D07300HPS	7,300	.2874	–	–	1,3	36	8
B284D07400HPS	B285D07400HPS	B286D07400HPS	7,400	.2913	–	–	1,4	36	8
B284D07500HPS	–	–	7,500	.2953	–	–	1,4	36	8
B284D07541HPS	B285D07541HPS	B286D07541HPS	7,541	.2969	19/64	–	1,4	36	8
B284D07600HPS	B285D07600HPS	B286D07600HPS	7,600	.2992	–	–	1,4	36	8
B284D07700HPS	B285D07700HPS	B286D07700HPS	7,700	.3031	–	–	1,4	36	8
–	B285D07800HPS	–	7,800	.3071	–	–	1,4	36	8
B284D07938HPS	B285D07938HPS	B286D07938HPS	7,938	.3125	5/16	–	1,5	36	8
B284D08000HPS	B285D08000HPS	B286D08000HPS	8,000	.3150	–	–	1,5	36	8
B284D08334HPS	B285D08334HPS	B286D08334HPS	8,334	.3281	21/64	–	1,5	40	10
B284D08400HPS	B285D08400HPS	B286D08400HPS	8,400	.3307	–	–	1,6	40	10
B284D08433HPS	B285D08433HPS	B286D08433HPS	8,433	.3320	–	–	1,6	40	10
B284D08500HPS	B285D08500HPS	B286D08500HPS	8,500	.3346	–	–	1,6	40	10
B284D08700HPS	B285D08700HPS	B286D08700HPS	8,700	.3425	–	–	1,6	40	10
B284D08733HPS	B285D08733HPS	B286D08733HPS	8,733	.3438	11/32	–	1,6	40	10
B284D08800HPS	B285D08800HPS	B286D08800HPS	8,800	.3465	–	–	1,6	40	10
B284D08900HPS	B285D08900HPS	B286D08900HPS	8,900	.3504	–	–	1,6	40	10
B284D09000HPS	B285D09000HPS	B286D09000HPS	9,000	.3543	–	–	1,7	40	10
B284D09100HPS	B285D09100HPS	B286D09100HPS	9,100	.3583	–	–	1,7	40	10
B284D09129HPS	B285D09129HPS	B286D09129HPS	9,129	.3594	23/64	–	1,7	40	10
B284D09300HPS	B285D09300HPS	B286D09300HPS	9,300	.3661	–	–	1,7	40	10
B284D09400HPS	B285D09400HPS	B286D09400HPS	9,400	.3701	–	–	1,7	40	10
B284D09500HPS	B285D09500HPS	B286D09500HPS	9,500	.3740	–	–	1,8	40	10
B284D09525HPS	B285D09525HPS	B286D09525HPS	9,525	.3750	3/8	–	1,8	40	10
B284D09900HPS	B285D09900HPS	B286D09900HPS	9,900	.3898	–	–	1,8	40	10
B284D09921HPS	B285D09921HPS	B286D09921HPS	9,921	.3906	25/64	–	1,8	40	10
B284D10000HPS	B285D10000HPS	B286D10000HPS	10,000	.3937	–	–	1,8	40	10
B284D10100HPS	B285D10100HPS	B286D10100HPS	10,100	.3976	–	–	1,9	45	12
B284D10200HPS	B285D10200HPS	B286D10200HPS	10,200	.4016	–	–	1,9	45	12
B284D10300HPS	B285D10300HPS	B286D10300HPS	10,300	.4055	–	–	1,9	45	12
B284D10320HPS	B285D10320HPS	B286D10320HPS	10,320	.4063	13/32	–	1,9	45	12
B284D10500HPS	B285D10500HPS	B286D10500HPS	10,500	.4134	–	–	1,9	45	12
B284D10600HPS	B285D10600HPS	B286D10600HPS	10,600	.4173	–	–	2,0	45	12

(continued)

(B284/B285/B286_HPS • ~3 x D/~5 x D/~8 x D — continued)







● first choice
○ alternate choice

short • KN15	long • KN15	extra long • KN15	D1 diameter mm	in	fraction	wire size	L5	LS	D
B284D10716HPS	B285D10716HPS	B286D10716HPS	10,716	.4219	27/64	—	2,0	45	12
B284D10800HPS	B285D10800HPS	B286D10800HPS	10,800	.4252	—	—	2,0	45	12
B284D11000HPS	B285D11000HPS	B286D11000HPS	11,000	.4331	—	—	2,0	45	12
B284D11100HPS	B285D11100HPS	B286D11100HPS	11,100	.4370	—	—	2,0	45	12
B284D11113HPS	B285D11113HPS	B286D11113HPS	11,113	.4375	7/16	—	2,1	45	12
B284D11200HPS	B285D11200HPS	B286D11200HPS	11,200	.4409	—	—	2,1	45	12
B284D11300HPS	B285D11300HPS	B286D11300HPS	11,300	.4449	—	—	2,1	45	12
B284D11400HPS	B285D11400HPS	B286D11400HPS	11,400	.4488	—	—	2,1	45	12
B284D11500HPS	B285D11500HPS	B286D11500HPS	11,500	.4528	—	—	2,1	45	12
B284D11509HPS	B285D11509HPS	B286D11509HPS	11,509	.4531	29/64	—	2,1	45	12
B284D11800HPS	B285D11800HPS	B286D11800HPS	11,800	.4646	—	—	2,2	45	12
B284D11908HPS	B285D11908HPS	B286D11908HPS	11,908	.4688	15/32	—	2,2	45	12
B284D12000HPS	B285D12000HPS	B286D12000HPS	12,000	.4724	—	—	2,2	45	12
B284D12304HPS	B285D12304HPS	B286D12304HPS	12,304	.4844	31/64	—	2,3	45	14
B284D12500HPS	B285D12500HPS	B286D12500HPS	12,500	.4921	—	—	2,3	45	14
B284D12600HPS	B285D12600HPS	B286D12600HPS	12,600	.4961	—	—	2,3	45	14
B284D12700HPS	B285D12700HPS	B286D12700HPS	12,700	.5000	1/2	—	2,3	45	14
B284D13000HPS	B285D13000HPS	B286D13000HPS	13,000	.5118	—	—	2,4	45	14
B284D13096HPS	B285D13096HPS	B286D13096HPS	13,096	.5156	33/64	—	2,4	45	14
B284D13100HPS	B285D13100HPS	B286D13100HPS	13,100	.5157	—	—	2,4	45	14
B284D13300HPS	B285D13300HPS	B286D13300HPS	13,300	.5236	—	—	2,5	45	14
B284D13400HPS	B285D13400HPS	B286D13400HPS	13,400	.5276	—	—	2,5	45	14
B284D13500HPS	B285D13500HPS	B286D13500HPS	13,500	.5315	—	—	2,5	45	14
B284D14000HPS	B285D14000HPS	B286D14000HPS	14,000	.5512	—	—	2,6	45	14
B284D14200HPS	B285D14200HPS	B286D14200HPS	14,200	.5591	—	—	2,6	48	16
B284D14288HPS	B285D14288HPS	B286D14288HPS	14,288	.5625	9/16	—	2,6	48	16
B284D14500HPS	B285D14500HPS	B286D14500HPS	14,500	.5709	—	—	2,7	48	16
B284D14684HPS	B285D14684HPS	B286D14684HPS	14,684	.5781	37/64	—	2,7	48	16
B284D15000HPS	B285D15000HPS	B286D15000HPS	15,000	.5906	—	—	2,8	48	16
B284D15083HPS	B285D15083HPS	B286D15083HPS	15,083	.5938	19/32	—	2,8	48	16
B284D15100HPS	B285D15100HPS	B286D15100HPS	15,100	.5945	—	—	2,8	48	16
B284D15300HPS	B285D15300HPS	B286D15300HPS	15,300	.6024	—	—	2,8	48	16
B284D15400HPS	B285D15400HPS	B286D15400HPS	15,400	.6063	—	—	2,8	48	16
B284D15875HPS	B285D15875HPS	B286D15875HPS	15,875	.6250	5/8	—	2,9	48	16
B284D16000HPS	B285D16000HPS	B286D16000HPS	16,000	.6299	—	—	3,0	48	16
B284D16500HPS	B285D16500HPS	B286D16500HPS	16,500	.6496	—	—	3,0	48	18
B284D16670HPS	B285D16670HPS	B286D16670HPS	16,670	.6563	21/32	—	3,1	48	18
B284D16800HPS	B285D16800HPS	B286D16800HPS	16,800	.6614	—	—	3,1	48	18
B284D16900HPS	B285D16900HPS	B286D16900HPS	16,900	.6654	—	—	3,1	48	18
B284D17000HPS	B285D17000HPS	B286D17000HPS	17,000	.6693	—	—	3,1	48	18
B284D17300HPS	B285D17300HPS	B286D17300HPS	17,300	.6811	—	—	3,2	48	18
B284D17463HPS	B285D17463HPS	B286D17463HPS	17,463	.6875	11/16	—	3,2	48	18
B284D17500HPS	B285D17500HPS	B286D17500HPS	17,500	.6890	—	—	3,2	48	18
B284D17859HPS	B285D17859HPS	B286D17859HPS	17,859	.7031	45/64	—	3,3	48	18
B284D18000HPS	B285D18000HPS	B286D18000HPS	18,000	.7087	—	—	3,3	48	18
B284D19000HPS	B285D19000HPS	B286D19000HPS	19,000	.7480	—	—	3,5	50	20
B284D19050HPS	B285D19050HPS	B286D19050HPS	19,050	.7500	3/4	—	3,5	50	20
B284D20000HPS	B285D20000HPS	B286D20000HPS	20,000	.7874	—	—	3,7	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

HP Drills • B28_HPS Series • Grade KN15™ • MQL and Through Coolant • Drill Diameters 3-20mm (.1181–.7874")





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	**230**	450	mm/r	0,13–0,25	0,14–0,29	0,17–0,35	0,21–0,42	0,27–0,50	0,33–0,57	0,37–0,69	0,43–0,82
	2	120	**220**	350	mm/r	0,14–0,23	0,15–0,28	0,17–0,34	0,22–0,39	0,29–0,46	0,34–0,54	0,39–0,67	0,45–0,80
	3	100	**180**	400	mm/r	0,13–0,20	0,14–0,21	0,16–0,27	0,20–0,33	0,28–0,40	0,33–0,45	0,38–0,60	0,44–0,68
	4	100	**130**	300	mm/r	0,10–0,18	0,12–0,20	0,14–0,26	0,16–0,30	0,18–0,34	0,20–0,38	0,24–0,42	0,28–0,46

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
N	1	390	**750**	**1480**	IPR	.005–.010	.006–.011	.007–.014	.008–.017	.011–.020	.013–.022	.015–.027	.017–.032
	2	390	**720**	**1150**	IPR	.006–.009	.006–.011	.007–.013	.009–.015	.011–.018	.013–.021	.015–.026	.018–.032
	3	330	**590**	**1310**	IPR	.005–.008	.006–.008	.006–.011	.008–.013	.011–.016	.013–.018	.015–.024	.017–.027
	4	330	**430**	**980**	IPR	.004–.007	.005–.008	.006–.010	.006–.012	.007–.013	.008–.015	.009–.017	.011–.018

Y-TECH™ Drills with Through Coolant for Difficult-to-Machine Materials

Primary Application

The B29_YPL series solid carbide drills are specifically engineered to drill stainless steel, high-temp alloys, and difficult-to-machine materials.
Y-TECH drills deliver best-in-class hole quality and longest tool life in these difficult-to-machine workpiece materials.
Operate these drills with standard through coolant.

Features and Benefits

YPL Drill-Point Design

- Ensures good centering and chip formation.
- No jamming of chips and enables easy reconditioning.

Uneven Flute-to-Flute Angle

- Unbalanced forces by design eliminate chipping on margin lands.

Three-Margin Lands

- Reduce pendulum motion by directing forces towards third margin, which results in superior hole accuracy (cylindricity, constant diameter, hole straightness).

KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables higher cutting speeds and outstanding wear resistance.
- Optimized surface finish of the tool ensures chip evacuation in high-speed drilling applications.

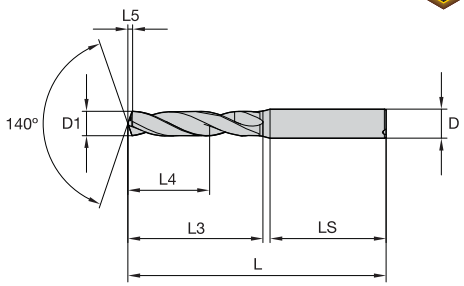
Y-TECH™ drills deliver best-in-class hole quality.

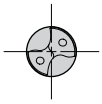


Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Using Kennametal slim line hydraulic chucks together with standard B29_YPL is recommended if workpiece contours need to be bypassed.



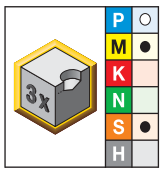


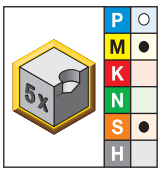




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B291/B292_YPL • ~3 x D/~5 x D



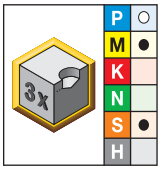


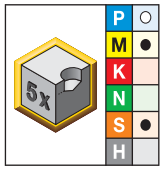
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B291A03000YPL	B292A03000YPL	3,000	.1181	–	–	0,6	36	6
B291A03100YPL	B292A03100YPL	3,100	.1220	–	–	0,6	36	6
B291A03175YPL	B292A03175YPL	3,175	.1250	1/8	–	0,6	36	6
B291A03200YPL	B292A03200YPL	3,200	.1260	–	–	0,6	36	6
B291A03300YPL	B292A03300YPL	3,300	.1299	–	–	0,7	36	6
B291A03400YPL	B292A03400YPL	3,400	.1339	–	–	0,7	36	6
B291A03454YPL	–	3,454	.1360	–	29	0,7	36	6
B291A03500YPL	B292A03500YPL	3,500	.1378	–	–	0,7	36	6
B291A03600YPL	B292A03600YPL	3,600	.1417	–	–	0,7	36	6
B291A03700YPL	B292A03700YPL	3,700	.1457	–	–	0,7	36	6
B291A03800YPL	B292A03800YPL	3,800	.1496	–	–	0,8	36	6
B291A03900YPL	B292A03900YPL *	3,900	.1535	–	–	0,8	36	6
B291A03970YPL	B292A03970YPL	3,970	.1563	5/32	–	0,8	36	6
B291A04000YPL	B292A04000YPL	4,000	.1575	–	–	0,8	36	6
B291A04100YPL	B292A04100YPL	4,100	.1614	–	–	0,8	36	6
–	B292A04200YPL	4,200	.1654	–	–	0,8	36	6
B291A04300YPL	B292A04300YPL	4,300	.1693	–	–	0,8	36	6
B291A04400YPL	–	4,400	.1732	–	–	0,9	36	6
B291A04500YPL	B292A04500YPL	4,500	.1772	–	–	0,9	36	6
–	B292A04700YPL	4,700	.1850	–	13	0,9	36	6
B291A04763YPL	B292A04763YPL	4,763	.1875	3/16	–	0,9	36	6
B291A04800YPL	B292A04800YPL	4,800	.1890	–	12	0,9	36	6
B291A04851YPL	B292A04851YPL	4,851	.1910	–	11	0,9	36	6
B291A04900YPL	–	4,900	.1929	–	–	0,9	36	6
B291A04915YPL	B292A04915YPL	4,915	.1935	–	10	1,0	36	6
B291A05000YPL	B292A05000YPL	5,000	.1969	–	–	1,0	36	6
B291A05100YPL	B292A05100YPL	5,100	.2008	–	–	1,0	36	6
B291A05200YPL	B292A05200YPL	5,200	.2047	–	–	1,0	36	6
B291A05410YPL	B292A05410YPL	5,410	.2130	–	3	1,1	36	6
B291A05500YPL	B292A05500YPL	5,500	.2165	–	–	1,1	36	6
–	B292A05558YPL	5,558	.2188	7/32	–	1,1	36	6
B291A05600YPL	B292A05600YPL	5,600	.2205	–	–	1,1	36	6
–	B292A05800YPL	5,800	.2283	–	–	1,1	36	6
B291A05900YPL	–	5,900	.2323	–	–	1,1	36	6
B291A06000YPL	B292A06000YPL	6,000	.2362	–	–	1,2	36	6
B291A06200YPL	B292A06200YPL	6,200	.2441	–	–	1,2	36	8

(continued)

(B291/B292_YPL • ~3 x D/~5 x D — continued)



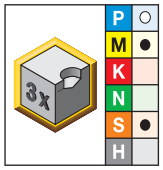


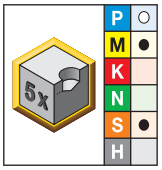
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B291A06350YPL	B292A06350YPL	6,350	.2500	1/4	–	1,2	36	8
B291A06500YPL	B292A06500YPL	6,500	.2559	–	–	1,3	36	8
–	B292A06528YPL	6,528	.2570	–	–	1,3	36	8
–	B292A06600YPL	6,600	.2598	–	–	1,3	36	8
–	B292A06746YPL	6,746	.2656	17/64	–	1,3	36	8
B291A06747YPL	–	6,747	.2656	17/64	–	1,3	36	8
B291A06800YPL	B292A06800YPL	6,800	.2677	–	–	1,3	36	8
–	B292A06900YPL	6,900	.2717	–	–	1,3	36	8
B291A07000YPL	B292A07000YPL	7,000	.2756	–	–	1,4	36	8
–	B292A07100YPL	7,100	.2795	–	–	1,4	36	8
B291A07144YPL	–	7,144	.2813	9/32	–	1,4	36	8
–	B292A07145YPL	7,145	.2813	9/32	–	1,4	36	8
B291A07200YPL	B292A07200YPL	7,200	.2835	–	–	1,4	36	8
–	B292A07400YPL	7,400	.2913	–	–	1,4	36	8
B291A07500YPL	B292A07500YPL *	7,500	.2953	–	–	1,4	36	8
–	B292A07600YPL	7,600	.2992	–	–	1,5	36	8
–	B292A07900YPL	7,900	.3110	–	–	1,5	36	8
B291A07938YPL	B292A07938YPL	7,938	.3125	5/16	–	1,5	36	8
B291A08000YPL	B292A08000YPL	8,000	.3150	–	–	1,5	36	8
–	B292A08100YPL	8,100	.3189	–	–	1,6	40	10
–	B292A08200YPL	8,200	.3228	–	–	1,6	40	10
B291A08334YPL	B292A08334YPL *	8,334	.3281	21/64	–	1,6	40	10
–	B292A08433YPL	8,433	.3320	–	–	1,6	40	10
B291A08500YPL	B292A08500YPL	8,500	.3346	–	–	1,6	40	10
B291A08600YPL	B292A08600YPL	8,600	.3386	–	–	1,7	40	10
B291A08733YPL	B292A08733YPL	8,733	.3438	11/32	–	1,7	40	10
B291A08800YPL	B292A08800YPL	8,800	.3465	–	–	1,7	40	10
B291A08900YPL *	B292A08900YPL	8,900	.3504	–	–	1,7	40	10
B291A09000YPL	B292A09000YPL	9,000	.3543	–	–	1,7	40	10
B291A09129YPL	–	9,129	.3594	23/64	–	1,8	40	10
–	B292A09130YPL	9,130	.3594	23/64	–	1,8	40	10
–	B292A09200YPL	9,200	.3622	–	–	1,8	40	10
B291A09300YPL	–	9,300	.3661	–	–	1,8	40	10
–	B292A09347YPL	9,347	.3680	–	–	1,8	40	10
B291A09500YPL	B292A09500YPL	9,500	.3740	–	–	1,8	40	10
B291A09525YPL	B292A09525YPL	9,525	.3750	3/8	–	1,8	40	10
–	B292A09600YPL	9,600	.3780	–	–	1,8	40	10
B291A09700YPL	B292A09700YPL	9,700	.3819	–	–	1,9	40	10
B291A09800YPL	B292A09800YPL	9,800	.3858	–	–	1,9	40	10
B291A10000YPL	B292A10000YPL	10,000	.3937	–	–	1,9	40	10
–	B292A10100YPL	10,100	.3976	–	–	1,9	45	12
B291A10200YPL	B292A10200YPL	10,200	.4016	–	–	2,0	45	12
B291A10320YPL	B292A10320YPL	10,320	.4063	13/32	–	2,0	45	12
B291A10500YPL	B292A10500YPL	10,500	.4134	–	–	2,0	45	12
B291A10716YPL	B292A10716YPL	10,716	.4219	27/64	–	2,0	45	12
B291A11000YPL	B292A11000YPL	11,000	.4331	–	–	2,1	45	12
–	B292A11112YPL	11,112	.4375	7/16	–	2,1	45	12
B291A11113YPL	–	11,113	.4375	7/16	–	2,1	45	12
B291A11500YPL	B292A11500YPL *	11,500	.4528	–	–	2,2	45	12
B291A11509YPL	B292A11509YPL	11,509	.4531	29/64	–	2,2	45	12
B291A11800YPL	–	11,800	.4646	–	–	2,2	45	12
B291A11908YPL	B292A11908YPL	11,908	.4688	15/32	–	2,3	45	12

(continued)

(B291/B292_YPL • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B291A12000YPL	B292A12000YPL	12,000	.4724	–	–	2,3	45	12
B291A12300YPL	–	12,300	.4843	–	–	2,3	45	14
–	B292A12304YPL	12,304	.4844	31/64	–	2,3	45	14
B291A12500YPL	B292A12500YPL	12,500	.4921	–	–	2,4	45	14
B291A12700YPL	B292A12700YPL	12,700	.5000	1/2	–	2,4	45	14
B291A12900YPL	–	12,900	.5079	–	–	2,5	45	14
B291A13000YPL	B292A13000YPL	13,000	.5118	–	–	2,5	45	14
–	B292A13500YPL	13,500	.5315	–	–	2,6	45	14
B291A13800YPL	–	13,800	.5433	–	–	2,6	45	14
–	B292A13900YPL *	13,900	.5472	–	–	2,6	45	14
B291A14000YPL	B292A14000YPL	14,000	.5512	–	–	2,7	45	14
–	B292A14200YPL *	14,200	.5591	–	–	2,7	48	16
B291A14288YPL	B292A14288YPL	14,288	.5625	9/16	–	2,7	48	16
B291A14500YPL	B292A14500YPL	14,500	.5709	–	–	2,8	48	16
B291A15000YPL	B292A15000YPL	15,000	.5906	–	–	2,8	48	16
–	B292A15500YPL	15,500	.6102	–	–	2,9	48	16
–	B292A15600YPL	15,600	.6142	–	–	3,0	48	16
B291A15800YPL	–	15,800	.6220	–	–	3,0	48	16
B291A15875YPL	B292A15875YPL	15,875	.6250	5/8	–	3,0	48	16
B291A16000YPL	B292A16000YPL *	16,000	.6299	–	–	3,0	48	16
B291A16100YPL *	–	16,100	.6339	–	–	3,1	48	18
–	B292A16500YPL *	16,500	.6496	–	–	3,1	48	18
B291A17000YPL	B292A17000YPL *	17,000	.6693	–	–	3,2	48	18
B291A17463YPL	B292A17463YPL	17,463	.6875	11/16	–	3,3	48	18
B291A17500YPL *	B292A17500YPL *	17,500	.6890	–	–	3,3	48	18
B291A17900YPL *	–	17,900	.7047	–	–	3,4	48	18
B291A18000YPL	B292A18000YPL *	18,000	.7087	–	–	3,4	48	18
–	B292A18500YPL *	18,500	.7283	–	–	3,5	50	20
–	B292A19000YPL *	19,000	.7480	–	–	3,6	50	20
B291A19050YPL *	B292A19050YPL	19,050	.7500	3/4	–	3,6	50	20
B291A19800YPL	–	19,800	.7795	–	–	3,7	50	20
–	B292A20000YPL	20,000	.7874	–	–	3,8	50	20
–	B292A20500YPL *	20,500	.8071	–	–	3,9	50	20
–	B292A21000YPL *	21,000	.8268	–	–	4,0	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

Y-TECH™ Drill • B29_YPL Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	5	45	**65**	80	mm/r		0,04–0,08	0,06–0,09	0,07–0,12	0,09–0,16	0,11–0,19	0,13–0,21	0,15–0,26	0,18–0,30
	6	50	**60**	90	mm/r		0,04–0,06	0,04–0,07	0,06–0,10	0,10–0,15	0,09–0,16	0,11–0,20	0,13–0,24	0,16–0,28
M	1	40	**50**	60	mm/r		0,07–0,11	0,08–0,12	0,13–0,17	0,14–0,21	0,14–0,21	0,17–0,23	0,19–0,25	0,22–0,27
	2	40	**50**	80	mm/r		0,07–0,11	0,07–0,12	0,08–0,17	0,13–0,21	0,14–0,22	0,17–0,23	0,19–0,25	0,22–0,27
	3	40	**50**	70	mm/r		0,04–0,06	0,04–0,07	0,04–0,07	0,05–0,08	0,06–0,09	0,06–0,10	0,06–0,10	0,07–0,11
S	1	15	**20**	30	mm/r		0,06–0,08	0,06–0,08	0,07–0,10	0,10–0,13	0,11–0,14	0,12–0,16	0,14–0,19	0,17–0,22
	2	20	**20**	30	mm/r		0,05–0,07	0,05–0,07	0,06–0,08	0,08–0,11	0,09–0,12	0,10–0,13	0,12–0,16	0,14–0,18
	3	25	**30**	50	mm/r		0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
	4	30	**30**	50	mm/r		0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
H	1	10	**20**	30	mm/r		0,01–0,03	0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	5	150	**210**	260	IPR		.002–.003	.002–.004	.003–.005	.004–.006	.004–.008	.005–.008	.006–.010	.007–.012
	6	160	**200**	300	IPR		.002–.002	.002–.003	.002–.004	.004–.006	.004–.006	.004–.008	.005–.009	.006–.011
M	1	130	**160**	200	IPR		.003–.004	.003–.005	.005–.007	.006–.008	.006–.008	.007–.009	.008–.010	.009–.011
	2	130	**160**	260	IPR		.003–.004	.003–.005	.003–.007	.005–.008	.006–.009	.007–.009	.008–.010	.009–.011
	3	130	**160**	230	IPR		.002–.002	.002–.003	.002–.003	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004
S	1	50	**70**	100	IPR		.002–.003	.002–.003	.003–.004	.004–.005	.004–.006	.005–.006	.006–.008	.007–.009
	2	70	**70**	100	IPR		.002–.003	.002–.003	.002–.003	.003–.004	.004–.005	.004–.005	.005–.006	.006–.007
	3	80	**100**	160	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005
	4	100	**100**	160	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005
H	1	30	**70**	100	IPR		.000–.001	.001–.001	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004

TX Drills with Through Coolant for Close Tolerance Holes

Primary Application

B411 solid carbide drills have an X-shaped, free-cutting 130° point design and are designed for gray cast iron, nodular iron, and non-ferrous and aluminum alloy materials. Best suited for high-quality, close tolerance holes that require a very good surface finish.

Features and Benefits

Two Cutting Edges with Straight Flutes

- Precise shape of the hole even if used as platform for complex step drills.
- Can run into cored holes.

X-Shaped Drill Point

- Excellent centering capabilities.

Four-Margin Land Design

- Second set of cutting margin lands improves the surface quality.
- Achieve tight diameter tolerances.
- Can run through cross holes and exit on inclined surfaces.

Wear-Resistant Carbide KF1 Grade

- Long tool life in abrasive materials, such as cast iron and aluminum die cast alloys.
- The uncoated grade KF1 helps to prevent built-up edge in drilling aluminum.

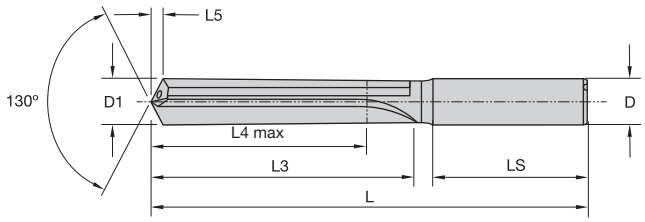
Best suited for high-quality, close tolerance holes that require a very good surface finish.

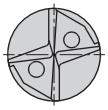


Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.
- Coated grades available for other material applications, such as cast iron.

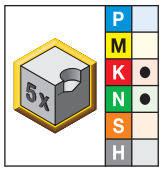








B411 • ~5 x D

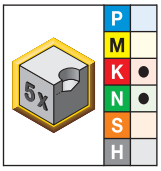


● first choice
○ alternate choice

KF1	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B411A03200	3,200	.1260	–	–	66	28	23	0,7	36	6
B411A03300	3,300	.1299	–	–	66	28	23	0,8	36	6
B411A03800	3,800	.1496	–	–	74	36	29	0,9	36	6
B411A04000	4,000	.1575	–	–	74	36	29	0,9	36	6
B411A04200	4,200	.1654	–	–	74	36	29	1,0	36	6
B411A04500	4,500	.1772	–	–	74	36	29	1,0	36	6
B411A04600	4,600	.1811	–	–	74	36	29	1,1	36	6
B411A04650	4,650	.1831	–	–	74	36	29	1,1	36	6
B411A04800	4,800	.1890	–	12	82	44	35	1,1	36	6
B411A04900	4,900	.1929	–	–	82	44	35	1,1	36	6
B411A05000	5,000	.1969	–	–	82	44	35	1,2	36	6
B411A05100	5,100	.2008	–	–	82	44	35	1,2	36	6
B411A05200	5,200	.2047	–	–	82	44	35	1,2	36	6
B411A05500	5,500	.2165	–	–	82	44	35	1,3	36	6
B411A05550	5,550	.2185	–	–	82	44	35	1,3	36	6
B411A05600	5,600	.2205	–	–	82	44	35	1,2	36	6
B411A05800	5,800	.2283	–	–	82	44	35	1,4	36	6
B411A06000	6,000	.2362	–	–	82	44	35	1,4	36	6
B411A06100	6,100	.2402	–	–	91	53	43	1,3	36	8
B411A06300	6,300	.2480	–	–	91	53	43	1,5	36	8
B411A06400	6,400	.2520	–	–	91	53	43	1,5	36	8
B411A06500	6,500	.2559	–	–	91	53	43	1,5	36	8
B411A06600	6,600	.2598	–	–	91	53	43	1,5	36	8
B411A06800	6,800	.2677	–	–	91	53	43	1,6	36	8
B411A07000	7,000	.2756	–	–	91	53	43	1,6	36	8
B411A07400	7,400	.2913	–	–	91	53	43	1,7	36	8
B411A07500	7,500	.2953	–	–	91	53	43	1,7	36	8
B411A07700 *	7,700	.3031	–	–	91	53	43	1,7	36	8
B411A07800	7,800	.3071	–	–	91	53	43	1,8	36	8
B411A08000	8,000	.3150	–	–	91	53	43	1,9	36	8
B411A08400	8,400	.3307	–	–	103	61	49	2,0	40	10
B411A08500	8,500	.3346	–	–	103	61	49	2,0	40	10

(continued)

(B411 • ~5 x D — continued)



● first choice
○ alternate choice

KF1	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B411A08700	8,700	.3425	—	—	103	61	49	1,9	40	10
B411A08800	8,800	.3465	—	—	103	61	49	1,9	40	10
B411A09000	9,000	.3543	—	—	103	61	49	2,1	40	10
B411A09300	9,300	.3661	—	—	103	61	49	2,2	40	10
B411A09500	9,500	.3740	—	—	103	61	49	2,2	40	10
B411A09800	9,800	.3858	—	—	103	61	49	2,3	40	10
B411A10000	10,000	.3937	—	—	103	61	49	2,3	40	10
B411A10200	10,200	.4016	—	—	118	71	56	2,4	45	12
B411A10500	10,500	.4134	—	—	118	71	56	2,4	45	12
B411A11000	11,000	.4331	—	—	118	71	56	2,6	45	12
B411A11200	11,200	.4409	—	—	118	71	56	2,6	45	12
B411A11500	11,500	.4528	—	—	118	71	56	2,7	45	12
B411A11800	11,800	.4646	—	—	118	71	56	2,8	45	12
B411A12000	12,000	.4724	—	—	118	71	56	2,8	45	12
B411A12500	12,500	.4921	—	—	124	77	60	2,9	45	14
B411A13000	13,000	.5118	—	—	124	77	60	3,0	45	14
B411A13500	13,500	.5315	—	—	124	77	60	3,1	45	14
B411A13800	13,800	.5433	—	—	124	77	60	3,2	45	14
B411A14000	14,000	.5512	—	—	124	77	60	3,3	45	14
B411A14500	14,500	.5709	—	—	133	83	63	3,4	48	16
B411A15000	15,000	.5906	—	—	133	83	63	3,5	48	16
B411A15500	15,500	.6102	—	—	133	83	63	3,6	48	16
B411A16000	16,000	.6299	—	—	133	83	63	3,7	48	16
B411A16500	16,500	.6496	—	—	143	93	71	3,8	48	18
B411A17000	17,000	.6693	—	—	143	93	71	4,0	48	18
B411A17500	17,500	.6890	—	—	143	93	71	4,1	48	18
B411A18000	18,000	.7087	—	—	143	93	71	4,2	48	18
B411A19000	19,000	.7480	—	—	153	101	77	4,4	50	20
B411A19500	19,500	.7677	—	—	153	101	77	4,5	50	20
B411A20000	20,000	.7874	—	—	153	101	77	4,7	50	20
B411A21000	21,000	.8268	—	—	167	114	85	4,9	50	20
B411A22000	22,000	.8661	—	—	167	114	85	5,1	50	20
B411A23000	23,000	.9055	—	—	184	126	98	5,4	56	25
B411A24000	24,000	.9449	—	—	184	126	98	5,6	56	25
B411A25000	25,000	.9843	—	—	184	126	98	5,8	56	25

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance k6	D tolerance h6
>3–6	0,001/0,009	0,000/-0,008
>6–10	0,001/0,010	0,000/-0,009
>10–18	0,001/0,012	0,000/-0,011
>18–25,4	0,002/0,015	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance k6	D tolerance h6
>.1181–.2362	.0000/.0004	.0000/-.0003
>.2362–.3937	.0000/.0004	.0000/-.0004
>.3937–.7087	.0000/.0005	.0000/-.0004
>.7087–1.0000	.0000/.0006	.0000/-.0005

TX Drills • B411 Series • Grade KF1 • Through Coolant • Drill Diameters 3–25mm (.1181–.9843")

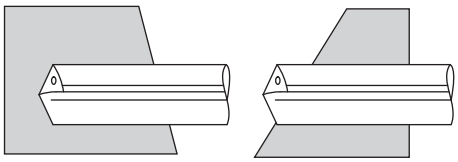


Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	25,4
K	1	115	**120**	140	mm/r	0,11–0,20	0,12–0,24	0,15–0,28	0,18–0,33	0,20–0,38	0,23–0,44	0,30–0,53	0,34–0,65	0,40–0,76
N	1	100	**250**	450	mm/r	0,12–0,25	0,13–0,29	0,16–0,35	0,20–0,42	0,26–0,50	0,32–0,57	0,36–0,69	0,42–0,82	0,59–0,96
	2	200	**250**	300	mm/r	0,13–0,21	0,14–0,26	0,16–0,32	0,20–0,37	0,27–0,44	0,32–0,52	0,38–0,64	0,44–0,78	0,60–0,96
	3	100	**150**	300	mm/r	0,11–0,18	0,12–0,20	0,15–0,24	0,18–0,30	0,20–0,38	0,23–0,44	0,30–0,53	0,34–0,65	0,40–0,76
	4	100	**170**	250	mm/r	0,10–0,16	0,12–0,20	0,14–0,26	0,16–0,28	0,18–0,32	0,20–0,36	0,22–0,40	0,24–0,44	0,28–0,50

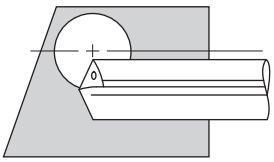
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750	1/1 1.000
K	1	380	**390**	460	IPR	.004–.008	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.012–.021	.013–.026	.016–.030
N	1	330	**820**	1480	IPR	.005–.010	.005–.011	.006–.014	.008–.017	.010–.020	.013–.022	.014–.027	.017–.032	.023–.038
	2	660	**820**	980	IPR	.005–.008	.006–.010	.006–.013	.008–.015	.011–.017	.013–.021	.015–.025	.017–.031	.024–.038
	3	330	**490**	980	IPR	.004–.007	.005–.008	.006–.009	.007–.012	.008–.015	.009–.017	.012–.021	.013–.026	.016–.030
	4	330	**560**	820	IPR	.004–.006	.005–.008	.006–.010	.006–.011	.007–.013	.008–.014	.009–.016	.009–.017	.011–.020

TX Drill Applications

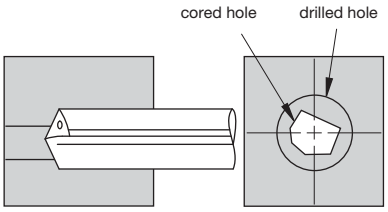
The excellent stability of the TX drill enables it to be used for drilling through inclined planes, intersecting holes, and cored holes:



inclined planes



intersecting holes



cored holes

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



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SPF Drills for CFRP Composite Materials

Primary Application

B53_SPF series solid carbide drills offer a material-specific design and grade to machine carbon fiber-reinforced polymer (CFRP) composite materials by minimizing delamination and increasing tool life.

Features and Benefits

SPF Drill-Point Design

- Special 90° point angle increases centering capability.
- Low thrust and improved hole quality.

Unique Geometry

- Combination of point design, substrate, and coating provides longer tool life and requires substantially less cutting force.

KDF400™ Grade

- CVD multilayer diamond coating provides more wear resistance and reduced friction, increasing tool life and improving chip flow.



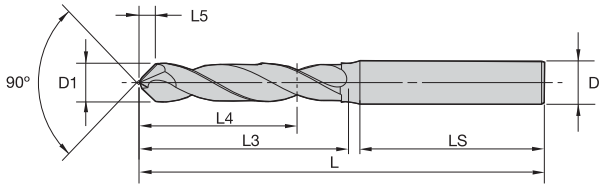
Designed to machine carbon fiber-reinforced polymers.

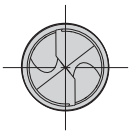


Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.



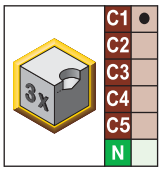


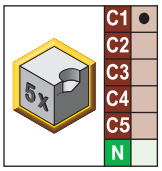




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B531/B532_SPF • ~3 x D/~5 x D





● first choice
○ alternate choice

short • KDF400	long • KDF400	D1 diameter mm	in	fraction	wire size	L5	LS	D
B531A03200SPF	B532A03200SPF *	3,200	.1260	–	–	1,5	36	6
B531A03300SPF	B532A03300SPF *	3,300	.1299	–	–	1,5	36	6
B531A03600SPF	B532A03600SPF *	3,600	.1417	–	–	1,6	36	6
B531A04000SPF	–	4,000	.1575	–	–	1,8	36	6
B531A04366SPF *	B532A04366SPF *	4,366	.1719	11/64	–	2,0	36	6
B531A04851SPF	B532A04851SPF *	4,851	.1910	–	11	2,2	36	6
B531A04864SPF	–	4,864	.1915	–	–	2,2	36	6
B531A05100SPF *	B532A05100SPF	5,100	.2008	–	–	2,3	36	6
B531A05200SPF *	B532A05200SPF *	5,200	.2047	–	–	2,4	36	6
B531A06000SPF	B532A06000SPF	6,000	.2362	–	–	2,7	36	6
B531A06375SPF	B532A06375SPF *	6,375	.2510	–	–	2,9	36	8
B531A06400SPF	B532A06400SPF *	6,400	.2520	–	–	2,9	36	8
B531A06500SPF	B532A06500SPF *	6,500	.2559	–	–	3,0	36	8
–	B532A06700SPF *	6,700	.2638	–	–	3,0	36	8
–	B532A07200SPF	7,200	.2835	–	–	3,3	36	8
B531A07938SPF	B532A07938SPF *	7,938	.3125	5/16	–	3,6	36	8
B531A09550SPF	–	9,550	.3760	–	–	4,3	40	10
B531A09563SPF	B532A09563SPF *	9,563	.3765	–	–	4,3	40	10
B531A11125SPF *	–	11,125	.4380	–	–	5,1	45	12
B531A12725SPF	B532A12725SPF *	12,725	.5010	–	–	5,8	45	14

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminum/Titanium

SPF Drills • B53_ Series • Grade KDF400™ • Dry Applications • Drill Diameters 3–12mm (.1181-.4724")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0
C	1	90	120	150	mm/r		0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20	0,03–0,20
Material Group		**Cutting Speed — vc Range — SFM min**	**Starting Value**	**max**	**Inch Recommended Feed Rate (f) by Diameter**		**1/8 .125**	**3/16 .188**	**1/4 .250**	**5/16 .313**	**3/8 .375**	**1/2 .500**
C	1	300	390	490	IPR		.001–.008	.001–.008	.001–.008	.001–.008	.001–.008	.001–.008

Drills for Machining of CFRP-Metal Stack Materials

Primary Application

The all new stack drill tackles CFRP-metal stack material drilling operations in diameter ranges of 4,763–15,875mm (3/16–5/8"). The drill can be applied in all combinations of stacks: CFRP-Ti-Al as well as CFRP-Ti, CFRP-Al, and also straight Ti or Al. Operate these drills with standard through coolant, MQL, or even dry.

The new Kennametal B55_DAL solid carbide drill provides excellent hole quality in combination with extended tool life, especially for customers in the aerospace industry who require the best hole quality and cost savings in an increasing number of applications with CFRP-Ti-stack materials.

The new Kennametal PDC251_ drill provides outstanding wear resistance and tool life. Thanks to the PCD tip, the PDC251_ drill withstands the most abrasive CFRP materials with high-fiber content. It is available in diameter ranges of 4,763–12,7mm (3/16–1/2"). Best performance is achieved with automated rigid machining devices. Additionally, multiple regrinds are possible.

Features and Benefits

Double-Angle Point Design

- Sharp cutting edge to cleanly cut CFRPs as top layer in CFRP-metal stacks.
- Bur-free when exiting metal side of stack.
- Excellent centering capabilities.

KN15™ Beyond™ Grade

- The highly polished surface ensures superior chip evacuation, even when MQL coolant is applied.
- The grade is a specified, uncoated 9% Co fine-grain carbide.

KD1415™ Grade

- Polycrystalline diamond grade for high wear resistance.
- Sufficient toughness for Ti- or Al-metal layers.



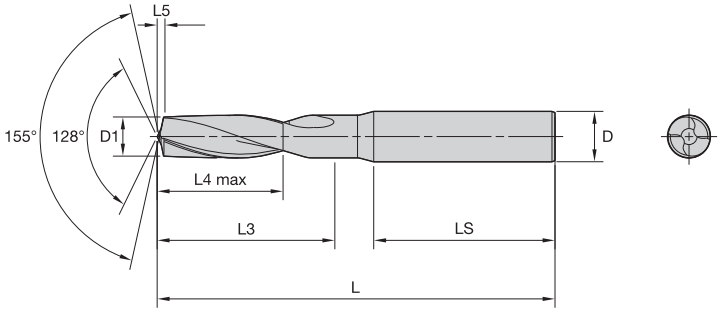
k6 Tolerance

- The drill diameter is ground to a k6 tolerance and can achieve hole tolerances of H8.

Customization

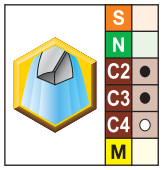
- Intermediate diameters available as semi-standards.
- Length variations and step drills, as well as shank variations, available as custom solutions for carbide and PCD versions.
- A four-margin land design for increased stability is available as semi-standard B54_DAL.







B551A_DAL • ~3 x D



● first choice
○ alternate choice

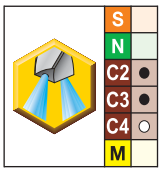
short • KN15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B551A04763DAL *	4,763	.1875	3/16	66	28	20	0,8	36	6
B551A06350DAL	6,350	.2500	1/4	79	34	24	1,1	36	8
B551A07938DAL	7,938	.3125	5/16	79	41	29	1,4	36	8
B551A09525DAL	9,525	.3750	3/8	89	47	35	1,7	40	10
B551A11113DAL *	11,113	.4375	7/16	102	55	40	2,0	45	12
B551A12700DAL *	12,700	.5000	1/2	107	60	43	2,3	45	14
B551A14288DAL *	14,288	.5625	9/16	115	65	45	2,5	48	16
B551A15875DAL *	15,875	.6250	5/8	115	65	45	2,8	48	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

DAL Drills • CFRP-Ti-Stacks • Through Coolant



B556A_DAL • ~3 x D



● first choice
○ alternate choice

short • KN15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B556A04763DAL *	4,763	.1875	3/16	66	28	20	0,8	36	6
B556A04826DAL	4,826	.1900	—	66	28	20	0,9	36	6
B556A06350DAL	6,350	.2500	1/4	79	34	24	1,1	36	8
B556A06375DAL *	6,375	.2510	—	79	34	24	1,1	36	8
B556A07938DAL	7,938	.3125	5/16	79	41	29	1,4	36	8
B556A09525DAL *	9,525	.3750	3/8	89	47	35	1,7	40	10
B556A11113DAL *	11,113	.4375	7/16	102	55	40	2,0	45	12
B556A12700DAL *	12,700	.5000	1/2	107	60	43	2,3	45	14
B556A14288DAL *	14,288	.5625	9/16	115	65	45	2,5	48	16
B556A15875DAL *	15,875	.6250	5/8	115	65	45	2,8	48	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Stack Drill • B551/B541 Series • Grade KN15™ • Dry • Drill Diameters 3–20mm (.1181–.7874")



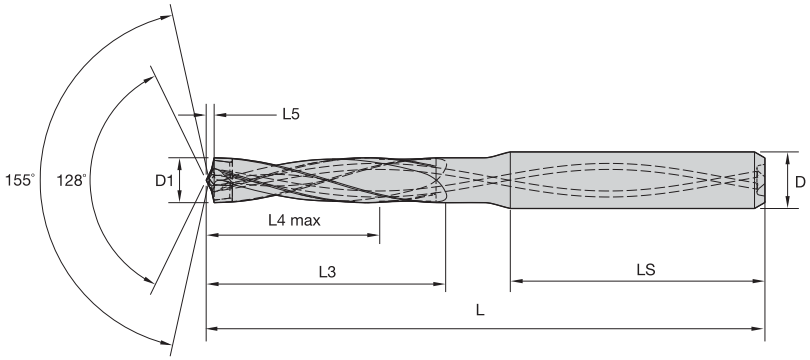
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	260	390	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	3	30	30	50	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	4	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009

Stack Drill • B556/B546 Series • Grade KN15 • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



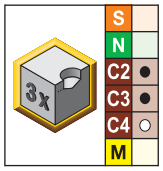
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	390	490	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	3	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	4	30	80	160	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009







PCD Twist Drill • PDC251 Series • ~3 x D



● first choice
○ alternate choice

KD1415	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
PDC251A04763DA	4,7630	0.188	3/16	66	28	20	0,8	36	6
PDC251A06350DA	6,3500	0.250	1/4	79	34	24	1,1	36	8
PDC251A07938DA *	7,9380	0.313	5/16	79	41	29	1,4	36	8
PDC251A09525DA *	9,5250	0.375	3/8	89	47	35	1,7	40	10
PDC251A11113DA *	11,1130	0.438	7/16	102	55	40	2,0	45	12
PDC251A12700DA *	12,7000	0.500	1/2	107	60	43	2,3	45	14

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance k6	D tolerance h6
>3–6	0,001/0,009	0,000/-0,008
>6–10	0,001/0,010	0,000/-0,009
>10–18	0,001/0,012	0,000/-0,011
>18–25,4	0,002/0,015	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance k6	D tolerance h6
>.1181–.2362	.0000/.0004	.0000/-.0003
>.2362–.3937	.0000/.0004	.0000/-.0004
>.3937–.7087	.0000/.0005	.0000/-.0004
>.7087–1.0000	.0000/.0006	.0000/-.0005

C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel

Stack Drill • PDC25 Series • Grade KD1415™ • Dry • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	260	390	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	3	30	30	50	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	4	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009

Stack Drill • PDC251 Series • Grade KD1415 • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
C	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	390	490	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	3	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
C	4	30	80	160	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009

FB Drills with Through Coolant for Flat-Bottom Applications

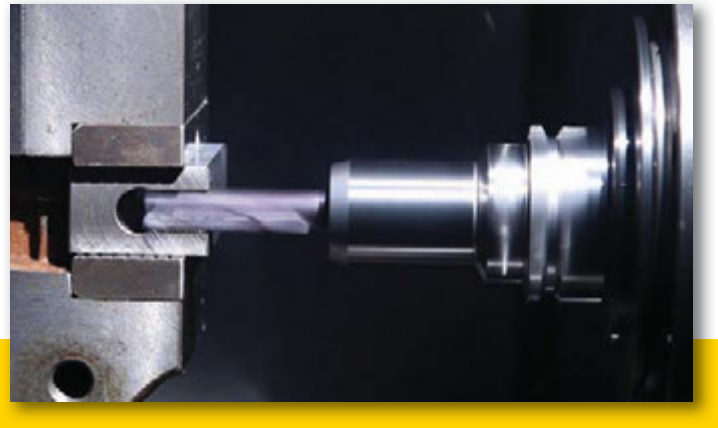
Primary Application

B707_FB series solid carbide drills are productivity tools that combine two operations in one:

1) Eliminate the 180° end mill in flat-bottom drilling or when preparing an inclined or curved surface for drilling.

2) After full cylindrical engagement, the drill runs at normal solid carbide drilling parameters.

The B707_FBS series with the uncoated KN15™ grade offers the same advantages for drilling in non-ferrous materials, such as aluminum, copper, and brass. The B707_FBL series with the new KCMS15™ grade was optimized for applications in stainless steel and high-temperature alloys.



Features and Benefits

Unique FB Drill-Point Design

- Two effective cutting edges over center enable high feed rates.
- Creates a true flat-bottom hole from O.D. to center.
- Four-margin land design improves hole straightness and roundness and provides good alignment, even when drilling cross holes.

Straight Cutting Edge

- Guarantees a true 180° hole ground.
- Rake angle correction improves chip control.

KC7315™ Grade on B707_FBG

- Enables high drill-like penetration rates and superior tool life in steel and iron materials.

KN15 Grade on B707_FBS

- The uncoated grade prevents built-up edge reducing the risk of fracture.
- The highly polished surfaces ensure superior chip evacuation even when low-pressure coolant or MQL is applied.

KCMS15™ Grade on B707_FBL

- AlTiN-based PVD coating for the demands of stainless steels.
- Edge preparation with a light hone.

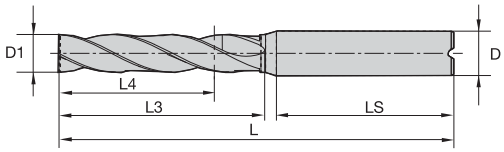
Productivity tools that combine two operations in one.

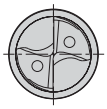


Customization

- Intermediate diameters available as semi-standards.
- Length variations available as semi-standard:
  - B706_ 1.5 x D
  - B708_ 5 x D
  - B709_ 8 x D
- Other length variations and step drills are available as engineered solutions.

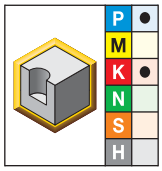


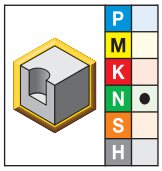


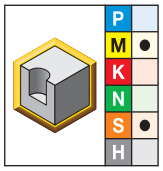




B707_FBG/FBS/FBL • ~3 x D





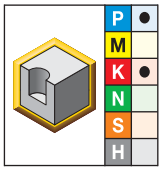


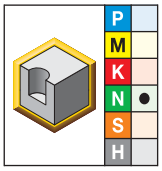
● first choice
○ alternate choice

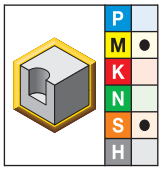
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B707A03000FBG	B707A03000FBS	B707A03000FBL	3,000	.1181	–	–	62	20	14	36	6
B707A03175FBG	B707A03175FBS	B707A03175FBL	3,175	.1250	1/8	–	62	20	14	36	6
B707A03500FBG	B707A03500FBS	B707A03500FBL	3,500	.1378	–	–	62	20	14	36	6
B707A03700FBG	–	–	3,700	.1457	–	–	62	20	14	36	6
–	–	B707A03800FBL	3,800	.1496	–	–	66	24	17	36	6
B707A03970FBG	–	–	3,970	.1563	5/32	–	66	24	17	36	6
B707A04000FBG	B707A04000FBS	B707A04000FBL	4,000	.1575	–	–	66	24	17	36	6
B707A04200FBG	B707A04200FBS	–	4,200	.1654	–	–	66	24	17	36	6
B707A04400FBG	B707A04400FBS	B707A04400FBL	4,400	.1732	–	–	66	24	17	36	6
B707A04500FBG	B707A04500FBS	B707A04500FBL	4,500	.1772	–	–	66	24	17	36	6
B707A04763FBG	–	–	4,763	.1875	3/16	–	66	28	20	36	6
B707A04800FBG	B707A04800FBS	B707A04800FBL	4,800	.1890	–	12	66	28	20	36	6
B707A04900FBG	B707A04900FBS *	–	4,900	.1929	–	–	66	28	20	36	6
B707A05000FBG	B707A05000FBS	B707A05000FBL	5,000	.1969	–	–	66	28	20	36	6
B707A05200FBG	–	–	5,200	.2047	–	–	66	28	20	36	6
B707A05560FBG	B707A05560FBS	B707A05560FBL	5,560	.2189	–	–	66	28	20	36	6
B707A05800FBG	–	–	5,800	.2283	–	–	66	28	20	36	6
B707A05900FBG	B707A05900FBS	B707A05900FBL	5,900	.2323	–	–	66	28	20	36	6
B707A06000FBG	B707A06000FBS	B707A06000FBL	6,000	.2362	–	–	66	28	20	36	6
B707A06100FBG	–	–	6,100	.2402	–	–	79	34	24	36	8
B707A06350FBG	B707A06350FBS	B707A06350FBL	6,350	.2500	1/4	–	79	34	24	36	8
B707A06500FBG	B707A06500FBS	B707A06500FBL	6,500	.2559	–	–	79	34	24	36	8
B707A06800FBG	B707A06800FBS	B707A06800FBL	6,800	.2677	–	–	79	34	24	36	8
B707A07000FBG	B707A07000FBS	B707A07000FBL	7,000	.2756	–	–	79	34	24	36	8

(continued)

(B707_FBG/FBS/FBL • ~3 x D — continued)





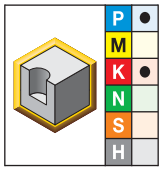


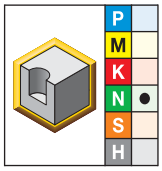
● first choice
○ alternate choice

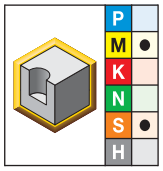
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B707A07145FBG	–	–	7,145	.2813	9/32	–	79	41	29	36	8
–	B707A07400FBS	–	7,400	.2913	–	–	79	41	29	36	8
B707A07500FBG	B707A07500FBS	B707A07500FBL	7,500	.2953	–	–	79	41	29	36	8
B707A07800FBG	–	–	7,800	.3071	–	–	79	41	29	36	8
B707A07938FBG	B707A07938FBS	B707A07938FBL	7,938	.3125	5/16	–	79	41	29	36	8
B707A08000FBG	B707A08000FBS	B707A08000FBL	8,000	.3150	–	–	79	41	29	36	8
B707A08334FBG	–	–	8,334	.3281	21/64	–	89	47	35	40	10
B707A08500FBG	B707A08500FBS	B707A08500FBL	8,500	.3346	–	–	89	47	35	40	10
B707A08800FBG	B707A08800FBS	B707A08800FBL	8,800	.3465	–	–	89	47	35	40	10
B707A09000FBG	B707A09000FBS	B707A09000FBL	9,000	.3543	–	–	89	47	35	40	10
B707A09129FBG	–	–	9,129	.3594	23/64	–	89	47	35	40	10
B707A09500FBG	B707A09500FBS	B707A09500FBL	9,500	.3740	–	–	89	47	35	40	10
B707A09525FBG	B707A09525FBS	B707A09525FBL	9,525	.3750	3/8	–	89	47	35	40	10
B707A09800FBG	–	–	9,800	.3858	–	–	89	47	35	40	10
B707A10000FBG	B707A10000FBS	B707A10000FBL	10,000	.3937	–	–	89	47	35	40	10
B707A10200FBG	–	–	10,200	.4016	–	–	102	55	40	45	12
B707A10320FBG	B707A10320FBS	B707A10320FBL	10,320	.4063	13/32	–	102	55	40	45	12
B707A10500FBG	B707A10500FBS	B707A10500FBL	10,500	.4134	–	–	102	55	40	45	12
B707A10600FBG	–	–	10,600	.4173	–	–	102	55	40	45	12
B707A10800FBG	–	–	10,800	.4252	–	–	102	55	40	45	12
B707A11000FBG	B707A11000FBS	B707A11000FBL	11,000	.4331	–	–	102	55	40	45	12
B707A11111FBG	B707A11111FBS	B707A11111FBL	11,111	.4374	–	–	102	55	40	45	12
B707A11350FBG	–	–	11,350	.4469	–	–	102	55	40	45	12
B707A11509FBG	B707A11509FBS	B707A11509FBL	11,509	.4531	29/64	–	102	55	40	45	12
B707A11570FBG	B707A11570FBS *	B707A11570FBL	11,570	.4555	–	–	102	55	40	45	12
B707A11700FBG	B707A11700FBS	B707A11700FBL	11,700	.4606	–	–	102	55	40	45	12
B707A11800FBG	B707A11800FBS	B707A11800FBL	11,800	.4646	–	–	102	55	40	45	12
B707A11908FBG	–	–	11,908	.4688	15/32	–	102	55	40	45	12
B707A12000FBG	B707A12000FBS	B707A12000FBL	12,000	.4724	–	–	102	55	40	45	12
B707A12100FBG	B707A12100FBS	B707A12100FBL	12,100	.4764	–	–	107	60	43	45	14
B707A12500FBG	B707A12500FBS	B707A12500FBL *	12,500	.4921	–	–	107	60	43	45	14
B707A12600FBG *	–	–	12,600	.4961	–	–	107	60	43	45	14
B707A12700FBG	B707A12700FBS	B707A12700FBL	12,700	.5000	1/2	–	107	60	43	45	14
B707A12800FBG	B707A12800FBS	B707A12800FBL	12,800	.5039	–	–	107	60	43	45	14
B707A13000FBG	B707A13000FBS	B707A13000FBL	13,000	.5118	–	–	107	60	43	45	14
B707A13500FBG	B707A13500FBS	B707A13500FBL	13,500	.5315	–	–	107	60	43	45	14
B707A14000FBG	B707A14000FBS	B707A14000FBL	14,000	.5512	–	–	107	60	43	45	14
B707A14288FBG	B707A14288FBS	B707A14288FBL	14,288	.5625	9/16	–	115	65	45	48	16
B707A14500FBG	B707A14500FBS	B707A14500FBL	14,500	.5709	–	–	115	65	45	48	16
B707A15000FBG	B707A15000FBS	B707A15000FBL	15,000	.5906	–	–	115	65	45	48	16

(continued)

(B707_FBG/FBS/FBL • ~3 x D — continued)







● first choice
○ alternate choice

B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	LS	D
B707A15250FBG	B707A15250FBS	B707A15250FBL *	15,250	.6004	—	—	115	65	45	48	16
B707A15500FBG	B707A15500FBS	B707A15500FBL	15,500	.6102	—	—	115	65	45	48	16
B707A15875FBG	B707A15875FBS	B707A15875FBL	15,875	.6250	5/8	—	115	65	45	48	16
B707A16000FBG	B707A16000FBS	B707A16000FBL	16,000	.6299	—	—	115	65	45	48	16
B707A16500FBG	B707A16500FBS	B707A16500FBL	16,500	.6496	—	—	123	73	51	48	18
B707A17000FBG	B707A17000FBS	B707A17000FBL	17,000	.6693	—	—	123	73	51	48	18
B707A17463FBG	–	–	17,463	.6875	11/16	—	123	73	51	48	18
B707A17500FBG	B707A17500FBS	B707A17500FBL	17,500	.6890	—	—	123	73	51	48	18
–	–	B707A17900FBL	17,900	.7047	—	—	123	73	51	48	18
B707A18000FBG	B707A18000FBS	B707A18000FBL	18,000	.7087	—	—	123	73	51	48	18
B707A18500FBG	–	–	18,500	.7283	—	—	131	79	55	50	20
B707A19000FBG	B707A19000FBS	B707A19000FBL *	19,000	.7480	—	—	131	79	55	50	20
B707A19050FBG	B707A19050FBS	B707A19050FBL *	19,050	.7500	3/4	—	131	79	55	50	20
B707A20000FBG	B707A20000FBS	B707A20000FBL	20,000	.7874	—	—	131	79	55	50	20
B707A21000FBG	B707A21000FBS	B707A21000FBL	21,000	.8268	—	—	141	86	60	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

Flat-Bottom Drills • B707_FBG Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	100	**133**	170	mm/r	0,06–0,14	0,10–0,17	0,09–0,20	0,11–0,25	0,18–0,28	0,14–0,31	0,16–0,37	0,19–0,42
	1	100	**133**	170	mm/r	0,07–0,16	0,12–0,20	0,10–0,23	0,13–0,29	0,21–0,33	0,17–0,37	0,19–0,44	0,22–0,49
	2	130	**150**	180	mm/r	0,07–0,13	0,10–0,16	0,16–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,19–0,35	0,22–0,39
	3	80	**106**	130	mm/r	0,09–0,16	0,13–0,20	0,13–0,23	0,16–0,24	0,20–0,31	0,21–0,37	0,25–0,44	0,28–0,46
	4	70	**98**	130	mm/r	0,08–0,16	0,12–0,19	0,11–0,22	0,14–0,27	0,21–0,31	0,18–0,35	0,21–0,41	0,24–0,46
	6	70	**98**	130	mm/r	0,07–0,12	0,10–0,14	0,10–0,16	0,12–0,20	0,16–0,23	0,16–0,26	0,18–0,31	0,21–0,34
K	1	70	**85**	100	mm/r	0,09–0,17	0,13–0,21	0,12–0,25	0,15–0,31	0,23–0,35	0,20–0,39	0,23–0,46	0,26–0,52
	2	100	**113**	130	mm/r	0,09–0,15	0,12–0,18	0,12–0,21	0,15–0,26	0,21–0,30	0,20–0,33	0,23–0,39	0,26–0,44
	3	70	**105**	140	mm/r	0,07–0,13	0,10–0,16	0,11–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,20–0,35	0,22–0,37

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	330	**440**	560	IPR	.002–.006	.004–.007	.004–.008	.004–.010	.007–.011	.006–.012	.006–.015	.008–.017
	1	330	**440**	560	IPR	.003–.006	.005–.008	.004–.009	.005–.011	.008–.013	.007–.015	.008–.017	.009–.019
	2	430	**490**	590	IPR	.003–.005	.004–.006	.006–.008	.005–.009	.007–.011	.007–.012	.008–.014	.009–.015
	3	260	**350**	430	IPR	.004–.006	.005–.008	.005–.009	.006–.009	.008–.012	.008–.015	.010–.017	.011–.018
	4	230	**320**	430	IPR	.003–.006	.005–.008	.004–.009	.006–.011	.008–.012	.007–.014	.008–.016	.009–.018
	6	230	**320**	430	IPR	.003–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.010	.007–.012	.008–.013
K	1	230	**280**	330	IPR	.004–.007	.005–.008	.005–.010	.006–.012	.009–.014	.008–.015	.009–.018	.010–.021
	2	330	**370**	430	IPR	.004–.006	.005–.007	.005–.008	.006–.010	.008–.012	.008–.013	.009–.015	.010–.017
	3	230	**340**	460	IPR	.003–.005	.004–.006	.004–.008	.005–.009	.007–.011	.007–.012	.008–.014	.009–.015

Flat-Bottom Drills • B707_FBS Series • Grade KN15™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	**260**	400	mm/r	0,07–0,20	0,08–0,22	0,13–0,34	0,14–0,40	0,15–0,44	0,17–0,46	0,19–0,50	0,22–0,58
	2	120	**250**	280	mm/r	0,08–0,20	0,08–0,22	0,09–0,34	0,14–0,40	0,15–0,44	0,19–0,46	0,21–0,50	0,24–0,58
	3	100	**200**	260	mm/r	0,08–0,15	0,08–0,16	0,09–0,22	0,15–0,26	0,16–0,30	0,20–0,37	0,22–0,42	0,26–0,46
	4	60	**150**	200	mm/r	0,03–0,05	0,03–0,06	0,03–0,06	0,04–0,06	0,05–0,07	0,05–0,08	0,05–0,08	0,06–0,09

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
N	1	390	**850**	1310	IPR	.003–.008	.003–.009	.005–.013	.006–.016	.006–.017	.007–.018	.008–.020	.009–.023
	2	390	**820**	920	IPR	.003–.008	.003–.009	.004–.013	.006–.016	.006–.017	.008–.018	.008–.020	.009–.023
	3	330	**660**	850	IPR	.003–.006	.003–.006	.004–.009	.006–.010	.006–.012	.008–.015	.009–.017	.010–.018
	4	200	**490**	660	IPR	.001–.002	.001–.002	.001–.002	.002–.002	.002–.003	.002–.003	.002–.003	.002–.004

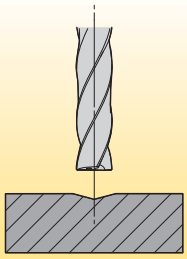
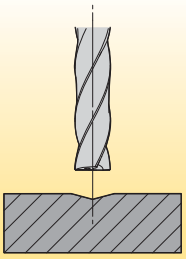
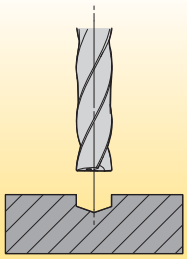
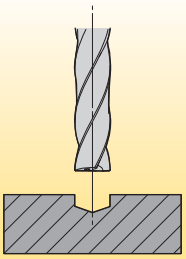
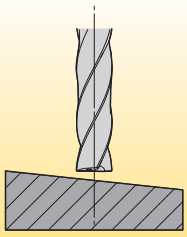
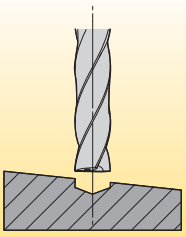
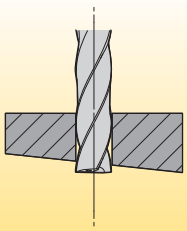
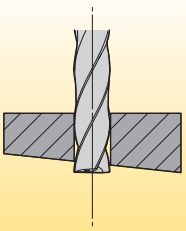
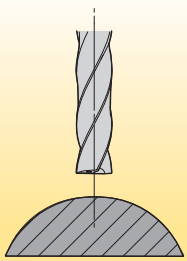
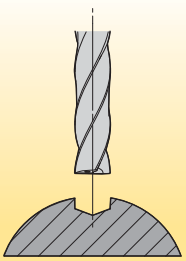
Flat-Bottom Drills • B707_FBL Series • Grade KCMS15™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter								
						3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	5	45	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	6	40	**50**	60	mm/r	0,03–0,06	0,04–0,07	0,04–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20
M	1	40	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	2	40	**50**	80	mm/r	0,06–0,11	0,07–0,11	0,08–0,16	0,12–0,20	0,13–0,21	0,16–0,22	0,18–0,24	0,21–0,26
	3	40	**55**	70	mm/r	0,03–0,04	0,03–0,05	0,04–0,06	0,04–0,07	0,05–0,08	0,06–0,10	0,07–0,11	0,08–0,12
S	1	20	**25**	30	mm/r	0,06–0,08	0,06–0,08	0,07–0,10	0,10–0,13	0,10–0,14	0,12–0,16	0,14–0,19	0,17–0,22
	2	10	**20**	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,08	0,08–0,11	0,09–0,12	0,10–0,13	0,12–0,16	0,14–0,18
	3	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
	4	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter								
						1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	5	150	**160**	200	IPR	.002–.003	.002–.004	.002–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.009
	6	130	**160**	200	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008
M	1	130	**160**	200	IPR	.002–.003	.002–.004	.002–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.009
	2	130	**160**	260	IPR	.002–.004	.003–.004	.003–.006	.005–.008	.005–.008	.006–.009	.007–.009	.008–.010
	3	130	**180**	230	IPR	.001–.002	.001–.002	.002–.002	.002–.003	.002–.003	.002–.004	.003–.004	.003–.005
S	1	70	**80**	100	IPR	.002–.003	.002–.003	.003–.004	.004–.005	.004–.006	.005–.006	.006–.008	.007–.009
	2	30	**70**	100	IPR	.002–.003	.002–.003	.002–.003	.003–.004	.004–.005	.004–.005	.005–.006	.006–.007
	3	100	**110**	160	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005
	4	100	**110**	160	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005

The B707_FBG drill eliminates the traditional two-step process to create a flat-bottom hole using a drill and an end mill and can perform the operation 25–40% faster. It also eliminates the two-step process of using an end mill to pre-machine a flat on the workpiece material for inclined surfaces.

Workpiece Application	B707A..FBG Standard Length	B708/B709A..FBG Custom Long Length
• Tapped hole with lead chamfer larger than FBG diameter.	 No feed reduction.	 50% feed reduction.
• Nominal diameter pilot required.	 Rough or hardened surfaces. No feed reduction.	 Pilot on all surfaces. No feed reduction.
• >6° angled entrances.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.
• Angled exits.	 30% feed reduction.	 30% feed reduction.
• Round surfaces.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.

HP Beyond™ Step Drills with Through Coolant for Steel and Iron

beyond

Primary Application

Most tapped holes require a chamfer. The B731_HP and B732_HP step drills offer a one-pass solution in steels and irons in traditional tap sizes to reduce cycle time and increase productivity. An extensive range of step drills are available to cover taps products by Kennametal.

Features and Benefits

HP Drill-Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.

Unique Flute Design

- Drastically improved chip evacuation.
- Better hole surface quality.

KCPK15™ Beyond Grade

- The grade is a multilayer, TiAlN-based coating with high hot hardness. High cutting speeds enable usage in MQL applications.
- The highly polished surface ensures superior chip evacuation even when low-pressure coolant is applied.
- Improves average metal removal rate and tool life by 10–20%.

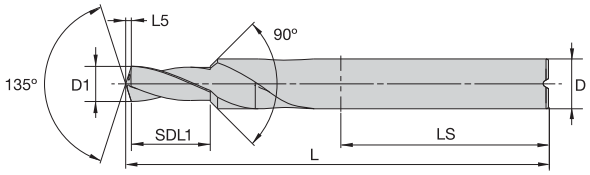
Drill and chamfer in one shot before tapping.

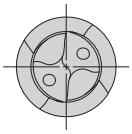


Customization

- Intermediate diameters available as semi-standards.
- Using Kennametal slim line hydraulic chucks together is recommended if workpiece contours need to be bypassed.

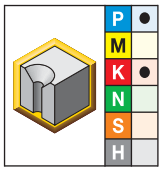








B731_HP • Short



● first choice
○ alternate choice

short • KCPK15	D1 diameter mm	in	fraction	L	SDL1	L5	LS	D
B731A03734HP	3,734	.1470	–	66	10	0,7	36	6
B731A04200HP	4,200	.1654	–	66	12	0,8	36	6
B731A04496HP	4,496	.1770	–	79	13	0,9	36	8
B731A05000HP	5,000	.1969	–	79	13	0,9	36	8
B731A05106HP	5,106	.2010	–	79	15	1,0	36	8
B731A05410HP	5,410	.2130	–	79	16	1,0	36	8
B731A06528HP	6,528	.2570	–	89	17	1,2	40	10
B731A06800HP	6,800	.2677	–	89	16	1,3	40	10
B731A06909HP	6,909	.2720	–	89	18	1,3	40	10
B731A07938HP	7,938	.3125	5/16	89	19	1,5	45	12
B731A08433HP	8,433	.3320	–	102	21	1,6	45	12
B731A08500HP	8,500	.3346	–	102	19	1,6	45	12
B731A09921HP	9,921	.3906	25/64	107	23	1,9	45	14
B731A10200HP	10,200	.4016	–	107	22	1,9	45	14
B731A10500HP	10,500	.4134	–	107	22	2,0	45	14
B731A10716HP	10,716	.4219	27/64	107	27	2,0	45	14
B731A12000HP	12,000	.4724	–	115	27	2,2	48	16
B731A12304HP *	12,304	.4844	31/64	115	28	2,3	48	16
B731A12500HP	12,500	.4921	–	115	27	2,3	48	16
B731A13096HP	13,096	.5156	33/64	115	31	2,4	48	16
B731A13495HP	13,495	.5313	17/32	123	32	2,5	48	18
B731A14000HP	14,000	.5512	–	123	29	2,6	48	18
B731A16670HP *	16,670	.6563	21/32	131	38	3,1	50	20
B731A17463HP	17,463	.6875	11/16	131	40	3,2	50	20
B731A19446HP *	19,446	.7656	49/64	153	43	3,6	56	25

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

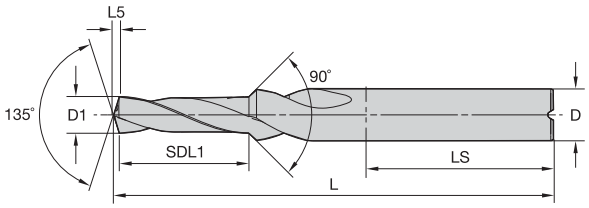
Tolerance • Metric

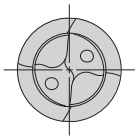
nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

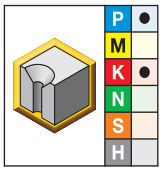








B732_HP • Long



● first choice
○ alternate choice

long • KCPK15	D1 diameter mm	in	fraction	L	SDL1	L5	LS	D
B732A03734HP	3,734	.1470	–	66	16	0,7	36	6
B732A04200HP	4,200	.1654	–	66	17	0,8	36	6
B732A04496HP	4,496	.1770	–	79	17	0,9	36	8
B732A05000HP	5,000	.1969	–	79	20	0,9	36	8
B732A05106HP	5,106	.2010	–	79	20	1,0	36	8
B732A05410HP *	5,410	.2130	–	79	21	1,0	36	8
B732A06528HP	6,528	.2570	–	89	24	1,2	40	10
B732A06800HP	6,800	.2677	–	89	25	1,3	40	10
B732A06909HP	6,909	.2720	–	89	25	1,3	40	10
B732A07938HP	7,938	.3125	5/16	102	27	1,5	45	12
B732A08433HP	8,433	.3320	–	102	29	1,6	45	12
B732A08500HP	8,500	.3346	–	102	30	1,6	45	12
B732A09921HP *	9,921	.3906	25/64	107	33	1,9	45	14
B732A10200HP	10,200	.4016	–	107	35	1,9	45	14
B732A10500HP	10,500	.4134	–	107	35	2,0	45	14
B732A10716HP	10,716	.4219	27/64	107	37	2,0	45	14
B732A12000HP	12,000	.4724	–	115	40	2,2	48	16
B732A12500HP *	12,500	.4921	–	115	40	2,3	48	16
B732A13096HP *	13,096	.5156	33/64	123	44	2,4	48	16
B732A13495HP *	13,495	.5313	17/32	123	45	2,5	48	18
B732A14000HP	14,000	.5512	–	123	43	2,6	48	18
B732A16670HP	16,670	.6563	21/32	141	55	3,1	50	20
B732A17463HP	17,463	.6875	11/16	141	58	3,2	50	20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

HP Step Drills • B73_HP Series • Grade KCPK15™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter								
						3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	150	**240**	270	mm/r	0,06–0,14	0,08–0,18	0,09–0,20	0,12–0,26	0,14–0,30	0,15–0,33	0,17–0,39	0,20–0,43
	1	140	**220**	240	mm/r	0,07–0,17	0,09–0,21	0,11–0,24	0,14–0,30	0,16–0,35	0,18–0,39	0,20–0,46	0,24–0,50
	2	180	**210**	240	mm/r	0,07–0,14	0,09–0,17	0,11–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,37	0,24–0,43
	3	120	**150**	180	mm/r	0,09–0,17	0,12–0,21	0,14–0,24	0,17–0,30	0,20–0,35	0,22–0,39	0,26–0,46	0,29–0,50
	4	100	**140**	180	mm/r	0,08–0,17	0,11–0,20	0,12–0,23	0,15–0,28	0,17–0,33	0,19–0,37	0,22–0,43	0,25–0,45
	6	140	**150**	180	mm/r	0,07–0,13	0,09–0,15	0,11–0,17	0,13–0,21	0,15–0,24	0,17–0,27	0,19–0,33	0,21–0,36
K	1	140	**160**	180	mm/r	0,09–0,18	0,12–0,22	0,13–0,26	0,16–0,33	0,19–0,37	0,21–0,41	0,24–0,48	0,27–0,51
	2	100	**150**	200	mm/r	0,09–0,16	0,12–0,19	0,13–0,22	0,16–0,27	0,19–0,32	0,21–0,35	0,24–0,41	0,27–0,45
	3	100	**140**	180	mm/r	0,07–0,14	0,09–0,17	0,12–0,20	0,14–0,24	0,16–0,28	0,18–0,32	0,21–0,37	0,24–0,39

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter								
						1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	490	**790**	890	IPR	.002–.006	.003–.007	.004–.008	.005–.010	.006–.012	.006–.013	.007–.015	.008–.017
	1	460	**720**	790	IPR	.003–.007	.004–.008	.004–.009	.006–.012	.006–.014	.007–.015	.008–.018	.009–.020
	2	590	**690**	790	IPR	.003–.006	.004–.007	.004–.008	.006–.009	.006–.011	.007–.013	.008–.015	.009–.017
	3	390	**490**	590	IPR	.004–.007	.005–.008	.006–.009	.007–.012	.008–.014	.009–.015	.010–.018	.011–.020
	4	330	**460**	590	IPR	.003–.007	.004–.008	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.010–.018
	6	460	**490**	590	IPR	.003–.005	.004–.006	.004–.007	.005–.008	.006–.009	.007–.011	.008–.013	.008–.014
K	1	460	**520**	590	IPR	.004–.007	.005–.009	.005–.010	.006–.013	.008–.015	.008–.016	.009–.019	.011–.020
	2	330	**490**	660	IPR	.004–.006	.005–.008	.005–.009	.006–.011	.008–.013	.008–.014	.009–.016	.011–.018
	3	330	**460**	590	IPR	.003–.006	.004–.007	.005–.008	.006–.009	.006–.011	.007–.013	.008–.015	.009–.015

Engineered Solutions

You Won't Find These Solutions in a Catalog

Kennametal engineered solutions pinpoint and address specific needs of customers, workpiece materials, or workpiece configurations. Solutions include standard products, custom designs, and old-fashioned process know-how that can only come from many decades of tooling expertise.
They are the result of coordinated global resources and are available anywhere in the world, no matter how small or large the project.



MANUFACTURING PROCESS

We Look at the Entire Production Process, Not Just Portions of It

From the machine tool to the last stop in production, we can optimize the manufacturing process throughout every step. The result is low implementation time and costs, and rapid return on investment.



New KMH Drills for Hard Materials

Primary Application

The all-new KMH solid carbide drills are engineered for hard material applications up to 65 HRC. The B94_drill series without through coolant is specifically designed to machine hardened and surface-hardened materials using flood coolant. With its 145º point angle, it is also perfectly suited as a pilot drill for the B95_drill series with through coolant and 140º point for deeper applications.

Both series come with an increased core to strengthen the drill, feature a curved cutting edge with corner chamfer to avoid chipping on the margin lands and increased tool life in these challenging materials.

Features and Benefits

New KMH Point Design

- Curved cutting edge with corner chamfer for maximum corner stability in hard materials.
- Avoids chipping on cutting edge and pre-mature wear.
- Also works well in applications with heavily-interrupted cuts using the make-to-order four-margin version.

Special Flute Design

- Strong web to increase the strength of the drill in tough applications with short chips.
- B94_ series with 15º helix angle to maximize stability in applications above 54 HRC.
- B95_ series with 30º helix angle to improve chip evacuation in higher length-to-diameter ratios.

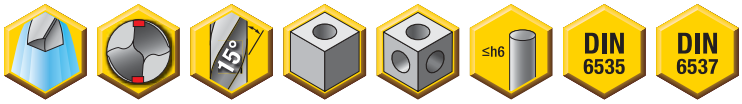
New KCH10 and KCH15 Grades

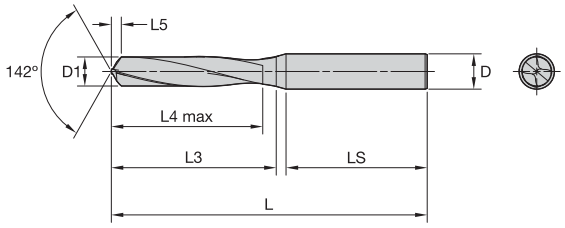
- KCH10 on B94_ series consists of a special fine-grain carbide substrate with higher hardness.
- KCH15 on B95_ series, with its higher toughness, supports edge strength at increased rake angles, which are applied to improve chip evacuation in higher L/D ratios.
- Both series carry a high temperature and shock resistance AlTiN coating for machining hardened materials to increase tool life.



Customization

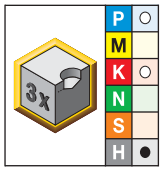
- Intermediate diameters available as semi-standards.
- Four margin land designs also available as semi-standards.
- Length variations and step drills available as custom solutions.
- High step diameter ratios and very complex step drill geometries are not recommended for hard materials.







B941A • ~3 x D



● first choice
○ alternate choice

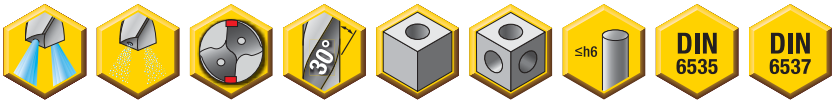
short • KCH10	D1 diameter mm	D1 diameter in	L	L3	L4 max	L5	LS	D
B941Z02500	2,500	.0984	50	16	11	0,5	28	3
B941A03000	3,000	.1181	62	20	14	0,6	36	6
B941A03300	3,300	.1299	62	20	14	0,6	36	6
B941A03400	3,400	.1339	62	20	14	0,6	36	6
B941A03500	3,500	.1378	62	20	14	0,6	36	6
B941A04000	4,000	.1575	66	24	17	0,7	36	6
B941A04200	4,200	.1654	66	24	17	0,8	36	6
B941A04300	4,300	.1693	66	24	17	0,8	36	6
B941A04500	4,500	.1772	66	24	17	0,8	36	6
B941A05000	5,000	.1969	66	28	20	0,9	36	6
B941A05100	5,100	.2008	66	28	20	0,9	36	6
B941A05200	5,200	.2047	66	28	20	0,9	36	6
B941A05500	5,500	.2165	66	28	20	1,0	36	6
B941A05600	5,600	.2205	66	28	20	1,0	36	6
B941A06000	6,000	.2362	66	28	20	1,1	36	6
B941A06900	6,900	.2717	79	34	24	1,3	36	8
B941A07000	7,000	.2756	79	34	24	1,3	36	8
B941A07100	7,100	.2795	79	41	29	1,3	36	8
B941A08000	8,000	.3150	79	41	29	1,4	36	8
B941A08500	8,500	.3346	89	47	35	1,5	40	10
B941A08600	8,600	.3386	89	47	35	1,6	40	10
B941A09000	9,000	.3543	89	47	35	1,6	40	10
B941A10000	10,000	.3937	89	47	35	1,8	40	10
B941A10200	10,200	.4016	102	55	40	1,8	45	12
B941A10400	10,400	.4094	102	55	40	1,9	45	12
B941A10500	10,500	.4134	102	55	40	1,9	45	12
B941A11100	11,100	.4370	102	55	40	2,0	45	12
B941A12000	12,000	.4724	102	55	40	2,1	45	12
B941A14000	14,000	.5512	107	60	43	2,5	45	14

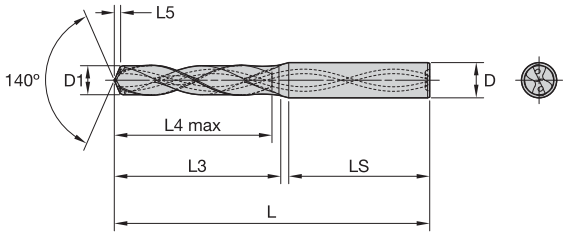
Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

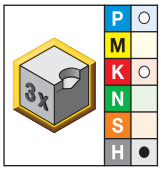
nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005







B951A • ~3 x D

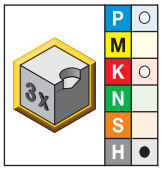


● first choice
○ alternate choice

short • KCH15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B951A03000	3,000	.1181	–	62	20	14	0,6	36	6
B951A03175	3,175	.1250	1/8	62	20	14	0,6	36	6
B951A03454	3,454	.1360	–	62	20	14	0,7	36	6
B951A03500	3,500	.1378	–	62	20	14	0,7	36	6
B951A03800	3,800	.1496	–	66	24	17	0,8	36	6
B951A04000	4,000	.1575	–	66	24	17	0,8	36	6
B951A04100	4,100	.1614	–	66	24	17	0,8	36	6
B951A04200	4,200	.1654	–	66	24	17	0,9	36	6
B951A04300	4,300	.1693	–	66	24	17	0,9	36	6
B951A04500	4,500	.1772	–	66	24	17	0,9	36	6
B951A04800	4,800	.1890	–	66	28	20	1,0	36	6
B951A04900	4,900	.1929	–	66	28	20	1,0	36	6
B951A05000	5,000	.1969	–	66	28	20	1,0	36	6
B951A05500	5,500	.2165	–	66	28	20	1,1	36	6
B951A05800	5,800	.2283	–	66	28	20	1,2	36	6
B951A06000	6,000	.2362	–	66	28	20	1,2	36	6
B951A06350	6,350	.2500	1/4	79	34	24	1,3	36	8
B951A06500	6,500	.2559	–	79	34	24	1,3	36	8
B951A06800	6,800	.2677	–	79	34	24	1,4	36	8
B951A07000	7,000	.2756	–	79	34	24	1,4	36	8
B951A08000	8,000	.3150	–	79	41	29	1,6	36	8
B951A08500	8,500	.3346	–	89	47	35	1,7	40	10
B951A09000	9,000	.3543	–	89	47	35	1,8	40	10
B951A09500	9,500	.3740	–	89	47	35	1,9	40	10
B951A09800	9,800	.3858	–	89	47	35	1,9	40	10
B951A10000	10,000	.3937	–	89	47	35	2,0	40	10
B951A10200	10,200	.4016	–	102	55	40	2,0	45	12
B951A10500	10,500	.4134	–	102	55	40	2,1	45	12
B951A10800	10,800	.4252	–	118	71	56	2,1	45	12
B951A11000	11,000	.4331	–	118	71	56	2,2	45	12
B951A11500	11,500	.4528	–	118	71	56	2,3	45	12
B951A11800	11,800	.4646	–	102	55	40	2,3	45	12
B951A12000	12,000	.4724	–	102	55	40	2,4	45	12
B951A12500	12,500	.4921	–	107	60	43	2,5	45	14
B951A12700	12,700	.5000	1/2	107	60	43	2,5	45	14
B951A12800	12,800	.5039	–	107	60	43	2,5	45	14

(continued)

(B951A • ~3 x D — continued)



● first choice
○ alternate choice

short • KCH15	D1 diameter mm	in	fraction	L	L3	L4 max	L5	LS	D
B951A13000	13,000	.5118	—	107	60	43	2,6	45	14
B951A13500	13,500	.5315	—	107	60	43	2,7	45	14
B951A14000	14,000	.5512	—	107	60	43	2,8	45	14
B951A14500	14,500	.5709	—	115	65	45	2,9	48	16
B951A15500	15,500	.6102	—	115	65	45	3,1	48	16
B951A16000	16,000	.6299	—	133	83	63	3,2	48	16

Application Data

KMH Drill • B94_Series • Grade KCH10 • Flood Coolant





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate per Rev	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	4	50	**70**	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	**50**	70	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	6	30	**40**	60	mm/r	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
K	1	80	**130**	150	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	70	**110**	100	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	120	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
H	1	20	**30**	40	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	15	**30**	40	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	15	**25**	35	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	15	**20**	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate per Rev	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	4	160	**230**	330	IPR	.0024-.0059	.0031-.0067	.0047-.0091	.0055-.0110	.0067-.0130	.0075-.0150	.0091-.0185	.0114-.0232
	5	130	**160**	230	IPR	.0031–.0063	.0039–.0079	.0047–.0094	.0063–.0110	.0079–.0126	.0094–.0142	.0110–.0173	.0126–.0205
	6	100	**130**	200	IPR	.0020-.0028	.0024-.0039	.0031-.0055	.0039-.0071	.0047-.0087	.0055-.0094	.0071-.0126	.0091-.0161
K	1	260	**430**	490	IPR	.0043-.0087	.0047-.0094	.0063-.0122	.0079-.0150	.0091-.0173	.0098-.0193	.0122-.0024	.0150-.0185
	2	230	**360**	330	IPR	.0039–.0067	.0047–.0075	.0063–.0098	.0079–.0122	.0091–.0142	.0098–.0157	.0122–.0189	.0150–.0236
	3	260	**360**	390	IPR	.0028-.0059	.0035-.0075	.0047-.0098	.0055-.0118	.0067-.0138	.0075-.0157	.0098-.0189	.0118-.0236
H	1	70	**100**	130	IPR	.0012-.0024	.0016-.0031	.0024-.0039	.0031-.0047	.0035-.0051	.0039-.0055	.0047-.0063	.0055-.0071
	2	50	**100**	130	IPR	.0008–.0016	.0012–.0024	.0020–.0031	.0028–.0039	.0031–.0043	.0035–.0047	.0039–.0055	.0043–.0063
	3	50	**80**	110	IPR	.0008-.0016	.0008-.0020	.0016-.0028	.0024-.0035	.0028-.0039	.0031-.0043	.0035-.0051	.0039-.0059
	4	50	**70**	100	IPR	.0008–.0016	.0012–.0024	.0020–.0031	.0028–.0039	.0031–.0043	.0035–.0047	.0039–.0055	.0043–.0063

KMH Drill • B95_Series • Grade KCH15 • Through Coolant



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate per Rev 3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	4	50	**70**	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	50	**60**	80	mm/r	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	6	40	**50**	70	mm/r	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
K	1	80	**130**	170	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	90	**110**	120	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**110**	130	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
H	1	20	**35**	45	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	15	**30**	45	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	15	**25**	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	15	**20**	35	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate per Rev 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	4	160	**230**	330	IPR	.0024-.0059	.0031-.0067	.0047-.0091	.0055-.0110	.0067-.0130	.0075-.0150	.0091-.0185	.0114-.0232
	5	160	**200**	260	IPR	.0031–.0055	.0039–.0079	.0047–.0079	.0063–.0094	.0079–.0110	.0094–.0126	.0110–.0157	.0126–.0189
	6	130	**160**	230	IPR	.0020-.0031	.0024-.0039	.0031-.0055	.0039-.0071	.0051-.0087	.0055-.0094	.0071-.0126	.0091-.0161
K	1	260	**430**	560	IPR	.0043-.0087	.0047-.0094	.0063-.0122	.0079-.0150	.0091-.0173	.0098-.0193	.0122-.0024	.0150-.0185
	2	300	**360**	390	IPR	.0039–.0067	.0047–.0075	.0063–.0098	.0079–.0122	.0091–.0142	.0098–.0157	.0122–.0189	.0150–.0236
	3	260	**360**	430	IPR	.0028-.0059	.0035-.0075	.0047-.0098	.0055-.0118	.0067-.0138	.0075-.0157	.0098-.0189	.0118-.0236
H	1	70	**110**	150	IPR	.0012-.0024	.0016-.0031	.0024-.0039	.0031-.0047	.0035-.0051	.0039-.0055	.0047-.0063	.0055-.0071
	2	50	**100**	150	IPR	.0008–.0016	.0012–.0024	.0020–.0031	.0028–.0039	.0031–.0043	.0035–.0047	.0039–.0055	.0043–.0063
	3	50	**80**	130	IPR	.0008-.0016	.0008-.0020	.0016-.0028	.0024-.0035	.0028-.0039	.0031-.0043	.0035-.0051	.0039-.0059
	4	50	**70**	110	IPR	.0008–.0016	.0012–.0024	.0020–.0031	.0028–.0039	.0031–.0043	.0035–.0047	.0039–.0055	.0043–.0063

Kenna Universal™ Drills

Primary Application

Kenna Universal Drills (B96/B97_ Series) are engineered to deliver superior performance in steel, cast iron, and stainless steel applications making it ideal for small- and medium-sized shops. The universal application profile reduces tool change times and the number of drills in inventory. Covering a large spectrum of off-the-shelf diameters and a broad range of applications makes Kenna Universal Drills an excellent alternative to other high-performance products.

The B976Z series is available from 2,383–3mm (.0938–.1181") making it the first standard offering in less than 3mm. This extended diameter offering covers all common tap drill sizes, including an expanded selection of wire, fractional, and letter sizes.

The new B967 series satisfies the demand for non-coolant drills up to 5 x D for applications with flood coolant or dry.

Use as Pilot Drill

- Ideal point angle and tolerance make the Kenna Universal drill the preferred pilot drill for B27_ series solid carbide deep-hole drills.

Features and Benefits

Kenna Universal Drill-Point Design

- Low thrust. Works well on a variety of machines.
- Excellent centering capabilities.
- Easy to regrind.

Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment and stability in tough drilling applications — even when drilling through cross holes.

KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables 30% higher cutting speeds and constant tool life.
- Surface finish ensures chip evacuation when drilling deep holes.

Universal application profile, problem solver, and pilot drill.

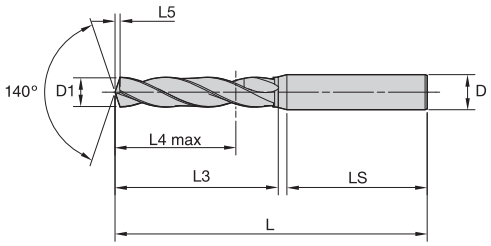


Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as engineered solutions.





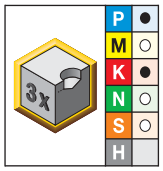


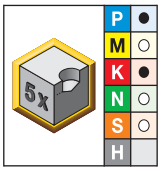




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B966A/B967A • ~3 x D/~5 x D



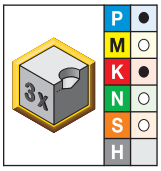


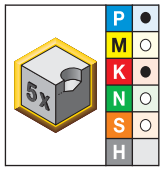
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B966A03000	B967A03000	3,000	.1181	–	–	0,5	36	6
B966A03100	B967A03100	3,100	.1220	–	–	0,5	36	6
B966A03200	B967A03200	3,200	.1260	–	–	0,5	36	6
B966A03300	B967A03300	3,300	.1299	–	–	0,5	36	6
B966A03400	–	3,400	.1339	–	–	0,6	36	6
B966A03500	B967A03500	3,500	.1378	–	–	0,6	36	6
B966A03600	–	3,600	.1417	–	–	0,6	36	6
B966A03700	–	3,700	.1457	–	–	0,6	36	6
B966A03800	B967A03800	3,800	.1496	–	–	0,6	36	6
B966A03900	–	3,900	.1535	–	–	0,6	36	6
B966A03960	–	3,960	.1559	–	–	0,7	36	6
B966A04000	B967A04000	4,000	.1575	–	–	0,7	36	6
B966A04100	–	4,100	.1614	–	–	0,7	36	6
B966A04200	B967A04200	4,200	.1654	–	–	0,7	36	6
B966A04300	B967A04300	4,300	.1693	–	–	0,7	36	6
B966A04400	–	4,400	.1732	–	–	0,7	36	6
B966A04500	B967A04500	4,500	.1772	–	–	0,7	36	6
B966A04600	–	4,600	.1811	–	–	0,8	36	6
B966A04700	–	4,700	.1850	–	13	0,8	36	6
B966A04800	B967A04800	4,800	.1890	–	12	0,8	36	6
B966A04900	–	4,900	.1929	–	–	0,8	36	6
B966A05000	B967A05000	5,000	.1969	–	–	0,8	36	6
B966A05040	–	5,040	.1984	–	–	0,8	36	6
B966A05100	B967A05100	5,100	.2008	–	–	0,8	36	6
B966A05200	B967A05200	5,200	.2047	–	–	0,9	36	6
B966A05300	–	5,300	.2087	–	–	0,9	36	6
B966A05400	–	5,400	.2126	–	–	0,9	36	6
B966A05500	B967A05500	5,500	.2165	–	–	0,9	36	6
B966A05600	–	5,600	.2205	–	–	0,9	36	6
B966A05700	–	5,700	.2244	–	–	1,0	36	6
B966A05800	B967A05800	5,800	.2283	–	–	1,0	36	6
B966A05900	–	5,900	.2323	–	–	1,0	36	6
B966A06000	B967A06000	6,000	.2362	–	–	1,0	36	6
B966A06050	–	6,050	.2382	–	–	1,0	36	8
B966A06100	B967A06100	6,100	.2402	–	–	1,0	36	8
B966A06200	–	6,200	.2441	–	–	1,0	36	8

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)



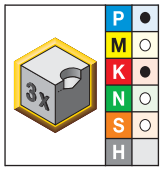


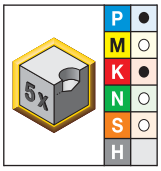
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B966A06300	–	6,300	.2480	–	–	1,1	36	8
B966A06350	–	6,350	.2500	1/4	–	1,1	36	8
B966A06400	–	6,400	.2520	–	–	1,1	36	8
B966A06500	B967A06500	6,500	.2559	–	–	1,1	36	8
B966A06600	B967A06600	6,600	.2598	–	–	1,1	36	8
B966A06700	B967A06700	6,700	.2638	–	–	1,1	36	8
B966A06800	B967A06800	6,800	.2677	–	–	1,1	36	8
B966A06900	–	6,900	.2717	–	–	1,2	36	8
B966A07000	B967A07000	7,000	.2756	–	–	1,2	36	8
B966A07100	–	7,100	.2795	–	–	1,2	36	8
B966A07200	–	7,200	.2835	–	–	1,2	36	8
B966A07300	–	7,300	.2874	–	–	1,2	36	8
B966A07400	B967A07400	7,400	.2913	–	–	1,3	36	8
B966A07500	B967A07500	7,500	.2953	–	–	1,3	36	8
B966A07600	–	7,600	.2992	–	–	1,3	36	8
B966A07700	–	7,700	.3031	–	–	1,3	36	8
B966A07800	B967A07800	7,800	.3071	–	–	1,3	36	8
B966A07900	–	7,900	.3110	–	–	1,3	36	8
B966A08000	B967A08000	8,000	.3150	–	–	1,4	36	8
B966A08100	B967A08100	8,100	.3189	–	–	1,4	40	10
B966A08200	–	8,200	.3228	–	–	1,4	40	10
B966A08300	–	8,300	.3268	–	–	1,4	40	10
B966A08400	–	8,400	.3307	–	–	1,4	40	10
B966A08500	B967A08500	8,500	.3346	–	–	1,4	40	10
B966A08600	B967A08600	8,600	.3386	–	–	1,5	40	10
B966A08700	B967A08700	8,700	.3425	–	–	1,5	40	10
B966A08800	B967A08800	8,800	.3465	–	–	1,5	40	10
B966A08900	–	8,900	.3504	–	–	1,5	40	10
B966A09000	B967A09000	9,000	.3543	–	–	1,5	40	10
B966A09100	–	9,100	.3583	–	–	1,5	40	10
B966A09200	–	9,200	.3622	–	–	1,6	40	10
B966A09300	B967A09300	9,300	.3661	–	–	1,6	40	10
B966A09400	–	9,400	.3701	–	–	1,6	40	10
B966A09500	B967A09500	9,500	.3740	–	–	1,6	40	10
B966A09600	–	9,600	.3780	–	–	1,6	40	10
B966A09700	–	9,700	.3819	–	–	1,7	40	10
B966A09800	B967A09800	9,800	.3858	–	–	1,7	40	10
B966A09900	–	9,900	.3898	–	–	1,7	40	10
B966A10000	B967A10000	10,000	.3937	–	–	1,7	40	10
B966A10100	–	10,100	.3976	–	–	1,7	45	12
B966A10200	B967A10200	10,200	.4016	–	–	1,7	45	12
B966A10300	–	10,300	.4055	–	–	1,8	45	12
B966A10400	–	10,400	.4094	–	–	1,8	45	12
B966A10500	B967A10500	10,500	.4134	–	–	1,8	45	12
B966A10600	–	10,600	.4173	–	–	1,8	45	12
B966A10700	B967A10700	10,700	.4213	–	–	1,8	45	12
B966A10800	B967A10800	10,800	.4252	–	–	1,8	45	12
B966A10900	–	10,900	.4291	–	–	1,9	45	12
B966A11000	B967A11000	11,000	.4331	–	–	1,9	45	12
B966A11100	–	11,100	.4370	–	–	1,9	45	12
B966A11200	–	11,200	.4409	–	–	1,9	45	12
B966A11300	B967A11300	11,300	.4449	–	–	1,9	45	12

(continued)

(B966A/B967A • ~3 x D/~5 x D — continued)





● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B966A11400	–	11,400	.4488	–	–	2,0	45	12
B966A11500	**B967A11500**	11,500	.4528	–	–	2,0	45	12
B966A11600	–	11,600	.4567	–	–	2,0	45	12
B966A11700	–	11,700	.4606	–	–	2,0	45	12
B966A11800	**B967A11800**	11,800	.4646	–	–	2,0	45	12
B966A11900	–	11,900	.4685	–	–	2,0	45	12
B966A12000	**B967A12000**	12,000	.4724	–	–	2,1	45	12
B966A12100	–	12,100	.4764	–	–	2,1	45	14
B966A12200	–	12,200	.4803	–	–	2,1	45	14
B966A12300	–	12,300	.4843	–	–	2,1	45	14
B966A12400	–	12,400	.4882	–	–	2,1	45	14
B966A12500	**B967A12500**	12,500	.4921	–	–	2,1	45	14
B966A12600	–	12,600	.4961	–	–	2,2	45	14
B966A12700	**B967A12700**	12,700	.5000	1/2	–	2,2	45	14
B966A12800	**B967A12800**	12,800	.5039	–	–	2,2	45	14
B966A12900	–	12,900	.5079	–	–	2,2	45	14
B966A13000	**B967A13000**	13,000	.5118	–	–	2,2	45	14
B966A13100	–	13,100	.5157	–	–	2,3	45	14
B966A13200	–	13,200	.5197	–	–	2,3	45	14
B966A13300	–	13,300	.5236	–	–	2,3	45	14
B966A13400	–	13,400	.5276	–	–	2,3	45	14
B966A13500	**B967A13500**	13,500	.5315	–	–	2,3	45	14
B966A13700	–	13,700	.5394	–	–	2,4	45	14
B966A14000	**B967A14000**	14,000	.5512	–	–	2,4	45	14
B966A14200	–	14,200	.5591	–	–	2,5	48	16
B966A14300	–	14,300	.5630	–	–	2,5	48	16
B966A14500	**B967A14500**	14,500	.5709	–	–	2,5	48	16
B966A14700	–	14,700	.5787	–	–	2,5	48	16
B966A14800	–	14,800	.5827	–	–	2,6	48	16
B966A15000	**B967A15000**	15,000	.5906	–	–	2,6	48	16
–	**B967A15300**	15,300	.6024	–	–	2,6	48	16
B966A15500	**B967A15500**	15,500	.6102	–	–	2,7	48	16
B966A15700	–	15,700	.6181	–	–	2,7	48	16
B966A16000	**B967A16000**	16,000	.6299	–	–	2,8	48	16
B966A16500	**B967A16500**	16,500	.6496	–	–	2,9	48	18
B966A17000	–	17,000	.6693	–	–	2,9	48	18
B966A17500	–	17,500	.6890	–	–	3,0	48	18
B966A18000	–	18,000	.7087	–	–	3,1	48	18
B966A20000	–	20,000	.7874	–	–	3,5	50	20

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

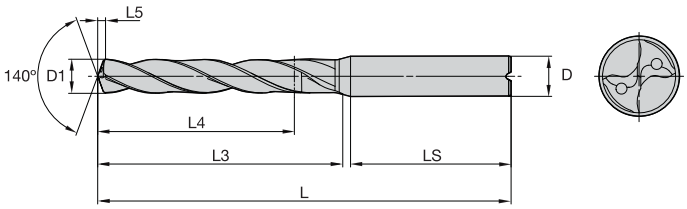
Kenna Universal™ Drills • B966, B967 Series • Grade KC7315™ • Flood Coolant • Drill Diameters 3–20mm (.1181–.7874")



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	90	115	mm/r	0,05–0,11	0,08–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	60	70	100	mm/r	0,06–0,13	0,09–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	80	90	100	mm/r	0,06–0,13	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	50	70	90	mm/r	0,07–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	70	100	mm/r	0,06–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	40	50	70	mm/r	0,06–0,12	0,08–0,14	0,10–0,18	0,12–0,22	0,16–0,26	0,18–0,28	0,22–0,36	0,26–0,42
	6	30	40	60	mm/r	0,05–0,07	0,06–0,10	0,08–0,14	0,10–0,18	0,12–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	30	40	50	mm/r	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	40	50	60	mm/r	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	30	40	50	mm/r	0,04–0,07	0,06–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	130	170	mm/r	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,06	0,38–0,47
	2	90	110	120	mm/r	0,10–0,17	0,12–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	110	130	mm/r	0,07–0,15	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,25–0,48	0,30–0,60
N	1	90	230	270	mm/r	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	220	270	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	180	225	mm/r	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	130	270	mm/r	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	20	25	30	mm/r	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	20	30	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	20	25	40	mm/r	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	20	25	50	mm/r	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (fz) by Diameter	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	230	300	380	IPR	.002–.004	.003–.005	.004–.007	.004–.009	.005–.010	.006–.012	.007–.014	.009–.018
	1	200	230	330	IPR	.002–.005	.004–.006	.004–.009	.005–.010	.006–.012	.007–.014	.009–.017	.011–.021
	2	260	300	330	IPR	.002–.005	.003–.006	.005–.009	.006–.010	.007–.012	.008–.014	.009–.017	.012–.021
	3	160	230	300	IPR	.003–.006	.004–.007	.005–.009	.006–.011	.008–.013	.009–.015	.010–.019	.013–.023
	4	160	230	330	IPR	.002–.006	.003–.007	.005–.009	.006–.011	.007–.013	.008–.015	.009–.019	.011–.023
	5	130	160	230	IPR	.002–.005	.003–.006	.004–.007	.005–.009	.006–.010	.007–.011	.009–.014	.010–.017
	6	100	130	200	IPR	.002–.003	.002–.004	.003–.006	.004–.007	.005–.009	.006–.009	.007–.013	.009–.016
M	1	100	130	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
	2	130	160	200	IPR	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008	.006–.009
	3	100	130	160	IPR	.002–.003	.002–.004	.003–.004	.004–.005	.004–.006	.005–.006	.006–.007	.006–.008
K	1	260	430	560	IPR	.004–.009	.005–.009	.006–.012	.008–.015	.009–.017	.010–.019	.012–.002	.015–.019
	2	300	360	390	IPR	.004–.007	.005–.008	.006–.010	.008–.012	.009–.014	.010–.016	.012–.019	.015–.024
	3	260	360	430	IPR	.003–.006	.004–.008	.005–.010	.006–.012	.007–.014	.008–.016	.010–.019	.012–.024
N	1	300	750	890	IPR	.003–.006	.004–.006	.005–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.019
	2	300	720	890	IPR	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.017	.013–.021
	3	300	590	740	IPR	.005–.006	.005–.006	.006–.008	.006–.009	.008–.011	.009–.013	.011–.016	.013–.017
	4	300	430	890	IPR	.003–.006	.004–.008	.005–.009	.006–.011	.008–.013	.009–.014	.011–.016	.013–.019
S	1	70	80	100	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.005	.004–.006	.005–.006	.006–.007
	2	30	70	100	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006
	3	70	80	130	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.003–.004	.003–.004	.004–.005	.004–.006
	4	70	80	160	IPR	.001–.002	.001–.002	.002–.003	.003–.004	.003–.004	.004–.005	.004–.006	.004–.006

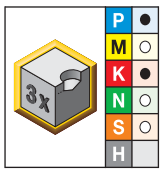


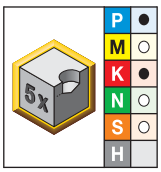




For information on L, L3, and L4 max, see the Solid Carbide Drills foldout table.

B976A/B977A • ~3 x D/~5 x D



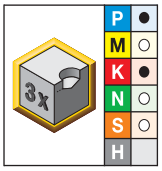


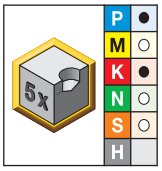
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B976Z02383	–	2,383	.0938	3/32	—	0,4	28	3
B976Z02400	–	2,400	.0945	—	—	0,4	28	3
B976Z02439	–	2,439	.0960	—	41	0,4	28	3
B976Z02489	–	2,489	.0980	—	40	0,4	28	3
B976Z02500	–	2,500	.0984	—	—	0,4	28	3
B976Z02578	–	2,578	.1015	—	38	0,4	28	3
B976Z02600	–	2,600	.1024	—	—	0,4	28	3
B976Z02642	–	2,642	.1040	—	37	0,4	28	3
B976Z02705	–	2,705	.1065	—	36	0,4	28	3
B976Z02779	–	2,779	.1094	7/64	—	0,4	28	3
B976Z02800	–	2,800	.1102	—	—	0,5	28	3
B976Z02820	–	2,820	.1110	—	34	0,5	28	3
B976Z02870	–	2,870	.1130	—	33	0,5	28	3
B976Z02900	–	2,900	.1142	—	—	0,5	28	3
B976Z02947 *	–	2,947	.1160	—	32	0,5	28	3
B976A03000	B977A03000	3,000	.1181	—	—	0,5	36	6
B976A03100	B977A03100	3,100	.1220	—	—	0,5	36	6
B976A03175	B977A03175	3,175	.1250	1/8	—	0,5	36	6
B976A03180	–	3,180	.1252	—	—	0,5	36	6
B976A03200	B977A03200	3,200	.1260	—	—	0,5	36	6
–	B977A03250	3,250	.1280	—	—	0,5	36	6
B976A03300	B977A03300	3,300	.1299	—	—	0,5	36	6
–	B977A03400	3,400	.1339	—	—	0,6	36	6
B976A03454	B977A03454	3,454	.1360	—	29	0,6	36	6
B976A03500	B977A03500	3,500	.1378	—	—	0,6	36	6
B976A03600	B977A03600	3,600	.1417	—	—	0,6	36	6
B976A03700	B977A03700	3,700	.1457	—	—	0,6	36	6
B976A03734	B977A03734	3,734	.1470	—	26	0,6	36	6
B976A03797	B977A03797	3,797	.1495	—	25	0,6	36	6
B976A03800	B977A03800	3,800	.1496	—	—	0,6	36	6
B976A03900	B977A03900	3,900	.1535	—	—	0,6	36	6
B976A03970	B977A03970	3,970	.1563	5/32	—	0,7	36	6
B976A04000	B977A04000	4,000	.1575	—	—	0,7	36	6
B976A04039	B977A04039	4,039	.1590	—	21	0,7	36	6
B976A04100	B977A04100	4,100	.1614	—	—	0,7	36	6
B976A04200	B977A04200	4,200	.1654	—	—	0,7	36	6

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



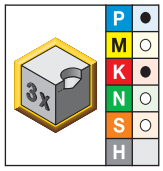


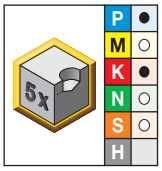
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B976A04300	B977A04300	4,300	.1693	–	–	0,7	36	6
B976A04366	B977A04366	4,366	.1719	11/64	–	0,7	36	6
–	B977A04400	4,400	.1732	–	–	0,7	36	6
B976A04496	B977A04496	4,496	.1770	–	16	0,7	36	6
B976A04500	B977A04500	4,500	.1772	–	–	0,7	36	6
–	B977A04580	4,580	.1803	–	15	0,8	36	6
B976A04600	B977A04600	4,600	.1811	–	–	0,8	36	6
B976A04620	–	4,620	.1819	–	–	0,8	36	6
–	B977A04623	4,623	.1820	–	14	0,8	36	6
–	B977A04650	4,650	.1831	–	–	0,8	36	6
B976A04700	B977A04700	4,700	.1850	–	13	0,8	36	6
B976A04763	B977A04763	4,763	.1875	3/16	–	0,8	36	6
B976A04800	B977A04800	4,800	.1890	–	12	0,8	36	6
B976A04900	B977A04900	4,900	.1929	–	–	0,8	36	6
B976A05000	B977A05000	5,000	.1969	–	–	0,8	36	6
B976A05100	B977A05100	5,100	.2008	–	–	0,8	36	6
B976A05106	B977A05106	5,106	.2010	–	7	0,8	36	6
B976A05200	B977A05200	5,200	.2047	–	–	0,9	36	6
B976A05250	–	5,250	.2067	–	–	0,9	36	6
B976A05300	B977A05300	5,300	.2087	–	–	0,9	36	6
B976A05400	B977A05400	5,400	.2126	–	–	0,9	36	6
B976A05410	B977A05410	5,410	.2130	–	3	0,9	36	6
B976A05500	B977A05500	5,500	.2165	–	–	0,9	36	6
B976A05530	–	5,530	.2177	–	–	0,9	36	6
B976A05558	B977A05558	5,558	.2188	7/32	–	0,9	36	6
B976A05575	–	5,575	.2195	–	–	0,9	36	6
B976A05600	B977A05600	5,600	.2205	–	–	0,9	36	6
B976A05700	B977A05700	5,700	.2244	–	–	1,0	36	6
B976A05791	B977A05791	5,791	.2280	–	1	1,0	36	6
B976A05800	B977A05800	5,800	.2283	–	–	1,0	36	6
–	B977A05900	5,900	.2323	–	–	1,0	36	6
B976A05944	B977A05944	5,944	.2340	–	–	1,0	36	6
B976A06000	B977A06000	6,000	.2362	–	–	1,0	36	6
B976A06100	B977A06100	6,100	.2402	–	–	1,0	36	8
–	B977A06150	6,150	.2421	–	–	1,0	36	8
B976A06200	B977A06200	6,200	.2441	–	–	1,0	36	8
–	B977A06300	6,300	.2480	–	–	1,1	36	8
B976A06350	B977A06350	6,350	.2500	1/4	–	1,1	36	8
–	B977A06400	6,400	.2520	–	–	1,1	36	8
B976A06500	B977A06500	6,500	.2559	–	–	1,1	36	8
B976A06528	B977A06528	6,528	.2570	–	–	1,1	36	8
B976A06530	–	6,530	.2571	–	–	1,1	36	8
B976A06600	B977A06600	6,600	.2598	–	–	1,1	36	8
B976A06700	B977A06700	6,700	.2638	–	–	1,1	36	8
B976A06746	–	6,746	.2656	17/64	–	1,1	36	8
B976A06750	–	6,750	.2657	–	–	1,1	36	8
B976A06800	B977A06800	6,800	.2677	–	–	1,1	36	8
B976A06900	B977A06900	6,900	.2717	–	–	1,2	36	8
B976A06909	B977A06909	6,909	.2720	–	–	1,2	36	8
B976A07000	B977A07000	7,000	.2756	–	–	1,2	36	8
B976A07100	B977A07100	7,100	.2795	–	–	1,2	36	8
B976A07145	B977A07145	7,145	.2813	9/32	–	1,2	36	8

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



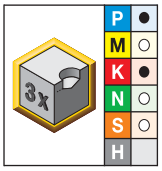


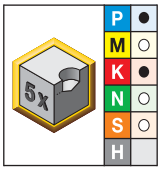
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B976A07200	B977A07200	7,200	.2835	–	–	1,2	36	8
B976A07300	B977A07300	7,300	.2874	–	–	1,2	36	8
B976A07366	B977A07366	7,366	.2900	–	–	1,2	36	8
B976A07400	B977A07400	7,400	.2913	–	–	1,3	36	8
B976A07500	B977A07500	7,500	.2953	–	–	1,3	36	8
B976A07541	B977A07541	7,541	.2969	19/64	–	1,3	36	8
B976A07600	B977A07600	7,600	.2992	–	–	1,3	36	8
B976A07700	B977A07700	7,700	.3031	–	–	1,3	36	8
B976A07800	B977A07800	7,800	.3071	–	–	1,3	36	8
B976A07900	B977A07900	7,900	.3110	–	–	1,3	36	8
B976A07938	B977A07938	7,938	.3125	5/16	–	1,3	36	8
B976A08000	B977A08000	8,000	.3150	–	–	1,4	36	8
B976A08020	B977A08020	8,020	.3157	–	–	1,4	40	10
B976A08100	B977A08100	8,100	.3189	–	–	1,4	40	10
B976A08200	B977A08200	8,200	.3228	–	–	1,4	40	10
B976A08300	B977A08300	8,300	.3268	–	–	1,4	40	10
B976A08334	B977A08334	8,334	.3281	21/64	–	1,4	40	10
–	B977A08400	8,400	.3307	–	–	1,4	40	10
B976A08430	–	8,430	.3319	–	–	1,4	40	10
B976A08433	B977A08433	8,433	.3320	–	–	1,4	40	10
B976A08500	B977A08500	8,500	.3346	–	–	1,4	40	10
B976A08600	B977A08600	8,600	.3386	–	–	1,5	40	10
B976A08700	B977A08700	8,700	.3425	–	–	1,5	40	10
B976A08733	B977A08733	8,733	.3438	11/32	–	1,5	40	10
B976A08800	B977A08800	8,800	.3465	–	–	1,5	40	10
B976A08839	B977A08839	8,839	.3480	–	–	1,5	40	10
–	B977A08900	8,900	.3504	–	–	1,5	40	10
B976A09000	B977A09000	9,000	.3543	–	–	1,5	40	10
B976A09093	B977A09093	9,093	.3580	–	–	1,5	40	10
B976A09100	B977A09100	9,100	.3583	–	–	1,5	40	10
B976A09129	B977A09129	9,129	.3594	23/64	–	1,6	40	10
B976A09200	B977A09200	9,200	.3622	–	–	1,6	40	10
B976A09300	B977A09300	9,300	.3661	–	–	1,6	40	10
–	B977A09347	9,347	.3680	–	–	1,6	40	10
B976A09400	B977A09400	9,400	.3701	–	–	1,6	40	10
B976A09500	B977A09500	9,500	.3740	–	–	1,6	40	10
B976A09525	B977A09525	9,525	.3750	3/8	–	1,6	40	10
B976A09600	B977A09600	9,600	.3780	–	–	1,6	40	10
B976A09700	B977A09700	9,700	.3819	–	–	1,7	40	10
–	B977A09746	9,746	.3837	–	–	1,7	40	10
B976A09750	–	9,750	.3839	–	–	1,7	40	10
B976A09800	B977A09800	9,800	.3858	–	–	1,7	40	10
–	B977A09900	9,900	.3898	–	–	1,7	40	10
B976A09921	B977A09921	9,921	.3906	25/64	–	1,7	40	10
B976A10000	B977A10000	10,000	.3937	–	–	1,7	40	10
–	B977A10100	10,100	.3976	–	–	1,7	45	12
B976A10200	B977A10200	10,200	.4016	–	–	1,7	45	12
B976A10262	B977A10262	10,262	.4040	–	–	1,8	45	12
B976A10300	B977A10300	10,300	.4055	–	–	1,8	45	12
B976A10320	B977A10320	10,320	.4063	13/32	–	1,8	45	12
B976A10400	B977A10400	10,400	.4094	–	–	1,8	45	12
B976A10500	B977A10500	10,500	.4134	–	–	1,8	45	12

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



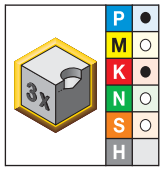


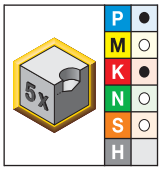
● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
B976A10600	B977A10600	10,600	.4173	–	–	1,8	45	12
B976A10700	B977A10700	10,700	.4213	–	–	1,8	45	12
B976A10716	B977A10716	10,716	.4219	27/64	–	1,8	45	12
B976A10800	B977A10800	10,800	.4252	–	–	1,8	45	12
–	B977A10900	10,900	.4291	–	–	1,9	45	12
B976A11000	B977A11000	11,000	.4331	–	–	1,9	45	12
–	B977A11100	11,100	.4370	–	–	1,9	45	12
B976A11113	B977A11113	11,113	.4375	7/16	–	1,9	45	12
B976A11200	B977A11200	11,200	.4409	–	–	1,9	45	12
B976A11300	B977A11300	11,300	.4449	–	–	1,9	45	12
–	B977A11400	11,400	.4488	–	–	2,0	45	12
B976A11500	B977A11500	11,500	.4528	–	–	2,0	45	12
B976A11509	B977A11509	11,509	.4531	29/64	–	2,0	45	12
B976A11600	B977A11600	11,600	.4567	–	–	2,0	45	12
B976A11700	B977A11700	11,700	.4606	–	–	2,0	45	12
B976A11800	B977A11800	11,800	.4646	–	–	2,0	45	12
–	B977A11900	11,900	.4685	–	–	2,0	45	12
B976A11908	B977A11908	11,908	.4688	15/32	–	2,0	45	12
B976A12000	B977A12000	12,000	.4724	–	–	2,1	45	12
–	B977A12100	12,100	.4764	–	–	2,1	45	14
–	B977A12200	12,200	.4803	–	–	2,1	45	14
B976A12300	B977A12300	12,300	.4843	–	–	2,1	45	14
B976A12304	B977A12304	12,304	.4844	31/64	–	2,1	45	14
–	B977A12400	12,400	.4882	–	–	2,1	45	14
B976A12500	B977A12500	12,500	.4921	–	–	2,1	45	14
–	B977A12600	12,600	.4961	–	–	2,2	45	14
B976A12700	B977A12700	12,700	.5000	1/2	–	2,2	45	14
B976A12800	B977A12800	12,800	.5039	–	–	2,2	45	14
–	B977A12900	12,900	.5079	–	–	2,2	45	14
B976A13000	B977A13000	13,000	.5118	–	–	2,2	45	14
–	B977A13096	13,096	.5156	33/64	–	2,3	45	14
–	B977A13100	13,100	.5157	–	–	2,3	45	14
–	B977A13200	13,200	.5197	–	–	2,3	45	14
B976A13300	B977A13300	13,300	.5236	–	–	2,3	45	14
B976A13495	B977A13495	13,495	.5313	17/32	–	2,3	45	14
B976A13500	B977A13500	13,500	.5315	–	–	2,3	45	14
B976A13700	B977A13700	13,700	.5394	–	–	2,4	45	14
–	B977A13800	13,800	.5433	–	–	2,4	45	14
B976A14000	B977A14000	14,000	.5512	–	–	2,4	45	14
B976A14100	B977A14100	14,100	.5551	–	–	2,4	48	16
B976A14200	B977A14200	14,200	.5591	–	–	2,5	48	16
B976A14288	B977A14288	14,288	.5625	9/16	–	2,5	48	16
B976A14500	B977A14500	14,500	.5709	–	–	2,5	48	16
–	B977A14600	14,600	.5748	–	–	2,5	48	16
B976A14700	B977A14700	14,700	.5787	–	–	2,5	48	16
–	B977A14900	14,900	.5866	–	–	2,6	48	16
B976A15000	B977A15000	15,000	.5906	–	–	2,6	48	16
–	B977A15100	15,100	.5945	–	–	2,6	48	16
–	B977A15200	15,200	.5984	–	–	2,6	48	16
–	B977A15300	15,300	.6024	–	–	2,6	48	16
B976A15500	B977A15500	15,500	.6102	–	–	2,7	48	16
–	B977A15700	15,700	.6181	–	–	2,7	48	16

(continued)

(B976A/B977A • ~3 x D/~5 x D — continued)



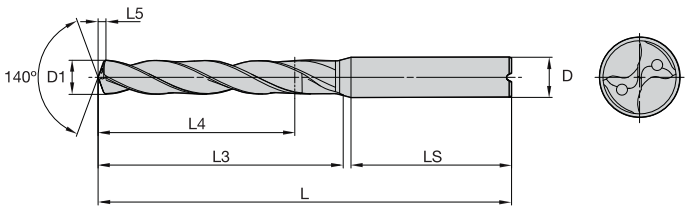


● first choice
○ alternate choice

short • KC7315	long • KC7315	D1 diameter mm	in	fraction	wire size	L5	LS	D
–	B977A15800	15,800	.6220	–	–	2,7	48	16
B976A15875	B977A15875	15,875	.6250	5/8	–	2,7	48	16
–	B977A15900	15,900	.6260	–	–	2,8	48	16
B976A16000	B977A16000	16,000	.6299	–	–	2,8	48	16
–	B977A16078	16,078	.6330	–	–	2,8	48	18
B976A16200	B977A16200	16,200	.6378	–	–	2,8	48	18
–	B977A16300	16,300	.6417	–	–	2,8	48	18
–	B977A16400	16,400	.6457	–	–	2,8	48	18
B976A16500	B977A16500	16,500	.6496	–	–	2,9	48	18
–	B977A16600	16,600	.6535	–	–	2,9	48	18
B976A16670	B977A16670	16,670	.6563	21/32	–	2,9	48	18
–	B977A16700	16,700	.6575	–	–	2,9	48	18
B976A16800	–	16,800	.6614	–	–	2,9	48	18
B976A17000	B977A17000	17,000	.6693	–	–	2,9	48	18
B976A17100	–	17,100	.6732	–	–	3,0	48	18
B976A17463	B977A17463	17,463	.6875	11/16	–	3,0	48	18
B976A17500	B977A17500	17,500	.6890	–	–	3,0	48	18
–	B977A17700	17,700	.6969	–	–	3,1	48	18
B976A18000	B977A18000	18,000	.7087	–	–	3,1	48	18
–	B977A18400	18,400	.7244	–	–	3,2	50	20
B976A18500	B977A18500	18,500	.7283	–	–	3,2	50	20
–	B977A18600	18,600	.7323	–	–	3,2	50	20
–	B977A18800	18,800	.7402	–	–	3,3	50	20
B976A19000	B977A19000	19,000	.7480	–	–	3,3	50	20
B976A19050	B977A19050	19,050	.7500	3/4	–	3,3	50	20
–	B977A19200	19,200	.7559	–	–	3,3	50	20
–	B977A19253	19,253	.7580	–	–	3,3	50	20
–	B977A19446	19,446	.7656	49/64	–	3,4	50	20
B976A19500	B977A19500	19,500	.7677	–	–	3,4	50	20
B976A19700	B977A19700	19,700	.7756	–	–	3,4	50	20
B976A19840 *	B977A19840	19,840	.7811	–	–	3,5	50	20
B976A20000	B977A20000	20,000	.7874	–	–	3,5	50	20
–	B977A21000	21,000	.8268	–	–	3,7	50	20

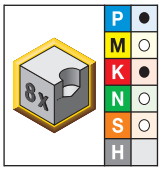
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.







B978A • ~8 x D

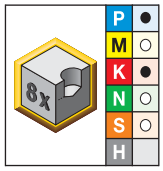


● first choice
○ alternate choice

extra long • KC7315	D1 diameter mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B978A03000	3,000	.1181	–	–	78	40	33	0,6	36	6
B978A03300	3,300	.1299	–	–	78	40	33	0,7	36	6
B978A03400	3,400	.1339	–	–	78	40	33	0,7	36	6
B978A03600	3,600	.1417	–	–	78	40	33	0,7	36	6
B978A03700	3,700	.1457	–	–	78	40	33	0,8	36	6
B978A03800	3,800	.1496	–	–	87	49	41	0,8	36	6
B978A03970	3,970	.1563	5/32	–	87	49	41	0,8	36	6
B978A04000	4,000	.1575	–	–	87	49	41	0,8	36	6
B978A04200	4,200	.1654	–	–	87	49	41	0,9	36	6
B978A04500	4,500	.1772	–	–	87	49	41	0,9	36	6
B978A04600	4,600	.1811	–	–	87	49	41	0,9	36	6
B978A04763	4,763	.1875	3/16	–	94	56	48	1,0	36	6
B978A04800	4,800	.1890	–	12	94	56	48	1,0	36	6
B978A05000	5,000	.1969	–	–	94	56	48	1,0	36	6
B978A05100	5,100	.2008	–	–	94	56	48	1,1	36	6
B978A05200	5,200	.2047	–	–	94	56	48	1,1	36	6
B978A05300	5,300	.2087	–	–	94	56	48	1,1	36	6
B978A05500	5,500	.2165	–	–	94	56	48	1,1	36	6
B978A05558	5,558	.2188	7/32	–	94	56	48	1,2	36	6
B978A05600	5,600	.2205	–	–	94	56	48	1,2	36	6
B978A05700	5,700	.2244	–	–	94	56	48	1,2	36	6
B978A05800	5,800	.2283	–	–	94	56	48	1,2	36	6
B978A05900	5,900	.2323	–	–	94	56	48	1,2	36	6
B978A06000	6,000	.2362	–	–	94	56	48	1,2	36	6
B978A06100	6,100	.2402	–	–	105	67	57	1,3	36	8
B978A06200	6,200	.2441	–	–	105	67	57	1,3	36	8
B978A06300	6,300	.2480	–	–	105	67	57	1,3	36	8
B978A06350	6,350	.2500	1/4	–	105	67	57	1,3	36	8
B978A06400	6,400	.2520	–	–	105	67	57	1,3	36	8
B978A06500	6,500	.2559	–	–	105	67	57	1,4	36	8
B978A06600	6,600	.2598	–	–	105	67	57	1,4	36	8
B978A06700	6,700	.2638	–	–	105	67	57	1,4	36	8
B978A06746	6,746	.2656	17/64	–	105	67	57	1,4	36	8
B978A06800	6,800	.2677	–	–	105	67	57	1,4	36	8
B978A07000	7,000	.2756	–	–	105	67	57	1,5	36	8
B978A07145	7,145	.2813	9/32	–	110	72	61	1,5	36	8

(continued)

(B978A • ~8 x D — continued)

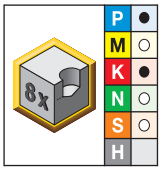


● first choice
○ alternate choice

	D1 diameter									
extra long • KC7315	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B978A07400	7,400	.2913	–	–	110	72	61	1,6	36	8
B978A07500	7,500	.2953	–	–	110	72	61	1,6	36	8
B978A07541	7,541	.2969	19/64	–	110	72	61	1,6	36	8
B978A07700	7,700	.3031	–	–	110	72	61	1,6	36	8
B978A07800	7,800	.3071	–	–	110	72	61	1,6	36	8
B978A07938	7,938	.3125	5/16	–	110	72	61	1,7	36	8
B978A08000	8,000	.3150	–	–	110	72	61	1,7	36	8
B978A08100	8,100	.3189	–	–	122	80	68	1,7	40	10
B978A08200	8,200	.3228	–	–	122	80	68	1,7	40	10
B978A08334	8,334	.3281	21/64	–	122	80	68	1,8	40	10
B978A08500	8,500	.3346	–	–	122	80	68	1,8	40	10
B978A08600	8,600	.3386	–	–	122	80	68	1,8	40	10
B978A08700	8,700	.3425	–	–	122	80	68	1,8	40	10
B978A08733	8,733	.3438	11/32	–	122	80	68	1,8	40	10
B978A08800	8,800	.3465	–	–	122	80	68	1,9	40	10
B978A09000	9,000	.3543	–	–	122	80	68	1,9	40	10
B978A09100	9,100	.3583	–	–	122	80	68	1,9	40	10
B978A09129	9,129	.3594	23/64	–	122	80	68	1,9	40	10
B978A09300	9,300	.3661	–	–	122	80	68	2,0	40	10
B978A09500	9,500	.3740	–	–	122	80	68	2,0	40	10
B978A09525	9,525	.3750	3/8	–	122	80	68	2,0	40	10
B978A09700	9,700	.3819	–	–	122	80	68	2,0	40	10
B978A09750	9,750	.3839	–	–	122	80	68	2,1	40	10
B978A09800	9,800	.3858	–	–	122	80	68	2,1	40	10
B978A09900	9,900	.3898	–	–	122	80	68	2,1	40	10
B978A09921	9,921	.3906	25/64	–	122	80	68	2,1	40	10
B978A10000	10,000	.3937	–	–	122	80	68	2,1	40	10
B978A10100	10,100	.3976	–	–	141	94	79	2,1	45	12
B978A10200	10,200	.4016	–	–	141	94	79	2,2	45	12
B978A10300	10,300	.4055	–	–	141	94	79	2,2	45	12
B978A10320	10,320	.4063	13/32	–	141	94	79	2,2	45	12
B978A10500	10,500	.4134	–	–	141	94	79	2,2	45	12
B978A10716	10,716	.4219	27/64	–	141	94	79	2,3	45	12
B978A10800	10,800	.4252	–	–	141	94	79	2,3	45	12
B978A11000	11,000	.4331	–	–	141	94	79	2,3	45	12
B978A11113	11,113	.4375	7/16	–	141	94	79	2,4	45	12
B978A11200	11,200	.4409	–	–	141	94	79	2,4	45	12
B978A11300	11,300	.4449	–	–	141	94	79	2,4	45	12
B978A11400	11,400	.4488	–	–	141	94	79	2,4	45	12
B978A11500	11,500	.4528	–	–	141	94	79	2,4	45	12
B978A11509	11,509	.4531	29/64	–	141	94	79	2,4	45	12
B978A11700	11,700	.4606	–	–	141	94	79	2,5	45	12
B978A11800	11,800	.4646	–	–	141	94	79	2,5	45	12
B978A11908	11,908	.4688	15/32	–	141	94	79	2,5	45	12
B978A12000	12,000	.4724	–	–	141	94	79	2,5	45	12
B978A12304 *	12,304	.4844	31/64	–	155	108	91	2,6	45	14
B978A12500	12,500	.4921	–	–	155	108	91	2,7	45	14
B978A12700	12,700	.5000	1/2	–	155	108	91	2,7	45	14
B978A12800	12,800	.5039	–	–	155	108	91	2,7	45	14
B978A13000	13,000	.5118	–	–	155	108	91	2,8	45	14
B978A13100	13,100	.5157	–	–	155	108	91	2,8	45	14
B978A13500	13,500	.5315	–	–	155	108	91	2,9	45	14

(continued)

(B978A • ~8 x D — continued)



● first choice
○ alternate choice

	D1 diameter									
extra long • KC7315	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D
B978A14000	14,000	.5512	—	—	155	108	91	3,0	45	14
B978A14288	14,288	.5625	9/16	—	171	121	101	3,0	48	16
B978A14500	14,500	.5709	—	—	171	121	101	3,1	48	16
B978A15000	15,000	.5906	—	—	171	121	101	3,2	48	16
B978A15100	15,100	.5945	—	—	171	121	101	3,2	48	16
B978A15200	15,200	.5984	—	—	171	121	101	3,2	48	16
B978A15300	15,300	.6024	—	—	171	121	101	3,3	48	16
B978A15500	15,500	.6102	—	—	171	121	101	3,3	48	16
B978A15800	15,800	.6220	—	—	171	121	101	3,4	48	16
B978A15875	15,875	.6250	5/8	—	171	121	101	3,4	48	16
B978A16000	16,000	.6299	—	—	171	121	101	3,4	48	16
B978A16078	16,078	.6330	—	—	185	135	113	3,4	48	18
B978A16200	16,200	.6378	—	—	185	135	113	3,5	48	18
B978A16500	16,500	.6496	—	—	185	135	113	3,5	48	18
B978A17000	17,000	.6693	—	—	185	135	113	3,6	48	18
B978A17463	17,463	.6875	11/16	—	185	135	113	3,7	48	18
B978A17500	17,500	.6890	—	—	185	135	113	3,7	48	18
B978A18000	18,000	.7087	—	—	185	135	113	3,9	48	18
B978A18500	18,500	.7283	—	—	200	148	124	4,0	50	20
B978A19000	19,000	.7480	—	—	200	148	124	4,1	50	20
B978A19050 *	19,050	.7500	3/4	—	200	148	124	4,1	50	20
B978A19253 *	19,253	.7580	—	—	200	148	124	4,1	50	20
B978A19500 *	19,500	.7677	—	—	200	148	124	4,2	50	20
B978A19800	19,800	.7795	—	—	200	148	124	4,2	50	20
B978A19840	19,840	.7811	—	—	200	148	124	4,3	50	20
B978A20000	20,000	.7874	—	—	200	148	124	4,3	50	20

NOTE: The point angle on B978 series is 132°.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Tolerance • Inch

nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/-.0003
>.2362–.3937	.0002/.0008	.0000/-.0004
>.3937–.7087	.0003/.0010	.0000/-.0004
>.7087–1.0000	.0003/.0011	.0000/-.0005

Kenna Universal™ Drills • B97_Series • Grade KC7315™ • Through Coolant • Drill Diameters 2–20mm (.0787–.7874")

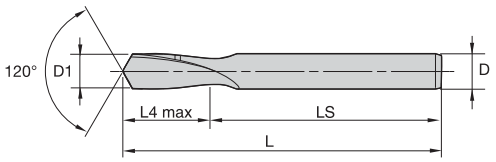


Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		2,0	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	**120**	160	mm/r		0,04–0,10	0,06–0,12	0,07–0,14	0,09–0,19	0,11–0,22	0,13–0,26	0,15–0,30	0,19–0,36	0,24–0,46
	1	70	**100**	140	mm/r		0,05–0,12	0,07–0,14	0,08–0,16	0,11–0,22	0,13–0,26	0,15–0,31	0,18–0,35	0,22–0,42	0,28–0,54
	2	90	**120**	140	mm/r		0,05–0,12	0,07–0,14	0,08–0,16	0,12–0,22	0,14–0,26	0,17–0,31	0,20–0,35	0,24–0,42	0,31–0,53
	3	60	**80**	100	mm/r		0,06–0,13	0,08–0,15	0,09–0,17	0,13–0,23	0,15–0,28	0,19–0,33	0,22–0,38	0,26–0,47	0,34–0,59
	4	50	**80**	100	mm/r		0,06–0,13	0,07–0,15	0,08–0,17	0,12–0,23	0,14–0,28	0,17–0,33	0,19–0,38	0,23–0,47	0,29–0,59
	5	50	**60**	80	mm/r		0,06–0,12	0,08–0,13	0,10–0,15	0,12–0,19	0,16–0,24	0,20–0,27	0,24–0,30	0,28–0,38	0,32–0,44
	6	40	**50**	70	mm/r		0,04–0,06	0,05–0,08	0,06–0,10	0,08–0,14	0,10–0,18	0,13–0,22	0,14–0,24	0,18–0,32	0,23–0,41
M	1	30	**40**	50	mm/r		0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
	2	40	**50**	60	mm/r		0,03–0,07	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22
	3	30	**40**	50	mm/r		0,03–0,06	0,04–0,07	0,05–0,09	0,08–0,11	0,09–0,12	0,10–0,14	0,12–0,16	0,14–0,18	0,16–0,20
K	1	80	**120**	170	mm/r		0,09–0,17	0,11–0,22	0,12–0,24	0,16–0,31	0,20–0,38	0,23–0,44	0,25–0,49	0,31–0,60	0,38–0,74
	2	80	**110**	140	mm/r		0,11–0,15	0,12–0,16	0,13–0,19	0,16–0,25	0,20–0,31	0,23–0,36	0,25–0,40	0,31–0,48	0,38–0,60
	3	80	**100**	130	mm/r		0,07–0,15	0,08–0,17	0,09–0,19	0,12–0,25	0,14–0,30	0,17–0,35	0,19–0,40	0,24–0,48	0,30–0,60
N	1	90	**230**	315	mm/r		0,06–0,13	0,08–0,14	0,10–0,16	0,12–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,48
	2	90	**225**	270	mm/r		0,06–0,12	0,08–0,16	0,10–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,44	0,32–0,52
	3	90	**180**	270	mm/r		0,11–0,14	0,12–0,14	0,13–0,16	0,14–0,20	0,16–0,24	0,20–0,28	0,24–0,32	0,28–0,40	0,32–0,44
	4	90	**135**	180	mm/r		0,06–0,12	0,08–0,16	0,01–0,20	0,12–0,24	0,16–0,28	0,20–0,32	0,24–0,36	0,28–0,40	0,32–0,48
S	1	10	**25**	30	mm/r		0,02–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,09–0,13	0,10–0,14	0,12–0,16	0,14–0,18
	2	10	**20**	25	mm/r		0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16
	3	10	**25**	30	mm/r		0,02–0,03	0,02–0,04	0,02–0,05	0,04–0,07	0,06–0,09	0,07–0,10	0,08–0,11	0,09–0,13	0,10–0,15
	4	10	**25**	40	mm/r		0,02–0,03	0,02–0,04	0,03–0,06	0,05–0,08	0,07–0,10	0,08–0,11	0,09–0,12	0,10–0,14	0,11–0,16

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		5/64 .078	1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	260	**390**	520	IPR		.002-.004	.002-.005	.003-.005	.004-.007	.004-.009	.005-.010	.006-.012	.007-.014	.009-.018
	1	230	**330**	460	IPR		.002-.005	.003-.006	.003-.006	.004-.009	.005-.010	.006-.012	.007-.014	.009-.017	.011-.022
	2	300	**390**	460	IPR		.002-.005	.003-.006	.003-.006	.005-.009	.006-.010	.007-.012	.008-.014	.009-.017	.012-.021
	3	200	**260**	330	IPR		.002-.005	.003-.006	.004-.007	.005-.009	.006-.011	.008-.013	.009-.015	.010-.019	.013-.023
	4	160	**260**	330	IPR		.002-.005	.003-.006	.003-.007	.005-.009	.006-.011	.007-.013	.008-.015	.009-.019	.011-.023
	5	160	**200**	260	IPR		.002-.005	.003-.005	.004-.006	.005-.008	.006-.009	.008-.011	.009-.012	.011-.015	.013-.017
	6	130	**160**	230	IPR		.002-.002	.002-.003	.002-.004	.003-.006	.004-.007	.005-.009	.006-.009	.007-.013	.009-.016
M	1	100	**130**	160	IPR		.001-.002	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
	2	130	**160**	200	IPR		.001-.003	.002-.003	.002-.004	.003-.005	.004-.006	.004-.006	.005-.007	.006-.008	.006-.009
	3	100	**130**	160	IPR		.001-.002	.002-.003	.002-.004	.003-.004	.004-.005	.004-.006	.005-.006	.006-.007	.006-.008
K	1	260	**390**	560	IPR		.004-.007	.004-.009	.005-.009	.006-.012	.008-.015	.009-.017	.010-.019	.012-.024	.015-.029
	2	260	**360**	460	IPR		.004-.006	.005-.006	.005-.008	.006-.010	.008-.012	.009-.014	.010-.016	.012-.019	.015-.024
	3	260	**330**	430	IPR		.003-.006	.003-.007	.004-.008	.005-.010	.006-.012	.007-.014	.008-.016	.009-.019	.012-.024
N	1	300	**750**	1030	IPR		.002-.005	.003-.006	.004-.006	.005-.008	.006-.009	.008-.011	.009-.013	.011-.016	.013-.019
	2	300	**740**	890	IPR		.002-.005	.003-.006	.004-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.017	.013-.021
	3	300	**590**	890	IPR		.004-.006	.005-.006	.005-.006	.006-.008	.006-.009	.008-.011	.009-.013	.011-.016	.013-.017
	4	300	**440**	590	IPR		.002-.005	.003-.006	.000-.008	.005-.009	.006-.011	.008-.013	.009-.014	.011-.016	.013-.019
S	1	30	**80**	100	IPR		.001-.002	.001-.002	.002-.003	.002-.004	.003-.005	.004-.005	.004-.006	.005-.006	.006-.007
	2	30	**70**	80	IPR		.001-.002	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006
	3	30	**80**	100	IPR		.001-.001	.001-.002	.001-.002	.002-.003	.002-.004	.003-.004	.003-.004	.004-.005	.004-.006
	4	30	**80**	130	IPR		.001-.001	.001-.002	.001-.002	.002-.003	.003-.004	.003-.004	.004-.005	.004-.006	.004-.006

KENNAMETAL®







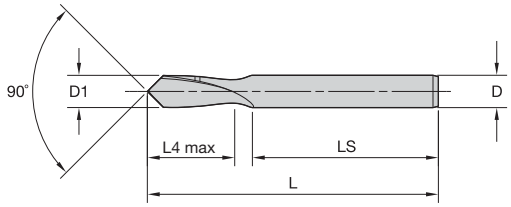


B501 • 120°



● first choice
○ alternate choice

B501 • K10	D1 diameter mm	in	fraction	wire size	L	L4 max	LS	D
B501Z04000	4,000	.1575	–	–	54	7	33	6
B501Z06000	6,000	.2362	–	–	54	9	33	6
B501Z10000	10,000	.3937	–	–	66	12	45	10
B501Z12000	12,000	.4724	–	–	73	14	52	12







B505 • 90°



● first choice
○ alternate choice

B505 • K10	D1 diameter mm	in	fraction	wire size	L	L4 max	LS	D
B505Z04000	4,000	.1575	–	–	54	7	33	4
B505Z06000	6,000	.2362	–	–	54	9	33	6
B505Z08000	8,000	.3150	–	–	58	11	37	8
B505Z10000	10,000	.3937	–	–	66	12	40	10
B505Z12000	12,000	.4724	–	–	73	14	52	12
B505Z16000	16,000	.6299	–	–	82	16	61	16
B505Z20000	20,000	.7874	–	–	92	18	71	20

Tolerance • Metric

D1	tolerance h8	tolerance h6
>3–6	0,000/-0,018	0,000/-0,008
>6–10	0,000/-0,022	0,000/-0,009
>10–18	0,000/-0,027	0,000/-0,011

Tolerance • Inch

D1	tolerance h8	tolerance h6
>.1181–.2362	.0000/-.0007	.0000/-.0003
>.2362–.3937	.0000/-.0009	.0000/-.0004
>.3937–.7087	.0000/-.0011	.0000/-.0004

Non-Coolant Spot Drills • B50_ Series • Grade K10 • Dry and Flood Coolant Drill • Diameters 3–20mm (.1181–.7874")





Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	50	65	100	mm/r		0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	1	40	55	80	mm/r		0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	2	40	55	80	mm/r		0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	3	40	55	80	mm/r		0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,24	0,18–0,28
	4	40	55	80	mm/r		0,05–0,08	0,05–0,10	0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,22	0,16–0,24
	5	30	40	60	mm/r		0,03–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,18	0,14–0,20
	6	30	40	60	mm/r		0,03–0,05	0,03–0,06	0,04–0,08	0,06–0,10	0,08–0,12	0,10–0,14	0,12–0,18	0,14–0,20
M	1	30	35	50	mm/r		0,04–0,07	0,05–0,09	0,06–0,11	0,80–0,13	0,09–0,15	0,10–0,17	0,11–0,20	0,12–0,23
	2	30	40	50	mm/r		0,03–0,05	0,04–0,08	0,05–0,09	0,06–0,10	0,07–0,12	0,08–0,14	0,09–0,17	0,10–0,20
	3	25	30	40	mm/r		0,03–0,05	0,04–0,08	0,05–0,09	0,06–0,10	0,07–0,12	0,08–0,14	0,09–0,17	0,10–0,20
K	1	60	90	120	mm/r		0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
	2	60	80	100	mm/r		0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
	3	60	90	120	mm/r		0,06–0,12	0,08–0,14	0,10–0,16	0,12–0,18	0,14–0,20	0,16–0,22	0,18–0,26	0,20–0,30
N	1	90	230	270	mm/r		0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	2	90	220	270	mm/r		0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	3	90	180	225	mm/r		0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
	4	90	130	270	mm/r		0,06–0,13	0,08–0,15	0,10–0,18	0,12–0,25	0,15–0,28	0,18–0,32	0,20–0,34	0,22–0,38
S	1	20	25	30	mm/r		0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	2	10	20	30	mm/r		0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	3	20	25	40	mm/r		0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20
	4	20	25	50	mm/r		0,03–0,05	0,04–0,07	0,05–0,09	0,06–0,10	0,07–0,11	0,08–0,13	0,09–0,16	0,10–0,20

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	160	210	330	IPR		.002–.004	.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.011
	1	130	180	260	IPR		.002–.004	.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.011
	2	130	180	260	IPR		.002–.004	.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.011
	3	130	180	260	IPR		.002–.004	.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.011
	4	130	180	260	IPR		.002–.003	.002–.004	.002–.005	.003–.006	.004–.006	.005–.007	.006–.009	.006–.009
	5	100	130	200	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.003–.005	.004–.006	.005–.007	.006–.008
	6	100	130	200	IPR		.001–.002	.001–.002	.002–.003	.002–.004	.003–.005	.004–.006	.005–.007	.006–.008
M	1	100	110	160	IPR		.002–.003	.002–.004	.002–.004	.032–.005	.004–.006	.004–.007	.004–.008	.005–.009
	2	100	130	160	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.005	.003–.006	.004–.007	.004–.008
	3	80	100	130	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.005	.003–.006	.004–.007	.004–.008
K	1	200	300	390	IPR		.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.010	.008–.012
	2	200	260	330	IPR		.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.010	.008–.012
	3	200	300	390	IPR		.002–.005	.003–.006	.004–.006	.005–.007	.006–.008	.006–.009	.007–.010	.008–.012
N	1	300	750	890	IPR		.002–.005	.003–.006	.004–.007	.005–.010	.006–.011	.007–.013	.008–.013	.009–.015
	2	300	720	890	IPR		.002–.005	.003–.006	.004–.007	.005–.010	.006–.011	.007–.013	.008–.013	.009–.015
	3	300	590	740	IPR		.002–.005	.003–.006	.004–.007	.005–.010	.006–.011	.007–.013	.008–.013	.009–.015
	4	300	430	890	IPR		.002–.005	.003–.006	.004–.007	.005–.010	.006–.011	.007–.013	.008–.013	.009–.015
S	1	70	80	100	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.004	.003–.005	.004–.006	.004–.008
	2	30	70	100	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.004	.003–.005	.004–.006	.004–.008
	3	70	80	130	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.004	.003–.005	.004–.006	.004–.008
	4	70	80	160	IPR		.001–.002	.002–.003	.002–.004	.002–.004	.003–.004	.003–.005	.004–.006	.004–.008



Modular Drills

Introduction **H2–H5**

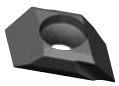
KenTIP FS **H6–H28**

KenTIP **H30–H48**

KSEM **H50–H101**

Tube Sheet Grooving Tool H98–H101

KSEM PLUS **H102–H133**

modular drills with internal coolant channel		grade/series	standard* ● first choice ○ alternate choice P	M	K	N	S	H	hole tolerance	standard range diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
KenTIP™ FS **For smaller diameters. Easy front clamping and disposable inserts.**												
	KenTIP FS inserts	KCP15A HPG	●		○				IT9–IT11	6,00–26,00	.2362–1.0236	—
		KC7410 HPC			●							
		KCMS15 HPL		●								
	KenTIP FS bodies	SS SF SCF	—						—	6,00≤Ø<9,50	.2362≤Ø<.3740	1.5–12 x D
										9,50≤Ø<11,00	.3740≤Ø<.4331	
										11,00≤Ø<12,50	.4331≤Ø<.4921	
										12,50≤Ø<14,00	.4921≤Ø<.5512	
										14,00≤Ø<15,50	.5512≤Ø<.6102	
										15,50≤Ø<16,50	.6102≤Ø<.6496	
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø<21,00	.7874≤Ø<.8268	SCF shank only
										21,00≤Ø<26,00	.8268≤Ø<1.0236	
KenTIP™												
	KenTIP inserts	KCP15 HP	●		○				IT9–IT11	7,94–27,99	.3125–1.1020	—
		KCPM45™ FEG	●	○	○					7,94–27,99	.3125–.7874	
	FAS chamfering inserts	KC7014 FAS-GD	○	○	○	●	○			Made-to-order toolholders required. Also available for KenTIP FS.		
		KC7215 FAS-GD	●	○	●	○	●					
	CFM tangential chamfering and counterboring	KCU40 CFM-HP	●	○	○	●	●					
	KenTIP bodies	SS SCF	—						—	7,94≤Ø<9,50	.3125≤Ø<.3740	1.5–12 x D
										9,50≤Ø<11,00	.3740≤Ø<.4331	
										11,00≤Ø<12,50	.4331≤Ø<.4921	
										12,50≤Ø<14,00	.4921≤Ø<.5512	
										14,00≤Ø<15,50	.5512≤Ø<.6102	
										15,50≤Ø<16,50	.6102≤Ø<.6496	
										16,50≤Ø<20,50	.6496≤Ø<.8071	
										20,00≤Ø<21,00	.8071≤Ø<.8268	
										21,00≤Ø<27,99	.8268≤Ø<1.1020	

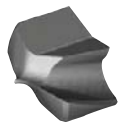
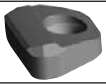
* Apart from our standard drills, we can offer you a wide variety of special coating solutions and edge preparations to fulfill all your needs. If a specific drill is not suitable for your workpiece material, please contact our **Engineered Solutions Department**.

■ Standard Product
□ Engineered Solutions

engineered solution range / diameter range			coolant	drilling	inclined exit	stacked plates	flat bottom	countersinking	counterboring	cross hole	2 flute 2 margin cooled	2 flute 4 margin cooled	corner chamfer	plain shank ≤H6	Whistle Notch 2°	WD shank	flat shank	SSF shank	KM™ shank	HSK shank	page(s)
D1 mm min–max	D1 inch min–max	max drilling depth																			
KenTIP™ FS For smaller diameters. Easy front clamping and disposable inserts. *(continued)*																					
6,00–26,00	.2362–1.0236	—		■	■	■		□	□	■	■	□	□								H8
			■	■	■			□	□	■		■	■								
			■	■	■			□	□	■	■	□	□								
6,00≤Ø<9,50	.2362≤Ø<.3740	12 x D	■					□	□					■	□	□	■	□	□	□	H18
9,50≤Ø<11,00	.3740≤Ø<.4331	13 x D	■					□	□					■	□	□	■	□	□	□	
11,00≤Ø<12,50	.4331≤Ø<.4921	14 x D	■					□	□					■	□	□	■	□	□	□	
12,50≤Ø<14,00	.4921≤Ø<.5512	15 x D	■					□	□					■	□	□	■	□	□	□	
14,00≤Ø<15,50	.5512≤Ø<.6102	16 x D	■					□	□					■	□	□	■	□	□	□	
15,50≤Ø<16,50	.6102≤Ø<.6496	17 x D	■					□	□					■	□	□	■	□	□	□	
16,50≤Ø<20,00	.6496≤Ø<.7874	18 x D	■					□	□					■	□	□	■	□	□	□	
20,00≤Ø<21,00	.7874≤Ø<.8268	20 x D	■					□	□					■	□	□	■	□	□	□	
21,00≤Ø<26,00	.8268≤Ø<1.0236	550mm	■					□	□					■	□	□	■	□	□	□	
KenTIP™ *(continued)*																					
7,94–27,99	.3125–1.1020	—		■	□						■	□	□								H32
				■	■			■	■	■	□	■	■								
12,50–36,01	.4921–1.4177							■													H42
								■													
10,00–31,20	.3937–1.2283							■	■												H43
7,94≤Ø<9,50	.3125≤Ø<.3740	12 x D	■					□**	□					■	□	□	■	□	□	□	H38
9,50≤Ø<11,00	.3740≤Ø<.4331	13 x D	■					□**	□					■	□	□	■	□	□	□	
11,00≤Ø<12,50	.5424≤Ø<.4921	14 x D	■					□**	□					■	□	□	■	□	□	□	
12,50≤Ø<14,00	.4921≤Ø<.5512	15 x D	■					□**	□					■	□	□	■	□	□	□	
14,00≤Ø<15,00	.5512≤Ø<.6102	16 x D	■					□**	□					■	□	□	■	□	□	□	
15,50≤Ø<16,50	.6102≤Ø<.6496	17 x D	■					□**	□					■	□	□	■	□	□	□	
16,50≤Ø<20,50	.6496≤Ø<.8070	18 x D	■					□**	□					■	□	□	■	□	□	□	
20,50≤Ø<21,00	.8070≤Ø<.8267	20 x D	■					□**	□					■	□	□	■	□	□	□	
21,00≤Ø<28,00	.8267≤Ø<1.1024	550mm	■					□**	□					■	□	□	■	□	□	□	

** Alternative chamfering solutions are available in combination with SEFAS™ or BF; see page I1.
Please use this table for orientation purposes only. Detailed information on available products (inserts, toolholders, etc.) can be found on the indicated pages of this catalog.

(continued)

modular drills with internal coolant channel		grade/series	standard* ● first choice ○ alternate choice P	M	K	N	S	H	hole tolerance	standard range diameter range D1 mm min–max	D1 inch min–max	drilling depth L/D1
KSEM™ For larger diameters. Very robust pocket and regrindable inserts.												
	**KSEM inserts**	**KC7315 HP/HPG**	●		○				IT9–IT11	12,50–40,00	.4921–1.5748	—
		KCPM45 HPG	●	○						12,50–40,00	.4921–1.5748	
		KC7410 HPCCL			●					12,70–40,00	.5000–1.5748	
		KC7320 HPL		●						12,50–40,00	.4921–1.5748	
		KCMS35 SPL	○	●		○	●			12,50–40,00	.4921–1.5748	
		KCPM45 FEG	●	○	○		○			16,00–40,00	.6230–1.5748	
		KC7135 PC	●		●					12,50–40,00	.4921–1.5748	
	**chamfering inserts**	**KC7015 TPGX-GD**		●		○				12,50–40,00	.4921–1.5748	—
		KC7140 TPGX-GD	●	○	○	●	○					
		KC7315™ TPGX-GD	○	○	●	○	●					
	**KSEM bodies**	**WN (Metric), SS (inch), SSF (inch)**	—						—	12,50≤Ø<16,50	.4921≤Ø<.6496	1–10 x D (SSF only up to 8 x D) (WN only up to Ø32mm)
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø≤32,00	.7874≤Ø≤1.2598	
		WD (Metric)	—						—	32,00<Ø≤40,00	1.2598<Ø≤1.5748	1–5 x D
		WN, SSF with chamfer	—						—	12,50≤Ø<16,50	.4921≤Ø<.6496	1 x D
										16,50≤Ø<20,00	.6496≤Ø<.7874	
										20,00≤Ø≤32,00	.7874<Ø≤1.2598	
		WD, SSF with chamfer	—						—	32,00<Ø≤40,00	1.2598<Ø<1.5748	1 x D
KSEM PLUS™ High-performance drilling for the largest diameters.												
	**KSEM PLUS heads**	**A1 style**							IT9–IT11	28,00<Ø≤101,40	1.1020<Ø≤4.0000	—
		B1 style										
	**KSEM PLUS center inserts**	**KSEMP KC7315 HPG**	●	●	○	○	○			13,00–40,00 mm PDD reference only		
		KSEM KC7410 HPCCL			●							
		KSEM KC7135 PC		●								
	**DFR™ inserts**	**KCU25 DFR-GD**	●	○	●	○	○			DFR inserts for A1 Heads with FDS28		—
		KCU40 DFR-GD	●	○	○	○	●			28,00–31,00	1.1024–1.2204	
		KC7140 DFR-MD	●	●	○	○	○					
		KC7225 DFR-LD	○	○	●	●	○					
	**DFT™ inserts**	**KCU25 DFT-HP**	●	○	●	○	○			DFT inserts for A1 Heads FDS32 and above		
		KCU40 DFT-HP	●	○	○	○	●			31,75–101,40	1.2500–4.0000	
		KCU40 DFC-DS	●	○		○	○					
		KC7140 DFT-MD	●	●	○	○	○					
	**DFC™ inserts (B1 Heads)**	**KCU25 DFC-HP**	●	○	●	○	○			DFC inserts for B1 Heads, all FDS sizes		
		KCU40 DFC-HP	●	○	○	○	●			28,00–101,40	1.1024–4.0000	
		KCU40 DFC-DS	●	○		○	○					
		KC7140 DFC-MD	●	●	○	○	○					
	**DPA guide pads (B1 Heads)**	**KCU40 DPA**	—							Available for all standard B1 Head Diameters		
	**KSEM PLUS bodies**	**WD (Metric)**	—						—	28,00≤Ø≤70,00	1.1024≤Ø≤2.7560	1.5–10 x D
		SSF (Inch)								70,00≤Ø≤101,40	2.7560≤Ø≤4.0000	1.5–5 x D

* Apart from our standard drills, we can offer you a wide variety of special coating solutions and edge preparations to fulfill all your needs. If a specific drill is not suitable for your workpiece material, please contact our **Engineered Solutions Department**.

■ Standard Product
□ Engineered Solutions

engineered solution range																						
diameter range			coolant	drilling	inclined exit	stacked plates	flat bottom	countersinking	counterboring	cross hole	2 flute 2 margin cooled	2 flute 4 margin cooled	corner chamfer	plain shank ≤H6	Whistle Notch 2°	WD shank	flat shank	SSF shank	KM™ shank	HSK shank	page(s)
D1 mm min–max	D1 inch min–max	max drilling depth																			
KSEM™ For larger diameters. Very robust pocket and regrindable inserts. *(continued)*																					
12,50–40,00	.4921–1.5748	—		■	■	■					■	□	□								H52
				■	■	■				■	■	□	□								
				■	■	■					■	□	■								
				■	■						■	□	□								
				■	■	■				■	■	□	□								
				■	■	■	■	■	■	■	□	■	■								
				■	■	■					■	□	■								
12,50–40,00	.4921–1.5748	—						■													H85
								■													
								■													
12,50≤Ø<16,50	.4921≤Ø<.6496	15 x D	■					□	□	□				■	■	□	□	■	□	□	H72
16,50≤Ø<20,00	.6496≤Ø<.7874	18 x D	■					□	□	□				■	■	□	□	■	□	□	
20,00≤Ø≤40,00	.7874≤Ø≤1.5748	20 x D	■					□	□	□				■	■	□	□	■	□	□	
32,00<Ø≤40,00	1.2598<Ø≤1.5748	20 x D (max 800mm)	■					□	□	□				□	□	■	□	□	□	□	
12,50≤Ø<16,50	.4921≤Ø<.6496	chamfer step drills available as custom solutions in various lengths	■					■	□	□				□	■	□	□	□	□	□	
16,50≤Ø<20,00	.6496≤Ø<.7874		■					■	□	□				□	■	□	□	□	□	□	
20,00≤Ø≤32,00	.7874≤Ø≤1.2598		■					■	□	□				□	■	□	□	■	□	□	
32,00<Ø≤40,00	1.2598<Ø≤1.5748		■					■	□	□				□		■	□	■	□	□	
KSEM PLUS™ High-performance drilling for the largest diameters. *(continued)*																					
28,00<Ø≤127,00	1.1020<Ø≤5.0000	—	■	■			□	□	□		■	□ (DPA)									H115
			■	■	■	■	□	□	□	■		■									
13,00–40,00 mm PDD reference only																					H111
DFR inserts for A1 Heads with FDS28		—																			H113
28,00≤Ø<31,75	1.1024≤Ø<1.2500																				
DFT inserts for A1 Heads FDS32 and above																					H112
31,75≤Ø≤127,00	1.2500≤Ø≤5.0000																				
DFC inserts for B1 Heads, all FDS sizes																					H114
28,00≤Ø≤127,00	1.1024≤Ø≤5.0000																				
DPA are supporting various solutions				■	■	■	□			■											H114
28,00≤Ø≤127,00	1.1020≤Ø≤5.0000	3–20 x D (max 1250mm)	■					□	□	□				□		■	□	■	□	□	H126

** Alternative chamfering solutions are available in combination with SEFAS™ or BF; see page I1.
Please use this table for orientation purposes only. Detailed information on available products (inserts, toolholders, etc.) can be found on the indicated pages of this catalog.

KenTIP™ FS

The Perfect Fusion of a Solid Carbide and an Indexable Drill

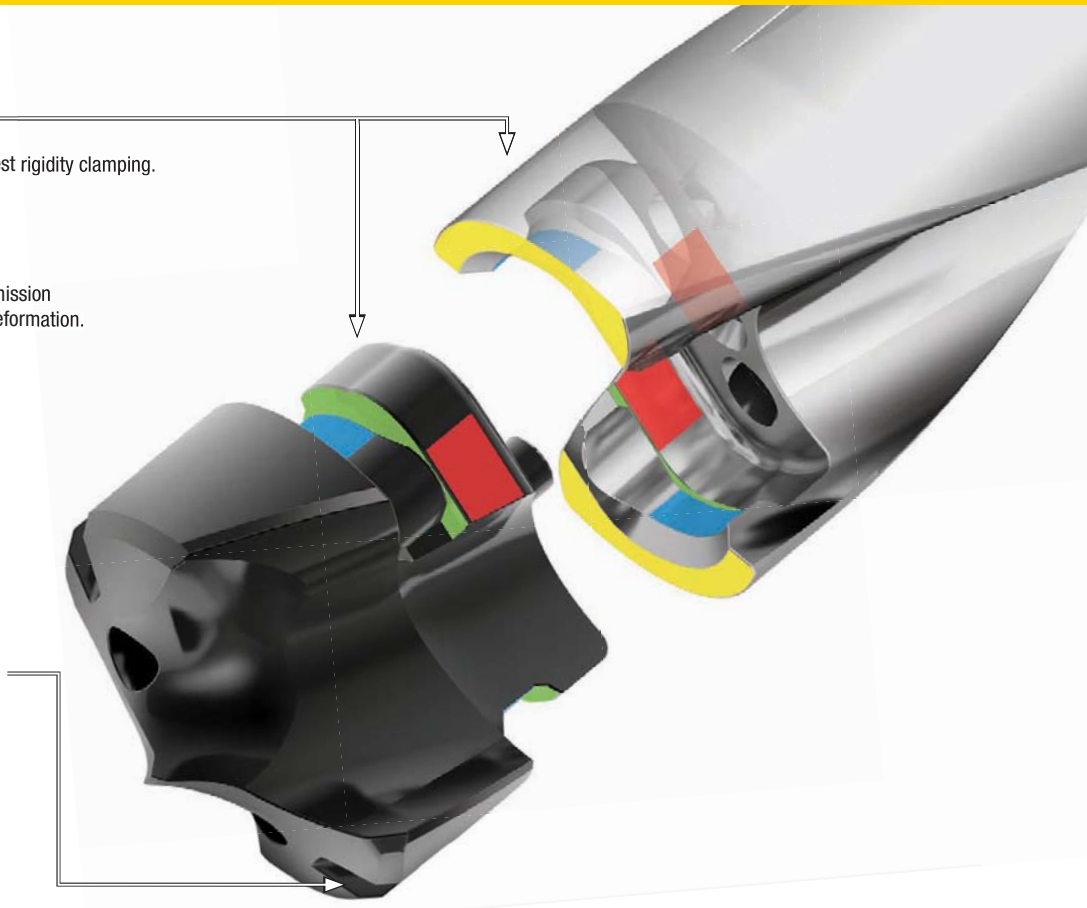
The new modular drill KenTIP FS covers more applications and provides better performance than any other modular system, delivering substantial cost savings and process simplifications on your shop floor.

3-point geometries, 3 high-performance grades, 3 different shank styles.
This modular drilling system covers a 6–26mm (.2363–1.0236") diameter range.
Up to 12 x D drilling depths.
Applicable in steel, stainless steel, and cast iron.

Intelligent Interface

- Taper interface uniquely designed for highest rigidity clamping.
- Retention lock prevents insert pullout.
- Large bearing surface positioned for transmission of highest torsional loads without pocket deformation.
- Large face contact surface.

Maximum performance and long tool life, even in unstable conditions.



Quick Release
Every drill body comes with a KenTIP smart wrench. Insert exchange in the machine becomes easy and saves idle time. And that saves money.



Recycling Instead of Reconditioning
KenTIP™ FS provides the same stable and repeatable performance with every new insert. Lower your operational expenses with less tooling inventory and simplified processes. Recoup cost by providing your used carbide inserts to our recycling service.

Fast Flow
Large, ultra-high polished chip flutes guarantee hassle-free chip evacuation, enhancing tool life and performance.

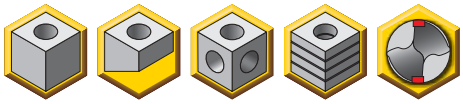
Multi-Coolant
Coolant delivery to the drill point and to the rake face for guaranteed coolant delivery where it is needed.

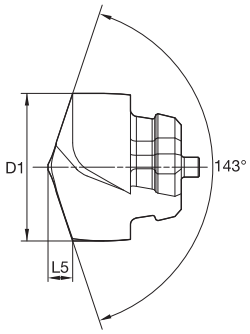
Unique Point Geometries
3 material-specific, self-centering point designs enable excellent hole quality and optimum tool performance.



Full Solid Carbide Front
KenTIP FS inserts cover the entire front part of the drill. The coupling is completely protected from chip flow and contact with workpiece.

- HPG-point geometry for steels.
- Great positioning and centering capabilities for drilling without precentering, even in deeper holes.
- KCP15A™ is an AlTiN PVD monolayer coating.
- Enhanced thermal stability.
- Excellent balance between toughness and wear resistance.
- Without internal coolant.

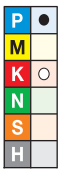






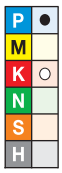
HPG Geometry

KenTIP FS Inserts • HPG KCP15A • No Internal Coolant Channels



● first choice
○ alternate choice

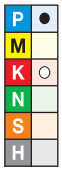
KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS06000HPGM	6,000	.2362	1,370	.0539	A
KTFSS06100HPGM	6,100	.2402	1,380	.0543	A
KTFSS06200HPGM	6,200	.2441	1,400	.0551	A
KTFSS06300HPGM	6,300	.2480	1,440	.0567	B
KTFSS06350HPGM	6,350	.2500	1,450	.0571	B
KTFSS06400HPGM *	6,400	.2520	1,450	.0571	B
KTFSS06500HPGM	6,500	.2559	1,470	.0579	B
KTFSS06530HPGM	6,530	.2571	1,480	.0583	B
KTFSS06600HPGM	6,600	.2598	1,490	.0587	C
KTFSS06629HPGM *	6,629	.2610	1,500	.0591	C
KTFSS06700HPGM	6,700	.2638	1,510	.0594	C
KTFSS06746HPGM	6,746	.2656	1,520	.0598	C
KTFSS06800HPGM	6,800	.2677	1,530	.0602	C
KTFSS06900HPGM *	6,900	.2717	1,540	.0606	C
KTFSS06909HPGM	6,909	.2720	1,540	.0606	C
KTFSS07000HPGM	7,000	.2756	1,590	.0626	D
KTFSS07100HPGM *	7,100	.2795	1,610	.0634	D
KTFSS07145HPGM	7,145	.2813	1,610	.0634	D
KTFSS07200HPGM *	7,200	.2835	1,620	.0638	D
KTFSS07366HPGM	7,366	.2900	1,650	.0650	D
KTFSS07400HPGM	7,400	.2913	1,660	.0654	D
KTFSS07500HPGM	7,500	.2953	1,680	.0661	E
KTFSS07541HPGM	7,541	.2969	1,690	.0665	E
KTFSS07600HPGM *	7,600	.2992	1,700	.0669	E
KTFSS07700HPGM *	7,700	.3031	1,710	.0673	E
KTFSS07800HPGM *	7,800	.3071	1,730	.0681	E
KTFSS07900HPGM *	7,900	.3110	1,750	.0689	E
KTFSS07938HPGM	7,938	.3125	1,750	.0689	E
KTFSS08000HPGM	8,000	.3150	1,800	.0709	F
KTFSS08100HPGM	8,100	.3189	1,820	.0717	F
KTFSS08164HPGM	8,164	.3214	1,830	.0720	F
KTFSS08204HPGM	8,204	.3230	1,840	.0724	F
KTFSS08300HPGM	8,300	.3268	1,850	.0728	F
KTFSS08334HPGM	8,334	.3281	1,860	.0732	F
KTFSS08400HPGM	8,400	.3307	1,870	.0736	F
KTFSS08433HPGM	8,433	.3320	1,870	.0736	F
KTFSS08500HPGM	8,500	.3346	1,890	.0744	G
KTFSS08600HPGM	8,600	.3386	1,910	.0752	G
KTFSS08611HPGM *	8,611	.3390	1,910	.0752	G
KTFSS08700HPGM	8,700	.3425	1,920	.0756	G



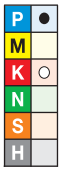
KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS08733HPGM	8,732	.3438	1,930	.0760	G
KTFSS08800HPGM	8,800	.3465	1,940	.0764	G
KTFSS08839HPGM *	8,839	.3480	1,950	.0768	G
KTFSS08900HPGM *	8,900	.3504	1,960	.0772	G
KTFSS09000HPGM	9,000	.3543	2,010	.0791	H
KTFSS09093HPGM *	9,093	.3580	2,030	.0799	H
KTFSS09100HPGM	9,100	.3583	2,030	.0799	H
KTFSS09129HPGM *	9,129	.3594	2,030	.0799	H
KTFSS09200HPGM	9,200	.3622	2,040	.0803	H
KTFSS09300HPGM	9,300	.3661	2,060	.0811	H
KTFSS09347HPGM	9,347	.3680	2,070	.0815	H
KTFSS09400HPGM	9,400	.3701	2,080	.0819	H
KTFSS09500HPGM	9,500	.3740	2,100	.0827	I
KTFSS09525HPGM	9,525	.3750	2,110	.0831	I
KTFSS09558HPGM	9,558	.3763	2,110	.0831	I
KTFSS09600HPGM	9,600	.3780	2,120	.0835	I
KTFSS09700HPGM	9,700	.3819	2,130	.0839	I
KTFSS09800HPGM	9,800	.3858	2,150	.0846	I
KTFSS09900HPGM	9,900	.3898	2,170	.0854	I
KTFSS09921HPGM	9,921	.3906	2,170	.0854	I
KTFSS10000HPGM	10,000	.3937	2,220	.0874	J
KTFSS10023HPGM *	10,023	.3946	2,220	.0874	J
KTFSS10084HPGM *	10,084	.3970	2,230	.0878	J
KTFSS10100HPGM	10,100	.3976	2,240	.0882	J
KTFSS10200HPGM	10,200	.4016	2,250	.0886	J
KTFSS10262HPGM *	10,262	.4040	2,260	.0890	J
KTFSS10300HPGM	10,300	.4055	2,270	.0894	J
KTFSS10320HPGM	10,320	.4063	2,270	.0894	J
KTFSS10400HPGM	10,400	.4094	2,290	.0902	J
KTFSS10490HPGM	10,490	.4130	2,300	.0906	J
KTFSS10500HPGM	10,500	.4134	2,310	.0909	K
KTFSS10600HPGM	10,600	.4173	2,330	.0917	K
KTFSS10700HPGM	10,700	.4213	2,340	.0921	K
KTFSS10716HPGM	10,716	.4219	2,350	.0925	K
KTFSS10800HPGM	10,800	.4252	2,360	.0929	K
KTFSS10900HPGM	10,900	.4291	2,380	.0937	K
KTFSS11000HPGM	11,000	.4331	2,430	.0957	L
KTFSS11100HPGM	11,100	.4370	2,450	.0965	L
KTFSS11113HPGM	11,112	.4375	2,450	.0965	L
KTFSS11200HPGM	11,200	.4409	2,460	.0969	L

(continued)

(KenTIP FS Inserts • HPG KCP15A™ • No Internal Coolant Channels — continued)



KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS11300HPGM	11,300	.4449	2,480	.0976	L
KTFSS11400HPGM	11,400	.4488	2,500	.0984	L
KTFSS11500HPGM	11,500	.4528	2,520	.0992	M
KTFSS11509HPGM	11,509	.4531	2,520	.0992	M
KTFSS11600HPGM	11,600	.4567	2,540	.1000	M
KTFSS11700HPGM	11,700	.4606	2,550	.1004	M
KTFSS11800HPGM	11,800	.4646	2,570	.1012	M
KTFSS11900HPGM	11,900	.4685	2,590	.1020	M
KTFSS11908HPGM	11,908	.4688	2,590	.1020	M
KTFSS12000HPGM	12,000	.4724	2,640	.1039	N
KTFSS12100HPGM	12,100	.4764	2,650	.1043	N
KTFSS12200HPGM	12,200	.4803	2,670	.1051	N
KTFSS12304HPGM	12,304	.4844	2,690	.1059	N
KTFSS12400HPGM	12,400	.4882	2,700	.1063	N
KTFSS12474HPGM	12,474	.4911	2,720	.1071	N
KTFSS12500HPGM	12,500	.4921	2,730	.1075	O
KTFSS12600HPGM	12,600	.4961	2,740	.1079	O
KTFSS12700HPGM	12,700	.5000	2,760	.1087	O
KTFSS12800HPGM	12,800	.5039	2,780	.1094	O
KTFSS12900HPGM	12,900	.5079	2,790	.1098	O
KTFSS13000HPGM	13,000	.5118	2,850	.1122	P
KTFSS13096HPGM	13,096	.5156	2,860	.1126	P
KTFSS13200HPGM	13,200	.5197	2,880	.1134	P
KTFSS13280HPGM	13,280	.5228	2,890	.1138	P
KTFSS13300HPGM	13,300	.5236	2,900	.1142	P
KTFSS13380HPGM	13,380	.5268	2,910	.1146	P
KTFSS13400HPGM	13,400	.5276	2,910	.1146	P
KTFSS13492HPGM	13,492	.5312	2,930	.1154	P
KTFSS13500HPGM	13,500	.5315	2,930	.1154	Q
KTFSS13600HPGM	13,600	.5354	2,950	.1161	Q
KTFSS13700HPGM	13,700	.5394	2,970	.1169	Q
KTFSS13800HPGM	13,800	.5433	2,980	.1173	Q
KTFSS13891HPGM	13,891	.5469	3,000	.1181	Q
KTFSS13896HPGM *	13,896	.5471	3,000	.1181	Q
KTFSS13940HPGM	13,940	.5488	3,010	.1185	Q
KTFSS14000HPGM	14,000	.5512	3,050	.1201	R
KTFSS14100HPGM	14,100	.5551	3,070	.1209	R
KTFSS14200HPGM	14,200	.5591	3,090	.1217	R
KTFSS14288HPGM	14,288	.5625	3,100	.1220	R
KTFSS14300HPGM	14,300	.5630	3,100	.1220	R
KTFSS14400HPGM	14,400	.5669	3,120	.1228	R
KTFSS14500HPGM	14,500	.5709	3,140	.1236	S
KTFSS14600HPGM	14,600	.5748	3,160	.1244	S
KTFSS14666HPGM *	14,666	.5774	3,170	.1248	S
KTFSS14684HPGM	14,684	.5781	3,170	.1248	S
KTFSS14700HPGM	14,700	.5787	3,170	.1248	S
KTFSS14800HPGM	14,800	.5827	3,190	.1256	S
KTFSS14900HPGM *	14,900	.5866	3,210	.1264	S
KTFSS15000HPGM	15,000	.5906	3,260	.1283	T
KTFSS15083HPGM	15,082	.5938	3,270	.1287	T
KTFSS15100HPGM	15,100	.5945	3,280	.1291	T
KTFSS15200HPGM	15,200	.5984	3,290	.1295	T
KTFSS15300HPGM	15,300	.6024	3,310	.1303	T
KTFSS15380HPGM	15,380	.6055	3,320	.1307	T
KTFSS15400HPGM	15,400	.6063	3,330	.1311	T
KTFSS15479HPGM	15,479	.6094	3,340	.1315	T



● first choice
○ alternate choice

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS15500HPGM	15,500	.6102	3,340	.1315	T
KTFSS15600HPGM	15,600	.6142	3,360	.1323	T
KTFSS15700HPGM	15,700	.6181	3,380	.1331	T
KTFSS15800HPGM	15,800	.6220	3,390	.1335	T
KTFSS15875HPGM	15,875	.6250	3,410	.1343	T
KTFSS15900HPGM *	15,900	.6260	3,410	.1343	T
KTFSS16000HPGM	16,000	.6299	3,480	.1370	U
KTFSS16027HPGM *	16,027	.6310	3,490	.1374	U
KTFSS16080HPGM *	16,080	.6331	3,490	.1374	U
KTFSS16100HPGM	16,100	.6339	3,500	.1378	U
KTFSS16104HPGM	16,104	.6340	3,500	.1378	U
KTFSS16200HPGM	16,200	.6378	3,510	.1382	U
KTFSS16271HPGM	16,271	.6406	3,530	.1390	U
KTFSS16300HPGM	16,300	.6417	3,530	.1390	U
KTFSS16400HPGM	16,400	.6457	3,550	.1398	U
KTFSS16500HPGM	16,500	.6496	3,570	.1406	U
KTFSS16600HPGM	16,600	.6535	3,580	.1409	U
KTFSS16670HPGM	16,670	.6563	3,590	.1413	U
KTFSS16700HPGM	16,700	.6575	3,600	.1417	U
KTFSS16800HPGM	16,800	.6614	3,620	.1425	U
KTFSS16900HPGM	16,900	.6654	3,630	.1429	U
KTFSS17000HPGM	17,000	.6693	3,660	.1441	V
KTFSS17066HPGM	17,066	.6719	3,670	.1445	V
KTFSS17100HPGM	17,100	.6732	3,670	.1445	V
KTFSS17200HPGM	17,200	.6772	3,690	.1453	V
KTFSS17300HPGM *	17,300	.6811	3,710	.1461	V
KTFSS17400HPGM	17,400	.6850	3,720	.1465	V
KTFSS17463HPGM	17,462	.6875	3,740	.1472	V
KTFSS17480HPGM	17,480	.6882	3,740	.1472	V
KTFSS17500HPGM	17,500	.6890	3,740	.1472	V
KTFSS17600HPGM	17,600	.6929	3,760	.1480	V
KTFSS17700HPGM	17,700	.6969	3,770	.1484	V
KTFSS17800HPGM	17,800	.7008	3,790	.1492	V
KTFSS17859HPGM	17,859	.7031	3,800	.1496	V
KTFSS17900HPGM	17,900	.7047	3,810	.1500	V
KTFSS18000HPGM	18,000	.7087	3,890	.1531	W
KTFSS18100HPGM	18,100	.7126	3,910	.1539	W
KTFSS18200HPGM	18,200	.7165	3,930	.1547	W
KTFSS18258HPGM	18,258	.7188	3,940	.1551	W
KTFSS18300HPGM	18,300	.7205	3,940	.1551	W
KTFSS18400HPGM	18,400	.7244	3,960	.1559	W
KTFSS18500HPGM	18,500	.7283	3,980	.1567	W
KTFSS18600HPGM	18,600	.7323	3,990	.1571	W
KTFSS18654HPGM	18,654	.7344	4,000	.1575	W
KTFSS18700HPGM	18,700	.7362	4,010	.1579	W
KTFSS18800HPGM	18,800	.7402	4,030	.1587	W
KTFSS18900HPGM	18,900	.7441	4,040	.1591	W
KTFSS19000HPGM	19,000	.7480	4,070	.1602	X
KTFSS19050HPGM	19,050	.7500	4,080	.1606	X
KTFSS19100HPGM	19,100	.7520	4,090	.1610	X
KTFSS19200HPGM	19,200	.7559	4,100	.1614	X
KTFSS19228HPGM	19,228	.7570	4,110	.1618	X
KTFSS19253HPGM *	19,253	.7580	4,110	.1618	X
KTFSS19279HPGM	19,279	.7590	4,120	.1622	X
KTFSS19300HPGM	19,300	.7598	4,120	.1622	X
KTFSS19355HPGM *	19,355	.7620	4,130	.1626	X

(continued)

(KenTIP FS Inserts • HPG KCP15A™ • No Internal Coolant Channels — continued)

P ● M K ○ N S H

● first choice
○ alternate choice

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS19400HPGM	19,400	.7638	4,140	.1630	X
KTFSS19446HPGM	19,446	.7656	4,140	.1630	X
KTFSS19460HPGM	19,460	.7661	4,150	.1634	X
KTFSS19500HPGM	19,500	.7677	4,150	.1634	X
KTFSS19600HPGM	19,600	.7717	4,170	.1642	X
KTFSS19700HPGM	19,700	.7756	4,190	.1650	X
KTFSS19800HPGM	19,800	.7795	4,200	.1654	X
KTFSS19845HPGM	19,845	.7813	4,210	.1657	X
KTFSS19900HPGM	19,900	.7835	4,220	.1661	X
KTFSS20000HPGM	20,000	.7874	4,310	.1697	Y
KTFSS20100HPGM	20,100	.7913	4,320	.1701	Y
KTFSS20200HPGM	20,200	.7953	4,340	.1709	Y
KTFSS20241HPGM *	20,241	.7969	4,350	.1713	Y
KTFSS20300HPGM	20,300	.7992	4,360	.1717	Y
KTFSS20500HPGM	20,500	.8071	4,390	.1728	Y
KTFSS20600HPGM	20,600	.8110	4,410	.1736	Y
KTFSS20638HPGM	20,638	.8125	4,410	.1736	Y
KTFSS20700HPGM *	20,700	.8150	4,420	.1740	Y
KTFSS20800HPGM	20,800	.8189	4,440	.1748	Y
KTFSS20900HPGM *	20,900	.8228	4,460	.1756	Y
KTFSS20990HPGM *	20,990	.8264	4,470	.1760	Y
KTFSS21000HPGM	21,000	.8268	4,480	.1764	Z
KTFSS21100HPGM *	21,100	.8307	4,500	.1772	Z
KTFSS21200HPGM	21,200	.8346	4,510	.1776	Z
KTFSS21300HPGM *	21,300	.8386	4,530	.1783	Z
KTFSS21400HPGM *	21,400	.8425	4,550	.1791	Z
KTFSS21433HPGM	21,432	.8438	4,550	.1791	Z
KTFSS21500HPGM	21,500	.8465	4,560	.1795	Z
KTFSS21700HPGM	21,700	.8543	4,600	.1811	Z
KTFSS21800HPGM *	21,800	.8583	4,610	.1815	Z
KTFSS21829HPGM	21,829	.8594	4,620	.1819	Z
KTFSS21900HPGM *	21,900	.8622	4,630	.1823	Z
KTFSS22000HPGM	22,000	.8661	4,720	.1858	ZA
KTFSS22100HPGM *	22,100	.8701	4,730	.1862	ZA
KTFSS22200HPGM *	22,200	.8740	4,750	.1870	ZA
KTFSS22225HPGM	22,225	.8750	4,750	.1870	ZA
KTFSS22400HPGM *	22,400	.8819	4,780	.1882	ZA
KTFSS22500HPGM	22,500	.8858	4,800	.1890	ZA
KTFSS22600HPGM *	22,600	.8898	4,820	.1898	ZA
KTFSS22700HPGM *	22,700	.8937	4,830	.1902	ZA

KCP15A	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFSS22800HPGM	22,800	.8976	4,850	.1909	ZA
KTFSS22900HPGM *	22,900	.9016	4,870	.1917	ZA
KTFSS23000HPGM	23,000	.9055	4,890	.1925	ZB
KTFSS23100HPGM	23,100	.9094	4,910	.1933	ZB
KTFSS23200HPGM *	23,200	.9134	4,920	.1937	ZB
KTFSS23300HPGM	23,300	.9173	4,940	.1945	ZB
KTFSS23400HPGM *	23,400	.9213	4,960	.1953	ZB
KTFSS23416HPGM	23,416	.9219	4,960	.1953	ZB
KTFSS23500HPGM	23,500	.9252	4,980	.1961	ZB
KTFSS23600HPGM *	23,600	.9291	4,990	.1965	ZB
KTFSS23700HPGM *	23,700	.9331	5,010	.1972	ZB
KTFSS23800HPGM *	23,800	.9370	5,030	.1980	ZB
KTFSS23813HPGM	23,812	.9375	5,030	.1980	ZB
KTFSS23900HPGM *	23,900	.9409	5,040	.1984	ZB
KTFSS24000HPGM	24,000	.9449	5,130	.2020	ZC
KTFSS24100HPGM *	24,100	.9488	5,140	.2024	ZC
KTFSS24200HPGM *	24,200	.9528	5,160	.2031	ZC
KTFSS24300HPGM	24,300	.9567	5,180	.2039	ZC
KTFSS24400HPGM *	24,400	.9606	5,190	.2043	ZC
KTFSS24500HPGM	24,500	.9646	5,210	.2051	ZC
KTFSS24600HPGM *	24,600	.9685	5,230	.2059	ZC
KTFSS24608HPGM	24,608	.9688	5,230	.2059	ZC
KTFSS24700HPGM *	24,700	.9724	5,240	.2063	ZC
KTFSS24800HPGM *	24,800	.9764	5,260	.2071	ZC
KTFSS24900HPGM *	24,900	.9803	5,280	.2079	ZC
KTFSS25000HPGM	25,000	.9843	5,300	.2087	ZD
KTFSS25100HPGM *	25,100	.9882	5,320	.2094	ZD
KTFSS25200HPGM *	25,200	.9921	5,330	.2098	ZD
KTFSS25250HPGM *	25,250	.9941	5,340	.2102	ZD
KTFSS25300HPGM *	25,300	.9961	5,350	.2106	ZD
KTFSS25400HPGM	25,400	1.0000	5,370	.2114	ZD
KTFSS25500HPGM *	25,500	1.0039	5,380	.2118	ZD
KTFSS25540HPGM	25,540	1.0055	5,390	.2122	ZD
KTFSS25600HPGM	25,600	1.0079	5,400	.2126	ZD
KTFSS25679HPGM	25,679	1.0110	5,410	.2130	ZD
KTFSS25700HPGM *	25,700	1.0118	5,420	.2134	ZD
KTFSS25800HPGM *	25,800	1.0157	5,440	.2142	ZD
KTFSS25806HPGM	25,806	1.0160	5,440	.2142	ZD
KTFSS25900HPGM *	25,900	1.0197	5,450	.2146	ZD
KTFSS26000HPGM	26,000	1.0236	5,470	.2154	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPG Geometry

Tolerance

D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

KenTIP FS HPG Geometry

Tolerance

D1 inch	tolerance k8
.2362	.000/+.0007
>.2362–.3937	.000/+.0009
>.3937–.7087	.000/+.0011
>.7087–1.0236	.000/+.0013

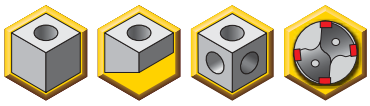
Modular Drill Carbide Insert Blades • KenTIP™ FS • HPG Geometry • Grade KCP15A™ • No Internal Coolant Channels on the Insert • Through Coolant on the Body • Metric

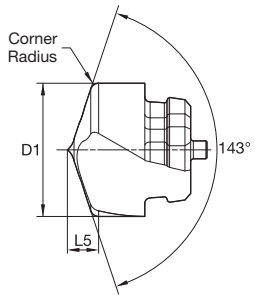
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0
P	1	90	**130**	170	mm/r	0,11–0,22	0,13–0,28	0,14–0,34	0,17–0,43	0,19–0,50	0,25–0,53
	2	100	**140**	180	mm/r	0,11–0,26	0,13–0,32	0,14–0,36	0,17–0,40	0,19–0,50	0,25–0,53
	3	60	**100**	130	mm/r	0,11–0,31	0,12–0,39	0,16–0,41	0,21–0,51	0,23–0,51	0,30–0,56
	4	60	**100**	130	mm/r	0,11–0,31	0,12–0,39	0,16–0,41	0,17–0,51	0,18–0,51	0,23–0,51
	5	60	**70**	100	mm/r	0,10–0,22	0,10–0,25	0,10–0,28	0,14–0,32	0,16–0,35	0,20–0,46
	6	60	**70**	70	mm/r	0,10–0,22	0,10–0,25	0,10–0,28	0,14–0,32	0,16–0,35	0,20–0,46
K	1	80	**120**	170	mm/r	0,15–0,32	0,16–0,35	0,17–0,39	0,21–0,46	0,25–0,53	0,31–0,65
	2	80	**110**	120	mm/r	0,15–0,32	0,16–0,33	0,17–0,36	0,21–0,45	0,25–0,53	0,31–0,65
	3	50	**80**	100	mm/r	0,16–0,33	0,17–0,36	0,18–0,40	0,20–0,45	0,21–0,48	0,23–0,53

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPG Geometry • Grade KCP15A™ • No Internal Coolant Channels on the Insert • Through Coolant on the Body • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		0.315	0.394	0.472	0.551	0,630	0.787
P	1	300	**430**	560	IPR	0.004–0.009	0.005–0.011	0.006–0.013	0.007–0.017	0.007–0.020	0.010–0.021
	2	330	**460**	590	IPR	0.004–0.010	0.005–0.013	0.006–0.014	0.007–0.016	0.007–0.020	0.010–0.021
	3	200	**330**	430	IPR	0.004–0.012	0.005–0.015	0.006–0.016	0.008–0.020	0.009–0.020	0.012–0.022
	4	200	**330**	430	IPR	0.004–0.012	0.005–0.015	0.006–0.016	0.007–0.020	0.007–0.020	0.009–0.020
	5	200	**230**	330	IPR	0.004–0.009	0.004–0.010	0.004–0.011	0.006–0.013	0.006–0.014	0.008–0.018
	6	200	**230**	230	IPR	0.004–0.009	0.004–0.010	0.004–0.011	0.006–0.013	0.006–0.014	0.008–0.018
K	1	260	**390**	560	IPR	0.006–0.013	0.006–0.014	0.007–0.015	0.008–0.018	0.010–0.021	0.012–0.026
	2	260	**360**	390	IPR	0.006–0.013	0.006–0.013	0.007–0.014	0.008–0.018	0.010–0.021	0.012–0.026
	3	160	**260**	330	IPR	0.006–0.013	0.007–0.014	0.007–0.016	0.008–0.018	0.008–0.019	0.009–0.021

- HPC-point geometry for all cast irons.
- 4-margin lands ensure hole straightness.
- Large corner radius prevents chipping and reduces exit burs when drilling through holes.
- KC7410™ is an AlCr PVD multilayer coating.
- Superb wear resistance.
- With internal coolant.







HPC Geometry

KenTIP FS Inserts • HPC KC7410 • With Internal Coolant Channels

P M K N S H

● first choice
○ alternate choice

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST06000HPCM	6,000	.2362	1,410	.0555	A
KTFST06200HPCM	6,200	.2441	1,440	.0567	A
KTFST06350HPCM	6,350	.2500	1,490	.0587	B
KTFST06500HPCM	6,500	.2559	1,510	.0594	B
KTFST06530HPCM	6,530	.2571	1,520	.0598	B
KTFST06700HPCM	6,700	.2638	1,570	.0618	C
KTFST06746HPCM	6,746	.2656	1,570	.0618	C
KTFST06800HPCM	6,800	.2677	1,580	.0622	C
KTFST07000HPCM	7,000	.2756	1,640	.0646	D
KTFST07145HPCM	7,145	.2813	1,670	.0657	D
KTFST07300HPCM	7,300	.2874	1,690	.0665	D
KTFST07500HPCM	7,500	.2953	1,760	.0693	E
KTFST07600HPCM	7,600	.2992	1,780	.0701	E
KTFST07800HPCM	7,800	.3071	1,810	.0713	E
KTFST07938HPCM	7,938	.3125	1,830	.0720	E
KTFST08000HPCM	8,000	.3150	1,880	.0740	F
KTFST08100HPCM *	8,100	.3189	1,890	.0744	F
KTFST08204HPCM *	8,204	.3230	1,910	.0752	F
KTFST08500HPCM	8,500	.3346	1,990	.0783	G
KTFST08600HPCM *	8,600	.3386	2,010	.0791	G
KTFST08700HPCM *	8,700	.3425	2,030	.0799	G
KTFST08733HPCM *	8,732	.3438	2,030	.0799	G
KTFST09000HPCM	9,000	.3543	2,110	.0831	H
KTFST09100HPCM *	9,100	.3583	2,130	.0839	H
KTFST09500HPCM	9,500	.3740	2,230	.0878	I
KTFST09525HPCM	9,525	.3750	2,230	.0878	I
KTFST09600HPCM *	9,600	.3780	2,250	.0886	I
KTFST09700HPCM *	9,700	.3819	2,260	.0890	I
KTFST09800HPCM *	9,800	.3858	2,280	.0898	I
KTFST09921HPCM	9,921	.3906	2,300	.0906	I
KTFST10000HPCM	10,000	.3937	2,350	.0925	J
KTFST10023HPCM *	10,023	.3946	2,350	.0925	J
KTFST10200HPCM	10,200	.4016	2,380	.0937	J
KTFST10300HPCM	10,300	.4055	2,400	.0945	J
KTFST10320HPCM *	10,320	.4063	2,400	.0945	J
KTFST10500HPCM	10,500	.4134	2,460	.0969	K

P M K N S H

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST10600HPCM *	10,600	.4173	2,480	.0976	K
KTFST10700HPCM *	10,700	.4213	2,500	.0984	K
KTFST10716HPCM	10,716	.4219	2,500	.0984	K
KTFST10800HPCM	10,800	.4252	2,510	.0988	K
KTFST11000HPCM	11,000	.4331	2,580	.1016	L
KTFST11100HPCM	11,100	.4370	2,600	.1024	L
KTFST11113HPCM	11,112	.4375	2,600	.1024	L
KTFST11400HPCM	11,400	.4488	2,650	.1043	L
KTFST11500HPCM	11,500	.4528	2,700	.1063	M
KTFST11800HPCM *	11,800	.4646	2,750	.1083	M
KTFST11908HPCM *	11,908	.4688	2,770	.1091	M
KTFST12000HPCM	12,000	.4724	2,820	.1110	N
KTFST12304HPCM *	12,304	.4844	2,870	.1130	N
KTFST12500HPCM	12,500	.4921	2,930	.1154	O
KTFST12700HPCM	12,700	.5000	2,970	.1169	O
KTFST13000HPCM	13,000	.5118	3,050	.1201	P
KTFST13096HPCM	13,096	.5156	3,070	.1209	P
KTFST13200HPCM *	13,200	.5197	3,080	.1213	P
KTFST13300HPCM	13,300	.5236	3,100	.1220	P
KTFST13492HPCM	13,492	.5312	3,130	.1232	P
KTFST13500HPCM	13,500	.5315	3,170	.1248	Q
KTFST13600HPCM	13,600	.5354	3,180	.1252	Q
KTFST13800HPCM	13,800	.5433	3,220	.1268	Q
KTFST13891HPCM	13,891	.5469	3,230	.1272	Q
KTFST14000HPCM	14,000	.5512	3,290	.1295	R
KTFST14100HPCM *	14,100	.5551	3,300	.1299	R
KTFST14288HPCM	14,288	.5625	3,330	.1311	R
KTFST14500HPCM	14,500	.5709	3,400	.1339	S
KTFST14600HPCM *	14,600	.5748	3,420	.1346	S
KTFST14684HPCM *	14,684	.5781	3,430	.1350	S
KTFST14800HPCM *	14,800	.5827	3,450	.1358	S
KTFST15000HPCM	15,000	.5906	3,520	.1386	T
KTFST15083HPCM *	15,082	.5938	3,530	.1390	T
KTFST15100HPCM	15,100	.5945	3,540	.1394	T
KTFST15200HPCM *	15,200	.5984	3,550	.1398	T
KTFST15300HPCM *	15,300	.6024	3,570	.1406	T

(continued)

(KenTIP FS Inserts • HPC KC7410™ • With Internal Coolant Channels — continued)



KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST15500HPCM	15,500	.6102	3,600	.1417	T
KTFST15600HPCM *	15,600	.6142	3,620	.1425	T
KTFST15800HPCM	15,800	.6220	3,650	.1437	T
KTFST15875HPCM *	15,875	.6250	3,670	.1445	T
KTFST16000HPCM	16,000	.6299	3,750	.1476	U
KTFST16100HPCM	16,100	.6339	3,770	.1484	U
KTFST16104HPCM *	16,104	.6340	3,770	.1484	U
KTFST16200HPCM *	16,200	.6378	3,790	.1492	U
KTFST16271HPCM *	16,271	.6406	3,800	.1496	U
KTFST16300HPCM *	16,300	.6417	3,800	.1496	U
KTFST16500HPCM	16,500	.6496	3,840	.1512	U
KTFST16550HPCM *	16,550	.6516	3,850	.1516	U
KTFST16600HPCM	16,600	.6535	3,850	.1516	U
KTFST16670HPCM	16,670	.6563	3,870	.1524	U
KTFST17000HPCM	17,000	.6693	3,990	.1571	V
KTFST17066HPCM *	17,066	.6719	4,000	.1575	V
KTFST17100HPCM *	17,100	.6732	4,010	.1579	V
KTFST17200HPCM	17,200	.6772	4,020	.1583	V
KTFST17300HPCM	17,300	.6811	4,040	.1591	V
KTFST17463HPCM *	17,462	.6875	4,070	.1602	V
KTFST17500HPCM	17,500	.6890	4,070	.1602	V
KTFST17550HPCM *	17,550	.6909	4,080	.1606	V
KTFST17600HPCM	17,600	.6929	4,090	.1610	V
KTFST17700HPCM *	17,700	.6969	4,110	.1618	V
KTFST17800HPCM	17,800	.7008	4,120	.1622	V
KTFST18000HPCM	18,000	.7087	4,220	.1661	W
KTFST18100HPCM *	18,100	.7126	4,240	.1669	W
KTFST18258HPCM *	18,258	.7188	4,270	.1681	W
KTFST18500HPCM	18,500	.7283	4,310	.1697	W
KTFST18600HPCM	18,600	.7323	4,320	.1701	W
KTFST18700HPCM *	18,700	.7362	4,340	.1709	W
KTFST19000HPCM	19,000	.7480	4,460	.1756	X



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST19050HPCM	19,050	.7500	4,470	.1760	X
KTFST19279HPCM *	19,279	.7590	4,500	.1772	X
KTFST19446HPCM *	19,446	.7656	4,530	.1783	X
KTFST19500HPCM	19,500	.7677	4,540	.1787	X
KTFST19800HPCM *	19,800	.7795	4,590	.1807	X
KTFST20000HPCM	20,000	.7874	4,690	.1846	Y
KTFST20241HPCM	20,241	.7969	4,730	.1862	Y
KTFST20300HPCM *	20,300	.7992	4,740	.1866	Y
KTFST20500HPCM	20,500	.8071	4,780	.1882	Y
KTFST20638HPCM	20,638	.8125	4,800	.1890	Y
KTFST21000HPCM	21,000	.8268	4,930	.1941	Z
KTFST21433HPCM *	21,432	.8438	5,000	.1969	Z
KTFST21500HPCM *	21,500	.8465	5,010	.1972	Z
KTFST22000HPCM	22,000	.8661	5,160	.2031	ZA
KTFST22225HPCM *	22,225	.8750	5,200	.2047	ZA
KTFST22440HPCM *	22,440	.8835	5,240	.2063	ZA
KTFST22500HPCM *	22,500	.8858	5,250	.2067	ZA
KTFST23000HPCM	23,000	.9055	5,400	.2126	ZB
KTFST23416HPCM *	23,416	.9219	5,470	.2154	ZB
KTFST23500HPCM *	23,500	.9252	5,480	.2157	ZB
KTFST23813HPCM *	23,812	.9375	5,530	.2177	ZB
KTFST24000HPCM	24,000	.9449	5,630	.2217	ZC
KTFST24500HPCM *	24,500	.9646	5,720	.2252	ZC
KTFST24608HPCM *	24,608	.9688	5,730	.2256	ZC
KTFST25000HPCM	25,000	.9843	5,870	.2311	ZD
KTFST25070HPCM *	25,070	.9870	5,880	.2315	ZD
KTFST25400HPCM	25,400	1.0000	5,930	.2335	ZD
KTFST25500HPCM *	25,500	1.0039	5,950	.2343	ZD
KTFST25679HPCM *	25,679	1.0110	5,980	.2354	ZD
KTFST25806HPCM *	25,806	1.0160	6,000	.2362	ZD
KTFST26000HPCM	26,000	1.0236	6,030	.2374	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≤ 19,999mm will be available in November 2017.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPC Geometry

Tolerance

D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

KenTIP FS HPC Geometry

Tolerance

D1 inch	tolerance k8
.2362	.000/+.0007
>.2362–.3937	.000/+.0009
>.3937–.7087	.000/+.0011
>.7087–1.0236	.000/+.0013

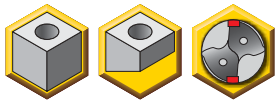
Modular Drill Carbide Insert Blades • KenTIP™ FS • HPC Geometry • Grade KC7410™ • Through Coolant • Metric

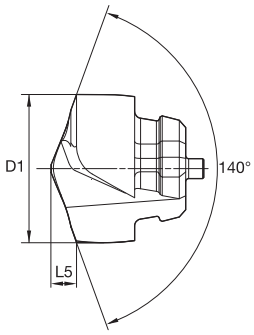
Material Group		Cutting Speed – vc Range – m/min			Metric						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0
K	1	100	**175**	200	mm/r	0,14–0,34	0,16–0,39	0,19–0,45	0,23–0,50	0,26–0,58	0,3–0,64
	2	100	**160**	180	mm/r	0,14–0,34	0,16–0,39	0,19–0,45	0,23–0,50	0,26–0,58	0,3–0,64
	3	70	**85**	120	mm/r	0,13–0,27	0,15–0,33	0,17–0,37	0,19–0,42	0,21–0,46	0,28–0,54

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPC Geometry • Grade KC7410™ • Through Coolant • Inch

Material Group		Cutting Speed – vc Range – SFM			Inch						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		.315	.394	.472	.551	.630	.787
K	1	330	**570**	660	IPR	0.005–0.013	0.006–0.015	0.007–0.017	0.009–0.019	0.010–0.022	0.011–0.025
	2	330	**520**	590	IPR	0.005–0.013	0.006–0.015	0.007–0.017	0.009–0.019	0.010–0.022	0.011–0.025
	3	230	**280**	390	IPR	0.005–0.010	0.005–0.013	0.006–0.014	0.007–0.016	0.008–0.018	0.011–0.021

- HPL-point geometry for stainless steels.
- Forms 2 chips per cutting edge for an uninterrupted and smooth chip flow.
- KCMS15™ is an AlTiN PVD monolayer coating.
- Prevents edge built-up, which delivers superior hole quality.
- Very high metal removal rates.
- With internal coolant.

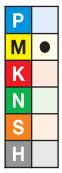




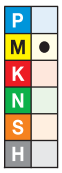


HPL Geometry

KenTIP FS Inserts • HPL KCMS15 • With Internal Coolant Channels



KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST06000HPLM	6,000	.2362	1,340	.0528	A
KTFST06350HPLM	6,350	.2500	1,400	.0551	B
KTFST06500HPLM	6,500	.2559	1,430	.0563	B
KTFST06629HPLM	6,629	.2610	1,460	.0575	C
KTFST06800HPLM	6,800	.2677	1,490	.0587	C
KTFST07000HPLM	7,000	.2756	1,530	.0602	D
KTFST07500HPLM	7,500	.2953	1,630	.0642	E
KTFST07800HPLM	7,800	.3071	1,680	.0661	E
KTFST07938HPLM	7,938	.3125	1,710	.0673	E
KTFST08000HPLM	8,000	.3150	1,720	.0677	F
KTFST08100HPLM *	8,100	.3189	1,740	.0685	F
KTFST08204HPLM *	8,204	.3230	1,760	.0693	F
KTFST08334HPLM *	8,334	.3281	1,790	.0705	F
KTFST08400HPLM *	8,400	.3307	1,800	.0709	F
KTFST08500HPLM	8,500	.3346	1,820	.0717	G
KTFST08600HPLM *	8,600	.3386	1,840	.0724	G
KTFST08700HPLM *	8,700	.3425	1,860	.0732	G
KTFST08800HPLM *	8,800	.3465	1,880	.0740	G
KTFST08900HPLM	8,900	.3504	1,900	.0748	G
KTFST09000HPLM	9,000	.3543	1,930	.0760	H
KTFST09100HPLM *	9,100	.3583	1,950	.0768	H
KTFST09200HPLM	9,200	.3622	1,970	.0776	H
KTFST09400HPLM *	9,400	.3701	2,000	.0787	H
KTFST09500HPLM	9,500	.3740	2,030	.0799	I
KTFST09558HPLM *	9,558	.3763	2,040	.0803	I
KTFST09600HPLM	9,600	.3780	2,050	.0807	I
KTFST09700HPLM *	9,700	.3819	2,070	.0815	I
KTFST09800HPLM	9,800	.3858	2,090	.0823	I
KTFST09900HPLM	9,900	.3898	2,110	.0831	I
KTFST10000HPLM	10,000	.3937	2,130	.0839	J
KTFST10100HPLM	10,100	.3976	2,150	.0846	J
KTFST10200HPLM	10,200	.4016	2,170	.0854	J
KTFST10300HPLM	10,300	.4055	2,190	.0862	J
KTFST10320HPLM	10,320	.4063	2,190	.0862	J
KTFST10400HPLM *	10,400	.4094	2,210	.0870	J
KTFST10500HPLM	10,500	.4134	2,230	.0878	K

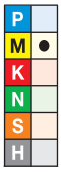


● first choice
○ alternate choice

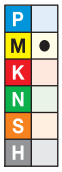
KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST10600HPLM *	10,600	.4173	2,250	.0886	K
KTFST10700HPLM	10,700	.4213	2,270	.0894	K
KTFST10800HPLM *	10,800	.4252	2,290	.0902	K
KTFST10900HPLM *	10,900	.4291	2,310	.0909	K
KTFST11000HPLM	11,000	.4331	2,340	.0921	L
KTFST11100HPLM	11,100	.4370	2,350	.0925	L
KTFST11113HPLM	11,112	.4375	2,360	.0929	L
KTFST11200HPLM *	11,200	.4409	2,370	.0933	L
KTFST11400HPLM *	11,400	.4488	2,410	.0949	L
KTFST11500HPLM	11,500	.4528	2,440	.0961	M
KTFST11600HPLM *	11,600	.4567	2,460	.0969	M
KTFST11800HPLM *	11,800	.4646	2,490	.0980	M
KTFST11908HPLM	11,908	.4688	2,520	.0992	M
KTFST12000HPLM	12,000	.4724	2,540	.1000	N
KTFST12200HPLM *	12,200	.4803	2,580	.1016	N
KTFST12304HPLM	12,304	.4844	2,600	.1024	N
KTFST12500HPLM	12,500	.4921	2,640	.1039	O
KTFST12700HPLM	12,700	.5000	2,680	.1055	O
KTFST12800HPLM *	12,800	.5039	2,700	.1063	O
KTFST12900HPLM *	12,900	.5079	2,720	.1071	O
KTFST13000HPLM	13,000	.5118	2,740	.1079	P
KTFST13096HPLM	13,096	.5156	2,760	.1087	P
KTFST13200HPLM *	13,200	.5197	2,780	.1094	P
KTFST13492HPLM *	13,492	.5312	2,840	.1118	P
KTFST13500HPLM	13,500	.5315	2,840	.1118	Q
KTFST13800HPLM *	13,800	.5433	2,900	.1142	Q
KTFST13891HPLM *	13,891	.5469	2,920	.1150	Q
KTFST13896HPLM *	13,896	.5471	2,920	.1150	Q
KTFST14000HPLM	14,000	.5512	2,950	.1161	R
KTFST14100HPLM *	14,100	.5551	2,960	.1165	R
KTFST14200HPLM *	14,200	.5591	2,980	.1173	R
KTFST14288HPLM	14,288	.5625	3,000	.1181	R
KTFST14300HPLM	14,300	.5630	3,000	.1181	R
KTFST14400HPLM *	14,400	.5669	3,020	.1189	R
KTFST14500HPLM	14,500	.5709	3,050	.1201	S
KTFST14684HPLM *	14,684	.5781	3,080	.1213	S

(continued)

(KenTIP FS Inserts • HPL KCMS15™ • With Internal Coolant Channels — continued)



KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST14800HPLM *	14,800	.5827	3,100	.1220	S
KTFST15000HPLM	15,000	.5906	3,150	.1240	T
KTFST15100HPLM *	15,100	.5945	3,170	.1248	T
KTFST15200HPLM *	15,200	.5984	3,190	.1256	T
KTFST15500HPLM	15,500	.6102	3,240	.1276	T
KTFST15875HPLM	15,875	.6250	3,310	.1303	T
KTFST16000HPLM	16,000	.6299	3,350	.1319	U
KTFST16100HPLM *	16,100	.6339	3,370	.1327	U
KTFST16104HPLM	16,104	.6340	3,370	.1327	U
KTFST16150HPLM	16,150	.6358	3,380	.1331	U
KTFST16271HPLM	16,271	.6406	3,400	.1339	U
KTFST16500HPLM	16,500	.6496	3,450	.1358	U
KTFST16670HPLM	16,670	.6563	3,480	.1370	U
KTFST17000HPLM	17,000	.6693	3,550	.1398	V
KTFST17463HPLM *	17,462	.6875	3,640	.1433	V
KTFST17480HPLM	17,480	.6882	3,640	.1433	V
KTFST17500HPLM	17,500	.6890	3,650	.1437	V
KTFST17700HPLM *	17,700	.6969	3,690	.1453	V
KTFST18000HPLM	18,000	.7087	3,760	.1480	W
KTFST18258HPLM *	18,258	.7188	3,800	.1496	W
KTFST18500HPLM	18,500	.7283	3,850	.1516	W
KTFST18654HPLM *	18,654	.7344	3,880	.1528	W
KTFST19000HPLM	19,000	.7480	3,960	.1559	X
KTFST19050HPLM	19,050	.7500	3,970	.1563	X
KTFST19200HPLM *	19,200	.7559	3,990	.1571	X
KTFST19228HPLM *	19,228	.7570	4,000	.1575	X
KTFST19253HPLM	19,253	.7580	4,000	.1575	X
KTFST19279HPLM	19,279	.7590	4,010	.1579	X



● first choice
○ alternate choice

KCMS15	D1 mm	D1 in	L5 mm	L5 in	seat size
KTFST19355HPLM *	19,355	.7620	4,020	.1583	X
KTFST19446HPLM	19,446	.7656	4,040	.1591	X
KTFST19460HPLM *	19,460	.7661	4,040	.1591	X
KTFST19500HPLM	19,500	.7677	4,050	.1594	X
KTFST19845HPLM	19,845	.7813	4,120	.1622	X
KTFST19850HPLM *	19,850	.7815	4,120	.1622	X
KTFST20000HPLM	20,000	.7874	4,160	.1638	Y
KTFST20500HPLM	20,500	.8071	4,250	.1673	Y
KTFST20638HPLM	20,638	.8125	4,280	.1685	Y
KTFST21000HPLM	21,000	.8268	4,360	.1717	Z
KTFST21150HPLM *	21,150	.8327	4,390	.1728	Z
KTFST21500HPLM	21,500	.8465	4,450	.1752	Z
KTFST22000HPLM	22,000	.8661	4,560	.1795	ZA
KTFST22225HPLM	22,225	.8750	4,600	.1811	ZA
KTFST22500HPLM	22,500	.8858	4,660	.1835	ZA
KTFST23000HPLM	23,000	.9055	4,760	.1874	ZB
KTFST23500HPLM	23,500	.9252	4,860	.1913	ZB
KTFST23813HPLM	23,812	.9375	4,920	.1937	ZB
KTFST24000HPLM	24,000	.9449	4,960	.1953	ZC
KTFST24500HPLM	24,500	.9646	5,060	.1992	ZC
KTFST25000HPLM	25,000	.9843	5,170	.2035	ZD
KTFST25400HPLM	25,400	1.0000	5,240	.2063	ZD
KTFST25500HPLM	25,500	1.0039	5,260	.2071	ZD
KTFST25600HPLM	25,600	1.0079	5,280	.2079	ZD
KTFST25650HPLM	25,650	1.0098	5,290	.2083	ZD
KTFST25679HPLM	25,679	1.0110	5,290	.2083	ZD
KTFST25806HPLM	25,806	1.0160	5,320	.2094	ZD
KTFST26000HPLM	26,000	1.0236	5,370	.2114	ZD

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Products with D1 ≥ 20mm will be available by January 1st, 2018.

KenTIP FS HPL Geometry
Tolerance

D1 metric	tolerance k8
6	0,000/+0,018
>6–10	0,000/+0,022
>10–18	0,000/+0,027
>18–26	0,000/+0,033

KenTIP FS HPL Geometry
Tolerance

D1 inch	tolerance k8
.2362	.000/+.0007
>.2362–.3937	.000/+.0009
>.3937–.7087	.000/+.0011
>.7087–1.0236	.000/+.0013

Modular Drill Carbide Insert Blades • KenTIP™ FS • HPL Geometry • Grade KCMS15™ • Through Coolant • Metric

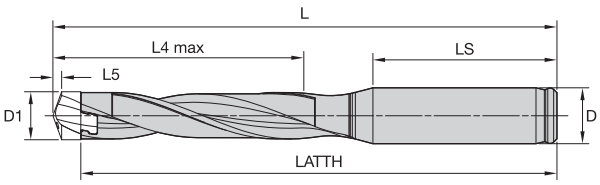
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0
M	1	50	**60**	90	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28
	2	30	**60**	90	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28
	3	20	**50**	60	mm/r	0,08–0,15	0,09–0,18	0,11–0,20	0,12–0,22	0,13–0,24	0,16–0,28

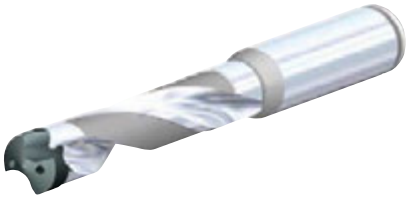
Modular Drill Carbide Insert Blades • KenTIP™ FS • HPL Geometry • Grade KCMS15™ • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate per Rev						
		min	Starting Value	max		.315	.394	.472	.551	.630	.787
M	1	160	**200**	300	IPR	0.003–0.006	0.004–0.007	0.004–0.008	0.005–0.009	0.005–0.009	0.006–0.011
	2	100	**200**	300	IPR	0.003–0.006	0.004–0.007	0.004–0.008	0.005–0.009	0.005–0.009	0.006–0.011
	3	70	**160**	200	IPR	0.003–0.006	0.004–0.007	0.004–0.008	0.005–0.009	0.005–0.009	0.006–0.011

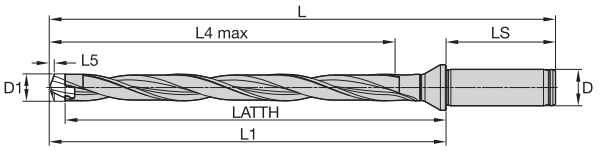
- KenTIP FS toolholder with straight cylindrical round metric shank.
- 12 x D holders feature a flanged shank for improved stiffness.
- Multi-coolant provides an advanced coolant channel layout with four coolant exits in each holder.
- Each tool body is shipped with related insert wrench.







Straight Round Shank (SS Shank)





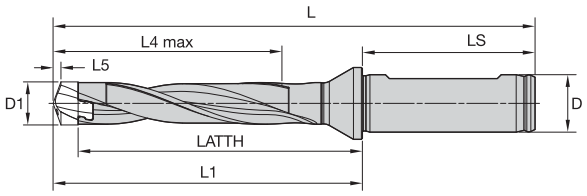
Flanged Round Shank (SF Shank)

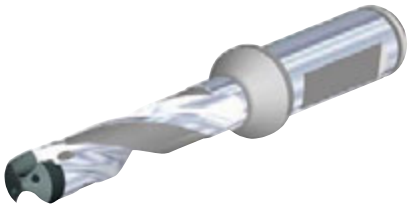
KenTIP FS Round Shank • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

1.5 x D SS	3 x D SS	5 x D SS	8 x D SS	12 x D SF	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTFS060R01SS8M	KTFS060R03SS8M	KTFS060R05SS8M	KTFS060R08SS8M	KTFS060R12SF12M	6,000	.2363	6,299	.2480	A	170.319
KTFS063R01SS8M	KTFS063R03SS8M	KTFS063R05SS8M	KTFS063R08SS8M	KTFS063R12SF12M	6,300	.2481	6,599	.2598	B	170.319
KTFS066R01SS8M	KTFS066R03SS8M	KTFS066R05SS8M	KTFS066R08SS8M	KTFS066R12SF12M	6,600	.2599	6,999	.2755	C	170.319
KTFS070R01SS8M	KTFS070R03SS8M	KTFS070R05SS8M	KTFS070R08SS8M	KTFS070R12SF12M	7,000	.2756	7,499	.2952	D	170.319
KTFS075R01SS8M	KTFS075R03SS8M	KTFS075R05SS8M	KTFS075R08SS8M	KTFS075R12SF12M	7,500	.2953	7,999	.3149	E	170.319
KTFS080R01SS10M	KTFS080R03SS10M	KTFS080R05SS10M	KTFS080R08SS10M	KTFS080R12SF12M	8,000	.3150	8,499	.3346	F	170.306
KTFS085R01SS10M	KTFS085R03SS10M	KTFS085R05SS10M	KTFS085R08SS10M	KTFS085R12SF12M	8,500	.3346	8,999	.3543	G	170.306
KTFS090R01SS10M	KTFS090R03SS10M	KTFS090R05SS10M	KTFS090R08SS10M	KTFS090R12SF12M	9,000	.3544	9,499	.3739	H	170.306
KTFS095R01SS10M	KTFS095R03SS10M	KTFS095R05SS10M	KTFS095R08SS10M	KTFS095R12SF12M	9,500	.3740	9,999	.3936	I	170.306
KTFS100R01SS12M	KTFS100R03SS12M	KTFS100R05SS12M	KTFS100R08SS12M	KTFS100R12SF16M	10,000	.3937	10,499	.4133	J	170.307
KTFS105R01SS12M	KTFS105R03SS12M	KTFS105R05SS12M	KTFS105R08SS12M	KTFS105R12SF16M	10,500	.4134	10,999	.4330	K	170.307
KTFS110R01SS12M	KTFS110R03SS12M	KTFS110R05SS12M	KTFS110R08SS12M	KTFS110R12SF16M	11,000	.4331	11,499	.4527	L	170.307
KTFS115R01SS12M	KTFS115R03SS12M	KTFS115R05SS12M	KTFS115R08SS12M	KTFS115R12SF16M	11,500	.4528	11,999	.4724	M	170.307
KTFS120R01SS14M	KTFS120R03SS14M	KTFS120R05SS14M	KTFS120R08SS14M	KTFS120R12SF16M	12,000	.4725	12,499	.4921	N	170.308
KTFS125R01SS14M	KTFS125R03SS14M	KTFS125R05SS14M	KTFS125R08SS14M	KTFS125R12SF16M	12,500	.4922	12,999	.5117	O	170.308
KTFS130R01SS14M	KTFS130R03SS14M	KTFS130R05SS14M	KTFS130R08SS14M	KTFS130R12SF16M	13,000	.5118	13,499	.5314	P	170.308
KTFS135R01SS14M	KTFS135R03SS14M	KTFS135R05SS14M	KTFS135R08SS14M	KTFS135R12SF16M	13,500	.5315	13,999	.5511	Q	170.308
KTFS140R01SS16M	KTFS140R03SS16M	KTFS140R05SS16M	KTFS140R08SS16M	KTFS140R12SF16M	14,000	.5512	14,499	.5708	R	170.309
KTFS145R01SS16M	KTFS145R03SS16M	KTFS145R05SS16M	KTFS145R08SS16M	KTFS145R12SF16M	14,500	.5709	14,999	.5905	S	170.309
KTFS150R01SS16M	KTFS150R03SS16M	KTFS150R05SS16M	KTFS150R08SS16M	KTFS150R12SF20M	15,000	.5906	15,999	.6299	T	170.309
KTFS160R01SS16M	KTFS160R03SS16M	KTFS160R05SS16M	KTFS160R08SS16M	KTFS160R12SF20M	16,000	.6300	16,999	.6692	U	170.309
KTFS170R01SS20M	KTFS170R03SS20M	KTFS170R05SS20M	KTFS170R08SS20M	KTFS170R12SF20M	17,000	.6693	17,999	.7086	V	170.314
KTFS180R01SS20M	KTFS180R03SS20M	KTFS180R05SS20M	KTFS180R08SS20M	KTFS180R12SF25M	18,000	.7087	18,999	.7479	W	170.314
KTFS190R01SS20M	KTFS190R03SS20M	KTFS190R05SS20M	KTFS190R08SS20M	KTFS190R12SF25M	19,000	.7480	19,999	.7873	X	170.314

- KenTIP FS toolholder with flanged shank and 0° flat metric shank.
- Multi-coolant provides an advanced coolant channel layout with four coolant exits in each holder.
- Each tool body is shipped with related insert wrench.







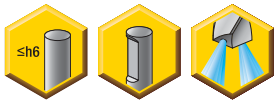
Flanged Shank with Flat (SCF Shank)

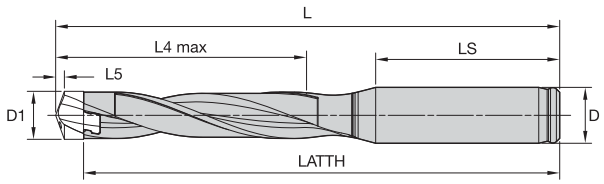
KenTIP FS Flanged Shank with Flat • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

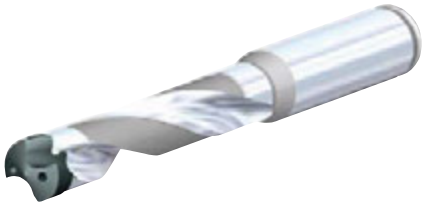
1.5 x D SCF	3 x D SCF	5 x D SCF	8 x D SCF	12 x D SCF	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
–	KTFS080R03SCF12M	KTFS080R05SCF12M	KTFS080R08SCF12M	–	8,000	.3150	8,499	.3346	F	170.306
–	KTFS085R03SCF12M	KTFS085R05SCF12M	KTFS085R08SCF12M	–	8,500	.3346	8,999	.3543	G	170.306
–	KTFS090R03SCF12M	KTFS090R05SCF12M	KTFS090R08SCF12M	–	9,000	.3544	9,499	.3739	H	170.306
–	KTFS095R03SCF12M	KTFS095R05SCF12M	KTFS095R08SCF12M	–	9,500	.3740	9,999	.3936	I	170.306
–	KTFS100R03SCF16M	KTFS100R05SCF16M	KTFS100R08SCF16M	–	10,000	.3937	10,499	.4133	J	170.307
–	KTFS105R03SCF16M	KTFS105R05SCF16M	KTFS105R08SCF16M	–	10,500	.4134	10,999	.4330	K	170.307
–	KTFS110R03SCF16M	KTFS110R05SCF16M	KTFS110R08SCF16M	–	11,000	.4331	11,499	.4527	L	170.307
–	KTFS115R03SCF16M	KTFS115R05SCF16M	KTFS115R08SCF16M	–	11,500	.4528	11,999	.4724	M	170.307
–	KTFS120R03SCF16M	KTFS120R05SCF16M	KTFS120R08SCF16M	–	12,000	.4725	12,499	.4921	N	170.308
–	KTFS125R03SCF16M	KTFS125R05SCF16M	KTFS125R08SCF16M	–	12,500	.4922	12,999	.5117	O	170.308
–	KTFS130R03SCF16M	KTFS130R05SCF16M	KTFS130R08SCF16M	–	13,000	.5118	13,499	.5314	P	170.308
–	KTFS135R03SCF16M	KTFS135R05SCF16M	KTFS135R08SCF16M	–	13,500	.5315	13,999	.5511	Q	170.308
–	KTFS140R03SCF16M	KTFS140R05SCF16M	KTFS140R08SCF16M	–	14,000	.5512	14,499	.5708	R	170.309
–	KTFS145R03SCF16M	KTFS145R05SCF16M	KTFS145R08SCF16M	–	14,500	.5709	14,999	.5905	S	170.309
–	KTFS150R03SCF20M	KTFS150R05SCF20M	KTFS150R08SCF20M	–	15,000	.5906	15,999	.6299	T	170.309
–	KTFS160R03SCF20M	KTFS160R05SCF20M	KTFS160R08SCF20M	–	16,000	.6300	16,999	.6692	U	170.309
–	KTFS170R03SCF20M	KTFS170R05SCF20M	KTFS170R08SCF20M	–	17,000	.6693	17,999	.7086	V	170.314
–	KTFS180R03SCF25M	KTFS180R05SCF25M	KTFS180R08SCF25M	–	18,000	.7087	18,999	.7479	W	170.314
–	KTFS190R03SCF25M	KTFS190R05SCF25M	KTFS190R08SCF25M	–	19,000	.7480	19,999	.7873	X	170.314
KTFS200R01SCF25M	KTFS200R03SCF25M	KTFS200R05SCF25M	KTFS200R08SCF25M	KTFS200R12SCF25M	20,000	.7874	20,999	.8267	Y	170.314
KTFS210R01SCF25M	KTFS210R03SCF25M	KTFS210R05SCF25M	KTFS210R08SCF25M	KTFS210R12SCF25M	21,000	.8268	21,999	.8661	Z	170.314
KTFS220R01SCF25M	KTFS220R03SCF25M	KTFS220R05SCF25M	KTFS220R08SCF25M	KTFS220R12SCF25M	22,000	.8662	22,999	.9054	ZA	170.314
KTFS230R01SCF25M	KTFS230R03SCF25M	KTFS230R05SCF25M	KTFS230R08SCF25M	KTFS230R12SCF25M	23,000	.9055	23,999	.9448	ZB	170.314
KTFS240R01SCF25M	KTFS240R03SCF25M	KTFS240R05SCF25M	KTFS240R08SCF25M	KTFS240R12SCF25M	24,000	.9449	24,999	.9842	ZC	170.314
KTFS250R01SCF25M	KTFS250R03SCF25M	KTFS250R05SCF25M	KTFS250R08SCF25M	KTFS250R12SCF25M	25,000	.9843	25,999	1.0236	ZD	170.314

NOTE: **Products with D1 ≥ 20mm will be available by January 1st, 2018.**

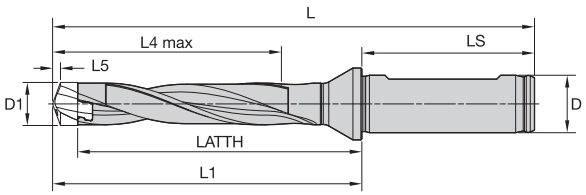
- KenTIP FS toolholder with straight cylindrical round shank. Inch shank <20mm nominal drilling diameter.
- KenTIP FS toolholder with Flanged shank and 0° Flat. Inch shank ≥20mm nominal drilling diameter.
- Multi-coolant provides an advanced coolant channel layout with four coolant exits in each holder.
- Each tool body is shipped with related insert wrench.

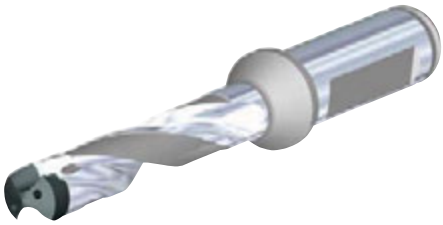






Straight Round Shank (SS Shank)





Flanged Shank with Flat (SCF Shank)

KenTIP FS Round and Flanged Shank with Flat • 3 x D/5 x D/8 x D • Inch

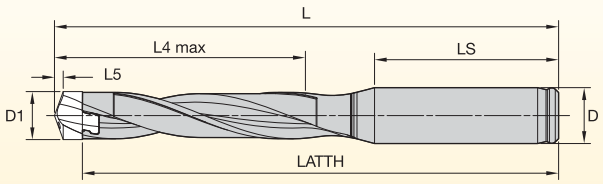
3 x D	5 x D	8 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTFS0237R03SS031	KTFS0237R05SS031	KTFS0237R08SS031	6,000	.2363	6,299	.2480	A	170.319
KTFS0249R03SS031	KTFS0249R05SS031	KTFS0249R08SS031	6,300	.2481	6,599	.2598	B	170.319
KTFS0260R03SS031	KTFS0260R05SS031	KTFS0260R08SS031	6,600	.2599	6,999	.2755	C	170.319
KTFS0276R03SS031	KTFS0276R05SS031	KTFS0276R08SS031	7,000	.2756	7,499	.2952	D	170.319
KTFS0296R03SS031	KTFS0296R05SS031	KTFS0296R08SS031	7,500	.2953	7,999	.3149	E	170.319
KTFS0315R03SS038	KTFS0315R05SS038	KTFS0315R08SS038	8,000	.3150	8,499	.3346	F	170.306
KTFS0335R03SS038	KTFS0335R05SS038	KTFS0335R08SS038	8,500	.3346	8,999	.3543	G	170.306
KTFS0355R03SS038	KTFS0355R05SS038	KTFS0355R08SS038	9,000	.3544	9,499	.3739	H	170.306
KTFS0375R03SS038	KTFS0375R05SS038	KTFS0375R08SS038	9,500	.3740	9,999	.3936	I	170.306
KTFS0394R03SS044	KTFS0394R05SS044	KTFS0394R08SS044	10,000	.3937	10,499	.4133	J	170.307
KTFS0414R03SS044	KTFS0414R05SS044	KTFS0414R08SS044	10,500	.4134	10,999	.4330	K	170.307
KTFS0434R03SS044	KTFS0434R05SS044	KTFS0434R08SS044	11,000	.4331	11,499	.4527	L	170.307
KTFS0453R03SS050	KTFS0453R05SS050	KTFS0453R08SS050	11,500	.4528	11,999	.4724	M	170.307
KTFS0473R03SS050	KTFS0473R05SS050	KTFS0473R08SS050	12,000	.4725	12,499	.4921	N	170.308
KTFS0493R03SS050	KTFS0493R05SS050	KTFS0493R08SS050	12,500	.4922	12,999	.5117	O	170.308
KTFS0512R03SS056	KTFS0512R05SS056	KTFS0512R08SS056	13,000	.5118	13,499	.5314	P	170.308
KTFS0532R03SS056	KTFS0532R05SS056	KTFS0532R08SS056	13,500	.5315	13,999	.5511	Q	170.308
KTFS0552R03SS056	KTFS0552R05SS056	KTFS0552R08SS056	14,000	.5512	14,499	.5708	R	170.309
KTFS0571R03SS063	KTFS0571R05SS063	KTFS0571R08SS063	14,500	.5709	14,999	.5905	S	170.309
KTFS0591R03SS063	KTFS0591R05SS063	KTFS0591R08SS063	15,000	.5906	15,999	.6299	T	170.309
KTFS0630R03SS063	KTFS0630R05SS063	KTFS0630R08SS063	16,000	.6300	16,999	.6692	U	170.309
KTFS0670R03SS075	KTFS0670R05SS075	KTFS0670R08SS075	17,000	.6693	17,999	.7086	V	170.314
KTFS0709R03SS075	KTFS0709R05SS075	KTFS0709R08SS075	18,000	.7087	18,999	.7479	W	170.314
KTFS0749R03SS075	KTFS0749R05SS075	KTFS0749R08SS075	19,000	.7480	19,999	.7873	X	170.314
KTFS0788R03SCF100	KTFS0788R05SCF100	KTFS0788R08SCF100	20,000	.7874	20,999	.8267	Y	170.314
KTFS0827R03SCF100	KTFS0827R05SCF100	KTFS0827R08SCF100	21,000	.8268	21,999	.8661	Z	170.314
KTFS0867R03SCF100	KTFS0867R05SCF100	KTFS0867R08SCF100	22,000	.8662	22,999	.9054	ZA	170.314
KTFS0906R03SCF100	KTFS0906R05SCF100	KTFS0906R08SCF100	23,000	.9055	23,999	.9448	ZB	170.314
KTFS0945R03SCF100	KTFS0945R05SCF100	KTFS0945R08SCF100	24,000	.9449	24,999	.9842	ZC	170.314
KTFS0985R03SCF100	KTFS0985R05SCF100	KTFS0985R08SCF100	25,000	.9843	25,999	1.0236	ZD	170.314

NOTE: **Products with D1 ≥ 20mm will be available by January 1st, 2018.**

Modular Drills • Dimension Tables

Straight Round Shank • Metric





					1.5 x D SS			3 x D SS			5 x D SS			8 x D SS		
D1 min	D1 max	Seat	LS	round D	LATTH	L	L4 max	LATTH	L	L4 max	LATTH	L	L4 max	LATTH	L	L4 max
6,000	6,299	A	37	8	53,5	57	9	63,5	67	19	76,5	80	32	94,5	98	50
6,300	6,599	B	37	8	54,3	58	10	64,3	68	20	77,3	81	33	97,3	101	53
6,600	6,999	C	37	8	55,2	59	10	66,2	70	21	80,2	84	35	101,2	105	56
7,000	7,499	D	37	8	55,9	60	11	66,9	71	22	82,9	87	38	104,9	109	60
7,500	7,999	E	37	8	56,7	61	12	68,7	73	24	84,7	89	40	108,7	113	64
8,000	8,499	F	41	10	63,4	68	13	76,4	81	26	92,4	97	42	118,4	123	68
8,500	8,999	G	41	10	64,1	69	14	77,1	82	27	95,1	100	45	122,1	127	72
9,000	9,499	H	41	10	63,8	69	14	77,8	83	28	97,8	103	48	125,8	131	76
9,500	9,999	I	41	10	64,5	70	15	79,5	85	30	99,5	105	50	129,5	135	80
10,000	10,499	J	46	12	72,2	78	16	88,2	94	32	108,2	114	52	140,2	146	84
10,500	10,999	K	46	12	71,9	78	16	88,9	95	33	110,9	117	55	143,9	150	88
11,000	11,499	L	46	12	72,6	79	17	89,6	96	34	113,6	120	58	147,6	154	92
11,500	11,999	M	46	12	73,3	80	18	91,3	98	36	115,3	122	60	151,3	158	96
12,000	12,499	N	46	14	76,0	83	19	95,0	102	38	119,0	126	62	157,0	164	100
12,500	12,999	O	46	14	76,8	84	20	95,8	103	39	121,8	129	65	160,8	168	104
13,000	13,499	P	46	14	76,5	84	20	96,5	104	40	124,5	132	68	164,5	172	108
13,500	13,999	Q	46	14	77,2	85	21	98,2	106	42	126,2	134	70	168,2	176	112
14,000	14,499	R	49	16	81,9	90	22	103,9	112	44	131,9	140	72	175,9	184	116
14,500	14,999	S	49	16	81,6	90	22	104,6	113	45	134,6	143	75	179,6	188	120
15,000	15,999	T	49	16	83,3	92	24	107,3	116	48	139,3	148	80	187,3	196	128
16,000	16,999	U	49	16	84,7	94	26	109,7	119	51	143,7	153	85	194,7	204	136
17,000	17,999	V	51	20	90,1	100	27	117,1	127	54	153,1	163	90	207,1	217	144
18,000	18,999	W	51	20	90,6	101	28	119,6	130	57	157,6	168	95	214,6	225	152
19,000	19,999	X	51	20	92,0	103	30	122,0	133	60	162,0	173	100	222,0	233	160

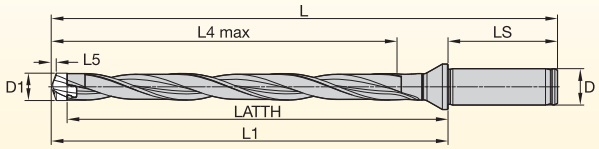
NOTE: Toolholder dimensions:
L: Total length of drill
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Flanged Round Shank • Metric





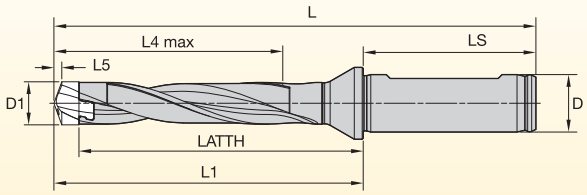
					12 x D SF			
D1 min	D1 max	Seat	LS	flanged D	LATTH	L	L1	L4 max
6,000	6,299	A	45	12	92,5	141	96	76
6,300	6,599	B	45	12	95,3	144	99	79
6,600	6,999	C	45	12	101,2	150	105	84
7,000	7,499	D	45	12	106,9	156	111	90
7,500	7,999	E	45	12	112,7	162	117	96
8,000	8,499	F	45	12	118,4	168	123	102
8,500	8,999	G	45	12	124,1	174	129	108
9,000	9,499	H	45	12	129,8	180	135	114
9,500	9,999	I	45	12	135,5	186	141	120
10,000	10,499	J	48	16	144,2	198	150	126
10,500	10,999	K	48	16	149,9	204	156	132
11,000	11,499	L	48	16	155,6	210	162	138
11,500	11,999	M	48	16	161,3	216	168	144
12,000	12,499	N	48	16	167,0	222	174	150
12,500	12,999	O	48	16	172,8	228	180	156
13,000	13,499	P	48	16	178,5	234	186	162
13,500	13,999	Q	48	16	184,2	240	192	168
14,000	14,499	R	48	16	189,9	246	198	174
14,500	14,999	S	48	16	195,6	252	204	180
15,000	15,999	T	50	20	210,3	269	219	192
16,000	16,999	U	50	20	221,7	281	231	204
17,000	17,999	V	50	20	233,1	293	243	216
18,000	18,999	W	56	25	247,6	314	258	228
19,000	19,999	X	56	25	259,0	326	270	240

NOTE: Toolholder dimensions:
L: Total length of drill
L1: Drill length including flange
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Flanged Shank with Flat • Metric



D1 min	D1 max	Seat	LS	flanged D	1.5 x D SCF				3 x D SCF				5 x D SCF				8 x D SCF				12 x D SCF			
					LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max	LATTH	L	L1	L4 max
8,000	8,499	F	45	12	–	–	–	–	42,4	92	2	26	58,4	108	2	42	84,4	134	4	68	–	–	–	–
8,500	8,999	G	45	12	–	–	–	–	43,1	93	2	27	61,1	111	3	45	88,1	138	4	72	–	–	–	–
9,000	9,499	H	45	12	–	–	–	–	43,8	94	2	28	63,8	114	3	48	91,8	142	4	76	–	–	–	–
9,500	9,999	I	45	12	–	–	–	–	45,5	96	2	30	65,5	116	3	50	95,5	146	4	80	–	–	–	–
10,000	10,499	J	48	16	–	–	–	–	50,2	104	2	32	70,2	124	3	52	102,2	156	4	84	–	–	–	–
10,500	10,999	K	48	16	–	–	–	–	50,9	105	2	33	72,9	127	3	55	105,9	160	4	88	–	–	–	–
11,000	11,499	L	48	16	–	–	–	–	51,6	106	2	34	75,6	130	3	58	109,6	164	5	92	–	–	–	–
11,500	11,999	M	48	16	–	–	–	–	53,3	108	2	36	77,3	132	3	60	113,3	168	5	96	–	–	–	–
12,000	12,499	N	48	16	–	–	–	–	55,0	110	2	38	79,0	134	3	62	117,0	172	5	100	–	–	–	–
12,500	12,999	O	48	16	–	–	–	–	55,8	111	2	39	81,8	137	4	65	120,8	176	5	104	–	–	–	–
13,000	13,499	P	48	16	–	–	–	–	56,5	112	3	40	84,5	140	4	68	124,5	180	5	108	–	–	–	–
13,500	13,999	Q	48	16	–	–	–	–	58,2	114	3	42	86,2	142	4	70	128,2	184	5	112	–	–	–	–
14,000	14,499	R	48	16	–	–	–	–	59,9	116	3	44	87,9	144	4	72	131,9	188	6	116	–	–	–	–
14,500	14,999	S	48	16	–	–	–	–	60,6	117	3	45	90,6	147	4	75	135,6	192	6	120	–	–	–	–
15,000	15,999	T	50	20	–	–	–	–	66,3	125	3	48	98,3	157	4	80	146,3	205	6	128	–	–	–	–
16,000	16,999	U	50	20	–	–	–	–	68,7	128	3	51	102,7	162	4	85	153,7	213	6	136	–	–	–	–
17,000	17,999	V	50	20	–	–	–	–	71,1	131	3	54	107,1	167	5	90	161,1	221	7	144	–	–	–	–
18,000	18,999	W	56	25	–	–	–	–	76,6	143	3	57	114,6	181	5	95	171,6	238	7	152	–	–	–	–
19,000	19,999	X	56	25	–	–	–	–	79,0	146	4	60	119,0	186	5	100	179,0	246	7	160	–	–	–	–
20,000	20,999	Y	56	25	50,4	118	2	32	81,4	149	4	63	123,4	191	5	105	186,4	254	8	168	270,4	338	11	252
21,000	21,999	Z	56	25	50,8	119	2	33	83,8	152	4	66	127,8	196	6	110	193,8	262	8	176	281,8	350	12	264
22,000	22,999	ZA	56	25	51,2	120	3	34	86,2	155	4	69	132,2	201	6	115	201,2	270	8	184	293,2	362	12	276
23,000	23,999	ZB	56	25	52,7	122	3	36	88,7	158	4	72	136,7	206	6	120	208,7	278	9	192	304,7	374	13	288
24,000	24,999	ZC	56	25	54,1	124	3	38	91,1	161	4	75	141,1	211	6	125	216,1	286	9	200	316,1	386	13	300
25,000	25,999	ZD	56	25	54,5	125	3	39	93,5	164	4	78	145,5	216	6	130	223,5	294	9	208	327,5	398	13	312

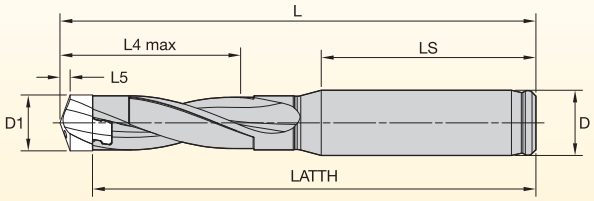
NOTE: Toolholder dimensions:
- L: Total length of drill
- L1: Drill length including flange
- L4: Max. drilling depth
- L5: Protruding length (Insert specific. See related insert pages)
- LATTH: Pocket seat reference length
- LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Straight Round Shank • Inch





					3 x D SS			5 x D SS			8 x D SS		
D1 min	D1 max	Seat	LS	round D	LATTH	L	L4 max	LATTH	L	L4 max	LATTH	L	L4 max
.3937	.4133	J	1.67	.438	3.32	3.54	1.26	4.10	4.33	2.05	5.36	5.59	3.31
.4134	.4330	K	1.67	.438	3.34	3.58	1.30	4.21	4.45	2.17	5.51	5.75	3.47
.4331	.4527	L	1.67	.438	3.37	3.62	1.34	4.32	4.57	2.28	5.65	5.91	3.62
.4528	.4724	M	1.79	.500	3.60	3.86	1.42	4.54	4.80	2.36	5.96	6.22	3.78
.4725	.4921	N	1.79	.500	3.66	3.94	1.50	4.61	4.88	2.44	6.10	6.38	3.94
.4922	.5117	O	1.79	.500	3.69	3.98	1.54	4.71	5.00	2.56	6.25	6.54	4.09
.5118	.5314	P	1.79	.563	3.76	4.06	1.58	4.86	5.16	2.68	6.44	6.73	4.25
.5315	.5511	Q	1.79	.563	3.83	4.13	1.65	4.93	5.24	2.76	6.58	6.89	4.41
.5512	.5708	R	1.79	.563	3.89	4.21	1.73	5.00	5.32	2.84	6.73	7.05	4.57
.5709	.5905	S	1.91	.625	4.12	4.45	1.77	5.30	5.63	2.95	7.07	7.40	4.72
.5906	.6299	T	1.91	.625	4.22	4.57	1.89	5.48	5.83	3.15	7.37	7.72	5.04
.6300	.6692	U	1.91	.625	4.28	4.65	2.01	5.62	5.98	3.35	7.63	7.99	5.35
.6693	.7086	V	2.00	.750	4.57	4.96	2.13	5.99	6.38	3.54	8.12	8.50	5.67
.7087	.7479	W	2.00	.750	4.67	5.08	2.24	6.16	6.57	3.74	8.41	8.82	5.98
.7480	.7873	X	2.00	.750	4.76	5.20	2.36	6.34	6.77	3.94	8.70	9.13	6.30
.2363	.2480	A	1.52	.313	2.58	2.72	.75	3.09	3.23	1.26	3.80	3.94	1.97
.2481	.2598	B	1.52	.313	2.61	2.76	.79	3.12	3.27	1.30	3.91	4.06	2.09
.2599	.2755	C	1.52	.313	2.64	2.80	.83	3.20	3.35	1.38	4.02	4.17	2.21
.2756	.2952	D	1.52	.313	2.67	2.83	.87	3.30	3.46	1.50	4.17	4.33	2.36
.2953	.3149	E	1.52	.313	2.83	3.00	.95	3.46	3.63	1.58	4.40	4.58	2.52
.3150	.3346	F	1.59	.375	2.97	3.15	1.02	3.60	3.78	1.65	4.62	4.80	2.68
.3346	.3543	G	1.59	.375	2.99	3.19	1.06	3.70	3.90	1.77	4.77	4.96	2.84
.3544	.3739	H	1.59	.375	3.02	3.23	1.10	3.81	4.02	1.89	4.91	5.12	2.99
.3740	.3936	I	1.59	.375	3.09	3.31	1.18	3.88	4.09	1.97	5.06	5.28	3.15

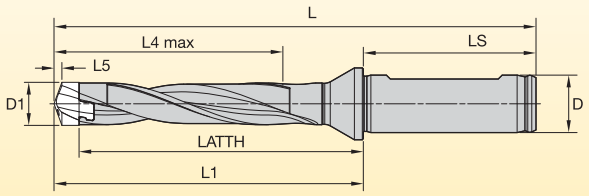
NOTE: Toolholder dimensions:
L: Total length of drill
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

(continued)

Modular Drills • Dimension Tables *(continued)*

Flanged Shank with Flat • Inch





D1 min	D1 max	Seat	LS	flanged D	3 x D SCF LATTH	L	L1	L4 max	5 x D SCF LATTH	L	L1	L4 max	8 x D SCF LATTH	L	L1	L4 max
.7874	.8267	Y	2.20	1.000	3.20	5.87	3.66	2.48	4.86	7.52	5.32	4.13	7.34	10.00	7.80	6.61
.8268	.8661	Z	2.20	1.000	3.30	5.98	3.78	2.60	5.03	7.72	5.51	4.33	7.63	10.32	8.11	6.93
.8662	.9054	ZA	2.20	1.000	3.40	6.10	3.90	2.72	5.21	7.91	5.71	4.53	7.92	10.63	8.43	7.24
.9055	.9448	ZB	2.20	1.000	3.49	6.22	4.02	2.84	5.38	8.11	5.91	4.72	8.22	10.94	8.74	7.56
.9449	.9842	ZC	2.20	1.000	3.59	6.34	4.13	2.95	5.55	8.31	6.10	4.92	8.51	11.26	9.06	7.87
.9843	1.0236	ZD	2.20	1.000	3.68	6.46	4.25	3.07	5.73	8.50	6.30	5.12	8.80	11.57	9.37	8.19

NOTE: Toolholder dimensions:
L: Total length of drill
L1: Drill length including flange
L4: Max. drilling depth
L5: Protruding length (Insert specific. See related insert pages)
LATTH: Pocket seat reference length
LS: Shank length

Mounting



1. Protect your eyes and hands. Fix holder. Clean pocket with air blast.

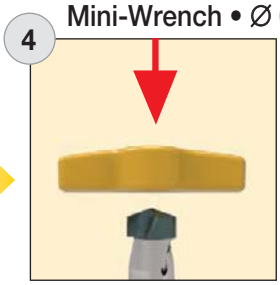


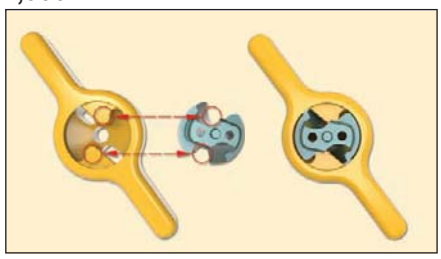
2. Put insert into pocket seat so it rests firmly on the holder.



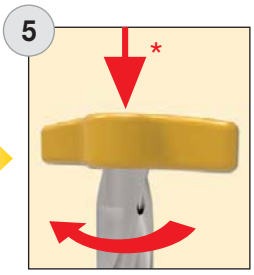
3. Turn slightly in clockwise direction using your fingers.

Mini-Wrench • Ø 6–7,999mm



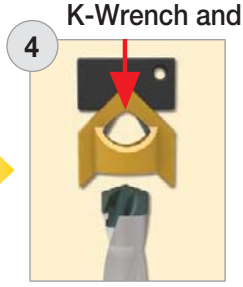


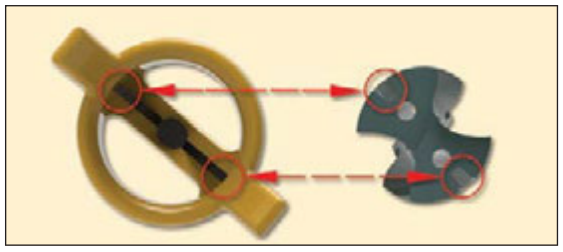
4. Set wrench properly onto insert: **Wrench noses must fit firmly into the chip grooves**.

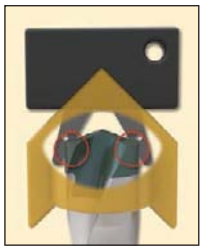


*For unmounting, firmly press wrench on insert to avoid slipping.

K-Wrench and Multi-Wrench • Ø 8–26mm







4. Set wrench properly onto insert: **Wrench blade must fit firmly into slots on insert flanks**.

Available Smart Wrenches

Mini-Wrench

Wrench noses must fit into the chip grooves.



K-Wrench

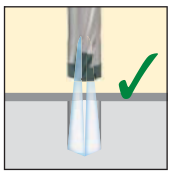
Wrench blades must fit into insert slots.



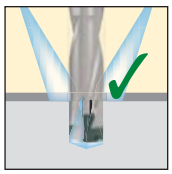
Multi-Wrench



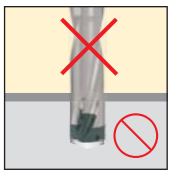
Coolant



Internal coolant is recommended for all applications.



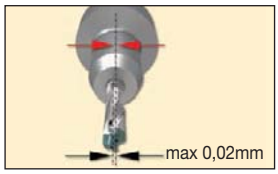
Flood coolant only for drilling depth ≤ 3 x D.



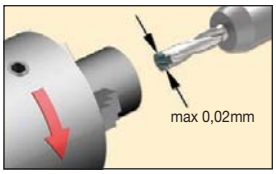
Dry cutting is not recommended. MQL ability is limited.

Core Deviation

Machining Center



Stationary Drill/Lathe



Rotating Applications

KenTIP FS holders with straight cylindrical SS and SF shanks (no flats) are designed for rotating applications where the drill rotates while the workpiece remains stationary. The shank to drill-point location of these drills is held to an extremely close tolerance. To maintain accuracy and gain maximum performance, please use the approved toolholding method shown below.



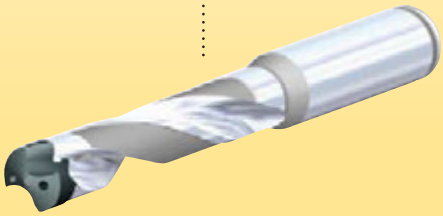
ERICKSON™ ER collet chucks



ERICKSON Hydrochuck HP Line



ERICKSON Shrink Fit toolholders for general purpose



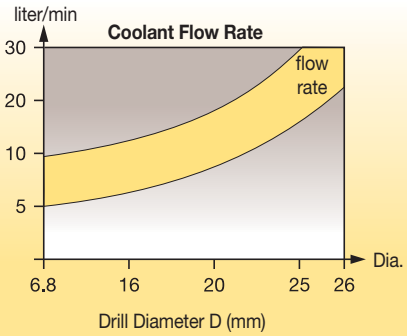
Rotating and Stationary Applications

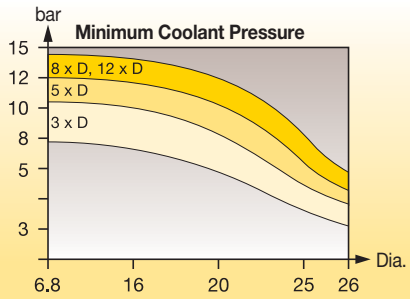
KenTIP FS holders with SCF shanks (Cylindrical with 90° flat and flange) are reducing deflections and represent a stiffer holder solution. As the shank is compatible with end mill adapters, these holders are very flexible in use. SCF shanks can be used in any rotating applications and are suited for lathe and other settings where the tool is stationary.



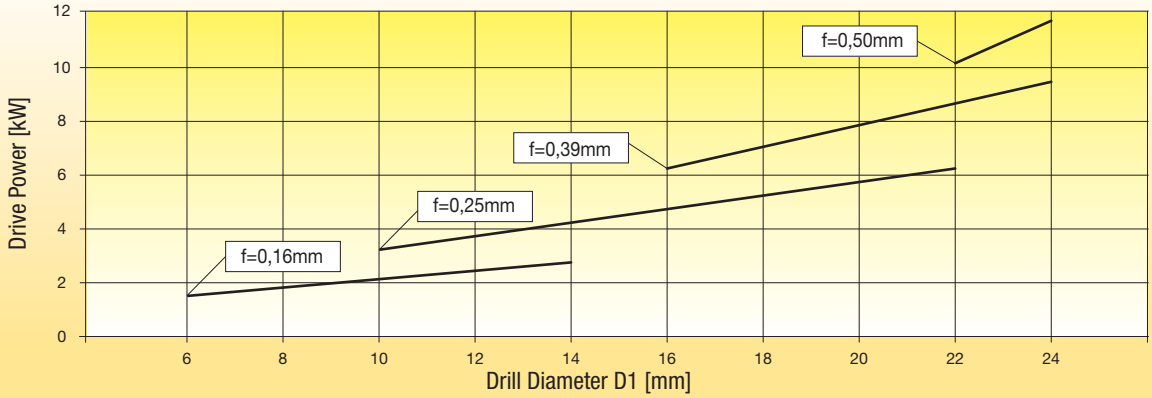
EM adapters



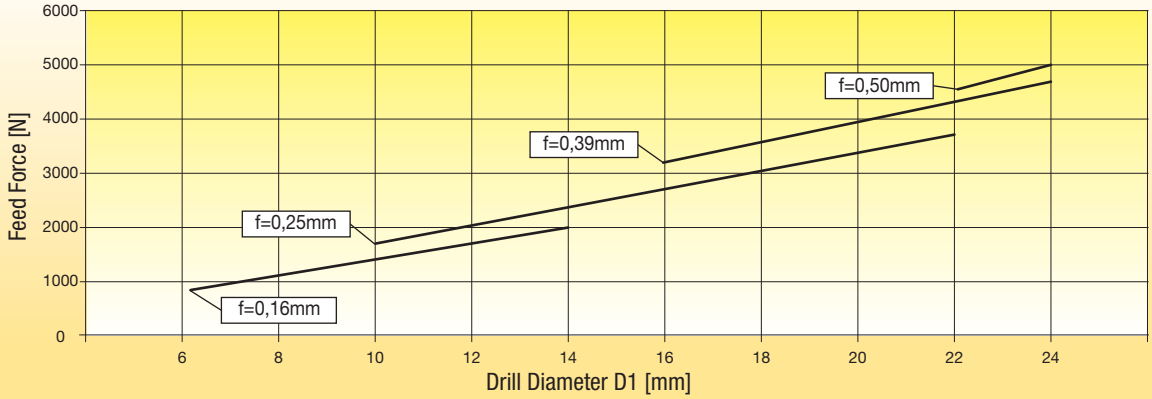




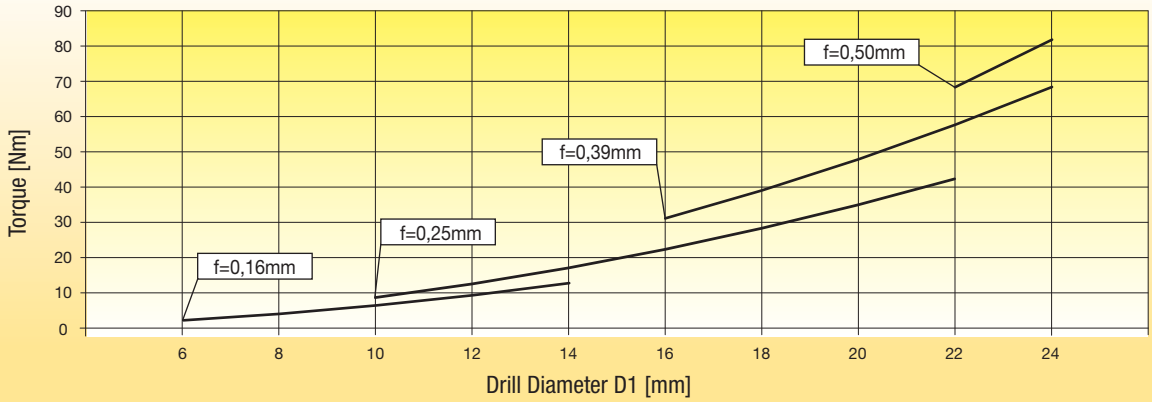
Drive Power (kW)



Feed Force (N)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels with a tensile strength: Rm = 750 N/mm^2. The base cutting speed used is: vc = 80 m/min.

NOVO KNOWS CAD/CAM

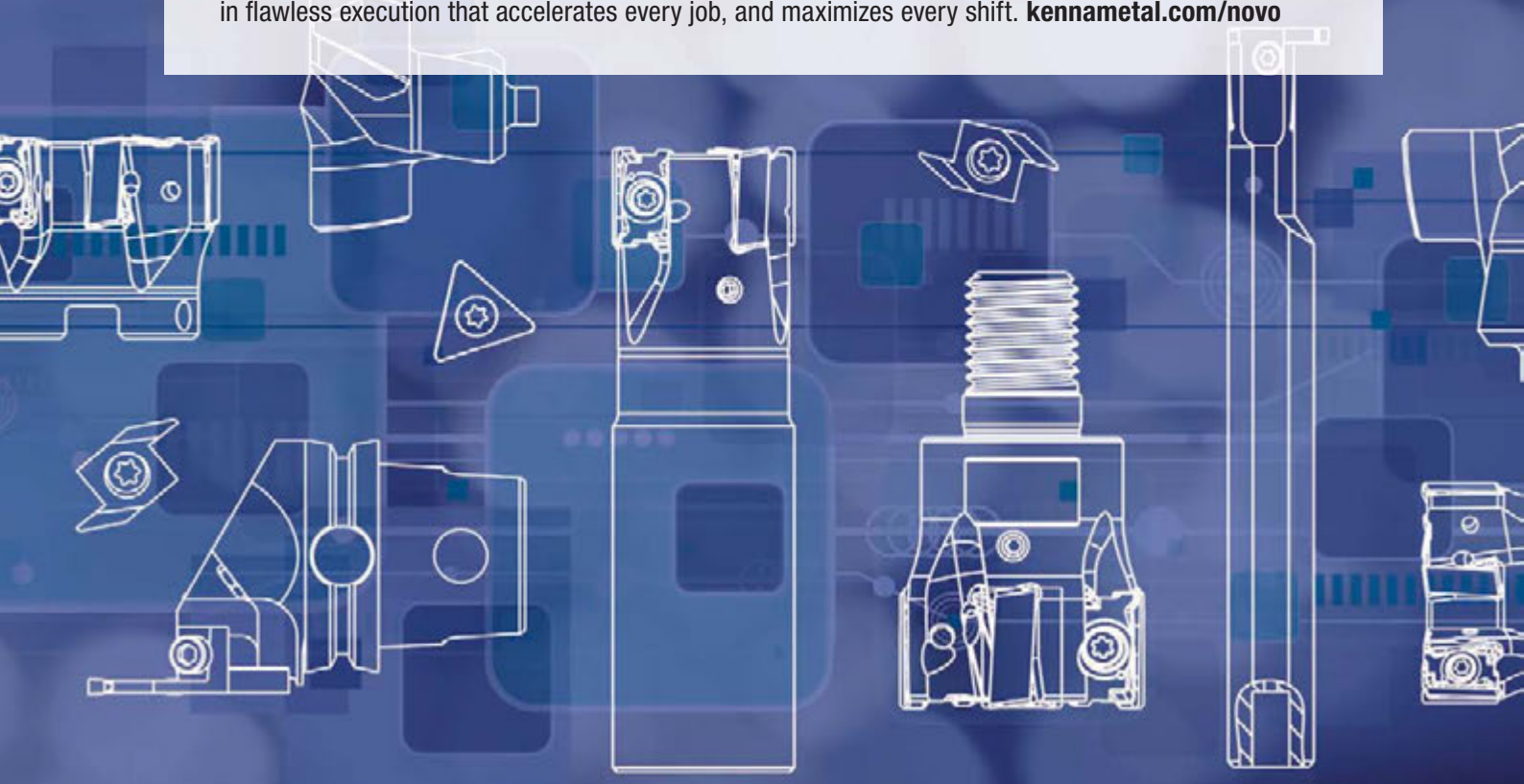
With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



KenTIP™ Modular Drill System

Primary Application

The KenTIP modular drill system offers performance levels commonly achieved with solid carbide drills. The proprietary locking system enables inserts to be changed inside the machine tool. Use KenTIP in steel, cast iron, ductile iron, and stainless steel applications. KenTIP modular drills are available up to diameter 27,99mm (1.1020"). Change drilling inserts within the machine without taking the body off, saving setup time and manufacturing costs.

With our new FEG Flat bottom E-shape inserts, the KenTIP modular drill system now offers an easy and very reliable solution to drill blind holes that performs on a very wide range of difficult applications.

Features and Benefits

Advanced Interface

- Strong pocket seats on all inserts and bodies.
- Long tip and body life in unstable conditions, especially when side loads occur.

Disposable Inserts

- No reconditioning costs.
- Consistent performance.
- Eliminates number of tools waiting for reconditioning, providing significant cost savings.

HP Drill-Point Design

- Very high feed rates possible.
- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.

Easy Insert Change

- Locking method requires no screws or clamps.
- Insert blades can be changed with a simple provided tool and do not require drill body removal from the machine or holder.

Tailored Grades and Geometries

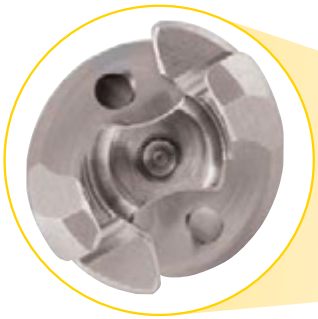
- KCP15™ grade has a new PVD coating enabling longer tool life in all steel applications.
- KCPM45™ grade combines a very tough, fine-grain carbide substrate with a TiAlN PVD coating. It is used on our FEG flat-bottom inserts.
- For applications in cast iron and stainless steel, we recommend to use our new KenTIP FS modular drill. Please see page H6 for drills.
- For further availability on KC7320™ HPL and KC7410™ HPC inserts for KenTIP, please refer to NOVO™ or contact your sales representative.

NEW!

FEG Style, E-shape Flat-Bottom Inserts

KenTIP™ FEG inserts create blind holes, through holes, and countersinks. These inserts are focused on versatility and will support you in many essential drilling applications.







Drill Body Portfolio

- Standard 12 x D holders with round shanks available, inch and metric. This covers the complete KenTIP diameter range.
- Standard 3, 5, and 8 x D tool bodies with round and flanged shank available, inch and metric.
- Standard 1.5 x D bodies available, especially for piloting operations on metric drill bodies.

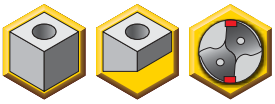
Customization

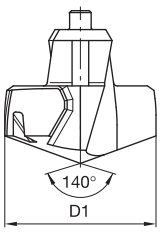
- Intermediate diameters available as semi-standards.
- Close tolerance tips available for precision holes.
- Chamfering insert pockets available.
- Multiple steps possible.
- CounterFix Micro tangential inserts for small diameter step drills.

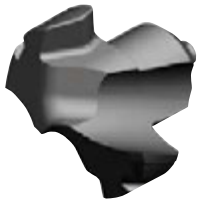
NEW!

CounterFix Micro Tangential Inserts

- KenTIP KCP15™ HP cutting edges enable high metal removal rates and superior tool life for steel applications.
- KenTIP HP geometry works with low cutting and feed forces and provides very good centering. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KCP15 is a fine grain carbide with a TiAlN-based PVD nanolayer coating with greatly improved layer bonding for higher tool life. Its increased Al content provides better thermal and chemical stability, which makes it more suitable for higher cutting speeds.
- KenTIP KCP15 HP cutting edges are perfectly suited to drill alloyed and high alloy steels.
- Use KenTIP KCP15 HP cutting edges as an alternative in cast iron materials.






HP

KenTIP Inserts • HP KCP15

P ● M K ○ N S H

● first choice
○ alternate choice

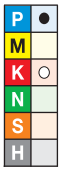
KCP15	D1 mm	D1 in	seat size
KTIP0794HPM	7,938	.3125	F
KTIP0800HPM	8,000	.3150	F
KTIP0810HPM	8,100	.3189	F
KTIP0816HPM	8,164	.3214	F
KTIP0820HPM	8,204	.3230	F
KTIP0830HPM	8,300	.3268	F
KTIP0833HPM	8,334	.3281	F
KTIP0840HPM	8,400	.3307	F
KTIP0843HPM	8,433	.3320	F
KTIP0850HPM	8,500	.3346	G
KTIP0860HPM	8,600	.3386	G
KTIP0861HPM	8,611	.3390	G
KTIP0870HPM	8,700	.3425	G
KTIP0873HPM	8,733	.3438	G
KTIP0880HPM	8,800	.3465	G
KTIP0884HPM	8,839	.3480	G
KTIP0890HPM	8,900	.3504	G
KTIP0900HPM	9,000	.3543	H
KTIP0909HPM	9,093	.3580	H
KTIP0910HPM	9,100	.3583	H
KTIP0913HPM	9,129	.3594	H
KTIP0920HPM	9,200	.3622	H
KTIP0930HPM	9,300	.3661	H
KTIP0935HPM	9,347	.3680	H
KTIP0940HPM	9,400	.3701	H
KTIP0950HPM	9,500	.3740	I
KTIP0953HPM	9,525	.3750	I
KTIP0956HPM	9,558	.3763	I
KTIP0958HPM	9,576	.3770	I
KTIP0960HPM	9,600	.3780	I
KTIP0970HPM	9,703	.3820	I
KTIP0980HPM	9,804	.3860	I

P ● M K ○ N S H

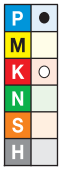
KCP15	D1 mm	D1 in	seat size
KTIP0983HPM	9,830	.3870	I
KTIP0990HPM	9,900	.3898	I
KTIP0992HPM	9,921	.3906	I
KTIP1000HPM	10,000	.3937	J
KTIP1002HPM	10,023	.3946	J
KTIP1008HPM	10,084	.3970	J
KTIP1010HPM	10,100	.3976	J
KTIP1020HPM	10,200	.4016	J
KTIP1026HPM	10,262	.4040	J
KTIP1030HPM	10,300	.4055	J
KTIP1032HPM	10,320	.4063	J
KTIP1040HPM	10,400	.4094	J
KTIP1049HPM	10,490	.4130	J
KTIP1050HPM	10,500	.4134	K
KTIP1060HPM	10,600	.4173	K
KTIP1070HPM	10,700	.4213	K
KTIP1072HPM	10,716	.4219	K
KTIP1080HPM	10,800	.4252	K
KTIP1090HPM	10,900	.4291	K
KTIP1100HPM	11,000	.4331	L
KTIP1110HPM	11,100	.4370	L
KTIP1111HPM	11,113	.4375	L
KTIP1120HPM	11,200	.4409	L
KTIP1130HPM	11,300	.4449	L
KTIP1140HPM	11,400	.4488	L
KTIP1150HPM	11,500	.4528	M
KTIP1151HPM	11,509	.4531	M
KTIP1160HPM	11,600	.4567	M
KTIP1161HPM	11,610	.4571	M
KTIP1170HPM	11,700	.4606	M
KTIP1180HPM	11,800	.4646	M
KTIP1190HPM	11,900	.4685	M

(continued)

(KenTIP inserts • HP KCP15™ — continued)



KCP15	D1 mm	D1 in	seat size
KTIP1191HPM	11,908	.4688	M
KTIP1200HPM	12,000	.4724	N
KTIP1210HPM	12,100	.4764	N
KTIP1220HPM	12,200	.4803	N
KTIP1230HPM	12,304	.4844	N
KTIP1240HPM	12,400	.4882	N
KTIP1247HPM	12,474	.4911	N
KTIP1250HPM	12,500	.4921	O
KTIP1260HPM	12,600	.4961	O
KTIP1270HPM	12,700	.5000	O
KTIP1280HPM	12,800	.5039	O
KTIP1290HPM	12,903	.5080	O
KTIP1300HPM	13,000	.5118	P
KTIP1310HPM	13,096	.5156	P
KTIP1320HPM	13,200	.5197	P
KTIP1328HPM	13,280	.5228	P
KTIP1330HPM	13,300	.5236	P
KTIP1338HPM	13,380	.5268	P
KTIP1340HPM	13,400	.5276	P
KTIP1349HPM	13,494	.5313	P
KTIP1350HPM	13,500	.5315	Q
KTIP1360HPM	13,600	.5354	Q
KTIP1370HPM	13,700	.5394	Q
KTIP1380HPM	13,800	.5433	Q
KTIP1389HPM	13,891	.5469	Q
KTIP1390HPM	13,896	.5471	Q
KTIP1394HPM	13,940	.5488	Q
KTIP1400HPM	14,000	.5512	R
KTIP1410HPM	14,100	.5551	R
KTIP1420HPM	14,200	.5591	R
KTIP1429HPM	14,288	.5625	R
KTIP1430HPM	14,300	.5630	R
KTIP1440HPM	14,400	.5669	R
KTIP1450HPM	14,500	.5709	S
KTIP1460HPM	14,600	.5748	S
KTIP1467HPM	14,666	.5774	S
KTIP1468HPM	14,684	.5781	S
KTIP1470HPM	14,700	.5787	S
KTIP1480HPM	14,800	.5827	S
KTIP1490HPM	14,900	.5866	S
KTIP1500HPM	15,000	.5906	T
KTIP1508HPM	15,083	.5938	T
KTIP1510HPM	15,100	.5945	T
KTIP1520HPM	15,200	.5984	T
KTIP1530HPM	15,300	.6024	T
KTIP1538HPM	15,380	.6055	T
KTIP1540HPM	15,400	.6063	T
KTIP1548HPM	15,479	.6094	T
KTIP1550HPM	15,500	.6102	T
KTIP1560HPM	15,600	.6142	T
KTIP1570HPM	15,700	.6181	T
KTIP1580HPM	15,800	.6220	T

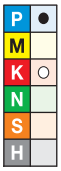


● first choice
○ alternate choice

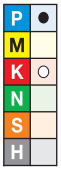
KCP15	D1 mm	D1 in	seat size
KTIP1588HPM	15,875	.6250	T
KTIP1600HPM	16,000	.6299	U
KTIP1603HPM	16,027	.6310	U
KTIP1608HPM	16,078	.6330	U
KTIP1610HPM	16,100	.6339	U
KTIP1620HPM	16,200	.6378	U
KTIP1627HPM	16,271	.6406	U
KTIP1630HPM	16,300	.6417	U
KTIP1640HPM	16,400	.6457	U
KTIP1650HPM	16,500	.6496	U
KTIP1660HPM	16,600	.6535	U
KTIP1667HPM	16,670	.6563	U
KTIP1670HPM	16,700	.6575	U
KTIP1680HPM	16,800	.6614	U
KTIP1690HPM	16,900	.6654	U
KTIP1700HPM	17,000	.6693	V
KTIP1707HPM	17,066	.6719	V
KTIP1710HPM	17,100	.6732	V
KTIP1720HPM	17,200	.6772	V
KTIP1730HPM	17,300	.6811	V
KTIP1740HPM	17,400	.6850	V
KTIP1748HPM	17,463	.6875	V
KTIP1750HPM	17,500	.6890	V
KTIP1760HPM	17,600	.6929	V
KTIP1770HPM	17,700	.6969	V
KTIP1780HPM	17,800	.7008	V
KTIP1786HPM	17,859	.7031	V
KTIP1790HPM	17,900	.7047	V
KTIP1800HPM	18,000	.7087	W
KTIP1810HPM	18,100	.7126	W
KTIP1820HPM	18,200	.7165	W
KTIP1826HPM	18,258	.7188	W
KTIP1830HPM	18,300	.7205	W
KTIP1840HPM	18,400	.7244	W
KTIP1850HPM	18,500	.7283	W
KTIP1860HPM	18,600	.7323	W
KTIP1865HPM	18,654	.7344	W
KTIP1870HPM	18,700	.7362	W
KTIP1880HPM	18,800	.7402	W
KTIP1890HPM	18,900	.7441	W
KTIP1900HPM	19,000	.7480	X
KTIP1905HPM	19,050	.7500	X
KTIP1910HPM	19,100	.7520	X
KTIP1920HPM	19,200	.7559	X
KTIP1923HPM	19,228	.7570	X
KTIP1925HPM	19,253	.7580	X
KTIP1930HPM	19,300	.7598	X
KTIP1935HPM	19,350	.7620	X
KTIP1940HPM	19,400	.7638	X
KTIP1946HPM	19,446	.7656	X
KTIP1950HPM	19,500	.7677	X
KTIP1960HPM	19,600	.7717	X

(continued)

(KenTIP inserts • HP KCP15™ — continued)



KCP15	D1 mm	D1 in	seat size
KTIP1970HPM	19,700	.7756	X
KTIP1980HPM	19,800	.7795	X
KTIP1984HPM	19,844	.7813	X
KTIP1990HPM	19,900	.7835	X
KTIP2000HPM	20,000	.7874	Y
KTIP2010HPM	20,100	.7913	Y
KTIP2020HPM	20,200	.7953	Y
KTIP2024HPM	20,241	.7969	Y
KTIP2030HPM	20,300	.7992	Y
KTIP2050HPM	20,500	.8071	Y
KTIP2060HPM	20,600	.8110	Y
KTIP2064HPM	20,638	.8125	Y
KTIP2070HPM	20,700	.8150	Y
KTIP2080HPM	20,800	.8189	Y
KTIP2090HPM	20,900	.8228	Y
KTIP2099HPM	20,990	.8264	Y
KTIP2100HPM	21,000	.8268	Z
KTIP2110HPM	21,100	.8307	Z
KTIP2143HPM	21,432	.8438	Z
KTIP2150HPM	21,500	.8465	Z
KTIP2200HPM	22,000	.8661	ZA
KTIP2223HPM	22,225	.8750	ZA
KTIP2250HPM	22,500	.8858	ZA
KTIP2280HPM	22,800	.8976	ZA



● first choice
○ alternate choice

KCP15	D1 mm	D1 in	seat size
KTIP2300HPM	23,000	.9055	ZB
KTIP2350HPM	23,500	.9252	ZB
KTIP2381HPM	23,813	.9375	ZB
KTIP2400HPM	24,000	.9449	ZC
KTIP2450HPM	24,500	.9646	ZC
KTIP2461HPM	24,608	.9688	ZC
KTIP2500HPM	25,000	.9843	ZD
KTIP2540HPM	25,400	1.0000	ZD
KTIP2550HPM	25,500	1.0039	ZD
KTIP2567HPM	25,679	1.0110	ZD
KTIP2581HPM	25,806	1.0160	ZD
KTIP2599HPM	25,990	1.0232	ZD
KTIP2600HPM	26,000	1.0236	ZE
KTIP2619HPM	26,187	1.0310	ZE
KTIP2650HPM	26,500	1.0433	ZE
KTIP2659HPM	26,590	1.0469	ZE
KTIP2700HPM	27,000	1.0630	ZE
KTIP2750HPM	27,500	1.0827	ZE
KTIP2778HPM	27,780	1.0938	ZE
KTIP2799HPM	27,990	1.1020	ZE

KenTIP HP Geometry

Tolerance

D1 metric	tolerance k8
8–10	0,000/+0,022
>10–17	0,000/+0,027
>17–18	0,000/+0,027
>18–28	0,000/+0,033

KenTIP HP Geometry

Tolerance

D1 inch	tolerance k8
.3125–.3906	.000/+.0009
>.3906–.6250	.000/+.0011
>.6692–.7090	.000/+.0010
>.7090–.8228	.000/+.0013

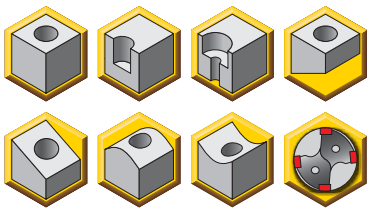
Modular Drill Carbide Insert Blades • KenTIP™ • HP Geometry • Grade KCP15™ • Through Coolant • Metric

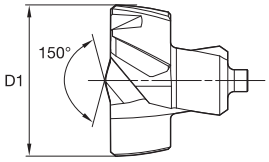
Material Group		Cutting Speed — vc Range — m/min			Metric								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0	24,0	28,0
P	1	90	**130**	180	mm/r	0,12–0,21	0,14–0,26	0,15–0,33	0,18–0,41	0,20–0,47	0,26–0,50	0,27–0,51	0,30–0,54
	2	110	**150**	190	mm/r	0,12–0,25	0,14–0,30	0,15–0,35	0,18–0,38	0,20–0,47	0,26–0,50	0,27–0,51	0,30–0,54
	3	50	**80**	110	mm/r	0,12–0,29	0,13–0,37	0,17–0,39	0,22–0,48	0,24–0,48	0,32–0,54	0,32–0,54	0,35–0,56
	4	50	**80**	110	mm/r	0,12–0,29	0,13–0,37	0,17–0,39	0,18–0,48	0,19–0,48	0,24–0,48	0,35–0,46	0,27–0,46
K	1	60	**100**	180	mm/r	0,16–0,30	0,17–0,34	0,18–0,37	0,22–0,44	0,26–0,50	0,33–0,62	0,35–0,65	0,40-0,70
	2	60	**80**	90	mm/r	0,16–0,30	0,17–0,32	0,18–0,35	0,22–0,43	0,26–0,50	0,33–0,62	0,35–0,65	0,40–0,70
	3	40	**70**	90	mm/r	0,17–0,32	0,18–0,35	0,19–0,38	0,21–0,43	0,22–0,46	0,24–0,50	0,25–0,51	0,40-0,70

Modular Drill Carbide Insert Blades • KenTIP • HP Geometry • Grade KCP15 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		.315	.394	.472	.551	.630	.787	.945	1.102
P	1	295	**425**	590	IPR	.005–.008	.006–.010	.006–.013	.007–.016	.008–.019	.010–.020	.011–.020	.012–.021
	2	360	**490**	625	IPR	.005–.010	.006–.012	.006–.014	.007–.015	.008–.019	.010–.020	.011–.020	.012–.021
	3	165	**260**	360	IPR	.005–.011	.005–.015	.007–.015	.009–.019	.009–.019	.013–.021	.013–.021	.014–.022
	4	165	**260**	360	IPR	.005–.011	.005–.015	.007–.015	.007–.019	.007–.019	.009–.019	.014–.018	.011–.018
K	1	195	**330**	590	IPR	.006–.012	.007–.013	.007–.015	.009–.017	.010–.020	.013–.024	.014–.026	.016–.028
	2	195	**260**	295	IPR	.006–.012	.007–.013	.007–.014	.009–.017	.010–.020	.013–.024	.014–.026	.016–.028
	3	130	**230**	295	IPR	.007–.013	.007–.014	.007–.015	.008–.017	.009–.018	.009–.020	.010–.020	.016–.028

- KenTIP FEG flat-bottom inserts create 180° flat holes — only a small cavity remains in the center of the hole ground. KenTIP offers easy-to-change disposable inserts and low cutting forces for your flat-bottom applications.
- Whether it is a blind hole, a through hole, or if you need to countersink, these inserts are focused on versatility and will support you in many essential drilling applications.
- KenTIP FEG inserts feature a small centering point as well as double margin lands for improved guidance and hole straightness. A corner chamfer serves to reduce bur formation and to improve tool life.
- KCPM45™ combines a very tough, fine grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Use KenTIP FEG KCPM45 cutting edges as an effective alternative in cast iron and stainless steel.







KenTIP Inserts • FEG (Flat Bottom)

P ●
M ○
K ○
N
S
H

● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KTIP0794FEGM	7,938	.3125	F
KTIP0800FEGM	8,000	.3150	F
KTIP0850FEGM	8,500	.3346	G
KTIP0852FEGM	8,520	.3354	G
KTIP0900FEGM	9,000	.3543	H
KTIP0913FEGM	9,130	.3594	H
KTIP0950FEGM	9,500	.3740	I
KTIP1000FEGM	10,000	.3937	J
KTIP1010FEGM	10,100	.3976	J
KTIP1050FEGM	10,500	.4134	K
KTIP1080FEGM	10,800	.4252	K
KTIP1100FEGM	11,000	.4331	L
KTIP1150FEGM	11,500	.4528	M
KTIP1170FEGM	11,700	.4606	M
KTIP1200FEGM	12,000	.4724	N
KTIP1250FEGM	12,500	.4921	O
KTIP1270FEGM	12,700	.5000	O
KTIP1300FEGM	13,000	.5118	P
KTIP1350FEGM	13,500	.5315	Q
KTIP1400FEGM	14,000	.5512	R

KCPM45	D1 mm	D1 in	seat size
KTIP1450FEGM	14,500	.5709	S
KTIP1490FEGM	14,900	.5866	S
KTIP1500FEGM	15,000	.5906	T
KTIP1550FEGM	15,500	.6102	T
KTIP1595FEGM	15,950	.6280	T
KTIP1600FEGM	16,000	.6299	U
KTIP1650FEGM	16,500	.6496	U
KTIP1700FEGM	17,000	.6693	V
KTIP1750FEGM	17,500	.6890	V
KTIP1770FEGM	17,700	.6969	V
KTIP1800FEGM	18,000	.7087	W
KTIP1850FEGM	18,500	.7283	W
KTIP1900FEGM	19,000	.7480	X
KTIP1905FEGM	19,050	.7500	X
KTIP1950FEGM	19,500	.7677	X
KTIP2000FEGM	20,000	.7874	Y

KenTIP FEG Geometry Tolerance

D1 metric	tolerance s7
8–10	0,023/+0,038
>10–18	0,028/+0,046
>18–28	0,035/+0,056

KenTIP FEG Geometry Tolerance

D1 Inch	tolerance s7
.3125-.3906	.0009/+.0015
>.3906-.7090	.0011/+.0018
>.7090-.8228	.0014/+.0022

Modular Drill Carbide Insert Blades • KenTIP™ • FEG Geometry • Grade KCPM45™ • Through Coolant • Metric

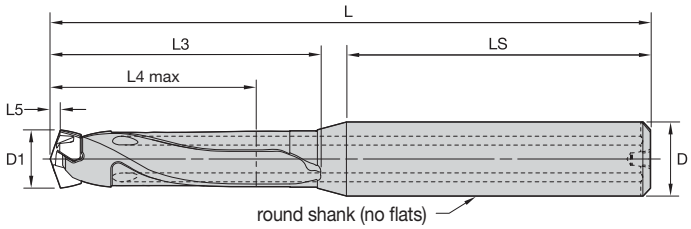
Material Group		Cutting Speed — vc Range — m/min			Metric								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		8,0	10,0	12,0	14,0	16,0	20,0	24,0	28,0
P	1	110	**140**	170	mm/r	0,14–0,23	0,14–0,23	0,14–0,23	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,23–0,38
	2	100	**120**	140	mm/r	0,17–0,23	0,17–0,23	0,17–0,23	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,29–0,38
	3	80	**100**	120	mm/r	0,14–0,20	0,14–0,20	0,14–0,20	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,23–0,34
	4	70	**90**	110	mm/r	0,11–0,20	0,11–0,20	0,11–0,20	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,18–0,34
M	1	40	**60**	80	mm/r	0,09–0,14	0,09–0,14	0,09–0,14	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,16–0,25
	2	35	**55**	70	mm/r	0,09–0,14	0,09–0,14	0,09–0,14	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,16–0,25
K	1	90	**135**	175	mm/r	0,18–0,24	0,18–0,24	0,18–0,24	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,28–0,37
	2	80	**120**	140	mm/r	0,18–0,24	0,18–0,24	0,18–0,24	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,28–0,37
	3	70	**110**	125	mm/r	0,15–0,24	0,15–0,24	0,15–0,24	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,23–0,37

Modular Drill Carbide Insert Blades • KenTIP • FEG Geometry • Grade KCPM45 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch								
					Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		0.315	0.394	0.472	0.551	0.630	0.787	0.945	1.102
P	1	360	**460**	560	IPR	.006–.009	.006–.009	.006–.009	.006–.009	.007–.010	.007–.011	.009–.015	.009–.015
	2	330	**390**	460	IPR	.007–.009	.007–.009	.007–.009	.007–.009	.007–.010	.009–.011	.011–.015	.011–.015
	3	260	**330**	390	IPR	.006–.008	.006–.008	.006–.008	.006–.008	.006–.009	.007–.010	.009–.013	.009–.013
	4	230	**300**	360	IPR	.004–.008	.004–.008	.004–.008	.004–.008	.005–.009	.006–.010	.007–.013	.007–.013
M	1	130	**200**	260	IPR	.004–.006	.004–.006	.004–.006	.004–.006	.004–.007	.005–.008	.006–.010	.006–.010
	2	110	**180**	230	IPR	.004–.006	.004–.006	.004–.006	.004–.006	.004–.007	.005–.008	.006–.010	.006–.010
K	1	300	**440**	570	IPR	.007–.009	.007–.009	.007–.009	.007–.009	.008–.011	.009–.012	.011–.015	.011–.015
	2	260	**390**	460	IPR	.007–.009	.007–.009	.007–.009	.007–.009	.008–.011	.009–.012	.011–.015	.011–.015
	3	230	**360**	410	IPR	.006–.009	.006–.009	.006–.009	.006–.009	.007–.010	.008–.011	.009–.015	.009–.015

- Tool body shipped with insert wrench.





For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H44.

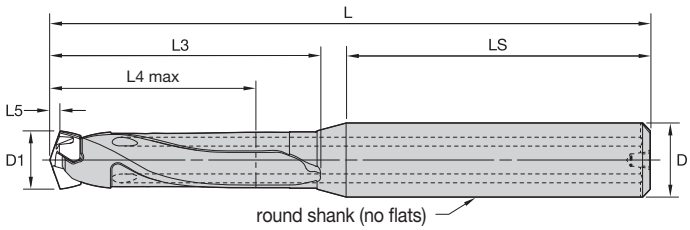


KenTIP Round Shank • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric

1.5 x D	3 x D	5 x D	8 x D	12 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP080R1SS10M	KTIP080R3SS10M	KTIP080R5SS10M	KTIP080R8SS10M	KTIP080R12SS10M	8,000	.3150	8,499	.3346	F	170.306
KTIP085R1SS10M	KTIP085R3SS10M	KTIP085R5SS10M	KTIP085R8SS10M	KTIP085R12SS10M	8,500	.3346	8,999	.3543	G	170.306
KTIP090R1SS10M	KTIP090R3SS10M	KTIP090R5SS10M	KTIP090R8SS10M	KTIP090R12SS10M	9,000	.3543	9,499	.3740	H	170.306
KTIP095R1SS10M	KTIP095R3SS10M	KTIP095R5SS10M	KTIP095R8SS10M	KTIP095R12SS10M	9,500	.3740	9,999	.3937	I	170.306
KTIP100R1SS12M	KTIP100R3SS12M	KTIP100R5SS12M	KTIP100R8SS12M	KTIP100R12SS12M	10,000	.3937	10,499	.4133	J	170.307
KTIP105R1SS12M	KTIP105R3SS12M	KTIP105R5SS12M	KTIP105R8SS12M	KTIP105R12SS12M	10,500	.4134	10,999	.4330	K	170.307
KTIP110R1SS12M	KTIP110R3SS12M	KTIP110R5SS12M	KTIP110R8SS12M	KTIP110R12SS12M	11,000	.4331	11,499	.4527	L	170.307
KTIP115R1SS12M	KTIP115R3SS12M	KTIP115R5SS12M	KTIP115R8SS12M	KTIP115R12SS12M	11,500	.4528	11,999	.4724	M	170.307
KTIP120R1SS14M	KTIP120R3SS14M	KTIP120R5SS14M	KTIP120R8SS14M	KTIP120R12SS14M	12,000	.4724	12,499	.4921	N	170.308
KTIP125R1SS14M	KTIP125R3SS14M	KTIP125R5SS14M	KTIP125R8SS14M	KTIP125R12SS14M	12,500	.4921	12,999	.5118	O	170.308
KTIP130R1SS14M	KTIP130R3SS14M	KTIP130R5SS14M	KTIP130R8SS14M	KTIP130R12SS14M	13,000	.5118	13,499	.5315	P	170.308
KTIP135R1SS14M	KTIP135R3SS14M	KTIP135R5SS14M	KTIP135R8SS14M	KTIP135R12SS14M	13,500	.5315	13,999	.5511	Q	170.308
KTIP140R1SS16M	KTIP140R3SS16M	KTIP140R5SS16M	KTIP140R8SS16M	KTIP140R12SS16M	14,000	.5512	14,499	.5708	R	170.309
KTIP145R1SS16M	KTIP145R3SS16M	KTIP145R5SS16M	KTIP145R8SS16M	KTIP145R12SS16M	14,500	.5709	14,999	.5905	S	170.309
KTIP150R1SS16M	KTIP150R3SS16M	KTIP150R5SS16M	KTIP150R8SS16M	KTIP150R12SS16M	15,000	.5906	15,999	.6299	T	170.309
KTIP160R1SS18M	KTIP160R3SS18M	KTIP160R5SS18M	KTIP160R8SS18M	KTIP160R12SS18M	16,000	.6299	16,999	.6693	U	170.309
KTIP170R1SS18M	KTIP170R3SS18M	KTIP170R5SS18M	KTIP170R8SS18M	KTIP170R12SS18M	17,000	.6693	17,999	.7086	V	170.314
KTIP180R1SS20M	KTIP180R3SS20M	KTIP180R5SS20M	KTIP180R8SS20M	KTIP180R12SS20M	18,000	.7087	18,999	.7480	W	170.314
KTIP190R1SS20M	KTIP190R3SS20M	KTIP190R5SS20M	KTIP190R8SS20M	KTIP190R12SS20M	19,000	.7480	19,999	.7874	X	170.314
KTIP200R1SS25M	KTIP200R3SS25M	KTIP200R5SS25M	KTIP200R8SS25M	KTIP200R12SS25M	20,000	.7874	20,999	.8267	Y	170.314
KTIP210R1SS25M	KTIP210R3SS25M	KTIP210R5SS25M	KTIP210R8SS25M	KTIP210R12SS25M	21,000	.8268	21,999	.8661	Z	170.314
KTIP220R1SS25M	KTIP220R3SS25M	KTIP220R5SS25M	KTIP220R8SS25M	KTIP220R12SS25M	22,000	.8661	22,999	.9055	ZA	170.314
KTIP230R1SS25M	KTIP230R3SS25M	KTIP230R5SS25M	KTIP230R8SS25M	KTIP230R12SS25M	23,000	.9055	23,999	.9448	ZB	170.314
KTIP240R1SS25M	KTIP240R3SS25M	KTIP240R5SS25M	KTIP240R8SS25M	KTIP240R12SS25M	24,000	.9449	24,999	.9842	ZC	170.314
KTIP250R1SS32M	KTIP250R3SS32M	KTIP250R5SS32M	KTIP250R8SS32M	KTIP250R12SS32M	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP260R1SS32M	KTIP260R3SS32M	KTIP260R5SS32M	KTIP260R8SS32M	KTIP260R12SS32M	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP270R1SS32M	KTIP270R3SS32M	KTIP270R5SS32M	KTIP270R8SS32M	KTIP270R12SS32M	27,000	1.0630	27,999	1.1023	ZE	170.314

- Tool body shipped with insert wrench.







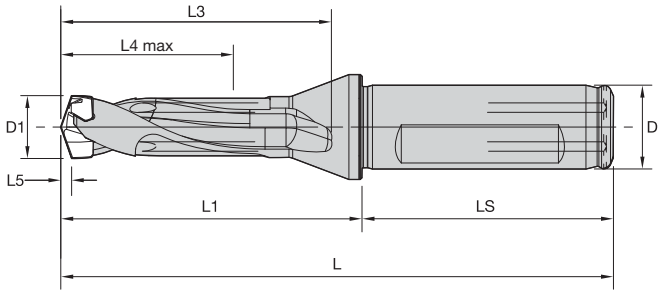
For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H45.

KenTIP Round Shank • 3 x D/5 x D/8 x D/12 x D • Inch

3 x D	5 x D	8 x D	12 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP0313R3SS038	KTIP0313R5SS038	KTIP0313R8SS038	KTIP0313R12SS038	7,940	.3125	8,499	.3346	F	170.306
KTIP0335R3SS038	KTIP0335R5SS038	KTIP0335R8SS038	KTIP0335R12SS038	8,500	.3346	8,999	.3543	G	170.306
KTIP0354R3SS038	KTIP0354R5SS038	KTIP0354R8SS038	KTIP0354R12SS038	9,000	.3543	9,499	.3740	H	170.306
KTIP0374R3SS038	KTIP0374R5SS038	KTIP0374R8SS038	KTIP0374R12SS038	9,500	.3740	9,999	.3937	I	170.306
KTIP0374R3SS044	KTIP0374R5SS044	KTIP0374R8SS044	KTIP0374R12SS044	9,500	.3740	9,999	.3937	I	170.306
KTIP0394R3SS044	KTIP0394R5SS044	KTIP0394R8SS044	KTIP0394R12SS044	10,000	.3937	10,499	.4133	J	170.307
KTIP0413R3SS044	KTIP0413R5SS044	KTIP0413R8SS044	KTIP0413R12SS044	10,500	.4134	10,999	.4330	K	170.307
KTIP0433R3SS044	KTIP0433R5SS044	KTIP0433R8SS044	KTIP0433R12SS044	11,000	.4331	11,499	.4527	L	170.307
KTIP0453R3SS050	KTIP0453R5SS050	KTIP0453R8SS050	KTIP0453R12SS050	11,500	.4528	11,999	.4724	M	170.307
KTIP0472R3SS050	KTIP0472R5SS050	KTIP0472R8SS050	KTIP0472R12SS050	12,000	.4724	12,499	.4921	N	170.308
KTIP0492R3SS050	KTIP0492R5SS050	KTIP0492R8SS050	KTIP0492R12SS050	12,500	.4921	12,999	.5118	O	170.308
KTIP0492R3SS056	KTIP0492R5SS056	KTIP0492R8SS056	KTIP0492R12SS056	12,500	.4921	12,999	.5118	O	170.308
KTIP0512R3SS056	KTIP0512R5SS056	KTIP0512R8SS056	KTIP0512R12SS056	13,000	.5118	13,499	.5315	P	170.308
KTIP0532R3SS056	KTIP0532R5SS056	KTIP0532R8SS056	KTIP0532R12SS056	13,500	.5315	13,999	.5511	Q	170.308
KTIP0551R3SS056	KTIP0551R5SS056	KTIP0551R8SS056	KTIP0551R12SS056	14,000	.5512	14,499	.5708	R	170.309
KTIP0571R3SS063	KTIP0571R5SS063	KTIP0571R8SS063	KTIP0571R12SS063	14,500	.5709	14,999	.5905	S	170.309
KTIP0591R3SS063	KTIP0591R5SS063	KTIP0591R8SS063	KTIP0591R12SS063	15,000	.5906	15,999	.6299	T	170.309
KTIP0630R3SS069	KTIP0630R5SS069	KTIP0630R8SS069	KTIP0630R12SS069	16,000	.6299	16,999	.6693	U	170.309
KTIP0669R3SS069	KTIP0669R5SS069	KTIP0669R8SS069	KTIP0669R12SS069	17,000	.6693	17,999	.7086	V	170.314
KTIP0709R3SS075	KTIP0709R5SS075	KTIP0709R8SS075	KTIP0709R12SS075	18,000	.7087	18,999	.7480	W	170.314
KTIP0748R3SS075	KTIP0748R5SS075	KTIP0748R8SS075	KTIP0748R12SS075	19,000	.7480	19,999	.7874	X	170.314
KTIP0787R3SS081	KTIP0787R5SS081	KTIP0787R8SS081	KTIP0787R12SS081	20,000	.7874	20,999	.8267	Y	170.314
KTIP0827R3SS088	KTIP0827R5SS088	KTIP0827R8SS088	KTIP0827R12SS088	21,000	.8268	21,999	.8661	Z	170.314
KTIP0866R3SS088	KTIP0866R5SS088	KTIP0866R8SS088	KTIP0866R12SS088	22,000	.8661	22,999	.9055	ZA	170.314
KTIP0906R3SS094	KTIP0906R5SS094	KTIP0906R8SS094	KTIP0906R12SS094	23,000	.9055	23,999	.9448	ZB	170.314
KTIP0945R3SS100	KTIP0945R5SS100	KTIP0945R8SS100	KTIP0945R12SS100	24,000	.9449	24,999	.9842	ZC	170.314
KTIP0984R3SS100	KTIP0984R5SS100	KTIP0984R8SS100	KTIP0984R12SS100	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP1024R3SS125	KTIP1024R5SS125	KTIP1024R8SS125	KTIP1024R12SS125	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP1063R3SS125	KTIP1063R5SS125	KTIP1063R8SS125	KTIP1063R12SS125	27,000	1.0630	27,999	1.1023	ZE	170.314

- Tool body shipped with insert wrench.





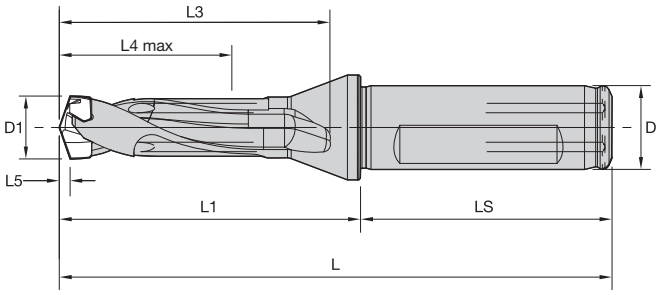
round shank (no flats)
For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H46.



KenTIP Flanged Shank • 1.5 x D/3 x D/5 x D/8 x D • Metric

1.5 x D	3 x D	5 x D	8 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP080R1SCF12M	KTIP080R3SCF12M	KTIP080R5SCF12M	KTIP080R8SCF12M	8,000	.3150	8,499	.3346	F	170.306
KTIP085R1SCF12M	KTIP085R3SCF12M	KTIP085R5SCF12M	KTIP085R8SCF12M	8,500	.3346	8,999	.3543	G	170.306
KTIP090R1SCF12M	KTIP090R3SCF12M	KTIP090R5SCF12M	KTIP090R8SCF12M	9,000	.3543	9,499	.3740	H	170.306
KTIP095R1SCF12M	KTIP095R3SCF12M	KTIP095R5SCF12M	KTIP095R8SCF12M	9,500	.3740	9,999	.3937	I	170.306
KTIP100R1SCF16M	KTIP100R3SCF16M	KTIP100R5SCF16M	KTIP100R8SCF16M	10,000	.3937	10,499	.4133	J	170.307
KTIP105R1SCF16M	KTIP105R3SCF16M	KTIP105R5SCF16M	KTIP105R8SCF16M	10,500	.4134	10,999	.4330	K	170.307
KTIP110R1SCF16M	KTIP110R3SCF16M	KTIP110R5SCF16M	KTIP110R8SCF16M	11,000	.4331	11,499	.4527	L	170.307
KTIP115R1SCF16M	KTIP115R3SCF16M	KTIP115R5SCF16M	KTIP115R8SCF16M	11,500	.4528	11,999	.4724	M	170.307
KTIP120R1SCF16M	KTIP120R3SCF16M	KTIP120R5SCF16M	KTIP120R8SCF16M	12,000	.4724	12,499	.4921	N	170.308
KTIP125R1SCF16M	KTIP125R3SCF16M	KTIP125R5SCF16M	KTIP125R8SCF16M	12,500	.4921	12,999	.5118	O	170.308
KTIP130R1SCF16M	KTIP130R3SCF16M	KTIP130R5SCF16M	KTIP130R8SCF16M	13,000	.5118	13,499	.5315	P	170.308
KTIP135R1SCF16M	KTIP135R3SCF16M	KTIP135R5SCF16M	KTIP135R8SCF16M	13,500	.5315	13,999	.5511	Q	170.308
KTIP140R1SCF16M	KTIP140R3SCF16M	KTIP140R5SCF16M	KTIP140R8SCF16M	14,000	.5512	14,499	.5708	R	170.309
KTIP145R1SCF16M	KTIP145R3SCF16M	KTIP145R5SCF16M	KTIP145R8SCF16M	14,500	.5709	14,999	.5905	S	170.309
KTIP150R1SCF20M	KTIP150R3SCF20M	KTIP150R5SCF20M	KTIP150R8SCF20M	15,000	.5906	15,999	.6299	T	170.309
KTIP160R1SCF20M	KTIP160R3SCF20M	KTIP160R5SCF20M	KTIP160R8SCF20M	16,000	.6299	16,999	.6693	U	170.309
KTIP170R1SCF20M	KTIP170R3SCF20M	KTIP170R5SCF20M	KTIP170R8SCF20M	17,000	.6693	17,999	.7086	V	170.314
KTIP180R1SCF25M	KTIP180R3SCF25M	KTIP180R5SCF25M	KTIP180R8SCF25M	18,000	.7087	18,999	.7480	W	170.314
KTIP190R1SCF25M	KTIP190R3SCF25M	KTIP190R5SCF25M	KTIP190R8SCF25M	19,000	.7480	19,999	.7874	X	170.314
KTIP200R1SCF25M	KTIP200R3SCF25M	KTIP200R5SCF25M	KTIP200R8SCF25M	20,000	.7874	20,999	.8267	Y	170.314
KTIP210R1SCF25M	KTIP210R3SCF25M	KTIP210R5SCF25M	KTIP210R8SCF25M	21,000	.8268	21,999	.8661	Z	170.314
KTIP220R1SCF25M	KTIP220R3SCF25M	KTIP220R5SCF25M	KTIP220R8SCF25M	22,000	.8661	22,999	.9055	ZA	170.314
KTIP230R1SCF25M	KTIP230R3SCF25M	KTIP230R5SCF25M	KTIP230R8SCF25M	23,000	.9055	23,999	.9448	ZB	170.314
KTIP240R1SCF25M	KTIP240R3SCF25M	KTIP240R5SCF25M	KTIP240R8SCF25M	24,000	.9449	24,999	.9842	ZC	170.314
KTIP250R1SCF25M	KTIP250R3SCF25M	KTIP250R5SCF25M	KTIP250R8SCF25M	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP260R1SCF25M	KTIP260R3SCF25M	KTIP260R5SCF25M	KTIP260R8SCF25M	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP270R1SCF25M	KTIP270R3SCF25M	KTIP270R5SCF25M	KTIP270R8SCF25M	27,000	1.0630	27,999	1.1023	ZE	170.314

- Tool body shipped with insert wrench.



round shank (no flats)
For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H47.



KenTIP Flanged Shank • 3 x D/5 x D/8 x D • Inch

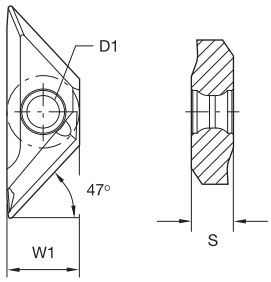
3 x D	5 x D	8 x D	D1 mm	D1 in	D1 max mm	D1 max in	seat size	KenTIP wrench
KTIP0313R3SCF050	KTIP0313R5SCF050	KTIP0313R8SCF050	7,940	.3125	8,499	.3346	F	170.306
KTIP0335R3SCF050	KTIP0335R5SCF050	KTIP0335R8SCF050	8,500	.3346	8,999	.3543	G	170.306
KTIP0354R3SCF050	KTIP0354R5SCF050	KTIP0354R8SCF050	9,000	.3543	9,499	.3740	H	170.306
KTIP0374R3SCF050	KTIP0374R5SCF050	KTIP0374R8SCF050	9,500	.3740	9,999	.3937	I	170.306
KTIP0394R3SCF063	KTIP0394R5SCF063	KTIP0394R8SCF063	10,000	.3937	10,499	.4133	J	170.307
KTIP0413R3SCF063	KTIP0413R5SCF063	KTIP0413R8SCF063	10,500	.4134	10,999	.4330	K	170.307
KTIP0433R3SCF063	KTIP0433R5SCF063	KTIP0433R8SCF063	11,000	.4331	11,499	.4527	L	170.307
KTIP0453R3SCF063	KTIP0453R5SCF063	KTIP0453R8SCF063	11,500	.4528	11,999	.4724	M	170.307
KTIP0472R3SCF063	KTIP0472R5SCF063	KTIP0472R8SCF063	12,000	.4724	12,499	.4921	N	170.308
KTIP0492R3SCF063	KTIP0492R5SCF063	KTIP0492R8SCF063	12,500	.4921	12,999	.5118	O	170.308
KTIP0512R3SCF063	KTIP0512R5SCF063	KTIP0512R8SCF063	13,000	.5118	13,499	.5315	P	170.308
KTIP0532R3SCF063	KTIP0532R5SCF063	KTIP0532R8SCF063	13,500	.5315	13,999	.5511	Q	170.308
KTIP0551R3SCF063	KTIP0551R5SCF063	KTIP0551R8SCF063	14,000	.5512	14,499	.5708	R	170.309
KTIP0571R3SCF063	KTIP0571R5SCF063	KTIP0571R8SCF063	14,500	.5709	14,999	.5905	S	170.309
KTIP0591R3SCF075	KTIP0591R5SCF075	KTIP0591R8SCF075	15,000	.5906	15,999	.6299	T	170.309
KTIP0630R3SCF075	KTIP0630R5SCF075	KTIP0630R8SCF075	16,000	.6299	16,999	.6693	U	170.309
KTIP0669R3SCF075	KTIP0669R5SCF075	KTIP0669R8SCF075	17,000	.6693	17,999	.7086	V	170.314
KTIP0709R3SCF075	KTIP0709R5SCF075	KTIP0709R8SCF075	18,000	.7087	18,999	.7480	W	170.314
KTIP0748R3SCF075	KTIP0748R5SCF075	KTIP0748R8SCF075	19,000	.7480	19,999	.7874	X	170.314
KTIP0787R3SCF100	KTIP0787R5SCF100	KTIP0787R8SCF100	20,000	.7874	20,999	.8267	Y	170.314
KTIP0827R3SCF100	KTIP0827R5SCF100	KTIP0827R8SCF100	21,000	.8268	21,999	.8661	Z	170.314
KTIP0866R3SCF100	KTIP0866R5SCF100	KTIP0866R8SCF100	22,000	.8661	22,999	.9055	ZA	170.314
KTIP0906R3SCF100	KTIP0906R5SCF100	KTIP0906R8SCF100	23,000	.9055	23,999	.9448	ZB	170.314
KTIP0945R3SCF100	KTIP0945R5SCF100	KTIP0945R8SCF100	24,000	.9449	24,999	.9842	ZC	170.314
KTIP0984R3SCF100	KTIP0984R5SCF100	KTIP0984R8SCF100	25,000	.9843	25,999	1.0236	ZD	170.314
KTIP1024R3SCF100	KTIP1024R5SCF100	KTIP1024R8SCF100	26,000	1.0236	26,999	1.0630	ZE	170.314
KTIP1063R3SCF100	KTIP1063R5SCF100	KTIP1063R8SCF100	27,000	1.0630	27,999	1.1023	ZE	170.314

- Drilling and chamfering in one operation using the KenTIP drilling system.
- Low setup time — no height adjustment required.
- Use standard chamfering inserts with our universal -GD geometry style.
- Selection of two grade choices:
  - — KC7215 offering the highest level of wear resistance for higher cutting speeds in stable conditions.
  - — KC7015 for medium cutting speeds and normal conditions.
- Tool bodies with chamfer pockets available as custom solutions.

● first choice
○ alternate choice

P	○	●
M	○	○
K	○	●
N	●	○
S	○	●
H		





FAS-GD • Chamfering Insert

	W1		D1		S		KC7215	KC7015
catalog number	mm	in	mm	in	mm	in		
FAS100302GD	6,35	.250	2,85	.112	3,48	.137	●	●



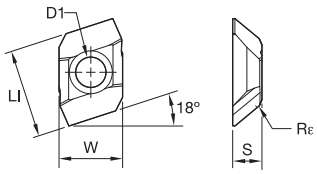
Made-to-order KenTIP holders with chamfering step using standard FAS inserts. Also available for KenTIP FS upon request.

- Very small incremental diameter changes for step drills.
- Best reliability and hole quality.
- Improved chip control and very low tendency for chattering.
- High tool life per edge; 2x indexable.
- Can be used with KenTIP and KSEM™ as well as Drill Fix™ indexable made-to-order step drills.
- CFM inserts are perfectly suited for usage on made-to-order indexable countersinking tools.

● first choice
○ alternate choice

P		●
M		○
K		○
N		●
S		●
H		





CounterFix Micro • Tangential Chamfer and Counterboring Inserts

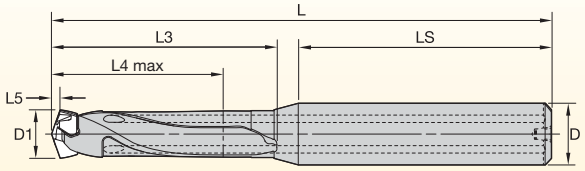
	D1		LI		W		S		Rε		KCU40
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
CFM0402R00RHP	2,05	0.081	6,000	0.24	4,25	.167	1,98	.078	0,20	.007	●
CFM0402R30RHP	2,05	0.081	6,000	0.24	4,25	.167	1,98	.078	0,20	.009	●
CFM0402R45RHP	2,05	0.081	6,000	0.24	4,25	.167	1,98	.078	0,20	.007	●



Made-to-order KenTIP holder with two very small counterboring steps using CounterFix Micro Inserts. Also available for KenTIP FS upon request.

Modular Drills • Dimension Tables

Dimensions for KenTIP™ Modular Drills • Round Shank • Metric



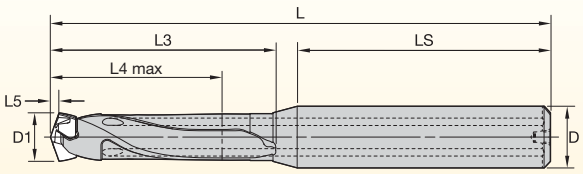


D1 mm	D1 max	seat	L5	LS	round D	1.5 x D L	1.5 x D L3	1.5 x D L4 max	3 x D L	3 x D L3	3 x D L4 max	5 x D L	5 x D L3	5 x D L4 max	8 x D L	8 x D L3	8 x D L4 max	12 x D L	12 x D L3	12 x D L4 max	wrench
8,000	8,499	F	1,4	41	10	67	23	13	79	35	26	97	53	43	123	79	68	157	113	102	**170.306**
8,500	8,999	G	1,5	41	10	68	24	14	81	37	27	100	56	45	127	83	72	163	119	108	**170.306**
9,000	9,499	H	1,6	41	10	69	25	14	83	39	29	103	58	48	132	88	76	170	126	114	**170.306**
9,500	9,999	I	1,6	41	10	70	26	15	85	41	30	107	63	50	137	92	80	177	133	120	**170.306**
10,000	10,499	J	1,7	46	12	77	28	16	92	43	32	115	66	53	147	98	84	189	140	126	**170.307**
10,500	10,999	K	1,8	46	12	78	29	17	94	45	33	118	68	55	151	101	88	195	146	132	**170.307**
11,000	11,499	L	1,9	46	12	79	30	17	96	47	35	121	71	58	156	105	92	202	153	138	**170.307**
11,500	11,999	M	2,0	46	12	80	31	18	98	49	36	124	75	60	160	110	96	208	159	144	**170.307**
12,000	12,499	N	2,1	46	14	83	34	19	101	52	38	127	78	63	165	116	100	215	166	150	**170.308**
12,500	12,999	O	2,2	46	14	84	35	20	103	54	39	130	81	65	169	120	104	221	172	156	**170.308**
13,000	13,499	P	2,2	46	14	85	36	20	105	56	41	133	84	68	174	125	108	228	179	162	**170.308**
13,500	13,999	Q	2,3	46	14	86	37	21	107	58	42	137	88	70	179	130	112	235	186	168	**170.308**
14,000	14,499	R	2,4	49	16	91	39	22	112	60	44	143	91	73	187	135	116	245	193	174	**170.309**
14,500	14,999	S	2,5	49	16	92	40	23	114	62	45	146	94	75	191	139	120	251	199	180	**170.309**
15,000	15,999	T	2,6	49	16	94	42	24	118	66	48	152	100	80	200	148	128	264	212	192	**170.309**
16,000	16,999	U	2,8	49	18	97	45	26	122	70	51	158	106	85	209	157	136	277	225	204	**170.309**
17,000	17,999	V	2,9	49	18	100	48	27	127	75	54	165	113	90	219	167	144	291	239	216	**170.314**
18,000	18,999	W	3,1	51	20	105	51	29	133	79	57	173	119	95	230	176	152	306	252	228	**170.314**
19,000	19,999	X	3,3	51	20	107	53	30	137	83	60	179	125	100	239	185	160	319	265	240	**170.314**
20,000	20,999	Y	3,5	57	25	116	56	32	147	87	63	191	131	105	254	200	168	344	284	252	**170.314**
21,000	21,999	Z	3,6	57	25	118	58	33	151	91	66	198	138	110	264	204	176	352	292	264	**170.314**
22,000	22,999	ZA	3,8	57	25	122	62	35	156	96	69	204	144	115	273	213	184	365	305	276	**170.314**
23,000	23,999	ZB	4,0	57	25	124	64	36	160	100	72	210	150	120	282	222	192	378	318	288	**170.314**
24,000	24,999	ZC	4,1	57	25	127	67	38	164	104	75	216	156	125	291	231	200	391	331	300	**170.314**
25,000	25,999	ZD	4,3	61	32	133	69	39	172	108	78	227	163	130	305	241	208	409	345	312	**170.314**
26,000	26,999	ZE	4,5	61	32	138	74	41	178	114	81	232	168	135	315	251	216	423	359	324	**170.314**
27,000	27,999	ZE	4,7	61	32	139	75	42	181	117	84	239	175	140	323	259	224	435	371	336	**170.314**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KenTIP™ Modular Drills • Round Shank • Inch





D1 mm	D1 max	seat	L5	LS	round D	3 x D L	3 x D L3	3 x D L4 max	5 x D L	5 x D L3	5 x D L4 max	8 x D L	8 x D L3	8 x D L4 max	12 x D L	12 x D L3	12 x D L4 max	wrench
.3125	.3346	F	.055	1.59	.3750	3.13	1.29	1.00	3.88	2.05	1.67	4.88	3.17	2.67	6.25	4.54	4.02	**170.306**
.3346	.3543	G	.059	1.59	.3750	3.25	1.38	1.06	4.00	2.16	1.77	5.13	3.42	2.83	6.50	4.79	4.25	**170.306**
.3543	.3740	H	.063	1.59	.3750	3.38	1.46	1.12	4.13	2.28	1.87	5.25	3.54	2.99	6.75	5.04	4.49	**170.306**
.3740	.3937	I	.063	1.59	.3750	3.38	1.54	1.18	4.25	2.44	1.97	5.38	3.67	3.15	7.13	5.34	4.72	**170.306**
.3740	.3937	I	.063	1.67	.4375	3.38	1.54	1.18	4.38	2.44	1.97	5.38	3.59	3.15	7.00	5.29	4.72	**170.306**
.3937	.4133	J	.067	1.67	.4375	3.63	1.63	1.24	4.63	2.55	2.07	5.75	3.96	3.30	7.37	5.59	4.96	**170.307**
.4134	.4330	K	.071	1.67	.4375	3.75	1.71	1.30	4.75	2.67	2.16	6.00	4.21	3.46	7.63	5.84	5.20	**170.307**
.4331	.4527	L	.075	1.67	.4375	3.88	1.79	1.36	4.88	2.78	2.26	6.25	4.46	3.62	7.87	6.09	5.43	**170.307**
.4528	.4724	M	.079	1.79	.5000	3.88	1.87	1.42	5.00	2.90	2.36	6.50	4.59	3.78	8.25	6.34	5.67	**170.307**
.4724	.4921	N	.083	1.79	.5000	4.00	1.95	1.48	5.00	3.01	2.46	6.75	4.84	3.94	8.50	6.59	5.91	**170.308**
.4921	.5118	O	.087	1.79	.5000	4.13	2.04	1.54	5.13	3.13	2.56	7.00	5.09	4.09	8.75	6.84	6.14	**170.308**
.4921	.5118	O	.087	1.79	.5625	4.13	2.04	1.54	5.13	3.13	2.56	7.00	5.09	4.09	8.75	6.84	6.14	**170.308**
.5118	.5315	P	.087	1.79	.5625	4.25	2.11	1.60	5.25	3.24	2.66	7.13	5.22	4.25	9.00	7.09	6.38	**170.308**
.5315	.5511	Q	.091	1.79	.5625	4.25	2.19	1.65	5.50	3.39	2.75	7.25	5.34	4.41	9.25	7.34	6.61	**170.308**
.5512	.5708	R	.095	1.79	.5625	4.50	2.27	1.71	5.75	3.50	2.85	7.38	5.47	4.57	9.50	7.59	6.85	**170.309**
.5709	.5905	S	.098	1.91	.6250	4.50	2.34	1.77	5.75	3.61	2.95	7.50	5.47	4.72	9.87	7.85	7.09	**170.309**
.5906	.6299	T	.102	1.91	.6250	4.75	2.43	1.89	6.00	3.76	3.15	7.75	5.72	5.04	1.37	8.35	7.56	**170.309**
.6299	.6693	U	.110	1.91	.6875	4.88	2.59	2.01	6.25	4.06	3.34	8.00	5.97	5.35	11.00	8.97	8.03	**170.309**
.6693	.7086	V	.116	1.91	.6875	5.00	2.99	2.24	6.50	4.47	3.66	8.75	6.72	5.79	11.50	9.47	8.50	**170.314**
.7087	.7480	W	.122	2.00	.7500	5.25	3.13	2.25	6.88	4.76	3.86	9.25	7.13	6.11	12.13	1.01	8.98	**170.314**
.7480	.7874	X	.129	2.00	.7500	5.50	3.38	2.49	7.13	5.01	4.07	9.63	7.51	6.43	12.63	1.51	9.45	**170.314**
.7874	.8267	Y	.136	2.00	.8125	5.75	3.63	2.62	7.50	5.38	4.27	1.00	7.88	6.75	13.13	11.01	9.92	**170.314**
.8268	.8661	Z	.142	2.07	.8750	5.88	3.69	2.60	7.63	5.44	4.33	1.25	8.06	6.93	13.75	11.56	1.39	**170.314**
.8661	.9055	ZA	.150	2.07	.8750	6.00	3.81	2.72	7.88	5.69	4.53	1.63	8.44	7.24	14.25	12.06	1.87	**170.314**
.9055	.9448	ZB	.158	2.15	.9375	6.25	3.98	2.83	8.25	5.98	4.72	11.13	8.86	7.56	14.87	12.61	11.34	**170.314**
.9449	.9842	ZC	.161	3.00	1.0000	7.25	4.13	2.95	9.38	6.26	4.92	12.25	9.13	7.87	16.25	13.13	11.81	**170.314**
.9843	1.0236	ZD	.169	3.00	1.0000	7.38	4.26	3.07	9.63	6.51	5.12	12.63	9.51	8.19	16.75	13.63	12.28	**170.314**
1.0236	1.0630	ZE	.176	3.25	1.2500	7.86	4.49	3.19	9.99	6.62	5.32	13.25	9.88	8.50	17.50	14.13	12.76	**170.314**
1.0630	1.1023	ZE	.185	3.25	1.2500	7.98	4.61	3.31	1.18	6.81	5.51	13.57	1.20	8.82	18.00	14.63	13.23	**170.314**

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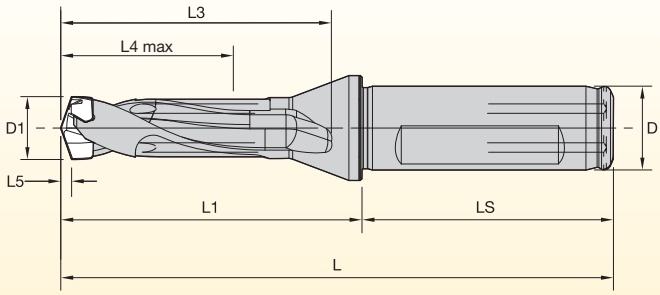
Modular Drills • Dimension Tables *(continued)*

Dimensions for KenTIP™ Modular Drills • Flanged Shank • Metric



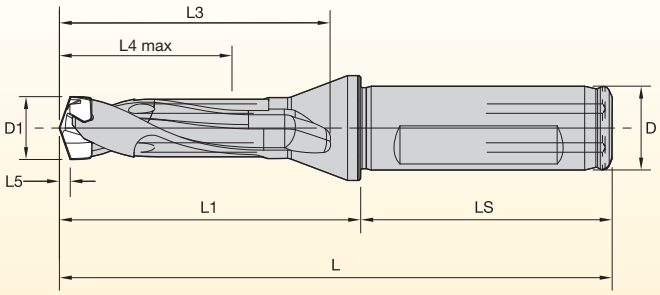


D1 mm	D1 max	seat	L5	LS	Flanged D	1.5 x D L	L3	L4 max	3 x D L	L3	L4 max	5 x D L	L3	L4 max	8 x D L	L3	L4 max	wrench
8,000	8,490	F	1,4	45	12	73	23	13	86	35	26	104	53	43	129	79	68	**170.306**
8,500	8,990	G	1,5	45	12	74	24	14	88	37	27	107	56	45	134	83	72	**170.306**
9,000	9,490	H	1,6	45	12	76	25	14	90	39	29	110	59	48	138	88	76	**170.306**
9,500	9,990	I	1,6	45	12	77	26	15	92	41	30	114	63	50	144	93	80	**170.306**
10,000	10,490	J	1,7	48	16	81	28	16	97	43	32	120	66	53	151	97	84	**170.307**
10,500	10,990	K	1,8	48	16	82	29	17	99	45	33	123	69	55	156	102	88	**170.307**
11,000	11,490	L	1,9	48	16	84	30	17	101	47	35	126	72	58	160	107	92	**170.307**
11,500	11,990	M	2,0	48	16	85	31	18	103	49	36	129	75	60	165	111	96	**170.307**
12,000	12,490	N	2,1	48	16	87	34	19	106	52	38	132	78	63	169	116	100	**170.308**
12,500	12,990	O	2,2	48	16	88	35	20	108	54	39	135	81	65	174	120	104	**170.308**
13,000	13,490	P	2,2	48	16	90	36	20	110	56	41	138	84	68	178	124	108	**170.308**
13,500	13,990	Q	2,3	48	16	91	37	21	112	58	42	142	88	70	184	130	112	**170.308**
14,000	14,490	R	2,4	48	16	92	39	22	114	60	44	145	91	73	188	134	116	**170.309**
14,500	14,990	S	2,5	48	16	93	40	23	116	62	45	148	94	75	193	139	120	**170.309**
15,000	15,990	T	2,6	50	20	98	42	24	122	66	48	156	100	80	204	148	128	**170.309**
16,000	16,990	U	2,8	50	20	100	45	26	126	70	51	162	106	85	213	157	136	**170.309**
17,000	17,990	V	2,9	50	20	104	48	27	131	75	54	169	113	90	223	167	144	**170.314**
18,000	18,990	W	3,1	56	25	112	51	29	141	79	57	181	119	95	238	176	152	**170.314**
19,000	19,990	X	3,3	56	25	115	53	30	144	83	60	187	125	100	247	185	160	**170.314**
20,000	20,990	Y	3,5	56	25	117	56	32	149	87	63	193	131	105	256	194	168	**170.314**
21,000	21,990	Z	3,6	56	25	120	58	33	153	91	66	200	138	110	266	204	176	**170.314**
22,000	22,990	ZA	3,8	56	25	123	62	35	158	96	69	206	144	115	275	213	184	**170.314**
23,000	23,990	ZB	4,0	56	25	126	64	36	162	100	72	212	150	120	284	222	192	**170.314**
24,000	24,990	ZC	4,1	56	25	128	67	38	166	104	75	218	156	125	293	231	200	**170.314**
25,000	25,990	ZD	4,3	56	25	131	69	39	170	108	78	225	163	130	303	241	208	**170.314**
26,000	26,990	ZE	4,5	56	25	135	74	41	176	114	81	230	168	135	313	251	216	**170.314**
27,000	27,990	ZE	4,7	56	25	137	75	42	179	117	84	237	175	140	321	259	224	**170.314**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KenTIP™ Modular Drills • Flanged Shank • Inch





D1 mm	D1 max	seat	L5	LS	Flanged D	3 x D L	3 x D L3	3 x D L4 max	5 x D L	5 x D L3	5 x D L4 max	8 x D L	8 x D L3	8 x D L4 max	wrench
.3125	.3343	F	.054	1.77	.5000	3.40	1.41	1.00	4.15	2.16	1.67	5.15	3.16	2.28	**170.306**
.3390	.3539	G	.059	1.77	.5000	3.52	1.53	1.06	4.27	2.28	1.77	5.27	3.28	2.83	**170.306**
.3580	.3736	H	.062	1.77	.5000	3.65	1.66	1.12	4.40	2.41	1.87	5.52	3.53	2.99	**170.306**
.3750	.3933	I	.065	1.77	.5000	3.65	1.66	1.18	4.52	2.53	1.97	5.77	3.78	3.15	**170.306**
.3946	.4130	J	.068	1.89	.6250	3.89	1.78	1.24	4.76	2.66	2.07	6.01	3.91	3.31	**170.307**
.4219	.4327	K	.073	1.89	.6250	3.89	1.78	1.30	4.89	2.78	2.17	6.14	4.03	3.46	**170.307**
.4375	.4524	L	.076	1.89	.6250	4.01	1.91	1.36	5.01	2.91	2.26	6.39	4.28	3.62	**170.307**
.4531	.4720	M	.078	1.89	.6250	4.14	2.03	1.42	5.14	3.03	2.36	6.51	4.41	3.78	**170.307**
.4844	.4917	N	.084	1.89	.6250	4.26	2.16	1.48	5.26	3.16	2.46	6.76	4.66	3.94	**170.308**
.5000	.5114	O	.086	1.89	.6250	4.26	2.16	1.54	5.39	3.28	2.56	6.89	4.78	4.09	**170.308**
.5156	.5311	P	.089	1.89	.6250	4.39	2.28	1.59	5.51	3.41	2.66	7.01	4.91	4.25	**170.308**
.5469	.5508	Q	.095	1.89	.6250	4.39	2.28	1.65	5.64	3.53	2.76	7.26	5.16	4.41	**170.308**
.5625	.5705	R	.097	1.89	.6250	4.51	2.41	1.71	5.76	3.66	2.85	7.51	5.41	4.57	**170.309**
.5774	.5902	S	.100	1.89	.6250	4.64	2.53	1.77	5.89	3.78	2.95	7.64	5.53	4.72	**170.309**
.5938	.6295	T	.102	1.97	.7500	4.84	2.66	1.89	6.22	4.03	3.15	8.09	5.91	5.04	**170.309**
.6310	.6689	U	.109	1.97	.7500	4.97	2.78	2.01	6.47	4.28	3.35	8.47	6.28	5.35	**170.309**
.6719	.7083	V	.116	1.97	.7500	5.22	3.03	2.13	6.72	4.53	3.54	8.84	6.66	5.67	**170.314**
.7188	.7476	W	.124	1.97	.7500	5.34	3.16	2.24	6.97	4.78	3.74	9.22	7.03	5.98	**170.314**
.7500	.7870	X	.129	1.97	.7500	5.47	3.28	2.36	7.22	5.03	3.94	9.47	7.28	6.30	**170.314**
.7969	.8264	Y	.137	2.20	1.0000	5.95	3.53	2.48	7.58	5.16	4.13	10.08	7.66	6.61	**170.314**
.8440	.8657	Z	.146	2.20	1.0000	6.08	3.66	2.60	7.95	5.53	4.33	10.45	8.03	6.93	**170.314**
.8750	.9051	ZA	.151	2.20	1.0000	6.20	3.78	2.72	8.20	5.78	4.53	10.83	8.41	7.24	**170.314**
.9375	.9445	ZB	.162	2.20	1.0000	6.45	4.03	2.83	8.33	5.91	4.72	11.20	8.78	7.56	**170.314**
.9690	.9839	ZC	.167	2.20	1.0000	6.58	4.16	2.95	8.58	6.16	4.92	11.58	9.16	7.87	**170.314**
.9744	1.0232	ZD	.172	2.20	1.0000	6.70	4.28	3.07	8.95	6.53	5.12	11.95	9.53	8.19	**170.314**
1.0240	1.0620	ZE	.176	2.20	1.0000	6.83	4.41	3.19	9.08	6.66	5.32	11.70	9.28	8.50	**170.314**
1.0630	1.1020	ZE	.184	2.20	1.0000	6.95	4.53	3.30	9.20	6.78	5.51	11.95	9.53	8.69	**170.314**

Mounting the KenTIP Inserts



1) Fix drill holder on arbor. For insert exchange, fix arbor on the machine or set on tool presetter.



2) Remove dust using air blast.



3) Put insert into drill holder (use gloves to protect your hands).



4) Turn lightly in a clockwise direction (use gloves to protect your hands).



5) Set the wrench properly.



6) Make sure the wrench fits with the insert slot (check size and alignment of wrench and insert slots to avoid injury).





7) Slowly turn the wrench in a clockwise direction.



8) Complete.

Cooling the KenTIP Drill



1) Internal coolant is recommended.



2) In case of external coolant, cutting depth must be 3 x D or less.

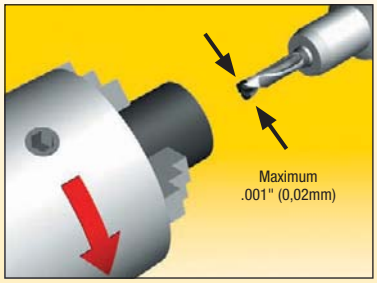
Only when using the 3 x D tool bodies



3) Dry cutting is not recommended. Limited applicability in cast iron materials, MQL strongly recommended.

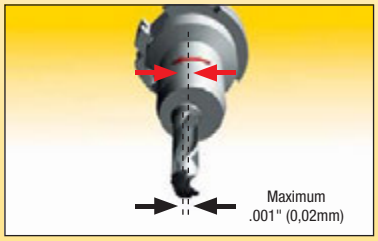
Usage Precautions
Core Deviation

1) For Turning Machines



Set deviation amount under 0,02mm between workpiece and drill.

2) For Machining Centers



Do not use any arbor with a damaged attachment surface.
Center of arbor deviation must be within 0,02mm.

A Natural Fit…

Tube Sheet Drilling with Kennametal



Our advanced drilling solutions provide the performance and reliability you need to succeed in your challenging business. We offer a complete holemaking range for working with tube sheets, support baffles, and many other components.

KSEM™ MODULAR DRILL SYSTEM

- Highly stable pocket seat holding replaceable carbide inserts for drill depth up to 10 x D and deeper*.
- Very high performance with the ability to create H10 fit holes in tube sheets in one pass.
- Application- and material-specific insert styles.
- All TEMA standard diameters in stock, with very high availability.



HPG P



HPL M



SPL M S

* Made-to-order holders easily available as made-to-order tools.

Find KSEM Modular Drills on pages H50–H97.

KGEM TUBE SHEET GROOVER

- Internal coolant for longer tool life and better chip formation.
- Covers TEMA standard sizes 19,25mm (.758") and above with circular interpolation.
- Productive solution for shallow or deep-hole applications on a wide range of machines.



Find KGEM Groovers on pages H98–H101.

Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

KSEM™ Modular Drill System

Primary Application

The KSEM™ modular drill system offers extended length and drilling diameters beyond the KenTIP™ modular drill system. The KSEM system enables very aggressive feed rates in many applications to enable very high productivity levels. It offers a very robust pocket for its exchangeable inserts to increase tool life for both steel holder and carbide tip. This makes the KSEM system a very economic and reliable system for drilling in the intermediate diameter range.

Hole depths of 10 x D and drilling diameters from 12,5–40mm (.4921–1.5748") are covered by our standard tooling range. Various grades are available for drilling applications in almost any materials.

Features and Benefits

HP Drill-Point styles

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.
- Application specific selection of geometries for unmatched performance.

Strong Pocket, Easy Insert Change

- Robust pocket design for increased insert and holder life.
- Four-wall pocket provides insert stability.
- Requires only a simple wrench for insert removal.

Regrindable Inserts

- All geometries except SPL can be reconditioned to improve tool economy.
- Quick and reliable regrinding services offered by Kennametal and our partners.

Tailored Grades

- KC7315™ grade TiAlN-based PVD multilayer coating for high cutting speeds, primarily in steel applications.
- KCPM45™ grade multilayer TiAlN coated, very tough carbide substrate. Improved chipping resistance in demanding machining conditions.
- KC7320™ grade AlTiN-based PVD coating for the demands of drilling stainless steels.
- KCMS35™ grade with high Al content TiAlN PVD coating specifically for M3 and S-type materials.
- KC7410™ grade contains multiple layers of PVD coating offering outstanding wear resistance for drilling cast irons.
- KC7135™ grade with thin TiCN-TiN PVD coating for universal usage in all materials.

NEW!



KSEM™ SPL inserts offer extraordinary drilling performance in stainless steels, super alloys, and other demanding environments.

NEW!



KSEM FEG inserts create blind holes, through holes, and countersinks. These inserts are focused on versatility and will support you in many essential drilling applications.



Drill Body Portfolio

- Standard 1, 3, 5, 7, and 10 x D tool bodies with round shanks (inch) and Whistle Notch shanks (metric) available.
- Flanged shanks with 2 flats and entry for external coolant supply in 1, 3, 5, and 8 x D.
- KSEM mountable chamfering ring with FAS carbide chamfer inserts.

Customization

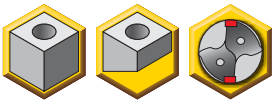
- Intermediate diameters available as semi-standards.
- Extensive step drill capabilities to support advanced applications and for one-shot counterboring and chamfering drills.
- Nearly all shank styles for toolholders available as semi-standards.
- Very high L x D ratios possible up to 25 x D and even higher (depending on drill diameter).

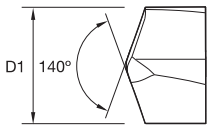
NEW!



Need to create very small diameter steps for chamfering and counterboring?
CFM inserts fit KSEM made-to-order step drills perfectly.
Find them in the KenTIP™ modular drill system section page H43.

- KSEM KC7315™ HP cutting edges enable high metal removal rates and superior tool life for steel applications.
- HP geometry offers a wide and strong HP-style chiseled edge that prevents material quenching in the center, enabling high feed rates. Sickle shaped, honed cutting edges provide excellent chip forming and tool life, even in long chipping materials.
- KC7315 is a fine-grain carbide with a TiAlN-based PVD multilayer coating. Its high wear resistance enables very high cutting speeds in stable conditions.
- KC7315 HP cutting edges are perfectly suited to drill alloyed and high-alloy steels.
- Use KC7315 HP cutting edges as an alternative to cast iron materials.

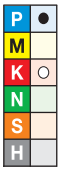






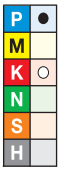
HP

KSEM Inserts • HP KC7315



● first choice
○ alternate choice

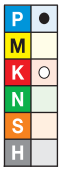
KC7315	D1 mm	D1 in	seat size
KSEM1250HPM	12,500	.4921	C
KSEM1270HPM	12,700	.5000	C
KSEM1280HPM	12,800	.5039	C
KSEM1300HPM	13,000	.5118	C
KSEM1310HPM	13,100	.5160	C
KSEM1320HPM	13,200	.5197	C
KSEM1350HPM	13,500	.5310	C
KSEM1370HPM	13,700	.5394	B
KSEM1380HPM	13,800	.5433	B
KSEM1389HPM	13,890	.5470	B
KSEM1400HPM	14,000	.5512	B
KSEM1410HPM	14,100	.5551	B
KSEM1420HPM	14,200	.5591	B
KSEM1429HPM	14,290	.5630	B
KSEM1440HPM	14,400	.5669	B
KSEM1450HPM	14,500	.5709	B
KSEM1468HPM	14,680	.5780	A
KSEM1480HPM	14,800	.5827	A
KSEM1500HPM	15,000	.5906	A
KSEM1508HPM	15,080	.5940	A
KSEM1530HPM	15,300	.6024	A
KSEM1550HPM	15,500	.6102	A
KSEM1560HPM	15,600	.6142	A
KSEM1570HPM	15,700	.6181	A
KSEM1580HPM	15,800	.6220	A
KSEM1588HPM	15,880	.6250	1
KSEM1600HPM	16,000	.6299	1
KSEM1609HPM	16,090	.6340	1
KSEM1620HPM	16,200	.6378	1
KSEM1627HPM	16,270	.6410	1
KSEM1650HPM	16,500	.6496	1
KSEM1667HPM	16,670	.6560	1
KSEM1700HPM	17,000	.6693	1
KSEM1707HPM	17,070	.6720	1
KSEM1746HPM	17,460	.6875	1
KSEM1750HPM	17,500	.6890	1



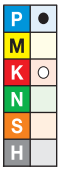
KC7315	D1 mm	D1 in	seat size
KSEM1786HPM	17,860	.7030	1
KSEM1800HPM	18,000	.7087	1
KSEM1826HPM	18,260	.7190	2
KSEM1850HPM	18,500	.7283	2
KSEM1865HPM	18,650	.7340	2
KSEM1900HPM	19,000	.7480	2
KSEM1905HPM	19,050	.7500	2
KSEM1923HPM	19,228	.7570	2
KSEM1927HPM	19,270	.7590	2
KSEM1945HPM	19,450	.7660	2
KSEM1950HPM	19,500	.7677	2
KSEM1984HPM	19,840	.7810	2
KSEM2000HPM	20,000	.7874	3
KSEM2024HPM	20,240	.7970	3
KSEM2050HPM	20,500	.8071	3
KSEM2064HPM	20,640	.8125	3
KSEM2100HPM	21,000	.8268	3
KSEM2143HPM	21,430	.8440	3
KSEM2150HPM	21,500	.8460	3
KSEM2183HPM	21,830	.8590	3
KSEM2200HPM	22,000	.8661	3
KSEM2223HPM	22,230	.8750	4
KSEM2244HPM	22,440	.8840	4
KSEM2250HPM	22,500	.8858	4
KSEM2300HPM	23,000	.9055	4
KSEM2342HPM	23,420	.9220	4
KSEM2350HPM	23,500	.9252	4
KSEM2381HPM	23,810	.9375	4
KSEM2400HPM	24,000	.9449	4
KSEM2450HPM	24,500	.9646	5
KSEM2461HPM	24,610	.9690	5
KSEM2500HPM	25,000	.9843	5
KSEM2540HPM	25,400	1.0000	5
KSEM2550HPM	25,500	1.0039	5
KSEM2560HPM	25,610	1.0080	5
KSEM2567HPM	25,670	1.0110	5

(continued)

(KSEM Inserts • HP KC7315™ — continued)



KC7315	D1 mm	D1 in	seat size
KSEM2600HPM	26,000	1.0236	5
KSEM2619HPM	26,190	1.0310	6
KSEM2650HPM	26,500	1.0433	6
KSEM2659HPM	26,590	1.0470	6
KSEM2700HPM	27,000	1.0630	6
KSEM2750HPM	27,500	1.0827	6
KSEM2778HPM	27,780	1.0940	6
KSEM2800HPM	28,000	1.1024	6
KSEM2818HPM	28,180	1.1090	7
KSEM2850HPM	28,500	1.1220	7
KSEM2858HPM	28,580	1.1250	7
KSEM2900HPM	29,000	1.1417	7
KSEM2937HPM	29,370	1.1563	7
KSEM2950HPM	29,500	1.1614	7
KSEM2977HPM	29,770	1.1720	7
KSEM3000HPM	30,000	1.1811	7
KSEM3016HPM	30,160	1.1875	8
KSEM3050HPM	30,500	1.2008	8
KSEM3096HPM	30,960	1.2190	8
KSEM3100HPM	31,000	1.2205	8



● first choice
○ alternate choice

KC7315	D1 mm	D1 in	seat size
KSEM3150HPM	31,500	1.2402	8
KSEM3175HPM	31,750	1.2500	8
KSEM3200HPM	32,000	1.2598	8
KSEM3250HPM	32,500	1.2795	9
KSEM3300HPM	33,000	1.2992	9
KSEM3334HPM	33,340	1.3130	9
KSEM3400HPM	34,000	1.3386	9
KSEM3413HPM	34,130	1.3440	9
KSEM3493HPM	34,930	1.3750	9
KSEM3500HPM	35,000	1.3780	9
KSEM3550HPM	35,500	1.3976	9
KSEM3600HPM	36,000	1.4173	9
KSEM3750HPM	37,500	1.4764	10
KSEM3800HPM	38,000	1.4961	10
KSEM3810HPM	38,100	1.5000	10
KSEM3850HPM	38,500	1.5157	10
KSEM3900HPM	39,000	1.5354	10
KSEM3950HPM	39,500	1.5551	10
KSEM4000HPM	40,000	1.5748	10

Tolerance HP • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance HP • Inch

D1 inch	tolerance h8
.500–.709	+.000/-.0010
>.709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

Application Data

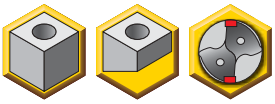
Modular Drill Carbide Insert Blades • KSEM • HP Geometry • Grade KC7315 • Through Coolant • Metric

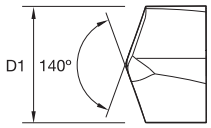
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 12,5	16,0	20,0	25,4	32,0	40,0
P	1	70	**90**	110	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	80	**100**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**75**	80	mm/r	0,15–0,28	0,17–0,31	0,19–0,36	0,25–0,46	0,23–0,53	0,33–0,60
	4	50	**65**	75	mm/r	0,12–0,28	0,14–0,31	0,16–0,36	0,20–0,46	0,23–0,53	0,30–0,60
	5	45	**50**	65	mm/r	0,09–0,15	0,11–0,18	0,12–0,21	0,15 –0,25	0,17–0,29	0,20–0,33
	6	45	**50**	65	mm/r	0,12–0,23	0,14–0,26	0,16–0,29	0,20 –0,38	0,23 –0,43	0,26–0,54

Modular Drill Carbide Insert Blades • KSEM • HP Geometry • Grade KC7315 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 0.462	0.630	0.787	1.000	1.260	1.575
P	1	230	**300**	360	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	2	260	**330**	390	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.014–.024	.016–.027
	3	210	**250**	260	IPR	.006–.011	.007–.012	.007–.014	.010–.018	.009–.021	.013–.024
	4	150	**160**	210	IPR	.005–.011	.006–.012	.006–.014	.008–.018	.009–.021	.012–.024
	5	150	**160**	210	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.013
	6	150	**160**	210	IPR	.005–.009	.006–.010	.006–.011	.008–.015	.009–.017	.010–.021

- KSEM KC7315™ HPG cutting edges enable high metal removal rates and superior tool life for steel applications.
- HPG geometry works with low cutting and feed forces and provides very good centering. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KC7315 is a fine-grain carbide with a TiAlN-based PVD multilayer coating. Its high wear resistance enables very high cutting speeds in stable conditions.
- KC7315 HPG cutting edges are perfectly suited to drill alloyed and high-alloy steels.
- Use KC7315 HPG cutting edges as an alternative to cast iron materials.

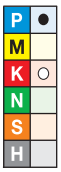




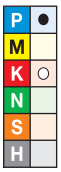


HPG

KSEM Inserts • HPG KC7315



KC7315	D1 mm	D1 in	seat size
KSEM1250HPGM	12,500	.4921	C
KSEM1260HPGM	12,600	.4961	C
KSEM1270HPGM	12,700	.5000	C
KSEM1280HPGM	12,800	.5039	C
KSEM1293HPGM	12,930	.5090	C
KSEM1300HPGM	13,000	.5118	C
KSEM1310HPGM	13,100	.5160	C
KSEM1320HPGM	13,200	.5197	C
KSEM1350HPGM	13,500	.5310	C
KSEM1360HPGM	13,600	.5354	B
KSEM1370HPGM	13,700	.5394	B
KSEM1380HPGM	13,800	.5433	B
KSEM1389HPGM	13,890	.5470	B
KSEM1400HPGM	14,000	.5512	B
KSEM1410HPGM	14,100	.5551	B
KSEM1420HPGM	14,200	.5591	B
KSEM1429HPGM	14,290	.5630	B
KSEM1440HPGM	14,400	.5669	B
KSEM1450HPGM	14,500	.5709	B
KSEM1460HPGM	14,600	.5748	A
KSEM1468HPGM	14,680	.5780	A
KSEM1480HPGM	14,800	.5827	A
KSEM1500HPGM	15,000	.5906	A
KSEM1508HPGM	15,080	.5940	A
KSEM1530HPGM	15,300	.6024	A
KSEM1548HPGM	15,480	.6090	A
KSEM1550HPGM	15,500	.6102	A
KSEM1560HPGM	15,600	.6142	A
KSEM1570HPGM	15,700	.6181	A
KSEM1580HPGM	15,800	.6220	A
KSEM1588HPGM	15,880	.6250	1
KSEM1600HPGM	16,000	.6299	1
KSEM1604HPGM	16,040	.6315	1
KSEM1609HPGM	16,090	.6340	1
KSEM1619HPGM	16,190	.6374	1
KSEM1620HPGM	16,200	.6378	1

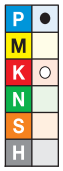


● first choice
○ alternate choice

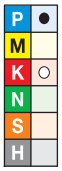
KC7315	D1 mm	D1 in	seat size
KSEM1627HPGM	16,270	.6410	1
KSEM1650HPGM	16,500	.6496	1
KSEM1660HPGM	16,600	.6535	1
KSEM1667HPGM	16,670	.6560	1
KSEM1700HPGM	17,000	.6693	1
KSEM1707HPGM	17,070	.6720	1
KSEM1735HPGM	17,350	.6831	1
KSEM1746HPGM	17,460	.6875	1
KSEM1750HPGM	17,500	.6890	1
KSEM1760HPGM	17,600	.6929	1
KSEM1770HPGM	17,700	.6969	1
KSEM1786HPGM	17,860	.7030	1
KSEM1800HPGM	18,000	.7087	1
KSEM1826HPGM	18,260	.7190	2
KSEM1850HPGM	18,500	.7283	2
KSEM1860HPGM	18,600	.7323	2
KSEM1865HPGM	18,650	.7340	2
KSEM1880HPGM	18,800	.7402	2
KSEM1900HPGM	19,000	.7480	2
KSEM1905HPGM	19,050	.7500	2
KSEM1925HPGM	19,250	.7579	2
KSEM1927HPGM	19,270	.7590	2
KSEM1932HPGM	19,320	.7606	2
KSEM1935HPGM	19,350	.7618	2
KSEM1945HPGM	19,450	.7660	2
KSEM1950HPGM	19,500	.7677	2
KSEM1970HPGM	19,700	.7756	2
KSEM1984HPGM	19,840	.7810	2
KSEM2000HPGM	20,000	.7874	3
KSEM2024HPGM	20,240	.7969	3
KSEM2050HPGM	20,500	.8071	3
KSEM2064HPGM	20,640	.8125	3
KSEM2070HPGM	20,700	.8150	3
KSEM2100HPGM	21,000	.8268	3
KSEM2110HPGM	21,100	.8307	3
KSEM2120HPGM	21,200	.8346	3

(continued)

(KSEM Inserts • HPG KC7315™ — continued)



KC7315	D1 mm	D1 in	seat size
KSEM2133HPGM	21,330	.8398	3
KSEM2143HPGM	21,430	.8440	3
KSEM2150HPGM	21,500	.8460	3
KSEM2170HPGM	21,700	.8543	3
KSEM2183HPGM	21,830	.8590	3
KSEM2200HPGM	22,000	.8661	3
KSEM2210HPGM	22,100	.8701	4
KSEM2215HPGM	22,150	.8720	4
KSEM2223HPGM	22,230	.8750	4
KSEM2244HPGM	22,440	.8840	4
KSEM2250HPGM	22,500	.8858	4
KSEM2262HPGM	22,620	.8906	4
KSEM2300HPGM	23,000	.9055	4
KSEM2305HPGM	23,050	.9075	4
KSEM2310HPGM	23,100	.9094	4
KSEM2325HPGM	23,250	.9154	4
KSEM2330HPGM	23,300	.9173	4
KSEM2342HPGM	23,420	.9220	4
KSEM2350HPGM	23,500	.9252	4
KSEM2381HPGM	23,810	.9375	4
KSEM2400HPGM	24,000	.9449	4
KSEM2430HPGM	24,300	.9567	5
KSEM2450HPGM	24,500	.9646	5
KSEM2461HPGM	24,610	.9690	5
KSEM2470HPGM	24,700	.9724	5
KSEM2500HPGM	25,000	.9843	5
KSEM2540HPGM	25,400	1.0000	5
KSEM2550HPGM	25,500	1.0039	5
KSEM2554HPGM	25,540	1.0055	5
KSEM2560HPGM	25,600	1.0080	5
KSEM2565HPGM	25,654	1.0100	5
KSEM2567HPGM	25,670	1.0110	5
KSEM2600HPGM	26,000	1.0236	5
KSEM2619HPGM	26,190	1.0310	6
KSEM2650HPGM	26,500	1.0433	6
KSEM2653HPGM	26,530	1.0445	6
KSEM2659HPGM	26,590	1.0470	6
KSEM2670HPGM	26,700	1.0512	6
KSEM2700HPGM	27,000	1.0630	6
KSEM2750HPGM	27,500	1.0827	6
KSEM2778HPGM	27,780	1.0940	6
KSEM2800HPGM	28,000	1.1024	6
KSEM2818HPGM	28,180	1.1090	7
KSEM2850HPGM	28,500	1.1220	7
KSEM2858HPGM	28,580	1.1250	7
KSEM2900HPGM	29,000	1.1417	7
KSEM2937HPGM	29,370	1.1563	7
KSEM2950HPGM	29,500	1.1614	7



● first choice
○ alternate choice

KC7315	D1 mm	D1 in	seat size
KSEM2955HPGM	29,550	1.1634	7
KSEM2973HPGM	29,730	1.1705	7
KSEM2977HPGM	29,770	1.1720	7
KSEM3000HPGM	30,000	1.1811	7
KSEM3016HPGM	30,160	1.1875	8
KSEM3050HPGM	30,500	1.2008	8
KSEM3056HPGM	30,560	1.2030	8
KSEM3096HPGM	30,960	1.2190	8
KSEM3100HPGM	31,000	1.2205	8
KSEM3125HPGM	31,250	1.2303	8
KSEM3150HPGM	31,500	1.2402	8
KSEM3175HPGM	31,750	1.2500	8
KSEM3200HPGM	32,000	1.2598	8
KSEM3220HPGM	32,200	1.2677	9
KSEM3234HPGM	32,340	1.2732	9
KSEM3250HPGM	32,500	1.2795	9
KSEM3254HPGM	32,540	1.2810	9
KSEM3294HPGM	32,940	1.2970	9
KSEM3300HPGM	33,000	1.2992	9
KSEM3334HPGM	33,340	1.3130	9
KSEM3350HPGM	33,500	1.3189	9
KSEM3373HPGM	33,730	1.3280	9
KSEM3400HPGM	34,000	1.3386	9
KSEM3413HPGM	34,130	1.3440	9
KSEM3450HPGM	34,500	1.3583	9
KSEM3493HPGM	34,930	1.3750	9
KSEM3500HPGM	35,000	1.3780	9
KSEM3550HPGM	35,500	1.3976	9
KSEM3572HPGM	35,720	1.4060	9
KSEM3600HPGM	36,000	1.4173	9
KSEM3612HPGM	36,120	1.4220	10
KSEM3650HPGM	36,500	1.4375	10
KSEM3651HPGM	36,510	1.4375	10
KSEM3700HPGM	37,000	1.4567	10
KSEM3731HPGM	37,310	1.4690	10
KSEM3750HPGM	37,500	1.4764	10
KSEM3800HPGM	38,000	1.4961	10
KSEM3810HPGM	38,100	1.5000	10
KSEM3846HPGM	38,460	1.5142	10
KSEM3850HPGM	38,500	1.5157	10
KSEM3900HPGM	39,000	1.5354	10
KSEM3950HPGM	39,500	1.5551	10
KSEM3975HPGM	39,750	1.5650	10
KSEM4000HPGM	40,000	1.5748	10

Tolerance HPG • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance HPG • Inch

D1 inch	tolerance h8
.500–.709	+.000/-.0010
>.709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

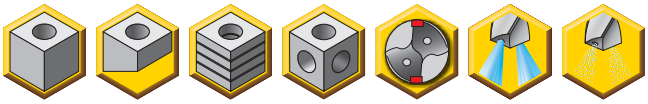
Modular Drill Carbide Insert Blades • KSEM™ • HPG Geometry • Grade KC7315™ • Through Coolant • Metric

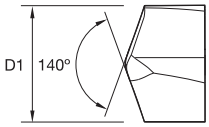
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	75	**110**	140	mm/r	0,15–0,34	0,17–0,40	0,19–0,45	0,25–0,58	0,29–0,66	0,33–0,76
	2	90	**120**	150	mm/r	0,15–0,34	0,17–0,40	0,19–0,45	0,25–0,58	0,29–0,66	0,33–0,76
	3	50	**75**	100	mm/r	0,15–0,28	0,17–0,34	0,19–0,40	0,25–0,51	0,29–0,58	0,33–0,66
	4	55	**75**	95	mm/r	0,12–0,31	0,14–0,34	0,16–0,40	0,20–0,51	0,23–0,58	0,26–0,66
	5	50	**65**	80	mm/r	0,09–0,17	0,11–0,20	0,12–0,23	0,15–0,28	0,17–0,32	0,20–0,36
	6	50	**65**	80	mm/r	0,12–0,25	0,14–0,29	0,16–0,32	0,20–0,42	0,23–0,47	0,26–0,54
K	1	90	**135**	175	mm/r	0,17–0,35	0,21–0,42	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
	2	90	**110**	125	mm/r	0,17–0,33	0,21–0,41	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
	3	40	**95**	125	mm/r	0,18–0,36	0,20–0,41	0,21–0,44	0,23–0,48	0,25–0,53	0,27–0,57

Modular Drill Carbide Insert Blades • KSEM • HPG Geometry • Grade KC7315 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		0.462	0.630	0.787	1.000	1.260	1.575
P	1	250	**360**	460	IPR	.006–.013	.007–.016	.007–.018	.010–.023	.011–.026	.013–.030
	2	300	**390**	490	IPR	.006–.013	.007–.016	.007–.018	.010–.023	.011–.026	.013–.030
	3	160	**250**	330	IPR	.006–.011	.007–.013	.007–.016	.010–.020	.011–.023	.013–.026
	4	160	**210**	260	IPR	.005–.012	.006–.011	.006–.016	.008–.020	.009–.023	.010–.026
	5	160	**210**	260	IPR	.004–.007	.004–.008	.005–.009	.006–.011	.007–.013	.008–.014
	6	160	**210**	260	IPR	.005–.010	.006–.011	.006–.013	.008–.017	.009–.019	.010–.021
K	1	300	**440**	570	IPR	.007–.014	.008–.017	.010–.019	.012–.023	.015–.028	.017–.032
	2	300	**360**	410	IPR	.007–.013	.008–.016	.010–.019	.012–.023	.015–.028	.017–.032
	3	130	**310**	410	IPR	.007–.014	.008–.016	.008–.017	.009–.019	.010–.021	.011–.022

- KSEM KCPM45™ HPG cutting edges provide increased productivity and improved tool life in steel in difficult conditions.
- HPG geometry works with low cutting and feed forces and provides very good centering. Reinforced cutting edges and good chip forming improve tool life due to high wear and edge chipping resistance.
- KCPM45 combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Material snap back, stacked plates, cross holes, and inclined exits are some examples of where KCPM45 HPG edges will do a great job in your operations.
- Use KCPM45 HPG cutting edges as an effective alternative in stainless steel as well.






HPG

KSEM Inserts • HPG KCPM45

P ● M ○ K N S H

● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KSEM1250HPGM	12,500	.4921	C
KSEM1270HPGM	12,700	.5000	C
KSEM1280HPGM	12,800	.5039	C
KSEM1293HPGM	12,930	.5090	C
KSEM1300HPGM	13,000	.5118	C
KSEM1350HPGM	13,500	.5310	C
KSEM1360HPGM	13,600	.5354	B
KSEM1380HPGM	13,800	.5433	B
KSEM1389HPGM	13,890	.5470	B
KSEM1400HPGM	14,000	.5512	B
KSEM1410HPGM	14,100	.5551	B
KSEM1429HPGM	14,290	.5630	B
KSEM1450HPGM	14,500	.5709	B
KSEM1468HPGM	14,680	.5780	A
KSEM1500HPGM	15,000	.5906	A
KSEM1508HPGM	15,080	.5940	A
KSEM1550HPGM	15,500	.6102	A
KSEM1580HPGM	15,800	.6220	A
KSEM1588HPGM	15,880	.6250	1
KSEM1600HPGM	16,000	.6299	1
KSEM1609HPGM	16,090	.6340	1
KSEM1620HPGM	16,200	.6378	1
KSEM1627HPGM	16,270	.6410	1
KSEM1650HPGM	16,500	.6496	1
KSEM1667HPGM	16,670	.6560	1
KSEM1700HPGM	17,000	.6693	1
KSEM1707HPGM	17,070	.6720	1
KSEM1746HPGM	17,460	.6875	1
KSEM1750HPGM	17,500	.6890	1
KSEM1786HPGM	17,860	.7030	1
KSEM1800HPGM	18,000	.7087	1
KSEM1826HPGM	18,260	.7190	2

P ● M ○ K N S H

KCPM45	D1 mm	D1 in	seat size
KSEM1850HPGM	18,500	.7283	2
KSEM1865HPGM	18,650	.7340	2
KSEM1900HPGM	19,000	.7480	2
KSEM1905HPGM	19,050	.7500	2
KSEM1920HPGM	19,200	.7559	2
KSEM1923HPGM	19,228	.7570	2
KSEM1925HPGM	19,250	.7579	2
KSEM1927HPGM	19,270	.7590	2
KSEM1945HPGM	19,450	.7660	2
KSEM1950HPGM	19,500	.7677	2
KSEM1965HPGM	19,650	.7736	2
KSEM1984HPGM	19,840	.7810	2
KSEM2000HPGM	20,000	.7874	3
KSEM2024HPGM	20,240	.7969	3
KSEM2050HPGM	20,500	.8071	3
KSEM2064HPGM	20,640	.8125	3
KSEM2100HPGM	21,000	.8268	3
KSEM2143HPGM	21,430	.8440	3
KSEM2150HPGM	21,500	.8460	3
KSEM2183HPGM	21,830	.8590	3
KSEM2200HPGM	22,000	.8661	3
KSEM2223HPGM	22,230	.8750	4
KSEM2244HPGM	22,440	.8840	4
KSEM2250HPGM	22,500	.8858	4
KSEM2300HPGM	23,000	.9055	4
KSEM2342HPGM	23,420	.9220	4
KSEM2350HPGM	23,500	.9252	4
KSEM2360HPGM	23,600	.9291	4
KSEM2370HPGM	23,700	.9331	4
KSEM2381HPGM	23,810	.9375	4
KSEM2400HPGM	24,000	.9449	4
KSEM2450HPGM	24,500	.9646	5

(continued)

(KSEM Inserts • HPG KCPM45™ — continued)

P ● M ○ K N S H	D1		seat size
KCPM45	mm	in	
KSEM2461HPGM	24,610	.9690	5
KSEM2500HPGM	25,000	.9843	5
KSEM2540HPGM	25,400	1.0000	5
KSEM2550HPGM	25,500	1.0039	5
KSEM2560HPGM	25,600	1.0080	5
KSEM2565HPGM	25,654	1.0100	5
KSEM2567HPGM	25,670	1.0106	5
KSEM2581HPGM	25,810	1.0161	5
KSEM2600HPGM	26,000	1.0236	5
KSEM2619HPGM	26,190	1.0310	6
KSEM2650HPGM	26,500	1.0433	6
KSEM2659HPGM	26,590	1.0470	6
KSEM2700HPGM	27,000	1.0630	6
KSEM2750HPGM	27,500	1.0827	6
KSEM2778HPGM	27,780	1.0940	6
KSEM2800HPGM	28,000	1.1024	6
KSEM2818HPGM	28,180	1.1090	7
KSEM2835HPGM	28,350	1.1161	7
KSEM2850HPGM	28,500	1.1220	7
KSEM2858HPGM	28,580	1.1250	7
KSEM2900HPGM	29,000	1.1417	7
KSEM2937HPGM	29,370	1.1563	7
KSEM2950HPGM	29,500	1.1614	7
KSEM2977HPGM	29,770	1.1720	7
KSEM3000HPGM	30,000	1.1811	7
KSEM3016HPGM	30,160	1.1875	8
KSEM3050HPGM	30,500	1.2008	8
KSEM3096HPGM	30,960	1.2190	8

● first choice
○ alternate choice

P ● M ○ K N S H	D1		seat size
KCPM45	mm	in	
KSEM3100HPGM	31,000	1.2205	8
KSEM3115HPGM	31,150	1.2264	8
KSEM3150HPGM	31,500	1.2402	8
KSEM3175HPGM	31,750	1.2500	8
KSEM3200HPGM	32,000	1.2598	8
KSEM3250HPGM	32,500	1.2795	9
KSEM3254HPGM	32,540	1.2810	9
KSEM3300HPGM	33,000	1.2992	9
KSEM3334HPGM	33,340	1.3130	9
KSEM3350HPGM	33,500	1.3189	9
KSEM3400HPGM	34,000	1.3386	9
KSEM3450HPGM	34,500	1.3583	9
KSEM3493HPGM	34,930	1.3750	9
KSEM3500HPGM	35,000	1.3780	9
KSEM3600HPGM	36,000	1.4173	9
KSEM3651HPGM	36,510	1.4375	10
KSEM3700HPGM	37,000	1.4567	10
KSEM3731HPGM	37,310	1.4690	10
KSEM3750HPGM	37,500	1.4764	10
KSEM3800HPGM	38,000	1.4961	10
KSEM3810HPGM	38,100	1.5000	10
KSEM3846HPGM	38,460	1.5142	10
KSEM3900HPGM	39,000	1.5354	10
KSEM4000HPGM	40,000	1.5748	10

Tolerance HPG • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance HPG • Inch

D1 inch	tolerance h8
.500–.709	+.000/-.0010
>.709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

Modular Drill Carbide Insert Blades • KSEM™ • HPG Geometry • Grade KCPM45™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	100	**110**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	80	**95**	110	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**70**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	30	**60**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	30	**50**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

Modular Drill Carbide Insert Blades • KSEM • HPG Geometry • Grade KCPM45 • MQL* • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	60	**70**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	50	**60**	70	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	65	**45**	80	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	30	**40**	50	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	25	**30**	35	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**25**	30	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

*Recommended for drilling depths ≤1.5 x D.

Modular Drill Carbide Insert Blades • KSEM • HPG Geometry • Grade KCPM45 • Through Coolant • Inch

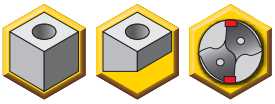
Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		.462	.630	.787	1.000	1.260	1.575
P	1	330	**360**	390	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	2	260	**310**	360	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	3	210	**230**	260	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
M	1	100	**200**	300	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	2	100	**160**	300	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	3	70	**130**	200	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012

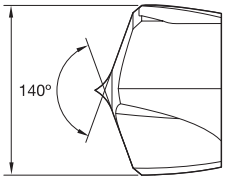
Modular Drill Carbide Insert Blades • KSEM • HPG Geometry • Grade KCPM45 • MQL* • Inch

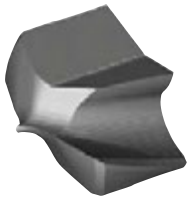
Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		.462	.630	.787	1.000	1.260	1.575
P	1	200	**230**	260	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	2	160	**200**	230	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	3	210	**150**	260	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
M	1	100	**130**	160	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	2	80	**100**	110	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	3	70	**80**	100	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012

*Recommended for drilling depths ≤1.5 x D.

- KSEM KC7410™ HPCCL focuses on tool life and process reliability in cast iron materials in all cast iron materials. It offers increased feed forces in increases your productivity.
- HPCCL geometry offers a wide and strong HP-style chiseled edge that prevents material quenching in the center, enabling high feed rates. With a corner chamfer and strong edges, it creates high quality holes and increased tool life.
- KC7410 is a multilayer AlCr-based coating over fine-grain carbide. It is extraordinarily wear resistant in cast iron applications due to its high hot hardness.
- Use KC7410 HPCCL in all cast iron applications, especially when working in difficult conditions and CGI or ADI irons.







HPCCL

KSEM Inserts • HPCCL KC7410



KC7410	D1 mm	D1 in	seat size
KSEM1250HPCCLM	12,500	.4921	C
KSEM1270HPCCLM *	12,700	.5000	C
KSEM1293HPCCLM	12,930	.5091	C
KSEM1300HPCCLM	13,000	.5118	C
KSEM1310HPCCLM	13,100	.5157	C
KSEM1350HPCCLM	13,500	.5315	C
KSEM1389HPCCLM	13,890	.5469	B
KSEM1400HPCCLM	14,000	.5512	B
KSEM1429HPCCLM	14,290	.5626	B
KSEM1450HPCCLM	14,500	.5709	B
KSEM1468HPCCLM	14,680	.5780	A
KSEM1500HPCCLM	15,000	.5906	A
KSEM1548HPCCLM *	15,480	.6094	A
KSEM1550HPCCLM	15,500	.6102	A
KSEM1588HPCCLM *	15,880	.6252	1
KSEM1600HPCCLM	16,000	.6299	1
KSEM1609HPCCLM	16,090	.6335	1
KSEM1627HPCCLM	16,270	.6406	1
KSEM1650HPCCLM	16,500	.6496	1
KSEM1667HPCCLM	16,670	.6563	1
KSEM1700HPCCLM	17,000	.6693	1
KSEM1707HPCCLM	17,070	.6720	1
KSEM1746HPCCLM	17,460	.6874	1
KSEM1750HPCCLM	17,500	.6890	1
KSEM1760HPCCLM	17,600	.6929	1
KSEM1800HPCCLM	18,000	.7087	1
KSEM1826HPCCLM	18,260	.7189	2
KSEM1850HPCCLM	18,500	.7283	2
KSEM1900HPCCLM	19,000	.7480	2
KSEM1905HPCCLM	19,050	.7500	2
KSEM1927HPCCLM *	19,270	.7587	2
KSEM1945HPCCLM *	19,450	.7657	2



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	seat size
KSEM1950HPCCLM	19,500	.7677	2
KSEM1984HPCCLM	19,840	.7811	2
KSEM2000HPCCLM	20,000	.7874	3
KSEM2024HPCCLM	20,240	.7969	3
KSEM2050HPCCLM	20,500	.8071	3
KSEM2064HPCCLM	20,640	.8126	3
KSEM2100HPCCLM	21,000	.8268	3
KSEM2143HPCCLM	21,430	.8437	3
KSEM2150HPCCLM	21,500	.8465	3
KSEM2200HPCCLM	22,000	.8661	3
KSEM2210HPCCLM	22,100	.8701	4
KSEM2223HPCCLM	22,230	.8752	4
KSEM2244HPCCLM	22,440	.8835	4
KSEM2250HPCCLM	22,500	.8858	4
KSEM2300HPCCLM	23,000	.9055	4
KSEM2342HPCCLM	23,420	.9220	4
KSEM2350HPCCLM	23,500	.9252	4
KSEM2381HPCCLM	23,810	.9374	4
KSEM2400HPCCLM	24,000	.9449	4
KSEM2450HPCCLM	24,500	.9646	5
KSEM2461HPCCLM	24,610	.9689	5
KSEM2500HPCCLM	25,000	.9843	5
KSEM2540HPCCLM	25,400	1.0000	5
KSEM2550HPCCLM	25,500	1.0039	5
KSEM2567HPCCLM	25,670	1.0106	5
KSEM2600HPCCLM	26,000	1.0236	5
KSEM2619HPCCLM	26,190	1.0311	6
KSEM2650HPCCLM	26,500	1.0433	6
KSEM2659HPCCLM	26,590	1.0469	6
KSEM2700HPCCLM	27,000	1.0630	6
KSEM2750HPCCLM	27,500	1.0827	6
KSEM2778HPCCLM	27,780	1.0937	6

(continued)

(KSEM Inserts • HPCCL KC7410™ — continued)



KC7410	D1 mm	D1 in	seat size
KSEM2800HPCCLM	28,000	1.1024	6
KSEM2818HPCCLM *	28,180	1.0940	7
KSEM2850HPCCLM	28,500	1.1220	7
KSEM2858HPCCLM	28,580	1.1250	7
KSEM2900HPCCLM	29,000	1.1417	7
KSEM2937HPCCLM	29,370	1.1563	7
KSEM2950HPCCLM *	29,500	1.1614	7
KSEM2977HPCCLM	29,770	1.1720	7
KSEM3000HPCCLM	30,000	1.1811	7
KSEM3016HPCCLM	30,160	1.1875	8
KSEM3050HPCCLM	30,500	1.2008	8
KSEM3100HPCCLM	31,000	1.2205	8



● first choice
○ alternate choice

KC7410	D1 mm	D1 in	seat size
KSEM3175HPCCLM	31,750	1.2500	8
KSEM3200HPCCLM	32,000	1.2598	8
KSEM3300HPCCLM	33,000	1.2992	9
KSEM3400HPCCLM *	34,000	1.3386	9
KSEM3500HPCCLM	35,000	1.3780	9
KSEM3600HPCCLM	36,000	1.4173	9
KSEM3700HPCCLM	37,000	1.4567	10
KSEM3800HPCCLM	38,000	1.4961	10
KSEM3900HPCCLM	39,000	1.5354	10
KSEM3920HPCCLM	39,200	1.5433	10
KSEM4000HPCCLM *	40,000	1.5748	10

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance HPCCL • Metric

D1	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance HPCCL • Inch

D1	tolerance h8
.500–.709	+.000/-.0010
>.709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

Application Data

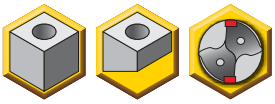
Modular Drill Carbide Insert Blades • KSEM™ • HPCCL Geometry • Grade KC7410™ • Through Coolant • Metric

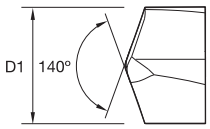
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter		12,5	16,0	20,0	25,4	32,0	40,0
K	1	100	**175**	200	mm/r	0,17–0,35	0,21–0,42	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
K	2	100	**160**	180	mm/r	0,17–0,33	0,21–0,41	0,25–0,48	0,31–0,59	0,37–0,70	0,43–0,81
K	3	70	**85**	100	mm/r	0,18–0,36	0,20–0,41	0,21–0,44	0,23–0,48	0,25–0,53	0,27–0,57

Modular Drill Carbide Insert Blades • KSEM • HPCCL Geometry • Grade KC7410 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter		0.462	0.630	0.787	1.000	1.260	1.575
K	1	330	**570**	660	IPR	.007–.014	.008–.017	.010–.019	.012–.023	.015–.028	.017–.032
K	2	330	**520**	590	IPR	.007–.013	.008–.016	.010–.019	.012–.023	.015–.028	.017–.032
K	3	230	**280**	330	IPR	.007–.014	.008–.016	.008–.017	.009–.019	.010–.021	.011–.022

- KSEM KC7320™ HPL cutting edges provide perfect results and very high productivity in stainless steel.
- HPL geometry forms two chips per cutting edge for an uninterrupted, smooth chip flow. Very high metal removal rates and a reliable drilling process up to 10 x D makes HPL the superior solution for drilling in stainless steels.
- Grade KC7320 features a high Al content TiAlN coating on a universal fine-grain carbide. Its excellent oxidation stability and carbide toughness enables a high level of wear resistance in austenitic and other stainless steels.







HPL

KSEM Inserts • HPL KC7320

P M ● K N S H

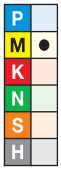
● first choice
○ alternate choice

KC7320	D1 mm	D1 in	seat size
KSEM1250HPLM	12,500	.4921	C
KSEM1270HPLM	12,700	.5000	C
KSEM1280HPLM	12,800	.5039	C
KSEM1293HPLM	12,930	.5090	C
KSEM1300HPLM	13,000	.5118	C
KSEM1311HPLM	13,100	.5157	C
KSEM1350HPLM	13,500	.5310	C
KSEM1360HPLM	13,600	.5354	B
KSEM1380HPLM	13,800	.5433	B
KSEM1389HPLM	13,890	.5470	B
KSEM1400HPLM	14,000	.5512	B
KSEM1410HPLM	14,100	.5551	B
KSEM1415HPLM	14,150	.5571	B
KSEM1420HPLM	14,200	.5591	B
KSEM1429HPLM	14,290	.5630	B
KSEM1450HPLM	14,500	.5709	B
KSEM1460HPLM	14,600	.5748	A
KSEM1468HPLM	14,680	.5780	A
KSEM1480HPLM	14,800	.5827	A
KSEM1500HPLM	15,000	.5906	A
KSEM1508HPLM	15,080	.5940	A
KSEM1548HPLM	15,480	.6090	A
KSEM1550HPLM	15,500	.6102	A
KSEM1560HPLM	15,600	.6142	A
KSEM1588HPLM	15,880	.6250	1
KSEM1600HPLM	16,000	.6299	1
KSEM1609HPLM	16,090	.6340	1
KSEM1610HPLM	16,100	.6339	1
KSEM1615HPLM	16,150	.6358	1
KSEM1620HPLM	16,200	.6378	1
KSEM1627HPLM	16,270	.6410	1
KSEM1650HPLM	16,500	.6496	1
KSEM1667HPLM	16,670	.6560	1
KSEM1700HPLM	17,000	.6693	1
KSEM1707HPLM	17,070	.6720	1
KSEM1746HPLM	17,460	.6875	1
KSEM1750HPLM	17,500	.6890	1
KSEM1775HPLM	17,750	.6988	1
KSEM1780HPLM	17,800	.7008	1
KSEM1786HPLM	17,860	.7030	1
KSEM1790HPLM	17,900	.7047	1
KSEM1800HPLM	18,000	.7087	1
KSEM1826HPLM	18,260	.7190	2
KSEM1850HPLM	18,500	.7283	2

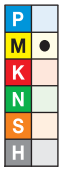
KC7320	D1 mm	D1 in	seat size
KSEM1860HPLM	18,600	.7323	2
KSEM1865HPLM	18,650	.7340	2
KSEM1890HPLM	18,900	.7441	2
KSEM1900HPLM	19,000	.7480	2
KSEM1905HPLM	19,050	.7500	2
KSEM1920HPLM	19,200	.7559	2
KSEM1923HPLM	19,228	.7570	2
KSEM1925HPLM	19,250	.7579	2
KSEM1927HPLM	19,270	.7590	2
KSEM1935HPLM	19,350	.7618	2
KSEM1936HPLM	19,360	.7622	2
KSEM1938HPLM	19,380	.7630	2
KSEM1945HPLM	19,450	.7660	2
KSEM1950HPLM	19,500	.7677	2
KSEM1984HPLM	19,840	.7810	2
KSEM2000HPLM	20,000	.7874	3
KSEM2010HPLM	20,100	.7913	3
KSEM2024HPLM	20,240	.7970	3
KSEM2035HPLM	20,350	.8012	3
KSEM2050HPLM	20,500	.8071	3
KSEM2064HPLM	20,640	.8125	3
KSEM2100HPLM	21,000	.8268	3
KSEM2115HPLM	21,150	.8327	3
KSEM2133HPLM	21,330	.8398	3
KSEM2143HPLM	21,430	.8440	3
KSEM2150HPLM	21,500	.8460	3
KSEM2183HPLM	21,830	.8590	3
KSEM2200HPLM	22,000	.8661	3
KSEM2223HPLM	22,230	.8750	4
KSEM2244HPLM	22,440	.8840	4
KSEM2250HPLM	22,500	.8858	4
KSEM2277HPLM	22,770	.8965	4
KSEM2300HPLM	23,000	.9055	4
KSEM2342HPLM	23,420	.9220	4
KSEM2350HPLM	23,500	.9252	4
KSEM2381HPLM	23,810	.9375	4
KSEM2400HPLM	24,000	.9449	4
KSEM2450HPLM	24,500	.9646	5
KSEM2461HPLM	24,610	.9690	5
KSEM2500HPLM	25,000	.9843	5
KSEM2507HPLM	25,070	.9870	5
KSEM2540HPLM	25,400	1.0000	5
KSEM2550HPLM	25,500	1.0039	5
KSEM2560HPLM	25,600	1.0080	5

(continued)

(KSEM Inserts • HPL KC7320™ — continued)



KC7320	D1 mm	D1 in	seat size
KSEM2565HPLM	25,650	1.0098	5
KSEM2567HPLM	25,670	1.0110	5
KSEM2581HPLM	25,810	1.0161	5
KSEM2600HPLM	26,000	1.0236	5
KSEM2619HPLM	26,190	1.0310	6
KSEM2650HPLM	26,500	1.0433	6
KSEM2659HPLM	26,590	1.0470	6
KSEM2670HPLM	26,700	1.0512	6
KSEM2700HPLM	27,000	1.0630	6
KSEM2750HPLM	27,500	1.0827	6
KSEM2779HPLM	27,780	1.0940	6
KSEM2800HPLM	28,000	1.1024	6
KSEM2810HPLM	28,100	1.1063	7
KSEM2817HPLM	28,180	1.1090	7
KSEM2850HPLM	28,500	1.1220	7
KSEM2858HPLM	28,580	1.1250	7
KSEM2900HPLM	29,000	1.1417	7
KSEM2937HPLM	29,370	1.1563	7
KSEM2950HPLM	29,500	1.1614	7
KSEM2977HPLM	29,770	1.1720	7



● first choice
○ alternate choice

KC7320	D1 mm	D1 in	seat size
KSEM3000HPLM	30,000	1.1811	7
KSEM3016HPLM	30,160	1.1875	8
KSEM3050HPLM	30,500	1.2008	8
KSEM3100HPLM	31,000	1.2205	8
KSEM3150HPLM	31,500	1.2402	8
KSEM3175HPLM	31,750	1.2500	8
KSEM3200HPLM	32,000	1.2598	8
KSEM3254HPLM	32,540	1.2810	9
KSEM3300HPLM	33,000	1.2992	9
KSEM3335HPLM	33,400	1.3130	9
KSEM3400HPLM	34,000	1.3386	9
KSEM3493HPLM	34,930	1.3750	9
KSEM3500HPLM	35,000	1.3780	9
KSEM3571HPLM	35,720	1.4060	9
KSEM3600HPLM	36,000	1.4173	9
KSEM3700HPLM	37,000	1.4567	10
KSEM3750HPLM	37,500	1.4764	10
KSEM3800HPLM	38,000	1.4961	10
KSEM3810HPLM	38,100	1.5000	10
KSEM3846HPLM	38,460	1.5140	10
KSEM3900HPLM	39,000	1.5354	10
KSEM4000HPLM	40,000	1.5748	10

Tolerance HPL • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance HPL • Inch

D1 inch	tolerance h8
.500–.709	+.000/-.0010
>.709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

Application Data

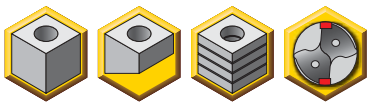
Modular Drill Carbide Insert Blades • KSEM • HPL Geometry • Grade KC7320 • Through Coolant • Metric

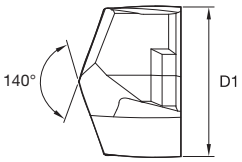
Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	12,5	16,0	20,0	25,4	32,0	40,0
M	1	30	**60**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
M	2	30	**50**	90	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
M	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

Modular Drill Carbide Insert Blades • KSEM • HPL Geometry • Grade KC7320 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max	Inch Recommended Feed Rate (f) by Diameter	0.462	0.630	0.787	1.000	1.260	1.575
M	1	100	**200**	300	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
M	2	100	**160**	300	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
M	3	70	**130**	200	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012

- KSEM SPL geometry was made to offer extraordinary drilling performance in stainless steels, super alloys, and other demanding environments.
- KSEM SPL provides process reliability, ensuring longer tool life and productivity in difficult-to-machine materials. Its advanced-point geometry and web design greatly reduces cutting forces.
- KCMS35™ is based on a very tough, fine-grain carbide substrate with a high Al content TiAlN PVD coating. It offers a high level of wear resistance and oxidation stability in parallel with chipping resistance for center point and cutting edges.
- This insert style is ideally suited to drill heavy-duty and corrosion-resistant tube end sheets and other heat exchanger components (especially from M3 and type S materials).
- Use KSEM KCMS35 SPL inserts as an effective alternative for plain and alloyed steels, as well as in the most important Al and Cu applications.







SPL

KSEM Inserts • SPL KCMS35

P ○
M ●
K
N ○
S ●
H

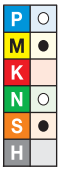
● first choice
○ alternate choice

KCMS35	D1 mm	D1 in	seat size
KSEM1250SPLM	12,500	.4921	C
KSEM1270SPLM	12,700	.5000	C
KSEM1300SPLM	13,000	.5118	C
KSEM1350SPLM	13,500	.5315	C
KSEM1400SPLM	14,000	.5512	B
KSEM1429SPLM	14,290	.5626	B
KSEM1450SPLM	14,500	.5709	B
KSEM1500SPLM	15,000	.5906	A
KSEM1550SPLM	15,500	.6102	A
KSEM1588SPLM	15,880	.6252	1
KSEM1600SPLM	16,000	.6299	1
KSEM1609SPLM	16,090	.6335	1
KSEM1615SPLM	16,150	.6358	1
KSEM1627SPLM	16,270	.6406	1
KSEM1650SPLM	16,500	.6496	1
KSEM1667SPLM	16,670	.6563	1
KSEM1700SPLM	17,000	.6693	1
KSEM1746SPLM	17,460	.6874	1
KSEM1750SPLM	17,500	.6890	1
KSEM1800SPLM	18,000	.7087	1
KSEM1830SPLM	18,300	.7205	2
KSEM1850SPLM	18,500	.7283	2
KSEM1900SPLM	19,000	.7480	2
KSEM1905SPLM	19,050	.7500	2
KSEM1920SPLM	19,200	.7559	2
KSEM1923SPLM	19,230	.7571	2
KSEM1925SPLM	19,250	.7579	2
KSEM1927SPLM	19,270	.7587	2
KSEM1935SPLM	19,350	.7618	2
KSEM1945SPLM	19,450	.7657	2
KSEM1950SPLM	19,500	.7677	2
KSEM1984SPLM	19,840	.7811	2

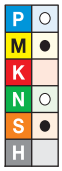
KCMS35	D1 mm	D1 in	seat size
KSEM2000SPLM	20,000	.7874	3
KSEM2024SPLM	20,240	.7969	3
KSEM2050SPLM	20,500	.8071	3
KSEM2064SPLM	20,640	.8126	3
KSEM2100SPLM	21,000	.8268	3
KSEM2150SPLM	21,500	.8465	3
KSEM2200SPLM	22,000	.8661	3
KSEM2223SPLM	22,230	.8752	4
KSEM2250SPLM	22,500	.8858	4
KSEM2300SPLM	23,000	.9055	4
KSEM2350SPLM	23,500	.9252	4
KSEM2381SPLM	23,810	.9374	4
KSEM2400SPLM	24,000	.9449	4
KSEM2450SPLM	24,500	.9646	5
KSEM2500SPLM	25,000	.9843	5
KSEM2525SPLM	25,250	.9941	5
KSEM2530SPLM	25,300	.9961	5
KSEM2540SPLM	25,400	1.0000	5
KSEM2550SPLM	25,500	1.0039	5
KSEM2560SPLM	25,600	1.0079	5
KSEM2565SPLM	25,650	1.0098	5
KSEM2567SPLM	25,670	1.0106	5
KSEM2581SPLM	25,810	1.0161	5
KSEM2600SPLM	26,000	1.0236	5
KSEM2619SPLM	26,190	1.0311	6
KSEM2630SPLM	26,300	1.0354	6
KSEM2650SPLM	26,500	1.0433	6
KSEM2659SPLM	26,590	1.0469	6
KSEM2700SPLM	27,000	1.0630	6
KSEM2750SPLM	27,500	1.0827	6
KSEM2800SPLM	28,000	1.1024	6
KSEM2850SPLM	28,500	1.1220	7

(continued)

(KSEM Inserts • SPL KCMS35™ — continued)



KCMS35	D1 mm	D1 in	seat size
KSEM2858SPLM	28,580	1.1252	7
KSEM2900SPLM	29,000	1.1417	7
KSEM2950SPLM	29,500	1.1614	7
KSEM3000SPLM	30,000	1.1811	7
KSEM3050SPLM	30,500	1.2008	8
KSEM3100SPLM	31,000	1.2205	8
KSEM3150SPLM	31,500	1.2402	8
KSEM3175SPLM	31,750	1.2500	8
KSEM3200SPLM	32,000	1.2598	8
KSEM3250SPLM	32,500	1.2795	9
KSEM3350SPLM	33,500	1.3189	9
KSEM3400SPLM	34,000	1.3386	9



● first choice
○ alternate choice

KCMS35	D1 mm	D1 in	seat size
KSEM3450SPLM	34,500	1.3583	9
KSEM3500SPLM	35,000	1.3780	9
KSEM3550SPLM	35,500	1.3976	9
KSEM3600SPLM	36,000	1.4173	9
KSEM3650SPLM	36,500	1.4370	10
KSEM3700SPLM	37,000	1.4567	10
KSEM3750SPLM	37,500	1.4764	10
KSEM3800SPLM	38,000	1.4961	10
KSEM3846SPLM	38,460	1.5142	10
KSEM3850SPLM	38,500	1.5157	10
KSEM3900SPLM	39,000	1.5354	10
KSEM3950SPLM	39,500	1.5551	10
KSEM4000SPLM	40,000	1.5748	10

Tolerance SPL • Metric

D1 metric	tolerance h8
12,5–18	+0,000/-0,027
>18–30	+0,000/-0,033
>30–40	+0,000/-0,039

Tolerance SPL • Inch

D1 inch	tolerance h8
.500–.709	+.000/-.0010
>709–1.181	+.000/-.0013
>1.181–1.575	+.000/-.0015

Modular Drill Carbide Insert Blades • KSEM™ • SPL Geometry • Grade KCMS35™ • Through Coolant • Metric

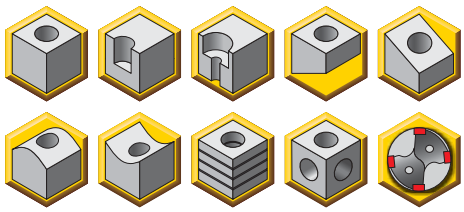
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	110	**140**	170	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	2	100	**120**	140	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
	3	80	**100**	120	mm/r	0,15–0,31	0,17–0,36	0,19–0,41	0,25–0,53	0,29–0,60	0,33–0,69
M	1	40	**60**	80	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	35	**55**	70	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
N	1	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	2	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	3	80	**120**	160	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
	4	90	**155**	220	mm/r	0,19–0,40	0,25–0,50	0,28–0,56	0,32–0,63	0,32–0,70	0,32–0,70
S	1	20	**40**	60	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	2	15	**30**	45	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	3	15	**30**	45	mm/r	0,05–0,10	0,07–0,12	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25
	4	10	**25**	40	mm/r	0,05–0,10	0,07–0,12	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

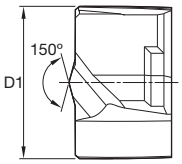
Modular Drill Carbide Insert Blades • KSEM • SPL Geometry • Grade KCMS35 • Through Coolant • Inch

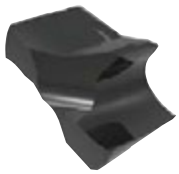
Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		0.462	0.630	0.787	1.000	1.260	1.575
P	1	360	**460**	560	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	2	330	**390**	460	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
	3	260	**330**	390	IPR	.006–.012	.007–.014	.007–.016	.010–.021	.011–.024	.013–.027
M	1	130	**200**	260	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	2	110	**180**	230	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	3	70	**130**	200	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
N	1	300	**510**	720	IPR	.007–.016	.010–.020	.011–.022	.013–.025	.013–.028	.013–.028
	2	300	**510**	720	IPR	.007–.016	.010–.020	.011–.022	.013–.025	.013–.028	.013–.028
	3	260	**390**	520	IPR	.007–.016	.010–.020	.011–.022	.013–.025	.013–.028	.013–.028
	4	300	**510**	720	IPR	.007–.016	.010–.020	.011–.022	.013–.025	.013–.028	.013–.028
S	1	70	**130**	200	IPR	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.010
	2	50	**100**	150	IPR	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.010
	3	50	**100**	150	IPR	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.010
	4	30	**80**	130	IPR	.002–.004	.003–.005	.004–.006	.004–.007	.005–.008	.006–.010

Application recommendation: We recommend pre-centering when drilling with SPL inserts >5 x D.
For deeper holes (> = 10 x D), and for drilling M1 and M2 materials in general, we recommend using KSEM HPL inserts as a first choice.

- KSEM FEG flat-bottom inserts create 180° flat holes — only a small cavity remains in the center of the hole ground. KSEM offers an extraordinarily strong pocket seat for your demanding flat-bottom applications.
- Whether it is a blind hole, a through hole, or if you need to countersink, these inserts are focused on versatility and will support you in many essential drilling applications.
- KSEM FEG inserts feature a small centering point as well as double margin lands for improved guidance and hole straightness. A corner chamfer serves to reduce bur formation and to improve tool life.
- KCPM45™ combines a very tough, fine-grain carbide substrate with an advanced multilayer TiAlN coating. It is capable of machining steel even in the most demanding conditions.
- Use KSEM FEG KCPM45 cutting edges as an effective alternative in cast iron, stainless steel, and high-temp alloys.







FEG

KSEM Inserts • FEG KCPM45

P ● M ○ K ○ N S ○ H

● first choice
○ alternate choice

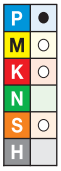
KCPM45	D1 mm	D1 in	seat size
KSEM1600FEGM	16,000	.6299	1
KSEM1650FEGM	16,500	.6496	1
KSEM1700FEGM	17,000	.6693	1
KSEM1750FEGM	17,500	.6890	1
KSEM1800FEGM	18,000	.7087	1
KSEM1850FEGM	18,500	.7283	2
KSEM1900FEGM	19,000	.7480	2
KSEM1905FEGM	19,050	.7500	2
KSEM1950FEGM	19,500	.7677	2
KSEM1984FEGM	19,840	.7811	2
KSEM2000FEGM	20,000	.7874	3
KSEM2050FEGM	20,500	.8071	3
KSEM2100FEGM	21,000	.8268	3
KSEM2150FEGM	21,500	.8465	3
KSEM2200FEGM	22,000	.8661	3
KSEM2250FEGM	22,500	.8858	4
KSEM2300FEGM	23,000	.9055	4
KSEM2350FEGM	23,500	.9252	4
KSEM2400FEGM	24,000	.9449	4
KSEM2450FEGM	24,500	.9646	5
KSEM2500FEGM	25,000	.9843	5
KSEM2540FEGM	25,400	1.0000	5
KSEM2550FEGM	25,500	1.0039	5
KSEM2580FEGM	25,800	1.0157	5

P ● M ○ K ○ N S ○ H

KCPM45	D1 mm	D1 in	seat size
KSEM2581FEGM	25,810	1.0161	5
KSEM2600FEGM	26,000	1.0236	5
KSEM2619FEGM	26,190	1.0311	6
KSEM2650FEGM	26,500	1.0433	6
KSEM2670FEGM	26,700	1.0512	6
KSEM2700FEGM	27,000	1.0630	6
KSEM2750FEGM	27,500	1.0827	6
KSEM2800FEGM	28,000	1.1024	6
KSEM2850FEGM	28,500	1.1220	7
KSEM2900FEGM	29,000	1.1417	7
KSEM2950FEGM	29,500	1.1614	7
KSEM3000FEGM	30,000	1.1811	7
KSEM3050FEGM	30,500	1.2008	8
KSEM3100FEGM	31,000	1.2205	8
KSEM3150FEGM	31,500	1.2402	8
KSEM3175FEGM	31,750	1.2500	8
KSEM3200FEGM	32,000	1.2598	8
KSEM3250FEGM	32,500	1.2795	9
KSEM3300FEGM	33,000	1.2992	9
KSEM3350FEGM	33,500	1.3189	9
KSEM3400FEGM	34,000	1.3386	9
KSEM3450FEGM	34,500	1.3583	9
KSEM3500FEGM	35,000	1.3780	9
KSEM3550FEGM	35,500	1.3976	9

(continued)

(KSEM Inserts • FEG KCPM45™ — continued)



● first choice
○ alternate choice

KCPM45	D1 mm	D1 in	seat size
KSEM3600FEGM	36,000	1.4173	9
KSEM3650FEGM	36,500	1.4370	10
KSEM3700FEGM	37,000	1.4567	10
KSEM3750FEGM	37,500	1.4764	10
KSEM3800FEGM	38,000	1.4961	10
KSEM3810FEGM	38,100	1.5000	10
KSEM3850FEGM	38,500	1.5157	10
KSEM3900FEGM	39,000	1.5354	10
KSEM3950FEGM	39,500	1.5551	10
KSEM4000FEGM	40,000	1.5748	10

Tolerance FEG • Metric

D1 metric	tolerance k7
12,5–18	+0,001/+ 0,019
>18–30	+0,002/+ 0,023
>30–40	+0,002/+ 0,027

Tolerance FEG • Inch

D1 inch	tolerance k7
.500–.709	+.0000/+.0008
>.709–1.181	+.0000/+.0009
>1.181–1.575	+.0000/+.0010

Modular Drill Carbide Insert Blades • KSEM™ • FEG Geometry • Grade KCPM45™ • Through Coolant • Metric

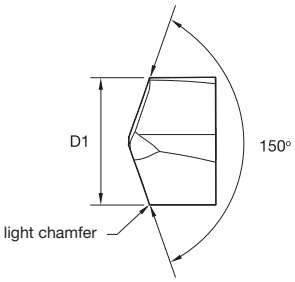
Material Group		Cutting Speed — vc Range — m/min			Metric						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0	40,0
P	1	110	**140**	170	mm/r	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,26–0,43	0,33–0,76
	2	100	**120**	140	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43	0,33–0,76
	3	80	**100**	120	mm/r	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,26–0,38	0,33–0,66
	4	70	**90**	110	mm/r	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,21–0,38	0,26–0,66
M	1	40	**60**	80	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	2	35	**55**	70	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
K	1	90	**135**	175	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29– 0,38	0,32–0,43	0,33–0,76
	2	80	**120**	140	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43	0,33–0,76
	3	70	**110**	125	mm/r	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,25–0,42	0,27–0,57
S	1	20	**40**	60	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31
	3	15	**30**	45	mm/r	0,09–0,14	0,11–0,17	0,13–0,20	0,16–0,25	0,18–0,28	0,21–0,31

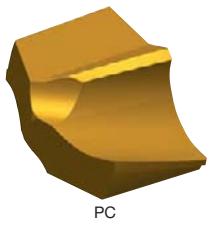
Modular Drill Carbide Insert Blades • KSEM • FEG Geometry • Grade KCPM45 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch						
					Recommended Feed Rate (f) by Diameter						
		min	Starting Value	max		0.462	0.630	0.787	1.000	1.260	1.575
P	1	360	**460**	560	IPR	.006–.009	.007–.010	.007–.011	.009–.015	.010–.017	.013–.030
	2	330	**390**	460	IPR	.007–.009	.007–.010	.009–.011	.011–.015	.013–.017	.013–.030
	3	260	**330**	390	IPR	.006–.008	.006–.009	.007–.010	.009–.013	.010–.015	.013–.026
	4	230	**300**	360	IPR	.004–.008	.005–.009	.006–.010	.007–.013	.008–.015	.010–.026
M	1	130	**200**	260	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	2	110	**180**	230	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	3	70	**130**	200	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
K	1	300	**440**	570	IPR	.007–.009	.007–.010	.009–.011	.011–.015	.013–.017	.013–.030
	2	260	**390**	460	IPR	.007–.009	.007–.010	.009–.011	.011–.015	.013–.017	.013–.030
	3	230	**360**	410	IPR	.006–.009	.007–.010	.008–.011	.009–.015	.010–.017	.011–.022
S	1	70	**130**	200	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012
	3	50	**100**	150	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.011	.008–.012

- KSEM PC cutting edges serve mainly as precentering inserts, but can also be used in demanding conditions.
- Steep 150° degree angle with a light corner chamfer. Very good centering capability and edge chipping resistance.
- KC7135™ is a very resistant grade featuring a TiCN-TiN PVD coating.







KSEM Inserts • PC KC7135

P ● M K ● N S H

● first choice
○ alternate choice

KC7135	D1 mm	D1 in	seat size
KSEM1250PCM	12,500	.4921	C
KSEM1280PCM	12,800	.5039	C
KSEM1300PCM	13,000	.5118	C
KSEM1350PCM	13,500	.5310	C
KSEM1380PCM	13,800	.5433	B
KSEM1400PCM	14,000	.5512	B
KSEM1410PCM	14,100	.5551	B
KSEM1450PCM	14,500	.5709	B
KSEM1460PCM	14,600	.5748	A
KSEM1480PCM	14,800	.5827	A
KSEM1500PCM	15,000	.5906	A
KSEM1550PCM	15,500	.6102	A
KSEM1560PCM	15,600	.6142	A
KSEM1580PCM	15,800	.6220	A
KSEM1600PCM	16,000	.6299	1
KSEM1620PCM	16,200	.6378	1
KSEM1650PCM	16,500	.6496	1
KSEM1700PCM	17,000	.6693	1
KSEM1750PCM	17,500	.6890	1
KSEM1800PCM	18,000	.7087	1
KSEM1850PCM	18,500	.7283	2
KSEM1900PCM	19,000	.7480	2
KSEM1950PCM	19,500	.7677	2
KSEM2000PCM	20,000	.7874	3
KSEM2050PCM	20,500	.8071	3
KSEM2100PCM	21,000	.8268	3
KSEM2150PCM	21,500	.8460	3
KSEM2200PCM	22,000	.8661	3

P ● M K ● N S H

KC7135	D1 mm	D1 in	seat size
KSEM2250PCM	22,500	.8858	4
KSEM2300PCM	23,000	.9055	4
KSEM2350PCM	23,500	.9252	4
KSEM2400PCM	24,000	.9449	4
KSEM2450PCM	24,500	.9646	5
KSEM2500PCM	25,000	.9843	5
KSEM2550PCM	25,500	1.0039	5
KSEM2600PCM	26,000	1.0236	5
KSEM2650PCM	26,500	1.0433	6
KSEM2700PCM	27,000	1.0630	6
KSEM2800PCM	28,000	1.1024	6
KSEM2850PCM	28,500	1.1220	7
KSEM2900PCM	29,000	1.1417	7
KSEM2950PCM	29,500	1.1614	7
KSEM3000PCM	30,000	1.1811	7
KSEM3050PCM	30,500	1.2008	8
KSEM3100PCM	31,000	1.2205	8
KSEM3200PCM	32,000	1.2598	8
KSEM3300PCM	33,000	1.2992	9
KSEM3400PCM	34,000	1.3386	9
KSEM3500PCM	35,000	1.3780	9
KSEM3600PCM	36,000	1.4173	9
KSEM3700PCM	37,000	1.4567	10
KSEM3800PCM	38,000	1.4961	10
KSEM3900PCM	39,000	1.5354	10
KSEM4000PCM	40,000	1.5748	10

Tolerance PC • Metric

D1 metric	tolerance k7
12,5–18	+0,001/+0,019
>18–30	+0,002/+0,023
>30–40	+0,002/+0,027

Tolerance PC • Inch

D1 inch	tolerance k7
.500–.709	+.0000/+.0008
>.709–1.181	+.0000/+.0009
>1.181–1.575	+.0000/+.0010

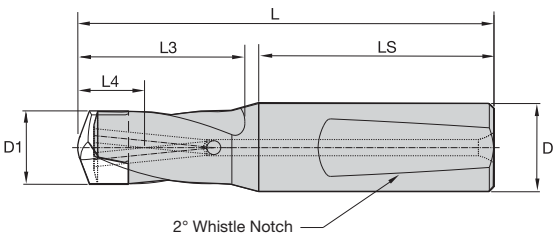
Modular Drill Carbide Insert Blades • KSEM™ • PC Geometry • Grade KC7135™ • Through Coolant • Metric

Material Group		Cutting Speed — vc Range — m/min			Metric					
					Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max		12,5	16,0	20,0	25,4	32,0
P	1	90	**100**	110	mm/r	0,14–0,23	0,17–0,25	0,19–0,29	0,23–0,38	0,26–0,43
	2	80	**90**	100	mm/r	0,17–0,23	0,19–0,25	0,22–0,29	0,29–0,38	0,32–0,43
	3	55	**65**	75	mm/r	0,14–0,20	0,15–0,23	0,17–0,25	0,23–0,34	0,26–0,38
	4	50	**60**	70	mm/r	0,11–0,20	0,13–0,23	0,14–0,25	0,18–0,34	0,21–0,38
	5	45	**50**	60	mm/r	0,08–0,11	0,10–0,13	0,11–0,14	0,14–0,18	0,15–0,20
	6	45	**55**	65	mm/r	0,11–0,17	0,13–0,18	0,14–0,20	0,18–0,28	0,21–0,31
K	1	60	**60**	90	mm/r	0,08–0,24	0,09–0,28	0,11–0,31	0,14–0,43	0,15–0,48
	2	60	**60**	75	mm/r	0,18–0,24	0,21–0,28	0,23–0,31	0,28–0,37	0,32–0,42
	3	40	**40**	75	mm/r	0,15–0,24	0,18–0,26	0,21–0,29	0,23–0,37	0,25–0,42

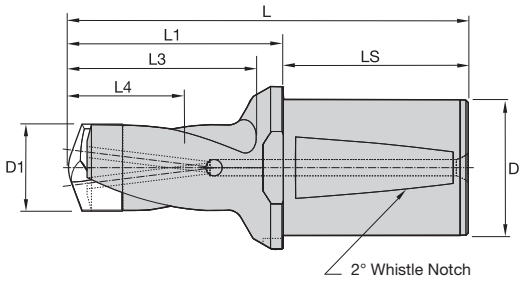
Modular Drill Carbide Insert Blades • KSEM • PC Geometry • Grade KC7135 • Through Coolant • Inch

Material Group		Cutting Speed — vc Range — SFM			Inch					
					Recommended Feed Rate (f) by Diameter					
		min	Starting Value	max		0.462	0.630	0.787	1.000	1.260
P	1	300	**330**	360	IPR	.006–.009	.007–.010	.007–.011	.009–.015	.010–.017
	2	260	**300**	330	IPR	.007–.009	.007–.010	.009–.011	.011–.015	.013–.017
	3	180	**210**	250	IPR	.006–.008	.006–.009	.007–.010	.009–.013	.010–.015
	4	150	**160**	200	IPR	.004–.008	.005–.009	.006–.010	.007–.013	.008–.015
	5	150	**180**	210	IPR	.003–.004	.004–.005	.004–.006	.006–.007	.006–.008
	6	150	**180**	210	IPR	.004–.007	.005–.007	.006–.008	.007–.011	.008–.012
K	1	200	**200**	300	IPR	.003–.009	.004–.011	.004–.012	.006–.017	.006–.019
	2	200	**200**	250	IPR	.007–.009	.008–.011	.009–.012	.011–.015	.013–.017
	3	130	**130**	250	IPR	.006–.009	.007–.010	.008–.011	.009–.015	.010–.017

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.



Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm

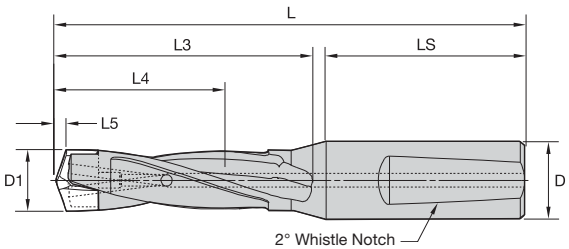


KSEM WN/WD50 Shank • 1 x D • Metric

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	L	L1	L4 max	L5	LS	D	seat size	central lock screw	wrench
KSEM125R1WN16M	12,500	.4921	13,500	.5314	78	—	14	2,0	48	16	C	**364.017**	**170.294**
KSEM136R1WN16M	13,510	.5319	14,500	.5708	81	—	15	2,2	48	16	B	**364.016**	**170.289**
KSEM146R1WN20M	14,510	.5713	15,874	.6249	85	—	16	2,3	50	20	A	**364.016**	**170.289**
KSEM160R1WN20M	16,000	.6299	18,000	.7086	88	—	18	2,5	50	20	1	**364.010**	**170.270**
KSEM181R1WN25M	18,010	.7091	19,999	.7873	99	—	20	2,9	56	25	2	**364.010**	**170.270**
KSEM200R1WN25M	20,000	.7874	22,000	.8661	102	—	22	3,2	56	25	3	**364.011**	**170.272**
KSEM221R1WN25M	22,010	.8665	24,000	.9448	107	—	24	3,5	56	25	4	**364.011**	**170.272**
KSEM241R1WN32M	24,010	.9453	26,000	1.0236	115	—	26	3,8	60	32	5	**364.012**	**170.274**
KSEM261R1WN32M	26,010	1.0240	28,000	1.1023	119	—	28	4,0	60	32	6	**364.012**	**170.274**
KSEM281R1WN32M	28,016	1.1030	30,000	1.1811	123	—	30	4,3	60	32	7	**364.013**	**170.276**
KSEM301R1WN32M	30,010	1.1815	32,000	1.2598	127	—	32	4,6	60	32	8	**364.013**	**170.276**
KSEM321R1WD50M	32,010	1.2602	36,000	1.4173	147	79	36	4,9	68	50	9	**364.015**	**170.276**
KSEM361R1WD50M	36,010	1.4177	40,000	1.5748	155	87	40	5,5	68	50	10	**364.015**	**170.276**

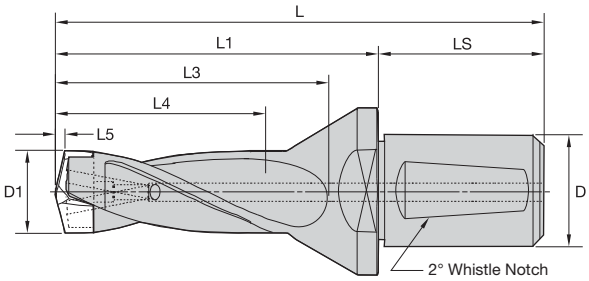
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.



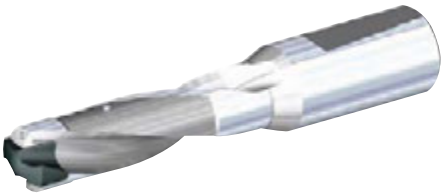


for diameters < 16mm, DIN 6535 - HE
for diameters > 16mm, DIN 1835 part 1 form E

Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm



KSEM WN/WD50 Shank • 3 x D/5 x D • Metric

3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM125R3WN16M	**KSEM125R5WN16M**	12,500	.4921	13,000	.5118	2,0	48	16	C	**364.017**
KSEM130R3WN16M	**KSEM130R5WN16M**	13,000	.5118	13,500	.5314	2,1	48	16	C	**364.017**
KSEM135R3WN16M	**KSEM135R5WN16M**	13,500	.5315	13,500	.5314	2,1	48	16	C	**364.017**
KSEM136R3WN16M	**KSEM136R5WN16M**	13,510	.5319	14,000	.5512	2,2	48	16	B	**364.016**
KSEM140R3WN16M	**KSEM140R5WN16M**	14,000	.5512	14,500	.5708	2,2	48	16	B	**364.016**
KSEM145R3WN20M	**KSEM145R5WN20M**	14,500	.5709	14,500	.5708	2,3	50	20	B	**364.016**
KSEM146R3WN20M	**KSEM146R5WN20M**	14,510	.5713	15,000	.5906	2,3	50	20	A	**364.016**
KSEM150R3WN20M	**KSEM150R5WN20M**	15,000	.5906	15,500	.6102	2,4	50	20	A	**364.016**
KSEM155R3WN20M	**KSEM155R5WN20M**	15,500	.6102	15,874	.6249	2,5	50	20	A	**364.016**
KSEM160R3WN20M	**KSEM160R5WN20M**	16,000	.6299	16,500	.6496	2,5	50	20	1	**364.010**
KSEM165R3WN20M	**KSEM165R5WN20M**	16,500	.6496	17,000	.6693	2,6	50	20	1	**364.010**
KSEM170R3WN20M	**KSEM170R5WN20M**	17,000	.6693	17,500	.6890	2,7	50	20	1	**364.010**
KSEM175R3WN20M	**KSEM175R5WN20M**	17,500	.6890	18,000	.7086	2,8	50	20	1	**364.010**
KSEM180R3WN20M	**KSEM180R5WN20M**	18,000	.7087	18,000	.7086	2,9	50	20	1	**364.010**
–	**KSEM181R5WN25M**	18,010	.7091	18,500	.7283	2,9	56	25	2	**364.010**
KSEM185R3WN25M	**KSEM185R5WN25M**	18,500	.7283	19,000	.7480	2,9	56	25	2	**364.010**
KSEM190R3WN25M	**KSEM190R5WN25M**	19,000	.7480	19,500	.7677	3,0	56	25	2	**364.010**
KSEM195R3WN25M	**KSEM195R5WN25M**	19,500	.7677	19,999	.7873	3,1	56	25	2	**364.010**
KSEM200R3WN25M	**KSEM200R5WN25M**	20,000	.7874	20,500	.8071	3,2	56	25	3	**364.011**
KSEM205R3WN25M	**KSEM205R5WN25M**	20,500	.8071	21,000	.8268	3,3	56	25	3	**364.011**
KSEM210R3WN25M	**KSEM210R5WN25M**	21,000	.8268	21,500	.8465	3,3	56	25	3	**364.011**
KSEM215R3WN25M	**KSEM215R5WN25M**	21,500	.8465	22,000	.8661	3,4	56	25	3	**364.011**
KSEM220R3WN25M	**KSEM220R5WN25M**	22,000	.8661	22,000	.8661	3,5	56	25	3	**364.011**
–	**KSEM221R5WN25M**	22,010	.8665	22,500	.8858	3,5	56	25	4	**364.011**

(*continued*)

(KSEM WN/WD50 Shank • 3 x D/5 x D • Metric — continued)

3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM225R3WN25M	KSEM225R5WN25M	22,500	.8858	23,000	.9055	3,6	56	25	4	364.011
KSEM230R3WN25M	KSEM230R5WN25M	23,000	.9055	23,500	.9252	3,7	56	25	4	364.011
KSEM235R3WN25M	KSEM235R5WN25M	23,500	.9252	24,000	.9448	3,7	56	25	4	364.011
KSEM240R3WN25M	KSEM240R5WN25M	24,000	.9449	24,000	.9448	3,8	56	25	4	364.011
–	KSEM241R5WN32M	24,010	.9453	24,500	.9646	3,8	60	32	5	364.012
KSEM245R3WN32M	KSEM245R5WN32M	24,500	.9646	25,000	.9843	3,9	60	32	5	364.012
KSEM250R3WN32M	KSEM250R5WN32M	25,000	.9843	25,500	1.0039	3,8	60	32	5	364.012
KSEM255R3WN32M	KSEM255R5WN32M	25,500	1.0039	26,000	1.0236	3,9	60	32	5	364.012
KSEM260R3WN32M	KSEM260R5WN32M	26,000	1.0236	26,000	1.0236	4,0	60	32	5	364.012
–	KSEM261R5WN32M	26,010	1.0240	26,500	1.0433	4,0	60	32	6	364.012
KSEM265R3WN32M	KSEM265R5WN32M	26,500	1.0433	27,000	1.0630	4,1	60	32	6	364.012
KSEM270R3WN32M	KSEM270R5WN32M	27,000	1.0630	27,500	1.0827	4,2	60	32	6	364.012
KSEM275R3WN32M	KSEM275R5WN32M	27,500	1.0827	28,000	1.1023	4,2	60	32	6	364.012
KSEM280R3WN32M	KSEM280R5WN32M	28,000	1.1024	28,000	1.1023	4,3	60	32	6	364.012
–	KSEM281R5WN32M	28,016	1.1030	28,500	1.1220	4,3	60	32	7	364.013
KSEM285R3WN32M	KSEM285R5WN32M	28,500	1.1220	29,000	1.1417	4,4	60	32	7	364.013
KSEM290R3WN32M	KSEM290R5WN32M	29,000	1.1417	29,500	1.1614	4,5	60	32	7	364.013
KSEM295R3WN32M	KSEM295R5WN32M	29,500	1.1614	30,000	1.1811	4,5	60	32	7	364.013
KSEM300R3WN32M	KSEM300R5WN32M	30,000	1.1811	30,000	1.1811	4,6	60	32	7	364.013
–	KSEM301R5WN32M	30,010	1.1815	30,500	1.2008	4,6	60	32	8	364.013
KSEM305R3WN32M	KSEM305R5WN32M	30,500	1.2008	31,000	1.2205	4,7	60	32	8	364.013
KSEM310R3WN32M	KSEM310R5WN32M	31,000	1.2205	31,500	1.2402	4,8	60	32	8	364.013
KSEM315R3WN32M	KSEM315R5WN32M	31,500	1.2402	32,000	1.2598	4,8	60	32	8	364.013
KSEM320R3WN32M	KSEM320R5WN32M	32,000	1.2598	32,000	1.2598	4,9	60	32	8	364.013
KSEM321R3WD50M	KSEM321R5WD50M	32,010	1.2602	33,000	1.2992	4,9	68	50	9	364.015
KSEM330R3WD50M	KSEM330R5WD50M	33,000	1.2992	34,000	1.3386	5,1	68	50	9	364.015
KSEM340R3WD50M	KSEM340R5WD50M	34,000	1.3386	35,000	1.3780	5,2	68	50	9	364.015
KSEM350R3WD50M	KSEM350R5WD50M	35,000	1.3780	36,000	1.4173	5,4	68	50	9	364.015
KSEM360R3WD50M	KSEM360R5WD50M	36,000	1.4173	36,000	1.4173	5,5	68	50	9	364.015
KSEM361R3WD50M	KSEM361R5WD50M	36,010	1.4177	37,000	1.4567	5,5	68	50	10	364.015
KSEM370R3WD50M	KSEM370R5WD50M	37,000	1.4567	38,000	1.4961	5,7	68	50	10	364.015
KSEM380R3WD50M	KSEM380R5WD50M	38,000	1.4961	39,000	1.5354	5,8	68	50	10	364.015
KSEM390R3WD50M	KSEM390R5WD50M	39,000	1.5354	40,000	1.5748	6,0	68	50	10	364.015
KSEM400R3WD50M	KSEM400R5WD50M	40,000	1.5748	40,000	1.5748	6,2	68	50	10	364.015

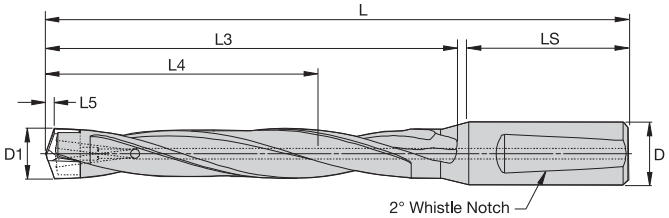


KSEM WD40 Shank • 3 x D/5 x D • Metric

3 x D	5 x D	D1 mm	D1 in	L5	LS	D	seat size	central lock screw
KSEM321R3WD40M	KSEM321R5WD40M	32,010	1.2602	5,6	68	40	9	364.015
KSEM330R3WD40M	KSEM330R5WD40M	33,000	1.2992	5,8	68	40	9	364.015
KSEM340R3WD40M	KSEM340R5WD40M	34,000	1.3386	6,0	68	40	9	364.015
KSEM350R3WD40M	KSEM350R5WD40M	35,000	1.3780	6,1	68	40	9	364.015
KSEM360R3WD40M	KSEM360R5WD40M	36,000	1.4173	6,3	68	40	9	364.015
KSEM361R3WD40M	KSEM361R5WD40M	36,010	1.4177	6,3	68	40	10	364.015
KSEM370R3WD40M	KSEM370R5WD40M	37,000	1.4567	6,5	68	40	10	364.015
KSEM380R3WD40M	KSEM380R5WD40M	38,000	1.4961	6,7	68	40	10	364.015
KSEM390R3WD40M	KSEM390R5WD40M	39,000	1.5354	6,9	68	40	10	364.015
KSEM400R3WD40M	KSEM400R5WD40M	40,000	1.5748	7,0	68	40	10	364.015

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.





for diameter <16mm DIN 6535 — HE
for diameter >16mm DIN 1835 part 1 form E

For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H94–H95.



KSEM WN Shank • 7 x D/10 x D • Metric

7x	10x	D1		D1 max						
7 x D	10 x D	mm	in	mm	in	L5	LS	D	seat size	central lock screw
KSEM125R7WN16M	KSEM125R10WN16M	12,500	.4921	13,000	.5118	2,0	48	16	C	364.017
KSEM130R7WN16M	KSEM130R10WN16M	13,000	.5118	13,500	.5314	2,1	48	16	C	364.017
KSEM135R7WN16M	KSEM135R10WN16M	13,500	.5315	13,500	.5314	2,1	48	16	C	364.017
KSEM136R7WN16M	KSEM136R10WN16M	13,510	.5319	14,000	.5512	2,2	48	16	B	364.016
KSEM140R7WN16M	KSEM140R10WN16M	14,000	.5512	14,500	.5708	2,2	48	16	B	364.016
KSEM145R7WN20M	KSEM145R10WN20M	14,500	.5709	14,500	.5708	2,3	50	20	B	364.016
KSEM146R7WN20M	KSEM146R10WN20M	14,510	.5713	15,000	.5906	2,3	50	20	A	364.016
KSEM150R7WN20M	KSEM150R10WN20M	15,000	.5906	15,500	.6102	2,4	50	20	A	364.016
KSEM155R7WN20M	KSEM155R10WN20M	15,500	.6102	15,874	.6249	2,5	50	20	A	364.016
KSEM160R7WN20M	KSEM160R10WN20M	16,000	.6299	16,500	.6496	2,5	50	20	1	364.010
KSEM165R7WN20M	KSEM165R10WN20M	16,500	.6496	17,000	.6693	2,6	50	20	1	364.010
KSEM170R7WN20M	KSEM170R10WN20M	17,000	.6693	17,500	.6890	2,7	50	20	1	364.010
KSEM175R7WN20M	KSEM175R10WN20M	17,500	.6890	18,000	.7086	2,8	50	20	1	364.010
KSEM180R7WN20M	KSEM180R10WN20M	18,000	.7087	18,000	.7086	2,9	50	20	1	364.010
—	KSEM181R10WN25M	18,010	.7091	18,500	.7283	2,9	56	25	2	364.010
KSEM185R7WN25M	KSEM185R10WN25M	18,500	.7283	19,000	.7480	2,9	56	25	2	364.010
KSEM190R7WN25M	KSEM190R10WN25M	19,000	.7480	19,500	.7677	3,0	56	25	2	364.010
KSEM195R7WN25M	KSEM195R10WN25M	19,500	.7677	19,999	.7873	3,1	56	25	2	364.010
KSEM200R7WN25M	KSEM200R10WN25M	20,000	.7874	20,500	.8071	3,2	56	25	3	364.011
KSEM205R7WN25M	KSEM205R10WN25M	20,500	.8071	21,000	.8268	3,3	56	25	3	364.011
KSEM210R7WN25M	KSEM210R10WN25M	21,000	.8268	21,500	.8465	3,3	56	25	3	364.011
KSEM215R7WN25M	KSEM215R10WN25M	21,500	.8465	22,000	.8661	3,4	56	25	3	364.011
KSEM220R7WN25M	KSEM220R10WN25M	22,000	.8661	22,000	.8661	3,5	56	25	3	364.011
—	KSEM221R10WN25M	22,010	.8665	22,500	.8858	3,5	56	25	4	364.011
KSEM225R7WN25M	KSEM225R10WN25M	22,500	.8858	23,000	.9055	3,6	56	25	4	364.011
KSEM230R7WN25M	KSEM230R10WN25M	23,000	.9055	23,500	.9252	3,7	56	25	4	364.011
KSEM235R7WN25M	KSEM235R10WN25M	23,500	.9252	24,000	.9448	3,7	56	25	4	364.011
KSEM240R7WN25M	KSEM240R10WN25M	24,000	.9449	24,000	.9448	3,8	56	25	4	364.011
—	KSEM241R10WN32M	24,010	.9453	24,500	.9646	3,8	60	32	5	364.012
KSEM245R7WN32M	KSEM245R10WN32M	24,500	.9646	25,000	.9843	3,9	60	32	5	364.012
KSEM250R7WN32M	KSEM250R10WN32M	25,000	.9843	25,500	1.0039	3,8	60	32	5	364.012
KSEM255R7WN32M	KSEM255R10WN32M	25,500	1.0039	26,000	1.0236	3,9	60	32	5	364.012

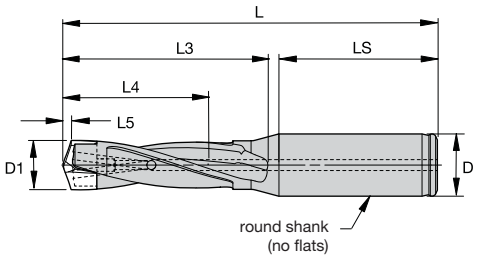
(continued)

(KSEM WN Shank • 7 x D/10 x D • Metric — continued)

7 x D	10 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
KSEM260R7WN32M	**KSEM260R10WN32M**	26,000	1.0236	26,000	1.0236	4,0	60	32	5	**364.012**
–	**KSEM261R10WN32M**	26,010	1.0240	26,500	1.0433	4,0	60	32	6	**364.012**
KSEM265R7WN32M	**KSEM265R10WN32M**	26,500	1.0433	27,000	1.0630	4,1	60	32	6	**364.012**
KSEM270R7WN32M	**KSEM270R10WN32M**	27,000	1.0630	27,500	1.0827	4,2	60	32	6	**364.012**
KSEM275R7WN32M	**KSEM275R10WN32M**	27,500	1.0827	28,000	1.1023	4,2	60	32	6	**364.012**
KSEM280R7WN32M	**KSEM280R10WN32M**	28,000	1.1024	28,000	1.1023	4,3	60	32	6	**364.012**
–	**KSEM281R10WN32M**	28,016	1.1030	28,500	1.1220	4,3	60	32	7	**364.013**
KSEM285R7WN32M	**KSEM285R10WN32M**	28,500	1.1220	29,000	1.1417	4,4	60	32	7	**364.013**
KSEM290R7WN32M	**KSEM290R10WN32M**	29,000	1.1417	29,500	1.1614	4,5	60	32	7	**364.013**
KSEM295R7WN32M	**KSEM295R10WN32M**	29,500	1.1614	30,000	1.1811	4,5	60	32	7	**364.013**
KSEM300R7WN32M	**KSEM300R10WN32M**	30,000	1.1811	30,000	1.1811	4,6	60	32	7	**364.013**
–	**KSEM301R10WN32M**	30,010	1.1815	30,500	1.2008	4,6	60	32	8	**364.013**
KSEM305R7WN32M	**–**	30,500	1.2008	31,000	1.2205	4,7	60	32	8	**364.013**
KSEM310R7WN32M	**KSEM310R10WN32M**	31,000	1.2205	31,500	1.2402	4,8	60	32	8	**364.013**
KSEM315R7WN32M	**–**	31,500	1.2402	32,000	1.2598	4,8	60	32	8	**364.013**
KSEM320R7WN32M	**KSEM320R10WN32M**	32,000	1.2598	32,000	1.2598	4,9	60	32	8	**364.013**

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately; see pages H52–H71.







For information on L, L3, and L4 max, see page H97.

KSEM Round Shank • 3 x D/5 x D • Inch

3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
–	KSEM0500R5SS050	12,700	.5000	13,200	.5197	.079	1.50	.5000	C	364.017
KSEM0500R3SS075	KSEM0500R5SS075	12,700	.5000	13,200	.5197	.079	2.00	.7500	C	364.017
KSEM0509R3SS075	KSEM0509R5SS075	12,929	.5090	13,429	.5287	.081	2.00	.7500	C	364.017
–	KSEM0516R5SS075	13,106	.5160	13,500	.5314	.082	2.00	.7500	C	364.017
KSEM0531R3SS075	KSEM0531R5SS075	13,494	.5313	13,500	.5314	.084	2.00	.7500	C	364.017
KSEM0547R3SS075	–	13,891	.5469	14,394	.5667	.087	2.00	.7500	B	364.016
–	KSEM0547R5SS075	13,894	.5470	14,394	.5667	.087	2.00	.7500	B	364.016
KSEM0563R3SS075	KSEM0563R5SS075	14,300	.5630	14,500	.5708	.089	2.00	.7500	B	364.016
KSEM0578R3SS075	KSEM0578R5SS075	14,681	.5780	15,181	.5977	.092	2.00	.7500	A	364.016
KSEM0594R3SS075	KSEM0594R5SS075	15,088	.5940	15,588	.6137	.094	2.00	.7500	A	364.016
KSEM0609R3SS075	KSEM0609R5SS075	15,469	.6090	15,874	.6249	.097	2.00	.7500	A	364.016
KSEM0625R3SS075	KSEM0625R5SS075	15,875	.6250	16,375	.6447	.099	2.00	.7500	1	364.010
KSEM0634R3SS075	KSEM0634R5SS075	16,104	.6340	16,604	.6537	.101	2.00	.7500	1	364.010
KSEM0641R3SS075	KSEM0641R5SS075	16,281	.6410	16,781	.6607	.102	2.00	.7500	1	364.010
KSEM0656R3SS075	KSEM0656R5SS075	16,670	.6563	17,170	.6760	.104	2.00	.7500	1	364.010
KSEM0672R3SS075	KSEM0672R5SS075	17,069	.6720	17,569	.6917	.107	2.00	.7500	1	364.010
KSEM0688R3SS075	KSEM0688R5SS075	17,463	.6875	17,963	.7072	.109	2.00	.7500	1	364.010
KSEM0703R3SS075	KSEM0703R5SS075	17,856	.7030	18,000	.7086	.112	2.00	.7500	1	364.010
KSEM0719R3SS075	KSEM0719R5SS075	18,256	.7187	18,756	.7384	.114	2.00	.7500	2	364.010
KSEM0734R3SS075	KSEM0734R5SS075	18,644	.7340	19,144	.7537	.117	2.00	.7500	2	364.010
KSEM0750R3SS075	KSEM0750R5SS075	19,050	.7500	19,550	.7697	.119	2.00	.7500	2	364.010
KSEM0750R3SS100	KSEM0750R5SS100	19,050	.7500	19,550	.7697	.119	3.00	1.0000	2	364.010
KSEM0759R3SS075	KSEM0759R5SS075	19,279	.7590	19,779	.7787	.121	2.00	.7500	2	364.010
KSEM0766R3SS100	KSEM0766R5SS100	19,456	.7660	19,956	.7857	.122	3.00	1.0000	2	364.010
KSEM0781R3SS100	KSEM0781R5SS100	19,844	.7813	19,999	.7873	.124	3.00	1.0000	2	364.010
KSEM0797R3SS100	KSEM0797R5SS100	20,244	.7970	20,744	.8167	.127	3.00	1.0000	3	364.011
KSEM0813R3SS100	KSEM0813R5SS100	20,638	.8125	21,138	.8322	.129	3.00	1.0000	3	364.011
KSEM0844R3SS100	KSEM0844R5SS100	21,431	.8437	21,931	.8634	.134	3.00	1.0000	3	364.011
KSEM0859R3SS100	KSEM0859R5SS100	21,819	.8590	22,000	.8661	.136	3.00	1.0000	3	364.011
KSEM0875R3SS100	KSEM0875R5SS100	22,225	.8750	22,725	.8947	.139	3.00	1.0000	4	364.011
KSEM0875R3SS125	KSEM0875R5SS125	22,225	.8750	22,725	.8947	.139	3.25	1.2500	4	364.011
KSEM0884R3SS100	KSEM0884R5SS100	22,454	.8840	22,954	.9037	.140	3.00	1.0000	4	364.011

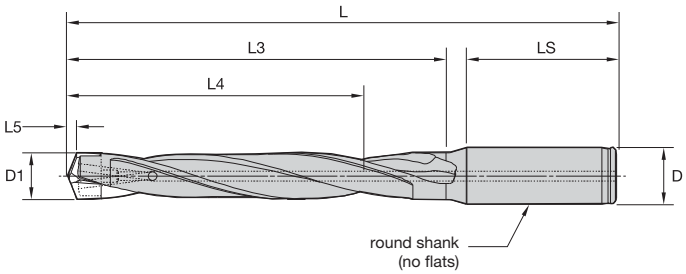
(continued)

(KSEM Round Shank • 3 x D/5 x D • Inch — continued)

		D1		D1 max						
3 x D	5 x D	mm	in	mm	in	L5	LS	D	seat size	central lock screw
KSEM0906R3SS100	KSEM0906R5SS100	23,019	.9063	23,519	.9260	.144	3.00	1.0000	4	364.011
KSEM0922R3SS100	KSEM0922R5SS100	23,419	.9220	23,919	.9417	.146	3.00	1.0000	4	364.011
KSEM0938R3SS100	KSEM0938R5SS100	23,813	.9375	24,000	.9448	.149	3.00	1.0000	4	364.011
KSEM0969R3SS100	KSEM0969R5SS100	24,606	.9687	25,106	.9884	.154	3.00	1.0000	5	364.012
KSEM0984R3SS100	KSEM0984R5SS100	25,003	.9844	25,503	1.0041	.151	3.00	1.0000	5	364.012
KSEM1000R3SS100	KSEM1000R5SS100	25,400	1.0000	25,900	1.0197	.154	3.00	1.0000	5	364.012
–	KSEM1000R5SS125	25,400	1.0000	25,900	1.0197	.154	3.25	1.2500	5	364.012
KSEM1011R3SS125	KSEM1011R5SS125	25,679	1.0110	26,000	1.0236	.156	3.25	1.2500	5	364.012
KSEM1031R3SS125	KSEM1031R5SS125	26,195	1.0313	26,695	1.0510	.159	3.25	1.2500	6	364.012
–	KSEM1047R5SS125	26,594	1.0470	27,094	1.0667	.161	3.25	1.2500	6	364.012
KSEM1063R3SS125	KSEM1063R5SS125	26,988	1.0625	27,488	1.0822	.164	3.25	1.2500	6	364.012
–	KSEM1094R5SS125	27,781	1.0937	28,000	1.1023	.168	3.25	1.2500	6	364.012
KSEM1109R3SS125	KSEM1109R5SS125	28,169	1.1090	28,669	1.1287	.171	3.25	1.2500	7	364.013
KSEM1125R3SS125	KSEM1125R5SS125	28,575	1.1250	29,075	1.1447	.173	3.25	1.2500	7	364.013
KSEM1156R3SS125	KSEM1156R5SS125	29,370	1.1563	29,870	1.1760	.178	3.25	1.2500	7	364.013
KSEM1172R3SS125	KSEM1172R5SS125	29,769	1.1720	30,000	1.1811	.180	3.25	1.2500	7	364.013
KSEM1188R3SS125	KSEM1188R5SS125	30,163	1.1875	30,663	1.2072	.183	3.25	1.2500	8	364.013
–	KSEM1203R5SS125	30,556	1.2030	31,056	1.2227	.185	3.25	1.2500	8	364.013
KSEM1219R3SS125	KSEM1219R5SS125	30,958	1.2188	31,458	1.2385	.188	3.25	1.2500	8	364.013
KSEM1250R3SS125	KSEM1250R5SS125	31,750	1.2500	32,000	1.2598	.192	3.25	1.2500	8	364.013
KSEM1250R3SS150	KSEM1250R5SS150	31,750	1.2500	32,000	1.2598	.192	3.75	1.5000	8	364.013
KSEM1281R3SS150	KSEM1281R5SS150	32,537	1.2810	33,537	1.3204	.197	3.75	1.5000	9	364.015
KSEM1297R3SS150	KSEM1297R5SS150	32,941	1.2969	33,941	1.3363	.200	3.75	1.5000	9	364.015
KSEM1313R3SS150	KSEM1313R5SS150	33,350	1.3130	34,350	1.3524	.202	3.75	1.5000	9	364.015
KSEM1328R3SS150	KSEM1328R5SS150	33,731	1.3280	34,731	1.3674	.204	3.75	1.5000	9	364.015
–	KSEM1344R5SS150	34,138	1.3440	35,138	1.3834	.207	3.75	1.5000	9	364.015
KSEM1375R3SS150	KSEM1375R5SS150	34,925	1.3750	35,925	1.4144	.212	3.75	1.5000	9	364.015
KSEM1406R3SS150	KSEM1406R5SS150	35,712	1.4060	36,000	1.4173	.216	3.75	1.5000	9	364.015
–	KSEM1422R5SS150	36,119	1.4220	37,119	1.4614	.219	3.75	1.5000	10	364.015
KSEM1438R3SS150	KSEM1438R5SS150	36,513	1.4375	37,513	1.4769	.221	3.75	1.5000	10	364.015
–	KSEM1469R5SS150	37,313	1.4690	38,313	1.5084	.226	3.75	1.5000	10	364.015
KSEM1500R3SS150	KSEM1500R5SS150	38,100	1.5000	39,100	1.5394	.231	3.75	1.5000	10	364.015
KSEM1514R3SS150	KSEM1514R5SS150	38,456	1.5140	39,456	1.5534	.233	3.75	1.5000	10	364.015

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately; see pages H52–H71.







For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H96.

KSEM Round Shank • 7 x D/10 x D • Inch

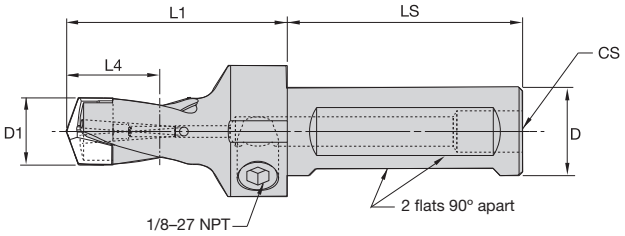
10 x D	7 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	central lock screw
–	KSEM0500R7SS050	12,700	.5000	13,200	.5197	.079	1.50	.5000	C	364.017
KSEM0500R10SS075	KSEM0500R7SS075	12,700	.5000	13,200	.5197	.079	2.00	.7500	C	364.017
KSEM0509R10SS075	KSEM0509R7SS075	12,929	.5090	13,429	.5287	.081	2.00	.7500	C	364.017
KSEM0516R10SS075	KSEM0516R7SS075	13,096	.5156	13,500	.5314	.082	2.00	.7500	C	364.017
KSEM0531R10SS075	KSEM0531R7SS075	13,494	.5313	13,500	.5314	.084	2.00	.7500	C	364.017
KSEM0547R10SS075	KSEM0547R7SS075	13,891	.5469	14,394	.5667	.087	2.00	.7500	B	364.016
KSEM0563R10SS075	KSEM0563R7SS075	14,288	.5625	14,500	.5708	.089	2.00	.7500	B	364.016
KSEM0578R10SS075	KSEM0578R7SS075	14,681	.5780	15,181	.5977	.092	2.00	.7500	A	364.016
KSEM0594R10SS075	KSEM0594R7SS075	15,083	.5938	15,588	.6137	.094	2.00	.7500	A	364.016
KSEM0609R10SS075	KSEM0609R7SS075	15,479	.6094	15,874	.6249	.097	2.00	.7500	A	364.016
KSEM0625R10SS075	KSEM0625R7SS075	15,875	.6250	16,375	.6447	.099	2.00	.7500	1	364.010
KSEM0634R10SS075	KSEM0634R7SS075	16,104	.6340	16,604	.6537	.101	2.00	.7500	1	364.010
KSEM0656R10SS075	KSEM0656R7SS075	16,670	.6563	17,170	.6760	.104	2.00	.7500	1	364.010
KSEM0688R10SS075	KSEM0688R7SS075	17,463	.6875	17,963	.7072	.109	2.00	.7500	1	364.010
KSEM0719R10SS075	KSEM0719R7SS075	18,256	.7187	18,756	.7384	.114	2.00	.7500	2	364.010
KSEM0750R10SS075	KSEM0750R7SS075	19,050	.7500	19,550	.7502	.119	2.00	.7500	2	364.010
KSEM0750R10SS100	KSEM0750R7SS100	19,050	.7500	19,550	.7502	.119	3.00	1.0000	2	364.010
–	KSEM0759R7SS075	19,279	.7590	19,779	.7787	.121	2.00	.7500	2	364.010
KSEM0759R10SS100	–	19,279	.7590	19,779	.7787	.121	3.00	1.0000	2	364.010
KSEM0781R10SS100	KSEM0781R7SS100	19,844	.7813	19,999	.7873	.124	3.00	1.0000	2	364.010
KSEM0813R10SS100	KSEM0813R7SS100	20,638	.8125	21,138	.8322	.129	3.00	1.0000	3	364.011
KSEM0844R10SS100	KSEM0844R7SS100	21,431	.8437	21,931	.8634	.134	3.00	1.0000	3	364.011
KSEM0875R10SS100	KSEM0875R7SS100	22,225	.8750	22,725	.8947	.139	3.00	1.0000	4	364.011
–	KSEM0875R7SS125	22,225	.8750	22,725	.8947	.139	3.25	1.2500	4	364.011
KSEM0884R10SS100	KSEM0884R7SS100	22,454	.8840	22,954	.9037	.140	3.00	1.0000	4	364.011
KSEM0906R10SS100	KSEM0906R7SS100	23,019	.9063	23,519	.9260	.144	3.00	1.0000	4	364.011
KSEM0938R10SS100	KSEM0938R7SS100	23,813	.9375	24,000	.9448	.149	3.00	1.0000	4	364.011
KSEM0969R10SS100	KSEM0969R7SS100	24,606	.9687	25,106	.9884	.154	3.00	1.0000	5	364.012
KSEM0984R10SS100	KSEM0984R7SS100	25,003	.9844	25,503	1.0041	.151	3.00	1.0000	5	364.012
KSEM1000R10SS100	KSEM1000R7SS100	25,400	1.0000	25,900	1.0197	.154	3.00	1.0000	5	364.012
KSEM1000R10SS125	KSEM1000R7SS125	25,400	1.0000	25,900	1.0197	.154	3.25	1.2500	5	364.012
KSEM1011R10SS125	KSEM1011R7SS125	25,679	1.0110	26,000	1.0236	.156	3.25	1.2500	5	364.012

(continued)

(KSEM Round Shank • 7 x D/10 x D • Inch — continued)

		D1		D1 max						
10 x D	7 x D	mm	in	mm	in	L5	LS	D	seat size	central lock screw
KSEM1031R10SS125	**KSEM1031R7SS125**	26,195	1.0313	26,695	1.0510	.159	3.25	1.2500	6	**364.012**
KSEM1063R10SS125	**KSEM1063R7SS125**	26,988	1.0625	27,488	1.0822	.164	3.25	1.2500	6	**364.012**
KSEM1094R10SS125	**KSEM1094R7SS125**	27,781	1.0937	28,000	1.1023	.168	3.25	1.2500	6	**364.012**
KSEM1125R10SS125	**KSEM1125R7SS125**	28,575	1.1250	29,075	1.1447	.173	3.25	1.2500	7	**364.013**
KSEM1156R10SS125	**KSEM1156R7SS125**	29,370	1.1563	29,870	1.1760	.178	3.25	1.2500	7	**364.013**
KSEM1188R10SS125	**KSEM1188R7SS125**	30,163	1.1875	30,663	1.2072	.183	3.25	1.2500	8	**364.013**
KSEM1219R10SS125	**KSEM1219R7SS125**	30,958	1.2188	31,458	1.2385	.188	3.25	1.2500	8	**364.013**
KSEM1250R10SS125	**KSEM1250R7SS125**	31,750	1.2500	32,000	1.2598	.192	3.25	1.2500	8	**364.013**
KSEM1250R10SS150	**KSEM1250R7SS150**	31,750	1.2500	32,000	1.2598	.192	3.75	1.5000	8	**364.013**

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.

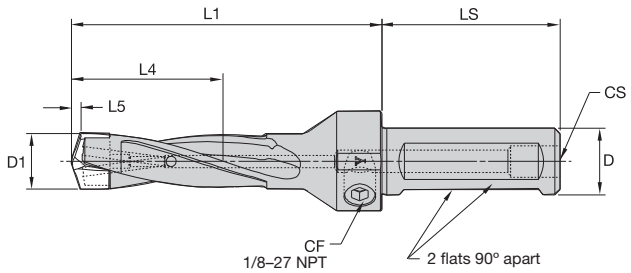




KSEM Flanged Shank • 1 x D • Inch

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	L	L1	L4 max	L5	LS	D	seat size	CS	central lock screw	wrench
KSEM0493R1SSF075	12,522	.4930	13,500	.5314	3.94	1.94	.53	.07	2.00	.750	C	1/8-27 NPT	**364.017**	**170.294**
KSEM0532R1SSF075	13,513	.5320	14,500	.5708	4.00	2.00	.61	.08	2.00	.750	B	1/8-27 NPT	**364.016**	**170.289**
KSEM0571R1SSF075	14,503	.5710	15,874	.6249	4.00	2.00	.63	.09	2.00	.750	A	1/8-27 NPT	**364.016**	**170.289**
KSEM0625R1SSF075	15,875	.6250	18,000	.7086	4.19	2.19	.71	.10	2.00	.750	1	1/8-27 NPT	**364.010**	**170.270**
KSEM0709R1SSF075	18,009	.7090	19,999	.7873	4.25	2.25	.78	.11	2.00	.750	2	1/8-27 NPT	**364.010**	**170.270**
KSEM0788R1SSF100	20,015	.7880	22,000	.8661	5.50	2.50	.87	.13	3.00	1.000	3	1/4-18 NPT	**364.011**	**170.272**
KSEM0867R1SSF100	22,022	.8670	24,000	.9448	5.56	2.56	.95	.14	3.00	1.000	4	1/4-18 NPT	**364.011**	**170.272**
KSEM0945R1SSF100	24,003	.9450	26,000	1.0236	5.63	2.63	1.02	.15	3.00	1.000	5	1/4-18 NPT	**364.012**	**170.274**
KSEM1024R1SSF125	26,010	1.0240	28,000	1.1023	6.13	2.88	1.11	.16	3.25	1.250	6	1/4-18 NPT	**364.012**	**170.274**
KSEM1103R1SSF125	28,016	1.1030	30,000	1.1811	6.19	2.94	1.18	.17	3.25	1.250	7	1/4-18 NPT	**364.013**	**170.276**
KSEM1182R1SSF125	30,023	1.1820	32,000	1.2598	6.25	3.00	1.27	.18	3.25	1.250	8	1/4-18 NPT	**364.013**	**170.276**
KSEM1260R1SSF125	32,004	1.2600	36,000	1.4173	6.50	3.25	1.42	.19	3.25	1.250	9	1/4-18 NPT	**364.015**	**170.276**
KSEM1418R1SSF125	36,017	1.4180	40,000	1.5748	6.63	3.38	1.57	.22	3.25	1.250	10	1/4-18 NPT	**364.015**	**170.276**

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.





For information on L, L3, and L4 max, see the Modular Drills Dimension Tables on page H96.

KSEM Flanged Shank • 3 x D/5 x D • Inch

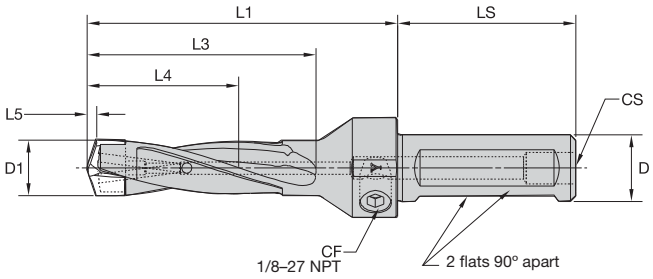
3 x D	5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	CS	central lock screw
KSEM0500R3SSF075	KSEM0500R5SSF075	12,700	.5000	13,200	.5197	.08	2.00	.750	C	1/8-27 NPT	364.017
KSEM0509R3SSF075	KSEM0509R5SSF075	12,929	.5090	13,429	.5287	.08	2.00	.750	C	1/8-27 NPT	364.017
KSEM0516R3SSF075	KSEM0516R5SSF075	13,106	.5160	13,500	.5314	.08	2.00	.750	C	1/8-27 NPT	364.017
KSEM0531R3SSF075	KSEM0531R5SSF075	13,487	.5310	13,500	.5314	.08	2.00	.750	C	1/8-27 NPT	364.017
KSEM0547R3SSF075	KSEM0547R5SSF075	13,894	.5470	14,394	.5667	.09	2.00	.750	B	1/8-27 NPT	364.016
KSEM0563R3SSF075	KSEM0563R5SSF075	14,300	.5630	14,500	.5708	.09	2.00	.750	B	1/8-27 NPT	364.016
KSEM0578R3SSF075	KSEM0578R5SSF075	14,681	.5780	15,181	.5977	.09	2.00	.750	A	1/8-27 NPT	364.016
KSEM0594R3SSF075	KSEM0594R5SSF075	15,088	.5940	15,588	.6137	.09	2.00	.750	A	1/8-27 NPT	364.016
KSEM0609R3SSF075	KSEM0609R5SSF075	15,469	.6090	15,874	.6249	.10	2.00	.750	A	1/8-27 NPT	364.016
KSEM0625R3SSF075	KSEM0625R5SSF075	15,875	.6250	16,375	.6447	.10	2.00	.750	1	1/8-27 NPT	364.010
KSEM0634R3SSF075	–	16,104	.6340	16,604	.6537	.10	2.00	.750	1	1/8-27 NPT	364.010
KSEM0641R3SSF075	–	16,281	.6410	16,781	.6607	.10	2.00	.750	1	1/8-27 NPT	364.010
KSEM0672R3SSF075	–	17,069	.6720	17,569	.6917	.11	2.00	.750	1	1/8-27 NPT	364.010
KSEM0688R3SSF075	KSEM0688R5SSF075	17,463	.6875	17,963	.7072	.11	2.00	.750	1	1/8-27 NPT	364.010
KSEM0703R3SSF075	–	17,856	.7030	18,000	.7086	.11	2.00	.750	1	1/8-27 NPT	364.010
KSEM0734R3SSF075	–	18,644	.7340	19,144	.7537	.12	2.00	.750	2	1/8-27 NPT	364.010
KSEM0750R3SSF075	KSEM0750R5SSF075	19,050	.7500	19,550	.7502	.12	2.00	.750	2	1/8-27 NPT	364.010
KSEM0750R3SSF100	KSEM0750R5SSF100	19,050	.7500	19,550	.7502	.12	3.00	1.000	2	1/4-18 NPT	364.010
KSEM0759R3SSF100	–	19,279	.7590	19,779	.7787	.12	3.00	1.000	2	1/4-18 NPT	364.010
KSEM0766R3SSF100	–	19,456	.7660	19,956	.7857	.12	3.00	1.000	2	1/4-18 NPT	364.010
KSEM0781R3SSF100	–	19,844	.7813	19,999	.7873	.12	3.00	1.000	2	1/4-18 NPT	364.010
KSEM0797R3SSF100	–	20,244	.7970	20,744	.8167	.13	3.00	1.000	3	1/4-18 NPT	364.011
KSEM0813R3SSF100	KSEM0813R5SSF100	20,638	.8125	21,138	.8322	.13	3.00	1.000	3	1/4-18 NPT	364.011
KSEM0859R3SSF100	–	21,819	.8590	22,000	.8661	.14	3.00	1.000	3	1/4-18 NPT	364.011
KSEM0875R3SSF100	KSEM0875R5SSF100	22,225	.8750	22,725	.8947	.14	3.00	1.000	4	1/4-18 NPT	364.011
KSEM0875R3SSF125	KSEM0875R5SSF125	22,225	.8750	22,725	.8947	.14	3.25	1.250	4	1/4-18 NPT	364.011
KSEM0884R3SSF100	–	22,454	.8840	22,954	.9037	.14	3.00	1.000	4	1/4-18 NPT	364.011
KSEM0906R3SSF100	–	23,019	.9063	23,519	.9260	.14	3.00	1.000	4	1/4-18 NPT	364.011
KSEM0922R3SSF100	–	23,419	.9220	23,919	.9417	.15	3.00	1.000	4	1/4-18 NPT	364.011
KSEM0938R3SSF100	KSEM0938R5SSF100	23,813	.9375	24,000	.9448	.15	3.00	1.000	4	1/4-18 NPT	364.011
KSEM0969R3SSF100	KSEM0969R5SSF100	24,606	.9687	25,106	.9884	.15	3.00	1.000	5	1/4-18 NPT	364.012
KSEM0984R3SSF100	KSEM0984R5SSF100	25,003	.9844	25,503	1.0041	.15	3.00	1.000	5	1/4-18 NPT	364.012

(continued)

(KSEM Flanged Shank • 3 x D/5 x D • Inch — continued)

 3 x D	 5 x D	D1 mm	D1 in	D1 max mm	D1 max in	L5	LS	D	seat size	CS	 central lock screw
KSEM1000R3SSF100	**KSEM1000R5SSF100**	25,400	1.0000	25,900	1.0197	.15	3.00	1.000	5	1/4-18 NPT	**364.012**
KSEM1000R3SSF125	**KSEM1000R5SSF125**	25,400	1.0000	25,900	1.0197	.15	3.25	1.250	5	1/4-18 NPT	**364.012**
KSEM1011R3SSF100	–	25,679	1.0110	26,000	1.0236	.16	3.00	1.000	5	1/4-18 NPT	**364.012**
KSEM1031R3SSF125	–	26,195	1.0313	26,695	1.0510	.16	3.25	1.250	6	1/4-18 NPT	**364.012**
KSEM1047R3SSF125	–	26,594	1.0470	27,094	1.0667	.16	3.25	1.250	6	1/4-18 NPT	**364.012**
KSEM1063R3SSF125	**KSEM1063R5SSF125**	26,988	1.0625	27,488	1.0822	.16	3.25	1.250	6	1/4-18 NPT	**364.012**
KSEM1094R3SSF125	–	27,781	1.0937	28,000	1.1023	.17	3.25	1.250	6	1/4-18 NPT	**364.012**
KSEM1109R3SSF125	–	28,169	1.1090	28,669	1.1287	.17	3.25	1.250	7	1/4-18 NPT	**364.013**
KSEM1125R3SSF125	**KSEM1125R5SSF125**	28,575	1.1250	29,075	1.1447	.17	3.25	1.250	7	1/4-18 NPT	**364.013**
KSEM1156R3SSF125	–	29,370	1.1563	29,870	1.1760	.18	3.25	1.250	7	1/4-18 NPT	**364.013**
KSEM1188R3SSF125	**KSEM1188R5SSF125**	30,163	1.1875	30,663	1.2072	.18	3.25	1.250	8	1/4-18 NPT	**364.013**
KSEM1203R3SSF125	–	30,556	1.2030	31,056	1.2227	.19	3.25	1.250	8	1/4-18 NPT	**364.013**
KSEM1250R3SSF125	**KSEM1250R5SSF125**	31,750	1.2500	32,000	1.2598	.19	3.25	1.250	8	1/4-18 NPT	**364.013**
KSEM1250R3SSF150	**KSEM1250R5SSF150**	31,750	1.2500	32,000	1.2598	.19	3.75	1.500	8	1/4-18 NPT	**364.013**
KSEM1281R3SSF150	–	32,540	1.2811	36,000	1.4173	.20	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1281R5SSF150	–	32,540	1.2811	36,000	1.4173	.22	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1297R3SSF150	**KSEM1297R5SSF150**	32,940	1.2969	36,000	1.4173	.23	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1313R3SSF150	**KSEM1313R5SSF150**	33,340	1.3126	36,000	1.4173	.23	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1328R3SSF150	–	33,730	1.3280	36,000	1.4173	.23	3.75	1.500	9	1/4-18 NPT	**364.015**
–	**KSEM1328R5SSF150**	33,730	1.2380	36,000	1.4173	.23	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1344R3SSF150	**KSEM1344R5SSF150**	34,130	1.3437	36,000	1.4173	.24	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1375R3SSF150	**KSEM1375R5SSF150**	34,930	1.3752	36,000	1.4173	.24	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1406R3SSF150	**KSEM1406R5SSF150**	35,720	1.4063	36,000	1.4173	.25	3.75	1.500	9	1/4-18 NPT	**364.015**
KSEM1422R3SSF150	**KSEM1422R5SSF150**	36,120	1.4220	40,000	1.5748	.25	3.75	1.500	10	1/4-18 NPT	**364.015**
KSEM1438R3SSF150	**KSEM1438R5SSF150**	36,520	1.4378	40,000	1.5748	.25	3.75	1.500	10	1/4-18 NPT	**364.015**
KSEM1469R3SSF150	**KSEM1469R5SSF150**	37,310	1.4689	40,000	1.5748	.26	3.75	1.500	10	1/4-18 NPT	**364.015**
KSEM1500R3SSF150	**KSEM1500R5SSF150**	38,100	1.5000	40,000	1.5748	.26	3.75	1.500	10	1/4-18 NPT	**364.015**
KSEM1514R3SSF150	**KSEM1514R5SSF150**	38,460	1.5142	40,000	1.5748	.27	3.75	1.500	10	1/4-18 NPT	**364.015**

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on page H91–H92.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately; see pages H52–H71.





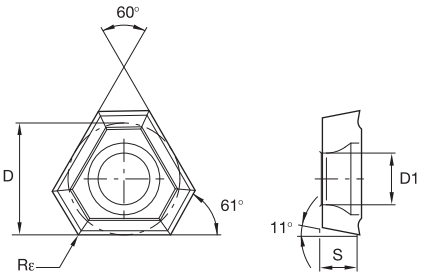
KSEM Flanged Shank • 8 x D • Inch

8 x D	D1 mm	D1 in	D1 max mm	D1 max in	L1	L3	L4 max	L5	LS	D	seat size	CS	central lock screw	wrench
KSEM0625R8SSF075	15,875	.6250	16,375	.6447	6.25	5.63	5.00	.10	2.00	.750	1	1/8-27 NPT	**364.010**	**170.271**
KSEM0688R8SSF075	17,463	.6875	17,963	.7072	7.00	6.38	5.50	.11	2.00	.750	1	1/8-27 NPT	**364.010**	**170.271**
KSEM0750R8SSF075	19,050	.7500	19,550	.7502	7.50	6.88	6.00	.12	2.00	.750	2	1/8-27 NPT	**364.010**	**170.281**
KSEM0750R8SSF100	19,050	.7500	19,550	.7502	7.50	6.88	6.00	.12	3.00	1.000	2	1/4-18 NPT	**364.010**	**170.281**
KSEM0813R8SSF100	20,638	.8125	21,138	.8322	8.00	7.38	6.50	.13	3.00	1.000	3	1/4-18 NPT	**364.011**	**170.282**
KSEM0875R8SSF100	22,225	.8750	22,725	.8947	8.50	7.88	7.00	.14	3.00	1.000	4	1/4-18 NPT	**364.011**	**170.282**
KSEM0875R8SSF125	22,225	.8750	22,725	.8947	8.50	7.88	7.00	.14	3.25	1.250	4	1/4-18 NPT	**364.011**	**170.282**
KSEM0938R8SSF100	23,813	.9375	24,000	.9448	9.13	8.51	7.50	.15	3.00	1.000	4	1/4-18 NPT	**364.011**	**170.282**
KSEM0984R8SSF100	25,003	.9844	25,503	1.0041	9.50	8.88	7.88	.15	3.00	1.000	5	1/4-18 NPT	**364.012**	**170.283**
KSEM1000R8SSF100	25,400	1.0000	25,900	1.0197	9.63	9.01	8.00	.15	3.00	1.000	5	1/4-18 NPT	**364.012**	**170.283**
KSEM1000R8SSF125	25,400	1.0000	25,900	1.0197	9.63	9.01	8.00	.15	3.25	1.250	5	1/4-18 NPT	**364.012**	**170.283**
KSEM1063R8SSF125	26,988	1.0625	27,488	1.0822	10.25	9.63	8.50	.16	3.25	1.250	6	1/4-18 NPT	**364.012**	**170.283**
KSEM1125R8SSF125	28,575	1.1250	29,075	1.1447	10.75	10.13	9.00	.17	3.25	1.250	7	1/4-18 NPT	**364.013**	**170.284**
KSEM1188R8SSF125	30,163	1.1875	30,663	1.2072	11.38	10.76	9.50	.18	3.25	1.250	8	1/4-18 NPT	**364.013**	**170.284**
KSEM1250R8SSF125	31,750	1.2500	32,000	1.2598	11.88	11.26	10.00	.19	3.25	1.250	8	1/4-18 NPT	**364.013**	**170.284**
KSEM1250R8SSF150	31,750	1.2500	32,000	1.2598	11.88	11.26	10.00	.19	3.75	1.500	8	1/4-18 NPT	**364.013**	**170.284**

KSEM Chamfering Solutions

- Drilling and chamfering in one operation.
- No height adjustment required.
- Low setup time.
- Use standard inserts.
- Tool bodies available as standard.





● first choice
○ alternate choice

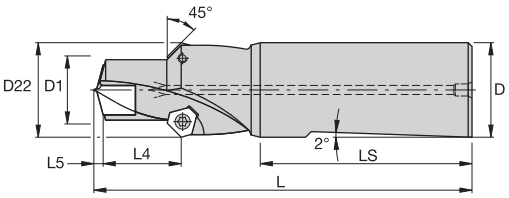
P		●	○
M	●	○	○
K		○	●
N	○	●	○
S		○	●
H			

TPGX-GD Geometry

	D		S		Rε		D1				
catalog number	mm	in	mm	in	mm	in	mm	in	KC7015	KC7315	KC7140
TPGX0902ZPRGD	5,56	.219	2,38	.094	0,20	.008	2,50	.098	●	●	●
TPGX1102ZPRGD	6,35	.250	2,38	.094	0,20	.008	2,85	.112	●	●	●
TPGX1303ZPRGD	7,94	.313	3,18	.125	0,20	.008	3,40	.134	●	●	●
TPGX1603ZPRGD	9,52	.375	3,18	.125	0,20	.008	4,40	.173	●	●	●

- Use any KSEM insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, insert screw, and wrenches.
- Order insert blades separately; see pages H52–H71.
- Order TPGX chamfering insert separately; see page H85.



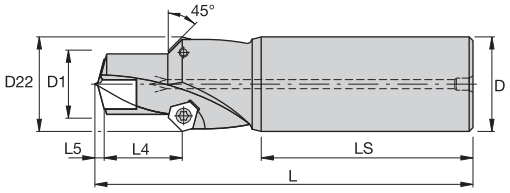




KSEM Bodies • WN/WD50 Shank with Chamfer • 1 x D • Metric

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	D22	L	L4 max	L5	LS	D	seat size	chamfer insert	central lock screw	wrench
KSEM125R1WN16F45M	12,500	.4921	13,500	.5314	18	107	14	2,0	48,0	16	C	KSEM1250	**364.017**	**170.051**
KSEM136R1WN16F45M	13,510	.5319	14,500	.5708	19	107	15	2,2	48,0	16	B	KSEM1351	**364.016**	**170.289**
KSEM146R1WN20F45M	14,510	.5713	15,874	.6249	20	109	16	2,3	50,0	20	A	KSEM1451	**364.016**	**170.289**
KSEM160R1WN20F45M	16,000	.6299	18,000	.7086	22	110	18	2,5	50,0	20	1	KSEM1600	**364.010**	**170.270**
KSEM181R1WN25F45M	18,010	.7091	19,999	.7873	25	118	20	2,9	56,0	25	2	KSEM1801	**364.010**	**170.270**
KSEM200R1WN25F45M	20,000	.7874	22,000	.8661	28	120	22	3,2	56,0	25	3	KSEM2000	**364.011**	**170.272**
KSEM221R1WN25F45M	22,010	.8665	24,000	.9448	30	123	24	3,5	56,0	25	4	KSEM2201	**364.011**	**170.272**
KSEM241R1WN32F45M	24,010	.9453	26,000	1.0236	34	129	26	3,8	60,0	32	5	KSEM2401	**364.012**	**170.055**
KSEM261R1WN32F45M	26,010	1.0240	28,000	1.1023	36	131	28	4,0	60,0	32	6	KSEM2601	**364.012**	**170.055**
KSEM281R1WN32F45M	28,016	1.1030	30,000	1.1811	38	134	30	4,3	60,0	32	7	KSEM2801	**364.013**	**170.276**
KSEM301R1WN32F45M	30,010	1.1815	32,000	1.2598	40	136	32	4,6	60,0	32	8	KSEM3001	**364.013**	**170.276**
KSEM321R1WD50F45M	32,010	1.2602	36,000	1.4173	42	155	36	4,9	68,0	50	9	KSEM3201	**364.015**	**170.276**
KSEM361R1WD50F45M	36,010	1.4177	40,000	1.5748	46	165	40	5,5	68,0	50	10	KSEM3601	**364.015**	**170.276**

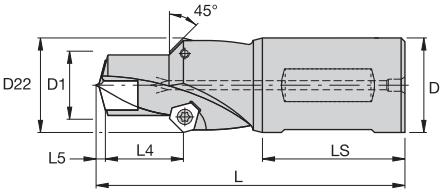
- Use any KSEM insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, insert screw, and wrenches.
- Order insert blades separately; see pages H52–H71.
- Order TPGX chamfering insert separately; see page H85.

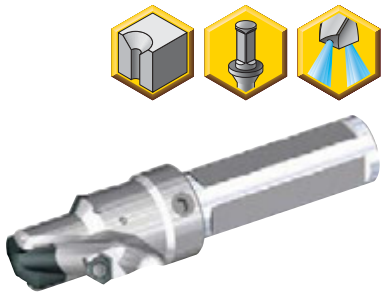




KSEM Bodies • WN/WD50 Shank with Chamfer • 1 x D • Metric

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	D22	L	L4 max	L5	LS	D	seat size	chamfer insert	central lock screw	wrench
KSEM125R1WN16F45M	12,500	.4921	13,500	.5314	18	107	14	2,0	48,0	16	C	KSEM1250	**364.017**	**170.051**
KSEM136R1WN16F45M	13,510	.5319	14,500	.5708	19	107	15	2,2	48,0	16	B	KSEM1351	**364.016**	**170.289**
KSEM146R1WN20F45M	14,510	.5713	15,874	.6249	20	109	16	2,3	50,0	20	A	KSEM1451	**364.016**	**170.289**
KSEM160R1WN20F45M	16,000	.6299	18,000	.7086	22	110	18	2,5	50,0	20	1	KSEM1600	**364.010**	**170.270**
KSEM181R1WN25F45M	18,010	.7091	19,999	.7873	25	118	20	2,9	56,0	25	2	KSEM1801	**364.010**	**170.270**
KSEM200R1WN25F45M	20,000	.7874	22,000	.8661	28	120	22	3,2	56,0	25	3	KSEM2000	**364.011**	**170.272**
KSEM221R1WN25F45M	22,010	.8665	24,000	.9448	30	123	24	3,5	56,0	25	4	KSEM2201	**364.011**	**170.272**
KSEM241R1WN32F45M	24,010	.9453	26,000	1.0236	34	129	26	3,8	60,0	32	5	KSEM2401	**364.012**	**170.055**
KSEM261R1WN32F45M	26,010	1.0240	28,000	1.1023	36	131	28	4,0	60,0	32	6	KSEM2601	**364.012**	**170.055**
KSEM281R1WN32F45M	28,016	1.1030	30,000	1.1811	38	134	30	4,3	60,0	32	7	KSEM2801	**364.013**	**170.276**
KSEM301R1WN32F45M	30,010	1.1815	32,000	1.2598	40	136	32	4,6	60,0	32	8	KSEM3001	**364.013**	**170.276**
KSEM321R1WD50F45M	32,010	1.2602	36,000	1.4173	42	155	36	4,9	68,0	50	9	KSEM3201	**364.015**	**170.276**
KSEM361R1WD50F45M	36,010	1.4177	40,000	1.5748	46	165	40	5,5	68,0	50	10	KSEM3601	**364.015**	**170.276**

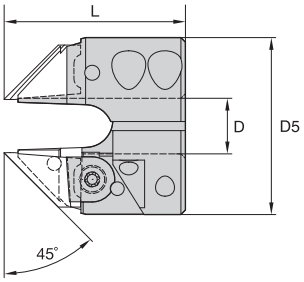




KSEM Bodies • Flanged Shank with Chamfer • 1 x D • Inch

1 x D	D1 mm	D1 in	D1 max mm	D1 max in	D22	L	L4 max	L5	LS	D	seat size	chamfer insert	central lock screw	pipe plug	wrench
KSEM0493R1SSF075F45	12,500	.4921	13,500	.5314	.70	4.00	.53	.08	2.00	.750	C	KSEM1250	**364.017**	**HSFS0125**	**170.051**
KSEM0532R1SSF075F45	13,600	.5354	14,500	.5708	.74	4.25	.57	.08	2.00	.750	B	KSEM1360	**364.016**	**HSFS0125**	**170.289**
KSEM0571R1SSF075F45	14,600	.5748	15,874	.6249	.77	4.25	.62	.09	2.00	.750	A	KSEM1460	**364.016**	**HSFS0125**	**170.289**
KSEM0625R1SSF075F45	15,880	.6252	18,000	.7086	.88	4.25	.71	.10	2.00	.750	1	KSEM0625	**364.010**	**HSFS0125**	**170.270**
KSEM0709R1SSF075F45	18,260	.7189	19,999	.7873	.96	4.25	.78	.11	2.00	.750	2	KSEM0719	**364.010**	**HSFS0125**	**170.270**
KSEM0788R1SSF100F45	20,000	.7874	22,000	.8661	1.11	5.50	.87	.13	3.00	1.000	3	KSEM2000	**364.011**	**HSFS0125**	**170.272**
KSEM0867R1SSF100F45	22,230	.8752	24,000	.9448	1.19	5.50	.94	.14	3.00	1.000	4	KSEM0875	**364.011**	**HSFS0125**	**170.272**
KSEM0945R1SSF100F45	24,500	.9646	26,000	1.0236	1.34	5.75	1.02	.15	3.00	1.000	5	KSEM2450	**364.012**	**HSFS0125**	**170.055**
KSEM1024R1SSF125F45	26,187	1.0310	28,000	1.1023	1.42	5.75	1.10	.16	3.25	1.250	6	KSEM1031	**364.012**	**HSFS0125**	**170.055**
KSEM1103R1SSF125F45	28,169	1.1090	30,000	1.1811	1.50	6.25	1.18	.17	3.25	1.250	7	KSEM1109	**364.013**	**HSFS0125**	**170.276**
KSEM1182R1SSF125F45	30,160	1.1874	32,000	1.2598	1.58	6.25	1.26	.18	3.25	1.250	8	KSEM1188	**364.013**	**HSFS0125**	**170.276**
KSEM1260R1SSF125F45	32,500	1.2795	36,000	1.4173	1.66	6.25	1.42	.19	3.25	1.250	9	KSEM3250	**364.015**	**HSFS0125**	**170.276**
KSEM1418R1SSF125F45	36,119	1.4220	40,000	1.5748	1.82	6.25	1.57	.22	3.25	1.250	10	KSEM1422	**364.015**	**HSFS0125**	**170.276**

- The NEW chamfering rings for KSEM are available in a diameter range of 12,5–32mm.
- The KSEM SEF ring is double-edged, features a more rigid design to withstand high feed rates, and reduces time-consuming deburring and small chamfer operations.
- Reduce machining time — combine drilling and chamfering in one operation.
- Short-term availability — standard tooling off-the-shelf — KSEM body and inserts, SEF ring, and SEFAS™ inserts.
- Flexibility — adjustable drilling depth.
- For speed and feed recommendations, please refer to catalog recommendations based on geometry and tool body length of the carrying KSEM tool.
- Small chamfers up to 1mm do not need further feed reduction.
- At deeper chamfers, a feed rate reduction of 50% is highly recommended to avoid vibrations and movement of the ring during operation.
- For inserts, please refer to SEFAS System.

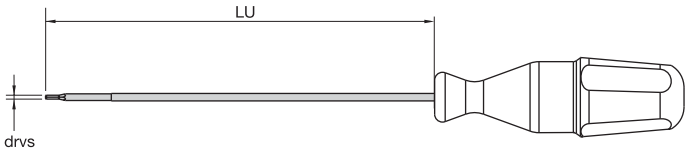




KSEM Chamfer Rings

	D		L		D5					
catalog number	mm	in	mm	in	mm	in	clamp assembly	chip deflector	chip deflector screw	drill clamp screw
KSEM125SEFM	12,5	.4921	40	1.57	39	1.54	360.551	360.660	128.508	191.726
KSEM130SEFM	13,0	.5118	40	1.57	39	1.54	360.551	360.660	128.508	191.726
KSEM135SEFM	13,5	.5315	40	1.57	39	1.54	360.551	360.660	128.508	191.726
KSEM140SEFM	14,0	.5512	40	1.57	40	1.57	360.551	360.661	128.508	199.123
KSEM145SEFM	14,5	.5709	40	1.57	40	1.57	360.551	360.661	128.508	199.123
KSEM150SEFM	15,0	.5906	40	1.57	40	1.57	360.551	360.662	128.508	199.123
KSEM155SEFM	15,5	.6102	40	1.57	40	1.57	360.551	360.662	128.508	199.123
KSEM160SEFM	16,0	.6299	42	1.65	43	1.69	360.551	360.663	128.508	199.123
KSEM165SEFM	16,5	.6496	42	1.65	43	1.69	360.551	360.663	128.508	199.123
KSEM170SEFM	17,0	.6693	42	1.65	43	1.69	360.551	360.663	128.508	199.123
KSEM175SEFM	17,5	.6890	42	1.65	43	1.69	360.551	360.663	128.508	199.123
KSEM180SEFM	18,0	.7087	42	1.65	43	1.69	360.551	360.663	128.508	199.123
KSEM185SEFM	18,5	.7283	42	1.65	43	1.69	360.551	360.664	128.508	199.123
KSEM190SEFM	19,0	.7480	42	1.65	43	1.69	360.551	360.664	128.508	199.123
KSEM195SEFM	19,5	.7677	42	1.65	43	1.69	360.551	360.664	128.508	199.123
KSEM200SEFM	20,0	.7874	48	1.89	50	1.97	360.551	360.665	128.510	199.123
KSEM205SEFM	20,5	.8071	48	1.89	50	1.97	360.551	360.665	128.510	199.123
KSEM210SEFM	21,0	.8268	48	1.89	50	1.97	360.551	360.665	128.510	199.123
KSEM215SEFM	21,5	.8465	48	1.89	50	1.97	360.551	360.665	128.510	199.123
KSEM220SEFM	22,0	.8661	48	1.89	50	1.97	360.551	360.665	128.510	199.123
KSEM225SEFM	22,5	.8858	50	1.97	50	1.97	360.551	360.666	128.510	–
KSEM230SEFM	23,0	.9055	50	1.97	50	1.97	360.551	360.666	128.510	–
KSEM235SEFM	23,5	.9252	50	1.97	50	1.97	360.551	360.666	128.510	–
KSEM240SEFM	24,0	.9449	50	1.97	50	1.97	360.551	360.666	128.510	–
KSEM245SEFM	24,5	.9646	54	2.13	55	2.17	360.551	360.667	128.510	–
KSEM250SEFM	25,0	.9843	54	2.13	55	2.17	360.551	360.667	128.510	–
KSEM255SEFM	25,5	1.0039	54	2.13	55	2.17	360.551	360.667	128.510	–
KSEM260SEFM	26,0	1.0236	54	2.13	55	2.17	360.551	360.667	128.510	–
KSEM265SEFM	26,5	1.0433	56	2.20	55	2.17	360.551	360.668	128.510	–
KSEM270SEFM	27,0	1.0630	56	2.20	55	2.17	360.551	360.668	128.510	–
KSEM275SEFM	27,5	1.0827	56	2.20	55	2.17	360.551	360.668	128.510	–
KSEM280SEFM	28,0	1.1024	56	2.20	55	2.17	360.551	360.668	128.510	–
KSEM285SEFM	28,5	1.1220	61	2.40	60	2.36	360.551	360.669	128.510	–
KSEM290SEFM	29,0	1.1417	61	2.40	60	2.36	360.551	360.669	128.510	–
KSEM295SEFM	29,5	1.1614	61	2.40	60	2.36	360.551	360.669	128.510	–
KSEM300SEFM	30,0	1.1811	61	2.40	60	2.36	360.551	360.669	128.510	–
KSEM305SEFM	30,5	1.2008	61	2.40	60	2.36	360.551	360.670	128.510	–
KSEM310SEFM	31,0	1.2205	61	2.40	60	2.36	360.551	360.670	128.510	–
KSEM315SEFM	31,5	1.2402	61	2.40	60	2.36	360.551	360.670	128.510	–
KSEM320SEFM	32,0	1.2598	61	2.40	60	2.36	360.551	360.670	128.510	–

NOTE: Order inserts separately; see the SEFAS system on page I30.



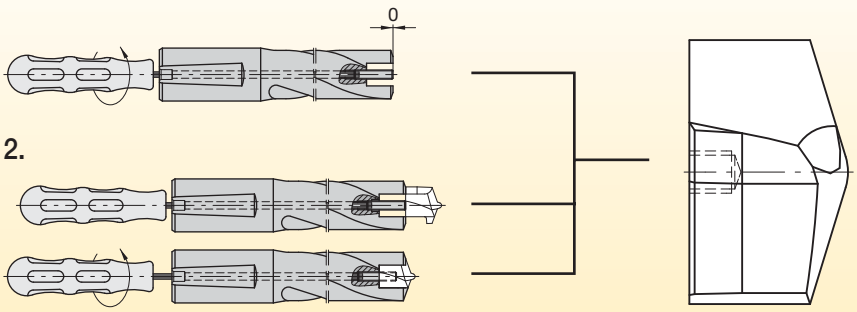


KSEM Wrenches

order number	catalog number	central lock screw D1<32mm	central lock screw D1≥32mm	DRVS	LU mm	LU in
1126021	**170.270**	364.010	–	1.5 mm	185,00	7
1126032	**170.271**	364.010	–	1.5 mm	225,00	9
1510773	**170.281**	364.010	–	1.5 mm	297,00	12
1255899	**170.285**	364.010	–	1.5 mm	351,00	14
1126040	**170.272**	364.011	–	2 mm	210,00	8
1126049	**170.273**	364.011	–	2 mm	260,00	10
1510776	**170.282**	364.011	–	2 mm	343,00	14
1255900	**170.286**	364.011	–	2 mm	405,00	16
1126066	**170.274**	364.012	–	2.5 mm	240,00	9
1126072	**170.275**	364.012	–	2.5 mm	295,00	12
1510779	**170.283**	364.012	–	2.5 mm	393,00	15
1255901	**170.287**	364.012	–	2.5 mm	459,00	18
1126079	**170.276**	364.101	364.015	3 mm	265,00	10
1126088	**170.277**	364.101	364.015	3 mm	330,00	13
1510781	**170.284**	364.101	364.015	3 mm	439,00	17
1255902	**170.288**	364.101	364.015	3 mm	513,00	20
1834819	**170.294**	364.017	–	T5	156,00	6
1836470	**170.295**	364.017	–	T5	188,00	7
1836471	**170.296**	364.017	–	T5	290,00	11
1795811	**170.289**	364.016	–	T6	156,00	6
1795956	**170.290**	364.016	–	T6	188,00	7
1795960	**170.291**	364.016	–	T6	290,00	11

Mounting the Inserts

1.



Inserts (<32mm) without Connector Pin

1) Use the screwdriver to set the threaded pin:
   - For inserts up to Ø 32mm, flush with the drill face.
   - For inserts bigger Ø 32mm, set 2mm below the drill face.

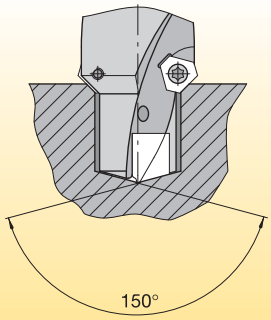
2) Tighten the insert using the screwdriver to fit securely in the insert seat.

To change the insert, turn the clamping screw counter-clockwise until the insert is released.

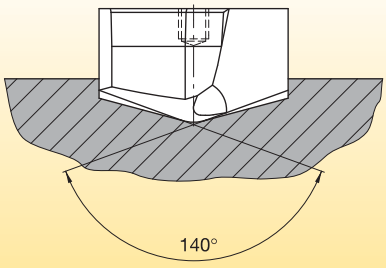
Repair of Damaged Threaded Pin

In the event that the central threaded pin becomes damaged, it can be removed after severing it in the tool body. To do this, drill beneath the insert seat in the tool body. The insert and threaded pin can then be removed. For information regarding the position and diameter of this repair hole, please refer to the manual (sheet **290.001 D/GB**) supplied with the tool body.

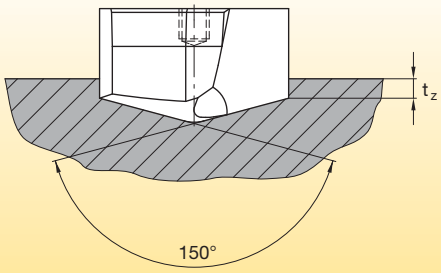
NOTE: For inserts without a connector pin, avoid jamming during mounting through precise positioning.



Precentering with FAS centering tool



HP inserts of the follower drill



Centering using PC inserts

Why is pre-centering necessary?

- Generally speaking, for drilling depths 5x the nominal diameter and above (5 x D).
- In unstable conditions (workpiece and tool clamping).

Why pre-center using PC inserts?

- Soft-cut entry of follower drill due to 150° point angle of the PC insert.
- No extension of the follower drill in the entry area.
- Prevent chipping and breaking on the cutting edges.
- To avoid deflection, it is recommended to pre-center with PC inserts using toolholders as short as possible (1 x D).

What happens if...
...a center cannot be used for technical reasons?

- Spot drill with normal insert at normal and reduced cutting data (approximately 1/2 vc and approximately 1/2 vf), then continue drilling with regular cutting data without lifting off/stopping.

...there is no suitable PC cutting insert in the standard range (ø)?

- Use a made-to-order PC insert with k7 tolerance in the required nominal diameter.

  OR

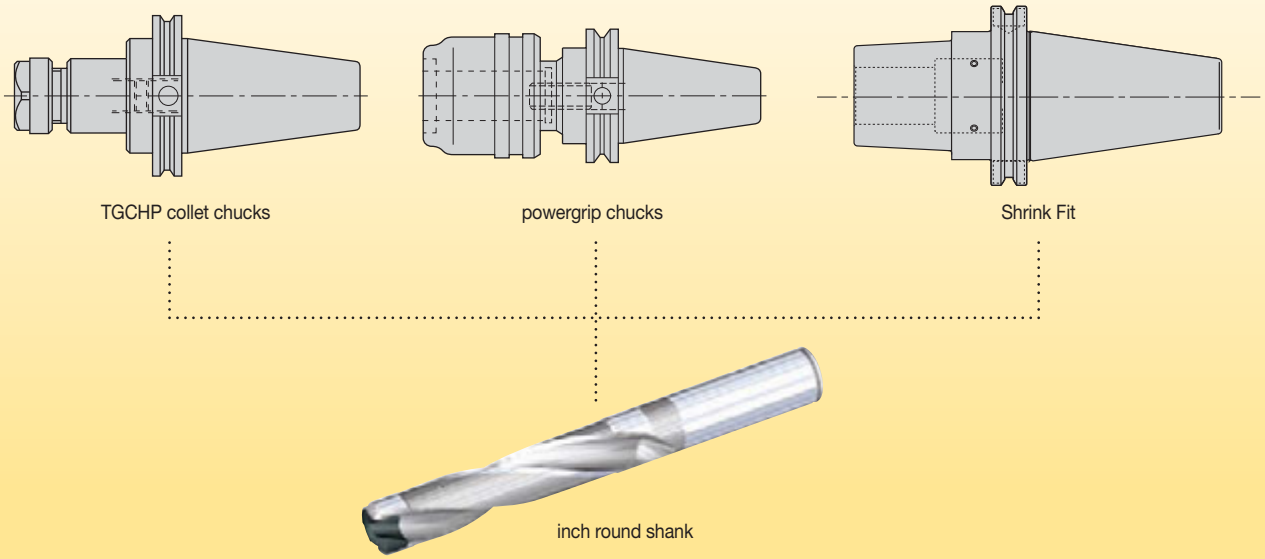
- Pre-center, using the same cutting insert as used for the follower drill but without the cutting edges penetrating the workpiece (spot drill ø approximately 90% of drill ø D1).

...only one tool body is required?

- Enter the workpiece with 50% feed until the cutting edges and the heels have penetrated the hole, then continue drilling without lifting off/stopping using regular cutting data.

Rotating Applications

KSEM inch drills with round shanks (no flats) are specifically designed for rotating applications where the drill rotates and the workpiece remains stationary.
The shank to drill-point location of these drills is held to an extremely close tolerance. To maintain accuracy, and get maximum performance from the KSEM drill, use only the approved toolholding method shown below.



TGCHP collet chucks | powergrip chucks | Shrink Fit

inch round shank

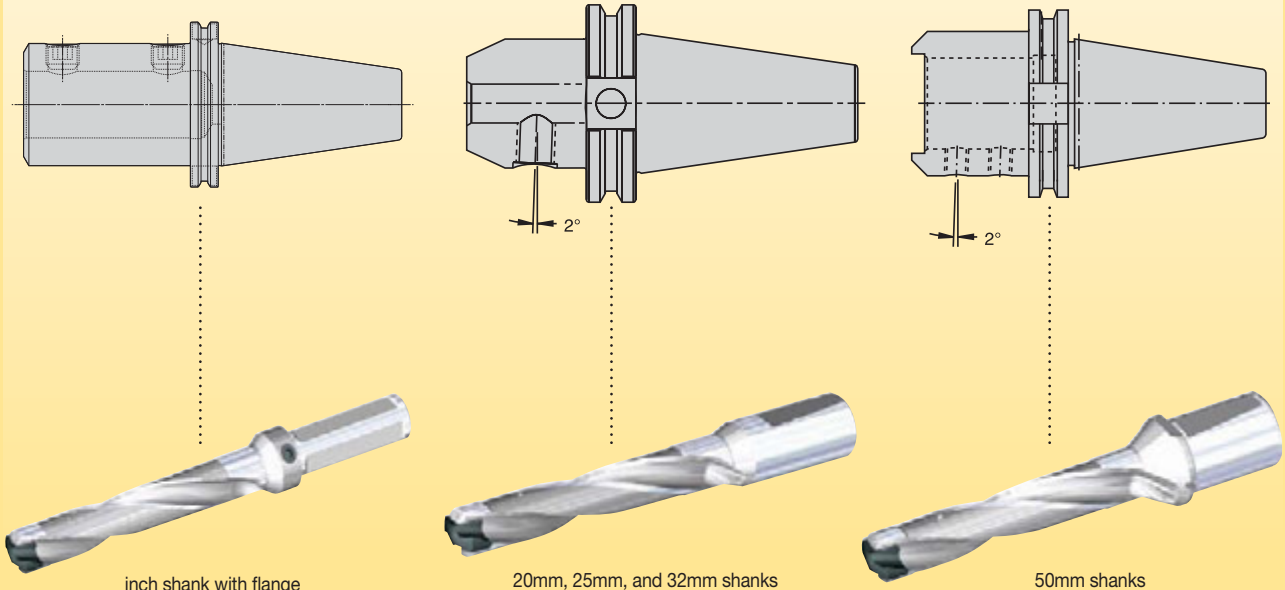
Inch Drill Bodies with Flange

KSEM inch drills with a flange can be used in rotating applications where the drill rotates and the workpiece remains stationary. To maintain accuracy and get maximum performance from the drill, use only the approved toolholding method shown here.

Metric Drill Bodies with a 2° Whistle Notch

KSEM metric drills come equipped with 2° Whistle Notch shanks. The 20mm, 25mm, and 32mm diameter shanks use WN adapters. The 50mm shank uses a WD adapter. Choose the correct adapter to minimize runout and securely hold the drill.

SSF straight-shank flanged adapter | WN adapters | WD adapters



inch shank with flange

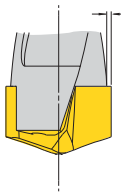
20mm, 25mm, and 32mm shanks
(DIN 1835, Form E)

50mm shanks

Insert blades may be used, within limits, on different drill bodies. The insert blade must be of the same seat size. Overhang (see Figure 1) must be kept under .0098" (0,250mm) per side. For best drilling performance, rigidity, and efficient chip evacuation, always use the first-choice steel body. Performance may be compromised by using alternatives. In some applications, chips may bind between the drill body and the hole wall — especially when machining long-chipping materials like austenitic stainless steel and low-carbon steel.

(does not apply to stub length drills)

Figure 1



diameter D

inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.492	12,50	KSEM1250	C	KSEM125..M	–	–	–	–
.500	12,70	KSEM0500	C	KSEM0500..	KSEM125..M	–	–	–
.509	12,93	KSEM0509	C	KSEM0509..	KSEM0500..	KSEM125..M	–	–
.512	13,00	KSEM1300	C	KSEM130..M	KSEM0509..	KSEM0500..	KSEM125..M	–
.516	13,10	KSEM0516	C	KSEM0516..	KSEM130..M	KSEM0509..	KSEM0500..	–
.531	13,50	KSEM1350	C	KSEM135..M	KSEM0531..	KSEM0516..	KSEM130..M	–
.547	13.89	KSEM0547	B	KSEM0547..	KSEM136..M	–	–	–
.551	14,00	KSEM1400	B	KSEM140..M	KSEM136..M	KSEM0547..	–	–
.563	14,29	KSEM0563	B	KSEM0563..	KSEM140..M	KSEM0547..	–	–
.571	14,50	KSEM1450	B	KSEM145..M	KSEM0563..	KSEM140..M	–	–
.578	14,68	KSEM0578	A	KSEM0578..	KSEM146..M	–	–	–
.591	15,00	KSEM1500	A	KSEM150..M	KSEM146..M	KSEM0578..	–	–
.594	15,08	KSEM0594	A	KSEM0594..	KSEM150..M	KSEM0578..	–	–
.609	15,48	KSEM0609	A	KSEM0609..	KSEM0594..	KSEM150..M	–	–
.610	15,50	KSEM1550	A	KSEM155..M	KSEM0609..	KSEM0594..	KSEM150..M	–
.625	15,88	KSEM0625	1	KSEM0625..	–	–	–	–
.630	16,00	KSEM1600	1	KSEM160..M	KSEM0625..	–	–	–
.634	16,09	KSEM0634	1	KSEM0634..	KSEM160..M	KSEM0625..	–	–
.641	16,27	KSEM0641	1	KSEM0641..	KSEM0634..	KSEM160..M	KSEM0625..	–
.650	16,50	KSEM1650	1	KSEM165..M	KSEM0641..	KSEM0634..	–	–
.656	16,67	KSEM0656	1	KSEM0656..	KSEM165..M	KSEM0641..	–	–
.669	17,00	KSEM1700	1	KSEM170..M	KSEM0656..	KSEM165..M	–	–
.672	17,07	KSEM0672	1	KSEM0672..	KSEM170..M	KSEM0656..	–	–
.688	17,46	KSEM0688	1	KSEM0688..	KSEM0672..	KSEM170..M	–	–
.689	17,50	KSEM1750	1	KSEM175..M	KSEM0688..	KSEM0672..	KSEM170..M	–
.700	17,78	KSEM0700	1	N/A	KSEM175..M	KSEM0688..	–	–
.703	17,86	KSEM0703	1	KSEM0703..	KSEM175..M	KSEM0688..	–	–
.709	18,00	KSEM1800	1	KSEM180..M	KSEM0703..	KSEM175..M	–	–
.719	18,26	KSEM0719	2	KSEM0719..	KSEM181..M	–	–	–
.728	18,50	KSEM1850	2	KSEM185..M	KSEM0719..	KSEM181..M	–	–
.734	18,65	KSEM0734	2	KSEM0734..	KSEM185..M	KSEM0719..	–	–
.748	19,00	KSEM1900	2	KSEM190..M	KSEM0734..	KSEM185..M	–	–
.750	19,05	KSEM0750	2	KSEM0750..	KSEM190..M	KSEM0734..	–	–
.759	19,27	KSEM0759	2	KSEM0759..	KSEM0750..	KSEM190..M	–	–
.766	19,45	KSEM0766	2	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M	–
.768	19,50	KSEM1950	2	KSEM195..M	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M
.781	19,84	KSEM0781	2	KSEM0781..	KSEM195..M	KSEM0766..	–	–
.787	20,00	KSEM2000	3	KSEM200..M	–	–	–	–
.797	20,24	KSEM0797	3	KSEM0797..	KSEM200..M	–	–	–
.800	20,32	KSEM0800	3	N/A	KSEM0797..	KSEM200..M	–	–
.807	20,50	KSEM2050	3	KSEM205..M	KSEM0797..	KSEM200..M	–	–
.813	20,64	KSEM0813	3	KSEM0813..	KSEM205..M	KSEM0797..	–	–
.827	21,00	KSEM2100	3	KSEM210..M	KSEM0813..	KSEM205..M	–	–
.844	21,43	KSEM0844	3	KSEM0844..	KSEM210..M	–	–	–
.847	21,50	KSEM2150	3	KSEM215..M	KSEM0844..	KSEM210..M	–	–
.859	21,83	KSEM0859	3	KSEM0859..	KSEM215..M	KSEM0844..	–	–
.866	22,00	KSEM2200	3	KSEM220..M	KSEM0859..	KSEM215..M	–	–
.875	22,23	KSEM0875	4	KSEM0875..	KSEM221..M	–	–	–
.884	22,44	KSEM0884	4	KSEM0884..	KSEM0875..	KSEM221..M	–	–
.886	22,50	KSEM2250	4	KSEM225..M	KSEM0884..	KSEM0875..	KSEM221..M	–
.906	23,00	KSEM2300	4	KSEM230..M	KSEM0906..	KSEM225..M	–	–
.922	23,42	KSEM0922	4	KSEM0922..	KSEM230..M	–	–	–
.925	23,50	KSEM2350	4	KSEM235..M	KSEM0922..	KSEM230..M	–	–
.938	23,81	KSEM0938	4	KSEM0938..	KSEM235..M	KSEM0922..	–	–
.945	24,00	KSEM2400	4	KSEM240..M	KSEM0938..	KSEM235..M	–	–

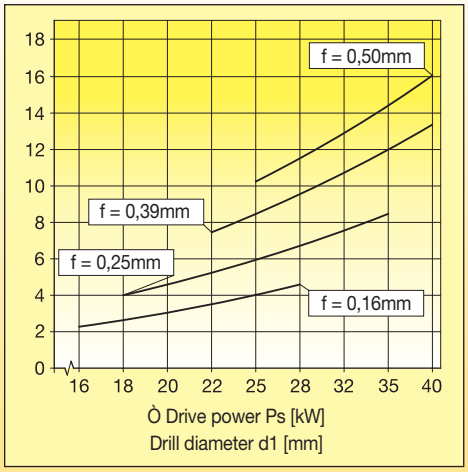
(continued)

(continued)

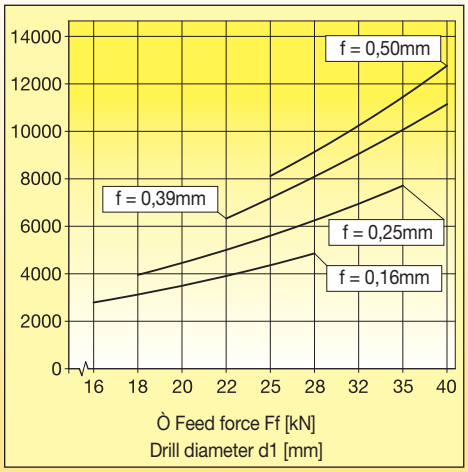
diameter D

inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.965	24,50	KSEM2450	5	KSEM245..M	KSEM241..M	–	–	–
.969	24,61	KSEM0969	5	KSEM0969..	KSEM245..M	–	–	–
.984	25,00	KSEM2500	5	KSEM250..M	KSEM0984..	KSEM0969..	KSEM245..M	–
1.000	25,40	KSEM1000	5	KSEM1000..	KSEM250..M	–	–	–
1.004	25,50	KSEM2550	5	KSEM255..M	KSEM1000..	KSEM250..M	–	–
1.011	25,67	KSEM1011	5	KSEM1011..	KSEM255..M	–	–	–
1.024	26,00	KSEM2600	5	KSEM260..M	KSEM1011..	KSEM255..M	–	–
1.031	26,19	KSEM1031	6	KSEM1031..	KSEM261..M	–	–	–
1.043	26,50	KSEM2650	6	KSEM265..M	KSEM1031..	KSEM261..M	–	–
1.047	26,59	KSEM1047	6	KSEM1047..	KSEM265..M	KSEM1031..	KSEM261..M	–
1.063	27,00	KSEM2700	6	KSEM270..M	KSEM1063..	KSEM1047..	KSEM265..M	–
1.083	27,50	KSEM2750	6	KSEM275..M	KSEM270..M	KSEM1063..	–	–
1.094	27,78	KSEM1094	6	KSEM1094..	KSEM275..M	–	–	–
1.102	28,00	KSEM2800	6	KSEM280..M	KSEM1094..	KSEM275..M	–	–
1.109	28,18	KSEM1109	7	KSEM1109..	KSEM281..M	–	–	–
1.122	28,50	KSEM2850	7	KSEM285..M	KSEM1109..	KSEM281..M	–	–
1.125	28,58	KSEM1125	7	KSEM1125..	KSEM285..M	KSEM1109..	KSEM281..M	–
1.142	29,00	KSEM2900	7	KSEM290..M	KSEM1125..	KSEM285..M	–	–
1.156	29,37	KSEM1156	7	KSEM1156..	KSEM290..M	–	–	–
1.161	29,50	KSEM2950	7	KSEM295..M	KSEM1156..	KSEM290..M	–	–
1.172	29,77	KSEM1172	7	KSEM1172..	KSEM295..M	KSEM1156..	–	–
1.181	30,00	KSEM3000	7	KSEM300..M	KSEM1172..	KSEM295..M	–	–
1.188	30,16	KSEM1188	8	KSEM1188..	KSEM301..M	–	–	–
1.201	30,50	KSEM3050	8	KSEM305..M	KSEM1188..	KSEM301..M	–	–
1.203	30,56	KSEM1203	8	KSEM1203..	KSEM305..M	KSEM1188..	KSEM301..M	–
1.219	30,96	KSEM1219	8	KSEM1219..	KSEM1203..	KSEM305..M	–	–
1.220	31,00	KSEM3100	8	KSEM310..M	KSEM1219..	KSEM1203..	KSEM305..M	–
1.240	31,50	KSEM3150	8	KSEM315..M	KSEM310..M	–	–	–
1.250	31,75	KSEM1250	8	KSEM1250..	KSEM315..M	–	–	–
1.260	32,00	KSEM3200	8	KSEM320..M	KSEM1250..	KSEM315..M	–	–
1.280	32,50	KSEM3250	9	–	KSEM321..M	–	–	–
1.281	32,54	KSEM1281	9	KSEM1281..	KSEM321..M	–	–	–
1.297	32,94	KSEM1297	9	KSEM1297..	KSEM1281..	–	–	–
1.299	33,00	KSEM3300	9	KSEM330..M	KSEM1297..	KSEM1281..	–	–
1.313	33,34	KSEM1313	9	KSEM1313..	KSEM330..M	KSEM1297..	–	–
1.319	33,50	KSEM3350	9	–	–	KSEM1313..	KSEM330..M	–
1.328	33,73	KSEM1328	9	KSEM1328..	KSEM1313..	–	–	–
1.339	34,00	KSEM3400	9	KSEM340..M	KSEM1328..	–	–	–
1.344	34,13	KSEM1344	9	KSEM1344..	KSEM340..M	KSEM1328..	–	–
1.358	34,50	KSEM3450	9	–	–	KSEM1344..	KSEM340..M	–
1.375	34,93	KSEM1375	9	KSEM1375..	–	–	–	–
1.378	35,00	KSEM3500	9	KSEM350..M	KSEM1375..	–	–	–
1.398	35,50	KSEM3550	9	–	–	KSEM350..M	–	–
1.406	35,72	KSEM1406	9	KSEM1406..	–	–	–	–
1.417	36,00	KSEM3600	9	KSEM360..M	KSEM1406..	–	–	–
1.422	36,12	KSEM1422	10	KSEM1422..	KSEM361..M	–	–	–
1.437	36,50	KSEM3650	10	–	–	KSEM1422..	KSEM361..M	–
1.438	36,51	KSEM1438	10	KSEM1438..	KSEM1422..	KSEM361..M	–	–
1.457	37,00	KSEM3700	10	KSEM370..M	KSEM1438..	–	–	–
1.469	37,31	KSEM1469	10	KSEM1469..	KSEM370..M	–	–	–
1.476	37,50	KSEM3750	10	–	–	KSEM1469..	KSEM370..M	–
1.496	38,00	KSEM3800	10	KSEM380..M	–	–	–	–
1.500	38,10	KSEM1500	10	KSEM1500..	KSEM380..M	–	–	–
1.514	38,46	KSEM1514	10	KSEM1514..	KSEM1500..	KSEM380..M	–	–
1.516	38,50	KSEM3850	10	–	–	KSEM1514..	KSEM1500..	KSEM380..M
1.535	39,00	KSEM3900	10	KSEM390..M	–	–	–	–
1.555	39,50	KSEM3950	10	–	–	KSEM390..M	–	–
1.575	40,00	KSEM4000	10	KSEM400..M	–	–	–	–

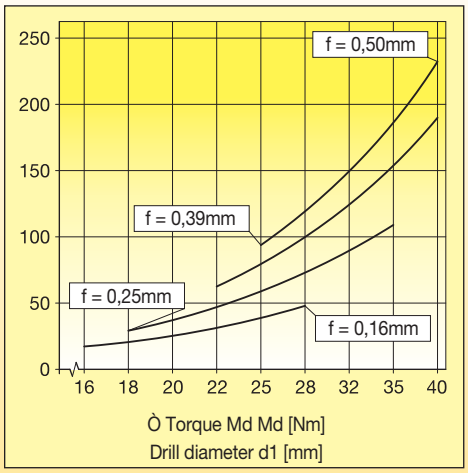
Drive Power (kW)



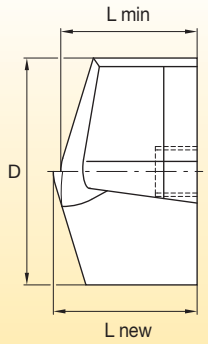
Feed Force (kN)



Torque (Nm)



NOTE: The diagrams above are used to determine the drive power, feed force, and torque. They are based on cutting force measurement in tempered steels in Cgr. 6. Tensile strength: Rm = 600 N/mm^2. The base cutting speed used is: vc = 80 m/min.



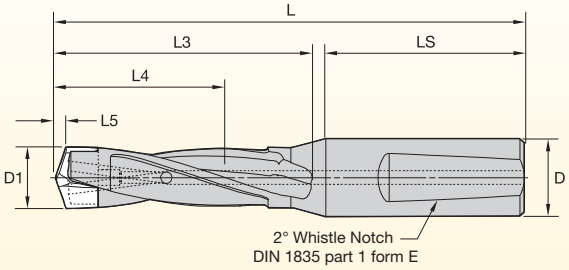
The following coolant pressure is recommended:

relative drilling depth	coolant pressure
1–3 x D	8 bars
5 x D	12 bars
7 x D	20 bars
10 x D	30 bars

insert seat size	diameter range D (mm)	L min. (mm)	L new (mm)
C	12,50–13,50	8,5	9,6
B	13,51–14,50	8,9	10,1
A	14,51–15,88	9,4	10,6
1	15,88–18,00	10,3	11,6
2	18,01–19,99	11,2	12,6
3	20,00–22,00	12,1	13,6
4	22,01–24,00	13,0	14,6
5	24,01–26,00	13,9	15,6
6	26,01–28,00	14,8	16,6
7	28,01–30,00	15,7	17,6
8	30,01–32,00	16,6	18,6
9	32,01–36,00	18,4	20,6
10	36,01–40,00	20,2	22,6

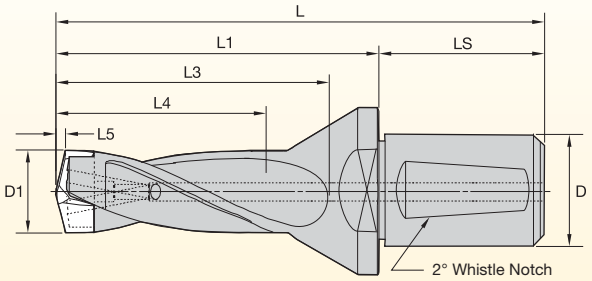
Modular Drills • Dimension Tables

Dimensions for KSEM™ Whistle Notch Shank • WN/WD 3 x D to 10 x D • Metric



for diameters < 16mm, DIN 6535 - HE
for diameters > 16mm, DIN 1835 part 1 form E

Whistle Notch shank D1≤32mm



Whistle Notch shank with Drive D1≥32mm

D1		WN/WD Shank Metric								WN Shank Metric					
		3 x D				5 x D				7 x D			10 x D		
mm	inch	L	L1	L4 max	wrench	L	L1	L4 max	wrench	L	L4 max	wrench	L	L4 max	wrench
12,50	.4921	111	–	42	**170.294**	139	–	70	**170.294**	167	98	**170.295**	195	125	**170.296**
13,00	.5118	111	–	42	**170.294**	139	–	70	**170.294**	167	98	**170.295**	200	130	**170.296**
13,50	.5315	111	–	42	**170.294**	139	–	70	**170.294**	167	98	**170.295**	205	135	**170.296**
13,51	.5319	111	–	42	**170.289**	139	–	70	**170.289**	167	98	**170.290**	205	135	**170.291**
14,00	.5512	111	–	42	**170.289**	139	–	70	**170.289**	167	98	**170.290**	210	140	**170.291**
14,50	.5709	122	–	48	**170.289**	154	–	80	**170.289**	186	112	**170.290**	220	145	**170.291**
14,51	.5713	122	–	48	**170.289**	154	–	80	**170.289**	186	112	**170.290**	220	145	**170.291**
15,00	.5906	122	–	48	**170.289**	154	–	80	**170.289**	186	112	**170.290**	225	150	**170.291**
15,50	.6102	122	–	48	**170.289**	154	–	80	**170.289**	186	112	**170.290**	230	155	**170.291**
16,00	.6299	122	–	48	**170.270**	154	–	80	**170.270**	186	112	**170.270**	234	160	**170.271**
16,50	.6496	130	–	54	**170.270**	166	–	90	**170.270**	202	126	**170.271**	241	165	**170.281**
17,00	.6693	130	–	54	**170.270**	166	–	90	**170.270**	202	126	**170.271**	246	170	**170.281**
17,50	.6890	130	–	54	**170.270**	166	–	90	**170.270**	202	126	**170.271**	251	175	**170.281**
18,00	.7087	130	–	54	**170.270**	166	–	90	**170.270**	202	126	**170.271**	256	180	**170.281**
18,01	.7091	–	–	–	**–**	184	–	100	**170.270**	–	–	**170.271**	269	185	**170.281**
18,50	.7283	144	–	60	**170.270**	184	–	100	**170.270**	224	140	**170.271**	269	185	**170.281**
19,00	.7480	144	–	60	**170.270**	184	–	100	**170.270**	224	140	**170.271**	274	190	**170.281**
19,50	.7677	144	–	60	**170.270**	184	–	100	**170.270**	224	140	**170.271**	279	195	**170.281**
20,00	.7874	153	–	60	**170.272**	197	–	100	**170.272**	241	140	**170.273**	297	200	**170.282**
20,50	.8071	153	–	66	**170.272**	197	–	110	**170.272**	241	154	**170.273**	297	205	**170.282**
21,00	.8268	153	–	66	**170.272**	197	–	110	**170.272**	241	154	**170.273**	297	210	**170.282**
21,50	.8465	153	–	66	**170.272**	197	–	110	**170.272**	241	154	**170.273**	307	215	**170.282**
22,00	.8661	153	–	66	**170.272**	197	–	110	**170.272**	241	154	**170.273**	307	220	**170.282**
22,01	.8665	–	–	–	**–**	209	–	120	**170.272**	–	–	**170.273**	319	225	**170.282**
22,50	.8858	161	–	72	**170.272**	209	–	120	**170.272**	257	168	**170.273**	319	225	**170.282**
23,00	.9055	161	–	72	**170.272**	209	–	120	**170.272**	257	168	**170.273**	319	230	**170.282**
23,50	.9252	161	–	72	**170.272**	209	–	120	**170.272**	257	168	**170.273**	329	235	**170.282**
24,00	.9449	161	–	72	**170.272**	209	–	120	**170.272**	257	168	**170.273**	329	240	**170.282**
24,01	.9453	–	–	–	**–**	226	–	130	**170.274**	–	–	**–**	346	245	**170.283**
24,50	.9646	174	–	78	**170.274**	226	–	130	**170.274**	278	182	**170.275**	346	245	**170.283**
25,00	.9843	174	–	78	**170.274**	226	–	130	**170.274**	278	182	**170.275**	346	250	**170.283**
25,50	10.039	174	–	78	**170.274**	226	–	130	**170.274**	278	182	**170.275**	356	255	**170.283**
26,00	10.236	174	–	78	**170.274**	226	–	130	**170.274**	278	182	**170.275**	356	260	**170.283**
26,01	10.240	–	–	–	**–**	238	–	140	**170.274**	–	–	**170.275**	363	265	**170.283**
26,50	10.433	182	–	84	**170.274**	238	–	140	**170.274**	294	196	**170.275**	363	265	**170.283**
27,00	10.630	182	–	84	**170.274**	238	–	140	**170.274**	294	196	**170.275**	368	270	**170.283**
27,50	10.827	182	–	84	**170.274**	238	–	140	**170.274**	294	196	**170.275**	378	275	**170.283**
28,00	11.024	182	–	84	**170.274**	238	–	140	**170.274**	294	196	**170.275**	378	280	**170.283**
28,02	11.028	–	–	–	**–**	250	–	150	**170.276**	–	–	**–**	390	285	**170.284**
28,50	11.220	190	–	90	**170.276**	250	–	150	**170.276**	310	210	**170.277**	390	285	**170.284**
29,00	11.417	190	–	90	**170.276**	250	–	150	**170.276**	310	210	**170.277**	390	290	**170.284**
29,50	11.614	190	–	90	**170.276**	250	–	150	**170.276**	310	210	**170.277**	400	295	**170.284**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KSEM™ Whistle Notch Shank • WN/WD 3 x D to 10 x D • Metric

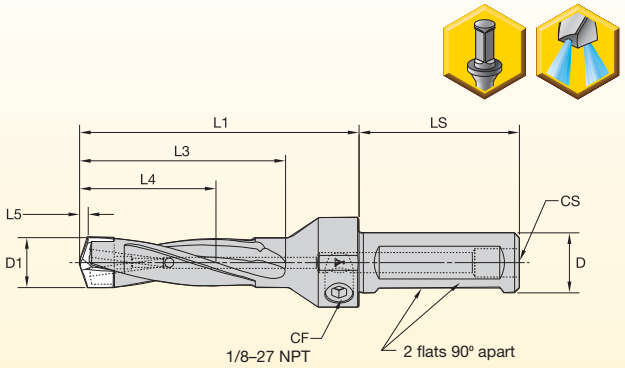


D1		WN/WD Shank Metric								WN Shank Metric					
		3 x D				5 x D				7 x D			10 x D		
mm	inch	L	L1	L4 max	wrench	L	L1	L4 max	wrench	L	L4 max	wrench	L	L4 max	wrench
30,00	11.811	190	–	90	**170.276**	250	–	150	**170.276**	310	210	**170.277**	400	300	**170.284**
30,01	11.815	–	–	–	**–**	264	–	160	**170.276**	–	–	**170.277**	414	305	**170.284**
30,50	12.008	200	–	96	**170.276**	264	–	160	**170.276**	328	224	**170.277**	–	–	**–**
31,00	12.205	200	–	96	**170.276**	264	–	160	**170.276**	328	224	**170.277**	414	310	**170.284**
31,50	12.402	200	–	96	**170.276**	264	–	160	**170.276**	328	224	**170.277**	–	–	**–**
32,00	12.598	200	–	96	**170.276**	264	–	160	**170.276**	328	224	**170.277**	424	320	**170.284**
32,01	12.602	220	159	99	**170.276**	293	225	165	**170.277**	–	–	**–**	–	–	**–**
33,00	12.992	227	159	99	**170.276**	293	225	165	**170.277**	–	–	**–**	–	–	**–**
34,00	13.386	225	157	102	**170.276**	293	225	170	**170.277**	–	–	**–**	–	–	**–**
35,00	13.780	235	167	105	**170.276**	305	237	175	**170.277**	–	–	**–**	–	–	**–**
36,00	14.173	233	165	108	**170.276**	305	237	180	**170.277**	–	–	**–**	–	–	**–**
36,01	14.177	237	176	111	**170.276**	318	250	185	**170.277**	–	–	**–**	–	–	**–**
37,00	14.567	244	176	111	**170.276**	318	250	185	**170.277**	–	–	**–**	–	–	**–**
38,00	14.961	242	174	114	**170.276**	318	250	190	**170.277**	–	–	**–**	–	–	**–**
39,00	15.354	252	184	117	**170.276**	330	262	195	**170.277**	–	–	**–**	–	–	**–**
40,00	15.748	250	182	120	**170.276**	330	262	200	**170.277**	–	–	**–**	–	–	**–**

(continued)

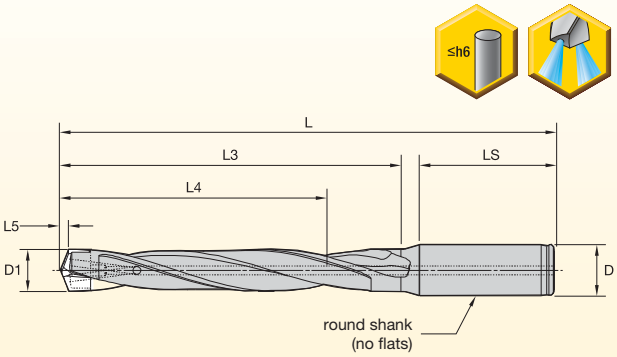
Modular Drills • Dimension Tables *(continued)*

Dimensions for KSEM Flanged Shank • 5 x D/8 x D • Inch



D1		5 x D			8 x D		
			L4			L4	
mm	inch	L1	max	wrench	L1	max	wrench
12,700	.5000	3.94	2.50	**170.294**	–	–	**–**
12,929	.5090	4.00	2.55	**170.294**	–	–	**–**
13,106	.5160	4.00	2.58	**170.294**	–	–	**–**
13,487	.5310	4.13	2.66	**170.294**	–	–	**–**
13,894	.5470	4.13	2.73	**170.289**	–	–	**–**
14,300	.5630	4.25	2.81	**170.289**	–	–	**–**
14,681	.5780	4.31	2.89	**170.289**	–	–	**–**
15,088	.5940	4.38	2.97	**170.289**	–	–	**–**
15,469	.6090	4.5	3.05	**170.289**	–	–	**–**
15,875	.6250	4.75	3.15	**170.270**	6.25	5.00	**170.271**
17,463	.6875	5.25	3.54	**170.270**	7.00	5.50	**170.271**
19,050	.7500	5.88	3.94	**170.271**	7.50	6.00	**170.281**
19,050	.7500	6.00	3.94	**170.271**	7.50	6.00	**170.281**
20,637	.8125	6.25	4.33	**170.273**	8.00	6.50	**170.282**
20,638	.8125	6.25	4.33	**170.273**	–	–	**170.282**
22,225	.8750	6.63	4.72	**170.273**	8.50	7.00	**170.282**
22,225	.8750	6.75	4.72	**170.273**	8.50	7.00	**170.282**
23,813	.9375	6.63	4.72	**170.273**	9.13	7.50	**170.282**
24,606	.9688	7.13	5.12	**170.275**	–	–	**–**
25,003	.9844	7.13	5.12	**170.275**	9.50	7.88	**170.283**
25,400	1.0000	7.25	5.12	**170.275**	9.63	8.00	**170.283**
25,400	1.0000	7.25	5.12	**170.275**	9.63	8.00	**170.283**
26,988	1.0625	7.63	5.51	**170.275**	10.25	8.50	**170.283**
28,575	1.1250	8.13	5.91	**170.277**	10.75	9.00	**170.284**
30,163	1.1875	8.50	6.30	**170.277**	11.38	9.50	**170.284**
31,750	1.2500	8.50	6.30	**170.277**	11.88	10.00	**170.284**
31,750	1.2500	8.75	6.30	**170.277**	11.88	10.00	**170.284**

Dimensions for KSEM Round Shank • 7 x D/10 x D • Inch



D1		7 x D			10 x D		
			L4			L4	
mm	inch	L1	max	wrench	L1	max	wrench
12,70	.5000	5.63	3.50	**170.295**	7.75	5.00	**170.296**
12,70	.5000	6.13	3.50	**170.295**	–	–	**–**
12,93	.5090	6.25	3.56	**170.295**	7.88	5.09	**170.296**
13,10	.5160	6.25	3.61	**170.295**	8.00	5.16	**170.296**
13,49	.5310	6.38	3.72	**170.295**	8.13	5.31	**170.296**
13,89	.5470	6.50	3.83	**170.290**	8.25	5.47	**170.291**
14,29	.5630	6.63	3.94	**170.290**	8.38	5.63	**170.291**
14,68	.5780	6.75	4.05	**170.290**	8.50	5.78	**170.291**
15,08	.5940	6.88	4.16	**170.290**	8.75	5.94	**170.291**
15,48	.6090	7.00	4.27	**170.290**	8.88	6.09	**170.291**
15,88	.6250	7.38	4.41	**170.270**	9.00	6.25	**170.281**
16,10	.6335	8.00	4.59	**170.271**	9.13	6.34	**170.281**
16,67	.6563	8.00	4.96	**170.271**	9.38	6.56	**170.281**
17,46	.6875	8.00	4.96	**170.271**	9.75	6.88	**170.281**
18,25	.7188	8.88	5.51	**170.271**	10.25	7.19	**170.281**
19,05	.7500	8.88	5.51	**170.271**	10.50	7.50	**170.281**
19,05	.7500	9.88	5.51	**170.281**	11.50	7.50	**170.281**
19,28	.7585	8.88	5.51	**170.271**	–	–	**–**
19,28	.7585	–	–	**–**	11.50	7.59	**170.281**
19,85	.7813	9.88	5.51	**170.281**	11.75	7.81	**170.281**
20,64	.8125	10.25	6.06	**170.273**	12.13	8.13	**170.282**
21,43	.8438	10.25	6.06	**170.273**	12.50	8.44	**170.282**
22,23	.8750	10.88	6.61	**170.282**	12.75	8.75	**170.282**
22,23	.8750	11.13	6.61	**170.282**	–	–	**–**
22,45	.8835	10.88	6.61	**170.282**	12.88	8.84	**170.282**
23,02	.9063	10.88	6.61	**170.282**	13.13	9.06	**170.282**
23,81	.9375	10.88	6.61	**170.282**	13.44	9.38	**170.282**
24,61	.9688	11.63	7.17	**170.275**	13.88	9.69	**170.283**
25,00	.9844	11.63	7.17	**170.283**	14.00	9.84	**170.283**
25,40	1.0000	11.63	7.17	**170.283**	14.13	10.00	**170.283**
25,40	1.0000	11.88	7.17	**170.283**	14.38	10.00	**170.283**
25,68	1.0105	12.25	7.08	**170.283**	14.50	10.11	**170.283**
26,20	1.0313	12.50	7.72	**170.283**	14.75	10.31	**170.283**
26,99	1.0625	12.50	7.72	**170.283**	15.13	10.63	**170.283**
27,78	1.0938	12.50	7.72	**170.283**	15.50	10.94	**170.283**
28,58	1.1250	13.13	8.27	**170.284**	15.75	11.25	**170.284**
29,37	1.1563	13.13	8.27	**170.284**	16.13	11.56	**170.284**
30,16	1.1875	13.75	8.82	**170.284**	16.50	11.88	**170.284**
30,96	1.2188	13.75	8.82	**170.284**	16.88	12.19	**170.284**
31,75	1.2500	13.75	8.82	**170.284**	17.13	12.50	**170.284**
31,75	1.2500	14.25	8.82	**170.284**	17.63	12.50	**170.284**

(continued)

Modular Drills • Dimension Tables *(continued)*

Dimensions for KSEM Round Shank • 3 x D/5 x D • Inch



D1		3 x D			5 x D		
			L4			L4	
mm	inch	L1	max	wrench	L1	max	wrench
12,700	.5000	–	–	**170.294**	4.63	2.50	**170.294**
12,700	.5000	4.13	1.50	**170.294**	5.13	2.50	**170.294**
12,929	.5090	4.25	1.53	**170.294**	5.25	2.55	**170.294**
13,106	.5160	–	–	**170.294**	5.25	2.58	**170.294**
13,487	.5310	4.25	1.59	**170.294**	5.38	2.66	**170.294**
13,894	.5470	4.38	1.64	**170.289**	5.44	2.73	**170.289**
14,300	.5630	4.38	1.69	**170.289**	5.50	2.81	**170.289**
14,681	.5780	4.50	1.73	**170.289**	5.63	2.89	**170.289**
15,088	.5940	4.50	1.78	**170.289**	5.75	2.97	**170.289**
15,469	.6090	4.63	1.83	**170.289**	5.88	3.05	**170.289**
15,875	.6250	4.63	1.88	**170.270**	6.00	3.15	**170.270**
16,091	.6335	–	–	**170.270**	6.50	3.54	**170.270**
16,104	.6340	4.75	1.90	**170.270**	–	–	**170.270**
16,281	.6410	4.75	1.92	**170.270**	6.50	3.54	**170.270**
16,662	.6560	4.88	1.97	**170.270**	–	–	**170.270**
16,669	.6563	–	–	**170.270**	6.50	3.54	**170.270**
17,069	.6720	4.88	2.02	**170.270**	6.50	3.54	**170.270**
17,463	.6875	4.88	2.06	**170.270**	6.50	3.54	**170.270**
17,856	.7030	5.00	2.11	**170.270**	6.50	3.54	**170.270**
18,256	.7188	–	–	**170.270**	7.25	3.94	**170.270**
18,263	.7190	5.00	2.16	**170.270**	–	–	**170.270**
18,644	.7340	5.13	2.20	**170.270**	7.25	3.94	**170.270**
19,050	.7500	6.13	2.25	**170.270**	8.25	3.94	**170.271**
19,050	.7500	5.13	2.25	**170.270**	7.25	3.94	**170.270**
19,279	.7585	5.25	2.28	**170.270**	7.25	3.94	**170.270**
19,456	.7660	6.25	2.30	**170.270**	8.25	3.94	**170.271**
19,845	.7813	6.25	2.34	**170.270**	8.13	3.94	**170.271**
19,837	.7810	–	–	**–**	–	–	**170.271**
20,244	.7970	6.38	2.39	**170.272**	8.50	4.33	**170.272**
20,638	.8125	6.38	2.44	**170.272**	8.50	4.33	**170.272**
21,431	.8438	–	–	**170.272**	8.50	4.33	**170.272**
21,438	.8440	6.50	2.53	**170.272**	–	–	**170.272**
21,829	.8590	6.63	2.58	**170.272**	8.50	4.33	**170.272**
21,819	.8590	–	–	**170.272**	–	–	**170.272**
22,225	.8750	6.88	2.63	**170.272**	9.00	4.72	**170.273**
22,225	.8750	6.63	2.63	**170.272**	9.25	4.72	**170.273**
22,454	.8835	6.75	2.65	**170.272**	9.00	4.72	**170.273**
22,454	.8840	–	–	**170.272**	–	–	**170.273**
23,012	.9060	6.75	2.72	**170.272**	–	–	**170.273**
23,019	.9063	–	–	**170.272**	9.00	4.72	**170.273**

D1		3 x D			5 x D		
			L4			L4	
mm	inch	L1	max	wrench	L1	max	wrench
23,419	.9220	6.88	2.77	**170.272**	9.00	4.72	**170.273**
23,813	.9375	6.88	2.81	**170.272**	9.00	4.72	**170.273**
24,606	.9688	–	–	**170.272**	9.50	5.12	**170.274**
24,613	.9690	7.00	2.91	**170.274**	–	–	**170.274**
25,003	.9844	7.13	2.95	**170.274**	9.50	5.12	**170.274**
25,400	1.0000	7.13	3.00	**170.274**	9.75	5.12	**170.274**
25,400	1.0000	–	–	**170.274**	9.50	5.12	**170.274**
25,679	1.0105	–	–	**170.274**	10.00	5.06	**170.274**
25,679	1.0110	7.50	3.03	**170.274**	–	–	**–**
26,187	1.0310	7.50	3.09	**170.274**	–	–	**–**
26,195	1.0313	–	–	**170.274**	10.25	5.51	**170.275**
26,594	1.0470	–	–	**170.274**	10.25	5.51	**170.275**
26,988	1.0625	7.63	3.19	**170.274**	10.25	5.51	**170.275**
27,781	1.0938	–	–	**170.274**	10.25	5.51	**170.275**
28,169	1.1090	7.88	3.33	**170.274**	10.75	5.91	**170.276**
28,575	1.1250	7.88	3.38	**170.276**	10.75	5.91	**170.276**
29,362	1.1560	8.00	3.47	**170.276**	–	–	**–**
29,370	1.1563	–	–	**170.276**	10.75	5.91	**170.276**
29,769	1.1720	8.13	3.52	**170.276**	10.75	5.91	**170.276**
30,163	1.1875	8.13	3.56	**170.276**	11.25	6.30	**170.277**
30,556	1.2030	–	–	**170.276**	11.25	6.30	**170.277**
30,958	1.2188	–	–	**170.276**	11.25	6.30	**170.277**
30,963	1.2190	8.25	3.66	**170.276**	–	–	**–**
31,750	1.2500	8.38	3.75	**170.276**	11.75	6.30	**170.277**
31,750	1.2500	8.88	3.75	**170.276**	11.25	6.30	**170.277**
32,537	1.2810	9.00	3.84	**170.276**	12.50	6.41	**170.277**
32,941	1.2970	–	–	**170.276**	12.50	6.48	**170.277**
32,944	1.2970	9.13	3.89	**170.276**	–	–	**–**
33,350	1.3130	9.13	3.94	**170.276**	12.50	6.56	**170.277**
33,731	1.3280	9.25	3.98	**170.276**	–	–	**–**
33,734	1.3280	–	–	**170.276**	12.50	6.64	**170.277**
34,138	1.3440	–	–	**170.276**	13.00	6.72	**170.277**
34,925	1.3750	9.38	4.13	**170.276**	13.00	6.87	**170.277**
35,712	1.4060	9.50	4.22	**170.276**	13.00	7.03	**170.277**
36,119	1.4220	–	–	**170.276**	13.50	7.11	**170.277**
36,513	1.4380	–	–	**170.276**	13.50	7.19	**170.277**
36,525	1.4380	9.63	4.31	**170.276**	–	–	**–**
37,313	1.4690	–	–	**170.276**	13.50	7.34	**170.277**
38,100	1.5000	9.88	4.50	**170.276**	13.50	7.50	**170.277**
38,456	1.5140	10.00	4.54	**170.276**	13.50	7.57	**170.277**

KGEM Tube Sheet Grooving Tool

Primary Application

The new Kennametal grooving tool features a unique approach for manufacturing two grooves simultaneously in minimal time, especially in heat exchanger manufacturing. All tubes need a finish operation to connect them. This new grooving insert features a geometry designed for bur-free cutting and is made with KCU45™, a special grade for machining a wide variety of materials in the heat exchanger industry, including A516-grade 70 low-carbon steel, 304 stainless steel, duplex, and Hastelloy®. The minimal amount of tungsten carbide in the insert eliminates the need for refurbishment, enabling the tool to work faster with a lower cost per hole.

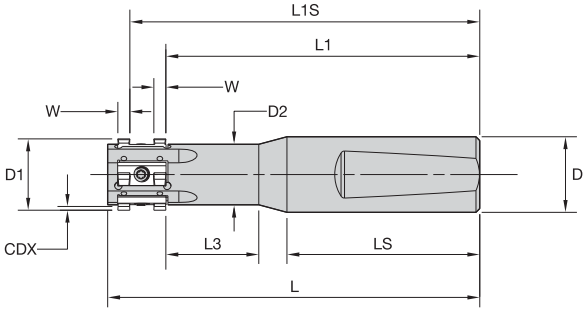
Features and Benefits

Higher Productivity and Profitablity

- Two edges per insert.
- Up to four inserts working at the same time.
- Rigid tool body design for highest productivity and grooving quality.
- Milling tool for maximum flexibility in hole diameter and interrupted cut for chip control.
- KCU45 grade for machining a variety of materials used for heat exchangers.
- Internal coolant supply for optimal tool life, groove quality, and chip evacuation.
- One-path-to-finish tool.
- Flexibility in groove position.









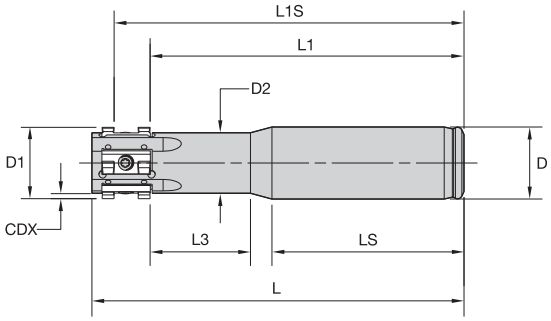
KGEM Groover Body • Metric



order number	catalog number	D1 mm	D1 in	D2	D mm	D in	L	LS	L1	L1S	L3	CDX	insert screw
5408657	KGEM1588R1WN20M	15,88	.625	13,50	20,00	.787	101,00	51,00	85,00	94,52	25,63	1,00	MS1861
5134143	KGEM1905R1WN20M	18,87	.743	16,00	20,00	.787	98,42	50,80	83,03	92,55	24,58	1,00	MS1861
5134145	KGEM1905R3WN20M	18,87	.743	16,00	20,00	.787	123,82	50,80	108,44	117,96	49,99	1,00	MS1861

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.







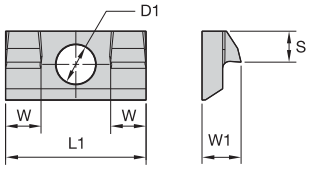
KGEM Groover Body • Inch



order number	catalog number	D1 mm	D1 in	D2	D	L	LS	L1	L1S	L3	CDX	insert screw
5134142	KGEM0750R1SS075	18,87	.743	.63	.75	3 7/8	2.000	3.269	3.644	1.045	.039	MS1861
5134144	KGEM0750R3SS075	18,87	.743	.63	.75	4 7/8	2.000	4.269	4.644	2.045	.039	MS1861

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.





● first choice
○ alternate choice

P		●
M		●
K		
N		
S		●
H		

KGEM Groover Insert

order number	catalog number	D1 mm	D1 in	W1 mm	W1 in	W mm	W in	S mm	S in	KCU45
5134141	KGIP0125N0189GD	2,80	.110	3,56	.140	3,18	.125	2,82	.111	●
5986819	KGIP0300N0189GD	2,80	.110	3,56	.140	3,00	.118	2,82	.111	●

Application Data

P	A516-Grade70
M	304SS/Duplex
S	Hastelloy

KGEM Tube Sheet Groover • KGIP GD Geometry • Grade KCU45™ • Through Coolant • Metric

Material Group	fz (mm/tooth)	tooth	RPM	vc (m/min)	VFC (mm/min)	VFL (mm/min)	DH (mm)	DT (mm)
P	0,05–0,075	4	1300–1500	77–89	2,46–4,27	264–457	19,05	18,87
M	0,05–0,075	4	600–900	35–53	1,70–2,57	183–274	19,05	18,87
S	0,05–0,075	4	250–300	15–18	0,48–0,86	51–91	19,05	18,87

KGEM Tube Sheet Groover • KGIP GD Geometry • Grade KCU45 • Through Coolant • Inch

Material Group	fz (inch/tooth)	tooth	RPM	vc (SFM)	VFC (inch/min)	VFL (inch/min)	DH (inch)	DT (inch)
P	0.002–0.003	4	1300–1500	252–291	0.097–0.168	10.4–18.0	0.75	0.743
M	0.002–0.003	4	600–900	116–174	0.067–0.101	7.2–10.8	0.75	0.743
S	0.002–0.003	4	250–300	48–58	0.019–0.034	2.0–3.6	0.75	0.743

Nomenclature:
fz: feed per tooth
VFL: linear feed rate = fz x number of tooth x RPM
VFC: compensated feed = VFL x (DH - DT)/DH
DT: tool diameter
DH: hole diameter

NOTE: Choose low-feed (fz) for long tools and less rigid machine tools.
Choose low RPM for lower coolant.

KSEM PLUS™ Modular Drill System

Our KSEM PLUS drill concept is simple but effective. It combines the benefits of the KSEM™ modular drill (high feeds and length-to-diameter [L/D] ratios) with the benefits of an indexable drill (high speeds and low consumable costs). The KSEM PLUS system is a modular drilling platform, offering a pre-mountable HSS head with pocket seats for carbide inserts. The KSEM PLUS modular drill system features two head styles that are interchangeable on fitting tool bodies with our flexible FDS interface.

Primary Application

The KSEM PLUS system performs in steel, cast iron, stainless steel, and advanced materials. It is perfectly suited to exchange older HSS tools or low performance indexable drills for a very high performance drilling solution. The KSEM PLUS range comprises 28–101mm (1.102–4") from 1.5–10 x D. There is a wide range of applications in the energy market, and in general engineering (e.g., bearing rings for windmills, hydraulic manifolds, large engine parts, generator housings, etc.). This tool will deliver vast improvements in productivity, and greatly attribute to increasing your machining capacity.

Features and Benefits

Replaceable Heads with FDS-Interface Coupling

- Quickly and easily replace inserts or drill heads without removing tool bodies from the machine.
- Save money and reduce tool stock by replacing just the worn drill head.
- Use one tool body for different sizes and styles of drill head (a head fits any drill body of the same FDS size).

Two Effective Cutting Edges

- The KSEM PLUS system has two full cutting edges in action when operating.
- Achieve up to 100% increased productivity versus an indexable drill of the same diameter.
- High L/D ratios possible from 1.5 x D up to 10 x D as stocked standards. Longer drills are possible as custom solutions.

KSEM PLUS A1 Heads

- High metal removal rates.
- Very stable in normal cutting conditions.
- Cost-effective indexable Drill Fix™ DFT inserts.

KSEM PLUS Pilot Insert

- Very high feed rates, comparable to modular drills.
- Very long tool life of KSEM PLUS center inserts and modular heads due to better chip flow.
- No precentering necessary for drill depths up to 5 x D.

KSEM PLUS B1 Heads

- High-speed drilling in difficult conditions.
- Drills stacked plates and cored holes.
- Capable of machining through cross holes.
- Works with slanted exits up to 15º.

DFR™/DFT™/DFC™ Outboard Inserts

- Very high cutting speeds for high metal removal rates.
- Improved stability in all cutting conditions.
- Indexable inserts provide good surface finish and hole diameter accuracy.

KSEM PLUS™ A1 Heads
Economic, high-performance drilling.





KSEM PLUS B1 Heads
High-performance drilling in difficult conditions.







NEW! All KSEMP Heads >70mm now available in 1mm and 1/8" pitch as standard product.

NEW! DS geometry for long chipping materials.

NEW! 1.5 x D toolholders now available with WD and SSF shanks.

Tailored Grades

Center Inserts

- KC7315™ grade — TiAlN-based PVD grade for superior performance in steel and stainless steel applications.
- KC7410™ grade — multilayered PVD coating for outstanding wear resistance when drilling cast irons.
- KC7135™ grade — chip-resistant universal grade with a TiCN-TiN PVD coating for challenging applications in steel and stainless steel materials.

Drill Fix™ Lateral Inserts

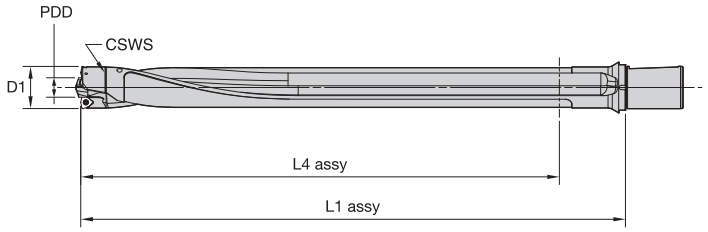
- KCU25™ grade — high metal removal rates, advanced TiCN-Al-CVD coating, and superior tool life in stable working conditions.
- KCU40™ grade — multilayered TiAlN-PVD coating with high wear resistance and reliability in most materials at medium cutting speeds.
- KC7140™ grade — TiCN-based, PVD-coated alloyed carbide for machining alloyed steel and stainless steel on KSEM PLUS systems.
- KC7225™ grade — TiAlN PVD-coated fine-grain carbide offers extreme process safety for non-ferrous materials, super alloys, and titanium.

NEW! DFT™ and DFC™ Lateral Inserts with DS Geometry

- Excellent performance and process stability in applications with long-chipping materials.
- Use for low carbon steel, difficult stainless steel, and non-ferrous materials where long chips can be an issue.
- Available in the KCU40™ grade.

Customization

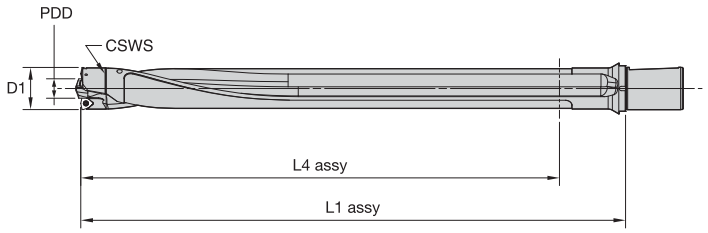
- Heads are available in intermediate diameters, and up to Ø 127mm as semi-standards.
- Tool bodies available in all popular shank styles up to shank length of 1200mm. Some restrictions with L/D ratios over 20 x D apply.
- Toolholders can be designed with helical chip flutes for better chip evacuation (e.g. drilling in cast iron).
- Heads for use with reground center inserts are available as semi-standards.
- The KSEM PLUS system features a high level of available customization. Please contact us about for your individual metalcutting applications.



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm) center insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
28.000	1.1024	**4000408**	**KSEMP2800FDS28A1M**	14.000	DFR040304D28	28	**6123570**	**WD32FDS28076M**	1.5 x D	57	101
28.575	1.1250	**4047811**	**KSEMP1125FDS28A1**	15.000	DFR040304D28		**4000409**	**WD32FDS28128M**	3 x D	96	153
29.000	1.1417	**4047812**	**KSEMP2900FDS28A1M**	15.000	DFR040304D28		**4051136**	**WD32FDS28190M**	5 x D	158	215
29.362	1.1563	**4047823**	**KSEMP1156FDS28A1**	16.000	DFR040304D28		**4051137**	**WD32FDS28283M**	8 x D	251	308
30.000	1.1811	**4047824**	**KSEMP3000FDS28A1M**	16.000	DFR040304D28		**4000411**	**WD32FDS28345M**	10 x D	313	370
30.175	1.1875	**4047825**	**KSEMP1188FDS28A1**	17.000	DFR040304D28		**6123582**	**SSF150FDS280299**	1.5 x D	57	101
30.963	1.2188	**4047826**	**KSEMP1219FDS28A1**	17.000	DFR040304D28		**4051138**	**SSF150FDS280502**	3 x D	96	153
31.000	1.2205	**4047827**	**KSEMP3100FDS28A1M**	17.000	DFR040304D28		**4051139**	**SSF150FDS280746**	5 x D	158	215
							4051140	**SSF150FDS281112**	8 x D	251	308
							4051141	**SSF150FDS281356**	10 x D	313	370
31.750	1.2500	**3794916**	**KSEMP1250FDS32A1**	15.000	DFT05T308D32	32	**6123571**	**WD32FDS32082M**	1.5 x D	59	107
32.000	1.2598	**3794291**	**KSEMP3200FDS32A1M**	15.000	DFT05T308D32		**3950219**	**WD32FDS32146M**	3 x D	110	171
33.000	1.2992	**3742210**	**KSEMP3300FDS32A1M**	16.000	DFT05T308D33		**3794428**	**WD32FDS32216M**	5 x D	180	241
33.200	1.3071	**3793949**	**KSEMP3320FDS32A1M**	16.000	DFT05T308D33		**3742293**	**WD32FDS32321M**	8 x D	285	346
33.350	1.3130	**3794917**	**KSEMP1313FDS32A1**	17.000	DFT05T308D33		**3794429**	**WD32FDS32391M**	10 x D	355	416
34.000	1.3386	**3794292**	**KSEMP3400FDS32A1M**	17.000	DFT05T308D33		**6123583**	**SSF150FDS320323**	1.5 x D	59	107
34.925	1.3750	**3794918**	**KSEMP1375FDS32A1**	18.000	DFT05T308D33		**3952192**	**SSF150FDS320573**	3 x D	110	171
35.000	1.3780	**3794393**	**KSEMP3500FDS32A1M**	18.000	DFT05T308D33		**3794835**	**SSF150FDS320850**	5 x D	180	241
							3794836	**SSF150FDS321263**	8 x D	285	346
							3794837	**SSF150FDS321539**	10 x D	355	416
36.000	1.4173	**3794394**	**KSEMP3600FDS36A1M**	13.000	DFT06T308D36	36	**6123572**	**WD32FDS36092M**	1.5 x D	65	117
36.525	1.4380	**3794919**	**KSEMP1438FDS36A1**	14.000	DFT06T308D36		**3950220**	**WD32FDS36166M**	3 x D	122	191
37.000	1.4567	**3794395**	**KSEMP3700FDS36A1M**	14.000	DFT06T308D36		**3794430**	**WD32FDS36244M**	5 x D	200	269
37.500	1.4764	**3794427**	**KSEMP3750FDS36A1M**	15.000	DFT06T308D36		**3794431**	**WD32FDS36361M**	8 x D	317	386
38.000	1.4961	**3794396**	**KSEMP3800FDS36A1M**	15.000	DFT06T308D36		**3794432**	**WD32FDS36439M**	10 x D	395	464
38.100	1.5000	**3794920**	**KSEMP1500FDS36A1**	15.000	DFT06T308D36		**6123584**	**SSF150FDS360362**	1.5 x D	65	117
39.000	1.5354	**3794397**	**KSEMP3900FDS36A1M**	16.000	DFT06T308D39		**3952343**	**SSF150FDS360652**	3 x D	122	191
39.200	1.5433	**3793950**	**KSEMP3920FDS36A1M**	16.000	DFT06T308D39		**3794838**	**SSF150FDS360960**	5 x D	200	269
39.700	1.5630	**3794921**	**KSEMP1563FDS36A1**	17.000	DFT06T308D39		**3794839**	**SSF150FDS361421**	8 x D	317	386
							3794840	**SSF150FDS361728**	10 x D	395	464
40.000	1.5748	**3794398**	**KSEMP4000FDS40A1M**	17.000	DFT06T308D39	40	**6123573**	**WD50FDS40100M**	1.5 x D	73	125
41.000	1.6142	**3794399**	**KSEMP4100FDS40A1M**	18.000	DFT06T308D39		**3872075**	**WD50FDS40183M**	3 x D	137	213
41.275	1.6250	**3794922**	**KSEMP1625FDS40A1**	18.000	DFT06T308D39		**3794443**	**WD50FDS40271M**	5 x D	225	301
42.000	1.6535	**3794400**	**KSEMP4200FDS40A1M**	19.000	DFT06T308D39		**3794444**	**WD50FDS40403M**	8 x D	357	433
43.000	1.6929	**3794401**	**KSEMP4300FDS40A1M**	20.000	DFT06T308D39		**3794445**	**WD50FDS40491M**	10 x D	445	521
44.000	1.7323	**3794402**	**KSEMP4400FDS40A1M**	21.000	DFT06T308D44		**6123585**	**SSF200FDS400394**	1.5 x D	73	125
44.450	1.7500	**3794933**	**KSEMP1750FDS40A1**	22.000	DFT06T308D44		**3952344**	**SSF200FDS400721**	3 x D	137	213
							3794841	**SSF200FDS401066**	5 x D	225	301
							3794842	**SSF200FDS401586**	8 x D	357	433
							3794903	**SSF200FDS401933**	10 x D	445	521

(continued)

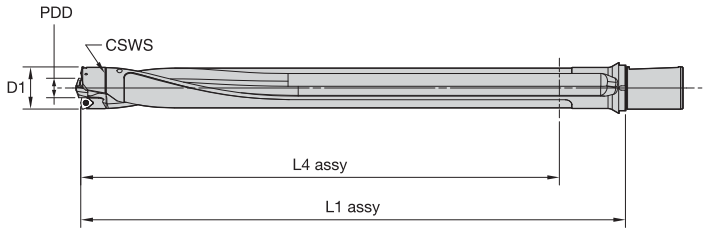
(KSEM PLUS Overview and Assembly for Systems Using A1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm) center insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
45.000	1.7717	**3794403**	**KSEMP4500FDS45A1M**	18.000	DFT070408D45	45	**6123575**	**WD50FDS45112M**	1.5 x D	85	147
46.000	1.8110	**3794404**	**KSEMP4600FDS45A1M**	19.000	DFT070408D45		**3872709**	**WD50FDS45206M**	3 x D	152	236
47.000	1.8504	**3794405**	**KSEMP4700FDS45A1M**	20.000	DFT070408D45		**3794446**	**WD50FDS45304M**	5 x D	250	334
47.625	1.8750	**3794934**	**KSEMP1875FDS45A1**	21.000	DFT070408D45		**3794447**	**WD50FDS45451M**	8 x D	397	481
48.000	1.8898	**3794406**	**KSEMP4800FDS45A1M**	21.000	DFT070408D45		**3794448**	**WD50FDS45549M**	10 x D	495	579
49.000	1.9291	**3794407**	**KSEMP4900FDS45A1M**	22.000	DFT070408D45		**6123586**	**SSF200FDS450441**	1.5 x D	85	147
							3952345	**SSF200FDS450809**	3 x D	152	236
							3794904	**SSF200FDS451196**	5 x D	250	334
							3794905	**SSF200FDS451775**	8 x D	397	481
							3794906	**SSF200FDS452161**	10 x D	495	579
50.000	1.9685	**3742211**	**KSEMP5000FDS50A1M**	23.000	DFT070408D50	50	**6123576**	**WD50FDS50122M**	1.5 x D	89	157
50.800	2.0000	**3794935**	**KSEMP2000FDS50A1**	24.000	DFT070408D50		**3950221**	**WD50FDS50228M**	3 x D	170	263
51.000	2.0079	**3794408**	**KSEMP5100FDS50A1M**	24.000	DFT070408D50		**3794449**	**WD50FDS50338M**	5 x D	280	373
52.000	2.0472	**3794409**	**KSEMP5200FDS50A1M**	25.000	DFT070408D50		**3742294**	**WD50FDS50503M**	8 x D	445	538
53.000	2.0866	**3794410**	**KSEMP5300FDS50A1M**	26.000	DFT070408D50		**3794450**	**WD50FDS50613M**	10 x D	555	648
53.975	2.1250	**3794936**	**KSEMP2125FDS50A1**	27.000	DFT070408D50		**6123587**	**SSF200FDS500480**	1.5 x D	89	157
54.000	2.1260	**3794411**	**KSEMP5400FDS50A1M**	27.000	DFT070408D50		**3952346**	**SSF200FDS500896**	3 x D	170	263
55.000	2.1654	**3794412**	**KSEMP5500FDS50A1M**	28.000	DFT070408D50		**3794907**	**SSF200FDS501330**	5 x D	280	373
							3794908	**SSF200FDS501980**	8 x D	445	538
							3794909	**SSF200FDS502413**	10 x D	555	648
56.000	2.2047	**3794413**	**KSEMP5600FDS56A1M**	20.000	DFT090508D56	56	**6123577**	**WD50FDS56140M**	1.5 x D	130	175
57.000	2.2441	**3794414**	**KSEMP5700FDS56A1M**	21.000	DFT090508D56		**3950222**	**WD50FDS56259M**	3 x D	191	294
57.150	2.2500	**3794937**	**KSEMP2250FDS56A1**	21.000	DFT090508D56		**3794451**	**WD50FDS56383M**	5 x D	315	418
58.000	2.2835	**3794415**	**KSEMP5800FDS56A1M**	22.000	DFT090508D56		**3794452**	**WD50FDS56569M**	8 x D	501	604
59.000	2.3228	**3794416**	**KSEMP5900FDS56A1M**	23.000	DFT090508D56		**3794453**	**WD50FDS56693M**	10 x D	625	728
60.000	2.3622	**3794417**	**KSEMP6000FDS56A1M**	24.000	DFT090508D56		**6123588**	**SSF200FDS560551**	1.5 x D	130	175
60.330	2.3750	**3794938**	**KSEMP2375FDS56A1**	24.000	DFT090508D56		**3952347**	**SSF200FDS561020**	3 x D	191	294
61.000	2.4016	**3794418**	**KSEMP6100FDS56A1M**	25.000	DFT090508D56		**3794910**	**SSF200FDS561507**	5 x D	315	418
62.000	2.4409	**3794419**	**KSEMP6200FDS56A1M**	26.000	DFT090508D56		**3794911**	**SSF200FDS562240**	8 x D	501	604
							3794912	**SSF200FDS562783**	10 x D	625	728
63.000	2.4803	**3794420**	**KSEMP6300FDS63A1M**	27.000	DFT090508D63	63	**6123578**	**WD50FDS63154M**	1.5 x D	111	194
63.500	2.5000	**3794939**	**KSEMP2500FDS63A1**	28.000	DFT090508D63		**3950333**	**WD50FDS63289M**	3 x D	214	329
64.000	2.5197	**3794421**	**KSEMP6400FDS63A1M**	28.000	DFT090508D63		**3794454**	**WD50FDS63429M**	5 x D	354	469
65.000	2.5591	**3794422**	**KSEMP6500FDS63A1M**	29.000	DFT090508D63		**3794455**	**WD50FDS63639M**	8 x D	564	679
66.000	2.5984	**3794423**	**KSEMP6600FDS63A1M**	30.000	DFT090508D63		**3742296**	**WD50FDS63779M**	10 x D	704	819
66.680	2.6250	**3794940**	**KSEMP2625FDS63A1**	31.000	DFT090508D63		**6123589**	**SSF200FDS630606**	1.5 x D	111	194
67.000	2.6378	**3794424**	**KSEMP6700FDS63A1M**	31.000	DFT090508D63		**3952348**	**SSF200FDS631138**	3 x D	214	329
68.000	2.6772	**3794425**	**KSEMP6800FDS63A1M**	32.000	DFT090508D63		**3794913**	**SSF200FDS631688**	5 x D	354	469
69.000	2.7165	**3794426**	**KSEMP6900FDS63A1M**	33.000	DFT090508D63		**3794914**	**SSF200FDS632515**	8 x D	564	679
69.850	2.7500	**3794941**	**KSEMP2750FDS63A1**	34.000	DFT090508D63		**3794915**	**SSF200FDS633066**	10 x D	704	819
70.000	2.7559	**3742212**	**KSEMP7000FDS63A1M**	34.000	DFT090508D63						

(continued)

(KSEM PLUS Overview and Assembly for Systems Using A1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm) center insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
71.000	2.7950	**6041904**	**KSEMP7100FDS71A1M**	26.000	4x DFT06T308D44	71	**6123579**	**WD50FDS71172M**	1.5 x D	128	217
72.000	2.8350	**5397513**	**KSEMP7200FDS71A1M**	27.000			**5397942**	**WD50FDS71292M**	3 x D	241	333
73.000	2.8740	**6041906**	**KSEMP7300FDS71A1M**	28.000			**5397943**	**WD50FDS71452M**	5 x D	401	493
73.025	2.8750	**6041931**	**KSEMP2875FDS71A1**	28.000			**6123590**	**SSF200FDS710677**	1.5 x D	128	217
74.000	2.9130	**5397514**	**KSEMP7400FDS71A1M**	29.000			**5397948**	**SSF200FDS711150**	3 x D	241	333
75.000	2.9530	**6041907**	**KSEMP7500FDS71A1M**	30.000			**5397949**	**SSF200FDS711780**	5 x D	401	493
76.000	2.9920	**5397515**	**KSEMP7600FDS71A1M**	31.000							
76.200	3.0000	**5397516**	**KSEMP3000FDS71A1**	31.000							
77.000	3.0310	**6041908**	**KSEMP7700FDS71A1M**	32.000							
78.000	3.0710	**5397517**	**KSEMP7800FDS71A1M**	33.000							
79.000	3.1100	**6041909**	**KSEMP7900FDS71A1M**	34.000							
79.375	3.1250	**6041932**	**KSEMP3125FDS80A1**	31.000	2x DFT06T308D44 & 2x DFT070408D50	80	**6123580**	**WD50FDS80192M**	1.5 x D	145	247
80.000	3.1500	**5397518**	**KSEMP8000FDS80A1M**	31.000			**5397944**	**WD50FDS80327M**	3 x D	271	373
81.000	3.1890	**6041910**	**KSEMP8100FDS80A1M**	32.000			**5397945**	**WD50FDS80507M**	5 x D	451	553
82.000	3.2280	**5397519**	**KSEMP8200FDS80A1M**	33.000			**6123591**	**SSF200FDS800756**	1.5 x D	145	247
83.000	3.2680	**6041921**	**KSEMP8300FDS80A1M**	34.000			**5398010**	**SSF200FDS801287**	3 x D	271	373
82.550	3.2500	**5397550**	**KSEMP3250FDS80A1**	34.000			**5398011**	**SSF200FDS801996**	5 x D	451	553
84.000	3.3070	**5397551**	**KSEMP8400FDS80A1M**	35.000							
85.000	3.3070	**6041922**	**KSEMP8500FDS80A1M**	36.000							
85.725	3.3750	**6041933**	**KSEMP3375FDS80A1**	37.000							
86.000	3.3860	**5397552**	**KSEMP8600FDS80A1M**	37.000							
87.000	3.4250	**6041923**	**KSEMP8700FDS80A1M**	38.000							
88.000	3.4650	**5397553**	**KSEMP8800FDS80A1M**	39.000							
88.900	3.5000	**5397554**	**KSEMP3500FDS80A1**	40.000							
89.000	3.5040	**6041924**	**KSEMP8900FDS80A1M**	40.000							
90.000	3.5430	**5397555**	**KSEMP9000FDS90A1M**	37.000	4x DFT070408D50	90	**6123581**	**WD50FDS90212M**	1.5 x D	160	272
91.000	3.5830	**6041925**	**KSEMP9100FDS90A1M**	38.000			**5397946**	**WD50FDS90362M**	3 x D	302	414
92.000	3.6220	**5397556**	**KSEMP9200FDS90A1M**	39.000			**5397947**	**WD50FDS90562M**	5 x D	502	614
92.075	3.6250	**6041934**	**KSEMP3625FDS90A1**	39.000			**6123592**	**SSF200FDS900835**	1.5 x D	160	272
93.000	3.6610	**6041926**	**KSEMP9300FDS90A1M**	40.000			**5398012**	**SSF200FDS901425**	3 x D	302	414
							5398013	**SSF200FDS902213**	5 x D	502	614
94.000	3.7010	**5397557**	**KSEMP9400FDS90A1M**	26.000	6x DFT06T308D44						
95.000	3.7400	**6041927**	**KSEMP9500FDS90A1M**	27.000							
95.250	3.7500	**5397558**	**KSEMP3750FDS90A1**	27.000							
96.000	3.7800	**5397559**	**KSEMP9600FDS90A1M**	28.000							
97.000	3.8190	**6041928**	**KSEMP9700FDS90A1M**	29.000							
98.000	3.8580	**5397560**	**KSEMP9800FDS90A1M**	30.000							
98.425	3.8750	**6041935**	**KSEMP3875FDS90A1**	31.000							
99.000	3.8980	**6041929**	**KSEMP9900FDS90A1M**	31.000							
100.000	3.9370	**6041930**	**KSEMP10000FDS90A1M**	32.000							
101.600	4.0000	**5397561**	**KSEMP4000FDS90A1**	34.000							

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See pages J4–J59 for Drill Fix™ Indexable Drills.

See pages H102–H106, H108–H125, and H133 for KSEM PLUS A1 and B1 head systems.





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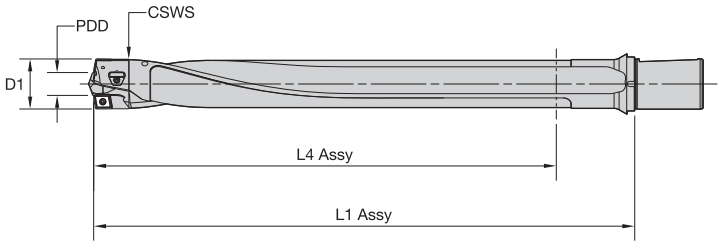

available KSEM PLUS heads				requested insert size reference per head		available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)					
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm) center insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
28.000	1.1020	**5115736**	**KSEMP2800FDS28B1M**	14.000	**DFC inserts** DFC040310D28 **DPA guiding pads** DPA07T3D25	28	**6123570**	**WD32FDS28076M**	1.5 x D	54	98
28.575	1.1250	**5115737**	**KSEMP1125FDS28B1**	15.000			**4000409**	**WD32FDS28128M**	3 x D	93	150
29.000	1.1420	**5115738**	**KSEMP2900FDS28B1M**	15.000			**4051136**	**WD32FDS28190M**	5 x D	155	212
29.362	1.1560	**5115739**	**KSEMP1156FDS28B1**	16.000			**4051137**	**WD32FDS28283M**	8 x D	248	305
30.000	1.1810	**5116010**	**KSEMP3000FDS28B1M**	16.000			**4000411**	**WD32FDS28345M**	10 x D	310	367
30.175	1.1880	**5116011**	**KSEMP1188FDS28B1**	17.000			**6123582**	**SSF150FDS280299**	1.5 x D	54	98
30.963	1.2190	**5116012**	**KSEMP1219FDS28B1**	17.000			**4051138**	**SSF150FDS280502**	3 x D	93	150
31.000	1.2200	**5116013**	**KSEMP3100FDS28B1M**	17.000			**4051139**	**SSF150FDS280746**	5 x D	155	212
							4051140	**SSF150FDS281112**	8 x D	248	305
							4051141	**SSF150FDS281356**	10 x D	310	367
31.750	1.2500	**5116014**	**KSEMP1250FDS32B1**	15.000	**DFC inserts** DFC05T312D32 **DPA guiding pads** DPA09T4D32	32	**6123571**	**WD32FDS32082M**	1.5 x D	54	102
32.000	1.2600	**5116015**	**KSEMP3200FDS32B1M**	15.000			**3950219**	**WD32FDS32146M**	3 x D	105	166
33.000	1.2990	**5116016**	**KSEMP3300FDS32B1M**	16.000			**3794428**	**WD32FDS32216M**	5 x D	175	236
33.200	1.3070	**5116017**	**KSEMP3320FDS32B1M**	16.000			**3742293**	**WD32FDS32321M**	8 x D	280	341
33.350	1.3130	**5116018**	**KSEMP1313FDS32B1**	17.000			**3794429**	**WD32FDS32391M**	10 x D	350	411
34.000	1.3390	**5116019**	**KSEMP3400FDS32B1M**	17.000			**6123583**	**SSF150FDS320323**	1.5 x D	54	102
34.925	1.3750	**5116030**	**KSEMP1375FDS32B1**	18.000			**3952192**	**SSF150FDS320573**	3 x D	105	166
35.000	1.3780	**5116031**	**KSEMP3500FDS32B1M**	18.000			**3794835**	**SSF150FDS320850**	5 x D	175	236
							3794836	**SSF150FDS321263**	8 x D	280	341
							3794837	**SSF150FDS321539**	10 x D	350	411
36.000	1.4170	**5116032**	**KSEMP3600FDS36B1M**	13.000	**DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32	36	**6123572**	**WD32FDS36092M**	1.5 x D	60	112
36.525	1.4380	**5116033**	**KSEMP1438FDS36B1**	14.000			**3950220**	**WD32FDS36166M**	3 x D	117	186
37.000	1.4570	**5116034**	**KSEMP3700FDS36B1M**	14.000			**3794430**	**WD32FDS36244M**	5 x D	195	264
37.500	1.4760	**5116035**	**KSEMP3750FDS36B1M**	15.000			**3794431**	**WD32FDS36361M**	8 x D	312	381
38.000	1.4960	**5116036**	**KSEMP3800FDS36B1M**	15.000			**3794432**	**WD32FDS36439M**	10 x D	390	459
38.100	1.5000	**5116037**	**KSEMP1500FDS36B1**	15.000			**6123584**	**SSF150FDS360362**	1.5 x D	60	112
39.000	1.5350	**5116038**	**KSEMP3900FDS36B1M**	16.000			**3952343**	**SSF150FDS360652**	3 x D	117	186
39.200	1.5430	**5116039**	**KSEMP3920FDS36B1M**	16.000			**3794838**	**SSF150FDS360960**	5 x D	195	264
39.700	1.5630	**5116040**	**KSEMP1563FDS36B1**	17.000			**3794839**	**SSF150FDS361421**	8 x D	312	381
							3794840	**SSF150FDS361728**	10 x D	390	459
40.000	1.5750	**5116041**	**KSEMP4000FDS40B1M**	17.000	**DFC inserts** DFC06T312D36 **DPA guiding pads** DPA09T4D32	40	**6123573**	**WD50FDS40100M**	1.5 x D	68	120
41.000	1.6140	**5116042**	**KSEMP4100FDS40B1M**	18.000			**3872075**	**WD50FDS40183M**	3 x D	132	208
41.275	1.6250	**5116043**	**KSEMP1625FDS40B1**	18.000			**3794443**	**WD50FDS40271M**	5 x D	220	296
42.000	1.6540	**5116044**	**KSEMP4200FDS40B1M**	19.000			**3794444**	**WD50FDS40403M**	8 x D	352	428
43.000	1.6930	**5116045**	**KSEMP4300FDS40B1M**	20.000			**3794445**	**WD50FDS40491M**	10 x D	440	516
44.000	1.7320	**5116046**	**KSEMP4400FDS40B1M**	21.000			**6123585**	**SSF200FDS400394**	1.5 x D	68	120
44.450	1.7500	**5116047**	**KSEMP1750FDS40B1**	22.000			**3952344**	**SSF200FDS400721**	3 x D	132	208
							3794841	**SSF200FDS401066**	5 x D	220	296
							3794842	**SSF200FDS401586**	8 x D	352	428
							3794903	**SSF200FDS401933**	10 x D	440	516

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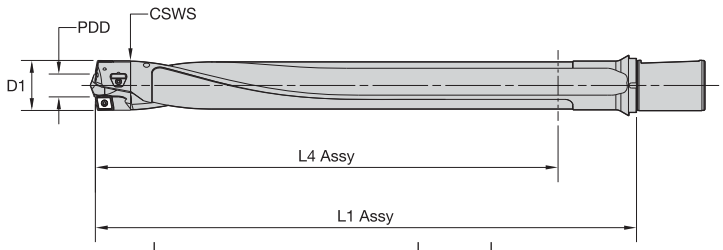
(KSEM PLUS Overview and Assembly for Systems Using B1 Heads — continued)



available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm)	outboard insert	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in			center insert size reference	Drill Fix™ DFC DPA guiding pads						
45.000	1.7720	5116098	KSEMP4500FDS45B1M	18.000	DFC inserts DFC070416D45 DPA guiding pads DPA09T4D32	45	6123575	WD50FDS45112M	1.5 x D	80	142
46.000	1.8110	5116099	KSEMP4600FDS45B1M	19.000			3872709	WD50FDS45206M	3 x D	147	231
47.000	1.8500	5116110	KSEMP4700FDS45B1M	20.000			3794446	WD50FDS45304M	5 x D	245	329
47.625	1.8750	5116111	KSEMP1875FDS45B1	21.000			3794447	WD50FDS45451M	8 x D	392	476
48.000	1.8900	5116112	KSEMP4800FDS45B1M	21.000			3794448	WD50FDS45549M	10 x D	490	574
49.000	1.9290	5116113	KSEMP4900FDS45B1M	22.000			6123586	SSF200FDS450441	1.5 x D	80	142
							3952345	SSF200FDS450809	3 x D	147	231
							3794904	SSF200FDS451196	5 x D	245	329
							3794905	SSF200FDS451775	8 x D	392	476
							3794906	SSF200FDS452161	10 x D	490	574
50.000	1.9690	5116114	KSEMP5000FDS50B1M	23.000	DFC inserts DFC070416D45 DPA guiding pads DPA13T5D50	50	6123576	WD50FDS50122M	1.5 x D	84	152
50.800	2.0000	5116115	KSEMP2000FDS50B1	24.000			3950221	WD50FDS50228M	3 x D	165	258
51.000	2.0080	5116116	KSEMP5100FDS50B1M	24.000			3794449	WD50FDS50338M	5 x D	275	368
52.000	2.0470	5116117	KSEMP5200FDS50B1M	25.000			3742294	WD50FDS50503M	8 x D	440	533
53.000	2.0870	5116118	KSEMP5300FDS50B1M	26.000			3794450	WD50FDS50613M	10 x D	550	643
53.975	2.1250	5116119	KSEMP2125FDS50B1	27.000			6123587	SSF200FDS500480	1.5 x D	84	152
54.000	2.1260	5116120	KSEMP5400FDS50B1M	27.000			3952346	SSF200FDS500896	3 x D	165	258
55.000	2.1650	5116121	KSEMP5500FDS50B1M	28.000			3794907	SSF200FDS501330	5 x D	275	368
							3794908	SSF200FDS501980	8 x D	440	533
							3794909	SSF200FDS502413	10 x D	550	643
56.000	2.2050	5116122	KSEMP5600FDS56B1M	20.000	DFC inserts DFC090520D56 DPA guiding pads DPA13T5D50	56	6123577	WD50FDS56140M	1.5 x D	125	170
57.000	2.2440	5116123	KSEMP5700FDS56B1M	21.000			3950222	WD50FDS56259M	3 x D	186	289
57.150	2.2500	5116124	KSEMP2250FDS56B1	21.000			3794451	WD50FDS56383M	5 x D	310	413
58.000	2.2830	5116125	KSEMP5800FDS56B1M	22.000			3794452	WD50FDS56569M	8 x D	496	599
59.000	2.3230	5116126	KSEMP5900FDS56B1M	23.000			3794453	WD50FDS56693M	10 x D	620	723
60.000	2.3620	5116127	KSEMP6000FDS56B1M	24.000			6123588	SSF200FDS560551	1.5 x D	125	170
60.330	2.3750	5116128	KSEMP2375FDS56B1	24.000			3952347	SSF200FDS561020	3 x D	186	289
61.000	2.4020	5116129	KSEMP6100FDS56B1M	25.000			3794910	SSF200FDS561507	5 x D	310	413
62.000	2.4410	5116130	KSEMP6200FDS56B1M	26.000			3794911	SSF200FDS562240	8 x D	496	599
							3794912	SSF200FDS562783	10 x D	620	723
63.000	2.4800	5116131	KSEMP6300FDS63B1M	27.000	DFC inserts DFC090520D56 DPA guiding pads DPA13T5D50	63	6123578	WD50FDS63154M	1.5 x D	107	190
63.500	2.5000	5116132	KSEMP2500FDS63B1	28.000			3950333	WD50FDS63289M	3 x D	210	325
64.000	2.5200	5116133	KSEMP6400FDS63B1M	28.000			3794454	WD50FDS63429M	5 x D	350	465
65.000	2.5590	5116134	KSEMP6500FDS63B1M	29.000			3794455	WD50FDS63639M	8 x D	560	675
66.000	2.5980	5116135	KSEMP6600FDS63B1M	30.000			3742296	WD50FDS63779M	10 x D	700	815
66.680	2.6250	5116136	KSEMP2625FDS63B1	31.000			6123589	SSF200FDS630606	1.5 x D	107	190
67.000	2.6380	5116137	KSEMP6700FDS63B1M	31.000			3952348	SSF200FDS631138	3 x D	210	325
68.000	2.6770	5116138	KSEMP6800FDS63B1M	32.000			3794913	SSF200FDS631688	5 x D	350	465
69.000	2.7170	5116139	KSEMP6900FDS63B1M	33.000			3794914	SSF200FDS632515	8 x D	560	675
69.850	2.7500	5116140	KSEMP2750FDS63B1	34.000			3794915	SSF200FDS633066	10 x D	700	815
70.000	2.7560	5116141	KSEMP7000FDS63B1M	34.000							

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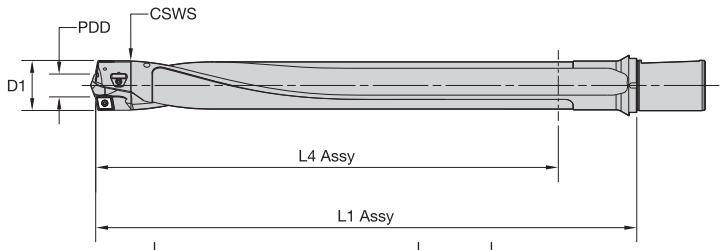
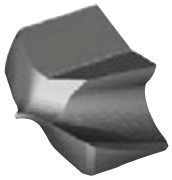
(KSEM PLUS Overview and Assembly for Systems Using B1 Heads — continued)

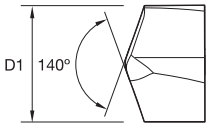


available KSEM PLUS heads				requested insert size reference per head			available tool bodies per CSWS connecting size 3 x D, 5 x D, 8 x D, 10 x D (metric and inch bodies)				
D1		KSEM PLUS head order number	KSEM PLUS head ANSI catalog number	PDD (mm) center insert size reference	outboard insert Drill Fix™ DFC DPA guiding pads	CSWS	KSEM PLUS body order number	KSEM PLUS body ANSI catalog number	L/D ratio	L4 assembly (mm)	L1 assembly (mm)
mm	in										
71.000	2.7950	**6041937**	**KSEMP7100FDS71B1M**	26.000	**DFC inserts** 4x DFC06T312D36 **DPA guiding pads** DPA13T5D50	71	**6123579**	**WD50FDS71172M**	1.5 x D	127	216
72.000	2.8350	**6041797**	**KSEMP7200FDS71B1M**	27.000			**5397942**	**WD50FDS71292M**	3 x D	240	332
73.000	2.8740	**6041938**	**KSEMP7300FDS71B1M**	28.000			**5397943**	**WD50FDS71452M**	5 x D	400	492
73.025	2.8750	**6042002**	**KSEMP2875FDS71B1**	28.000			**6123590**	**SSF200FDS710677**	1.5 x D	127	216
74.000	2.9130	**6041798**	**KSEMP7400FDS71B1M**	29.000			**5397948**	**SSF200FDS711150**	3 x D	240	332
75.000	2.9530	**6041939**	**KSEMP7500FDS71B1M**	30.000			**5397949**	**SSF200FDS711780**	5 x D	400	492
76.000	2.9920	**6041799**	**KSEMP7600FDS71B1M**	31.000							
77.000	3.0310	**6041940**	**KSEMP7700FDS71B1M**	32.000							
76.200	3.0000	**5397562**	**KSEMP3000FDS71B1**	31.000							
78.000	3.0710	**6041800**	**KSEMP7800FDS71B1M**	33.000							
79.000	3.1100	**6041991**	**KSEMP7900FDS71B1M**	34.000							
79.375	3.1250	**6042003**	**KSEMP3125FDS80B1**	31.000	**DFC inserts** 2x DFC06T312D36 & 2x DFC070416D45 **DPA guiding pads** DPA13T5D50	80	**6123580**	**WD50FDS80192M**	1.5 x D	144	246
80.000	3.1500	**6041881**	**KSEMP8000FDS80B1M**	31.000			**5397944**	**WD50FDS80327M**	3 x D	270	372
81.000	3.1890	**6041992**	**KSEMP8100FDS80B1M**	32.000			**5397945**	**WD50FDS80507M**	5 x D	450	552
82.000	3.2280	**6041882**	**KSEMP8200FDS80B1M**	33.000			**6123591**	**SSF200FDS800756**	1.5 x D	144	246
82.550	3.2500	**5397563**	**KSEMP3250FDS80B1**	34.000			**5398010**	**SSF200FDS801287**	3 x D	270	372
83.000	3.2680	**6041993**	**KSEMP8300FDS80B1M**	34.000			**5398011**	**SSF200FDS801996**	5 x D	450	552
84.000	3.3070	**6041883**	**KSEMP8400FDS80B1M**	35.000							
85.000	3.3460	**6041994**	**KSEMP8500FDS80B1M**	36.000							
85.725	3.3750	**6042004**	**KSEMP3375FDS80B1**	37.000							
86.000	3.3860	**6041884**	**KSEMP8600FDS80B1M**	37.000							
87.000	3.4250	**6041995**	**KSEMP8700FDS80B1M**	38.000							
88.000	3.4650	**6041885**	**KSEMP8800FDS80B1M**	39.000							
88.900	3.5000	**5397564**	**KSEMP3500FDS80B1**	40.000							
89.000	3.5040	**6041996**	**KSEMP8900FDS80B1M**	40.000							
90.000	3.5430	**6041886**	**KSEMP9000FDS90B1M**	37.000	**DFC inserts** 4x DFC070416D45 **DPA guiding pads** DPA13T5D50	90	**6123581**	**WD50FDS90212M**	1.5 x D	158	270
91.000	3.5830	**6041997**	**KSEMP9100FDS90B1M**	38.000			**5397946**	**WD50FDS90362M**	3 x D	300	412
92.000	3.6220	**6041887**	**KSEMP9200FDS90B1M**	39.000			**5397947**	**WD50FDS90562M**	5 x D	500	612
92.075	3.6250	**6042005**	**KSEMP3625FDS90B1**	39.000			**6123592**	**SSF200FDS900835**	1.5 x D	158	270
93.000	3.6610	**6041998**	**KSEMP9300FDS90B1M**	40.000			**5398012**	**SSF200FDS901425**	3 x D	300	412
							5398013	**SSF200FDS902213**	5 x D	500	612
94.000	3.7010	**6041888**	**KSEMP9400FDS90B1M**	26.000	**DFC inserts** 6x DFC06T312D36 **DPA guiding pads** DPA13T5D50						
95.000	3.7400	**6041999**	**KSEMP9500FDS90B1M**	27.000							
95.250	3.7500	**5397565**	**KSEMP3750FDS90B1**	27.000							
96.000	3.7800	**6041889**	**KSEMP9600FDS90B1M**	28.000							
97.000	3.8190	**6042000**	**KSEMP9700FDS90B1M**	29.000							
98.000	3.8580	**6041890**	**KSEMP9800FDS90B1M**	30.000							
98.425	3.8750	**6042006**	**KSEMP3875FDS90B1**	31.000							
99.000	3.8980	**6042001**	**KSEMP9900FDS90B1M**	31.000							
100.000	3.9370	**6041901**	**KSEMP10000FDS90B1M**	32.000							
101.600	4.0000	**5397566**	**KSEMP4000FDS90B1**	34.000							

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- The callout D1 (mm) = PDD. PDD is used in reference to the KSEM PLUS heads.
- Please refer to KSEMP insert recommendation on page H116 to configure your insert setup depending on the application.



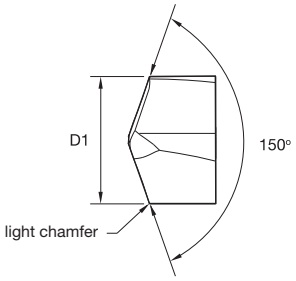
HPG/HPCCL



D1 (mm) = PDD

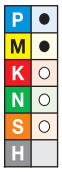


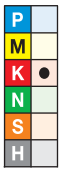
PC

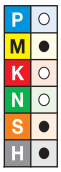


D1 (mm) = PDD

KSEM PLUS Center Inserts





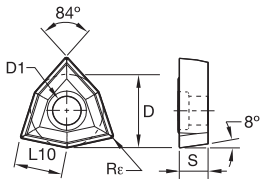


● first choice
○ alternate choice

HPG • KC7315	HPCCL • KC7410	PC • KC7135	D1 mm	D1 in	seat size
KSEMP1300HPGM	KSEM1300HPCCLM	KSEM1300PCM	13,000	.5118	C
KSEMP1400HPGM	KSEM1400HPCCLM	KSEM1400PCM	14,000	.5512	B
KSEMP1500HPGM	KSEM1500HPCCLM	KSEM1500PCM	15,000	.5906	A
KSEMP1600HPGM	KSEM1600HPCCLM	KSEM1600PCM	16,000	.6299	1
KSEMP1700HPGM	KSEM1700HPCCLM	KSEM1700PCM	17,000	.6693	1
KSEMP1800HPGM	KSEM1800HPCCLM	KSEM1800PCM	18,000	.7087	1
KSEMP1900HPGM	KSEM1900HPCCLM	KSEM1900PCM	19,000	.7480	2
KSEMP2000HPGM	KSEM2000HPCCLM	KSEM2000PCM	20,000	.7874	3
KSEMP2100HPGM	KSEM2100HPCCLM	KSEM2100PCM	21,000	.8268	3
KSEMP2200HPGM	KSEM2200HPCCLM	KSEM2200PCM	22,000	.8661	3
KSEMP2300HPGM	KSEM2300HPCCLM	KSEM2300PCM	23,000	.9055	4
KSEMP2400HPGM	KSEM2400HPCCLM	KSEM2400PCM	24,000	.9449	4
KSEMP2500HPGM	KSEM2500HPCCLM	KSEM2500PCM	25,000	.9843	5
KSEMP2600HPGM	KSEM2600HPCCLM	KSEM2600PCM	26,000	1.0236	5
KSEMP2700HPGM	KSEM2700HPCCLM	KSEM2700PCM	27,000	1.0630	6
KSEMP2800HPGM	KSEM2800HPCCLM	KSEM2800PCM	28,000	1.1024	6
KSEMP2900HPGM	KSEM2900HPCCLM	KSEM2900PCM	29,000	1.1417	7
KSEMP3000HPGM	KSEM3000HPCCLM	KSEM3000PCM	30,000	1.1811	7
KSEMP3100HPGM	KSEM3100HPCCLM	KSEM3100PCM	31,000	1.2205	8
KSEMP3200HPGM	KSEM3200HPCCLM	KSEM3200PCM	32,000	1.2598	8
KSEMP3300HPGM	KSEM3300HPCCLM	KSEM3300PCM	33,000	1.2992	9
KSEMP3400HPGM	KSEM3400HPCCLM	KSEM3400PCM	34,000	1.3386	9
KSEMP3500HPGM	KSEM3500HPCCLM	KSEM3500PCM	35,000	1.3780	9
KSEMP3600HPGM	KSEM3600HPCCLM	KSEM3600PCM	36,000	1.4173	9
KSEMP3700HPGM	KSEM3700HPCCLM	KSEM3700PCM	37,000	1.4567	10
KSEMP3800HPGM	KSEM3800HPCCLM	KSEM3800PCM	38,000	1.4961	10
KSEMP3900HPGM	KSEM3900HPCCLM	KSEM3900PCM	39,000	1.5354	10
KSEMP4000HPGM	KSEM4000HPCCLM	KSEM4000PCM	40,000	1.5748	10

Tolerance KSEMP HPG • KSEM HPCCL • Metric		Tolerance KSEMP HPG • KSEM HPCCL • Inch		Tolerance KSEM PC • Metric		Tolerance KSEM PC • Inch	
D1	tolerance h8	D1	tolerance h8	D1 metric	tolerance k7	D1 inch	tolerance k7
12,5–18	+0,000/-0,027	.500–.709	+.000/-.0010	12,5–18	+0,001/+ 0,019	.500–.709	+.0000/+.0008
>18–30	+0,000/-0,033	>.709–1.181	+.000/-.0013	>18–30	+0,002/+ 0,023	>.709–1.181	+.0000/+.0009
>30–40	+0,000/-0,039	>1.181–1.575	+.000/-.0015	>30–40	+0,002/+ 0,027	>1.181–1.575	+.0000/+.0010





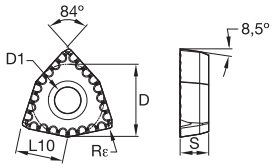
● first choice
○ alternate choice

P											●	●
M											○	○
K											●	○
N											○	○
S											○	●
H												

DFT-HP

	L10		D		D1		S		Rε			
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCU25	KCU40
DFT05T308D32HP	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●	●
DFT05T308D33HP	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●	●
DFT06T308D36HP	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●
DFT06T308D39HP	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●
DFT06T308D44HP	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●
DFT070408D45HP	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●	●
DFT070408D50HP	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●	●
DFT090508D56HP	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●	●
DFT090508D63HP	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●	●



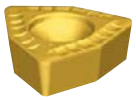


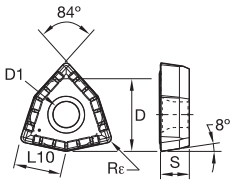
● first choice
○ alternate choice

P											●	
M											○	
K												
N											○	
S											○	
H												

DFT • DS

	L10		D		D1		S		Rε		
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCU40
DFT05T308D32DS	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT05T308D33DS	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT06T308D36DS	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT06T308D39DS	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT06T308D44DS	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT070408D45DS	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT070408D50DS	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT090508D56DS	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●
DFT090508D63DS	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●



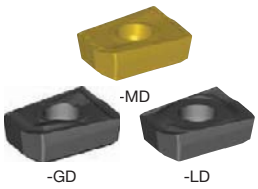


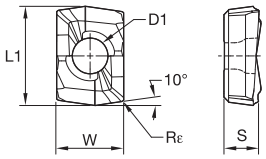
● first choice
○ alternate choice

P	●
M	●
K	○
N	○
S	○
H	

DFT-MD

	L10		D		D1		S		Rε		
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KC7140
DFT05T308D32MD	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT05T308D33MD	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT06T308D36MD	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT06T308D39MD	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT06T308D44MD	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT070408D45MD	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT070408D50MD	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT090508D56MD	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●
DFT090508D63MD	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●



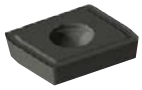


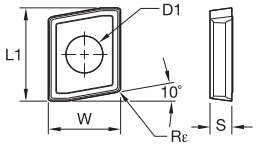
● first choice
○ alternate choice

P	●	○	●	●
M	●	○	○	○
K	○	●	●	○
N	○	●	○	○
S	○	○	○	●
H				

DFR-GD, -MD, -LD

	LI		W		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KC7140	KC7225	KCU25	KCU40
DFR040304D28GD	10,76	.424	7,26	0.29	2,85	.112	3,79	.149	0,40	.016	–	–	●	●
DFR040304D28LD	10,76	.424	7,26	0.29	2,85	.112	3,78	.149	0,40	.016	–	●	–	–
DFR040304D28MD	10,76	.424	7,26	0.29	2,85	.112	3,79	.149	0,40	.016	●	–	–	–





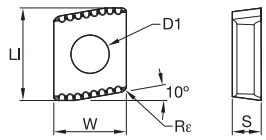
● first choice
○ alternate choice

P	●	●
M	○	○
K	●	○
N	○	●
S	○	●
H		

DFC-HP

	LI		W		D1		S		Rε		KCU25	KCU40
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in		
DFC040310D28HP	10,00	.3940	7,60	.2990	2,85	.1120	3,18	.1250	0,50	.0200	●	●
DFC05T312D32HP	12,00	.4720	9,40	.3700	3,40	.1340	3,75	.1480	0,80	.0320	●	●
DFC06T312D36HP	16,00	.6300	12,40	.4880	4,40	.1730	3,75	.1480	0,80	.0320	●	●
DFC070416D45HP	18,00	.7090	14,50	.5710	4,40	.1730	4,75	.1870	0,80	.0320	●	●
DFC090520D56HP	24,00	.9450	19,00	.7480	5,50	.2170	5,25	.2070	0,80	.0310	●	●





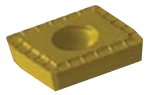
● first choice
○ alternate choice

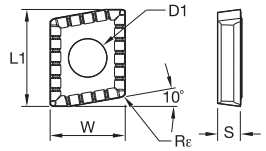
P	●	
M	○	
K	○	
N	●	
S	●	
H		

DFC-DS

NEW!

	LI		W		D1		S		Rε		KCU40
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
DFC040310D28DS	10,00	.394	7,60	.299	2,85	.112	3,18	.125	0,50	.020	●
DFC05T312D32DS	12,00	.472	9,40	.370	3,40	.134	3,75	.148	0,80	.031	●
DFC06T312D36DS	16,00	.630	12,40	.488	4,40	.173	3,75	.148	0,80	.031	●
DFC070416D45DS	18,00	.709	14,50	.571	4,40	.173	4,75	.187	0,80	.031	●
DFC090520D56DS	24,00	.945	19,00	.748	5,50	.217	5,25	.207	0,80	.031	●



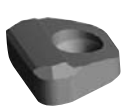


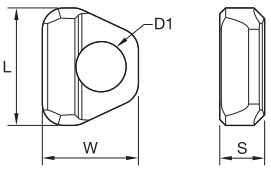
● first choice
○ alternate choice

P	●	
M	●	
K	○	
N	○	
S	○	
H		

DFC-MD

	LI		W		D1		S		Rε		KC7140
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
DFC040310D28MD	10,00	.3940	7,60	.2990	2,85	.1120	3,18	.1250	0,50	.0200	●
DFC05T312D32MD	12,00	.4720	9,40	.3700	3,40	.1340	3,75	.1480	0,80	.0310	●
DFC06T312D36MD	16,00	.6300	12,40	.4880	4,40	.1730	3,75	.1480	0,80	.0310	●
DFC070416D45MD	18,00	.7090	14,50	.5710	4,40	.1730	4,75	.1870	0,80	.0310	●
DFC090520D56MD	24,00	.9450	19,00	.7480	5,50	.2170	5,25	.2070	0,80	.0310	●





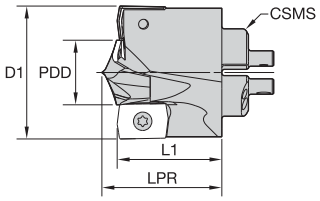
● first choice
○ alternate choice

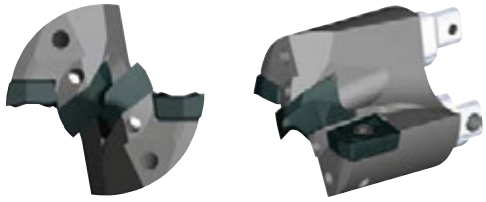
P	●	
M	●	
K	●	
N	●	
S	●	
H		

DPA Guiding Pads

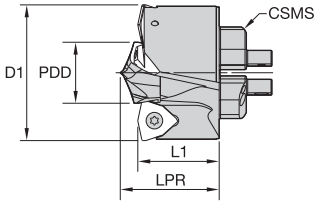
	L		W		D1		S		KCU40
catalog number	mm	in	mm	in	mm	in	mm	in	
DPA07T3D25	8,60	.3390	7,00	.2760	2,85	.1120	3,50	.1380	●
DPA09T4D32	11,00	.4330	9,00	.3540	3,40	.1340	4,20	.1650	●
DPA13T5D50	16,00	.6300	13,00	.5120	4,40	.1730	5,20	.2050	●

- To ensure 100% system stability, KSEM™ inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS heads are shipped with two wrenches, one for the KSEM insert and one to be used for the DFT™/DFR™ inserts as well as for the assembly of the body to the head.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM HPG and HPCCL inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFT, and DFR) for KSEM PLUS separately.



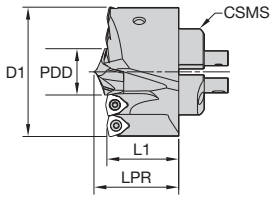


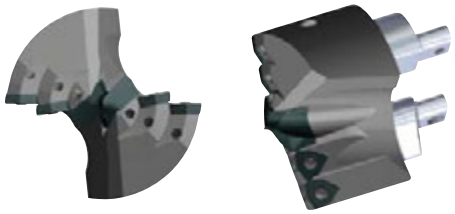
2 x DFR
diameter: 28–<31,75mm



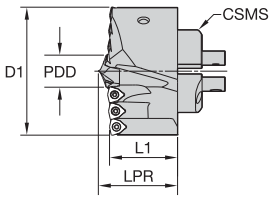


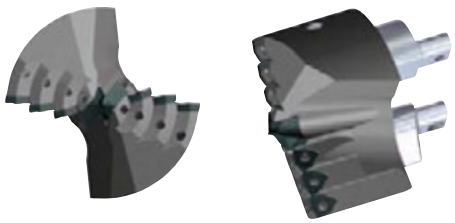
2 x DFT
diameter: 31,75–70,34mm





4 x DFT
diameter: 70,35–93,34mm





6 x DFT
diameter: 93,35–127mm

KSEM PLUS A1 Heads 1.102–4" (28–101,60mm)

order number	ISO catalog number	ANSI catalog number	D1 mm	D1 in	PDD mm	PDD in	LPR mm	LPR in	L1 mm	L1 in	CSMS system size
4000408	KSEMP2800FDS28A1M	KSEMP2800FDS28A1M	28,00	1.102	14,00	.5512	24,9	.980	22,0	.866	FDS28
4047811	KSEMP2858FDS28A1M	KSEMP1125FDS28A1	28,58	1.125	15,00	.5906	25,0	.984	22,0	.866	FDS28
4047812	KSEMP2900FDS28A1M	KSEMP2900FDS28A1M	29,00	1.142	15,00	.5906	25,0	.984	22,0	.866	FDS28
4047823	KSEMP2937FDS28A1M	KSEMP1156FDS28A1	29,36	1.156	16,00	.6299	25,2	.992	22,0	.866	FDS28
4047824	KSEMP3000FDS28A1M	KSEMP3000FDS28A1M	30,00	1.181	16,00	.6299	25,2	.992	22,0	.866	FDS28
4047825	KSEMP3017FDS28A1M	KSEMP1188FDS28A1	30,18	1.188	17,00	.6693	25,4	1.000	22,0	.866	FDS28
4047826	KSEMP3096FDS28A1M	KSEMP1219FDS28A1	30,96	1.219	17,00	.6693	25,4	1.000	22,0	.866	FDS28
4047827	KSEMP3100FDS28A1M	KSEMP3100FDS28A1M	31,00	1.221	17,00	.6693	25,4	1.000	22,0	.866	FDS28
3794916	KSEMP3175FDS32A1M	KSEMP1250FDS32A1	31,75	1.250	15,00	.5906	23,0	.907	20,0	.787	FDS32
3794291	KSEMP3200FDS32A1M	KSEMP3200FDS32A1M	32,00	1.260	15,00	.5906	23,0	.907	20,0	.787	FDS32
3742210	KSEMP3300FDS32A1M	KSEMP3300FDS32A1M	33,00	1.299	16,00	.6299	23,2	.913	20,0	.787	FDS32
3793949	KSEMP3320FDS32A1M	KSEMP3320FDS32A1M	33,20	1.307	16,00	.6299	23,2	.913	20,0	.787	FDS32
3794917	KSEMP3334FDS32A1M	KSEMP1313FDS32A1	33,35	1.313	17,00	.6693	23,4	.920	20,0	.787	FDS32
3794292	KSEMP3400FDS32A1M	KSEMP3400FDS32A1M	34,00	1.339	17,00	.6693	23,4	.920	20,0	.787	FDS32
3794918	KSEMP3493FDS32A1M	KSEMP1375FDS32A1	34,93	1.375	18,00	.7087	23,6	.928	20,0	.787	FDS32
3794393	KSEMP3500FDS32A1M	KSEMP3500FDS32A1M	35,00	1.378	18,00	.7087	23,6	.928	20,0	.787	FDS32

(continued)

(KSEM PLUS A1 Heads 1.102–4" (28–101,60mm) — continued)

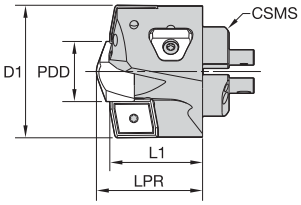
order number	ISO catalog number	ANSI catalog number	D1 mm	D1 in	PDD mm	PDD in	LPR mm	LPR in	L1 mm	L1 in	CSMS system size
3794394	KSEMP3600FDS36A1M	KSEMP3600FDS36A1M	36,00	1.417	13,00	.5118	22,7	.893	20,0	.787	FDS36
3794919	KSEMP3651FDS36A1M	KSEMP1438FDS36A1	36,53	1.438	14,00	.5512	22,9	.900	20,0	.787	FDS36
3794395	KSEMP3700FDS36A1M	KSEMP3700FDS36A1M	37,00	1.457	14,00	.5512	22,9	.900	20,0	.787	FDS36
3794427	KSEMP3750FDS36A1M	KSEMP3750FDS36A1M	37,50	1.476	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794396	KSEMP3800FDS36A1M	KSEMP3800FDS36A1M	38,00	1.496	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794920	KSEMP3810FDS36A1M	KSEMP1500FDS36A1	38,10	1.500	15,00	.5906	23,0	.907	20,0	.787	FDS36
3794397	KSEMP3900FDS36A1M	KSEMP3900FDS36A1M	39,00	1.535	16,00	.6299	23,2	.913	20,0	.787	FDS36
3793950	KSEMP3920FDS36A1M	KSEMP3920FDS36A1M	39,20	1.543	16,00	.6299	23,2	.913	20,0	.787	FDS36
3794921	KSEMP3970FDS36A1M	KSEMP1563FDS36A1	39,70	1.563	17,00	.6693	23,4	.920	20,0	.787	FDS36
3794398	KSEMP4000FDS40A1M	KSEMP4000FDS40A1M	40,00	1.575	17,00	.6693	28,6	1.125	25,0	.984	FDS40
3794399	KSEMP4100FDS40A1M	KSEMP4100FDS40A1M	41,00	1.614	18,00	.7087	28,8	1.132	25,0	.984	FDS40
3794922	KSEMP4128FDS40A1M	KSEMP1625FDS40A1	41,28	1.625	18,00	.7087	28,8	1.132	25,0	.984	FDS40
3794400	KSEMP4200FDS40A1M	KSEMP4200FDS40A1M	42,00	1.654	19,00	.7480	28,9	1.139	25,0	.984	FDS40
3794401	KSEMP4300FDS40A1M	KSEMP4300FDS40A1M	43,00	1.693	20,00	.7874	29,1	1.146	25,0	.984	FDS40
3794402	KSEMP4400FDS40A1M	KSEMP4400FDS40A1M	44,00	1.732	21,00	.8268	29,3	1.153	25,0	.984	FDS40
3794933	KSEMP4445FDS40A1M	KSEMP1750FDS40A1	44,45	1.750	22,00	.8661	29,5	1.160	25,0	.984	FDS40
3794403	KSEMP4500FDS45A1M	KSEMP4500FDS45A1M	45,00	1.772	18,00	.7087	28,8	1.132	25,0	.984	FDS45
3794404	KSEMP4600FDS45A1M	KSEMP4600FDS45A1M	46,00	1.811	19,00	.7480	28,9	1.139	25,0	.984	FDS45
3794405	KSEMP4700FDS45A1M	KSEMP4700FDS45A1M	47,00	1.850	20,00	.7874	29,1	1.146	25,0	.984	FDS45
3794934	KSEMP4763FDS45A1M	KSEMP1875FDS45A1	47,63	1.875	21,00	.8268	29,3	1.153	25,0	.984	FDS45
3794406	KSEMP4800FDS45A1M	KSEMP4800FDS45A1M	48,00	1.890	21,00	.8268	29,3	1.153	25,0	.984	FDS45
3794407	KSEMP4900FDS45A1M	KSEMP4900FDS45A1M	49,00	1.929	22,00	.8661	29,5	1.160	25,0	.984	FDS45
3742211	KSEMP5000FDS50A1M	KSEMP5000FDS50A1M	50,00	1.969	23,00	.9055	34,8	1.372	30,0	1.181	FDS50
3794935	KSEMP5080FDS50A1M	KSEMP2000FDS50A1	50,80	2.000	24,00	.9449	35,0	1.379	30,0	1.181	FDS50
3794408	KSEMP5100FDS50A1M	KSEMP5100FDS50A1M	51,00	2.008	24,00	.9449	35,0	1.379	30,0	1.181	FDS50
3794409	KSEMP5200FDS50A1M	KSEMP5200FDS50A1M	52,00	2.047	25,00	.9843	35,2	1.386	30,0	1.181	FDS50
3794410	KSEMP5300FDS50A1M	KSEMP5300FDS50A1M	53,00	2.087	26,00	1.0236	35,4	1.392	30,0	1.181	FDS50
3794936	KSEMP5398FDS50A1M	KSEMP2125FDS50A1	53,98	2.125	27,00	1.0630	35,6	1.399	30,0	1.181	FDS50
3794411	KSEMP5400FDS50A1M	KSEMP5400FDS50A1M	54,00	2.126	27,00	1.0630	35,6	1.399	30,0	1.181	FDS50
3794412	KSEMP5500FDS50A1M	KSEMP5500FDS50A1M	55,00	2.165	28,00	1.1024	35,7	1.406	30,0	1.181	FDS50
3794413	KSEMP5600FDS56A1M	KSEMP5600FDS56A1M	56,00	2.205	20,00	.7874	34,3	1.351	30,0	1.181	FDS56
3794414	KSEMP5700FDS56A1M	KSEMP5700FDS56A1M	57,00	2.244	21,00	.8268	34,5	1.358	30,0	1.181	FDS56
3794937	KSEMP5715FDS56A1M	KSEMP2250FDS56A1	57,15	2.250	21,00	.8268	34,5	1.358	30,0	1.181	FDS56
3794415	KSEMP5800FDS56A1M	KSEMP5800FDS56A1M	58,00	2.284	22,00	.8661	34,7	1.365	30,0	1.181	FDS56
3794416	KSEMP5900FDS56A1M	KSEMP5900FDS56A1M	59,00	2.323	23,00	.9055	34,8	1.372	30,0	1.181	FDS56
3794417	KSEMP6000FDS56A1M	KSEMP6000FDS56A1M	60,00	2.362	24,00	.9449	35,0	1.379	30,0	1.181	FDS56
3794938	KSEMP6033FDS56A1M	KSEMP2375FDS56A1	60,33	2.375	24,00	.9449	35,0	1.379	30,0	1.181	FDS56
3794418	KSEMP6100FDS56A1M	KSEMP6100FDS56A1M	61,00	2.402	25,00	.9843	35,2	1.386	30,0	1.181	FDS56
3794419	KSEMP6200FDS56A1M	KSEMP6200FDS56A1M	62,00	2.441	26,00	1.0236	35,4	1.392	30,0	1.181	FDS56
3794420	KSEMP6300FDS63A1M	KSEMP6300FDS63A1M	63,00	2.480	27,00	1.0630	41,8	1.643	36,0	1.417	FDS63
3794939	KSEMP6350FDS63A1M	KSEMP2500FDS63A1	63,50	2.500	28,00	1.1024	41,9	1.650	36,0	1.417	FDS63
3794421	KSEMP6400FDS63A1M	KSEMP6400FDS63A1M	64,00	2.520	28,00	1.1024	41,9	1.650	36,0	1.417	FDS63
3794422	KSEMP6500FDS63A1M	KSEMP6500FDS63A1M	65,00	2.559	29,00	1.1417	42,1	1.657	36,0	1.417	FDS63
3794423	KSEMP6600FDS63A1M	KSEMP6600FDS63A1M	66,00	2.598	30,00	1.1811	42,3	1.664	36,0	1.417	FDS63
3794940	KSEMP6668FDS63A1M	KSEMP2625FDS63A1	66,68	2.625	31,00	1.2205	42,5	1.671	36,0	1.417	FDS63
3794424	KSEMP6700FDS63A1M	KSEMP6700FDS63A1M	67,00	2.638	31,00	1.2205	42,5	1.671	36,0	1.417	FDS63
3794425	KSEMP6800FDS63A1M	KSEMP6800FDS63A1M	68,00	2.677	32,00	1.2598	42,6	1.678	36,0	1.417	FDS63
3794426	KSEMP6900FDS63A1M	KSEMP6900FDS63A1M	69,00	2.717	33,00	1.2992	42,8	1.685	36,0	1.417	FDS63
3794941	KSEMP6985FDS63A1M	KSEMP2750FDS63A1	69,85	2.750	34,00	1.3386	43,0	1.692	36,0	1.417	FDS63
3742212	KSEMP7000FDS63A1M	KSEMP7000FDS63A1M	70,00	2.756	34,00	1.3386	43,0	1.692	36,0	1.417	FDS63
6041904	KSEMP7100FDS71A1M	KSEMP7100FDS71A1M	71,00	2.795	26,00	1.0240	46,8	1.842	46,8	1.842	FDS71
5397513	KSEMP7200FDS71A1M	KSEMP7200FDS71A1M	72,00	2.835	27,00	1.0630	47,0	1.849	47,0	1.849	FDS71
6041906	KSEMP7300FDS71A1M	KSEMP7300FDS71A1M	73,00	2.874	28,00	1.1020	47,1	1.855	47,1	1.855	FDS71
6041931	KSEMP7303FDS71A1M	KSEMP2875FDS71A1	73,03	2.875	28,00	1.1020	47,1	1.855	47,1	1.855	FDS71
5397514	KSEMP7400FDS71A1M	KSEMP7400FDS71A1M	74,00	2.913	29,00	1.1420	47,3	1.863	47,3	1.863	FDS71
6041907	KSEMP7500FDS71A1M	KSEMP7500FDS71A1M	75,00	2.953	30,00	1.1810	47,5	1.869	47,5	1.869	FDS71

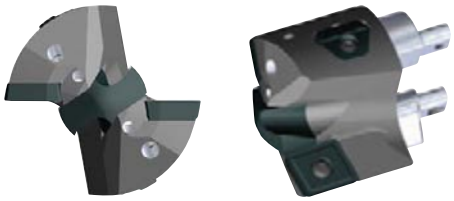
(continued)

(KSEM PLUS A1 Heads 1.102–4" (28–101,60mm) — continued)

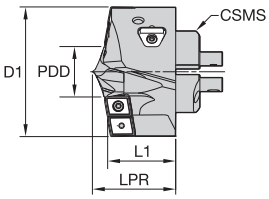
order number	ISO catalog number	ANSI catalog number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
5397515	KSEMP7600FDS71A1M	KSEMP7600FDS71A1M	76,00	2.992	31,00	1.2200	47,7	1.876	47,7	1.876	FDS71
5397516	KSEMP7620FDS71A1M	KSEMP3000FDS71A1	76,20	3.000	31,00	1.2200	47,7	1.876	47,7	1.876	FDS71
6041908	KSEMP7700FDS71A1M	KSEMP7700FDS71A1M	77,00	3.031	32,00	1.2600	47,8	1.883	47,8	1.883	FDS71
5397517	KSEMP7800FDS71A1M	KSEMP7800FDS71A1M	78,00	3.071	33,00	1.2990	48,0	1.890	48,0	1.890	FDS71
6041909	KSEMP7900FDS71A1M	KSEMP7900FDS71A1M	79,00	3.110	34,00	1.3390	48,2	1.897	48,2	1.897	FDS71
6041932	KSEMP7938FDS80A1M	KSEMP3125FDS80A1	79,38	3.125	31,00	1.2200	52,8	2.077	52,8	2.077	FDS80
5397518	KSEMP8000FDS80A1M	KSEMP8000FDS80A1M	80,00	3.150	31,00	1.2200	52,8	2.077	52,8	2.077	FDS80
6041910	KSEMP8100FDS80A1M	KSEMP8100FDS80A1M	81,00	3.189	32,00	1.2600	52,9	2.085	52,9	2.085	FDS80
5397519	KSEMP8200FDS80A1M	KSEMP8200FDS80A1M	82,00	3.228	33,00	1.2992	53,1	2.091	53,1	2.091	FDS80
5397550	KSEMP8255FDS80A1M	KSEMP3250FDS80A1	82,55	3.250	34,00	1.3386	53,3	2.098	53,3	2.098	FDS80
6041921	KSEMP8300FDS80A1M	KSEMP8300FDS80A1M	83,00	3.268	34,00	1.3390	53,3	2.098	53,3	2.098	FDS80
5397551	KSEMP8400FDS80A1M	KSEMP8400FDS80A1M	84,00	3.307	35,00	1.3780	53,5	2.105	53,5	2.105	FDS80
6041922	KSEMP8500FDS80A1M	KSEMP8500FDS80A1M	85,00	3.346	36,00	1.4170	53,6	2.112	53,6	2.112	FDS80
6041933	KSEMP8573FDS80A1M	KSEMP3375FDS80A1	85,73	3.375	37,00	1.4570	53,8	2.119	53,8	2.119	FDS80
5397552	KSEMP8600FDS80A1M	KSEMP8600FDS80A1M	86,00	3.386	37,00	1.4567	53,8	2.119	53,8	2.119	FDS80
6041923	KSEMP8700FDS80A1M	KSEMP8700FDS80A1M	87,00	3.425	38,00	1.4960	54,0	2.126	54,0	2.126	FDS80
5397553	KSEMP8800FDS80A1M	KSEMP8800FDS80A1M	88,00	3.465	39,00	1.5354	54,2	2.133	54,2	2.133	FDS80
5397554	KSEMP8890FDS80A1M	KSEMP3500FDS80A1	88,90	3.500	40,00	1.5748	54,3	2.140	54,3	2.140	FDS80
6041924	KSEMP8900FDS80A1M	KSEMP8900FDS80A1M	89,00	3.504	40,00	1.5750	54,3	2.140	54,3	2.140	FDS80
5397555	KSEMP9000FDS90A1M	KSEMP9000FDS90A1M	90,00	3.543	37,00	1.4567	59,2	2.332	59,2	2.332	FDS90
6041925	KSEMP9100FDS90A1M	KSEMP9100FDS90A1M	91,00	3.583	38,00	1.4960	59,4	2.339	59,4	2.339	FDS90
5397556	KSEMP9200FDS90A1M	KSEMP9200FDS90A1M	92,00	3.622	39,00	1.5354	59,6	2.346	59,6	2.346	FDS90
6041934	KSEMP9208FDS90A1M	KSEMP3625FDS90A1	92,08	3.625	39,00	1.5350	59,6	2.346	59,6	2.346	FDS90
6041926	KSEMP9300FDS90A1M	KSEMP9300FDS90A1M	93,00	3.661	40,00	1.5750	59,7	2.352	59,7	2.352	FDS90
5397557	KSEMP9400FDS90A1M	KSEMP9400FDS90A1M	94,00	3.701	26,00	1.0236	58,0	2.283	58,0	2.283	FDS90
6041927	KSEMP9500FDS90A1M	KSEMP9500FDS90A1M	95,00	3.740	27,00	1.0630	58,2	2.290	58,2	2.290	FDS90
5397558	KSEMP9525FDS90A1M	KSEMP3750FDS90A1	95,25	3.750	27,00	1.0630	58,3	2.297	58,3	2.297	FDS90
5397559	KSEMP9600FDS90A1M	KSEMP9600FDS90A1M	96,00	3.780	28,00	1.1024	58,3	2.297	58,3	2.297	FDS90
6041928	KSEMP9700FDS90A1M	KSEMP9700FDS90A1M	97,00	3.819	29,00	1.1420	58,5	2.304	58,5	2.304	FDS90
5397560	KSEMP9800FDS90A1M	KSEMP9800FDS90A1M	98,00	3.858	30,00	1.1811	58,7	2.311	58,7	2.311	FDS90
6041935	KSEMP9843FDS90A1M	KSEMP3875FDS90A1	98,43	3.875	31,00	1.2200	58,9	2.317	58,9	2.317	FDS90
6041929	KSEMP9900FDS90A1M	KSEMP9900FDS90A1M	99,00	3.898	31,00	1.2200	58,9	2.317	58,9	2.317	FDS90
6041930	KSEMP10000FDS90A1M	KSEMP10000FDS90A1M	100,00	3.937	32,00	1.2600	59,0	2.324	59,0	2.324	FDS90
5397561	KSEMP10160FDS90A1M	KSEMP4000FDS90A1	101,60	4.000	34,00	1.3390	59,4	2.338	59,4	2.338	FDS90

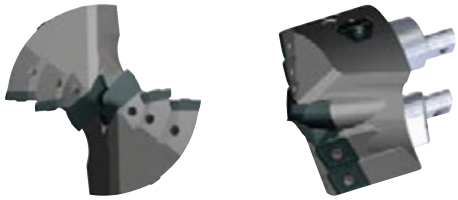
- To ensure 100% system stability, KSEM inserts used for KSEM PLUS should not be reground.
- KSEM PLUS heads are shipped with all insert screws.
- KSEM PLUS B1 heads are shipped with two or three wrenches, one for the KSEM insert, one for DFC™ inserts and DPA guiding pads, as well as for assembling the head onto the tool body. One additional wrench might be added depending on the size of the guiding pad.
- Order KSEM PLUS shanks using connection coupling size (CSMS) to determine which heads go with each shank.
- PDD in the callout drawing refers to the D1 of the KSEM, HPGM, and HPCM inserts for use with KSEM PLUS.
- Order inserts (KSEM, DFC) for KSEM PLUS separately.



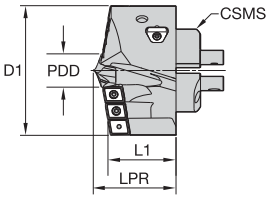


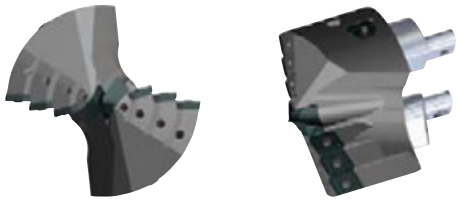
2 x DFC
diameter: 28–70,34mm





4 x DFC
diameter: 70,35–93,34mm





6 x DFC
diameter: 93,35–127mm

KSEM PLUS B1 Heads 1.102–4" (28–101,60mm)

order number	ISO catalog number	ANSI catalog number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
5115736	KSEMP2800FDS28B1M	KSEMP2800FDS28B1M	28,00	1.102	14,00	.5512	28,1	1.105	25,0	.984	FDS28
5115737	KSEMP2858FDS28B1M	KSEMP1125FDS28B1	28,58	1.125	15,00	.5906	28,2	1.110	25,0	.984	FDS28
5115738	KSEMP2900FDS28B1M	KSEMP2900FDS28B1M	29,00	1.142	15,00	.5906	28,2	1.111	25,0	.984	FDS28
5115739	KSEMP2937FDS28B1M	KSEMP1156FDS28B1	29,36	1.156	16,00	.6299	28,4	1.118	25,0	.984	FDS28
5116010	KSEMP3000FDS28B1M	KSEMP3000FDS28B1M	30,00	1.181	16,00	.6299	28,4	1.118	25,0	.984	FDS28
5116011	KSEMP3017FDS28B1M	KSEMP1188FDS28B1	30,18	1.188	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116012	KSEMP3096FDS28B1M	KSEMP1219FDS28B1	30,96	1.219	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116013	KSEMP3100FDS28B1M	KSEMP3100FDS28B1M	31,00	1.220	17,00	.6693	28,6	1.125	25,0	.984	FDS28
5116014	KSEMP3175FDS32B1M	KSEMP1250FDS32B1	31,75	1.250	15,00	.5906	28,2	1.111	25,0	.984	FDS32
5116015	KSEMP3200FDS32B1M	KSEMP3200FDS32B1M	32,00	1.260	15,00	.5906	28,2	1.111	25,0	.984	FDS32
5116016	KSEMP3300FDS32B1M	KSEMP3300FDS32B1M	33,00	1.299	16,00	.6299	28,4	1.118	25,0	.984	FDS32
5116017	KSEMP3320FDS32B1M	KSEMP3320FDS32B1M	33,20	1.307	16,00	.6299	28,4	1.118	25,0	.984	FDS32
5116018	KSEMP3334FDS32B1M	KSEMP1313FDS32B1	33,35	1.313	17,00	.6693	28,6	1.125	25,0	.984	FDS32
5116019	KSEMP3400FDS32B1M	KSEMP3400FDS32B1M	34,00	1.339	17,00	.6693	28,6	1.125	25,0	.984	FDS32
5116030	KSEMP3493FDS32B1M	KSEMP1375FDS32B1	34,93	1.375	18,00	.7087	28,8	1.132	25,0	.984	FDS32
5116031	KSEMP3500FDS32B1M	KSEMP3500FDS32B1M	35,00	1.378	18,00	.7087	28,8	1.132	25,0	.984	FDS32
5116032	KSEMP3600FDS36B1M	KSEMP3600FDS36B1M	36,00	1.417	13,00	.5118	27,9	1.098	25,0	.984	FDS36
5116033	KSEMP3651FDS36B1M	KSEMP1438FDS36B1	36,53	1.438	14,00	.5512	28,1	1.105	25,0	.984	FDS36
5116034	KSEMP3700FDS36B1M	KSEMP3700FDS36B1M	37,00	1.457	14,00	.5512	28,1	1.105	25,0	.984	FDS36
5116035	KSEMP3750FDS36B1M	KSEMP3750FDS36B1M	37,50	1.476	15,00	.5906	28,2	1.111	25,0	.984	FDS36

(continued)

(KSEM PLUS B1 Heads 1.102–4" (28–101,60mm) — continued)

order number	ISO catalog number	ANSI catalog number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
5116036	KSEMP3800FDS36B1M	KSEMP3800FDS36B1M	38,00	1.496	15,00	.5906	28,2	1.111	25,0	.984	FDS36
5116037	KSEMP3810FDS36B1M	KSEMP1500FDS36B1	38,10	1.500	15,00	.5906	28,2	1.111	25,0	.984	FDS36
5116038	KSEMP3900FDS36B1M	KSEMP3900FDS36B1M	39,00	1.535	16,00	.6299	28,4	1.118	25,0	.984	FDS36
5116039	KSEMP3920FDS36B1M	KSEMP3920FDS36B1M	39,20	1.543	16,00	.6299	28,4	1.118	25,0	.984	FDS36
5116040	KSEMP3970FDS36B1M	KSEMP1563FDS36B1	39,70	1.563	17,00	.6693	28,6	1.125	25,0	.984	FDS36
5116041	KSEMP4000FDS40B1M	KSEMP4000FDS40B1M	40,00	1.575	17,00	.6693	33,8	1.330	30,0	1.181	FDS40
5116042	KSEMP4100FDS40B1M	KSEMP4100FDS40B1M	41,00	1.614	18,00	.7087	34,0	1.337	30,0	1.181	FDS40
5116043	KSEMP4128FDS40B1M	KSEMP1625FDS40B1	41,28	1.625	18,00	.7087	34,0	1.337	30,0	1.181	FDS40
5116044	KSEMP4200FDS40B1M	KSEMP4200FDS40B1M	42,00	1.654	19,00	.7480	34,1	1.344	30,0	1.181	FDS40
5116045	KSEMP4300FDS40B1M	KSEMP4300FDS40B1M	43,00	1.693	20,00	.7874	34,3	1.351	30,0	1.181	FDS40
5116046	KSEMP4400FDS40B1M	KSEMP4400FDS40B1M	44,00	1.732	21,00	.8268	34,5	1.358	30,0	1.181	FDS40
5116047	KSEMP4445FDS40B1M	KSEMP1750FDS40B1	44,45	1.750	22,00	.8661	34,7	1.365	30,0	1.181	FDS40
5116098	KSEMP4500FDS45B1M	KSEMP4500FDS45B1M	45,00	1.772	18,00	.7087	34,0	1.337	30,0	1.181	FDS45
5116099	KSEMP4600FDS45B1M	KSEMP4600FDS45B1M	46,00	1.811	19,00	.7480	34,1	1.344	30,0	1.181	FDS45
5116110	KSEMP4700FDS45B1M	KSEMP4700FDS45B1M	47,00	1.850	20,00	.7874	34,3	1.351	30,0	1.181	FDS45
5116111	KSEMP4763FDS45B1M	KSEMP1875FDS45B1	47,63	1.875	21,00	.8268	34,5	1.358	30,0	1.181	FDS45
5116112	KSEMP4800FDS45B1M	KSEMP4800FDS45B1M	48,00	1.890	21,00	.8268	34,5	1.358	30,0	1.181	FDS45
5116113	KSEMP4900FDS45B1M	KSEMP4900FDS45B1M	49,00	1.929	22,00	.8661	34,7	1.365	30,0	1.181	FDS45
5116114	KSEMP5000FDS50B1M	KSEMP5000FDS50B1M	50,00	1.969	23,00	.9055	40,0	1.577	35,0	1.378	FDS50
5116115	KSEMP5080FDS50B1M	KSEMP2000FDS50B1	50,80	2.000	24,00	.9449	40,2	1.584	35,0	1.378	FDS50
5116116	KSEMP5100FDS50B1M	KSEMP5100FDS50B1M	51,00	2.008	24,00	.9449	40,2	1.584	35,0	1.378	FDS50
5116117	KSEMP5200FDS50B1M	KSEMP5200FDS50B1M	52,00	2.047	25,00	.9843	40,4	1.590	35,0	1.378	FDS50
5116118	KSEMP5300FDS50B1M	KSEMP5300FDS50B1M	53,00	2.087	26,00	1.0236	40,6	1.597	35,0	1.378	FDS50
5116119	KSEMP5398FDS50B1M	KSEMP2125FDS50B1	53,98	2.125	27,00	1.0630	40,8	1.604	35,0	1.378	FDS50
5116120	KSEMP5400FDS50B1M	KSEMP5400FDS50B1M	54,00	2.126	27,00	1.0630	40,8	1.604	35,0	1.378	FDS50
5116121	KSEMP5500FDS50B1M	KSEMP5500FDS50B1M	55,00	2.165	28,00	1.1024	40,9	1.611	35,0	1.378	FDS50
5116122	KSEMP5600FDS56B1M	KSEMP5600FDS56B1M	56,00	2.205	20,00	.7874	39,5	1.556	35,0	1.378	FDS56
5116123	KSEMP5700FDS56B1M	KSEMP5700FDS56B1M	57,00	2.244	21,00	.8268	39,7	1.563	35,0	1.378	FDS56
5116124	KSEMP5715FDS56B1M	KSEMP2250FDS56B1	57,15	2.250	21,00	.8268	39,7	1.563	35,0	1.378	FDS56
5116125	KSEMP5800FDS56B1M	KSEMP5800FDS56B1M	58,00	2.283	22,00	.8661	39,9	1.570	35,0	1.378	FDS56
5116126	KSEMP5900FDS56B1M	KSEMP5900FDS56B1M	59,00	2.323	23,00	.9055	40,0	1.577	35,0	1.378	FDS56
5116127	KSEMP6000FDS56B1M	KSEMP6000FDS56B1M	60,00	2.362	24,00	.9449	40,2	1.584	35,0	1.378	FDS56
5116128	KSEMP6033FDS56B1M	KSEMP2375FDS56B1	60,33	2.375	24,00	.9449	40,2	1.584	35,0	1.378	FDS56
5116129	KSEMP6100FDS56B1M	KSEMP6100FDS56B1M	61,00	2.402	25,00	.9843	40,4	1.590	35,0	1.378	FDS56
5116130	KSEMP6200FDS56B1M	KSEMP6200FDS56B1M	62,00	2.441	26,00	1.0236	40,6	1.597	35,0	1.378	FDS56
5116131	KSEMP6300FDS63B1M	KSEMP6300FDS63B1M	63,00	2.480	27,00	1.0630	46,0	1.809	40,0	1.575	FDS63
5116132	KSEMP6350FDS63B1M	KSEMP2500FDS63B1	63,50	2.500	28,00	1.1024	46,1	1.816	40,0	1.575	FDS63
5116133	KSEMP6400FDS63B1M	KSEMP6400FDS63B1M	64,00	2.520	28,00	1.1024	46,1	1.816	40,0	1.575	FDS63
5116134	KSEMP6500FDS63B1M	KSEMP6500FDS63B1M	65,00	2.559	29,00	1.1417	46,3	1.823	40,0	1.575	FDS63
5116135	KSEMP6600FDS63B1M	KSEMP6600FDS63B1M	66,00	2.598	30,00	1.1811	46,5	1.830	40,0	1.575	FDS63
5116136	KSEMP6668FDS63B1M	KSEMP2625FDS63B1	66,68	2.625	31,00	1.2205	46,7	1.837	40,0	1.575	FDS63
5116137	KSEMP6700FDS63B1M	KSEMP6700FDS63B1M	67,00	2.638	31,00	1.2205	46,7	1.837	40,0	1.575	FDS63
5116138	KSEMP6800FDS63B1M	KSEMP6800FDS63B1M	68,00	2.677	32,00	1.2598	46,8	1.844	40,0	1.575	FDS63
5116139	KSEMP6900FDS63B1M	KSEMP6900FDS63B1M	69,00	2.717	33,00	1.2992	47,0	1.851	40,0	1.575	FDS63
5116140	KSEMP6985FDS63B1M	KSEMP2750FDS63B1	69,85	2.750	34,00	1.3386	47,2	1.858	40,0	1.575	FDS63
5116141	KSEMP7000FDS63B1M	KSEMP7000FDS63B1M	70,00	2.756	34,00	1.3386	47,2	1.858	40,0	1.575	FDS63
6041937	KSEMP7100FDS71B1M	KSEMP7100FDS71B1M	71,00	2.795	26,00	1.0240	47,9	1.885	40,0	1.575	FDS71
6041797	KSEMP7200FDS71B1M	KSEMP7200FDS71B1M	72,00	2.835	27,00	1.0630	48,1	1.892	40,0	1.575	FDS71
6041938	KSEMP7300FDS71B1M	KSEMP7300FDS71B1M	73,00	2.874	28,00	1.1020	48,2	1.899	40,0	1.575	FDS71
6042002	KSEMP7303FDS71B1M	KSEMP2875FDS71B1	73,03	2.875	28,00	1.1020	48,2	1.899	40,0	1.575	FDS71
6041798	KSEMP7400FDS71B1M	KSEMP7400FDS71B1M	74,00	2.913	29,00	1.1420	48,4	1.906	40,0	1.575	FDS71
6041939	KSEMP7500FDS71B1M	KSEMP7500FDS71B1M	75,00	2.953	30,00	1.1810	48,6	1.913	40,0	1.575	FDS71
6041799	KSEMP7600FDS71B1M	KSEMP7600FDS71B1M	76,00	2.992	31,00	1.2200	48,8	1.919	40,0	1.575	FDS71
5397562	KSEMP7620FDS71B1M	KSEMP3000FDS71B1	76,20	3.000	31,00	1.2200	48,8	1.919	48,8	1.919	FDS71
6041940	KSEMP7700FDS71B1M	KSEMP7700FDS71B1M	77,00	3.031	32,00	1.2600	48,9	1.927	40,0	1.575	FDS71
6041800	KSEMP7800FDS71B1M	KSEMP7800FDS71B1M	78,00	3.071	33,00	1.2990	49,1	1.933	40,0	1.575	FDS71

(continued)

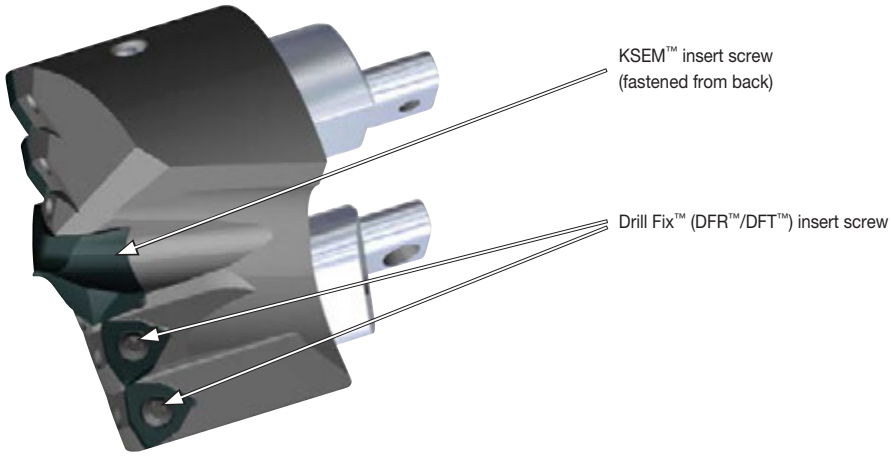
(KSEM PLUS B1 Heads 1.102–4" (28–101,60mm) — continued)

order number	ISO catalog number	ANSI catalog number	D1		PDD		LPR		L1		CSMS system size
			mm	in	mm	in	mm	in	mm	in	
6041991	KSEMP7900FDS71B1M	KSEMP7900FDS71B1M	79,00	3.110	34,00	1.3390	49,3	1.940	40,0	1.575	FDS71
6042003	KSEMP7938FDS80B1M	KSEMP3125FDS80B1	79,38	3.125	31,00	1.2200	54,1	2.128	45,0	1.772	FDS80
6041881	KSEMP8000FDS80B1M	KSEMP8000FDS80B1M	80,00	3.150	31,00	1.2200	54,1	2.128	45,0	1.772	FDS80
6041992	KSEMP8100FDS80B1M	KSEMP8100FDS80B1M	81,00	3.189	32,00	1.2600	54,2	2.135	45,0	1.772	FDS80
6041882	KSEMP8200FDS80B1M	KSEMP8200FDS80B1M	82,00	3.228	33,00	1.2990	54,4	2.142	45,0	1.772	FDS80
5397563	KSEMP8255FDS80B1M	KSEMP3250FDS80B1	82,55	3.250	34,00	1.3386	54,6	2.149	54,6	2.149	FDS80
6041993	KSEMP8300FDS80B1M	KSEMP8300FDS80B1M	83,00	3.268	34,00	1.3390	54,6	2.149	45,0	1.772	FDS80
6041883	KSEMP8400FDS80B1M	KSEMP8400FDS80B1M	84,00	3.307	35,00	1.3780	54,8	2.156	45,0	1.772	FDS80
6041994	KSEMP8500FDS80B1M	KSEMP8500FDS80B1M	85,00	3.346	36,00	1.4170	54,9	2.163	45,0	1.772	FDS80
6042004	KSEMP8573FDS80B1M	KSEMP3375FDS80B1	85,73	3.375	37,00	1.4570	55,1	2.170	45,0	1.772	FDS80
6041884	KSEMP8600FDS80B1M	KSEMP8600FDS80B1M	86,00	3.386	37,00	1.4570	55,1	2.170	45,0	1.772	FDS80
6041995	KSEMP8700FDS80B1M	KSEMP8700FDS80B1M	87,00	3.425	38,00	1.4960	55,3	2.177	45,0	1.772	FDS80
6041885	KSEMP8800FDS80B1M	KSEMP8800FDS80B1M	88,00	3.465	39,00	1.5350	55,5	2.184	45,0	1.772	FDS80
5397564	KSEMP8890FDS80B1M	KSEMP3500FDS80B1	88,90	3.500	40,00	1.5748	55,6	2.190	55,6	2.190	FDS80
6041996	KSEMP8900FDS80B1M	KSEMP8900FDS80B1M	89,00	3.504	40,00	1.5750	55,6	2.190	45,0	1.772	FDS80
6041886	KSEMP9000FDS90B1M	KSEMP9000FDS90B1M	90,00	3.543	37,00	1.4570	60,3	2.375	50,0	1.969	FDS90
6041997	KSEMP9100FDS90B1M	KSEMP9100FDS90B1M	91,00	3.583	38,00	1.4960	60,5	2.382	50,0	1.969	FDS90
6041887	KSEMP9200FDS90B1M	KSEMP9200FDS90B1M	92,00	3.622	39,00	1.5350	60,7	2.389	50,0	1.969	FDS90
6042005	KSEMP9208FDS90B1M	KSEMP3625FDS90B1	92,08	3.625	39,00	1.5350	60,7	2.389	50,0	1.969	FDS90
6041998	KSEMP9300FDS90B1M	KSEMP9300FDS90B1M	93,00	3.661	40,00	1.5750	60,8	2.395	50,0	1.969	FDS90
6041888	KSEMP9400FDS90B1M	KSEMP9400FDS90B1M	94,00	3.701	26,00	1.0240	60,4	2.376	50,0	1.968	FDS90
6041999	KSEMP9500FDS90B1M	KSEMP9500FDS90B1M	95,00	3.740	27,00	1.0630	60,6	2.383	50,0	1.968	FDS90
5397565	KSEMP9525FDS90B1M	KSEMP3750FDS90B1	95,25	3.750	27,00	1.0630	60,6	2.383	60,6	2.383	FDS90
6041889	KSEMP9600FDS90B1M	KSEMP9600FDS90B1M	96,00	3.780	28,00	1.1020	60,7	2.390	50,0	1.968	FDS90
6042000	KSEMP9700FDS90B1M	KSEMP9700FDS90B1M	97,00	3.819	29,00	1.1420	60,9	2.398	50,0	1.968	FDS90
6041890	KSEMP9800FDS90B1M	KSEMP9800FDS90B1M	98,00	3.858	30,00	1.1810	61,1	2.404	50,0	1.968	FDS90
6042006	KSEMP9843FDS90B1M	KSEMP3875FDS90B1	98,43	3.875	31,00	1.2200	61,3	2.411	50,0	1.968	FDS90
6042001	KSEMP9900FDS90B1M	KSEMP9900FDS90B1M	99,00	3.898	31,00	1.2200	61,3	2.412	50,0	1.969	FDS90
6041901	KSEMP10000FDS90B1M	KSEMP10000FDS90B1M	100,00	3.937	32,00	1.2600	61,4	2.418	50,0	1.968	FDS90
5397566	KSEMP10160FDS90B1M	KSEMP4000FDS90B1	101,60	4.000	34,00	1.3390	61,8	2.432	61,8	2.432	FDS90

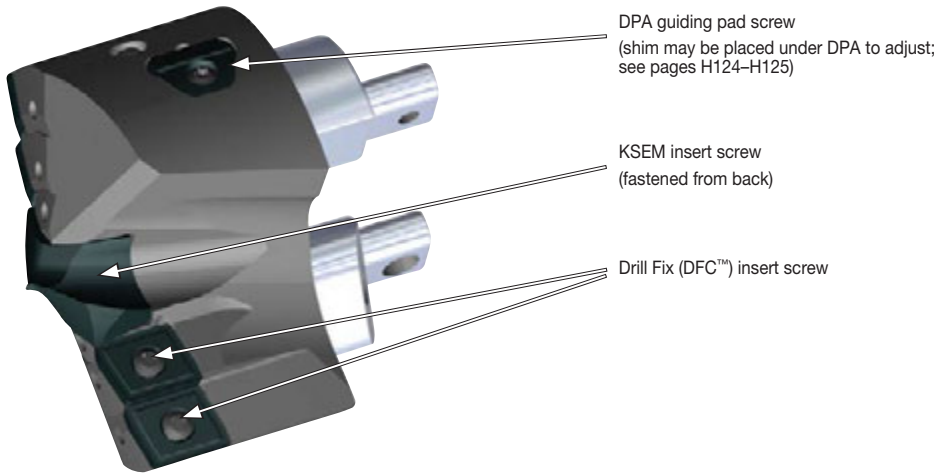
NOTE: When one screw is listed, it is for both insert and guiding pad. When two screws are listed, the first one is for the insert screw, and the second one is for the guiding pad. Find complete KSEM PLUS B1 product overview on pages H108–H110.

- The following pages consolidate required spare parts for KSEM PLUS heads.
- Tables show each spare part followed by required screw driver (if applicable).
- Adjustment shims for DPA guide pads on KSEM PLUS B1 heads come as easy-to-use shim packs.
- Please find reference for spare part location below.

KSEM PLUS A1 Heads • Spare Parts



KSEM PLUS B1 Heads • Spare Parts



KSEM PLUS A1 Heads 1.102–4" (28–101,60mm) • Spare Parts

D1		PDD						
mm	in	mm	in	CSMS system size	KSEM insert screw	KSEM wrench	Drill Fix insert screw	Drill Fix wrench
28,00	1.102	14,00	.551	FDS28	364.016	170.350	192.432	170.352
28,58	1.125	15,00	.591	FDS28	364.016	170.350	192.432	170.352
29,00	1.142	15,00	.591	FDS28	364.016	170.350	192.432	170.352
29,36	1.156	16,00	.630	FDS28	364.010	170.345	192.432	170.352
30,00	1.181	16,00	.630	FDS28	364.010	170.345	192.432	170.352
30,18	1.188	17,00	.669	FDS28	364.010	170.345	192.432	170.352
30,96	1.219	17,00	.669	FDS28	364.010	170.345	192.432	170.352
31,00	1.221	17,00	.669	FDS28	364.010	170.345	192.432	170.352
31,75	1.250	15,00	.591	FDS32	364.016	170.350	191.924	170.353
32,00	1.260	15,00	.591	FDS32	364.016	170.350	191.924	170.353
33,00	1.299	16,00	.630	FDS32	364.010	170.345	191.924	170.353
33,20	1.307	16,00	.630	FDS32	364.010	170.345	191.924	170.353
33,35	1.313	17,00	.669	FDS32	364.010	170.345	191.924	170.353
34,00	1.339	17,00	.669	FDS32	364.010	170.345	191.924	170.353
34,93	1.375	18,00	.709	FDS32	364.010	170.345	191.924	170.353
35,00	1.378	18,00	.709	FDS32	364.010	170.345	191.924	170.353
36,00	1.417	13,00	.512	FDS36	364.016	170.350	191.916	170.355
36,53	1.438	14,00	.551	FDS36	364.016	170.350	191.916	170.355
37,00	1.457	14,00	.551	FDS36	364.016	170.350	191.916	170.355
37,50	1.476	15,00	.591	FDS36	364.016	170.350	191.916	170.355
38,00	1.496	15,00	.591	FDS36	364.016	170.350	191.916	170.355
38,10	1.500	15,00	.591	FDS36	364.016	170.350	191.916	170.355
39,00	1.535	16,00	.630	FDS36	364.010	170.345	191.916	170.355
39,20	1.543	16,00	.630	FDS36	364.010	170.345	191.916	170.355
39,70	1.563	17,00	.669	FDS36	364.010	170.345	191.916	170.355
40,00	1.575	17,00	.669	FDS40	364.010	170.345	191.916	170.355
41,00	1.614	18,00	.709	FDS40	364.010	170.345	191.916	170.355
41,28	1.625	18,00	.709	FDS40	364.010	170.345	191.916	170.355
42,00	1.654	19,00	.748	FDS40	364.010	170.345	191.916	170.355
43,00	1.693	20,00	.787	FDS40	364.011	170.346	191.916	170.355
44,00	1.732	21,00	.827	FDS40	364.011	170.346	191.916	170.355
44,45	1.750	22,00	.866	FDS40	364.011	170.346	191.916	170.355
45,00	1.772	18,00	.709	FDS45	364.010	170.345	191.698	170.355
46,00	1.811	19,00	.748	FDS45	364.010	170.345	191.698	170.355
47,00	1.850	20,00	.787	FDS45	364.011	170.346	191.698	170.355
47,63	1.875	21,00	.827	FDS45	364.011	170.346	191.698	170.355
48,00	1.890	21,00	.827	FDS45	364.011	170.346	191.698	170.355
49,00	1.929	22,00	.866	FDS45	364.011	170.346	191.698	170.355
50,00	1.969	23,00	.906	FDS50	364.011	170.346	191.698	170.355
50,80	2.000	24,00	.945	FDS50	364.011	170.346	191.698	170.355
51,00	2.008	24,00	.945	FDS50	364.011	170.346	191.698	170.355
52,00	2.047	25,00	.984	FDS50	364.012	170.347	191.698	170.355
53,00	2.087	26,00	1.024	FDS50	364.012	170.347	191.698	170.355
53,98	2.125	27,00	1.063	FDS50	364.012	170.347	191.698	170.355
54,00	2.126	27,00	1.063	FDS50	364.012	170.347	191.698	170.355
55,00	2.165	28,00	1.102	FDS50	364.012	170.347	191.698	170.355
56,00	2.205	20,00	.787	FDS56	364.011	170.346	191.726	170.356
57,00	2.244	21,00	.827	FDS56	364.011	170.346	191.726	170.356
57,15	2.250	21,00	.827	FDS56	364.011	170.346	191.726	170.356
58,00	2.284	22,00	.866	FDS56	364.011	170.346	191.726	170.356
59,00	2.323	23,00	.906	FDS56	364.011	170.346	191.726	170.356
60,00	2.362	24,00	.945	FDS56	364.011	170.346	191.726	170.356
60,33	2.375	24,00	.945	FDS56	364.011	170.346	191.726	170.356
61,00	2.402	25,00	.984	FDS56	364.012	170.347	191.726	170.356
62,00	2.441	26,00	1.024	FDS56	364.012	170.347	191.726	170.356
63,00	2.480	27,00	1.063	FDS63	364.012	170.347	191.726	170.356

(continued)

(KSEM PLUS A1 Heads 1.102–4" (28–101,60mm) • Spare Parts — continued)

D1		PDD						
mm	in	mm	in	CSMS system size	KSEM insert screw	KSEM wrench	Drill Fix insert screw	Drill Fix wrench
63,50	2.500	28,00	1.102	FDS63	364.012	170.347	191.726	170.356
64,00	2.520	28,00	1.102	FDS63	364.012	170.347	191.726	170.356
65,00	2.559	29,00	1.142	FDS63	364.013	170.348	191.726	170.356
66,00	2.598	30,00	1.181	FDS63	364.013	170.348	191.726	170.356
66,68	2.625	31,00	1.221	FDS63	364.013	170.348	191.726	170.356
67,00	2.638	31,00	1.221	FDS63	364.013	170.348	191.726	170.356
68,00	2.677	32,00	1.260	FDS63	364.013	170.348	191.726	170.356
69,00	2.717	33,00	1.299	FDS63	364.015	170.348	191.726	170.356
69,85	2.750	34,00	1.339	FDS63	364.015	170.348	191.726	170.356
70,00	2.756	34,00	1.339	FDS63	364.015	170.348	191.726	170.356
71,00	2.795	26,00	1.024	FDS71	364.012	170.347	191.916	170.355
72,00	2.835	27,00	1.063	FDS71	364.012	170.347	191.916	170.355
73,00	2.874	28,00	1.102	FDS71	364.012	170.347	191.916	170.355
73,03	2.875	28,00	1.102	FDS71	364.012	170.347	191.916	170.355
74,00	2.913	29,00	1.142	FDS71	364.013	170.365	191.916	170.355
75,00	2.953	30,00	1.181	FDS71	364.013	170.365	191.916	170.355
76,00	2.992	31,00	1.220	FDS71	364.013	170.365	191.916	170.355
76,20	3.000	31,00	1.220	FDS71	364.013	170.365	191.916	170.355
77,00	3.031	32,00	1.260	FDS71	364.013	170.365	191.916	170.355
78,00	3.071	33,00	1.299	FDS71	364.015	170.365	191.916	170.355
79,00	3.110	34,00	1.339	FDS71	364.015	170.365	191.916	170.355
79,38	3.125	31,00	1.220	FDS80	364.013	170.365	191.916	170.355
80,00	3.150	31,00	1.220	FDS80	364.013	170.365	191.916	170.355
81,00	3.189	32,00	1.260	FDS80	364.013	170.365	191.916	170.355
82,00	3.228	33,00	1.299	FDS80	364.015	170.365	191.916	170.355
82,55	3.250	34,00	1.339	FDS80	364.015	170.365	191.916	170.355
83,00	3.268	34,00	1.339	FDS80	364.015	170.365	191.916	170.355
84,00	3.307	35,00	1.378	FDS80	364.015	170.365	191.916	170.355
85,00	3.346	36,00	1.417	FDS80	364.015	170.365	191.916	170.355
85,73	3.375	37,00	1.457	FDS80	364.015	170.365	191.916	170.355
86,00	3.386	37,00	1.457	FDS80	364.015	170.365	191.916	170.355
87,00	3.425	38,00	1.496	FDS80	364.015	170.365	191.916	170.355
88,00	3.465	39,00	1.535	FDS80	364.015	170.365	191.916	170.355
88,90	3.500	40,00	1.575	FDS80	364.015	170.365	191.916	170.355
89,00	3.504	40,00	1.575	FDS80	364.015	170.365	191.916	170.355
90,00	3.543	37,00	1.457	FDS90	364.015	170.365	191.916	170.355
91,00	3.583	38,00	1.496	FDS90	364.015	170.365	191.916	170.355
92,00	3.622	39,00	1.535	FDS90	364.015	170.365	191.916	170.355
92,08	3.625	39,00	1.535	FDS90	364.015	170.365	191.916	170.355
93,00	3.661	40,00	1.575	FDS90	364.015	170.365	191.916	170.355
94,00	3.701	26,00	1.024	FDS90	364.012	170.355	191.916	170.355
95,00	3.740	27,00	1.063	FDS90	364.012	170.355	191.916	170.355
95,25	3.750	27,00	1.063	FDS90	364.012	170.355	191.916	170.355
96,00	3.780	28,00	1.102	FDS90	364.012	170.355	191.916	170.355
97,00	3.819	29,00	1.142	FDS90	364.013	170.365	191.916	170.355
98,00	3.858	30,00	1.181	FDS90	364.013	170.365	191.916	170.355
98,43	3.875	31,00	1.220	FDS90	364.013	170.365	191.916	170.355
99,00	3.898	31,00	1.220	FDS90	364.013	170.365	191.916	170.355
100,00	3.937	32,00	1.260	FDS90	364.013	170.365	191.916	170.355
101,60	4.000	34,00	1.339	FDS90	364.015	170.365	191.916	170.355

KSEM PLUS B1 Heads 1.102–4" (28–101,60mm) • Spare Parts



D1		PDD									
mm	in	mm	in	CSMS system size	KSEM insert screw	Torx wrench	DFC insert screw	Torx wrench	DPA guiding pad screw	Torx wrench	shim pack
28,00	1.102	14,00	.551	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
28,58	1.125	15,00	.591	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
29,00	1.142	15,00	.591	FDS28	364.016	170.350	192.432	170.352	192.432	170.352	193.554
29,36	1.156	16,00	.630	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,00	1.181	16,00	.630	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,18	1.188	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
30,96	1.219	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
31,00	1.220	17,00	.669	FDS28	364.010	170.345	192.432	170.352	192.432	170.352	193.554
31,75	1.250	15,00	.591	FDS32	364.016	170.350	191.924	170.353	191.924	170.353	193.555
32,00	1.260	15,00	.591	FDS32	364.016	170.350	191.924	170.353	191.924	170.353	193.555
33,00	1.299	16,00	.630	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
33,20	1.307	16,00	.630	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
33,35	1.313	17,00	.669	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
34,00	1.339	17,00	.669	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
34,93	1.375	18,00	.709	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
35,00	1.378	18,00	.709	FDS32	364.010	170.345	191.924	170.353	191.924	170.353	193.555
36,00	1.417	13,00	.512	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
36,53	1.438	14,00	.551	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
37,00	1.457	14,00	.551	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
37,50	1.476	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
38,00	1.496	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
38,10	1.500	15,00	.591	FDS36	364.016	170.350	191.916	170.355	191.924	170.353	193.555
39,00	1.535	16,00	.630	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
39,20	1.543	16,00	.630	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
39,70	1.563	17,00	.669	FDS36	364.010	170.345	191.916	170.355	191.924	170.353	193.555
40,00	1.575	17,00	.669	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
41,00	1.614	18,00	.709	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
41,28	1.625	18,00	.709	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
42,00	1.654	19,00	.748	FDS40	364.010	170.345	191.916	170.355	191.924	170.353	193.555
43,00	1.693	20,00	.787	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
44,00	1.732	21,00	.827	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
44,45	1.750	22,00	.866	FDS40	364.011	170.346	191.916	170.355	191.924	170.353	193.555
45,00	1.772	18,00	.709	FDS45	364.010	170.345	191.916	170.355	191.924	170.353	193.555
46,00	1.811	19,00	.748	FDS45	364.010	170.345	191.916	170.355	191.924	170.353	193.555
47,00	1.850	20,00	.787	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
47,63	1.875	21,00	.827	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
48,00	1.890	21,00	.827	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
49,00	1.929	22,00	.866	FDS45	364.011	170.346	191.916	170.355	191.924	170.353	193.555
50,00	1.969	23,00	.906	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
50,80	2.000	24,00	.945	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
51,00	2.008	24,00	.945	FDS50	364.011	170.346	191.916	170.355	191.916	170.355	193.556
52,00	2.047	25,00	.984	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
53,00	2.087	26,00	1.024	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
53,98	2.125	27,00	1.063	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
54,00	2.126	27,00	1.063	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
55,00	2.165	28,00	1.102	FDS50	364.012	170.347	191.916	170.355	191.916	170.355	193.556
56,00	2.205	20,00	.787	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
57,00	2.244	21,00	.827	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
57,15	2.250	21,00	.827	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
58,00	2.283	22,00	.866	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
59,00	2.323	23,00	.906	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
60,00	2.362	24,00	.945	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
60,33	2.375	24,00	.945	FDS56	364.011	170.346	191.726	170.356	191.916	170.355	193.556
61,00	2.402	25,00	.984	FDS56	364.012	170.347	191.726	170.356	191.916	170.355	193.556
62,00	2.441	26,00	1.024	FDS56	364.012	170.347	191.726	170.356	191.916	170.355	193.556
63,00	2.480	27,00	1.063	FDS63	364.012	170.347	191.726	170.356	191.916	170.355	193.556

(continued)

(KSEM PLUS B1 Heads 1.102–4" (28–101,60mm) • Spare Parts — continued)



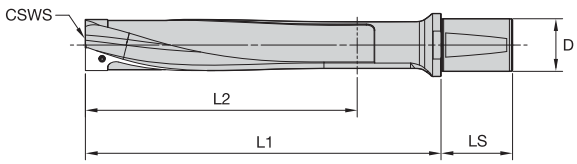






D1		PDD									
mm	in	mm	in	CSMS system size	KSEM insert screw	Torx wrench	DFC insert screw	Torx wrench	DPA guiding pad screw	Torx wrench	shim pack
63,50	2.500	28,00	1.102	FDS63	364.012	170.347	191.726	170.356	191.916	170.355	193.556
64,00	2.520	28,00	1.102	FDS63	364.012	170.347	191.726	170.356	191.916	170.355	193.556
65,00	2.559	29,00	1.142	FDS63	364.013	170.348	191.726	170.356	191.916	170.355	193.556
66,00	2.598	30,00	1.181	FDS63	364.013	170.348	191.726	170.356	191.916	170.355	193.556
66,68	2.625	31,00	1.221	FDS63	364.013	170.348	191.726	170.356	191.916	170.355	193.556
67,00	2.638	31,00	1.221	FDS63	364.013	170.348	191.726	170.356	191.916	170.355	193.556
68,00	2.677	32,00	1.260	FDS63	364.013	170.348	191.726	170.356	191.916	170.355	193.556
69,00	2.717	33,00	1.299	FDS63	364.015	170.348	191.726	170.356	191.916	170.355	193.556
69,85	2.750	34,00	1.339	FDS63	364.015	170.348	191.726	170.356	191.916	170.355	193.556
70,00	2.756	34,00	1.339	FDS63	364.015	170.348	191.726	170.356	191.916	170.355	193.556
71,00	2.795	26,00	1.024	FDS71	364.012	170.347	191.916	170.356	191.916	170.355	193.556
72,00	2.835	27,00	1.063	FDS71	364.012	170.347	191.916	170.356	191.916	170.355	193.556
73,00	2.874	28,00	1.102	FDS71	364.012	170.347	191.916	170.356	191.916	170.355	193.556
73,03	2.875	28,00	1.102	FDS71	364.012	170.347	191.916	170.356	191.916	170.355	193.556
74,00	2.913	29,00	1.142	FDS71	364.013	170.365	191.916	170.356	191.916	170.355	193.556
75,00	2.953	30,00	1.181	FDS71	364.013	170.365	191.916	170.356	191.916	170.355	193.556
76,00	2.992	31,00	1.220	FDS71	364.013	170.365	191.916	170.356	191.916	170.355	193.556
76,20	3.000	31,00	1.220	FDS71	364.013	170.365	191.916	170.355	191.916	170.356	193.556
77,00	3.031	32,00	1.260	FDS71	364.013	170.365	191.916	170.355	191.916	170.356	193.556
78,00	3.071	33,00	1.299	FDS71	364.015	170.365	191.916	170.355	191.916	170.356	193.556
79,00	3.110	34,00	1.339	FDS71	364.015	170.365	191.916	170.355	191.916	170.356	193.556
79,38	3.125	31,00	1.220	FDS80	364.013	170.365	191.916	170.355	191.916	170.356	193.556
80,00	3.150	31,00	1.220	FDS80	364.013	170.365	191.916	170.355	191.916	170.356	193.556
81,00	3.189	32,00	1.260	FDS80	364.013	170.365	191.916	170.355	191.916	170.356	193.556
82,00	3.228	33,00	1.299	FDS80	364.015	170.365	191.916	170.355	191.916	170.356	193.556
82,55	3.250	34,00	1.339	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
83,00	3.268	34,00	1.339	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
84,00	3.307	35,00	1.378	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
85,00	3.346	36,00	1.417	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
85,73	3.375	37,00	1.457	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
86,00	3.386	37,00	1.457	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
87,00	3.425	38,00	1.496	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
88,00	3.465	39,00	1.535	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
88,90	3.500	40,00	1.575	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
89,00	3.504	40,00	1.575	FDS80	364.015	170.355	191.916	170.355	191.916	170.356	193.556
90,00	3.543	37,00	1.457	FDS90	364.015	170.355	191.916	170.355	191.916	170.356	193.556
91,00	3.583	38,00	1.496	FDS90	364.015	170.355	191.916	170.355	191.916	170.356	193.556
92,00	3.622	39,00	1.535	FDS90	364.015	170.355	191.916	170.355	191.916	170.356	193.556
92,08	3.625	39,00	1.535	FDS90	364.015	170.355	191.916	170.355	191.916	170.356	193.556
93,00	3.661	40,00	1.575	FDS90	364.015	170.355	191.916	170.355	191.916	170.356	193.556
94,00	3.701	26,00	1.024	FDS90	364.012	170.355	191.916	170.355	191.916	170.356	193.556
95,00	3.740	27,00	1.063	FDS90	364.012	170.355	191.916	170.355	191.916	170.356	193.556
95,25	3.750	27,00	1.063	FDS90	364.012	170.355	191.916	170.355	191.916	170.356	193.556
96,00	3.780	28,00	1.102	FDS90	364.012	170.355	191.916	170.355	191.916	170.356	193.556
97,00	3.819	29,00	1.142	FDS90	364.013	170.355	191.916	170.355	191.916	170.356	193.556
98,00	3.858	30,00	1.181	FDS90	364.013	170.355	191.916	170.355	191.916	170.356	193.556
98,43	3.875	31,00	1.220	FDS90	364.013	170.355	191.916	170.355	191.916	170.356	193.556
99,00	3.898	31,00	1.220	FDS90	364.013	170.355	191.916	170.355	191.916	170.356	193.556
100,00	3.937	32,00	1.260	FDS90	364.013	170.355	191.916	170.355	191.916	170.356	193.556
101,60	4.000	34,00	1.339	FDS90	364.015	170.365	191.916	170.355	191.916	170.356	193.556

- Order KSEM PLUS heads according to the connection coupling size (CSWS).
- Order KSEM PLUS heads separately; see page H115–H120.
- Wrench will be shipped with KSEM PLUS head.
- Custom solution for cast iron application with twisted flutes available.





KSEM PLUS WD Shanks • 1.5 x D • Metric

1.5 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28076M	FDS28	32	76	32	58	**193.537**
WD32FDS32082M	FDS32	32	82	34	58	**193.523**
WD32FDS36092M	FDS36	32	92	40	58	**193.524**
WD50FDS40100M	FDS40	50	100	43	68	**193.524**
WD50FDS45112M	FDS45	50	112	50	68	**193.525**
WD50FDS50122M	FDS50	50	122	54	68	**193.525**
WD50FDS56140M	FDS56	50	140	65	68	**193.526**
WD50FDS63154M	FDS63	50	154	71	68	**193.526**
WD50FDS71172M	FDS71	50	172	80	68	**193.526**
WD50FDS80192M	FDS80	50	192	90	68	**193.545**
WD50FDS90212M	FDS90	50	212	100	68	**193.545**

KSEM PLUS WD Shanks • 3 x D • Metric

3 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28128M	FDS28	32	128	71	58	**193.537**
WD32FDS32146M	FDS32	32	146	85	58	**193.523**
WD32FDS36166M	FDS36	32	166	97	58	**193.524**
WD50FDS40183M	FDS40	50	183	107	68	**193.524**
WD50FDS45206M	FDS45	50	206	122	68	**193.525**
WD50FDS50228M	FDS50	50	228	135	68	**193.525**
WD50FDS56259M	FDS56	50	259	156	68	**193.526**
WD50FDS63289M	FDS63	50	289	174	68	**193.526**
WD50FDS71292M	FDS71	50	292	200	68	**193.526**
WD50FDS80327M	FDS80	50	327	225	68	**193.545**
WD50FDS90362M	FDS90	50	362	250	68	**193.545**

KSEM PLUS WD Shanks • 5 x D • Metric





5 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28190M	FDS28	32	190	133	58	**193.537**
WD32FDS32216M	FDS32	32	216	155	58	**193.523**
WD32FDS36244M	FDS36	32	244	175	58	**193.524**
WD50FDS40271M	FDS40	50	271	195	68	**193.524**
WD50FDS45304M	FDS45	50	304	220	68	**193.525**
WD50FDS50338M	FDS50	50	338	245	68	**193.525**
WD50FDS56383M	FDS56	50	383	280	68	**193.526**
WD50FDS63429M	FDS63	50	429	314	68	**193.526**
WD50FDS71452M	FDS71	50	452	360	68	**193.526**
WD50FDS80507M	FDS80	50	507	405	68	**193.545**
WD50FDS90562M	FDS90	50	562	450	68	**193.545**

KSEM PLUS WD Shanks • 8 x D • Metric





8 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28283M	FDS28	32	283	226	58	**193.537**
WD32FDS32321M	FDS32	32	321	260	58	**193.523**
WD32FDS36361M	FDS36	32	361	292	58	**193.524**
WD50FDS40403M	FDS40	50	403	327	68	**193.524**
WD50FDS45451M	FDS45	50	451	367	68	**193.525**
WD50FDS50503M	FDS50	50	503	410	68	**193.525**
WD50FDS56569M	FDS56	50	569	466	68	**193.526**
WD50FDS63639M	FDS63	50	639	524	68	**193.526**

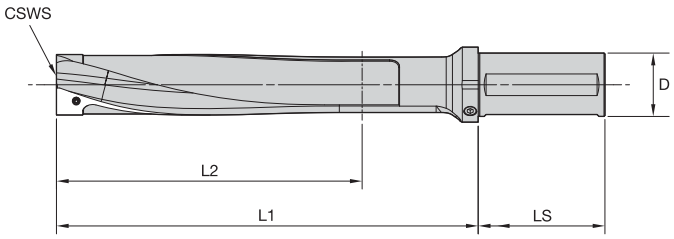
KSEM PLUS WD Shanks • 10 x D • Metric





10 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw
WD32FDS28345M	FDS28	32	345	288	58	**193.537**
WD32FDS32391M	FDS32	32	391	330	58	**193.523**
WD32FDS36439M	FDS36	32	439	370	58	**193.524**
WD50FDS40491M	FDS40	50	491	415	68	**193.524**
WD50FDS45549M	FDS45	50	549	465	68	**193.525**
WD50FDS50613M	FDS50	50	613	520	68	**193.525**
WD50FDS56693M	FDS56	50	693	590	68	**193.526**
WD50FDS63779M	FDS63	50	779	664	68	**193.526**

- Order KSEM PLUS heads according to the connection coupling size (CSWS).
- Order KSEM PLUS heads separately; see pages H115–H120.
- Wrench will be shipped with KSEM PLUS head.
- Custom solution for cast iron application with twisted flutes available.





KSEM PLUS SSF Shanks • 1.5 x D • Inch

1.5 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw	pipe plug
SSF150FDS280299	FDS28	1.5000	2.99	1.26	3.75	**193.537**	**HSFS0125**
SSF150FDS320323	FDS32	1.5000	3.23	1.34	3.75	**193.523**	**HSFS0125**
SSF150FDS360362	FDS36	1.5000	3.62	1.58	3.75	**193.524**	**HSFS0125**
SSF200FDS400394	FDS40	2.0000	3.94	1.69	4.00	**193.524**	**HSFS0125**
SSF200FDS450441	FDS45	2.0000	4.41	1.97	4.00	**193.525**	**HSFS0125**
SSF200FDS500480	FDS50	2.0000	4.80	2.13	4.00	**193.525**	**HSFS0125**
SSF200FDS560551	FDS56	2.0000	5.51	2.56	4.00	**193.526**	**HSFS0125**
SSF200FDS630606	FDS63	2.0000	6.06	2.80	4.00	**193.526**	**HSFS0125**
SSF200FDS710677	FDS71	2.0000	6.77	3.15	4.00	**193.526**	**HSFS0500**
SSF200FDS800756	FDS80	2.0000	7.56	3.54	4.00	**193.545**	**HSFS0500**
SSF200FDS900835	FDS90	2.0000	8.35	3.94	4.00	**193.545**	**HSFS0500**

KSEM PLUS SSF Shanks • 3 x D • Inch

3 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw	pipe plug
SSF150FDS280502	FDS28	1.5000	5.04	2.80	3.75	**193.537**	**HSFS0125**
SSF150FDS320573	FDS32	1.5000	5.75	3.35	3.75	**193.523**	**HSFS0125**
SSF150FDS360652	FDS36	1.5000	6.54	3.82	3.75	**193.524**	**HSFS0125**
SSF200FDS400721	FDS40	2.0000	7.20	4.21	3.75	**193.524**	**HSFS0125**
SSF200FDS450809	FDS45	2.0000	8.11	4.80	4.00	**193.525**	**HSFS0125**
SSF200FDS500896	FDS50	2.0000	8.98	5.32	4.00	**193.525**	**HSFS0125**
SSF200FDS561020	FDS56	2.0000	10.20	6.14	4.00	**193.526**	**HSFS0125**
SSF200FDS631138	FDS63	2.0000	11.38	6.85	4.00	**193.526**	**HSFS0125**
SSF200FDS711150	FDS71	2.0000	11.50	7.87	4.00	**193.526**	**HSFS0500**
SSF200FDS801287	FDS80	2.0000	12.87	8.86	4.00	**193.545**	**HSFS0500**
SSF200FDS901425	FDS90	2.0000	14.25	9.84	4.00	**193.545**	**HSFS0500**

KSEM PLUS SSF Shanks • 5 x D • Inch







5 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw	pipe plug
SSF150FDS280746	FDS28	1.5000	7.48	5.24	3.75	193.537	HSFS0125
SSF150FDS320850	FDS32	1.5000	8.50	6.10	3.75	193.523	HSFS0125
SSF150FDS360960	FDS36	1.5000	9.61	6.89	3.75	193.524	HSFS0125
SSF200FDS401066	FDS40	2.0000	10.67	7.68	4.00	193.524	HSFS0125
SSF200FDS451196	FDS45	2.0000	11.97	8.66	4.00	193.525	HSFS0125
SSF200FDS501330	FDS50	2.0000	13.31	9.65	4.00	193.525	HSFS0125
SSF200FDS561507	FDS56	2.0000	15.08	11.02	4.00	193.526	HSFS0125
SSF200FDS631688	FDS63	2.0000	16.89	12.36	4.00	193.526	HSFS0125
SSF200FDS711780	FDS71	2.0000	17.80	14.17	4.00	193.526	HSFS0500
SSF200FDS801996	FDS80	2.0000	19.96	15.95	4.00	193.545	HSFS0500
SSF200FDS902213	FDS90	2.0000	22.13	17.72	4.00	193.545	HSFS0500

KSEM PLUS SSF Shanks • 8 x D • Inch







8 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw	pipe plug
SSF150FDS281112	FDS28	1.5000	11.14	8.90	3.75	193.537	HSFS0125
SSF150FDS321263	FDS32	1.5000	12.64	10.24	3.75	193.523	HSFS0125
SSF150FDS361421	FDS36	1.5000	14.21	11.50	3.75	193.524	HSFS0125
SSF200FDS401586	FDS40	2.0000	15.87	12.87	4.00	193.524	HSFS0125
SSF200FDS451775	FDS45	2.0000	17.76	14.45	4.00	193.525	HSFS0125
SSF200FDS501980	FDS50	2.0000	19.80	16.14	4.00	193.525	HSFS0125
SSF200FDS562240	FDS56	2.0000	22.40	18.35	4.00	193.526	HSFS0125
SSF200FDS632515	FDS63	2.0000	25.16	20.63	4.00	193.526	HSFS0125

KSEM PLUS SSF Shanks • 10 x D • Inch







10 x D catalog number	CSWS system size	D	L1	L2	LS	clamp screw	pipe plug
SSF150FDS281356	FDS28	1.5000	13.58	11.34	3.75	193.537	HSFS0125
SSF150FDS321539	FDS32	1.5000	15.39	12.99	3.75	193.523	HSFS0125
SSF150FDS361728	FDS36	1.5000	17.28	14.57	3.75	193.524	HSFS0125
SSF200FDS401933	FDS40	2.0000	19.33	16.34	4.00	193.524	HSFS0125
SSF200FDS452161	FDS45	2.0000	21.61	18.31	4.00	193.525	HSFS0125
SSF200FDS502413	FDS50	2.0000	24.13	20.47	4.00	193.525	HSFS0125
SSF200FDS562783	FDS56	2.0000	27.28	23.23	4.00	193.526	HSFS0125
SSF200FDS633066	FDS63	2.0000	30.67	26.14	4.00	193.526	HSFS0125

KSEM PLUS Carbide Insert Recommendations

Material Group	Outboard/ Inboard	Insert Style	Grade	Page(s)	Comments
P	O	DFR-GD	KCU25, KCU40	H113	Recommended outboard insert style for working in all P-materials. Start with KCU40™ and use KCU25™ in stable conditions to achieve higher tool life.
		DFC-/DFT-HP		H112, H114	
		DFC-/DFT-DS	KCU40	H112, H114	Reduce feed rate by 10% to further improve chip formation in long-chipping steels and low carbon steel.
	I	KSEMP-HPG	KC7315	H111	Must use KSEMP center inserts in P-materials to avoid excessive wear on head & inserts.
M	O	DFR-MD	KC7140	H113	Recommended outboard insert style for working in all M-materials.
		DFC-/DFT-MD		H113–H114	
		DFC-/DFT-DS	KCU40	H112, H114	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEMP-HPG	KC7315	H111	Recommended inboard insert style for working in all M-materials.
		KSEM-PC	KC7135	H70, H111	For unstable conditions in stainless steel, use KSEM PC inserts.
		KSEM-HPL	KC7320	H62	If chip control issue resulting from center insert occurs in M-materials, use KSEM HPL insert inboard. Reduction of feed rate up to 20% is recommended.
K	O	DFR-LD	KCU25	H113	Recommended insert styles for working in all K-Materials.
		DFC-/DFT-HP		H112, H114	
	I	KSEM-HPCCL	KC7410	H60, H111	
N	O	DFR-GD	KC7225	H113	Recommended outboard insert styles for working in all non-ferrous materials.
		DFC-/DFT-HP	KCU40	H112, H114	
		DFC-/DFT-DS	KCU40	H112, H114	Reduce feed rate by 15% for diameters <56mm and up to 50% for larger diameters to improve chip formation.
		DFR/DFT-ST	KD1425	J98	Use PCD tipped outboard when working with CFRP, CFRP/metal stacks and plastics (N3, N5, and N6).
	I	KSEMP-HPG	KC7315	H111	Recommended inboard insert style for working in all non-ferrous materials.
		KSEM-HPS	K715	—	This is a made-to-order item (uncoated/sharp) — use it to improve your results in N3, N5, and N6, if required.
S	O	DFR-GD	KC7140	H113	Recommended outboard insert style for working in all S-materials.
		DFC-/DFT-HP	KCU40	H112, H114	
		DFC-/DFT-DS	KCU40	H112, H114	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEM-PC	KC7135	H70, H111	If center breakage is an issue in S-materials, use KSEM PC insert inboard.



Need help with bad chip formation?

Our new DS geometry for DFT™ and DFC™ inserts on KSEM PLUS helps you to improve your performance in long chipping materials.

If chip formation is an issue, you may use our new DFT and DFC DS style inserts with the recommendations for feed rate adjustments given as indicated.

Modular Drill • KSEM PLUS™ • Metric • A1 and B1 Style

Metric											
Material Group		Condition	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter					
			min	Starting Value	max	Ø	KSEM 14....17 DFR/DFC04... 28.00–31,74	KSEM 15....18 DFT/DFC05... 31,74–35,99	KSEM 13....22 DFT/DFC06... 36,00–44,99	KSEM 18....28 DFT/DFC07... 45,00–55,99	KSEM 20....34 DFT/DFC09... 56,00–102,35
P	1	S	115	**235**	290	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	90	**160**	215	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	65	**100**	140	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	90	**190**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		U	71	**130**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	3	S	90	**180**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**120**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	106	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	4	S	90	**140**	220	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**110**	160	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	5	S	90	**130**	210	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**100**	150	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	6	S	70	**90**	180	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	50	**75**	120	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	40	**60**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
M	1	S	60	**110**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**70**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	60	**100**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	50	**90**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	25	**40**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
K	1	S	90	**170**	230	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**120**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	2	S	90	**160**	220	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**110**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	100	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	3	S	90	**150**	210	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**100**	150	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	35	**60**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
N	1	S	150	**240**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**160**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	2	S	150	**220**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**150**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	3	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	4	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	5	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	6	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	7	S	110	**220**	260	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	70	**140**	170	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	45	**90**	110	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
S	1	S	25	**50**	75	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	15	**30**	50	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	35	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	4	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360

Modular Drill • KSEM PLUS™ • Inch • A1 and B1 Style

Material Group		Condition	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter					
			min	Starting Value	max	Ø	KSEM 14….17 DFR/DFC04... 1.102–1.249	KSEM 15….18 DFT/DFC05... 1.250–1.416	KSEM 13….22 DFT/DFC06... 1.417–1.771	KSEM 18….28 DFT/DFC07... 1.772–2.204	KSEM 20….34 DFT/DFC09... 2.205–4.0295
			Inch								
P	1	S	370	**775**	944	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	290	**532**	698	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	205	**327**	451	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	2	S	295	**623**	755	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		U	233	**427**	558	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		I	164	**262**	361	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
	3	S	295	**591**	755	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		U	230	**394**	558	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		I	164	**230**	361	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
	4	S	295	**459**	722	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		U	230	**361**	525	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		I	264	**262**	361	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
	5	S	295	**427**	689	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		U	230	**328**	689	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		I	164	**230**	492	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
	6	S	230	**295**	591	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		U	164	**246**	394	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
		I	131	**197**	328	IPR	0.006–0.011	0.006–0.011	0.008–0.014	0.008–0.016	0.008–0.018
M	1	S	197	**361**	443	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	131	**230**	295	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	98	**164**	213	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	2	S	197	**328**	443	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	131	**197**	295	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	98	**164**	213	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	3	S	164	**295**	443	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	131	**197**	295	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	82	**131**	213	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
K	1	S	295	**558**	755	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		U	197	**394**	525	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		I	131	**230**	295	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
	2	S	295	**525**	722	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		U	197	**361**	525	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		I	131	**230**	328	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
	3	S	295	**492**	689	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		U	197	**328**	492	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
		I	115	**197**	295	IPR	0.007–0.012	0.007–0.012	0.009–0.014	0.009–0.017	0.012–0.019
N	1	S	492	**787**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**525**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**328**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	2	S	492	**722**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**492**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**328**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	3	S	492	**722**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**492**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**328**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	4	S	492	**722**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**492**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**328**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	5	S	492	**722**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**492**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**328**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	6	S	492	**656**	1181	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	328	**459**	787	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	197	**295**	525	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
	7	S	361	**722**	853	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		U	230	**459**	558	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
		I	148	**295**	361	IPR	0.005–0.008	0.005–0.008	0.006–0.011	0.006–0.013	0.008–0.016
S	1	S	82	**164**	246	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	66	**131**	197	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	49	**98**	164	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	2	S	66	**131**	197	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	49	**98**	148	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	39	**82**	115	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	3	S	66	**131**	197	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	49	**98**	148	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	39	**82**	131	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
	4	S	66	**131**	197	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		U	49	**98**	148	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014
		I	39	**82**	131	IPR	0.005–0.010	0.005–0.010	0.006–0.011	0.006–0.013	0.008–0.014

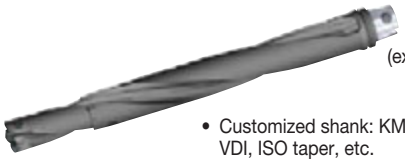


Application	Workpiece Shape	A1 Head	B1 Head
Flat Face		✓	✓
Cored Hole		✗	✓
Stacked Plates		✗	✓
Angled Exit (exit only!)		✓ <3°	✓ max 15°
Angled Entrance		✓ <3°	✓ <3°
Cross Holes		✗	✓ max 50% of D1

KSEM PLUS Customized Solution Capabilities:



- Intermediate head Ø.
- Custom head to use reground KSEM™ inserts.
- Heads for cross holes Ø = d1.



(example)

- Customized shank: KM™, HSK, VDI, ISO taper, etc.
- Customized flute helix.
- Step drill.

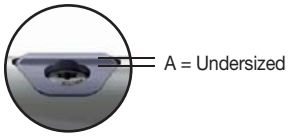


- Drill body up to L1 = 20 x D and total length of 1250mm.

Mounting DPA Guiding Pads on B1 Heads

All B1 heads are delivered with preset guiding pads.





Measure radial undersize “A” of pad to cutting edge for both sides and adjust using shim set that comes with each head.

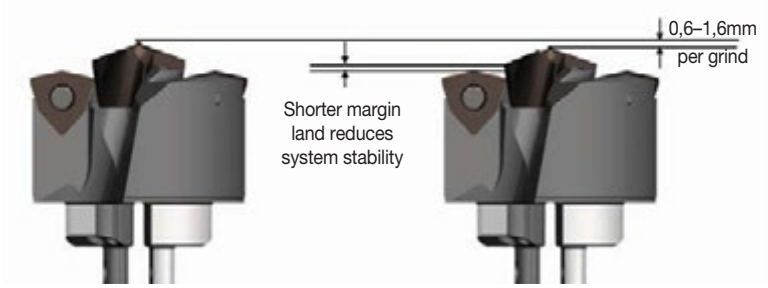
NOTE: For best results with slanted exits and in cross hole drilling, we recommend guiding pads adjustment results in an undersize of A = 30 µm (edge of guiding pads to cutting edges).

Coolant Recommendations



Internal coolant is recommended for optimum chip flow and tool life.

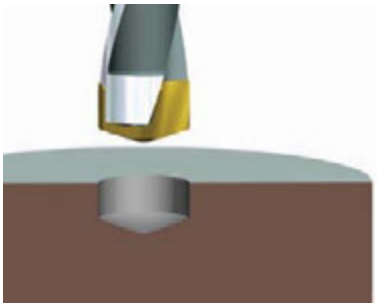
KSEM PLUS Piloting Insert SHOULD NOT Be Reground:



Only new KSEM PLUS inserts will provide consistency and process security on a KSEM PLUS modular drill system. If you want to regrind, refer to our custom solution A1 and B1 heads.

NOTE: Reground KSEM PLUS inserts can be used in KSEM™ drills.

Piloting Instructions:



1. KSEM….PC Pilot drill Ø equal KSEMP Ø PDD
2. Drill 1mm deep from full diameter



Combination Tools

Tool Selection Guide **I2–I3**

BF Combination Drilling System **I4–I20**

B343_HPG Drill for BF I8–I10

KenTIP for BF I11–I13

BF Bodies I14–I15

BF Inserts I16–I17

SEFAS Combination Drilling System **I22–I30**

SEFAS Bodies I25–I28

SEFAS Hardware I29

SEFAS Chamfering Inserts I30



		standard							standard range			customized solution range			
		● first choice ○ alternate choice						hole tolerance	diameter range		drilling depth L/D1	diameter range		drilling depth	
		P	M	K	N	S	H		D1 mm min–max	D1 inch min–max		D1 mm min–max	D1 inch min–max		
	**BF with Solid Carbide Drill** Combination Tool	●		●				IT7–11	3,4–18 (B343 drill)	.134–.709 (B343 drill)	approx. 3 x D	3,4–22,5	.134–.70	.1–5 x D	
	**BF with KenTIP™** Combination Tool	●	●	●				IT7–11	8–18,99	.313–.826	3 x D 4 x D 5 x D	8–25,99	.313–1.023	3–5 x D	
	**SEFAS™** Combination Tool	●	○	●	●	○		IT7–11	4–20	.157–.787	approx. 3 x D 5 x D 8 x D 12 x D	3,4–25	.134–1.039	1–5 x D	

In regard to insert and drill coatings, anything is possible. If a specific insert or drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

[1] Other shank styles available as customized solution.

	coolant		■ standard and □ customized solution capabilities [1]			■ standard and □ customized solution capabilities [1]								page(s)
	■		■ ■			■			□		■	□		■	I8–I10
	■		■ ■			■			□		■	□		■	I11–I13
	■		■ ■		□	■			□		■			■	I25–I30

Combination Tools

Combination drilling tools are customizable using standard components and combine centering, drilling, and countersinking into a single operation to increase productivity by reducing cycle time and tool changes.

Both the BF and SEFAS™ combination systems provide high flexibility to adapt the tool to varying hole geometries and provide full through-coolant capabilities.



Features and Benefits

BF Combination Drilling System

- Drilling, chamfering, and countersinking in one tool.
- Uses solid carbide and modular KenTIP™ drills.
- Covered drill diameter range 3,4–18mm (.125–.750").
- A specific range of drill diameters can be applied for each drill body based upon drill shank size.
- Highly flexible system:
  - Chamfer insert with different angles.
  - Insert design enables special geometrical shapes.
  - Inserts can be easily interchanged.

NOTE: TF drills may be used with one insert in limited applications.
Consult your Kennametal Sales Representative for more information.



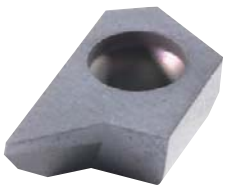
Provide high flexibility to adapt the tool to varying hole geometries.



SEFAS™ Combination Drilling System

- High-performance, self-centering drill and chamfer in one tool.
- Drill diameter range 4–18mm (.156–.750").
- Uses standard solid carbide drills in HP and TX styles as well as modular KenTIP™ drills.
- 90° and 82° angles available for chamfer inserts.
- Various shanks can be used with metric and inch diameter drills.





BF Combination Drilling System

Primary Application

Combines centering, drilling, and countersinking into a single operation, increasing productivity by reducing cycle time and number of tool changes. The modular design provides flexibility to adapt the tool to varying hole geometries in small- and medium-lot-size manufacturing.

With its slim design and full-through-coolant capabilities, the BF combination system can be used in even deeper holes, in critical materials, and with restricted workspace.

Features and Benefits

Productivity

- Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.
- Use high-performance solid carbide drills and KenTIP™ drill bodies to achieve high speeds and feeds.
- Avoid the need for reconditioning by using KenTIP blades.

Versatility

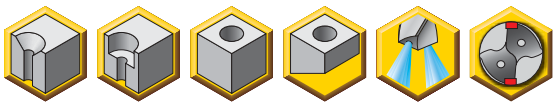
- Choose between solid carbide drills and KenTIP drill bodies.
- Various grades and insert styles.
- Flexible modular system for adjusting the drill length or insert style to manufacture different geometries.

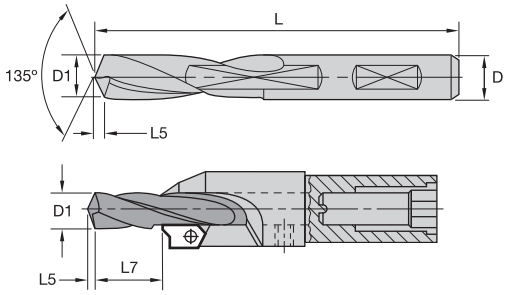
Choose between solid carbide drills and KenTIP™ drill bodies.

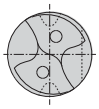


Customization

- Length variations available as engineered solutions.
- TX drills for aluminum available as engineered solutions.
- BF inserts can be customized to almost any geometry.









B343_HPG



● first choice
○ alternate choice

KC7315	D1 in	D1 mm	D1 fraction	D1 wire size	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in
B343S03175HPG	.125	3,18	1/8	—	4	.158	55	2.2	1,0	.039	8,6	.339	0,60	.024
B343S03400HPG	.134	3,40	—	—	4	.158	55	2.2	1,0	.039	10,0	.394	0,63	.025
B343S03500HPG	.138	3,50	—	—	4	.158	55	2.2	1,6	.063	10,6	.417	0,65	.025
B343S03797HPG *	.150	3,80	—	25	4	.158	55	2.2	3,3	.130	12,3	.484	0,70	.028
B343S03800HPG	.150	3,80	—	—	4	.158	55	2.2	3,3	.130	12,3	.484	0,70	.028
B343S03970HPG	.156	3,97	5/32	—	4	.158	55	2.2	4,2	.165	13,2	.520	0,73	.029
B343S04000HPG	.158	4,00	—	—	4	.158	55	2.2	4,4	.173	13,4	.528	0,74	.029
B343S04100HPG	.161	4,10	—	—	5	.197	62	2.4	3,7	.146	13,7	.539	0,76	.030
B343S04200HPG	.165	4,20	—	—	5	.197	62	2.4	4,2	.165	14,2	.559	0,78	.031
B343S04300HPG	.169	4,30	—	—	5	.197	62	2.4	4,7	.185	14,7	.579	0,79	.031
B343S04500HPG	.177	4,50	—	—	5	.197	62	2.4	5,6	.221	15,6	.614	0,83	.033
B343S04600HPG *	.181	4,60	—	—	5	.197	62	2.4	5,8	.228	15,8	.622	0,85	.033
B343S04623HPG	.182	4,62	—	14	5	.197	62	2.4	5,9	.232	15,9	.626	0,85	.034
B343S04763HPG	.188	4,76	3/16	—	5	.197	62	2.4	6,6	.260	16,6	.654	0,88	.035
B343S04900HPG *	.193	4,90	—	—	5	.197	62	2.4	7,2	.284	17,2	.677	0,90	.036
B343S05000HPG	.197	5,00	—	—	5	.197	62	2.4	7,6	.299	17,6	.693	0,92	.036
B343S05100HPG	.201	5,10	—	—	6	.236	66	2.6	6,8	.268	17,8	.701	0,94	.037
B343S05200HPG	.205	5,20	—	—	6	.236	66	2.6	7,2	.284	18,2	.717	0,96	.038
B343S05300HPG	.209	5,30	—	—	6	.236	66	2.6	7,6	.299	18,6	.732	0,98	.039
B343S05400HPG	.213	5,40	—	—	6	.236	66	2.6	8,0	.315	19,0	.748	1,00	.039
B343S05410HPG	.213	5,41	—	—	6	.236	66	2.6	8,0	.315	19,0	.748	1,00	.039
B343S05500HPG	.217	5,50	—	—	6	.236	66	2.6	8,4	.331	19,4	.764	1,02	.040
B343S05550HPG	.219	5,55	—	—	6	.236	66	2.6	8,3	.327	19,3	.760	1,02	.040
B343S05558HPG *	.219	5,56	7/32	—	6	.236	66	2.6	8,4	.331	19,4	.764	1,03	.040
B343S05600HPG	.221	5,60	—	—	6	.236	66	2.6	8,5	.335	19,5	.768	1,03	.041
B343S05800HPG	.228	5,80	—	—	6	.236	66	2.6	9,3	.366	20,3	.799	1,07	.042
B343S06000HPG	.236	6,00	—	—	6	.236	66	2.6	10,0	.394	21,0	.827	1,11	.044
B343S06100HPG	.240	6,10	—	—	7	.276	74	2.9	9,1	.358	21,1	.831	1,13	.044
B343S06200HPG	.244	6,20	—	—	7	.276	74	2.9	9,5	.374	21,5	.847	1,14	.045
B343S06300HPG	.248	6,30	—	—	7	.276	74	2.9	9,8	.386	21,8	.858	1,16	.046
B343S06350HPG	.250	6,35	1/4	—	7	.276	74	2.9	10,0	.394	22,0	.866	1,17	.046
B343S06400HPG	.252	6,40	—	—	7	.276	74	2.9	10,2	.402	22,2	.874	1,18	.047
B343S06500HPG	.256	6,50	—	—	7	.276	74	2.9	10,5	.413	22,5	.886	1,20	.047
B343S06528HPG	.257	6,53	—	F	7	.276	74	2.9	10,6	.417	22,6	.890	1,21	.047
B343S06600HPG	.260	6,60	—	—	7	.276	74	2.9	10,9	.429	22,9	.902	1,22	.048
B343S06700HPG	.264	6,70	—	—	7	.276	74	2.9	11,2	.441	23,2	.913	1,24	.049

(continued)

(B343_HPG — continued)

P ●
M
K ●
N
S
H

● first choice
○ alternate choice

KC7315	D1 in	D1 mm	D1 fraction	D1 wire size	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in
B343S06746HPG	.266	6,75	17/64	–	7	.276	74	2.9	11,4	.449	23,4	.921	1,25	.049
B343S06800HPG	.268	6,80	–	–	7	.276	74	2.9	11,5	.453	23,5	.925	1,26	.049
B343S06900HPG	.272	6,90	–	–	7	.276	74	2.9	11,9	.469	23,9	.941	1,27	.050
B343S07000HPG	.276	7,00	–	–	7	.276	74	2.9	12,2	.480	24,2	.953	1,29	.051
B343S07145HPG	.281	7,14	9/32	–	8	.315	79	3.1	11,1	.437	24,1	.949	1,32	.052
B343S07300HPG	.287	7,30	–	–	8	.315	79	3.1	11,6	.457	24,6	.969	1,35	.053
B343S07400HPG	.291	7,40	–	–	8	.315	79	3.1	11,9	.469	24,9	.980	1,37	.054
B343S07500HPG	.295	7,50	–	–	8	.315	79	3.1	12,3	.484	25,3	.996	1,38	.055
B343S07541HPG *	.297	7,54	19/64	–	8	.315	79	3.1	12,4	.488	25,4	1.000	1,39	.055
B343S07800HPG	.307	7,80	–	–	8	.315	79	3.1	13,2	.520	26,2	1.032	1,44	.057
B343S07900HPG	.311	7,90	–	–	8	.315	79	3.1	13,5	.532	26,5	1.043	1,46	.057
B343S07938HPG	.313	7,94	5/16	–	8	.315	79	3.1	13,6	.535	26,6	1.047	1,47	.058
B343S08000HPG	.315	8,00	–	–	8	.315	79	3.1	13,8	.543	26,8	1.055	1,48	.058
B343S08100HPG	.319	8,10	–	–	9	.354	84	3.3	12,6	.496	26,6	1.047	1,50	.059
B343S08200HPG	.323	8,20	–	–	9	.354	84	3.3	12,8	.504	26,8	1.055	1,51	.060
B343S08300HPG	.327	8,30	–	–	9	.354	84	3.3	13,1	.516	27,1	1.067	1,53	.060
B343S08334HPG *	.328	8,33	21/64	–	9	.354	84	3.3	13,2	.520	27,2	1.071	1,54	.061
B343S08400HPG	.331	8,40	–	–	9	.354	84	3.3	13,4	.528	27,4	1.079	1,55	.061
B343S08433HPG *	.332	8,43	–	Q	9	.354	84	3.3	13,5	.532	27,5	1.083	1,56	.061
B343S08500HPG	.335	8,50	–	–	9	.354	84	3.3	13,7	.539	27,7	1.091	1,57	.062
B343S08600HPG	.339	8,60	–	–	9	.354	84	3.3	14,0	.551	28,0	1.102	1,59	.063
B343S08700HPG	.343	8,70	–	–	9	.354	84	3.3	14,3	.563	28,3	1.114	1,61	.063
B343S08733HPG *	.344	8,73	11/32	–	9	.354	84	3.3	14,4	.567	28,4	1.118	1,61	.064
B343S08800HPG	.347	8,80	–	–	9	.354	84	3.3	14,5	.571	28,5	1.122	1,62	.064
B343S09000HPG	.354	9,00	–	–	9	.354	84	3.3	15,1	.595	29,1	1.146	1,66	.065
B343S09100HPG	.358	9,10	–	–	10	.394	89	3.5	14,3	.563	28,8	1.134	1,68	.066
B343S09347HPG	.368	9,35	–	U	10	.394	89	3.5	15,0	.591	29,5	1.161	1,73	.068
B343S09400HPG *	.370	9,40	–	–	10	.394	89	3.5	15,1	.595	29,6	1.165	1,74	.068
B343S09500HPG *	.374	9,50	–	–	10	.394	89	3.5	15,4	.606	29,9	1.177	1,75	.069
B343S09525HPG *	.375	9,53	3/8	–	10	.394	89	3.5	15,4	.606	29,9	1.177	1,76	.069
B343S09700HPG *	.382	9,70	–	–	10	.394	89	3.5	15,9	.626	30,4	1.197	1,79	.071
B343S09800HPG	.386	9,80	–	–	10	.394	89	3.5	16,2	.638	30,7	1.209	1,81	.071
B343S09921HPG *	.391	9,92	25/64	–	10	.394	89	3.5	16,5	.650	31,0	1.221	1,83	.072
B343S10000HPG	.394	10,00	–	–	10	.394	89	3.5	16,7	.658	31,2	1.228	1,85	.073
B343S10100HPG	.398	10,10	–	–	11	.433	95	3.7	15,9	.630	30,9	1.220	1,86	.073
B343S10200HPG	.402	10,20	–	–	11	.433	95	3.7	16,2	.638	31,2	1.228	1,88	.074
B343S10300HPG	.406	10,30	–	–	11	.433	95	3.7	16,4	.646	31,4	1.236	1,90	.075
B343S10320HPG	.406	10,32	13/32	–	11	.433	95	3.7	16,5	.650	31,5	1.240	1,91	.075
B343S10400HPG	.409	10,40	–	–	11	.433	95	3.7	16,7	.658	31,7	1.248	1,92	.076
B343S10500HPG	.413	10,50	–	–	11	.433	95	3.7	16,9	.665	31,9	1.256	1,94	.076
B343S10600HPG	.417	10,60	–	–	11	.433	95	3.7	17,2	.677	32,2	1.268	1,96	.077
B343S10700HPG	.421	10,70	–	–	11	.433	95	3.7	17,4	.685	32,4	1.276	1,98	.078
B343S10710HPG	.422	10,71	27/64	–	11	.433	95	3.7	17,4	.685	32,4	1.276	1,98	.078
B343S10800HPG	.425	10,80	–	–	11	.433	95	3.7	17,7	.697	32,7	1.287	1,99	.079
B343S11000HPG	.433	11,00	–	–	11	.433	95	3.7	18,1	.713	33,1	1.303	2,03	.080
B343S11100HPG	.437	11,10	–	–	12	.472	102	4.0	17,4	.685	32,9	1.295	2,05	.081
B343S11110HPG	.438	11,11	7/16	–	12	.472	102	4.0	17,4	.685	32,9	1.295	2,05	.081
B343S11200HPG *	.441	11,20	–	–	12	.472	102	4.0	17,6	.693	33,1	1.303	2,07	.081
B343S11300HPG *	.445	11,30	–	–	12	.472	102	4.0	17,9	.705	33,4	1.315	2,09	.082
B343S11500HPG	.453	11,50	–	–	12	.472	102	4.0	18,3	.721	33,8	1.331	2,12	.084
B343S11508HPG *	.453	11,51	29/64	–	12	.472	102	4.0	18,3	.721	33,8	1.331	2,12	.084
B343S11700HPG	.461	11,70	–	–	12	.472	102	4.0	18,8	.740	34,3	1.350	2,16	.085

(continued)

(B343_HPG — continued)



● first choice
○ alternate choice

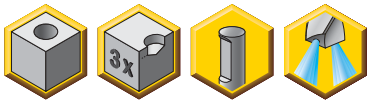
KC7315	D1 in	D1 mm	D1 fraction	D1 wire size	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in
B343S11800HPG	.465	11,80	—	—	12	.472	102	4.0	19,0	.748	34,5	1.358	2,18	.086
B343S11900HPG	.469	11,90	15/32	—	12	.472	102	4.0	19,3	.760	34,8	1.370	2,20	.087
B343S12000HPG	.472	12,00	—	—	12	.472	102	4.0	19,5	.768	35,0	1.378	2,22	.087
B343S12200HPG	.480	12,20	—	—	13	.512	102	4.0	18,9	.744	34,9	1.374	2,25	.073
B343S12500HPG	.492	12,50	—	—	13	.512	102	4.0	19,6	.772	35,6	1.400	2,31	.089
B343S12700HPG *	.500	12,70	1/2	—	13	.512	102	4.0	20,1	.791	36,1	1.421	2,34	.091
B343S12800HPG	.504	12,80	—	—	13	.512	102	4.0	20,3	.799	36,3	1.429	2,36	.092
B343S13000HPG	.512	13,00	—	—	13	.512	102	4.0	20,7	.815	36,7	1.445	2,40	.093
B343S13200HPG	.520	13,20	—	—	14	.551	107	4.2	20,4	.803	36,9	1.453	2,44	.096
B343S13500HPG	.532	13,50	—	—	14	.551	107	4.2	21,1	.831	37,6	1.480	2,49	.098
B343S14000HPG	.551	14,00	—	—	14	.551	107	4.2	22,1	.870	38,6	1.520	2,58	.102
B343S14200HPG	.559	14,20	—	—	15	.591	111	4.4	21,5	.847	38,5	1.516	2,62	.103
B343S14280HPG	.563	14,28	9/16	—	15	.591	111	4.4	21,7	.854	38,7	1.524	2,64	.104
B343S15000HPG	.591	15,00	—	—	15	.591	111	4.4	23,2	.913	40,2	1.583	2,77	.109
B343S15500HPG	.610	15,50	—	—	16	.630	115	4.5	23,2	.913	40,7	1.602	2,86	.113
B343S15870HPG	.625	15,87	5/8	—	16	.630	115	4.5	23,9	.941	41,4	1.630	2,93	.115
B343S16000HPG	.630	16,00	—	—	16	.630	115	4.5	24,2	.953	41,7	1.642	2,95	.116
B343S16500HPG	.650	16,50	—	—	17	.669	115	4.5	24,2	.953	42,2	1.661	3,05	.120
B343S16670HPG *	.656	16,67	21/32	—	17	.669	115	4.5	24,5	.965	42,5	1.673	3,08	.121
B343S17000HPG	.669	17,00	—	—	17	.669	115	4.5	25,1	.988	43,1	1.697	3,14	.124
B343S17500HPG	.689	17,50	—	—	18	.709	117	4.6	25,1	.988	43,6	1.717	3,23	.127
B343S17700HPG	.697	17,70	—	—	18	.709	117	4.6	25,5	1.004	44,0	1.732	3,27	.129
B343S18000HPG	.709	18,00	—	—	18	.709	117	4.6	26,0	1.024	44,5	1.752	3,32	.131

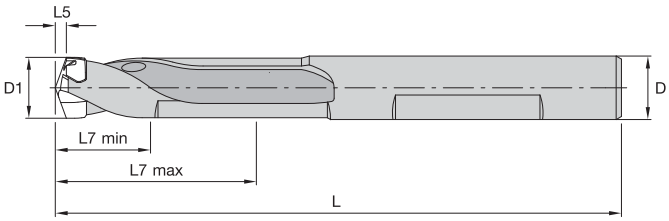
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

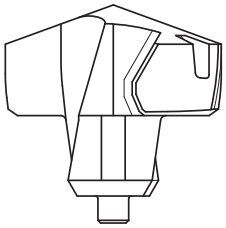
Tolerance

D1	tolerance h7	D	tolerance h6
>3–6	0,000/-0,012	6	0,000/-0,008
>6–10	0,000/-0,016	8–10	0,000/-0,009
>10–18	0,000/-0,018	12–18	0,000/-0,011

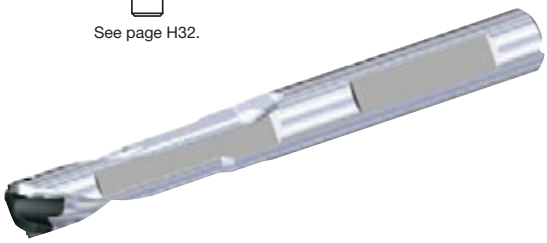
- Tool body with insert wrench included.
- Order KenTIP blades separately.







See page H32.

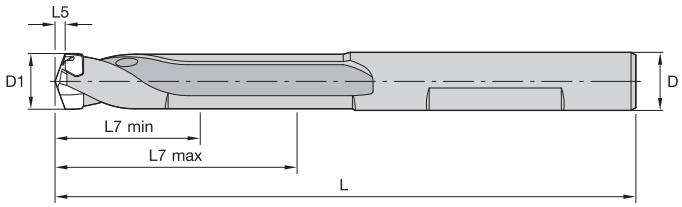


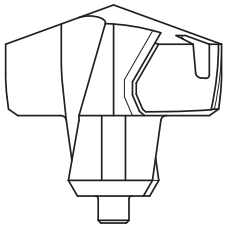
KenTIP • 3 x D • Metric

catalog number	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in	insert blade seat size
KTIP080R3BF08M	8,00	.315	8,50	.335	8,0	.315	80,0	3.150	11,5	.453	25,5	1.004	1,4	.055	F
KTIP080R3BF09M	8,00	.315	8,50	.335	9,0	.354	81,0	3.189	11,5	.453	25,5	1.004	1,4	.055	F
KTIP085R3BF09M	8,50	.335	9,00	.354	9,0	.354	82,0	3.228	12,5	.492	27,0	1.063	1,5	.059	G
KTIP090R3BF09M	9,00	.354	9,50	.374	9,0	.354	82,0	3.228	13,5	.532	28,5	1.122	1,6	.063	H
KTIP090R3BF10M	9,00	.354	9,50	.374	10,0	.394	91,0	3.583	13,5	.532	28,5	1.122	1,6	.063	H
KTIP095R3BF10M	9,50	.374	10,00	.394	10,0	.394	92,0	3.622	15,0	.591	30,0	1.181	1,6	.063	I
KTIP100R3BF10M	10,00	.394	10,50	.413	10,0	.394	93,0	3.661	16,0	.630	31,5	1.240	1,7	.067	J
KTIP100R3BF11M	10,00	.394	10,50	.413	11,0	.433	94,0	3.701	16,0	.630	31,5	1.240	1,7	.067	J
KTIP105R3BF11M	10,50	.413	11,00	.433	11,0	.433	94,0	3.701	17,0	.669	33,0	1.299	1,8	.071	K
KTIP110R3BF11M	11,00	.433	11,50	.453	11,0	.433	96,0	3.780	18,5	.728	34,5	1.358	1,9	.075	L
KTIP110R3BF12M	11,00	.433	11,50	.453	12,0	.472	106,0	4.173	18,5	.728	34,5	1.358	1,9	.075	L
KTIP115R3BF12M	11,50	.453	12,00	.472	12,0	.472	107,0	4.213	19,5	.768	36,0	1.417	2,0	.079	M
KTIP120R3BF12M	12,00	.472	12,50	.492	12,0	.472	108,0	4.252	20,5	.787	37,5	1.476	2,1	.083	N
KTIP120R3BF13M	12,00	.472	12,50	.492	13,0	.512	108,0	4.252	20,5	.787	37,5	1.476	2,1	.083	N
KTIP125R3BF13M	12,50	.492	13,00	.512	13,0	.512	110,0	4.331	22,0	.866	39,0	1.535	2,2	.087	O
KTIP130R3BF13M	13,00	.512	13,50	.532	13,0	.512	111,0	4.370	23,0	.906	40,5	1.595	2,2	.087	P
KTIP130R3BF14M	13,00	.512	13,50	.532	14,0	.551	111,0	4.370	23,0	.906	40,5	1.595	2,2	.087	P
KTIP135R3BF14M	13,50	.532	14,00	.551	14,0	.551	112,0	4.409	24,5	.965	42,0	1.654	2,3	.091	Q
KTIP140R3BF14M	14,00	.551	14,50	.571	14,0	.551	113,0	4.449	25,5	1.000	43,5	1.713	2,4	.095	R
KTIP140R3BF15M	14,00	.551	14,50	.571	15,0	.591	118,0	4.646	25,5	1.004	43,5	1.713	2,4	.095	R
KTIP145R3BF15M	14,50	.571	15,00	.591	15,0	.591	118,0	4.646	26,5	1.043	45,0	1.772	2,5	.098	S
KTIP150R3BF15M	15,00	.591	16,00	.630	15,0	.591	121,0	4.764	29,0	1.142	48,0	1.890	2,6	.102	T
KTIP150R3BF16M	15,00	.591	16,00	.630	16,0	.630	121,0	4.764	29,0	1.142	48,0	1.890	2,6	.102	T
KTIP160R3BF16M	16,00	.630	17,00	.669	16,0	.630	123,0	4.843	31,5	1.240	51,0	2.008	2,8	.110	U
KTIP160R3BF17M	16,00	.630	17,00	.669	17,0	.669	124,0	4.882	31,5	1.240	51,0	2.008	2,8	.110	U
KTIP170R3BF17M	17,00	.669	18,00	.709	17,0	.669	127,0	5.000	34,0	1.339	54,0	2.126	2,9	.120	V
KTIP170R3BF18M	17,00	.669	18,00	.709	18,0	.709	127,0	5.000	34,0	1.339	54,0	2.126	2,9	.115	V
KTIP180R3BF18M	18,00	.709	19,00	.748	18,0	.709	130,0	5.118	36,5	1.437	57,0	2.244	3,1	.122	W

- Tool body with insert wrench included.
- Order KenTIP blades separately.







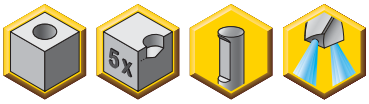
See page H32.

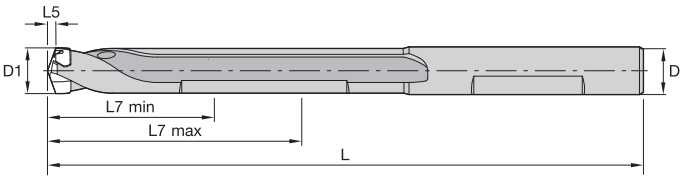


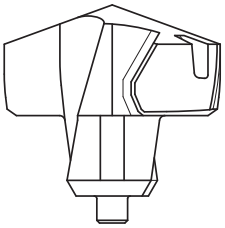
KenTIP • 4 x D • Metric

catalog number	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in	insert blade seat size
KTIP080R4BF09M	8,00	.315	8,50	.335	9,0	.354	89,5	3.524	20,0	.787	34,0	1.339	1,4	.054	F
KTIP085R4BF09M	8,50	.335	9,00	.354	9,0	.354	91,0	3.583	21,5	.847	36,0	1.417	1,5	.058	G
KTIP090R4BF10M	9,00	.354	9,50	.374	10,0	.394	100,5	3.957	23,0	.906	38,0	1.496	1,6	.061	H
KTIP095R4BF10M	9,50	.374	10,00	.394	10,0	.394	102,0	4.016	25,0	.984	40,0	1.575	1,6	.065	I
KTIP100R4BF11M	10,00	.394	10,50	.413	11,0	.433	104,5	4.114	26,5	1.043	42,0	1.654	1,7	.068	J
KTIP105R4BF11M	10,50	.413	11,00	.433	11,0	.433	105,0	4.134	28,0	1.102	44,0	1.732	1,8	.071	K
KTIP110R4BF12M	11,00	.433	11,50	.453	12,0	.472	117,5	4.626	30,0	1.181	46,0	1.811	1,9	.075	L
KTIP115R4BF12M	11,50	.453	12,00	.472	12,0	.472	119,0	4.685	31,5	1.240	48,0	1.890	2,0	.078	M
KTIP120R4BF13M	12,00	.472	12,50	.492	13,0	.512	120,5	4.744	33,0	1.299	50,0	1.969	2,1	.083	N
KTIP125R4BF13M	12,50	.492	13,00	.512	13,0	.512	123,0	4.843	35,0	1.378	52,0	2.047	2,2	.087	O
KTIP130R4BF14M	13,00	.512	13,50	.532	14,0	.551	124,5	4.902	36,5	1.437	54,0	2.126	2,2	.087	P
KTIP135R4BF14M	13,50	.532	14,00	.551	14,0	.551	126,0	4.961	38,5	1.516	56,0	2.205	2,3	.091	Q
KTIP140R4BF15M	14,00	.551	14,50	.571	15,0	.591	132,5	5.217	40,0	1.575	58,0	2.284	2,4	.095	R
KTIP145R4BF15M	14,50	.571	15,00	.591	15,0	.591	133,0	5.236	41,5	1.634	60,0	2.362	2,5	.098	S
KTIP150R4BF16M	15,00	.591	16,00	.630	16,0	.630	137,0	5.394	45,0	1.772	64,0	2.520	2,6	.102	T
KTIP160R4BF17M	16,00	.630	17,00	.669	17,0	.669	141,0	5.551	48,5	1.909	68,0	2.677	2,8	.110	U
KTIP170R4BF18M	17,00	.669	18,00	.709	18,0	.709	145,0	5.709	52,0	2.047	72,0	2.835	2,9	.115	V
KTIP180R4BF18M	18,00	.709	19,00	.748	18,0	.709	149,0	5.866	55,5	2.185	76,0	2.992	3,1	.122	W

- Tool body with insert wrench included.
- Order KenTIP blades separately.







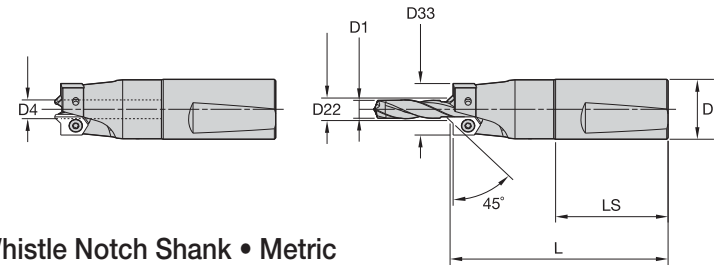
See page H32.



KenTIP • 5 x D • Metric

catalog number	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L7 min mm	L7 min in	L7 max mm	L7 max in	L5 mm	L5 in	insert blade seat size
KTIP080R5BF09M	8,00	.315	8,50	.335	9,0	.354	98,0	3.858	28,5	1.122	42,5	1.673	1,4	.054	F
KTIP085R5BF09M	8,50	.335	9,00	.354	9,0	.354	100,0	3.937	30,5	1.201	45,0	1.772	1,5	.059	G
KTIP090R5BF10M	9,00	.354	9,50	.374	10,0	.394	110,0	4.331	32,5	1.280	47,5	1.870	1,6	.061	H
KTIP095R5BF10M	9,50	.374	10,00	.394	10,0	.394	112,0	4.409	35,0	1.378	50,0	1.969	1,6	.065	I
KTIP100R5BF11M	10,00	.394	10,50	.413	11,0	.433	115,0	4.528	37,0	1.457	52,5	2.067	1,7	.068	J
KTIP105R5BF11M	10,50	.413	11,00	.433	11,0	.433	116,0	4.567	39,0	1.535	55,0	2.165	1,8	.071	K
KTIP110R5BF12M	11,00	.433	11,50	.453	12,0	.473	129,0	5.079	41,5	1.634	57,5	2.264	1,9	.075	L
KTIP115R5BF12M	11,50	.453	12,00	.472	12,0	.473	131,0	5.158	43,5	1.713	60,0	2.362	2,0	.078	M
KTIP120R5BF13M	12,00	.472	12,50	.492	13,0	.512	133,0	5.236	45,5	1.791	62,5	2.461	2,1	.083	N
KTIP125R5BF13M	12,50	.492	13,00	.512	13,0	.512	136,0	5.354	48,0	1.890	65,0	2.559	2,2	.087	O
KTIP130R5BF14M	13,00	.512	13,50	.532	14,0	.551	138,0	5.433	50,0	1.969	67,5	2.658	2,2	.087	P
KTIP135R5BF14M	13,50	.532	14,00	.551	14,0	.551	140,0	5.512	52,5	2.067	70,0	2.756	2,3	.091	Q
KTIP140R5BF15M	14,00	.551	14,50	.571	15,0	.591	147,0	5.787	54,5	2.146	72,5	2.854	2,4	.095	R
KTIP145R5BF15M	14,50	.571	15,00	.591	15,0	.591	148,0	5.827	56,5	2.244	75,0	2.953	2,5	.098	S
KTIP150R5BF16M	15,00	.591	16,00	.630	16,0	.630	153,0	6.024	61,0	2.402	80,0	3.150	2,6	.102	T
KTIP160R5BF17M	16,00	.630	17,00	.669	17,0	.669	158,0	6.221	65,5	2.579	85,0	3.347	2,8	.110	U
KTIP170R5BF18M	17,00	.669	18,00	.709	18,0	.709	163,0	6.417	70,0	2.756	90,0	3.543	2,9	.115	V
KTIP180R5BF18M	18,00	.709	19,00	.748	18,0	.709	168,0	6.614	74,5	2.933	95,0	3.740	3,1	.122	W

- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills with shanks up to and including 9,10mm use only one insert.





Round Shank • 2° Whistle Notch Shank • Metric

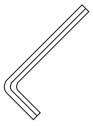



DIN 1835 Form A	DIN 1835 Form E	D1	D1 max	D4	D	D22	D33	L	LS	insert
3.37042R320	**3.37042R820**	3,40	4,00	4,00	20,0	9,0	14,9	87,5	50,0	3.41020..
3.37051R320	**3.37051R820 ***	4,10	4,50	5,00	20,0	9,5	15,4	87,5	50,0	3.41020..
3.37052R320	**3.37052R820**	4,60	5,00	5,00	20,0	10,0	15,9	87,5	50,0	3.41020..
3.37061R320	**3.37061R820**	5,10	5,50	6,00	20,0	10,5	16,4	87,5	50,0	3.41020..
3.37062R320	**3.37062R820**	5,55	6,00	6,00	20,0	11,0	16,9	87,5	50,0	3.41020..
3.37071R320	**3.37071R820**	6,10	7,00	7,00	20,0	11,5	17,4	97,3	50,0	3.41020..
3.37081R320	**3.37081R820**	7,30	8,00	8,00	20,0	12,6	18,4	97,3	50,0	3.41020..
3.37091R320	**3.37091R820**	8,10	9,00	9,00	20,0	13,6	19,4	97,3	50,0	3.41020..
3.37092R320	**3.37092R820**	8,10	9,00	9,00	20,0	13,7	19,4	97,3	50,0	3.41020..
3.37101R332	**3.37101R832**	9,10	10,00	10,00	32,0	14,7	27,9	117,4	60,0	3.41220..
3.37111R332	**3.37111R832**	10,10	11,00	11,00	32,0	15,7	28,9	117,4	60,0	3.41220..
3.37121R332	**3.37121R832**	11,10	12,00	12,00	32,0	16,7	29,9	127,4	60,0	3.41220..
3.37131R332	**3.37131R832**	12,20	13,00	13,00	32,0	17,7	31,0	127,4	60,0	3.41220..
3.37141R332	**–**	13,10	14,00	14,00	32,0	18,2	31,5	127,1	60,0	3.41220..
–	**3.37141R832**	13,10	14,00	14,00	32,0	18,2	31,5	127,4	60,0	3.41220..
3.37151R332	**–**	14,10	15,00	15,00	32,0	19,3	32,5	127,4	60,0	3.41220..
–	**3.37151R832**	14,10	15,00	15,00	32,0	19,3	32,5	127,1	60,0	3.41220..
3.37161R332	**3.37161R832**	15,50	16,00	16,00	32,0	20,3	33,5	127,1	60,0	3.41220..
3.37171R332 *	**3.37171R832**	16,50	17,00	17,00	32,0	21,3	34,5	127,1	60,0	3.41220..
3.37181R332	**3.37181R832**	17,50	18,00	18,00	32,0	22,3	35,5	127,1	60,0	3.41220..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



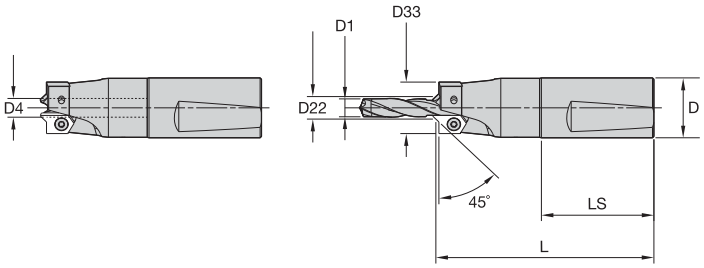




D1	back-up screw	drill clamp screw	hex wrench	insert screw	wrench
3,40	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
4,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
4,60	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
5,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
5,55	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
6,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
7,30	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
8,10	**192.888**	**192.718**	**170.003**	**192.432**	**170.028**
9,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
10,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
11,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
12,20	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
13,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
14,10	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
15,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
16,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**
17,50	**192.889**	**192.720**	**170.005**	**191.725**	**170.025**

NOTE: Dimensions are factored with a 45° insert positioned in insert pocket.

- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills up to and including .359" shanks use only one insert.





Round Shank • Inch

catalog number	D1	D1 max	D4	D	D22	D33	L	LS	insert
KBFI4	.125	.156	4,0	.75	.36	.59	3.44	1.97	3.41020..
KBFI5B	.182	.188	5,0	.75	.40	.62	3.44	1.97	3.41020..
KBFI6B	.213	.230	6,0	.75	.44	.66	3.44	1.97	3.41020..
KBFI7	.250	.266	7,0	.75	.46	.68	3.83	1.97	3.41020..
KBFI8	.281	.313	8,0	.75	.50	.72	3.83	1.97	3.41020..
KBFI9	.328	.344	9,0	1.00	.54	.76	4.31	2.20	3.41020..
KBFI10	.359	.391	10,0	1.00	.58	1.10	4.62	2.20	3.41220..
KBFI11	.406	.430	11,0	1.00	.62	1.14	4.62	2.20	3.41220..
KBFI12 *	.438	.469	12,0	1.00	.66	1.18	5.02	2.20	3.41220..
KBFI13	.484	.510	13,0	1.00	.70	1.22	5.02	2.20	3.41220..
KBFI14	.516	.550	14,0	1.25	.72	1.24	5.00	2.40	3.41220..
KBFI15	.563	.590	15,0	1.25	.76	1.28	5.00	2.36	3.41220..
KBFI16	.625	.630	16,0	1.25	.80	1.32	5.14	2.36	3.41220..
KBFI17	.656	.670	17,0	1.25	.84	1.36	5.00	2.40	3.41220..
KBFI18	.688	.700	18,0	1.25	.88	1.40	5.00	2.36	3.41220..

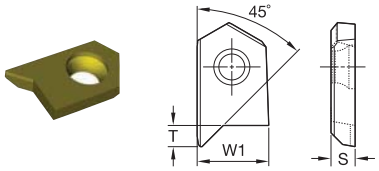
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	back-up screw	drill clamp screw	insert screw	wrench
.125	**192.888**	**192.718**	**192.432**	**170.028**
.182	**192.888**	**192.718**	**192.432**	**170.028**
.213	**192.888**	**192.718**	**192.432**	**170.028**
.250	**192.888**	**192.718**	**192.432**	**170.028**
.281	**192.888**	**192.718**	**192.432**	**170.028**
.328	**192.889**	**192.718**	**192.432**	**170.028**
.359	**192.889**	**192.720**	**191.725**	**170.025**
.406	**192.889**	**192.720**	**191.725**	**170.025**
.438	**192.889**	**192.720**	**191.725**	**170.025**
.484	**192.889**	**192.720**	**191.725**	**170.025**
.516	**192.889**	**192.720**	**191.725**	**170.025**
.563	**192.889**	**192.720**	**191.725**	**170.025**
.625	**192.889**	**192.720**	**191.725**	**170.025**
.656	**192.889**	**192.720**	**191.725**	**170.025**
.688	**192.889**	**192.720**	**191.725**	**170.025**

NOTE: Dimensions are factored with a 45° insert positioned in insert pocket.

- Standard steel drill bodies are designed for inserts with 41° and 45° chamfers.

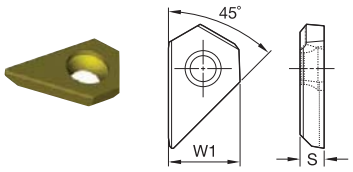


● first choice
○ alternate choice

P	●	●
M	●	
K	●	●
N		
S		
H		

BF Insert R901 • 45° with Spot Face

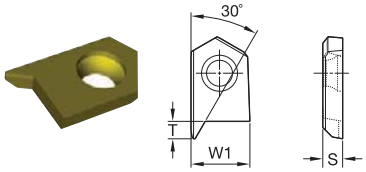
	S		W1		T		CS5	KC7315
catalog number	mm	in	mm	in	mm	in		
3.41020R901	3,00	.118	6,10	.240	2,90	.114	●	●
3.41220R901	3,50	.138	10,10	.398	3,05	.120	●	●



BF Insert R902 • 45°

	S		W1		CS5	KC7315
catalog number	mm	in	mm	in		
3.41020R902	3,00	.118	6,10	.240	●	●
3.41220R902	3,50	.138	10,10	.398	●	●

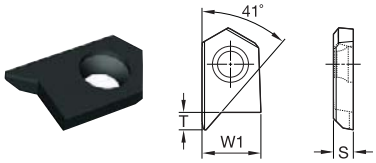
- When using the 60° insert or special insert, the assembled tool should be inspected.
- These insert combinations require that the steel body be altered to provide insert coverage.



BF Insert R903 • 60° with Spot Face

	S		W1		T		CS5	KC7315
catalog number	mm	in	mm	in	in	mm		
3.41020R903	3,00	.118	6,10	.240	0.114	2,90	●	●
3.41220R903	3,50	.138	10,10	.398	0.120	3,05	●	●

- Standard steel drill bodies are designed for inserts with 41° and 45° chamfers.

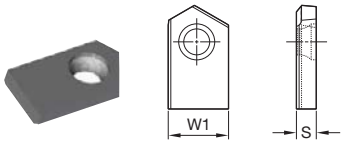


● first choice
○ alternate choice

P	●
M	
K	●
N	
S	
H	

BF Insert R904 • 41° with Spot Face

	S		W1		T		
catalog number	mm	in	mm	in	mm	in	KC7315
3.41020R904	3,00	.118	6,10	.240	2,90	.114	●
3.41220R904	3,50	.138	10,10	.398	3,05	.120	●

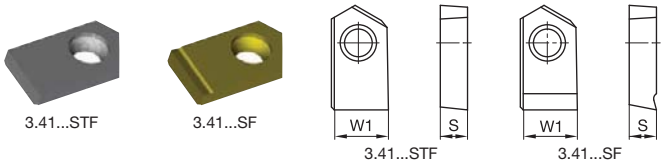


● first choice
○ alternate choice

P	
M	
K	○
N	●
S	
H	

BF Insert R900 • Semi-Finished

	S		W1		
catalog number	mm	in	mm	in	KMF
3.41020R900	3,00	.118	6,10	.240	●
3.41220R900	3,50	.138	10,10	.398	●



● first choice
○ alternate choice

P	●	
M	●	
K	●	○
N		●
S		
H		

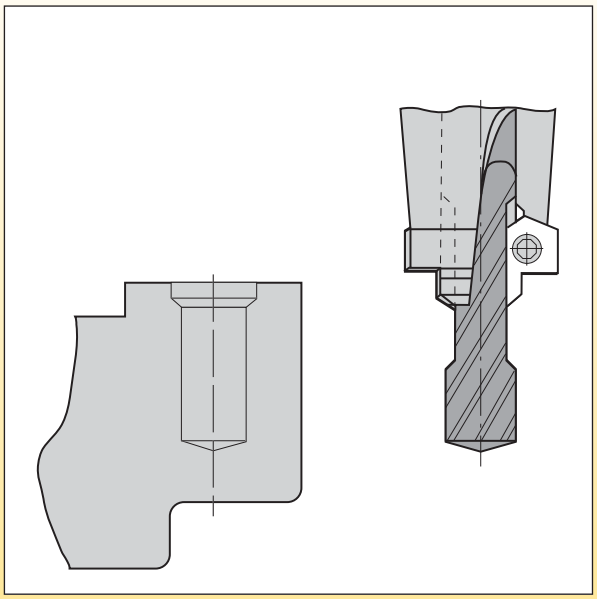
BF Insert R900 S(T)F • Semi-Finished

	S		W1			
catalog number	mm	in	mm	in	CS5	KMF
3.41020R900STF	3,00	.118	6,10	.240	●	–
3.41220R900SF	3,50	.138	10,10	.398	–	●
3.41220R900STF	3,50	.138	10,10	.398	●	–

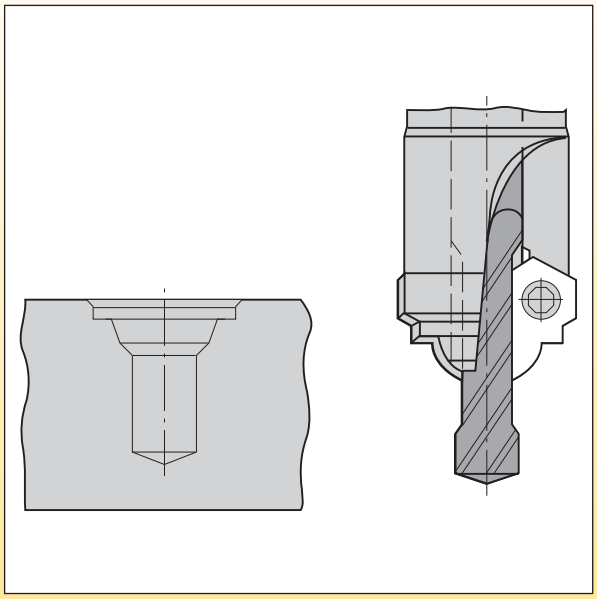
Engineered Solutions Available!



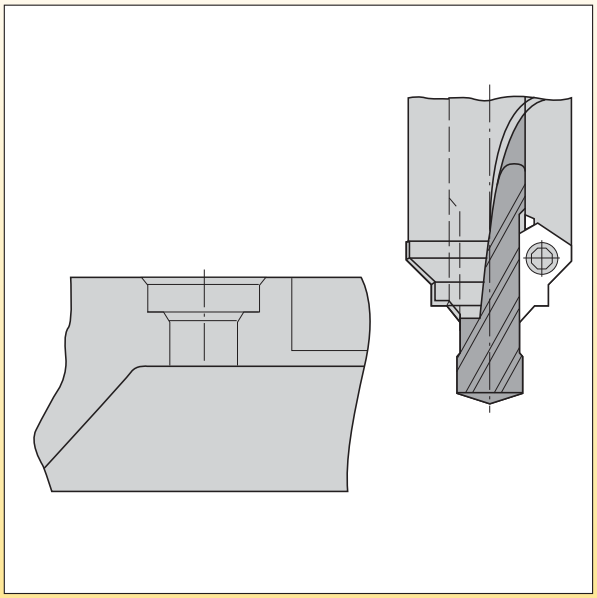
Tapped Hole with Protection Countersinking



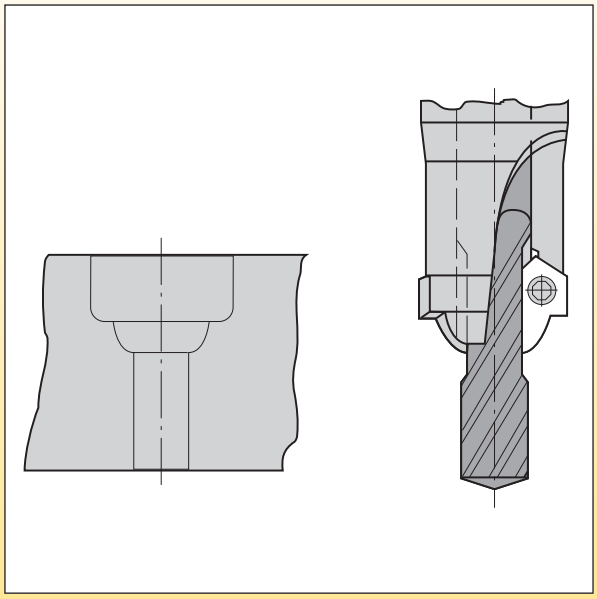
Countersinking for Round Sealing Rings



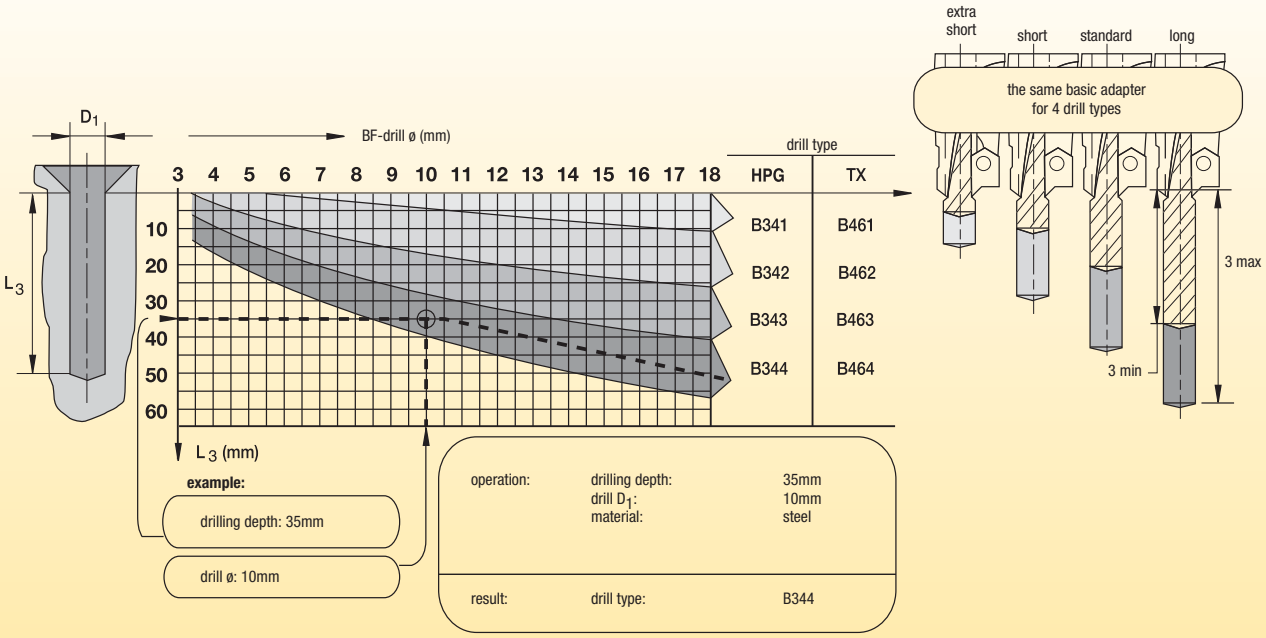
Countersinking for Countersunk Head Screws



Countersinking for Aluminum Rim



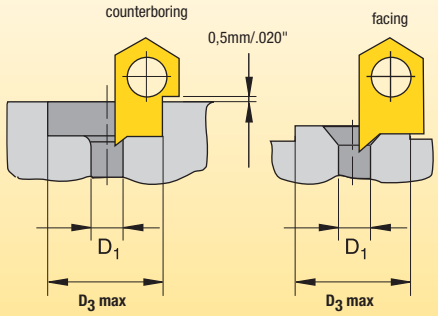
Possible Drilling Depths • Semi-Standard Series

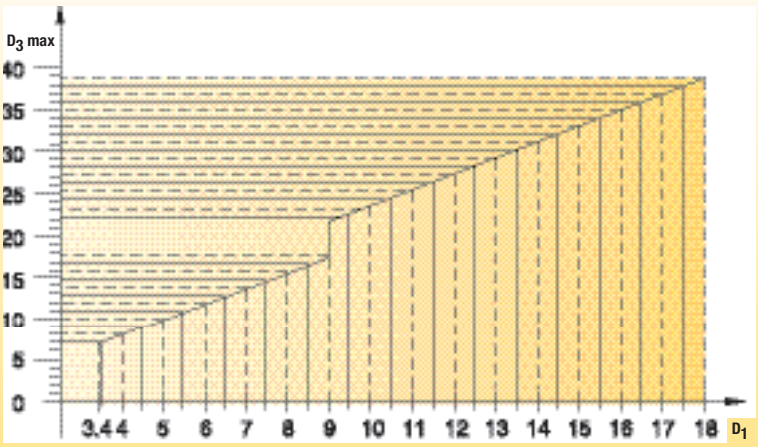


Possible Facing and Counterboring Diameters

90º insert blanks are available to grind special geometry forms for other multiprofile applications.
Contact your local Kennametal Representative for special insert profile designs and quoting.
Use the table below to determine the maximum facing or counterboring diameter for a given BF drill diameter.
Reference your chosen drill diameter across the bottom axis of the table and then read up and across to the left axis to find the maximum facing or counterboring diameter.

Possible Facing and Countersinking Diameter • Machining Steel





HP Drills • B343HPG Series • Grade KC7315™ • Through Coolant • Metric



Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max		Metric Recommended Feed Rate (f) by Diameter 3,0	4,0	6,0	8,0	10,0	12,0	16,0	18,0
P	1	100	**140**	180	mm/r	0,07–0,16	0,08–0,19	0,10–0,23	0,13–0,29	0,15–0,33	0,17–0,37	0,19–0,44	0,22–0,44
	2	90	**115**	140	mm/r	0,07–0,13	0,08–0,17	0,10–0,19	0,13–0,23	0,15–0,27	0,17–0,30	0,19–0,35	0,22–0,39
	3	80	**100**	120	mm/r	0,10–0,16	0,11–0,19	0,13–0,23	0,16–0,29	0,19–0,33	0,21–0,37	0,25–0,44	0,28–0,49
	4	70	**90**	110	mm/r	0,08–0,16	0,10–0,19	0,11–0,22	0,12–0,25	0,14–0,29	0,16–0,32	0,21–0,41	0,24–0,46
	5	70	**85**	110	mm/r	0,07–0,12	0,08–0,14	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,26	0,18–0,31	0,21–0,34
K	1	100	**120**	140	mm/r	0,09–0,17	0,10–0,21	0,12–0,25	0,15–0,31	0,17–0,35	0,20–0,39	0,23–0,46	0,26–0,52
	2	80	**105**	130	mm/r	0,09–0,15	0,10–0,18	0,12–0,21	0,15–0,26	0,18–0,30	0,20–0,33	0,23–0,39	0,26–0,44
	3	70	**85**	100	mm/r	0,08–0,13	0,10–0,15	0,11–0,19	0,14–0,23	0,16–0,26	0,18–0,30	0,21–0,35	0,23–0,39

HP Drills • B343HPG Series • Grade KC7315 • Through Coolant • Inch



Material Group		Cutting Speed — vc Range — SFM min	Starting Value	max		Inch Recommended Feed Rate (f) by Diameter 1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	1	328	**459**	591	IPR	.003–.006	.003–.007	.004–.009	.005–.011	.006–.013	.007–.015	.007–.017	.009–.017
	2	295	**377**	459	IPR	.003–.005	.003–.007	.004–.007	.005–.009	.006–.011	.007–.012	.007–.014	.009–.017
	3	262	**328**	394	IPR	.004–.006	.004–.007	.005–.009	.006–.011	.007–.013	.008–.015	.010–.017	.011–.019
	4	230	**295**	361	IPR	.003–.006	.004–.007	.004–.009	.005–.010	.006–.011	.006–.013	.008–.016	.009–.018
	5	230	**279**	361	IPR	.003–.005	.003–.006	.004–.006	.005–.008	.006–.009	.006–.010	.007–.012	.008–.013
K	1	328	**394**	459	IPR	.004–.007	.004–.008	.005–.011	.005–.010	.007–.014	.008–.015	.009–.018	.010–.020
	2	262	**345**	427	IPR	.004–.006	.004–.007	.005–.008	.006–.010	.007–.012	.008–.013	.009–.015	.010–.017
	3	230	**279**	328	IPR	.003-.005	.004-.006	.004-.007	.006-.009	.006-.010	.007-.012	.008-.014	.009-.015

Centering | Drilling | Chamfering

Three Applications, One Tool

Centering, drilling, and chamfering in a single operation with Kennametal SEFAS™

- Reduce the number of tool changes and cycle time by combining centering, drilling, and chamfering into one operation.
- Uses standard solid carbide drills in HP and TX styles as well as modular KenTIP™ drills.
- Range of insert styles for use in most workpiece materials.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

SEFAS™ Combination Drilling System

Primary Application

Combines centering, drilling, and chamfering into a single operation, increasing productivity by reducing cycle time and number of tool changes.

Achieve productivity gains by still using standard solid carbide or KenTIP™ drills. The SEFAS system provides full through coolant capabilities.



Features and Benefits

Productivity

- Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.
- Achieve highest metal removal rates by applying an HP-style drill.
- Reduce inventory and avoid reconditioning by using KenTIP blades.
- Easily change tool within the machine by using KenTIP.

Versatility

- Any style of standard HP drill can be used for highest metal removal rates.
- Use TX drills to achieve excellent hole quality and tool life in non-ferrous materials.
- For increased accuracy and tool life, use the Kennametal hydraulic chuck recommended for cylindrical tool shanks.
- Range of insert styles for use in most workpiece materials.

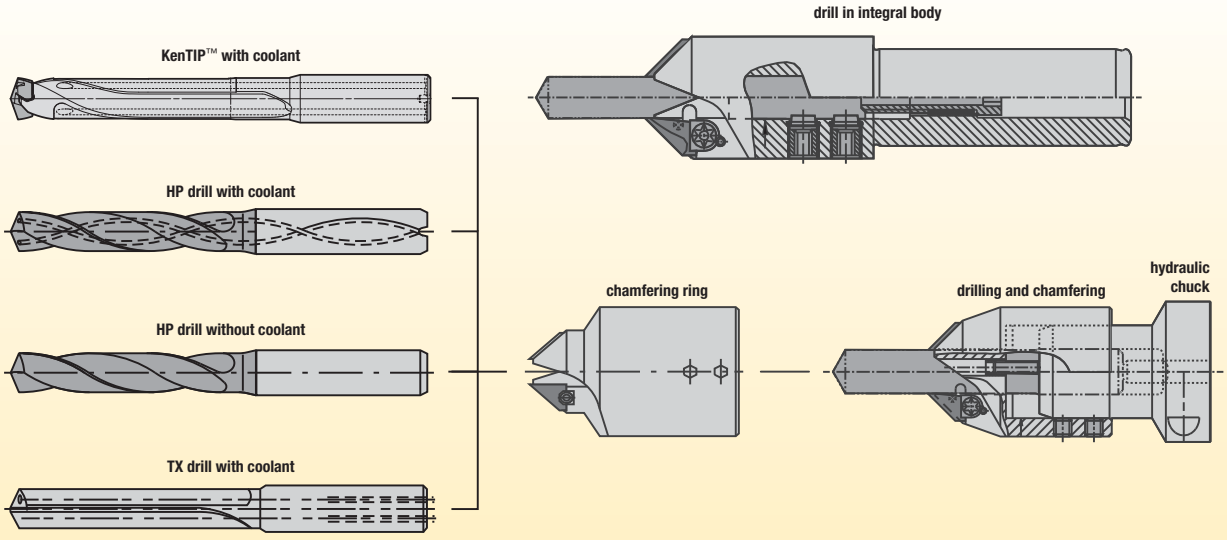
Reduce the number of tool changes and cycle time by combining drilling and countersinking into one operation.



Customization

- Length variations available as engineered solutions.



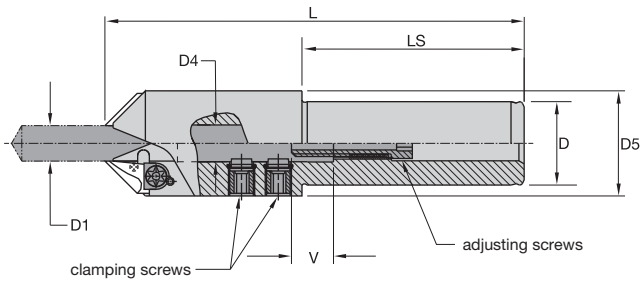


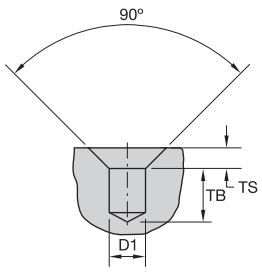
The SEFAS combination drilling system may be used in most workpiece materials. The design and flexibility of the system can be used with a wide variety of solid carbide drills.

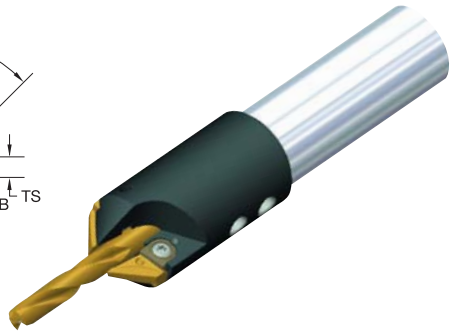
Three types of SEFAS chamfering tools are offered: (1) integral bodies with a compact design that provides additional workpiece and work-holding clearance; (2) chamfering rings that may be mounted to Kennametal hydraulic chucks for optimal drill performance and increased productivity; and (3) high-performance HSK bodies (available as customized solutions) for new machine spindles and high-output applications.



- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.







Round Shank • For Use with Inch Drills • Inch

catalog number	D1	D1 max	D	D4	D5	L	LS	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw
SEF156187RSS075	0.1560	.188	.75	.19	.94	4.06	2.00	.71	3.42805..	**360.550**	**170.024**	**360.650**	**360.516**
SEF218250RSS075	>0.1880	.250	.75	.25	.97	4.13	2.00	.71	3.42805..	**360.550**	**170.024**	**360.651**	**360.510**
SEF265312RSS075	>0.2500	.313	.75	.31	1.03	4.31	2.00	.71	3.42805..	**360.550**	**170.024**	**360.652**	**360.510**
SEF328375RSS075	>0.3130	.375	.75	.38	1.16	4.63	2.00	.67	3.42805..	**360.550**	**170.024**	**360.653**	**360.510**
SEF390437RSS100	>0.3750	.438	1.00	.44	1.47	5.75	3.00	.75	3.42807..	**360.551**	**170.025**	**360.654**	**360.513**
SEF453500RSS100	>0.4380	.500	1.00	.50	1.53	5.88	3.00	.83	3.42807..	**360.551**	**170.025**	**360.655**	**360.513**
SEF500562RSS100	>0.5000	.563	1.00	.56	1.59	6.06	3.00	.63	3.42807..	**360.551**	**170.025**	**360.656**	**360.511**
SEF562625RSS125	>0.5630	.625	1.25	.63	1.66	6.44	3.25	.75	3.42807..	**360.551**	**170.025**	**360.657**	**360.511**
SEF625687RSS125 *	>0.6250	.688	1.25	.69	1.81	6.50	3.25	.59	3.42807..	**360.551**	**170.025**	**360.658**	**360.511**
SEF687750RSS125	>0.6880	.750	1.25	.75	1.88	6.56	3.25	.67	3.42807..	**360.551**	**170.025**	**360.659**	**360.511**
SEF750812RSS125	>0.7500	.813	1.25	.81	1.94	6.63	3.25	.67	3.42807..	**360.551**	**170.025**	**360.679**	**360.511**
SEF812875RSS150	>0.8130	.875	1.50	.88	2.09	7.25	3.75	.63	3.42807..	**360.551**	**170.025**	**360.680**	**360.511**
SEF875937RSS150 *	>0.8750	.938	1.50	.94	2.16	7.38	3.75	.71	3.42807..	**360.551**	**170.025**	**360.681**	**360.511**
SEF9371010RSS150	>0.9380	1.010	1.50	1.00	2.25	7.50	3.75	.71	3.42807..	**360.551**	**170.025**	**360.682**	**360.511**

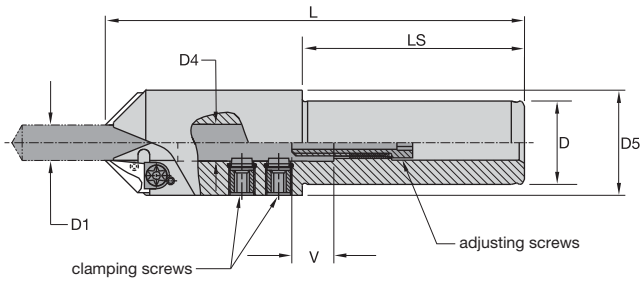
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

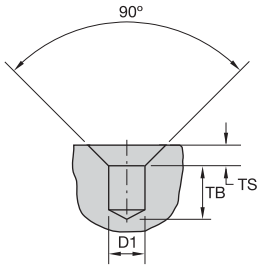
Achievable Drilling (TB) and Sink Depths (TS)

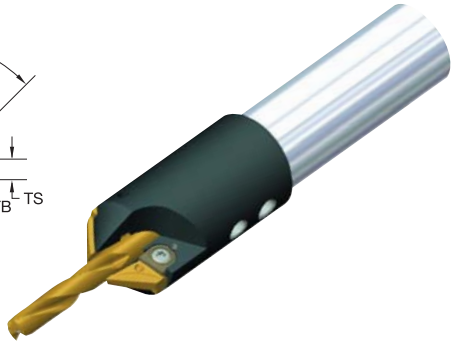
drill diameter D1	K210, K254, K284		K211, K222, K255, K285, K411		K212, K256		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron, high-alloy steel and stainless steel		
	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
.156-.188	.236	.866	.472	1.102	.866	1.102	.047	.071	.098
>.188-.250	.354	1.024	.709	1.378	1.220	1.890	.059	.087	.118
>.250-.266	.433	1.102	.906	1.575	1.654	2.323	.079	.118	.157
>.266-.313	.433	1.102	.906	1.575	1.654	2.323	.098	.157	.197
>.313.-.375	.512	1.142	1.063	1.693	1.929	2.559	.118	.197	.236
>.375-.438	.551	1.260	1.142	1.850	2.008	2.717	.138	.197	.276
>.438-.500	.591	1.378	1.220	2.008	2.205	2.992	.157	.236	.315
>.500-.563	.827	1.417	1.496	2.087	2.717	3.307	.157	.236	.315
>.563-.625	.866	1.575	1.575	2.283	3.071	3.780	.157	.236	.315
>.625-.688	1.299	1.850	2.087	2.638	3.740	4.291	.157	.236	.315
>.688-.750	1.378	2.008	2.126	2.756	4.055	4.685	.157	.236	.315
>.750-.813	1.552	2.181	2.260	2.890	4.386	5.016	.157	.236	.315
>.813-.875	1.702	2.293	2.726	3.317	4.694	5.285	.157	.236	.315
>.875-.938	1.735	2.404	2.876	3.546	4.884	5.554	.157	.236	.315
>.938-1.010	1.846	2.515	3.067	3.736	5.193	5.862	.157	.236	.315

NOTE: TS_{100}: maximum sink depths at which the full feed values can be maintained during chamfering and sinking.
TS_{80}: maximum sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TS_{max}: maximum sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.







Round Shank • For Use with Metric Drills • Metric

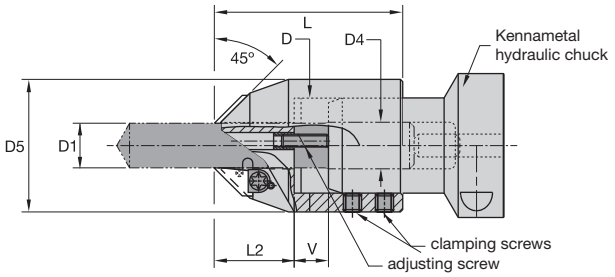
catalog number	D1	D1 max	D	D4	D5	L	LS	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw
SEF040060RSS075M	4,000	6,0	19,1	6,0	24,0	103,1	50,8	18,0	3.42805..	**360.550**	**170.024**	**360.630**	**360.510**
SEF060080RSS075M	>6,000	8,0	19,1	8,0	26,0	109,5	50,8	18,0	3.42805..	**360.550**	**170.024**	**360.634**	**360.510**
SEF080100RSS100M	>8,000	10,0	25,4	10,0	29,0	143,0	76,2	17,0	3.42805..	**360.550**	**170.024**	**360.631**	**360.510**
SEF100120RSS125M	>10,000	12,0	31,8	12,0	38,0	155,7	82,6	21,0	3.42807..	**360.551**	**170.025**	**360.635**	**360.513**
SEF120140RSS125M	>12,000	14,0	31,8	14,0	40,0	160,3	82,6	16,0	3.42807..	**360.551**	**170.025**	**360.636**	**360.511**
SEF140160RSS125M	>14,000	16,0	31,8	16,0	41,5	163,6	82,6	19,0	3.42807..	**360.551**	**170.025**	**360.632**	**360.511**
SEF160180RSS125M	>16,000	18,0	31,8	18,0	47,0	166,4	82,6	15,0	3.42807..	**360.551**	**170.025**	**360.633**	**360.511**
SEF180200RSS125M *	>18,000	20,0	31,8	20,0	49,0	170,0	82,6	17,0	3.42807..	**360.551**	**170.025**	**360.637**	**360.511**

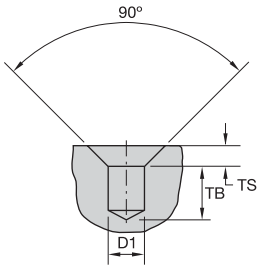
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

2° Whistle Notch (WN) Shank • For Use with Metric Drills • Metric

catalog number	D1	D1 max	D	D4	D5	L	LS	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw
3.37060R720	4,000	6,0	20,0	6,0	24,0	102,0	52,0	18,0	3.42805..	**360.550**	**170.024**	**360.630**	**360.510**
3.37080R720	>6,000	8,0	20,0	8,0	26,0	108,0	52,0	18,0	3.42805..	**360.550**	**170.024**	**360.634**	**360.510**
3.37100R720	>8,000	10,0	20,0	10,0	29,0	122,0	52,0	17,0	3.42805..	**360.550**	**170.024**	**360.631**	**360.510**
3.37120R732	>10,000	12,0	32,0	12,0	38,0	133,0	62,0	21,0	3.42807..	**360.551**	**170.025**	**360.635**	**360.513**
3.37140R732	>12,000	14,0	32,0	14,0	40,0	137,0	62,0	16,0	3.42807..	**360.551**	**170.025**	**360.636**	**360.511**
3.37160R732	>14,000	16,0	32,0	16,0	41,5	141,0	62,0	19,0	3.42807..	**360.551**	**170.025**	**360.632**	**360.511**
3.37180R732	>16,000	18,0	32,0	18,0	47,0	144,0	62,0	15,0	3.42807..	**360.551**	**170.025**	**360.633**	**360.511**

- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Use only with hydraulic chucks.







Chamfer Rings • For Use with Metric Kennametal Hydraulic Chucks • For Use with Inch or Metric Drills

catalog number	D1	D1 max	D	D4	D5	L	L2	V	gage insert	insert clamp	Torx wrench	drill clamp screw	adjusting screw	adjusting screw
3.37526R006	4,000	6,0	25,70	6,00	38,00	49,50	21,00	5,00	3.42805..	**360.550**	**170.024**	**190.195**	–	**192.057**
3.37528R008	>6,000	8,0	27,70	8,00	40,00	50,00	21,00	6,00	3.42805..	**360.550**	**170.024**	**190.195**	**190.371**	–
3.37530R010	>8,000	10,0	29,70	10,00	41,50	56,50	22,00	8,00	3.42805..	**360.550**	**170.024**	**190.195**	**193.113**	–
3.37532R012	>10,000	12,0	31,60	12,00	48,00	68,00	29,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.114**	–
3.37534R014	>12,000	14,0	33,60	14,00	50,00	70,50	29,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.114**	–
3.37538R016	>14,000	16,0	37,60	16,00	54,00	78,00	32,00	12,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.115**	–
3.37540R018	>16,000	18,0	39,60	18,00	56,00	80,50	34,00	15,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.116**	–
3.37542R020	>18,000	20,0	41,60	20,00	58,00	82,50	35,00	15,00	3.42807..	**360.551**	**170.025**	**190.076**	**193.116**	–

Achievable Drilling (TB) and Sink Depths (TS)

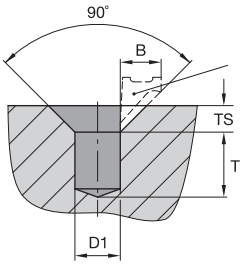
	B210, B221, B224, B254, B284, B291, B707, B966, B976		B211, B222, B225, B285, B292, B411, B708, B977		B212, B256, B709, B978		B269		unalloyed and low-alloy steel; unalloyed and alloy steel, and cast iron, high-alloy steel and stainless steel		
drill diameter D1	**TB_{min}**	**TB_{max}**	**TB_{min}**	**TB_{max}**	**TB_{min}**	**TB_{max}**	**TB_{min}**	**TB_{max}**	**TS_{100}**	**TS_{80}**	**TS_{max}**
4,0–4,7	4	17	12	29	20	36	45	62	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	63	80	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	71	88	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	85	102	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	109	125	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	131	151	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	160	175	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	184	202	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	213	227	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	237	253	4,0	6,0	8,0

(continued)

(Achievable Drilling (TB) and Sink Depths (TS) — continued)

drill diameter D1	K210, K254, K284		K211, K222, K255, K285, K411		K212, K256		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron, high-alloy steel and stainless steel		
	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
.156–.250 >.250–.313	not applicable (drill shank diameter > chamfer ring inside diameter), not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.313–.375	.748	1.339	1.229	1.890	2.165	2.756	.098	.157	.197
>.375–.500 >.500–.563	not applicable (drill shank diameter > chamfer ring inside diameter), not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.563–.625	.906	1.732	1.614	2.441	3.110	3.937	.157	.236	.315
>.625–.709	not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.709–.750	1.142	2.087	1.890	2.835	3.819	4.764	.157	.236	.315

NOTE: TS_{100}: maximum sink depths at which the full feed values can be maintained during chamfering and sinking.
TS_{80}: maximum sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TS_{max}: maximum sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.
When using SEFAS with GOdrill™, please contact your Kennametal Representative for application support.

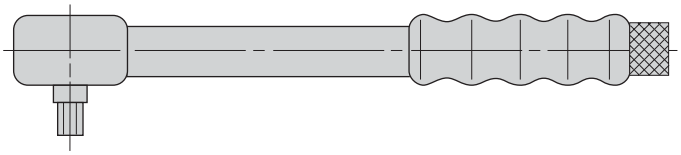




Achievable Drilling (T) and Sink Depths (TS) with KenTIP Tool Bodies

D1 mm	D1 in	drilling depths (T) with SEFAS compact tools 3x T	3x T_{max}	5x T	5x T_{max}	8x T	8x T_{max}	drilling depths (T) with SEFAS chamfer rings 3x T	3x T_{max}	5x T	5x T_{max}	8x T	8x T_{max}	sink depths (TS) TS_{100}	TS_{80}	TS_{max}
8,00–8,49	.3125–.3343	11	19	21	37	47	63	11	22	22	40	48	66	2,5	4,0	5,0
8,50–8,99	.3346–.3539	12	21	24	40	51	67	12	24	25	43	52	70	2,5	4,0	5,0
9,00–9,49	.3543–.3736	12	23	27	43	56	72	12	26	28	46	57	75	2,5	4,0	5,0
9,50–9,99	.3740–.3933	13	25	31	47	61	77	13	28	32	50	62	80	2,5	4,0	5,0
10,00–10,49	.3937–.4130	13	26	28	49	60	81	13	28	29	51	61	83	3,5	5,0	7,0
10,50–10,99	.4134–.4327	14	28	31	52	64	85	14	30	32	54	65	87	3,5	5,0	7,0
11,00–11,49	.4331–.4524	14	30	34	55	69	90	14	32	35	57	70	92	3,5	5,0	7,0
11,50–11,99	.4528–.4720	15	32	37	58	73	94	15	34	38	60	74	96	3,5	5,0	7,0
12,00–12,49	.4724–.4917	15	30	41	56	79	94	15	32	36	58	74	96	4,0	6,0	8,0
12,50–12,99	.4921–.5114	17	32	44	59	83	98	16	34	39	61	78	100	4,0	6,0	8,0
13,00–13,49	.5118–.5311	19	34	47	62	88	103	16	36	42	64	83	105	4,0	6,0	8,0
13,50–13,99	.5315–.5508	21	36	51	66	93	108	17	38	46	68	88	110	4,0	6,0	8,0
14,00–14,49	.5512–.5705	19	37	50	68	94	112	18	40	49	71	93	115	4,0	6,0	8,0
14,50–14,99	.5709–.5902	21	39	53	71	98	116	20	42	52	74	97	119	4,0	6,0	8,0
15,00–15,99	.5906–.6295	25	43	59	77	107	125	24	46	58	80	106	128	4,0	6,0	8,0
16,00–16,99	.6299–6689	29	47	65	83	117	135	28	50	64	85	115	136	4,0	6,0	8,0
17,00–17,99	.6693–.7083	35	49	73	87	127	141	30	54	68	92	122	146	4,0	6,0	8,0
18,00–18,99	.7087–.7476	36	52	76	92	133	149	33	57	73	97	130	154	4,0	6,0	8,0
19,00–19,99	.7480–.7870	40	56	82	98	142	158	37	61	79	103	139	163	4,0	6,0	8,0

NOTE: TS_{100}: maximum sink depths at which the full feed values can be maintained during chamfering and sinking.
TS_{80}: maximum sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TS_{max}: maximum sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.
T: minimum drilling depth that can be achieved due to the protruded length of the drill.
T_{max}: maximum drilling depth that can be achieved due to the protruded length of the drill.



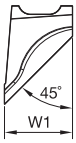
Torque Wrench • Metric

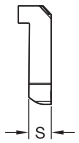
drill diameter D1	torque wrench	tightening torque Nm	SW	drill clamp screw	wrench adapter
4,0–6,0	**170.190**	7	3	**360.630**	**170.240**
>6,0–8,0	**170.190**	8	3	**360.635**	**170.240**
>8,0–10,0	**170.190**	10	4	**360.631**	**170.232**
>10,0–12,0	**170.190**	15	4	**360.635**	**170.232**
>12,0–14,0	**170.190**	20	5	**360.636**	**170.233**
>14,0–16,0	**170.190**	30	5	**360.632**	**170.233**
>16,0–18,0	**170.190**	45	6	**360.633**	**170.234**
>18,0–20,0	**170.190**	45	6	**360.637**	**170.234**

Torque Wrench • Inch

drill diameter D1	torque wrench	tightening torque ft. lbs.	SW	drill clamp screw	wrench adapter
.156–.188	**170.190**	5.2	3	**360.650**	**170.240**
>.188–.250	**170.190**	5.9	3	**360.651**	**170.240**
>.250–.313	**170.190**	5.9	3	**360.652**	**170.240**
>.313.–.375	**170.190**	7.4	4	**360.653**	**170.232**
>.375–.438	**170.190**	11.1	4	**360.654**	**170.232**
>.438–.500	**170.190**	11.1	4	**360.655**	**170.232**
>.500–.563	**170.190**	14.8	5	**360.656**	**170.233**
>.563–.625	**170.190**	22.1	5	**360.657**	**170.233**
>.625–.688	**170.190**	33.2	6	**360.658**	**170.234**
>.688–.750	**170.190**	33.2	6	**360.659**	**170.234**
>.750–.813	**170.190**	35.4	6	**360.679**	**170.234**
>.813–.875	**170.190**	44.3	8	**360.680**	**170.229**
>.875–.938	**170.190**	47.9	8	**360.681**	**170.229**
>.938–1.010	**170.190**	51.6	8	**360.682**	**170.229**







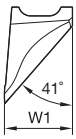
● first choice
○ alternate choice

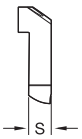
P	●
M	
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for Solid Carbide Drills • 45°

		S		W1				
catalog number	angle	mm	in	mm	in	CS5	KC7215	KMF
3.42805R001	45	2,83	.111	8,00	.315	●	●	●
3.42807R001	45	3,98	.157	12,00	.472	●	●	●







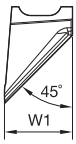
● first choice
○ alternate choice

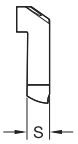
P	
M	
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for Solid Carbide Drills • 41°

		S		W1		
catalog number	angle	mm	in	mm	in	KC7215
3.42805R081	41	2,83	.111	8,00	.315	●
3.42807R081	41	3,98	.157	12,00	.472	●







● first choice
○ alternate choice

P	●
M	●
K	●
N	●
S	
H	

SEFAS Chamfering Inserts for KenTIP™ Drills • 45°

		S		W1						
catalog number	angle	mm	in	mm	in	CS5	KC7015	KC7215	KC7315	KMF
3.42805R001	45	2,83	.111	8,00	.315	●	–	●	–	●
3.42805R021	45	2,83	.111	8,00	.315	–	●	–	●	–
3.42807R001	45	3,98	.157	12,00	.472	●	–	●	–	●
3.42807R021	45	3,98	.157	12,00	.472	–	●	–	●	–

Cost Reduction Targets Giving You Headaches?

Save time and money with Kennametal SEFAS™ COMBINATION DRILLING SYSTEM:

- Combine centering, drilling, and chamfering into a single operation, increasing productivity by reducing cycle time and number of tool changes.
- Reduce inventory and avoid reconditioning by using KenTIP™ blades.
- Easily change tool within the machine by using KenTIP drills.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com



Indexable Drills

Tool Selection Guide J2–J3

Drill Fix DFR, DFSP, and DFT J4–J59

Drill Fix DFR J4, J8–J21

Drill Fix DFSP J4, J22–J45

Drill Fix DFT J5, J46–J59

HTS Series Indexable Deep-Hole Drilling System J60–J96

HTS and HTS-R Indexable Drill System J60–J96

Indexable Drill Inserts J97–J111

Drill Fix DFR Inserts J97–J99

Drill Fix DFT Inserts J98, J100–J102

Drill Fix DFSP Inserts J103–J104

CTR Counterboring Tools J112–J117

Counterboring Inserts J115–J117



		standard							standard range			customized solution range			
		● first choice ○ alternate choice							diameter range			diameter range			
		P	M	K	N	S	H	hole tolerance	D1 mm min–max	D1 inch min–max	drilling depth L/D1	D1 mm min–max	D1 inch min–max	drilling depth	
	**DFR**™ Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	12,5–25	.500–1.039	2 x D 3 x D 4 x D	12,5–26	.500–1.023	1–5 x D	
	**DFSP**™ Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	14–55	.551–2.165	2 x D 3 x D 4 x D 5 x D	14–85	.551–3.350	1–5 x D	
	**DFT**™ Indexable Drill Body *Short-Hole Drilling*	●	●	●	●	●		IT9–11	16–83	.625–3.250	2.5 x D 4 x D	15,8–83	.622–3.350	1–5 x D	
	**HTS-R** Indexable Drilling Tool *Deep-Hole Drilling*	●	●	●	●	●		IT9–11	40–55	1.574–2.165	10 x D	40–55	1.574–2.165	1–10 x D	
	**HTS** Indexable Drilling Tool *Deep-Hole Drilling*	●	●	●	●	●		IT9–11	45–270	1.772–10.630	10 x D	45–540	1.772–21.259	1–10 x D	
	**S2 S Countersinking** Countersinking Tool	●	●	●	●	●		IT9–11	15,1–46,2	.813–3.125	1 x D	11,5–150	.451–5.905	1–5 x D	

In regard to insert and drill coatings, anything is possible. If a specific insert or drill is not suitable for your workpiece material, please contact our Engineered Solutions Department for an offer about special coatings and edge preparations.

* Except for L/D 5 x D.

[1] Other shank styles available as customized solution.

	■ standard capabilities [1]							■ standard and □ customized solution capabilities									
	coolant		2°		TS	XMZ	DV	BT									page(s)
		■		■	■				■	■	■	■	■	□	□		J10–J21
		■		■	■	■			■	■	■	■	■*	□	□		□	J24–J45
		■		■	■	■			■	■	■	■	■	□	□			J48–J59
		■			■		■	■	■									J75–J80
		■			■		■	■	■									J82–J96
		■	■												■	□		J114–J117

Drill Fix™ DFR™, DFSP™, and DFT™

Primary Application

Drill short holes up to 5 x D with DFR, DFSP, and DFT indexable drills in steel, cast iron, ductile iron, stainless steel, and non-ferrous materials. The Drill Fix portfolio covers the diameter range 12,5–85mm (.500–3.250").

Features and Benefits

Drill Fix DFR

- Diameter range of 12,5–24mm (.500–1.000") in 2 x D, 3 x D, and 4 x D.
- Rectangular-shaped inserts offer the highest stability and feed rates at smaller sizes.
- Long tool life due to soft starting cut, short chips, and low cutting forces.
- X-offset design to adjust diameter size on turning machines and optimize tolerances on machining centers.

Drill Fix DFSP

- Combines the benefits of a trigon-style DFT inboard and a square-style SP..X outboard insert.
- Standard diameter range from 14–55mm (.551–2.125") in 2 x D, 3 x D, 4 x D, and new 5 x D.
- Squared-outboard insert has four economic cutting edges.
- Highest feed rates and cutting speeds due to highly stable tool body design.
- X-offset design to adjust diameter size on turning machines and optimize tolerances on machining centers.
- Beyond™ grades to achieve highest productivity and outstanding results in steel, stainless steel, and cast iron.

Use where speed and economy are prime considerations.

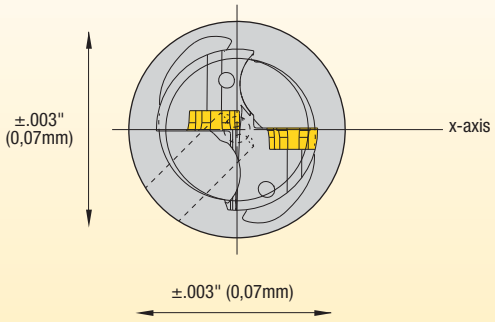


Drill Fix™ DFT™

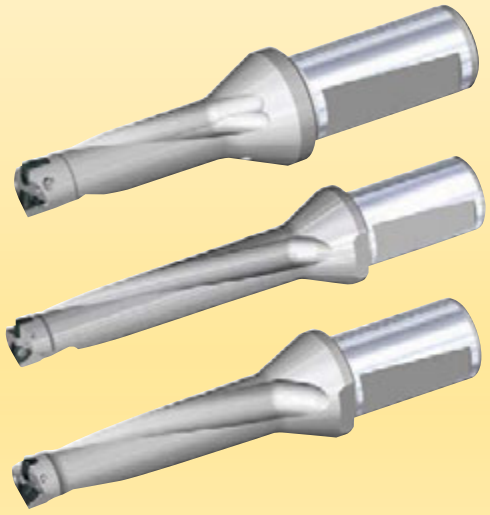
- One drill system that covers a large diameter range, from 24–82mm (1.000–3.250") in 2.5 x D and 4 x D.
- Best centering capabilities due to trigon-shaped inserts used as inboard and outboard inserts.
- Various insert grades and geometries available.
- Balanced cutting forces in the shank center for highest tool body stability.
- X-offset design to adjust diameter size on turning machines and optimize tolerances on machining centers.
- The Drill Fix DFT system has an inner insert for best centering capabilities.

Stationary Applications

Metric Drill Bodies with 2° Whistle Notch



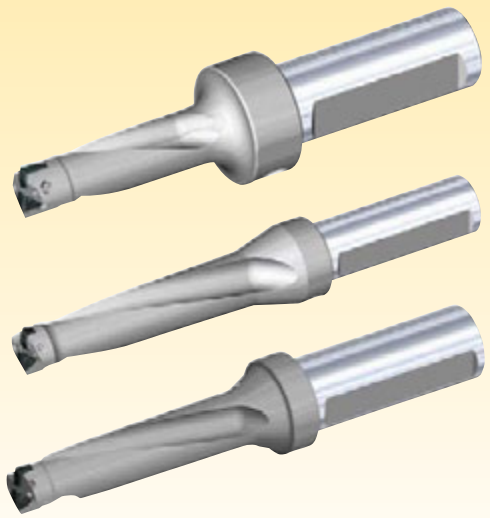
Metric shank drills with a 2° Whistle Notch shank are easily mounted into inch turrets using a WD adapter. Align the X-axis of the drill with the X-axis of the machine tool as described above. Accurate alignment is absolutely essential for good performance. The drill must be on center within the tolerance shown above. Angularity must not exceed .003" (0,07mm).



Inch Bodies • Flange

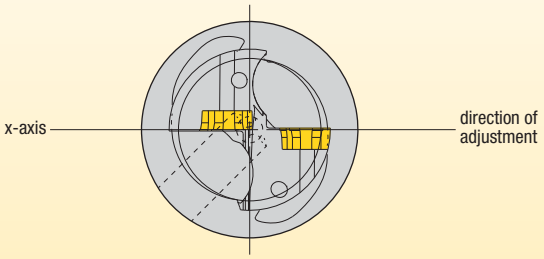
Drill Fix™ inch drills, with a flange, were designed for use on lathes or any machine where the tool remains stationary and the workpiece rotates. An “x” is marked on the flat of the X-axis of the drill to aid insert orientation on the machine tool.

It is important to align the X-axis of the drill with the X-axis on the machine tool. Accurate alignment is absolutely essential for good performance. The drill must be on center, within the tolerance shown here. Angularity must not exceed .003" (0,07mm) within the designated drill depth.



Drill Fix™ X-Adjustment

Application Examples

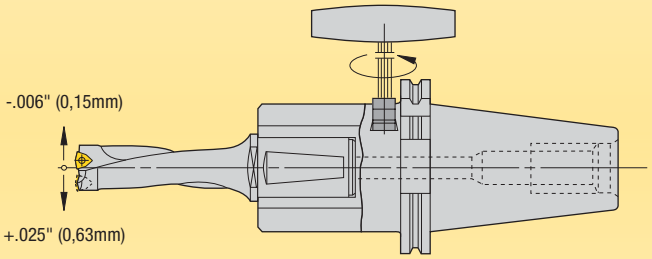


Stationary Tool

The X-adjustment must be made at the outer cutting edge, parallel to the surface of the outer insert when the turret of the turning machine is offset along the X-axis.

Rotating Tool • Straight Shank

Use an adjustable eccentric chuck with a steep taper to help offset the drill along the X-axis when machining with a rotating tool on a machining center.

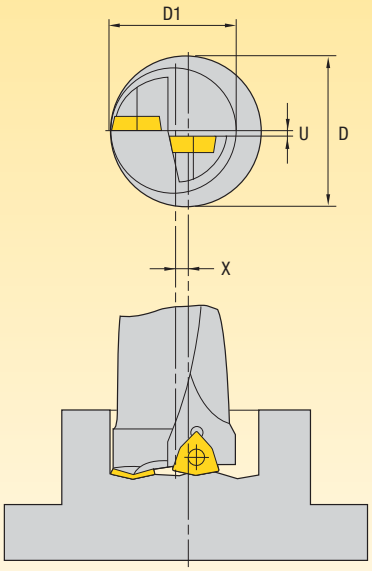


X-Adjustment Description

Different diameter holes can be drilled using the same Drill Fix drill. Holes with a diameter greater than the nominal diameter can be drilled directly into a solid. Intermediate dimensions are produced by means of the X-adjustment.

Benefits

- Eliminates the need for special tools for intermediate dimensions.
- Just a few drills cover a wide application range.
- Once precise adjustment of the desired diameter is made, tolerances of ± .002" (0,05mm) are achieved.



*Additional information on X-adjustment, as well as additional information on Drill Fix tools, is available on the Kennametal website, **kennametal.com**.*

Drill Fix™ DFR™

The Drill Fix DFR platform offers maximum feed rates at a diameter range of 12,5–24mm (.500–1.000") for 2 x D, 3 x D, and 4 x D applications. Using rectangular-shaped inboard and outboard inserts enables soft starting cuts, short chips, and higher feed rates compared to small-size symmetrical-trigon or square inserts. The Drill Fix DFR platform's low cutting forces provide long tool life and high stability at the smallest diameters.

Features and Benefits

Productivity and Profitability

- Achieve high feed rates with rectangular-shaped inserts that offer a soft starting cut and greater stability.
- Use X-offset on turning machines to adjust drill, and eliminate the need for specials in many applications, and on machining centers to reach tolerance optimization.
- Same insert size is used in each pocket, reducing inventory costs.

Versatility

- Diameter range covering 12,5–24mm (.500–1.000").
- 2 x D, 3 x D, and 4 x D L/D ratios as standard.
- Various shanks as standard available: WD, SSF, and new WB, a Weldon® shank.
- Multiple insert grades and geometries available.
- Use where feed rates are the limiting factor.
- Apply in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Eccentric chuck available as standard.

Low cutting forces provide long tool body life and high stability at the smallest diameters.



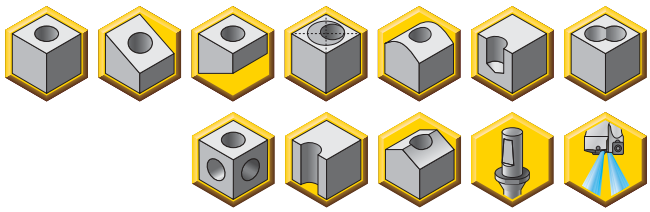
Reliability

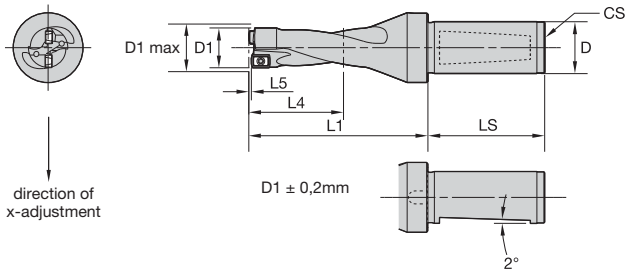
- High stability in smaller sizes due to rectangular-shaped insert.
- Same insert can be used as inboard or outboard insert. No risk of mixing up inner and outer inserts.
- Low cutting forces result in long body tool life.

Customization

- Intermediate diameters available as semi-standards.
- Engineered solutions available.
- Multistep drills available upon request.
- Left-hand version available.

- Drill shipped with insert screws and Torx wrench.
- See pages J97–J98 for inserts.







WN/WD Shank • 2 x D • Metric

D		D1						
20	32	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR125R2WD20M	–	12,50	.492	13,50	47,4	25,0	0,5	DFR0202..
DFR127R2WD20M	–	12,70	.500	13,70	47,8	25,4	0,5	DFR0202..
DFR130R2WD20M	–	13,00	.512	14,00	48,4	26,0	0,5	DFR0202..
DFR135R2WD20M	–	13,50	.532	14,50	49,4	27,0	0,5	DFR0202..
DFR140R2WD20M	–	14,00	.551	15,00	50,4	28,0	0,5	DFR0202..
DFR145R2WD20M	–	14,50	.571	15,50	53,4	29,0	0,5	DFR0202..
DFR150R2WD20M	–	15,00	.591	16,00	54,4	30,0	0,5	DFR0202..
DFR155R2WD20M	–	15,50	.610	16,50	55,4	31,0	0,5	DFR0202..
DFR160R2WD20M	–	16,00	.630	17,00	56,4	32,0	0,5	DFR0202..
–	**DFR165R2WD32M**	16,50	.650	17,50	62,4	33,0	0,6	DFR0302..
–	**DFR170R2WD32M**	17,00	.669	18,00	63,4	34,0	0,6	DFR0302..
–	**DFR175R2WD32M**	17,50	.689	18,50	64,4	35,0	0,6	DFR0302..
–	**DFR180R2WD32M**	18,00	.709	19,00	65,4	36,0	0,6	DFR0302..
–	**DFR185R2WD32M**	18,50	.728	19,50	66,4	37,0	0,6	DFR0302..
–	**DFR190R2WD32M**	19,00	.748	20,00	67,4	38,0	0,6	DFR0302..
–	**DFR195R2WD32M**	19,50	.768	20,50	68,4	39,0	0,6	DFR0302..
–	**DFR200R2WD32M**	20,00	.787	21,00	72,4	40,0	0,6	DFR0302..
–	**DFR205R2WD32M**	20,50	.807	21,50	73,6	41,0	0,8	DFR0403..
–	**DFR210R2WD32M**	21,00	.827	22,00	74,6	42,0	0,8	DFR0403..
–	**DFR220R2WD32M**	22,00	.866	23,00	76,6	44,0	0,8	DFR0403..
–	**DFR230R2WD32M**	23,00	.906	24,00	78,6	46,0	0,8	DFR0403..
–	**DFR240R2WD32M**	24,00	.945	25,00	80,6	48,0	0,8	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

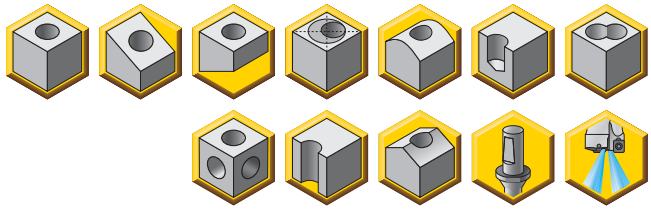


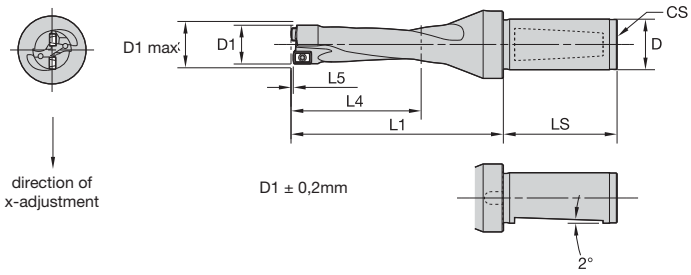


gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J97–J98 for inserts.







WN/WD Shank • 3 x D • Metric

D			D1						
20	25	32	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR125R3WD20M	–	–	12,50	.492	13,50	59,9	37,5	0,5	DFR0202..
DFR127R3WD20M	–	–	12,70	.500	13,70	60,5	38,1	0,5	DFR0202..
DFR130R3WD20M	–	–	13,00	.512	14,00	61,4	39,0	0,5	DFR0202..
DFR135R3WD20M	–	–	13,50	.532	14,50	62,9	40,5	0,5	DFR0202..
DFR140R3WD20M	–	–	14,00	.551	15,00	64,4	42,0	0,5	DFR0202..
DFR145R3WD20M	–	–	14,50	.571	15,50	67,9	43,5	0,5	DFR0202..
DFR150R3WD20M	–	–	15,00	.591	16,00	69,4	45,0	0,5	DFR0202..
DFR155R3WD20M	–	–	15,50	.610	16,50	70,9	46,5	0,5	DFR0202..
DFR160R3WD20M	–	–	16,00	.630	17,00	72,4	48,0	0,5	DFR0202..
–	–	**DFR165R3WD32M**	16,50	.650	17,50	78,9	49,5	0,6	DFR0302..
–	–	**DFR170R3WD32M**	17,00	.669	18,00	80,4	51,0	0,6	DFR0302..
–	**DFR175R3WD25M**	**DFR175R3WD32M**	17,50	.689	18,50	81,9	52,5	0,6	DFR0302..
–	**DFR180R3WD25M**	**DFR180R3WD32M**	18,00	.709	19,00	83,4	54,0	0,6	DFR0302..
–	**DFR185R3WD25M**	**DFR185R3WD32M**	18,50	.728	19,50	84,9	55,5	0,6	DFR0302..
–	**DFR190R3WD25M**	**DFR190R3WD32M**	19,00	.748	20,00	86,4	57,0	0,6	DFR0302..
–	**DFR195R3WD25M**	**DFR195R3WD32M**	19,50	.768	20,50	87,9	58,5	0,6	DFR0302..
–	**DFR200R3WD25M**	**DFR200R3WD32M**	20,00	.787	21,00	92,4	60,0	0,6	DFR0302..
–	**DFR205R3WD25M**	**DFR205R3WD32M**	20,50	.807	21,50	94,1	61,5	0,8	DFR0403..
–	**DFR210R3WD25M**	**DFR210R3WD32M**	21,00	.827	22,00	95,6	63,0	0,8	DFR0403..
–	**DFR220R3WD25M**	**DFR220R3WD32M**	22,00	.866	23,00	98,6	66,0	0,8	DFR0403..
–	**DFR230R3WD25M**	**DFR230R3WD32M**	23,00	.906	24,00	101,6	69,0	0,8	DFR0403..
–	**DFR240R3WD25M**	**DFR240R3WD32M**	24,00	.945	25,00	104,6	72,0	0,8	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

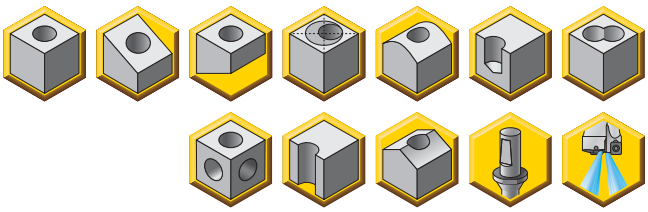


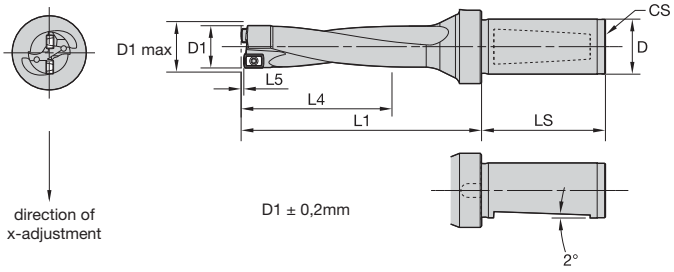


gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
25	45	R 1/4 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J97–J98 for inserts.







WN/WD Shank • 4 x D • Metric

D		D1						
20	32	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR125R4WD20M	–	12,50	.492	13,50	72,4	50,0	0,5	DFR0202..
DFR127R4WD20M	–	12,70	.500	13,70	73,2	50,8	0,5	DFR0202..
DFR130R4WD20M	–	13,00	.512	14,00	74,4	52,0	0,5	DFR0202..
DFR135R4WD20M	–	13,50	.532	14,50	76,4	54,0	0,5	DFR0202..
DFR140R4WD20M	–	14,00	.551	15,00	78,4	56,0	0,5	DFR0202..
DFR145R4WD20M	–	14,50	.571	15,50	82,4	58,0	0,5	DFR0202..
DFR150R4WD20M	–	15,00	.591	16,00	84,4	60,0	0,5	DFR0202..
DFR155R4WD20M	–	15,50	.610	16,50	86,4	62,0	0,5	DFR0202..
DFR160R4WD20M	–	16,00	.630	17,00	88,4	64,0	0,5	DFR0202..
–	**DFR165R4WD32M**	16,50	.650	17,50	95,4	66,0	0,6	DFR0302..
–	**DFR170R4WD32M**	17,00	.669	18,00	97,4	68,0	0,6	DFR0302..
–	**DFR175R4WD32M**	17,50	.689	18,50	99,4	70,0	0,6	DFR0302..
–	**DFR180R4WD32M**	18,00	.709	19,00	101,4	72,0	0,6	DFR0302..
–	**DFR185R4WD32M**	18,50	.728	19,50	103,4	74,0	0,6	DFR0302..
–	**DFR190R4WD32M**	19,00	.748	20,00	105,4	76,0	0,6	DFR0302..
–	**DFR195R4WD32M**	19,50	.768	20,50	107,4	78,0	0,6	DFR0302..
–	**DFR200R4WD32M**	20,00	.787	21,00	109,4	80,0	0,6	DFR0302..
–	**DFR205R4WD32M**	20,50	.807	21,50	111,6	82,0	0,8	DFR0403..
–	**DFR210R4WD32M**	21,00	.827	22,00	113,6	84,0	0,8	DFR0403..
–	**DFR220R4WD32M**	22,00	.866	23,00	117,6	88,0	0,8	DFR0403..
–	**DFR230R4WD32M**	23,00	.906	24,00	121,6	92,0	0,8	DFR0403..
–	**DFR240R4WD32M**	24,00	.945	25,00	125,6	96,0	0,8	DFR0403..

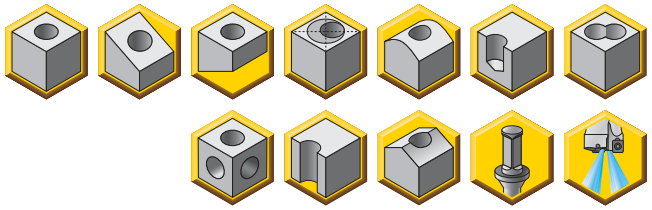
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

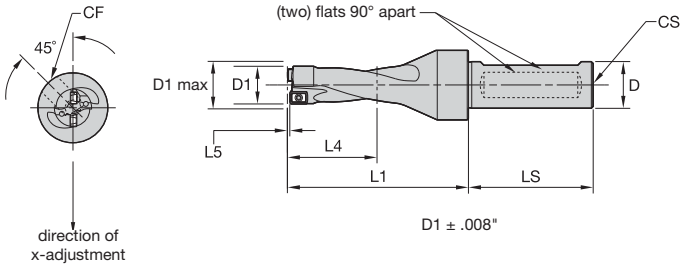



gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CS
20	45	R 1/8 BSP
32	58	R 1/4 BSP

- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages J97–J98 for inserts.







Flange Shank • 2 x D • Inch

D		D1 diameter						
0.750	1.000	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR0500R2SSF075	**–**	12,70	.500	.539	1.95	1.00	.02	DFR0202..
DFR0563R2SSF075	**–**	14,30	.563	.602	2.08	1.13	.02	DFR0202..
DFR0625R2SSF075	**–**	15,88	.625	.664	2.20	1.25	.02	DFR0202..
DFR0688R2SSF075	**–**	17,48	.688	.727	2.33	1.38	.02	DFR0302..
–	**DFR0750R2SSF100**	19,05	.750	.789	2.52	1.50	.02	DFR0302..
–	**DFR0813R2SSF100**	20,65	.813	.852	2.65	1.63	.03	DFR0403..
–	**DFR0875R2SSF100**	22,23	.875	.914	2.87	1.75	.03	DFR0403..
–	**DFR0938R2SSF100**	23,83	.938	.977	2.99	1.88	.03	DFR0403..
–	**DFR1000R2SSF100**	25,40	1.000	1.039	3.12	2.00	.03	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

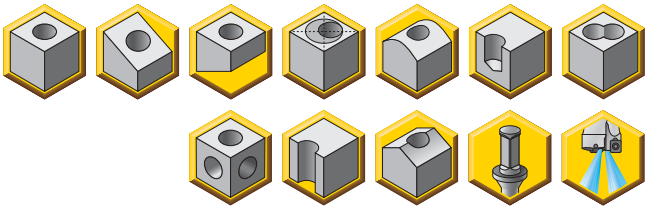


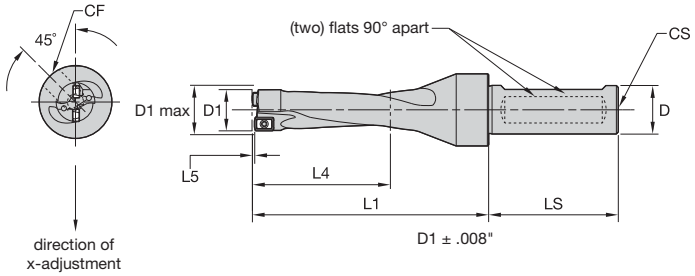

gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

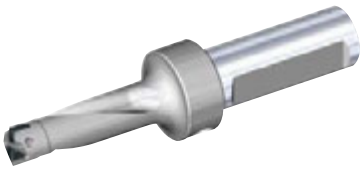


D	LS	CF	CS	pipe plug
0.75	2.00	1/8-27 NPT	1/8-27 NPT	**HSFS0125**
1.00	3.00	1/8-27 NPT	1/4-18 NPT	**HSFS0125**

- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages J97–J98 for inserts.







Flange Shank • 3 x D • Inch

D			D1 diameter						
0.750	1.000	1.250	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR0500R3SSF075	–	–	12,70	.500	.539	2.44	1.59	.02	DFR0202..
DFR0531R3SSF075	–	–	13,49	.531	.570	2.50	1.69	.02	DFR0202..
DFR0563R3SSF075	–	–	14,30	.563	.602	2.64	1.69	.02	DFR0202..
DFR0594R3SSF075	–	–	15,09	.594	.633	2.70	1.78	.02	DFR0202..
DFR0625R3SSF075	DFR0625R3SSF100	–	15,88	.625	.664	2.83	1.88	.02	DFR0202..
DFR0656R3SSF075	DFR0656R3SSF100	–	16,66	.656	.695	2.92	1.97	.02	DFR0302..
DFR0688R3SSF075	DFR0688R3SSF100	–	17,48	.688	.727	3.02	2.06	.02	DFR0302..
DFR0703R3SSF075	DFR0703R3SSF100	–	17,86	.703	.742	3.13	2.11	.02	DFR0302..
DFR0734R3SSF075	DFR0734R3SSF100	–	18,64	.734	.773	3.22	2.20	.02	DFR0302..
DFR0750R3SSF075	DFR0750R3SSF100	–	19,05	.750	.789	3.27	2.25	.02	DFR0302..
DFR0781R3SSF075	DFR0781R3SSF100	–	19,84	.781	.820	3.36	2.34	.02	DFR0302..
DFR0813R3SSF075	DFR0813R3SSF100	–	20,65	.813	.852	3.46	2.44	.03	DFR0403..
DFR0844R3SSF075 *	DFR0844R3SSF100	–	21,44	.844	.883	3.65	2.53	.03	DFR0403..
DFR0875R3SSF075	DFR0875R3SSF100	–	22,23	.875	.914	3.74	2.63	.03	DFR0403..
–	DFR0906R3SSF100	–	23,01	.906	.945	3.83	2.72	.03	DFR0403..
–	DFR0938R3SSF100	–	23,83	.938	.977	3.93	2.81	.03	DFR0403..
–	DFR0969R3SSF100	–	24,61	.969	1.008	4.02	2.91	.03	DFR0403..
–	DFR0984R3SSF100	–	24,99	.984	1.023	4.07	2.95	.03	DFR0403..
–	DFR1000R3SSF100	DFR1000R3SSF125	25,40	1.000	1.039	4.12	3.00	.03	DFR0403..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

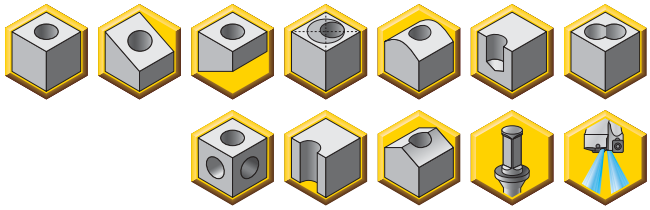


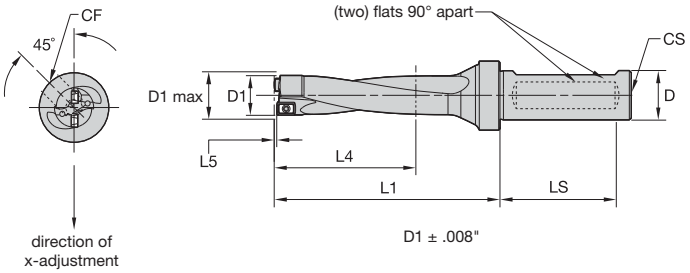
gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8



D	LS	CF	CS	pipe plug
0.75	2.00	1/8-27 NPT	1/8-27 NPT	**HSFS0125**
1.00	3.00	1/8-27 NPT	1/4-18 NPT	**HSFS0125**
1.25	3.25	1/8-27 NPT	1/4-18 NPT	**HSFS0125**

- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages J97–J98 for inserts.







Flange Shank • 4 x D • Inch

D			D1 diameter						
0.750	1.000	1.250	mm	in	D1 max	L1	L4 max	L5	gage insert
DFR0500R4SSF075	–	–	12,70	.500	.540	2.95	2.00	.02	DFR0202..
DFR0531R4SSF075	–	–	13,49	.531	.571	3.05	2.12	.02	DFR0202..
DFR0563R4SSF075	–	–	14,30	.563	.603	3.21	2.25	.02	DFR0202..
DFR0594R4SSF075	–	–	15,09	.594	.633	3.30	2.38	.02	DFR0202..
DFR0625R4SSF075	DFR0625R4SSF100	–	15,88	.625	.664	3.45	2.50	.02	DFR0202..
–	DFR0656R4SSF100	–	16,66	.656	.695	3.58	2.62	.02	DFR0302..
–	DFR0688R4SSF100	–	17,48	.688	.727	3.71	2.75	.02	DFR0302..
–	DFR0703R4SSF100	–	17,86	.703	.742	3.83	2.81	.02	DFR0302..
–	DFR0734R4SSF100	–	18,64	.734	.773	3.95	2.94	.02	DFR0302..
–	DFR0750R4SSF100	–	19,05	.750	.789	4.02	3.00	.02	DFR0302..
–	DFR0781R4SSF100	–	19,84	.781	.820	4.14	3.12	.02	DFR0302..
–	DFR0813R4SSF100	–	20,65	.813	.852	4.27	3.25	.03	DFR0403..
–	DFR0844R4SSF100	–	21,44	.844	.883	4.49	3.38	.03	DFR0403..
–	DFR0875R4SSF100	–	22,23	.875	.914	4.62	3.50	.03	DFR0403..
–	DFR0906R4SSF100	–	23,01	.906	.945	4.74	3.62	.03	DFR0403..
–	DFR0938R4SSF100	–	23,83	.938	.977	4.87	3.75	.03	DFR0403..
–	DFR0969R4SSF100	–	24,61	.969	1.008	4.99	3.88	.03	DFR0403..
–	DFR0984R4SSF100	–	24,99	.984	1.023	5.05	3.84	.03	DFR0403..
–	DFR1000R4SSF100	DFR1000R4SSF125	25,40	1.000	1.039	5.12	4.00	.03	DFR0403..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

gage insert	insert screw	Torx wrench	Torx size
DFR0202..	**193.281**	**170.027**	6
DFR0302..	**192.416**	**170.023**	7
DFR0403..	**192.432**	**170.028**	8

D	LS	CF	CS	pipe plug
0.75	2.00	1/8-27 NPT	1/8-27 NPT	**HSFS0125**
1.00	3.00	1/8-27 NPT	1/4-18 NPT	**HSFS0125**
1.25	3.25	1/8-27 NPT	1/4-18 NPT	**HSFS0125**

Drill Fix™ DFR™ • Metric

Metric												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
P	1	S	O	MD	KCU25	310	**325**	360	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
		U	O	MD	KCU40	200	**215**	230	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
		I	O	MD	KC7140	130	**135**	150	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	MD	KC7140							
	2	S	O	GD	KCPK10	310	**325**	360	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	200	**215**	230	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	MD	KC7140	130	**135**	150	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	3	S	O	GD	KCPK10	260	**285**	320	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	180	**195**	220	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	GD	KC7140	110	**120**	140	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	4	S	O	GD	KCU25	220	**250**	300	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		U	O	GD	KCU40	150	**180**	220	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
		I	O	GD	KC7140	90	**110**	140	mm/r	0,09–0,15	0,11–0,18	0,15–0,25
			I	LD	KC7140							
	5	S	O	GD	KCU25	180	**200**	220	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		U	O	GD	KCU40	120	**135**	150	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		I	O	GD	KC7140	70	**85**	100	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
	6	S	O	GD	KCU25	180	**200**	220	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		U	O	GD	KCU40	120	**135**	150	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
		I	O	GD	KC7140	70	**85**	100	mm/r	0,07–0,13	0,09–0,15	0,11–0,18
			I	LD	KC7140							
M	1	S	O	MD	KC7140	150	**190**	230	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	60	**80**	100	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
	2	S	O	MD	KC7140	150	**180**	210	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	60	**80**	100	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
	3	S	O	MD	KC7140	100	**130**	160	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		U	O	MD	KC7140	80	**110**	140	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							
		I	O	MD	KC7140	50	**70**	90	mm/r	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Metric

Metric											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
K	1	S	O	GD	KCPK10	200	**240**	300	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	120	**155**	200	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	125	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
	2	S	O	GD	KCPK10	180	**220**	260	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	110	**140**	170	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	120	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
	3	S	O	GD	KCPK10	180	**220**	260	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KCU40							
		U	O	GD	KCU25	110	**140**	170	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
		I	O	GD	KCU40	80	**100**	120	mm/r	0,10–0,18	0,12–0,20	0,14–0,24
			I	LD	KC7140							
N	1	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	300	**400**	500	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	2	S	O	ST	KD1425	375	**550**	775	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	175	**250**	325	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	3	S	O	ST	KD1425	350	**500**	650	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	150	**250**	350	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	4	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	5	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	LD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
		I	O	LD	KCU40	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	LD	KCU40							
	6	S	O	ST	KD1425	400	**600**	800	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	ST	KD1425							
		U	O	GD	KCU40	250	**350**	450	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	GD	KCU40							
		I	O	GD	KMF	200	**300**	400	mm/r	0,07–0,09	0,10–0,14	0,12–0,16
			I	GD	KMF							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Metric

Metric											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter		
						min	Starting Value	max	Ø	DFR02... 12,50–16,00mm	DFR03... 16,50–20,00mm	DFR04... 20,50–24,00mm
S	1	S	O	GD	KCU40	60	**70**	75	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	40	**50**	60	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	25	**30**	40	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140							
	2	S	O	GD	KCU40	50	**60**	70	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	30	**40**	50	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	25	**30**	40	mm/r	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140							
	3	S	O	GD	KCU40	70	**80**	90	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	50	**60**	70	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	MD	KC7140							
	4	S	O	GD	KCU40	70	**80**	90	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KCU40							
		U	O	GD	KCU40	50	**60**	70	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	LD	KC7140							
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,08	0,06–0,10	0,06–0,10
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Inch

Inch											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... .500–.625"	DFR03... .688–.750"	DFR04... .813–1.00"
P	1	S	O	MD	KCU25	1017	**1066**	1181	SFM	.004–.006	.004–.007	.006–.010
			I	MD	KC7140							
		U	O	MD	KCU40	656	**705**	754	SFM	.004–.006	.004–.007	.006–.010
			I	MD	KC7140							
		I	O	MD	KC7140	426	**443**	492	SFM	.004–.006	.004–.007	.006–.010
			I	MD	KC7140							
	2	S	O	GD	KCPK10	1017	**1066**	1181	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		U	O	GD	KCU40	656	**705**	754	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		I	O	MD	KC7140	426	**443**	492	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
	3	S	O	GD	KCPK10	853	**935**	1050	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		U	O	GD	KCU40	590	**640**	722	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		I	O	GD	KC7140	361	**394**	459	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
	4	S	O	GD	KCU25	722	**820**	984	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		U	O	GD	KCU40	492	**590**	722	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		I	O	GD	KC7140	295	**361**	459	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
	5	S	O	GD	KCU25	590	**656**	722	SFM	.003–.005	.004–.006	.004–.007
			I	LD	KC7140							
		U	O	GD	KCU40	394	**443**	492	SFM	.003–.005	.004–.006	.004–.007
			I	LD	KC7140							
		I	O	GD	KC7140	230	**279**	328	SFM	.003–.005	.004–.006	.004–.007
			I	LD	KC7140							
	6	S	O	GD	KCU25	590	**656**	722	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		U	O	GD	KCU40	394	**443**	492	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
		I	O	GD	KC7140	230	**279**	328	SFM	.004–.006	.004–.007	.006–.010
			I	LD	KC7140							
M	1	S	O	MD	KC7140	492	**623**	754	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		U	O	MD	KC7140	328	**426**	525	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		I	O	MD	KC7140	197	**262**	328	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
	2	S	O	MD	KC7140	492	**590**	689	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		U	O	MD	KC7140	328	**426**	525	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		I	O	MD	KC7140	197	**262**	328	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
	3	S	O	MD	KC7140	328	**426**	525	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		U	O	MD	KC7140	262	**361**	459	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							
		I	O	MD	KC7140	164	**230**	295	SFM	.003–.005	.003–.006	.004–.007
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Inch

Inch												
Material Group		Pocket Seat	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... .500–.625"	DFR03... .688–.750"	DFR04... .813–1.00"
K	1	S	O	GD	KCPK10	656	**787**	984	SFM	.004–.007	.005–.008	.006–.009
			I	LD	KCU40							
		U	O	GD	KCU25	394	**508**	656	SFM	.004–.007	.005–.008	.006–.009
			I	LD	KC7140							
		I	O	GD	KCU40	262	**328**	410	SFM	.004–.007	.005–.008	.005–.009
			I	LD	KC7140							
	2	S	O	GD	KCPK10	590	**722**	853	SFM	.004–.007	.005–.008	.006–.009
			I	LD	KCU40							
		U	O	GD	KCU25	361	**459**	558	SFM	.004–.007	.005–.008	.005–.009
			I	LD	KC7140							
		I	O	GD	KCU40	262	**328**	394	SFM	.004–.007	.005–.008	.006–.009
			I	LD	KC7140							
	3	S	O	GD	KCPK10	590	**722**	853	SFM	.004–.007	.005–.008	.005–.009
			I	LD	KCU40							
		U	O	GD	KCU25	361	**459**	558	SFM	.004–.007	.005–.008	.006–.009
			I	LD	KC7140							
		I	O	GD	KCU40	262	**328**	394	SFM	.004–.007	.005–.008	.005–.009
			I	LD	KC7140							
N	1	S	O	ST	KD1425	1312	**1968**	2624	SFM	.003–.004	.004–.006	.005–.006
			I	ST	KD1425							
		U	O	LD	KCU40	984	**1312**	1640	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
		I	O	LD	KCU40	656	**984**	1312	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
	2	S	O	ST	KD1425	1230	**1804**	2542	SFM	.003–.004	.004–.006	.005–.006
			I	ST	KD1425							
		U	O	LD	KCU40	820	**1148**	1476	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
		I	O	LD	KCU40	574	**820**	1066	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
	3	S	O	ST	KD1425	1148	**1640**	2132	SFM	.003–.004	.004–.006	.005–.006
			I	ST	KD1425							
		U	O	LD	KCU40	820	**1148**	1476	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
		I	O	LD	KCU40	492	**820**	1148	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
	4	S	O	ST	KD1425	1312	**1968**	2624	SFM	.003–.004	.004–.006	.005–.006
			I	ST	KD1425							
		U	O	LD	KCU40	820	**1148**	1486	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
		I	O	LD	KCU40	656	**984**	1312	SFM	.003–.004	.004–.006	.005–.006
			I	LD	KCU40							
	5	S	O	HP	KD1425	1312	**1968**	2624	SFM	.003–.004	.004–.006	.005–.006
			I	HP	KD1425							
		U	O	HP	KCU40	820	**1148**	1476	SFM	.003–.004	.004–.006	.005–.006
			I	HP	KCU40							
		I	O	HP	KCU40	656	**984**	1312	SFM	.003–.004	.004–.006	.005–.006
			I	HP	KCU40							
	6	S	O	ST	KD1425	1312	**1968**	2624	SFM	.003–.004	.004–.006	.005–.006
			I	ST	KD1425							
		U	O	GD	KCU40	820	**1148**	1476	SFM	.003–.004	.004–.006	.005–.006
			I	GD	KCU40							
		I	O	GD	KMF	656	**984**	1312	SFM	.003–.004	.004–.006	.005–.006
			I	GD	KMF							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFR™ • Inch

Inch												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter			
						min	Starting Value	max	Ø	DFR02... .500–.625"	DFR03... .688–.750"	DFR04... .813–1.00"
S	1	S	O	GD	KCU40	197	**230**	246	SFM	.002–.002	.002–.003	.002–.004
			I	LD	KCU40							
		U	O	GD	KCU40	131	**164**	197	SFM	.002–.002	.002–.003	.002–.004
			I	LD	KC7140							
		I	O	MD	KC7140	82	**98**	131	SFM	.002–.002	.002–.003	.002–.004
			I	MD	KC7140							
	2	S	O	GD	KCU40	164	**197**	230	SFM	.002–.002	.002–.003	.002–.004
			I	LD	KCU40							
		U	O	GD	KCU40	98	**131**	164	SFM	.002–.002	.002–.003	.002–.004
			I	LD	KC7140							
		I	O	MD	KC7140	82	**98**	131	SFM	.002–.002	.002–.003	.002–.004
			I	MD	KC7140							
	3	S	O	GD	KCU40	230	**262**	295	SFM	.002–.004	.002–.003	.002–.004
			I	LD	KCU40							
		U	O	GD	KCU40	164	**197**	230	SFM	.002–.003	.002–.004	.002–.004
			I	LD	KC7140							
		I	O	MD	KC7140	98	**131**	164	SFM	.002–.003	.002–.004	.002–.004
			I	MD	KC7140							
	4	S	O	GD	KCU40	230	**262**	295	SFM	.002–.003	.002–.004	.002–.004
			I	LD	KCU40							
		U	O	GD	KCU40	164	**197**	230	SFM	.002–.003	.002–.004	.002–.004
			I	LD	KC7140							
		I	O	MD	KC7140	98	**131**	164	SFM	.002–.003	.002–.004	.002–.004
			I	MD	KC7140							

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™

DFSP is the new name of the now-extended Drill Fix DFS" indexable drilling platform. The standard diameter range is now expanded starting from 14–55mm (.551–2.125") in L/D ratios 2 x D, 3 x D, 4 x D, and 5 x D. Like the DFS platform, the DFSP platform combines the economically squared outboard insert with the superior centering capabilities of the trigon inboard insert. DFSP indexable drills offer increased metal removal rates combined with high surface quality and hole straightness.

Boost your productivity even further and achieve outstanding results in steel, stainless steel, and cast iron with the latest Beyond™ insert grades.

Features and Benefits

Higher Productivity and Profitability

- Achieve highest metal removal rates and excellent chip evacuation from advanced chip flutes and non-central and increased cooling channels.
- Squared outboard inserts offer four economic cutting edges.
- Complete product portfolio offers standard L/D ratios up to 5 x D.

Versatility

- Drill holes up to 5 x D in steel, cast iron, ductile iron, stainless steel, and non-ferrous materials.
- Use where speed and economy are prime considerations.
- Use DFSP drills in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Use X-offset on turning machines to adjust the drill diameter and eliminate the need for specials in many applications, and on machining centers to reach tolerance optimization.
- Eccentric chuck available as standard.
- Quick and easy insert grade and/or geometry change to address material and application changes.

Boost your productivity even further with the latest Beyond™ insert grades.



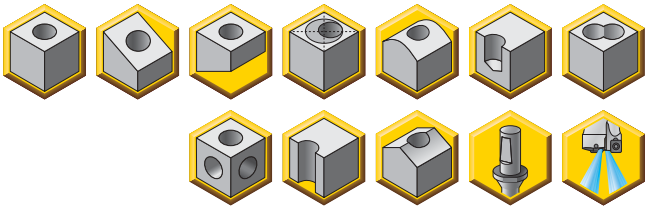
Reliability

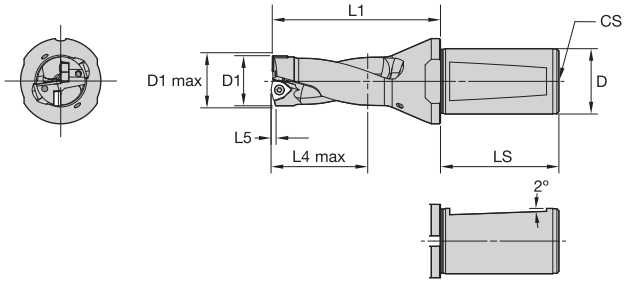
- High accuracy holes in any feed rates.
- Gain outstanding results using Beyond grades for DFT™ and SPGX/SPPX inserts.
- High wear resistance in interrupted cuts due to squared outboard insert.

Customization

- Use DFSP cartridges to extend diameter range up to 85mm (3.35") in L/D ratios up to 5 x D.
- Intermediate diameters, multistep drills, and other non-standard shanks are available.
- Contact our engineered solutions team for recommendations.

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J103–J104 for inserts.







WD Shank • 2 x D • Metric

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R2WD20M	–	–	–	14,00	.550	15,00	50,0	28,0	0,3	SPGX0502..	DFTX202..
DFSP145R2WD20M *	–	–	–	14,50	.570	15,50	53,0	29,0	0,4	SPGX0502..	DFTX202..
DFSP150R2WD20M	–	–	–	15,00	.590	16,00	54,0	30,0	0,4	SPGX0502..	DFTX202..
DFSP155R2WD20M	–	–	–	15,50	.610	16,50	55,0	31,0	0,4	SPGX0502..	DFTX202..
DFSP160R2WD20M	–	–	–	16,00	.630	17,00	56,0	32,0	0,4	SPGX0502..	DFTX202..
–	DFSP165R2WD32M	–	–	16,50	.650	17,50	62,0	33,0	0,5	SPGX0502..	DFTX202..
–	DFSP170R2WD32M	–	–	17,00	.670	18,00	63,0	34,0	0,5	SPGX0502..	DFTX202..
–	DFSP175R2WD32M	–	–	17,50	.690	18,50	64,0	35,0	0,5	SPGX0603..	DFT0303..
–	DFSP180R2WD32M	–	–	18,00	.710	19,00	65,0	36,0	0,5	SPGX0603..	DFT0303..
–	DFSP185R2WD32M	–	–	18,50	.730	19,50	66,0	37,0	0,6	SPGX0603..	DFT0303..
–	DFSP190R2WD32M	–	–	19,00	.750	20,00	67,0	38,0	0,6	SPGX0603..	DFT0303..
–	DFSP195R2WD32M	–	–	19,50	.770	20,50	68,0	39,0	0,6	SPGX0603..	DFT0303..
–	DFSP200R2WD32M	–	–	20,00	.790	21,00	72,0	40,0	0,6	SPGX0603..	DFT0303..
–	DFSP210R2WD32M	–	–	21,00	.830	22,00	74,0	42,0	0,7	SPGX0603..	DFT0303..
–	DFSP220R2WD32M	–	–	22,00	.870	23,00	76,0	44,0	0,5	SPGX0703..	DFT05T3..
–	DFSP230R2WD32M	–	–	23,00	.910	24,00	78,0	46,0	0,6	SPGX0703..	DFT05T3..
–	DFSP240R2WD32M	–	–	24,00	.945	25,00	80,0	48,0	0,6	SPGX0703..	DFT05T3..
–	DFSP250R2WD32M	–	–	25,00	.984	26,00	83,0	50,0	0,7	SPGX0703..	DFT05T3..
–	DFSP260R2WD32M	–	–	26,00	1.024	27,00	86,0	52,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP265R2WD32M	–	–	26,50	1.043	27,50	87,0	53,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP270R2WD32M	–	–	27,00	1.063	28,00	89,0	54,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP280R2WD32M	–	–	28,00	1.102	29,00	91,0	56,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP290R2WD32M	–	–	29,00	1.142	30,00	94,0	58,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP300R2WD32M	–	–	30,00	1.181	31,00	97,0	60,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP310R2WD32M	–	–	31,00	1.221	32,00	100,0	62,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP320R2WD32M	–	–	32,00	1.260	33,00	103,0	64,0	1,0	SPPX09T3..	DFT05T3..
–	DFSP330R2WD32M	–	–	33,00	1.299	34,00	105,0	66,0	0,9	SPPX1204..	DFT06T3..
–	DFSP340R2WD32M	–	–	34,00	1.339	35,00	108,0	68,0	0,9	SPPX1204..	DFT06T3..
–	DFSP350R2WD32M	–	–	35,00	1.378	36,00	111,0	70,0	1,0	SPPX1204..	DFT06T3..
–	DFSP360R2WD32M	–	–	36,00	1.417	37,00	114,0	72,0	1,0	SPPX1204..	DFT06T3..
–	DFSP370R2WD32M	–	–	37,00	1.457	38,00	117,0	74,0	1,1	SPPX1204..	DFT06T3..
–	DFSP375R2WD32M *	–	–	37,50	1.476	38,50	118,0	75,0	1,1	SPPX1204..	DFT06T3..
–	DFSP380R2WD32M	–	–	38,00	1.496	39,00	119,0	76,0	1,1	SPPX1204..	DFT06T3..
–	DFSP390R2WD32M	–	–	39,00	1.535	40,00	122,0	78,0	1,2	SPPX1204..	DFT06T3..
–	DFSP400R2WD32M	–	–	40,00	1.575	41,00	125,0	80,0	1,2	SPPX1204..	DFT06T3..
–	DFSP410R2WD32M	–	–	41,00	1.614	42,00	128,0	82,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 2 x D • Metric — continued)

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
—	**DFSP420R2WD32M**	—	—	42,00	1.654	43,00	131,0	84,0	1,3	SPPX1204..	DFT0704..
—	**DFSP430R2WD32M**	—	—	43,00	1.693	44,00	133,0	86,0	1,3	SPPX1204..	DFT0704..
—	**DFSP440R2WD32M**	—	—	44,00	1.732	45,00	135,0	88,0	1,4	SPPX15T5..	DFT0704..
—	—	**DFSP450R2WD40M**	—	45,00	1.772	46,00	137,0	90,0	1,4	SPPX15T5..	DFT0704..
—	—	**DFSP460R2WD40M**	—	46,00	1.811	47,00	140,0	92,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP470R2WD40M**	—	47,00	1.850	48,00	142,0	94,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP480R2WD40M**	—	48,00	1.890	49,00	144,0	96,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP490R2WD40M**	—	49,00	1.929	50,00	146,0	98,0	1,4	SPPX15T5..	DFT0905..
—	—	**DFSP500R2WD40M**	—	50,00	1.969	51,00	148,0	100,0	1,5	SPPX15T5..	DFT0905..
—	—	**DFSP505R2WD40M**	—	50,50	1.988	51,50	148,0	100,0	1,5	SPPX15T5..	DFT0905..
—	—	**DFSP510R2WD40M**	—	51,00	2.008	52,00	150,0	102,0	1,6	SPPX15T5..	DFT0905..
—	—	**DFSP520R2WD40M**	—	52,00	2.047	53,00	152,0	104,0	1,6	SPPX15T5..	DFT0905..
—	—	**DFSP530R2WD40M**	—	53,00	2.087	54,00	154,0	106,0	1,7	SPPX15T5..	DFT0905..
—	—	**DFSP540R2WD40M**	—	54,00	2.126	55,00	156,0	108,0	1,7	SPPX15T5..	DFT0905..
—	—	—	**DFSP550R2WD50M**	55,00	2.165	56,00	158,0	110,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



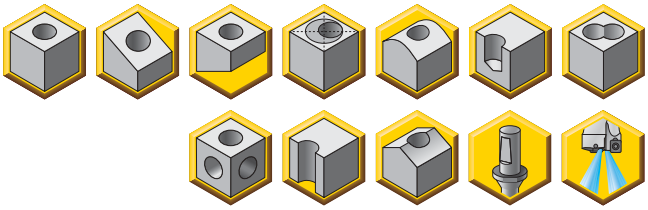

diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
14.00–17.00	DFTX202..	**193.281**	0,6	.44	SPGX0502..	**193.281**	0,6	.44	**170.370**	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
41.00–43.00	DFT0704..	**191.916**	6	4.43	SPPX1204..	**191.916**	3	2.21	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**192.433**	3	2.21	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

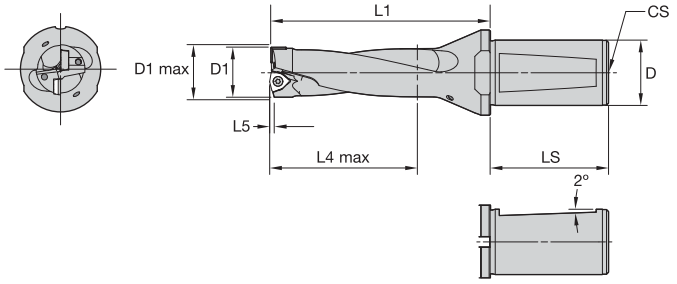
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	45	—
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J103–J104 for inserts.







WD Shank • 3 x D • Metric

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R3WD20M	–	–	–	14,00	.550	15,00	64,0	42,0	0,3	SPGX0502..	DFTX202..
DFSP145R3WD20M	–	–	–	14,50	.570	15,50	67,5	43,5	0,4	SPGX0502..	DFTX202..
DFSP150R3WD20M	–	–	–	15,00	.590	16,00	69,0	45,0	0,4	SPGX0502..	DFTX202..
DFSP155R3WD20M	–	–	–	15,50	.610	16,50	70,5	46,5	0,4	SPGX0502..	DFTX202..
DFSP160R3WD20M	–	–	–	16,00	.630	17,00	72,0	48,0	0,4	SPGX0502..	DFTX202..
–	**DFSP165R3WD32M**	–	–	16,50	.650	17,50	78,5	49,5	0,5	SPGX0502..	DFTX202..
–	**DFSP170R3WD32M**	–	–	17,00	.670	18,00	80,0	51,0	0,5	SPGX0502..	DFTX202..
–	**DFSP175R3WD32M**	–	–	17,50	.690	18,50	81,5	52,5	0,5	SPGX0603..	DFT0303..
–	**DFSP180R3WD32M**	–	–	18,00	.710	19,00	83,0	54,0	0,5	SPGX0603..	DFT0303..
–	**DFSP185R3WD32M**	–	–	18,50	.730	19,50	84,5	55,5	0,6	SPGX0603..	DFT0303..
–	**DFSP190R3WD32M**	–	–	19,00	.750	20,00	86,0	57,0	0,6	SPGX0603..	DFT0303..
–	**DFSP195R3WD32M**	–	–	19,50	.770	20,50	87,5	58,5	0,6	SPGX0603..	DFT0303..
–	**DFSP200R3WD32M**	–	–	20,00	.790	21,00	92,0	60,0	0,6	SPGX0603..	DFT0303..
–	**DFSP210R3WD32M**	–	–	21,00	.830	22,00	95,0	63,0	0,7	SPGX0603..	DFT0303..
–	**DFSP220R3WD32M**	–	–	22,00	.870	23,00	98,0	66,0	0,5	SPGX0703..	DFT05T3..
–	**DFSP230R3WD32M**	–	–	23,00	.910	24,00	101,0	69,0	0,6	SPGX0703..	DFT05T3..
–	**DFSP240R3WD32M**	–	–	24,00	.945	25,00	104,0	72,0	0,6	SPGX0703..	DFT05T3..
–	**DFSP250R3WD32M**	–	–	25,00	.984	26,00	108,0	75,0	0,7	SPGX0703..	DFT05T3..
–	**DFSP260R3WD32M**	–	–	26,00	1.024	27,00	112,0	78,0	0,7	SPPX09T3..	DFT05T3..
–	**DFSP265R3WD32M**	–	–	26,50	1.043	27,50	113,5	79,5	0,7	SPPX09T3..	DFT05T3..
–	**DFSP270R3WD32M**	–	–	27,00	1.063	28,00	116,0	81,0	0,8	SPPX09T3..	DFT05T3..
–	**DFSP280R3WD32M**	–	–	28,00	1.102	29,00	119,0	84,0	0,8	SPPX09T3..	DFT05T3..
–	**DFSP290R3WD32M**	–	–	29,00	1.142	30,00	123,0	87,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP300R3WD32M**	–	–	30,00	1.181	31,00	127,0	90,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP310R3WD32M**	–	–	31,00	1.221	32,00	131,0	93,0	0,9	SPPX09T3..	DFT05T3..
–	**DFSP320R3WD32M**	–	–	32,00	1.260	33,00	135,0	96,0	1,0	SPPX09T3..	DFT05T3..
–	**DFSP330R3WD32M**	–	–	33,00	1.299	34,00	138,0	99,0	0,9	SPPX1204..	DFT06T3..
–	**DFSP340R3WD32M**	–	–	34,00	1.339	35,00	142,0	102,0	0,9	SPPX1204..	DFT06T3..
–	**DFSP350R3WD32M**	–	–	35,00	1.378	36,00	146,0	105,0	1,0	SPPX1204..	DFT06T3..
–	**DFSP360R3WD32M**	–	–	36,00	1.417	37,00	150,0	108,0	1,0	SPPX1204..	DFT06T3..
–	**DFSP370R3WD32M**	–	–	37,00	1.457	38,00	154,0	111,0	1,1	SPPX1204..	DFT06T3..
–	**DFSP375R3WD32M**	–	–	37,50	1.476	38,50	155,5	112,5	1,1	SPPX1204..	DFT06T3..
–	**DFSP380R3WD32M**	–	–	38,00	1.496	39,00	157,0	114,0	1,1	SPPX1204..	DFT06T3..
–	**DFSP390R3WD32M**	–	–	39,00	1.535	40,00	161,0	117,0	1,2	SPPX1204..	DFT06T3..
–	**DFSP400R3WD32M**	–	–	40,00	1.575	41,00	165,0	120,0	1,2	SPPX1204..	DFT06T3..
–	**DFSP410R3WD32M**	–	–	41,00	1.614	42,00	169,0	123,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 3 x D • Metric — continued)

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
—	**DFSP420R3WD32M**	—	—	42,00	1.654	43,00	173,0	126,0	1,3	SPPX1204..	DFT0704..
—	**DFSP430R3WD32M**	—	—	43,00	1.693	44,00	176,0	129,0	1,3	SPPX1204..	DFT0704..
—	**DFSP440R3WD32M**	—	—	44,00	1.732	45,00	179,0	132,0	1,4	SPPX15T5..	DFT0704..
—	—	**DFSP450R3WD40M**	—	45,00	1.772	46,00	182,0	135,0	1,4	SPPX15T5..	DFT0704..
—	—	**DFSP460R3WD40M**	—	46,00	1.811	47,00	186,0	138,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP470R3WD40M**	—	47,00	1.850	48,00	189,0	141,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP480R3WD40M**	—	48,00	1.890	49,00	192,0	144,0	1,5	SPPX15T5..	DFT0704..
—	—	**DFSP490R3WD40M**	—	49,00	1.929	50,00	195,0	147,0	1,4	SPPX15T5..	DFT0905..
—	—	**DFSP500R3WD40M**	—	50,00	1.969	51,00	198,0	150,0	1,5	SPPX15T5..	DFT0905..
—	—	**DFSP505R3WD40M**	—	50,50	1.988	51,50	199,5	151,5	1,5	SPPX15T5..	DFT0905..
—	—	**DFSP510R3WD40M**	—	51,00	2.008	52,00	201,0	153,0	1,6	SPPX15T5..	DFT0905..
—	—	**DFSP520R3WD40M**	—	52,00	2.047	53,00	204,0	156,0	1,6	SPPX15T5..	DFT0905..
—	—	**DFSP530R3WD40M**	—	53,00	2.087	54,00	207,0	159,0	1,7	SPPX15T5..	DFT0905..
—	—	**DFSP540R3WD40M**	—	54,00	2.126	55,00	210,0	162,0	1,7	SPPX15T5..	DFT0905..
—	—	—	**DFSP550R3WD50M**	55,00	2.165	56,00	213,0	165,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).

Spare Parts



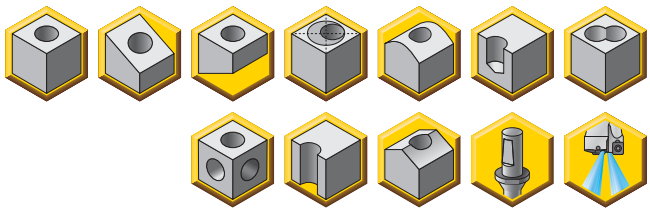
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
14.00–17.00	DFTX202..	**193.281**	0,6	.44	SPGX0502..	**193.281**	0,6	.44	**170.370**	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
41.00–43.00	DFT0704..	**191.916**	6	4.43	SPPX1204..	**191.916**	3	2.21	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**192.433**	3	2.21	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

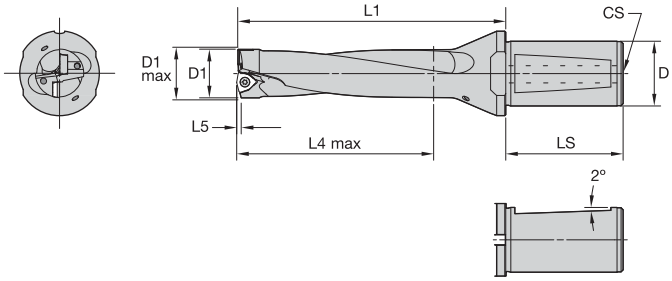
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
20	45	—
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J103–J104 for inserts.







WD Shank • 4 x D • Metric

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP140R4WD20M	–	–	–	14,00	.551	15,00	78,0	56,0	0,3	SPGX0502..	DFTX202..
DFSP145R4WD20M	–	–	–	14,50	.571	15,50	82,0	58,0	0,4	SPGX0502..	DFTX202..
DFSP150R4WD20M	–	–	–	15,00	.591	16,00	84,0	60,0	0,4	SPGX0502..	DFTX202..
DFSP155R4WD20M *	–	–	–	15,50	.610	16,50	86,0	62,0	0,4	SPGX0502..	DFTX202..
DFSP160R4WD20M	–	–	–	16,00	.630	17,00	88,0	64,0	0,4	SPGX0502..	DFTX202..
DFSP165R4WD20M *	–	–	–	16,50	.650	17,50	95,0	66,0	0,5	SPGX0502..	DFTX202..
DFSP170R4WD20M	–	–	–	17,00	.669	18,00	97,0	68,0	0,5	SPGX0502..	DFTX202..
–	DFSP175R4WD32M	–	–	17,50	.690	18,50	99,0	70,0	0,5	SPGX0603..	DFT0303..
–	DFSP180R4WD32M	–	–	18,00	.710	19,00	101,0	72,0	0,5	SPGX0603..	DFT0303..
–	DFSP185R4WD32M	–	–	18,50	.730	19,50	103,0	74,0	0,6	SPGX0603..	DFT0303..
–	DFSP190R4WD32M	–	–	19,00	.750	20,00	105,0	76,0	0,6	SPGX0603..	DFT0303..
–	DFSP195R4WD32M	–	–	19,50	.770	20,50	107,0	78,0	0,6	SPGX0603..	DFT0303..
–	DFSP200R4WD32M	–	–	20,00	.790	21,00	112,0	80,0	0,6	SPGX0603..	DFT0303..
–	DFSP210R4WD32M	–	–	21,00	.830	22,00	96,0	64,0	0,7	SPGX0603..	DFT0303..
–	DFSP220R4WD32M	–	–	22,00	.870	23,00	120,0	88,0	0,5	SPGX0703..	DFT05T3..
–	DFSP230R4WD32M	–	–	23,00	.910	24,00	124,0	92,0	0,6	SPGX0703..	DFT05T3..
–	DFSP240R4WD32M	–	–	24,00	.945	25,00	128,0	96,0	0,6	SPGX0703..	DFT05T3..
–	DFSP250R4WD32M	–	–	25,00	.984	26,00	133,0	100,0	0,7	SPGX0703..	DFT05T3..
–	DFSP260R4WD32M	–	–	26,00	1.024	27,00	138,0	104,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP265R4WD32M	–	–	26,50	1.043	27,50	140,0	106,0	0,7	SPPX09T3..	DFT05T3..
–	DFSP270R4WD32M	–	–	27,00	1.063	28,00	143,0	108,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP280R4WD32M	–	–	28,00	1.102	29,00	147,0	112,0	0,8	SPPX09T3..	DFT05T3..
–	DFSP290R4WD32M	–	–	29,00	1.142	30,00	152,0	116,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP300R4WD32M	–	–	30,00	1.181	31,00	157,0	120,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP310R4WD32M	–	–	31,00	1.221	32,00	162,0	124,0	0,9	SPPX09T3..	DFT05T3..
–	DFSP320R4WD32M	–	–	32,00	1.260	33,00	167,0	128,0	1,0	SPPX09T3..	DFT05T3..
–	DFSP330R4WD32M	–	–	33,00	1.299	34,00	171,0	132,0	0,9	SPPX1204..	DFT06T3..
–	DFSP340R4WD32M	–	–	34,00	1.339	35,00	176,0	136,0	0,9	SPPX1204..	DFT06T3..
–	DFSP350R4WD32M	–	–	35,00	1.378	36,00	181,0	140,0	1,0	SPPX1204..	DFT06T3..
–	DFSP360R4WD32M	–	–	36,00	1.417	37,00	186,0	144,0	1,0	SPPX1204..	DFT06T3..
–	DFSP370R4WD32M	–	–	37,00	1.457	38,00	191,0	148,0	1,1	SPPX1204..	DFT06T3..
–	DFSP375R4WD32M	–	–	37,50	1.476	38,50	193,0	150,0	1,1	SPPX1204..	DFT06T3..
–	DFSP380R4WD32M	–	–	38,00	1.496	39,00	195,0	152,0	1,1	SPPX1204..	DFT06T3..
–	DFSP390R4WD32M	–	–	39,00	1.535	40,00	200,0	156,0	1,2	SPPX1204..	DFT06T3..
–	DFSP400R4WD32M	–	–	40,00	1.575	41,00	205,0	160,0	1,2	SPPX1204..	DFT06T3..
–	DFSP410R4WD32M	–	–	41,00	1.614	42,00	210,0	164,0	1,2	SPPX1204..	DFT0704..

(continued)

(WD Shank • 4 x D • Metric — continued)

D				D1 diameter							
20	32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
–	**DFSP420R4WD32M**	–	–	42,00	1.654	43,00	215,0	168,0	1,3	SPPX1204..	DFT0704..
–	**DFSP430R4WD32M**	–	–	43,00	1.693	44,00	219,0	172,0	1,3	SPPX1204..	DFT0704..
–	**DFSP440R4WD32M**	–	–	44,00	1.732	45,00	223,0	176,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP450R4WD40M**	–	45,00	1.772	46,00	227,0	180,0	1,4	SPPX15T5..	DFT0704..
–	–	**DFSP460R4WD40M**	–	46,00	1.811	47,00	232,0	184,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP470R4WD40M**	–	47,00	1.850	48,00	236,0	188,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP480R4WD40M**	–	48,00	1.890	49,00	240,0	192,0	1,5	SPPX15T5..	DFT0704..
–	–	**DFSP490R4WD40M**	–	49,00	1.929	50,00	244,0	196,0	1,4	SPPX15T5..	DFT0905..
–	–	**DFSP500R4WD40M**	–	50,00	1.969	51,00	248,0	200,0	1,5	SPPX15T5..	DFT0905..
–	–	**DFSP510R4WD40M**	–	51,00	2.008	52,00	252,0	204,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP520R4WD40M**	–	52,00	2.047	53,00	256,0	208,0	1,6	SPPX15T5..	DFT0905..
–	–	**DFSP530R4WD40M**	–	53,00	2.087	54,00	260,0	212,0	1,7	SPPX15T5..	DFT0905..
–	–	**DFSP540R4WD40M**	–	54,00	2.126	55,00	264,0	216,0	1,7	SPPX15T5..	DFT0905..
–	–	–	**DFSP550R4WD50M**	55,00	2.165	56,00	268,0	220,0	1,8	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts



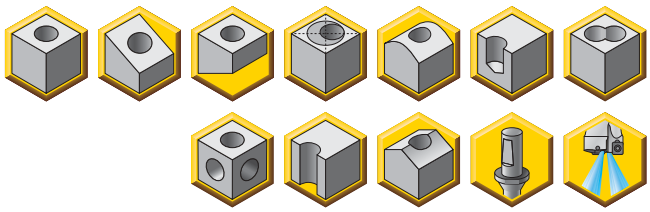
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
–	DFTX202..	–	–	–	SPGX0502..	–	–	–	–	T6
17.50–21.00	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
41.00–43.00	DFT0704..	**192.433**	6	4.43	SPPX1204..	**191.698**	3	2.21	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**191.698**	3	2.21	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

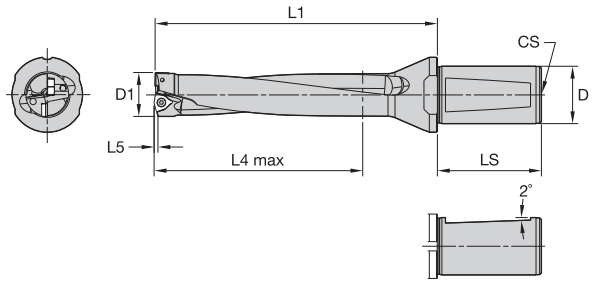
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws and Torx wrench.
- Order inserts for DFSP separately.
  See pages J103–J104 for inserts.







WD Shank • 5 x D • Metric

D			D1							
			D1 diameter							
32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP200R5WD32M	–	–	20,00	.787	–	132,0	100,0	0,6	SPGX0603..	DFT0303..
DFSP210R5WD32M	–	–	21,00	.827	–	137,0	105,0	0,7	SPGX0603..	DFT0303..
DFSP220R5WD32M	–	–	22,00	.866	–	142,0	110,0	0,5	SPGX0703..	DFT05T3..
DFSP230R5WD32M	–	–	23,00	.906	–	147,0	115,0	0,6	SPGX0703..	DFT05T3..
DFSP240R5WD32M	–	–	24,00	.945	–	152,0	120,0	0,6	SPGX0703..	DFT05T3..
DFSP250R5WD32M	–	–	25,00	.984	–	158,0	125,0	0,7	SPGX0703..	DFT05T3..
DFSP260R5WD32M	–	–	26,00	1.024	–	164,0	130,0	0,7	SPPX09T3..	DFT05T3..
DFSP265R5WD32M	–	–	26,50	1.043	–	166,5	132,5	0,7	SPPX09T3..	DFT05T3..
DFSP270R5WD32M	–	–	27,00	1.063	–	170,0	135,0	0,8	SPPX09T3..	DFT05T3..
DFSP280R5WD32M	–	–	28,00	1.102	–	175,0	140,0	0,8	SPPX09T3..	DFT05T3..
DFSP290R5WD32M	–	–	29,00	1.142	–	181,0	145,0	0,9	SPPX09T3..	DFT05T3..
DFSP300R5WD32M	–	–	30,00	1.181	–	187,0	150,0	0,9	SPPX09T3..	DFT05T3..
DFSP310R5WD32M	–	–	31,00	1.221	–	193,0	155,0	0,9	SPPX09T3..	DFT05T3..
DFSP320R5WD32M	–	–	32,00	1.260	–	199,0	160,0	1,0	SPPX09T3..	DFT05T3..
DFSP330R5WD32M	–	–	33,00	1.299	–	204,0	165,0	0,9	SPPX1204..	DFT06T3..
DFSP340R5WD32M	–	–	34,00	1.339	–	210,0	170,0	0,9	SPPX1204..	DFT06T3..
DFSP350R5WD32M	–	–	35,00	1.378	–	216,0	175,0	1,0	SPPX1204..	DFT06T3..
DFSP360R5WD32M	–	–	36,00	1.417	–	222,0	180,0	1,0	SPPX1204..	DFT06T3..
DFSP370R5WD32M	–	–	37,00	1.457	–	228,0	185,0	1,1	SPPX1204..	DFT06T3..
DFSP375R5WD32M	–	–	37,50	1.476	–	230,5	187,5	1,1	SPPX1204..	DFT06T3..
DFSP380R5WD32M	–	–	38,00	1.496	–	233,0	190,0	1,1	SPPX1204..	DFT06T3..
DFSP390R5WD32M	–	–	39,00	1.535	–	239,0	195,0	1,2	SPPX1204..	DFT06T3..
DFSP400R5WD32M	–	–	40,00	1.575	–	245,0	200,0	1,2	SPPX1204..	DFT06T3..
DFSP410R5WD32M	–	–	41,00	1.614	–	251,0	205,0	1,2	SPPX1204..	DFT0704..
DFSP420R5WD32M	–	–	42,00	1.654	–	257,0	210,0	1,3	SPPX1204..	DFT0704..
DFSP430R5WD32M	–	–	43,00	1.693	–	262,0	215,0	1,3	SPPX1204..	DFT0704..
DFSP440R5WD32M	–	–	44,00	1.732	–	267,0	220,0	1,4	SPPX15T5..	DFT0704..
–	DFSP450R5WD40M	–	45,00	1.772	–	272,0	225,0	1,4	SPPX15T5..	DFT0704..
–	DFSP460R5WD40M	–	46,00	1.811	–	278,0	230,0	1,5	SPPX15T5..	DFT0704..
–	DFSP470R5WD40M	–	47,00	1.850	–	283,0	235,0	1,5	SPPX15T5..	DFT0704..
–	DFSP480R5WD40M	–	48,00	1.890	–	288,0	240,0	1,5	SPPX15T5..	DFT0704..
–	DFSP490R5WD40M	–	49,00	1.929	–	293,0	245,0	1,4	SPPX15T5..	DFT0905..
–	DFSP500R5WD40M	–	50,00	1.969	–	298,0	250,0	1,5	SPPX15T5..	DFT0905..
–	DFSP510R5WD40M *	–	51,00	2.008	–	303,0	255,0	1,6	SPPX15T5..	DFT0905..
–	DFSP520R5WD40M	–	52,00	2.047	–	308,0	260,0	1,6	SPPX15T5..	DFT0905..
–	DFSP530R5WD40M	–	53,00	2.087	–	313,0	265,0	1,7	SPPX15T5..	DFT0905..
–	DFSP540R5WD40M	–	54,00	2.126	–	318,0	270,0	1,7	SPPX15T5..	DFT0905..
–	–	DFSP550R5WD50M	55,00	2.165	–	323,0	275,0	1,8	SPPX15T5..	DFT0905..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(WD Shank • 5 x D • Metric — continued)

Spare Parts



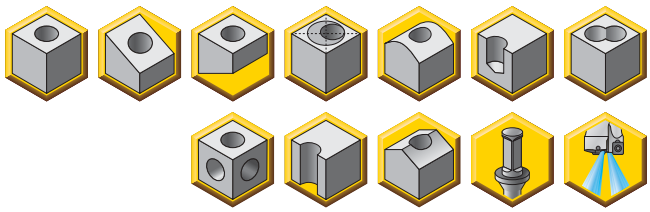
diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
17.50–21.00	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
22.00–25.00	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
26.00–32.00	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
33.00–40.00	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
41.00–43.00	DFT0704..	**192.433**	6	4.43	SPPX1204..	**191.698**	3	2.21	**170.025**	T15
44.00–48.00	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**192.433**	3	2.21	**170.025**	T15
49.00–55.00	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

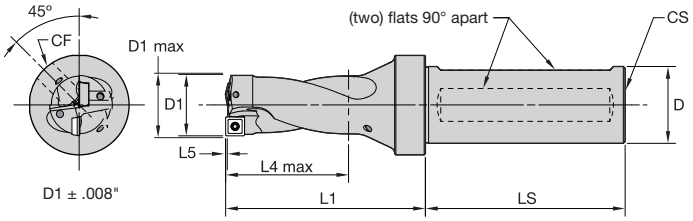
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

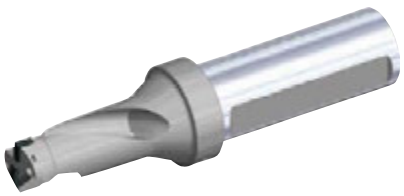
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J103–J104 for inserts.







Flange Shank • 2 x D • Inch

D					D1 diameter							
0.750	1.000	1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP0563R2SSF075	–	–	–	–	14,30	.563	.602	2.06	1.13	.01	SPGX0502..	DFTX202..
DFSP0594R2SSF075	–	–	–	–	15,09	.594	.633	2.13	1.19	.02	SPGX0502..	DFTX202..
DFSP0625R2SSF075	–	–	–	–	15,88	.625	.664	2.19	1.25	.02	SPGX0502..	DFTX202..
DFSP0656R2SSF075 *	–	–	–	–	16,66	.656	.695	2.25	1.31	.02	SPGX0502..	DFTX202..
DFSP0688R2SSF075	–	–	–	–	17,48	.688	.727	2.31	1.38	.02	SPGX0502..	DFTX202..
DFSP0703R2SSF075	–	–	–	–	17,86	.703	.742	2.34	1.41	.02	SPGX0603..	DFT0303..
DFSP0734R2SSF075	–	–	–	–	18,64	.734	.773	2.42	1.47	.02	SPGX0603..	DFT0303..
–	DFSP0750R2SSF100	–	–	–	19,05	.750	.789	2.46	1.50	.02	SPGX0603..	DFT0303..
–	DFSP0781R2SSF100	–	–	–	19,84	.781	.820	2.54	1.56	.02	SPGX0603..	DFT0303..
–	DFSP0813R2SSF100	–	–	–	20,65	.813	.852	2.62	1.63	.03	SPGX0603..	DFT0303..
–	DFSP0844R2SSF100 *	–	–	–	21,44	.844	.883	2.70	1.69	.03	SPGX0603..	DFT0303..
–	DFSP0875R2SSF100	–	–	–	22,23	.875	.914	2.77	1.75	.02	SPGX0703..	DFT05T3..
–	DFSP0906R2SSF100	–	–	–	23,01	.906	.945	2.84	1.81	.02	SPGX0703..	DFT05T3..
–	DFSP0938R2SSF100	–	–	–	23,83	.938	.977	2.93	1.88	.02	SPGX0703..	DFT05T3..
–	DFSP0969R2SSF100	–	–	–	24,61	.969	1.008	3.01	1.94	.03	SPGX0703..	DFT05T3..
–	DFSP0984R2SSF100	–	–	–	24,99	.984	1.023	3.04	1.97	.03	SPGX0703..	DFT05T3..
–	DFSP1000R2SSF100	DFSP1000R2SSF125	–	–	25,40	1.000	1.040	3.25	2.00	.03	SPGX0703..	DFT05T3..
–	–	–	DFSP1000R2SSF150 *	–	25,40	1.000	1.039	3.25	2.00	.03	SPGX0703..	DFT05T3..
–	–	DFSP1031R2SSF125	–	–	26,19	1.031	1.071	3.44	2.06	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1063R2SSF125	–	–	27,00	1.063	1.103	3.50	2.13	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1094R2SSF125	–	–	27,79	1.094	1.134	3.56	2.19	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1125R2SSF125	–	–	28,58	1.125	1.165	3.75	2.25	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1156R2SSF125	–	–	29,36	1.156	1.196	3.81	2.31	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1188R2SSF125	–	–	30,18	1.188	1.228	3.88	2.38	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1219R2SSF125	–	–	30,96	1.219	1.259	4.06	2.44	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1250R2SSF125	–	–	31,75	1.250	1.290	4.12	2.50	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1313R2SSF125	DFSP1313R2SSF150	–	33,35	1.313	1.353	4.25	2.63	.04	SPPX1204..	DFT06T3..
–	–	DFSP1375R2SSF125	DFSP1375R2SSF150	–	34,93	1.375	1.415	4.37	2.75	.04	SPPX1204..	DFT06T3..
–	–	DFSP1438R2SSF125	–	–	36,53	1.438	1.478	4.63	2.88	.04	SPPX1204..	DFT06T3..
–	–	DFSP1469R2SSF125	–	–	37,31	1.469	1.509	4.69	2.94	.04	SPPX1204..	DFT06T3..
–	–	DFSP1500R2SSF125	DFSP1500R2SSF150	–	38,10	1.500	1.540	4.75	3.00	.04	SPPX1204..	DFT06T3..
–	–	DFSP1563R2SSF125	DFSP1563R2SSF150	–	39,70	1.563	1.603	4.88	3.13	.05	SPPX1204..	DFT06T3..
–	–	DFSP1625R2SSF125	DFSP1625R2SSF150	–	41,28	1.625	1.665	5.00	3.25	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1656R2SSF150	–	42,06	1.656	1.696	5.06	3.31	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1688R2SSF150	–	42,88	1.688	1.728	5.13	3.38	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1750R2SSF150	–	44,45	1.750	1.790	5.25	3.50	.05	SPPX15T5..	DFT0704..
–	–	–	DFSP1813R2SSF150	–	46,05	1.813	1.853	5.50	3.63	.06	SPPX15T5..	DFT0704..
–	–	–	DFSP1875R2SSF150	–	47,63	1.875	1.915	5.63	3.75	.06	SPPX15T5..	DFT0704..
–	–	–	DFSP1938R2SSF150	–	49,23	1.938	1.978	5.88	3.88	.06	SPPX15T5..	DFT0905..
–	–	–	DFSP2000R2SSF150	DFSP2000R2SSF200	50,80	2.000	2.040	6.00	4.00	.06	SPPX15T5..	DFT0905..
–	–	–	DFSP2125R2SSF150	DFSP2125R2SSF200	53,98	2.125	2.165	6.37	4.25	.07	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(Flange Shank • 2 x D • Inch — continued)

Spare Parts









diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
.563–.688	DFTX202..	**193.281**	0,6	.44	SPGX0502..	**193.281**	0,6	.44	**170.370**	T6
.703–.844	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
.875–1.000	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
1.031–1.281	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
1.313–1.563	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.625–1.688	DFT0704..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.750–1.875	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**191.698**	3	2.21	**170.025**	T15
1.938–2.125	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

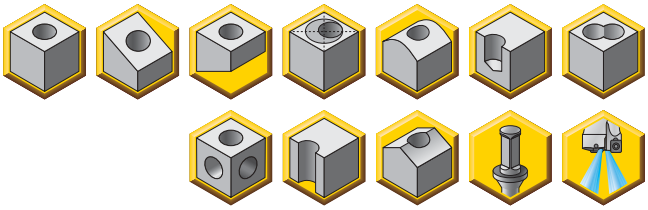
NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

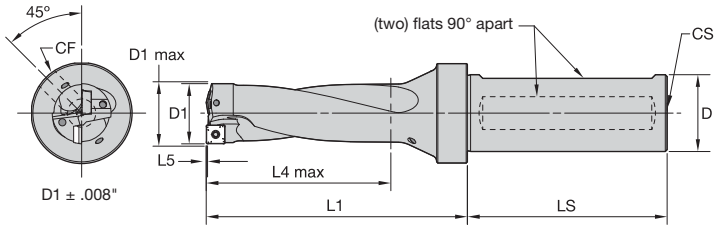
WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



D	LS	CF	CS	pipe plug
0.750	2.00	1/8-27 NPT	R 1/8-27 NPT	**1025612**
1.000	3.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.250	3.25	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.500	3.75	1/8-27 NPT	R 1/4-18 NPT	**1025612**
2.000	4.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**

- DFSP combines the economical squared outboard insert with the superior centering capabilities of the trigon inboard insert.
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- Order inserts for DFSP separately.
See pages J103–J104 for inserts.







Flange Shank • 3 x D • Inch

D					D1 diameter							
0.750	1.000	1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP0563R3SSF075	–	–	–	–	14,30	.563	.602	2.62	1.69	.01	SPGX0502..	DFTX202..
DFSP0594R3SSF075	–	–	–	–	15,09	.594	.633	2.72	1.78	.02	SPGX0502..	DFTX202..
DFSP0625R3SSF075	–	–	–	–	15,88	.625	.664	2.81	1.88	.02	SPGX0502..	DFTX202..
DFSP0656R3SSF075	–	–	–	–	16,66	.656	.695	2.91	1.97	.02	SPGX0502..	DFTX202..
DFSP0688R3SSF075	–	–	–	–	17,48	.688	.727	3.00	2.06	.02	SPGX0502..	DFTX202..
DFSP0703R3SSF075	–	–	–	–	17,86	.703	.742	3.05	2.11	.02	SPGX0603..	DFT0303..
DFSP0734R3SSF075	–	–	–	–	18,64	.734	.773	3.18	2.20	.02	SPGX0603..	DFT0303..
–	DFSP0750R3SSF100	–	–	–	19,05	.750	.789	3.21	2.25	.02	SPGX0603..	DFT0303..
–	DFSP0781R3SSF100	–	–	–	19,84	.781	.820	3.32	2.34	.02	SPGX0603..	DFT0303..
–	DFSP0813R3SSF100	–	–	–	20,65	.813	.852	3.43	2.44	.03	SPGX0603..	DFT0303..
–	DFSP0844R3SSF100	–	–	–	21,44	.844	.883	3.53	2.53	.03	SPGX0603..	DFT0303..
–	DFSP0875R3SSF100	–	–	–	22,23	.875	.914	3.65	2.63	.02	SPGX0703..	DFT05T3..
–	DFSP0906R3SSF100 *	–	–	–	23,01	.906	.945	3.75	2.72	.02	SPGX0703..	DFT05T3..
–	DFSP0938R3SSF100	–	–	–	23,83	.938	.977	3.86	2.81	.02	SPGX0703..	DFT05T3..
–	DFSP0969R3SSF100	–	–	–	24,61	.969	1.008	3.98	2.91	.03	SPGX0703..	DFT05T3..
–	DFSP0984R3SSF100	–	–	–	24,99	.984	1.023	4.03	2.95	.03	SPGX0703..	DFT05T3..
–	DFSP1000R3SSF100	DFSP1000R3SSF125	DFSP1000R3SSF150	–	25,40	1.000	1.040	4.25	3.00	.03	SPGX0703..	DFT05T3..
–	–	DFSP1031R3SSF125	–	–	26,19	1.031	1.071	4.47	3.09	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1063R3SSF125	–	–	27,00	1.063	1.103	4.56	3.19	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1094R3SSF125	–	–	27,79	1.094	1.134	4.66	3.28	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1125R3SSF125	–	–	28,58	1.125	1.165	4.87	3.38	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1156R3SSF125	–	–	29,36	1.156	1.196	4.97	3.47	.03	SPPX09T3..	DFT05T3..
–	–	DFSP1188R3SSF125	–	–	30,18	1.188	1.228	5.06	3.56	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1219R3SSF125	–	–	30,96	1.219	1.259	5.28	3.66	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1250R3SSF125	–	–	31,75	1.250	1.290	5.37	3.75	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1281R3SSF125	–	–	32,54	1.281	1.321	5.47	3.84	.04	SPPX09T3..	DFT05T3..
–	–	DFSP1313R3SSF125	DFSP1313R3SSF150	–	33,35	1.313	1.353	5.56	3.94	.04	SPPX1204..	DFT06T3..
–	–	DFSP1375R3SSF125	DFSP1375R3SSF150	–	34,93	1.375	1.415	5.75	4.13	.04	SPPX1204..	DFT06T3..
–	–	DFSP1438R3SSF125	–	–	36,53	1.438	1.478	6.06	4.31	.04	SPPX1204..	DFT06T3..
–	–	DFSP1469R3SSF125	–	–	37,31	1.509	1.509	6.16	4.41	.04	SPPX1204..	DFT06T3..
–	–	DFSP1500R3SSF125	DFSP1500R3SSF150	–	38,10	1.500	1.540	6.25	4.50	.04	SPPX1204..	DFT06T3..
–	–	–	DFSP1563R3SSF150	–	39,70	1.563	1.603	6.44	4.69	.05	SPPX1204..	DFT06T3..
–	–	DFSP1625R3SSF125	DFSP1625R3SSF150	–	41,28	1.625	1.664	6.62	4.88	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1656R3SSF150 *	–	42,06	1.656	1.695	6.70	4.97	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1688R3SSF150	–	42,88	1.688	1.727	6.81	5.06	.05	SPPX1204..	DFT0704..
–	–	–	DFSP1750R3SSF150	–	44,45	1.750	1.789	7.00	5.25	.05	SPPX15T5..	DFT0704..
–	–	–	DFSP1813R3SSF150	–	46,05	1.813	1.852	7.31	5.44	.06	SPPX15T5..	DFT0704..
–	–	–	DFSP1875R3SSF150	–	47,63	1.875	1.914	7.50	5.63	.06	SPPX15T5..	DFT0704..
–	–	–	DFSP1938R3SSF150	–	49,23	1.938	1.977	7.81	5.81	.06	SPPX15T5..	DFT0905..
–	–	–	DFSP2000R3SSF150	DFSP2000R3SSF200	50,80	2.000	2.039	8.00	6.00	.06	SPPX15T5..	DFT0905..
–	–	–	DFSP2125R3SSF150	DFSP2125R3SSF200	53,98	2.125	2.164	8.50	6.38	.07	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(Flange Shank • 3 x D • Inch — continued)

Spare Parts



diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
.563–.688	DFTX202..	**193.281**	0,6	.44	SPGX0502..	**193.281**	0,6	.44	**170.370**	T6
.703–.844	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
.875–1.000	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
1.031–1.281	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
1.313–1.563	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.625–1.688	DFT0704..	**191.916**	4	2.95	SPPX1204..	**191.916**	3	2.21	**170.025**	T15
1.750–1.875	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**191.698**	3	2.21	**170.025**	T15
1.938–2.125	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



D	LS	CF	CS	pipe plug
0.750	2.00	1/8-27 NPT	R 1/8-27 NPT	**1025612**
1.000	3.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.250	3.25	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.500	3.75	1/8-27 NPT	R 1/4-18 NPT	**1025612**
2.000	4.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**

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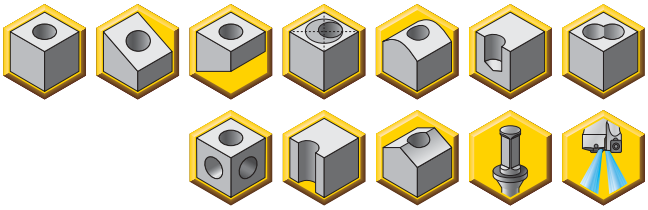
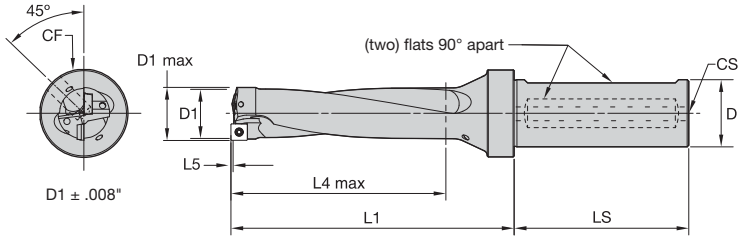
  See pages J103–J104 for inserts.







Flange Shank • 4 x D • Inch

D				D1 diameter							
1.000	1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP0750R4SSF100	–	–	–	19,05	.750	.789	3.96	3.00	.02	SPGX0603..	DFT0303..
DFSP0781R4SSF100	–	–	–	19,84	.781	.820	4.10	3.12	.02	SPGX0603..	DFT0303..
DFSP0813R4SSF100	–	–	–	20,65	.813	.852	4.24	3.25	.03	SPGX0603..	DFT0303..
DFSP0844R4SSF100	–	–	–	21,44	.844	.883	4.38	3.38	.03	SPGX0603..	DFT0303..
DFSP0875R4SSF100	–	–	–	22,23	.875	.914	4.52	3.50	.02	SPGX0703..	DFT05T3..
DFSP0906R4SSF100	–	–	–	23,01	.805	.945	4.66	3.62	.02	SPGX0703..	DFT05T3..
DFSP0938R4SSF100	–	–	–	23,83	.938	.977	4.80	3.75	.02	SPGX0703..	DFT05T3..
DFSP0969R4SSF100	–	–	–	24,61	.969	1.008	4.94	3.88	.03	SPGX0703..	DFT05T3..
DFSP0984R4SSF100	–	–	–	24,99	.984	1.023	5.01	3.94	.03	SPGX0703..	DFT05T3..
DFSP1000R4SSF100	**DFSP1000R4SSF125**	**DFSP1000R4SSF150** *	–	25,40	1.000	1.040	5.25	4.00	.03	SPGX0703..	DFT05T3..
–	**DFSP1031R4SSF125**	–	–	26,19	1.031	1.071	5.50	4.12	.03	SPPX09T3..	DFT05T3..
–	**DFSP1063R4SSF125**	–	–	27,00	1.063	1.103	5.62	4.25	.03	SPPX09T3..	DFT05T3..
–	**DFSP1094R4SSF125** *	–	–	27,79	1.094	1.134	5.75	4.38	.03	SPPX09T3..	DFT05T3..
–	**DFSP1125R4SSF125**	–	–	28,58	1.125	1.165	6.00	4.50	.03	SPPX09T3..	DFT05T3..
–	**DFSP1156R4SSF125**	–	–	29,36	1.156	1.196	6.12	4.62	.03	SPPX09T3..	DFT05T3..
–	**DFSP1188R4SSF125**	–	–	30,18	1.188	1.228	6.25	4.75	.04	SPPX09T3..	DFT05T3..
–	**DFSP1219R4SSF125**	–	–	30,96	1.219	1.259	6.50	4.88	.04	SPPX09T3..	DFT05T3..
–	**DFSP1250R4SSF125**	**DFSP1250R4SSF150**	–	31,75	1.250	1.290	6.62	5.00	.04	SPPX09T3..	DFT05T3..
–	**DFSP1313R4SSF125**	–	–	33,35	1.313	1.353	6.88	5.25	.04	SPPX1204..	DFT06T3..
–	**DFSP1375R4SSF125**	**DFSP1375R4SSF150** *	–	34,93	1.375	1.415	7.12	5.50	.04	SPPX1204..	DFT06T3..
–	–	**DFSP1406R4SSF150**	–	35,71	1.406	1.446	7.25	5.62	.04	SPPX1204..	DFT06T3..
–	**DFSP1438R4SSF125**	–	–	36,53	1.438	1.478	7.50	5.75	.04	SPPX1204..	DFT06T3..
–	**DFSP1500R4SSF125**	**DFSP1500R4SSF150**	–	38,10	1.500	1.540	7.75	6.00	.04	SPPX1204..	DFT06T3..
–	–	**DFSP1563R4SSF150**	–	39,70	1.563	1.603	8.00	6.25	.05	SPPX1204..	DFT06T3..
–	–	**DFSP1625R4SSF150**	–	41,28	1.625	1.665	8.25	6.50	.05	SPPX1204..	DFT0704..
–	–	**DFSP1656R4SSF150**	–	42,06	1.656	1.696	8.36	6.62	.05	SPPX1204..	DFT0704..
–	–	**DFSP1750R4SSF150**	–	44,45	1.750	1.790	8.75	7.00	.05	SPPX15T5..	DFT0704..
–	–	**DFSP1813R4SSF150**	–	46,05	1.813	1.853	9.13	7.25	.04	SPPX15T5..	DFT0704..
–	–	**DFSP1875R4SSF150**	–	47,63	1.875	1.914	9.37	7.50	.06	SPPX15T5..	DFT0704..
–	–	**DFSP1938R4SSF150**	–	49,23	1.938	1.977	9.75	7.75	.06	SPPX15T5..	DFT0905..
–	–	**DFSP2000R4SSF150**	**DFSP2000R4SSF200**	50,80	2.000	2.039	10.00	8.00	.06	SPPX15T5..	DFT0905..
–	–	**DFSP2125R4SSF150**	**DFSP2125R4SSF200**	53,98	2.125	2.164	10.62	8.50	.07	SPPX15T5..	DFT0905..

NOTE for D1 max: Diameter can be adjusted. It is highly recommended to not adjust the diameter more than +.039" (+1mm).
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(Flange Shank • 4 x D • Inch — continued)

Spare Parts



diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
.703–.844	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
.875–1.000	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
1.031–1.281	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
1.313–1.563	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.625–1.688	DFT0704..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.750–1.875	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**191.698**	3	2.21	**170.025**	T15
1.938–2.125	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

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During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



D	LS	CF	CS	pipe plug
1.000	3.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.250	3.25	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.500	3.75	1/8-27 NPT	R 1/4-18 NPT	**1025612**
2.000	4.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**

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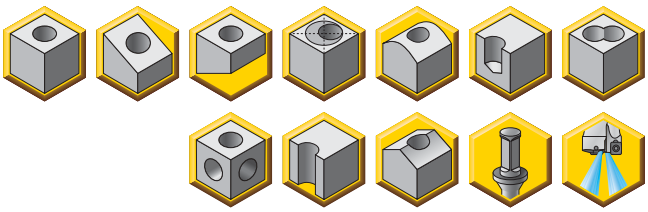

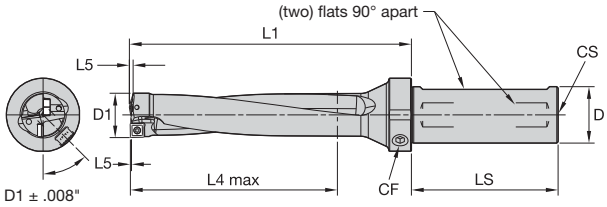



Flange Shank • 5 x D • Inch

D				D1 diameter							
1.000	1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert outside	gage insert inside
DFSP0813R5SSF100	–	–	–	20,65	.813	.852	5.06	4.07	.03	SPGX0603..	DFT0303..
DFSP0844R5SSF100	–	–	–	21,44	.844	.883	5.22	4.22	.03	SPGX0603..	DFT0303..
DFSP0875R5SSF100	–	–	–	22,23	.875	.914	5.39	4.38	.02	SPGX0703..	DFT05T3..
DFSP0906R5SSF100 *	–	–	–	23,01	.906	.945	5.57	4.53	.02	SPGX0703..	DFT05T3..
DFSP0938R5SSF100	–	–	–	23,83	.938	.977	5.74	4.69	.02	SPGX0703..	DFT05T3..
DFSP0969R5SSF100 *	–	–	–	24,61	.969	1.008	5.91	4.85	.03	SPGX0703..	DFT05T3..
DFSP0984R5SSF100 *	–	–	–	24,99	.984	1.023	5.99	4.92	.03	SPGX0703..	DFT05T3..
DFSP1000R5SSF100	–	–	–	25,40	1.000	–	6.25	5.00	.02	SPGX0703..	DFT05T3..
–	DFSP1000R5SSF125	DFSP1000R5SSF150	–	25,40	1.000	–	6.25	5.00	.03	SPGX0703..	DFT05T3..
–	DFSP1031R5SSF125	–	–	26,19	1.031	–	6.53	5.16	.03	SPPX09T3..	DFT05T3..
–	DFSP1063R5SSF125	–	–	27,00	1.063	–	6.69	5.32	.03	SPPX09T3..	DFT05T3..
–	DFSP1094R5SSF125	–	–	27,79	1.094	–	6.84	5.47	.03	SPPX09T3..	DFT05T3..
–	DFSP1125R5SSF125	–	–	28,58	1.125	–	7.12	5.63	.03	SPPX09T3..	DFT05T3..
–	DFSP1156R5SSF125 *	–	–	29,36	1.156	–	7.28	5.78	.03	SPPX09T3..	DFT05T3..
–	DFSP1188R5SSF125	–	–	30,18	1.188	–	7.44	5.94	.04	SPPX09T3..	DFT05T3..
–	DFSP1219R5SSF125 *	–	–	30,96	1.219	–	7.55	5.92	.04	SPPX09T3..	DFT05T3..
–	DFSP1250R5SSF125	DFSP1250R5SSF150	–	31,75	1.250	–	7.87	6.25	.04	SPPX09T3..	DFT05T3..
–	DFSP1313R5SSF125	–	–	33,35	1.313	–	8.19	6.57	.04	SPPX1204..	DFT06T3..
–	DFSP1375R5SSF125	DFSP1375R5SSF150	–	34,93	1.375	–	8.50	6.88	.04	SPPX1204..	DFT06T3..
–	DFSP1438R5SSF125	–	–	36,53	1.438	–	8.94	7.19	.04	SPPX1204..	DFT06T3..
–	DFSP1500R5SSF125	DFSP1500R5SSF150	–	38,10	1.500	–	9.25	7.50	.04	SPPX1204..	DFT06T3..
–	–	DFSP1563R5SSF150	–	39,70	1.563	–	9.57	7.82	.05	SPPX1204..	DFT06T3..
–	–	DFSP1625R5SSF150	–	41,28	1.625	–	9.87	8.13	.05	SPPX1204..	DFT0704..
–	–	DFSP1656R5SSF150	–	42,06	1.656	–	10.03	8.28	.05	SPPX1204..	DFT0704..
–	–	DFSP1750R5SSF150	–	44,45	1.750	–	10.50	8.75	.05	SPPX15T5..	DFT0704..
–	–	DFSP1813R5SSF150 *	–	46,05	1.813	–	10.94	9.07	.06	SPPX15T5..	DFT0704..
–	–	DFSP1875R5SSF150	–	47,63	1.875	–	11.25	9.38	.06	SPPX15T5..	DFT0704..
–	–	DFSP1938R5SSF150 *	–	49,23	1.938	–	11.69	9.69	.06	SPPX15T5..	DFT0905..
–	–	DFSP2000R5SSF150	DFSP2000R5SSF200	50,80	2.000	–	12.00	10.00	.06	SPPX15T5..	DFT0905..
–	–	DFSP2125R5SSF150	DFSP2125R5SSF200	53,98	2.125	–	12.75	10.63	.07	SPPX15T5..	DFT0905..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

(continued)

(Flange Shank • 5 x D • Inch — continued)

Spare Parts



diameter range	gage insert inside	inboard insert screw	tightening torque Nm	tightening torque ft. lbs	gage insert outside	outboard insert screw	tightening torque Nm	tightening torque ft. lbs	Torx driver	Torx size
.703–.844	DFT0303..	**MS1152**	0,9	.66	SPGX0603..	**MS1152**	0,9	.66	**170.023**	T7
.875–1.000	DFT05T3..	**193.491**	2,1	1.55	SPGX0703..	**192.432**	1,3	.96	**170.028**	T8
1.031–1.281	DFT05T3..	**191.924**	2,1	1.55	SPPX09T3..	**191.924**	2,1	1.55	**170.024**	T9
1.313–1.563	DFT06T3..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.625–1.688	DFT0704..	**191.916**	4	2.95	SPPX1204..	**191.916**	4	2.95	**170.025**	T15
1.750–1.875	DFT0704..	**191.698**	6	4.43	SPPX15T5..	**191.698**	3	2.21	**170.025**	T15
1.938–2.125	DFT0905..	**192.433**	6	4.43	SPPX15T5..	**192.433**	6	4.43	**170.025**	T15

NOTE: To ensure proper clamping, two different screws for DFT™ inserts with different threads for diameter ranges .875–1.000" (22–25,5mm) and 1.750–1.875" (41–48mm) are necessary. Both screws have the same Torx size.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



D	LS	CF	CS	pipe plug
1.000	3.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.250	3.25	1/8-27 NPT	R 1/4-18 NPT	**1025612**
1.500	3.75	1/8-27 NPT	R 1/4-18 NPT	**1025612**
2.000	4.00	1/8-27 NPT	R 1/4-18 NPT	**1025612**

Drill Fix™ DFSP™ • Metric

Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min min	Starting Value	max	Recommended Feed Rate (fz) by Diameter Ø	SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
									Metric						
P	0	S	O	LP	KCU40	310	**325**	360	mm/r	0,06–0,10	0,06–0,11	0,08–0,14	0,12–0,21	0,14–0,26	0,16–0,26
			I	DS	KCU40										
		U	O	LP	KCU40	200	**215**	230	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,07–0,12	0,09–0,15	0,11–0,21
			I	HP	KCU40										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,07–0,12	0,09–0,15	0,11–0,21
			I	HP	KCU40										
	1	S	O	FP	KCPK10	310	**325**	360	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	FP	KCU25	200	**215**	230	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	2	S	O	FP	KCPK10	310	**325**	360	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	FP	KCU25	200	**215**	230	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	3	S	O	FP	KCPK10	260	**285**	320	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU25	180	**195**	220	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	110	**120**	140	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	4	S	O	FP	KCPK10	220	**250**	300	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU25	150	**180**	220	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KCU40	90	**110**	140	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	5	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	6	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,11	0,08–0,14	0,10–0,18	0,14–0,25	0,16–0,30	0,18–0,30
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13-0,25
			I	HP	KC7140										
M	1	S	O	LP	KCU40	150	**190**	230	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										
		U	O	LP	KCU40	100	**130**	160	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,16
			I	DS	KCU40										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										
	2	S	O	LP	KCU40	150	**180**	210	mm/r	0,05–0,08	0,06–0,10	0,07–0,12	0,10–0,16	0,12–0,21	0,14–0,24
			I	DS	KCU40										
		U	O	MD	KCU40	100	**130**	160	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,20
			I	MD	KC7140										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										
	3	S	O	LP	KCU40	100	**130**	160	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,16
			I	DS	KCU40										
		U	O	HP	KCU40	80	**110**	140	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,20
			I	HP	KC7140										
		I	O	MD	KC7140	50	**70**	90	mm/r	0,03–0,05	0,04–0,07	0,05–0,09	0,07–0,13	0,08–0,16	0,10–0,18
			I	MD	KC7140										

NOTE: Applying Drill Fix™ DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated.

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter					
						min	Starting Value	max	Ø	SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
K	1	S	O	FP	KCPK10	200	**240**	300	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	FP	KCU25	120	**155**	200	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	FP	KC7140	80	**100**	125	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	2	S	O	FP	KCPK10	180	**220**	260	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KC7140	80	**100**	120	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	3	S	O	HP	KCPK10	180	**220**	260	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KC7140	80	**100**	120	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
N	1	S	O	HP	KCPK10	350	**500**	650	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	300	**400**	500	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	2	S	O	HP	KCPK10	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	175	**250**	325	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	3	S	O	HP	KCPK10	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	150	**250**	350	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										
	4	S	O	HP	KCU25	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KC7140										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	5	S	O	HP	KCU25	300	**400**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KC7140										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KC7140										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KC7140										
	6	S	O	HP	KCU40	400	**450**	500	mm/r	0,07–0,12	0,10–0,16	0,12–0,20	0,16–0,28	0,18–0,32	0,20–0,34
			I	HP	KMF										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,09	0,06–0,12	0,08–0,15	0,12–0,20	0,14–0,25	0,16–0,28
			I	HP	KMF										
		I	O	HP	KCU40	200	**300**	400	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,09–0,15	0,11–0,18	0,13–0,25
			I	HP	KMF										

NOTE: Applying Drill Fix™ DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated.

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Metric

Metric															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter						
						min	Starting Value	max	Ø	SPGX05 DFTX2 14,00–18,00mm	SPGX06 DFT03 18,00–21,99mm	SPGX07 DFT05 22,00–25,99mm	SPGX09 DFT05 26,00–32,99mm	SPGX12 DFT06/..07 33,00–43,99mm	SPGX15 DFT07/..09 44,00–55,00mm
S	1	S	O	HP	KCU40	60	**70**	75	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	MD	KC7140										
		U	O	HP	KCU40	40	**50**	60	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
		I	O	HP	KCU40	25	**30**	40	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	2	S	O	HP	KCU40	50	**60**	70	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	MD	KC7140										
		U	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
		I	O	HP	KCU40	25	**30**	40	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	3	S	O	LP	KCU40	70	**80**	90	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	DS	KC7140										
		U	O	LP	KCU40	50	**60**	70	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	DS	KC7140										
		I	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										
	4	S	O	LP	KCU40	70	**80**	90	mm/r	0,03–0,06	0,04–0,08	0,05–0,10	0,08–0,12	0,10–0,15	0,12–0,18
			I	DS	KC7140										
		U	O	LP	KCU40	50	**60**	70	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	DS	KC7140										
		I	O	HP	KCU40	30	**40**	50	mm/r	0,02–0,03	0,02–0,04	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,10
			I	MD	KC7140										

NOTE: Applying Drill Fix™ DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated.

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Inch

Inch															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM min	Starting Value	max	Recommended Feed Rate (fz) by Diameter Ø	SPGX05 DFTX2 .551–.708"	SPGX06 DFT03 .709–.865"	SPGX07 DFT05 .866–1.023"	SPGX09 DFT05 1.024–1.299"	SPGX12 DFT06/..07 1.300–1.732"	SPGX15 DFT07/..09 1.733–2.165"
P	0	S	O	LP	KCU40	1017	**1066**	1181	SFM	0.0024–0.0039	0.0024–0.0043	0.0031–0.0055	0.0047–0.0083	0.0055–0.0102	0.0063–0.0102
			I	DS	KCU40										
		U	O	LP	KCU40	656	**705**	754	SFM	0.0020–0.00284	0.0024–0.0031	0.0028–0.0039	0.0028–0.0047	0.0035–0.0059	0.0043–0.0081
			I	HP	KCU40										
		I	O	HP	KCU40	426	**443**	492	SFM	0.0020–0.00284	0.0024–0.0031	0.0028–0.0039	0.0028–0.0047	0.0035–0.0059	0.0043–0.0081
			I	HP	KCU40										
	1	S	O	FP	KCPK10	1017	**1066**	1181	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	FP	KCU25	656	**705**	754	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KCU40	426	**443**	492	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	2	S	O	FP	KCPK10	1017	**1066**	1181	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	FP	KCU25	656	**705**	754	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KCU40	426	**443**	492	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	3	S	O	FP	KCPK10	853	**935**	1050	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	HP	KCU25	590	**640**	722	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KCU40	361	**394**	459	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	4	S	O	FP	KCPK10	722	**820**	984	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	HP	KCU25	492	**590**	722	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KCU40	295	**361**	459	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	5	S	O	HP	KCU25	590	**656**	722	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	HP	KCU40	394	**443**	492	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KC7140	230	**279**	328	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	6	S	O	HP	KCU25	590	**656**	722	SFM	0.0024–0.0043	0.0031–0.0055	0.0039–0.0071	0.0055–0.0098	0.0063–0.0118	0.0071–0.0118
			I	HP	KC7140										
		U	O	HP	KCU40	394	**443**	492	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
		I	O	HP	KC7140	230	**279**	328	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
M	1	S	O	LP	KCU40	492	**623**	754	SFM	0.0020–0.0031	0.0024–0.0039	0.0028–0.0047	0.0039–0.0063	0.0047–0.0083	0.0055–0.0094
			I	DS	KCU40										
		U	O	LP	KCU40	328	**426**	525	SFM	0.0020–0.0028	0.0024–0.0031	0.0028–0.0039	0.0020–0.0039	0.0024–0.0051	0.0031–0.0063
			I	DS	KCU40										
		I	O	MD	KC7140	197	**262**	328	SFM	0.0012–0.0020	0.0016–0.0028	0.0020–0.0035	0.0028–0.0051	0.0031–0.0063	0.0039–0.0071
			I	MD	KC7140										
	2	S	O	LP	KCU40	492	**590**	689	SFM	0.0020–0.0031	0.0024–0.0039	0.0028–0.0047	0.0039–0.0063	0.0047–0.0083	0.0055–0.0094
			I	DS	KCU40										
		U	O	MD	KCU40	328	**426**	525	SFM	0.0012–0.0020	0.0016–0.0028	0.0020–0.0035	0.0028–0.0051	0.0031–0.0063	0.0039–0.0079
			I	MD	KC7140										
		I	O	MD	KC7140	197	**262**	328	SFM	0.0012–0.0020	0.0016–0.0028	0.0020–0.0035	0.0028–0.0051	0.0031–0.0063	0.0039–0.0071
			I	MD	KC7140										
	3	S	O	LP	KCU40	328	**426**	525	SFM	0.0020–0.0028	0.0024–0.0031	0.0028–0.0039	0.0020–0.0039	0.0024–0.0051	0.0031–0.0063
			I	DS	KCU40										
		U	O	HP	KCU40	262	**361**	459	SFM	0.0012–0.0020	0.0016–0.0028	0.0020–0.0035	0.0028–0.0051	0.0031–0.0063	0.0039–0.0079
			I	HP	KC7140										
		I	O	MD	KC7140	164	**230**	295	SFM	0.0012–0.0020	0.0016–0.0028	0.0020–0.0035	0.0028–0.0051	0.0031–0.0063	0.0039–0.0071
			I	MD	KC7140										

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Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Inch

Inch															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter						
						min	Starting Value	max	Ø	SPGX05 DFTX2 .551–.708"	SPGX06 DFT03 .709–.865"	SPGX07 DFT05 .866–1.023"	SPGX09 DFT05 1.024–1.299"	SPGX12 DFT06/..07 1.300–1.732"	SPGX15 DFT07/..09 1.733–2.165"
K	1	S	O	FP	KCPK10	656	**787**	984	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KCU40										
		U	O	FP	KCU25	394	**508**	656	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KC7140										
		I	O	FP	KC7140	262	**328**	410	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	2	S	O	FP	KCPK10	590	**722**	853	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KCU40										
		U	O	HP	KCU25	361	**459**	558	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KC7140										
		I	O	HP	KC7140	262	**328**	394	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	3	S	O	HP	KCPK10	590	**722**	853	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KCU40										
		U	O	HP	KCU25	361	**459**	558	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KC7140										
		I	O	HP	KC7140	262	**328**	394	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
N	1	S	O	HP	KCPK10	1148	**1640**	2132	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KMF										
		U	O	HP	KCU40	984	**1312**	1640	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KMF										
		I	O	HP	KCU40	656	**984**	1312	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KMF										
	2	S	O	HP	KCPK10	984	**1312**	1640	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KMF										
		U	O	HP	KCU40	820	**1148**	1476	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KMF										
		I	O	HP	KCU40	574	**820**	1066	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KMF										
	3	S	O	HP	KCPK10	984	**1312**	1640	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KMF										
		U	O	HP	KCU40	820	**1148**	1476	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KMF										
		I	O	HP	KCU40	492	**820**	1148	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KMF										
	4	S	O	HP	KCU25	984	**1312**	1640	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KC7140										
		U	O	HP	KCU40	820	**1148**	1476	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KC7140										
		I	O	HP	KCU40	656	**984**	1312	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KC7140										
	5	S	O	HP	KCU40	1312	**1476**	1640	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KMF										
		U	O	HP	KCU40	820	**1148**	1476	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KMF										
		I	O	HP	KCU40	656	**984**	1312	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KMF										
	6	S	O	HP	KCU40	1312	**1476**	1640	SFM	0.0028–0.0047	0.0039–0.0063	0.0047–0.0079	0.0063–0.0110	0.0071–0.0126	0.0079–0.0134
			I	HP	KMF										
		U	O	HP	KCU40	820	**1148**	1476	SFM	0.0020–0.0035	0.0024–0.0047	0.0031–0.0059	0.0047–0.0079	0.0055–0.0098	0.0063–0.0110
			I	HP	KMF										
		I	O	HP	KCU40	656	**984**	1312	SFM	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039	0.0035–0.0059	0.0043–0.0071	0.0051–0.0098
			I	HP	KMF										

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Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFSP™ • Inch

Inch														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter					
						min	Starting Value	max	Ø	SPGX05 DFTX2 .551–.708"	SPGX06 DFT03 .709–.865"	SPGX07 DFT05 .866–1.023"	SPGX09 DFT05 1.024–1.299"	SPGX12 DFT06/..07 1.300–1.732"	SPGX15 DFT07/..09 1.733–2.165"
S	1	S	O	HP	KCU40	197	**230**	246	SFM	0.0012–0.0024	0.0016–0.0031	0.0020–0.0039	0.0031–0.0047	0.0039–0.0059	0.0047–0.0071
			I	MD	KC7140										
		U	O	HP	KCU40	131	**164**	197	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
		I	O	HP	KCU40	82	**98**	131	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
	2	S	O	HP	KCU40	164	**197**	230	SFM	0.0012–0.0024	0.0016–0.0031	0.0020–0.0039	0.0031–0.0047	0.0039–0.0059	0.0047–0.0071
			I	MD	KC7140										
		U	O	HP	KCU40	98	**131**	164	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
		I	O	HP	KCU40	82	**98**	131	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
	3	S	O	HP	KCU40	230	**262**	295	SFM	0.0012–0.0024	0.0016–0.0031	0.0020–0.0039	0.0031–0.0047	0.0039–0.0059	0.0047–0.0071
			I	MD	KC7140										
		U	O	HP	KCU40	164	**197**	230	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
		I	O	HP	KCU40	98	**131**	164	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
	4	S	O	HP	KCU40	230	**262**	295	SFM	0.0012–0.0024	0.0016–0.0031	0.0020–0.0039	0.0031–0.0047	0.0039–0.0059	0.0047–0.0071
			I	MD	KC7140										
		U	O	HP	KCU40	164	**197**	230	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										
		I	O	HP	KCU40	98	**131**	164	SFM	0.0008–0.0012	0.0008–0.0016	0.0012–0.0020	0.0016–0.0024	0.0020–0.0031	0.0024–0.0039
			I	MD	KC7140										

NOTE: Applying Drill Fix™ DFSP 5 x D requires high stability. It is highly recommended to be conservative in regard to speeds and feeds, and start with minimum values indicated.

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™

Primary Application

The Drill Fix DFT system is available in diameter range 24–82mm (.625–3.250") as a versatile and reliable tool solution with a large portfolio of lengths, insert geometries, and grades.

Balanced cutting forces, improved chip flute, and coolant-channel design enable high metal removal rates and long tool body life. The trigon-shaped DFT inserts are used for both inboard and outboard inserts and offer the highest centering capabilities. Each insert has three cutting edges.

Features and Benefits

Productivity and Profitability

- Achieve high hole accuracy with trigon-shaped inboard inserts that offer the highest centering capabilities.
- Use X-offset on turning machines to adjust the drill diameter and eliminate the need for specials in many applications, and on machining centers to reach tolerance optimization.
- Same insert size is used in each pocket, reducing inventory costs.

Versatility

- Diameter range covering 24–82mm (.625–3.250").
- 2.5 x D and 4 x D L/D ratios are standard.
- Various shanks available as standard: WD and SSF.
- Trigon-shaped inserts feature three cutting edges.
- Large variety of DFT insert grades and geometries available.
- Use DFT drills in straight holes, inclined entries and exits, interrupted cuts, and rough or welded entry surfaces.
- Eccentric chuck available as standard.

Versatile and reliable tool solution with a large portfolio of lengths, insert geometries, and grades.



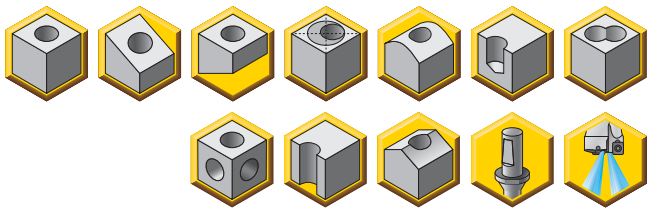
Reliability

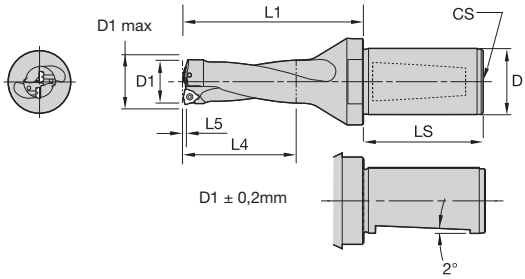
- Highest centering capabilities due to trigon-shaped insert.
- Same insert can be used as inboard or outboard insert — no risk of mixing up inner and outer inserts.
- Improved chip flute and coolant-channel design result in long tool body life and excellent chip evacuation.

Customization

- Intermediate diameters available as semi-standards.
- Engineered solutions available.
- Multistep drills available upon request.
- Stacked material version.

- Drill shipped with insert screws and Torx wrench.
- See pages J98 and J101–J102 for inserts.







WN/WD Shank • 2,5 x D • Metric

D			D1 diameter						
32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert
DFT250R2WD32M	DFT250R2WD40M	–	25,00	.984	27,00	90,0	58,9	0,9	DFT05T3..
DFT260R2WD32M	DFT260R2WD40M	–	26,00	1.024	27,00	90,0	59,1	1,1	DFT05T3..
DFT270R2WD32M	DFT270R2WD40M	–	27,00	1.063	29,00	100,0	66,1	1,1	DFT05T3..
DFT280R2WD32M	DFT280R2WD40M	–	28,00	1.102	29,00	100,0	66,3	1,3	DFT05T3..
DFT290R2WD32M	DFT290R2WD40M	–	29,00	1.142	31,00	100,0	66,3	1,3	DFT05T3..
DFT300R2WD32M	DFT300R2WD40M	–	30,00	1.181	31,00	115,0	76,4	1,4	DFT05T3..
DFT310R2WD32M	DFT310R2WD40M	–	31,00	1.221	33,00	115,0	76,4	1,4	DFT05T3..
DFT320R2WD32M	DFT320R2WD40M	–	32,00	1.260	33,00	115,0	76,5	1,5	DFT05T3..
DFT330R2WD32M	DFT330R2WD40M	–	33,00	1.299	35,00	115,0	76,4	1,4	DFT06T3..
DFT340R2WD32M	DFT340R2WD40M	–	34,00	1.339	35,00	115,0	76,5	1,5	DFT06T3..
DFT350R2WD32M	DFT350R2WD40M	–	35,00	1.378	38,00	115,0	76,6	1,6	DFT06T3..
DFT360R2WD32M	DFT360R2WD40M	–	36,00	1.417	37,00	115,0	76,8	1,8	DFT06T3..
DFT370R2WD32M	DFT370R2WD40M	–	37,00	1.457	38,00	135,0	96,7	1,7	DFT06T3..
DFT380R2WD32M	DFT380R2WD40M	–	38,00	1.496	41,00	135,0	96,8	1,8	DFT06T3..
DFT390R2WD32M	DFT390R2WD40M	–	39,00	1.535	40,00	135,0	96,9	1,9	DFT06T3..
DFT400R2WD32M	DFT400R2WD40M	–	40,00	1.575	41,00	135,0	97,0	2,0	DFT06T3..
DFT410R2WD32M	DFT410R2WD40M	–	41,00	1.614	44,00	135,0	96,9	1,9	DFT0704..
DFT420R2WD32M	DFT420R2WD40M	–	42,00	1.654	43,00	135,0	96,9	2,0	DFT0704..
DFT430R2WD32M	DFT430R2WD40M	–	43,00	1.693	44,00	150,0	112,1	2,1	DFT0704..
DFT440R2WD32M	DFT440R2WD40M	–	44,00	1.732	47,00	150,0	112,1	2,1	DFT0704..
–	DFT450R2WD40M	DFT450R2WD50M	45,00	1.772	46,00	150,0	112,2	2,2	DFT0704..
–	DFT460R2WD40M	DFT460R2WD50M	46,00	1.811	47,00	150,0	112,0	2,3	DFT0704..
–	DFT470R2WD40M	DFT470R2WD50M *	47,00	1.850	50,00	150,0	111,5	2,4	DFT0704..
–	DFT480R2WD40M	DFT480R2WD50M	48,00	1.890	49,00	150,0	111,0	2,4	DFT0704..
–	DFT490R2WD40M	DFT490R2WD50M	49,00	1.929	50,00	165,0	117,2	2,2	DFT0905..
–	DFT500R2WD40M	DFT500R2WD50M	50,00	1.969	54,00	165,0	117,2	2,2	DFT0905..
–	DFT510R2WD40M	DFT510R2WD50M	51,00	2.008	52,00	165,0	117,4	2,5	DFT0905..
–	DFT520R2WD40M	DFT520R2WD50M	52,00	2.047	53,00	165,0	117,5	2,6	DFT0905..
–	DFT530R2WD40M	DFT530R2WD50M	53,00	2.087	54,00	165,0	117,6	2,6	DFT0905..
–	DFT540R2WD40M	DFT540R2WD50M	54,00	2.126	58,00	165,0	117,7	2,7	DFT0905..
–	–	DFT550R2WD50M	55,00	2.165	56,00	180,0	125,0	2,7	DFT0905..
–	–	DFT560R2WD50M	56,00	2.205	57,00	180,0	125,0	2,8	DFT0905..
–	–	DFT570R2WD50M	57,00	2.244	58,00	180,0	125,0	2,9	DFT0905..
–	–	DFT580R2WD50M	58,00	2.284	62,00	180,0	125,0	3,0	DFT0905..
–	–	DFT590R2WD50M	59,00	2.323	60,00	180,0	125,0	3,0	DFT0905..
–	–	DFT600R2WD50M	60,00	2.362	61,00	180,0	125,0	3,1	DFT0905..

(continued)

(WN/WD Shank • 2,5 x D • Metric — continued)

D			D1 diameter						
32	40	50	mm	in	D1 max	L1	L4 max	L5	gage insert
–	–	**DFT610R2WD50M**	61,00	2.402	62,00	180,0	125,0	3,2	DFT0905..
–	–	**DFT620R2WD50M**	62,00	2.441	65,00	180,0	125,0	3,2	DFT0905..
–	–	**DFT630R2WD50M**	63,00	2.480	64,00	180,0	125,0	3,3	DFT0905..
–	–	**DFT640R2WD50M**	64,00	2.520	65,00	180,0	125,0	3,4	DFT0905..
–	–	**DFT650R2WD50M**	65,00	2.559	66,00	180,0	125,0	3,4	DFT0905..
–	–	**DFT660R2WD50M**	66,00	2.598	69,00	180,0	125,0	3,5	DFT0905..
–	–	**DFT670R2WD50M**	67,00	2.638	67,00	180,0	125,0	3,5	DFT0905..
–	–	**DFT680R2WD50M**	68,00	2.677	69,00	180,0	125,0	3,6	DFT0905..
–	–	**DFT690R2WD50M**	69,00	2.717	73,00	205,0	140,0	3,6	DFT1105..
–	–	**DFT700R2WD50M**	70,00	2.756	71,00	205,0	140,0	3,6	DFT1105..
–	–	**DFT710R2WD50M**	71,00	2.795	72,00	205,0	140,0	3,9	DFT1105..
–	–	**DFT720R2WD50M**	72,00	2.835	73,00	205,0	140,0	3,9	DFT1105..
–	–	**DFT730R2WD50M**	73,00	2.874	79,00	205,0	140,0	4,0	DFT1105..
–	–	**DFT740R2WD50M**	74,00	2.913	75,00	205,0	140,0	4,1	DFT1105..
–	–	**DFT750R2WD50M**	75,00	2.953	76,00	205,0	140,0	4,2	DFT1105..
–	–	**DFT760R2WD50M**	76,00	2.992	77,00	205,0	140,0	4,2	DFT1105..
–	–	**DFT770R2WD50M**	77,00	3.032	78,00	205,0	140,0	4,3	DFT1105..
–	–	**DFT780R2WD50M**	78,00	3.071	79,00	205,0	140,0	4,3	DFT1105..
–	–	**DFT790R2WD50M**	79,00	3.110	82,00	205,0	140,0	4,4	DFT1105..
–	–	**DFT800R2WD50M**	80,00	3.150	81,00	205,0	140,0	4,5	DFT1105..
–	–	**DFT810R2WD50M** *	81,00	3.189	82,00	205,0	140,0	4,5	DFT1105..
–	–	**DFT820R2WD50M**	82,00	3.228	83,00	205,0	140,0	4,5	DFT1105..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

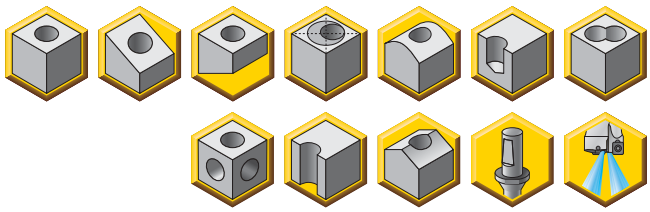


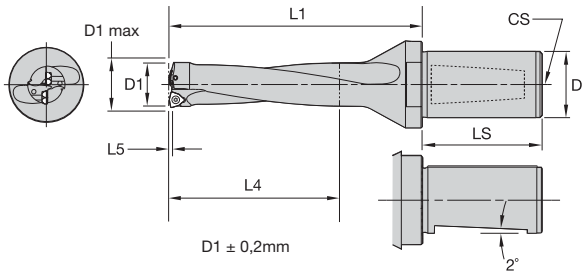


gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15
DFT0905..	**191.726**	**170.026**	20
DFT1105..	**191.375**	**170.026**	20

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP
50	68	R 1/4 BSP

- Drill shipped with insert screws and Torx wrench.
- See pages J98 and J101–J102 for inserts.







WN/WD Shank • 4 x D • Metric

D		D1 diameter						
32	40	mm	in	D1 max	L1	L4 max	L5	gage insert
DFT250R4WD32M	**DFT250R4WD40M**	25,00	.984	27,00	135,0	100,0	0,8	DFT05T3..
DFT260R4WD32M	**DFT260R4WD40M**	26,00	1.024	27,00	139,0	104,0	0,9	DFT05T3..
DFT270R4WD32M	**DFT270R4WD40M**	27,00	1.063	29,00	143,0	108,0	1,0	DFT05T3..
DFT280R4WD32M	**DFT280R4WD40M**	28,00	1.102	29,00	156,0	112,0	1,1	DFT05T3..
DFT290R4WD32M	**DFT290R4WD40M**	29,00	1.142	31,00	151,0	116,0	1,1	DFT05T3..
DFT300R4WD32M	**DFT300R4WD40M**	30,00	1.181	31,00	160,0	120,0	1,2	DFT05T3..
DFT310R4WD32M	**DFT310R4WD40M**	31,00	1.221	33,00	164,0	124,0	1,3	DFT05T3..
DFT320R4WD32M	**DFT320R4WD40M**	32,00	1.260	33,00	168,0	128,0	1,3	DFT05T3..
–	**DFT330R4WD40M**	33,00	1.299	35,00	177,0	132,0	1,1	DFT06T3..
–	**DFT340R4WD40M**	34,00	1.339	35,00	181,0	136,0	1,3	DFT06T3..
–	**DFT350R4WD40M**	35,00	1.378	38,00	185,0	140,0	1,3	DFT06T3..
–	**DFT360R4WD40M**	36,00	1.417	37,00	189,0	144,0	1,4	DFT06T3..
–	**DFT370R4WD40M**	37,00	1.457	38,00	198,0	148,0	1,5	DFT06T3..
–	**DFT380R4WD40M**	38,00	1.496	41,00	202,0	152,0	1,5	DFT06T3..
–	**DFT390R4WD40M**	39,00	1.535	40,00	206,0	156,0	1,6	DFT06T3..
–	**DFT400R4WD40M**	40,00	1.575	41,00	210,0	160,0	1,7	DFT06T3..
–	**DFT410R4WD40M**	41,00	1.614	44,00	214,0	164,0	1,6	DFT0704..
–	**DFT420R4WD40M**	42,00	1.654	43,00	223,0	168,0	1,7	DFT0704..
–	**DFT430R4WD40M**	43,00	1.693	44,00	227,0	172,0	1,7	DFT0704..
–	**DFT440R4WD40M**	44,00	1.732	47,00	231,0	176,0	1,8	DFT0704..
–	**DFT450R4WD40M**	45,00	1.772	46,00	240,0	180,0	1,9	DFT0704..
–	**DFT460R4WD40M**	46,00	1.811	47,00	244,0	184,0	1,9	DFT0704..
–	**DFT470R4WD40M**	47,00	1.850	50,00	248,0	188,0	2,0	DFT0704..
–	**DFT480R4WD40M**	48,00	1.890	49,00	252,0	192,0	2,0	DFT0704..

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

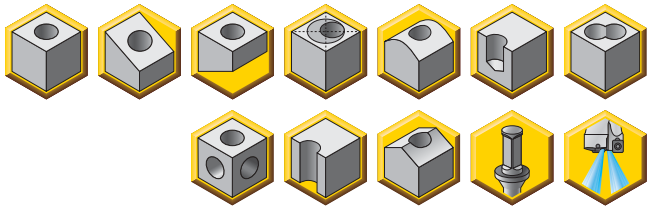


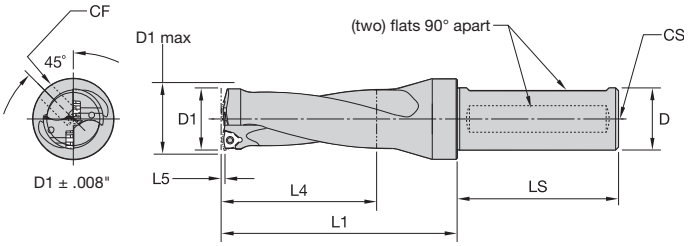


gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15

D	LS	CS
32	58	R 1/4 BSP
40	68	R 1/4 BSP

- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages J98 and J101–J102 for inserts.







Flange Shank • 2.5 x D • Inch

D			D1 diameter						
1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert
DFT0875R2SSF125	–	–	22,23	.875	.950	3.63	2.19	.04	DFT0303..
DFT0906R2SSF125	–	–	23,01	.906	.981	3.63	2.27	.04	DFT0303..
DFT0938R2SSF125	–	–	23,81	.938	1.000	3.75	2.35	.04	DFT0303..
DFT0969R2SSF125	–	–	24,61	.969	1.019	3.75	2.40	.04	DFT0303..
DFT0984R2SSF125	–	–	25,00	.984	1.109	3.88	2.50	.04	DFT05T3..
DFT1000R2SSF125	DFT1000R2SSF150	–	25,40	1.000	1.125	4.00	2.50	.04	DFT05T3..
DFT1031R2SSF125	–	–	26,20	1.031	1.156	4.00	2.60	.04	DFT05T3..
DFT1063R2SSF125	–	–	26,99	1.063	1.188	4.13	2.65	.04	DFT05T3..
DFT1094R2SSF125	–	–	27,79	1.094	1.219	4.13	2.70	.05	DFT05T3..
DFT1125R2SSF125	–	–	28,58	1.125	1.250	4.38	2.85	.05	DFT05T3..
DFT1156R2SSF125	–	–	29,36	1.156	1.281	4.38	2.89	.05	DFT05T3..
DFT1188R2SSF125	–	–	30,16	1.188	1.288	4.50	3.00	.05	DFT05T3..
DFT1219R2SSF125	DFT1219R2SSF150	–	30,96	1.219	1.319	4.63	3.05	.06	DFT05T3..
DFT1250R2SSF125	DFT1250R2SSF150	–	31,75	1.250	1.325	4.75	3.13	.06	DFT05T3..
DFT1281R2SSF125	DFT1281R2SSF150 *	–	32,55	1.281	1.345	4.75	3.20	.06	DFT05T3..
DFT1313R2SSF125	DFT1313R2SSF150	–	33,34	1.313	1.438	4.88	3.30	.05	DFT06T3..
DFT1375R2SSF125	DFT1375R2SSF150	–	34,93	1.375	1.500	5.13	3.45	.06	DFT06T3..
DFT1406R2SSF125	DFT1406R2SSF150	–	35,71	1.406	1.531	5.13	3.50	.06	DFT06T3..
DFT1438R2SSF125	DFT1438R2SSF150	–	36,51	1.438	1.563	5.25	3.60	.07	DFT06T3..
DFT1469R2SSF125	DFT1469R2SSF150	–	37,31	1.469	1.594	5.38	3.70	.07	DFT06T3..
DFT1500R2SSF125	DFT1500R2SSF150	–	38,10	1.500	1.625	5.50	3.75	.07	DFT06T3..
DFT1531R2SSF125	DFT1531R2SSF150	–	38,89	1.531	1.656	5.50	3.85	.07	DFT06T3..
DFT1563R2SSF125	DFT1563R2SSF150	–	39,69	1.563	1.688	5.63	3.90	.07	DFT06T3..
DFT1625R2SSF125	DFT1625R2SSF150	–	41,28	1.625	1.750	5.88	4.10	.07	DFT0704..
DFT1688R2SSF125	DFT1688R2SSF150	–	42,86	1.688	1.813	6.00	4.25	.08	DFT0704..
–	DFT1750R2SSF150	–	44,45	1.750	1.875	6.25	4.38	.08	DFT0704..
–	DFT1813R2SSF150	–	46,04	1.813	1.938	6.38	4.55	.09	DFT0704..
–	DFT1875R2SSF150	–	47,63	1.875	2.000	6.63	4.70	.09	DFT0704..

(continued)

(Flange Shank • 2.5 x D • Inch — continued)

D			D1 diameter						
1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert
—	**DFT1938R2SSF150**	—	49,21	1.938	2.188	6.75	4.85	.08	DFT0905..
—	**DFT2000R2SSF150**	**DFT2000R2SSF200**	50,80	2.000	2.250	7.00	5.00	.09	DFT0905..
—	**DFT2125R2SSF150**	**DFT2125R2SSF200**	53,98	2.125	2.375	7.38	5.35	.10	DFT0905..
—	—	**DFT2250R2SSF200**	57,15	2.250	2.500	7.75	5.63	.11	DFT0905..
—	—	**DFT2375R2SSF200**	60,33	2.375	2.590	8.13	5.95	.12	DFT0905..
—	—	**DFT2500R2SSF200**	63,50	2.500	2.650	8.50	6.25	.12	DFT0905..
—	—	**DFT2750R2SSF200**	69,85	2.750	3.050	9.13	6.88	.15	DFT1105..
—	—	**DFT3000R2SSF200**	76,20	3.000	3.150	10.00	7.50	.15	DFT1105..
—	—	**DFT3250R2SSF200**	82,55	3.250	3.260	10.26	8.13	.16	DFT1105..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

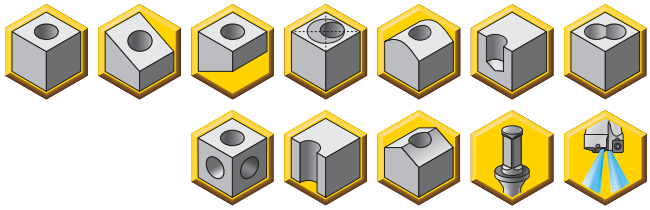


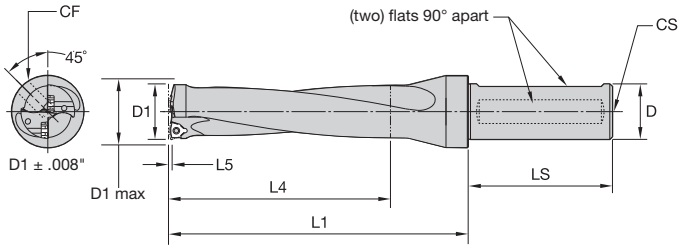

gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15
DFT0905..	**191.726**	**170.026**	20
DFT1105..	**191.375**	**170.026**	20



D	LS	CF	CS	pipe plug
1.25	3.25	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**
1.50	3.75	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**
2.00	4.00	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**

- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages J98 and J101–J102 for inserts.







Flange Shank • 4 x D • Inch

D				D1 diameter						
1.000	1.250	1.500	2.000	mm	in	D1 max	L1	L4 max	L5	gage insert
DFT0984R4SSF100	**–**	**–**	**–**	25,00	.984	1.109	5.50	3.94	.03	DFT05T3..
DFT1000R4SSF100	**DFT1000R4SSF125**	**DFT1000R4SSF150**	**–**	25,40	1.000	1.125	5.63	4.00	.03	DFT05T3..
–	**DFT1031R4SSF125**	**–**	**–**	26,20	1.031	1.156	5.75	4.13	.04	DFT05T3..
–	**DFT1063R4SSF125**	**–**	**–**	26,99	1.063	1.188	5.88	4.25	.04	DFT05T3..
–	**DFT1094R4SSF125**	**–**	**–**	27,78	1.094	1.219	5.88	4.38	.04	DFT05T3..
–	**DFT1125R4SSF125**	**DFT1125R4SSF150**	**–**	28,58	1.125	1.250	6.13	4.50	.04	DFT05T3..
–	**DFT1156R4SSF125**	**–**	**–**	29,37	1.156	1.281	6.13	4.63	.05	DFT05T3..
–	**DFT1188R4SSF125**	**–**	**–**	30,16	1.188	1.288	6.50	4.75	.05	DFT05T3..
–	**DFT1219R4SSF125**	**–**	**–**	30,96	1.219	1.319	6.63	4.88	.05	DFT05T3..
–	**DFT1250R4SSF125**	**DFT1250R4SSF150**	**–**	31,75	1.250	1.325	6.75	5.00	.05	DFT05T3..
–	**DFT1281R4SSF125**	**–**	**–**	32,55	1.281	1.345	6.88	5.13	.05	DFT05T3..
–	**DFT1313R4SSF125**	**–**	**–**	33,34	1.313	1.438	7.00	5.25	.05	DFT06T3..
–	**DFT1375R4SSF125**	**DFT1375R4SSF150**	**–**	34,93	1.375	1.500	7.25	5.50	.05	DFT06T3..
–	**DFT1406R4SSF125 ***	**–**	**–**	35,72	1.406	1.531	7.25	5.63	.05	DFT06T3..
–	**DFT1438R4SSF125**	**DFT1438R4SSF150**	**–**	36,51	1.438	1.563	7.63	5.75	.06	DFT06T3..
–	**DFT1469R4SSF125**	**–**	**–**	37,31	1.469	1.594	7.75	5.88	.06	DFT06T3..
–	**DFT1500R4SSF125**	**DFT1500R4SSF150**	**–**	38,10	1.500	1.625	7.88	6.00	.06	DFT06T3..
–	**DFT1531R4SSF125**	**DFT1531R4SSF150 ***	**–**	38,90	1.531	1.656	7.88	6.13	.06	DFT06T3..
–	**DFT1563R4SSF125**	**DFT1563R4SSF150**	**–**	39,69	1.563	1.688	8.13	6.25	.06	DFT06T3..
–	**DFT1625R4SSF125**	**DFT1625R4SSF150**	**–**	41,28	1.625	1.750	8.38	6.50	.06	DFT0704..
–	**DFT1688R4SSF125**	**DFT1688R4SSF150**	**–**	42,86	1.688	1.813	8.75	6.75	.07	DFT0704..
–	**–**	**DFT1750R4SSF150**	**–**	44,45	1.750	1.875	9.00	7.00	.07	DFT0704..
–	**–**	**DFT1813R4SSF150**	**–**	46,04	1.813	1.938	9.25	7.25	.08	DFT0704..
–	**–**	**DFT1875R4SSF150**	**–**	47,63	1.875	2.000	9.50	7.50	.08	DFT0704..
–	**–**	**DFT1938R4SSF150**	**–**	49,21	1.938	2.188	9.88	7.75	.07	DFT0905..
–	**–**	**DFT2000R4SSF150**	**DFT2000R4SSF200**	50,80	2.000	2.250	10.13	8.00	.07	DFT0905..
–	**–**	**DFT2125R4SSF150**	**DFT2125R4SSF200**	53,98	2.125	2.375	10.63	8.50	.09	DFT0905..

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.




gage insert	insert screw	Torx wrench	Torx size
DFT05T3..	**191.924**	**170.024**	9
DFT06T3..	**191.848**	**170.025**	15
DFT0704..	**191.698**	**170.025**	15
DFT0905..	**191.726**	**170.026**	20



D	LS	CF	CS	pipe plug
1.00	3.00	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**
1.25	3.25	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**
1.50	3.75	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**
2.00	4.00	1/8-27 NPT	R 1/4-18 NPT	**HSFS0125**

Drill Fix™ DFT™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
P	0	S	O	DS	KCU40	280	**300**	320	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,17–0,27
			I	DS	KCU40										
		U	O	DS	KCU40	200	**215**	230	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,17–0,27
			I	DS	KCU40										
		I	O	DS	KCU40	130	**135**	150	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,19–0,31
			I	DS	KCU40										
	1	S	O	MD	KCU25	310	**325**	360	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	0,19–0,31
			I	MD	KC7140										
		U	O	MD	KCU25	200	**215**	230	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	MD	KC7140										
		I	O	MD	KCU40	130	**135**	150	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	MD	KC7140										
	2	S	O	HP	KCPK10	310	**325**	360	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU25	200	**215**	230	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KCU40	130	**135**	150	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	3	S	O	HP	KCPK10	260	**285**	320	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU25	180	**195**	220	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KCU40	110	**120**	140	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	4	S	O	HP	KCU25	220	**250**	300	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		U	O	HP	KCU40	150	**180**	220	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
		I	O	HP	KC7140	90	**110**	140	mm/r	0,06–0,10	0,09–0,15	0,11–0,18	0,15–0,25	0,19–0,31	0,19–0,31
			I	HP	KC7140										
	5	S	O	HP	KCU25	180	**200**	220	mm/r	0,06–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,06–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
	6	S	O	HP	KCU25	180	**200**	220	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		U	O	HP	KCU40	120	**135**	150	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
		I	O	HP	KC7140	70	**85**	100	mm/r	0,05–0,10	0,07–0,13	0,09–0,15	0,11–0,18	0,12–0,23	0,12–0,23
			I	HP	KC7140										
M	1	S	O	DS	KCU40	150	**190**	230	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	DS	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
	2	S	O	DS	KCU40	150	**180**	210	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	MD	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
		I	O	MD	KC7140	60	**80**	100	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										
	3	S	O	DS	KCU40	100	**130**	160	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	DS	KCU40										
		U	O	HP	KCU40	80	**110**	140	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	HP	KC7140										
		I	O	MD	KC7140	50	**70**	90	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	0,09–0,17	0,09–0,17
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
K	1	S	O	HP	KCPK10	200	**240**	300	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	120	**155**	200	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		I	O	HP	KCU40	80	**100**	125	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
	2	S	O	HP	KCPK10	180	**220**	260	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
		I	O	HP	KCU40	80	**100**	120	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
	3	S	O	HP	KCPK10	180	**220**	260	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KCU40										
		U	O	HP	KCU25	110	**140**	170	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
		I	O	HP	KCU40	80	**100**	120	mm/r	0,08–0,13	0,10–0,18	0,14–0,26	0,18–0,33	0,21–0,39	0,21–0,39
			I	HP	KC7140										
N	1	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	300	**400**	500	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	2	S	O	ST	KD1425	375	**550**	775	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	175	**250**	325	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	3	S	O	ST	KD1425	350	**500**	650	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	150	**250**	350	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	4	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	5	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										
	6	S	O	ST	KD1425	400	**600**	800	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST	KD1425										
		U	O	HP	KCU40	250	**350**	450	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KCU40										
		I	O	HP	KMF	200	**300**	400	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	HP	KMF										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

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Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24mm	DFT05 25–32mm	DFT06 32–40mm	DFT07 41–48mm	DFT09... 49–68mm	DFT11 69–82mm
S	1	S	O	HP	KCU40	60	**70**	75	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		U	O	HP	KCU40	40	**50**	60	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KC7140										
		I	O	MD	KC7140	25	**30**	40	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	MD	KC7140										
	2	S	O	HP	KCU40	50	**60**	70	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	HP	KCU40										
		U	O	HP	KCU40	30	**40**	50	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,06–0,1	0,09–0,15	0,09–0,15
			I	HP	KC7140										
		I	O	MD	KC7140	25	**30**	40	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	MD	KC7140										
	3	S	O	HP	KCU40	70	**80**	90	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		U	O	HP	KCU40	50	**60**	70	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	HP	KCU40										
		I	O	MD	KC7140	30	**40**	50	mm/r	0,03–0,05	0,04–0,06	0,05–0,08	0,06–0,1	0,08–0,13	0,08–0,13
			I	MD	KC7140										
	4	S	O	HP	KCU40	70	**80**	90	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	HP	KCU40										
		U	O	HP	KCU40	50	**60**	70	mm/r	0,04–0,06	0,05–0,08	0,06–0,10	0,06–0,1	0,09–0,15	0,09–0,15
			I	HP	KCU40										
		I	O	MD	KC7140	30	**40**	50	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,1	0,07–0,12	0,07–0,12
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Inch

Inch															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter						
						min	Starting Value	max	Ø	DFT03 .625–.969"	DFT05 .984–1.250"	DFT06 1.313–1.563"	DFT07 1.625–1.875"	DFT09 1.938–2.125"	DFT11 2.750–3.250"
P	0	S	O	DS	KCU40	918	**984**	1050	SFM	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	.0067–.0106
			I	DS	KCU40										
		U	O	DS	KCU40	656	**705**	754	SFM	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	.0067–.0106
			I	DS	KCU40										
		I	O	DS	KCU40	426	**443**	492	SFM	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	.0075–.0122
			I	DS	KCU40										
	1	S	O	MD	KCU25	1017	**1066**	1181	SFM	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	.0075–.0122
			I	MD	KC7140										
		U	O	MD	KCU25	656	**705**	754	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	MD	KC7140										
		I	O	MD	KCU40	426	**443**	492	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	MD	KC7140										
	2	S	O	HP	KCPK10	1017	**1066**	1181	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		U	O	HP	KCU25	656	**705**	754	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		I	O	HP	KCU40	426	**443**	492	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
	3	S	O	HP	KCPK10	853	**935**	1050	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		U	O	HP	KCU25	590	**640**	722	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		I	O	HP	KCU40	361	**394**	459	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
	4	S	O	HP	KCU25	722	**820**	984	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		U	O	HP	KCU40	492	**590**	722	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
		I	O	HP	KC7140	295	**361**	459	SFM	.0024–.0039	.0035–.0059	.0043–.0071	.0059–.0098	.0075–.0122	.0075–.0122
			I	HP	KC7140										
	5	S	O	HP	KCU25	590	**656**	722	SFM	.0024–.0039	.0028–.0051	.0035–.0059	.0043–.0071	.0047–.0091	.0047–.0091
			I	HP	KC7140										
		U	O	HP	KCU40	394	**443**	492	SFM	.0024–.0039	.0028–.0051	.0035–.0059	.0043–.0071	.0047–.0091	.0047–.0091
			I	HP	KC7140										
		I	O	HP	KC7140	230	**279**	328	SFM	.0020–.0039	.0028–.0051	.0035–.0059	.0043–.0071	.0047–.0091	.0047–.0091
			I	HP	KC7140										
	6	S	O	HP	KCU25	590	**656**	722	SFM	.0020–.0039	.0028–.0051	.0035–.0059	.0043–.0071	.0047–.0091	.0047–.0091
			I	HP	KC7140										
		U	O	HP	KCU40	394	**443**	492	SFM	.0020–.0039	.0028–.0051	.0035–.0059–	.0047–.0091	.0047–.0091	.0043–.0071
			I	HP	KC7140										
		I	O	HP	KC7140	230	**279**	328	SFM	.0020–.0039	.0028–.0051	.0035–.0059	.0043–.0071	.0047–.0091	.0047–.0091
			I	HP	KC7140										
M	1	S	O	DS	KCU40	492	**623**	754	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	DS	KCU40										
		U	O	DS	KCU40	328	**426**	525	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	DS	KCU40										
		I	O	MD	KC7140	197	**262**	328	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	MD	KC7140										
	2	S	O	DS	KCU40	492	**590**	689	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	DS	KCU40										
		U	O	MD	KCU40	328	**426**	525	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	MD	KC7140										
		I	O	MD	KC7140	197	**262**	328	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	MD	KC7140										
	3	S	O	DS	KCU40	328	**426**	525	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	DS	KCU40										
		U	O	HP	KCU40	262	**361**	459	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	HP	KC7140										
		I	O	MD	KC7140	164	**230**	295	SFM	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067	.0035–.0067
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Inch

Inch															
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter						
						min	Starting Value	max	Ø	DFT03 .625–.969"	DFT05 .984–1.250"	DFT06 1.313–1.563"	DFT07 1.625–1.875"	DFT09 1.938–2.125"	DFT11 2.750–3.250"
K	1	S	O	HP	KCPK10	656	**787**	984	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KCU40										
		U	O	HP	KCU25	394	**508**	656	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
		I	O	HP	KC7140	262	**328**	410	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
	2	S	O	HP	KCPK10	590	**722**	853	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KCU40										
		U	O	HP	KCU25	361	**459**	558	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
		I	O	HP	KC7140	262	**328**	394	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
	3	S	O	HP	KCPK10	590	**722**	853	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KCU40										
		U	O	HP	KCU25	361	**459**	558	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
		I	O	HP	KC7140	262	**328**	394	SFM	.0031–.0051	.0039–.0071	.0055–.0102	.0071–.0130	.0083–.0154	.0083–.0154
			I	HP	KC7140										
N	1	S	O	ST	KD1425	1312	**1968**	2624	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	984	**1312**	1640	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	656	**984**	1312	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										
	2	S	O	ST	KD1425	1230	**1804**	2542	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	820	**1148**	1476	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	574	**820**	1066	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										
	3	S	O	ST	KD1425	1148	**1640**	2132	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	820	**1148**	1476	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	492	**820**	1148	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										
	4	S	O	ST	KD1425	1312	**1968**	2624	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	820	**1148**	1476	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	656	**984**	1312	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										
	5	S	O	ST	KD1425	1312	**1968**	2624	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	820	**1148**	1476	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	656	**984**	1312	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										
	6	S	O	ST	KD1425	1312	**1968**	2624	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	ST	KD1425										
		U	O	HP	KCU40	820	**1148**	1476	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KCU40										
		I	O	HP	KMF	656	**984**	1312	SFM	.0020–.0028	.0028–.0035	.0039–.0055	.0047–.0063	.0055–.0071	.0055–.0071
			I	HP	KMF										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Drill Fix™ DFT™ • Inch

Inch														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 .625–.969"	DFT05 .984–1.250"	DFT06 1.313–1.563"	DFT07 1.625–1.875"	DFT09 1.938–2.125"	DFT11 2.750–3.250"
S	1	S	O	HP	KCU40	197	**230**	246	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	HP	KCU40										
		U	O	HP	KCU40	131	**164**	197	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	HP	KC7140										
		I	O	MD	KC7140	82	**98**	131	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	MD	KC7140										
	2	S	O	HP	KCU40	164	**197**	230	SFM	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	.0028–.0047
			I	HP	KCU40										
		U	O	HP	KCU40	98	**131**	164	SFM	.0016–.0024	.0020–.0031	.0024–.0039	.0024–.0039	.0035–.0059	.0035–.0059
			I	HP	KC7140										
		I	O	MD	KC7140	82	**98**	131	SFM	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	.0028–.0047
			I	MD	KC7140										
	3	S	O	HP	KCU40	230	**262**	295	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	HP	KCU40										
		U	O	HP	KCU40	164	**197**	230	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	HP	KCU40										
		I	O	MD	KC7140	98	**131**	164	SFM	.0012–.0020	.0016–.0024	.0020–.0031	.0024–.0039	.0031–.0051	.0031–.0051
			I	MD	KC7140										
	4	S	O	HP	KCU40	230	**262**	295	SFM	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	.0028–.0047
			I	HP	KCU40										
		U	O	HP	KCU40	164	**197**	230	SFM	.0016–.0024	.0020–.0031	.0024–.0039	.0024–.0039	.0035–.0059	.0035–.0059
			I	HP	KCU40										
		I	O	MD	KC7140	98	**131**	164	SFM	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	.0028–.0047
			I	MD	KC7140										

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS Series Indexable Deep-Hole Drilling System

Primary Application

HTS series indexable drills are designed for deep-hole drilling up to 10 x D in steel, stainless steel, ductile iron, cast iron, and non-ferrous materials. The two HTS systems — HTS and HTS-R — cover a diameter range of 40–270mm (1.575–10.629").



Features and Benefits

HTS Indexable Drill System

- Large diameter range from 45–270mm (1.750–10.629") with standard drill heads.
- Drill Fix™ DFT™ trigon inserts as outboard and inboard insert offer the best centering capabilities; square-outboard insert cartridges offer increased surface and hole quality.
- Various insert geometries and grades available as standard.
- Adjust drilling depth and diameter range with suitable extensions and reducers.
- Diameter adjustment by shortening outer cartridge.
- Customized drilling heads up to 540mm (21.259").



HTS-R Indexable Drill System

- Modular system uses drill heads equipped with DFR™ insert cartridges.
- Five drill heads cover the diameter range 40–55mm (1.575–2.165").
- Drill Fix™ DFR rectangular inboard and outboard inserts offer the highest feed rates at small diameters.
- Various insert geometries and grades available as standard.
- Adjust drilling depth and diameters by using extensions and reducers.
- Diameter adjustment by shortening outer cartridge.

HTS Indexable Drill System

The HTS indexable drill system is one of the most reliable deep-hole drilling systems available. Drilling up to 10 x D can be easily achieved in materials like steel, stainless steel, ductile iron, cast iron, and non-ferrous materials. Various drilling heads cover the diameter range 45–270mm (1.77–10.63").

HTS drill heads are equipped with pilot drills and cartridges using trigon-shaped Drill Fix™ DFT™ inserts. Use HTS extensions and reducers to achieve various diameters and depths of drilling.

For improved surface qualities and increased reliability, finishing HTS cartridges with a squared-outboard insert are available as standard.

Features and Benefits

Productivity

- Achieve high hole accuracy by using pilot drills and trigon-shaped inserts.
- Benefit from improved surface qualities using finishing cartridges with squared-outboard inserts.
- Adjust outer cartridge to desired cutting diameter, reducing inventory.
- Same insert size is used in each insert cartridge, reducing inventory costs.

Versatility

- Diameter range covering 45–270mm (1.77–10.63").
- L/D ratio up to 10 x D as standard.
- Inserts and pilot drills can be used with various heads and cartridges, covering various diameters.
- Large variety of DFT insert grades and geometries available.
- Finishing cartridge with squared-outboard insert offering four cutting edges for high process stability.
- Carbide pilot drills are available upon request.

Use HTS extensions and reducers to achieve various diameters and depths of drilling.

Customization

- Wear pads can be added for increased stability.
- Fully engineered solutions available.
- Custom solutions covering diameter range up to 540mm (21.259") are possible.



HTS-R Indexable Drill System

HTS-R extends the HTS system by covering diameters between 40–55mm (1.575–2.165").

Up to 30% higher feed rates achievable with rectangular-shaped Drill Fix™ DFR™ inserts with the added benefit of improved chip control.

Features and Benefits

Productivity

- Benefit from better chip control and higher insert stability for longer tool body life.
- Same insert size is used in each insert cartridge.

Versatility

- Diameter range covering 40–55mm (1.575–2.165") with five drilling heads.
- Large variety of DFR insert grades and geometries available.
- Outer cartridges can be adjusted to the desired cutting diameter.
- Extensions and reducers are available as standard.
- Solid carbide and HSS pilot drills are available to match the cutting conditions of specific applications.

Benefit from better chip control and higher insert stability for longer tool body life.



Pilot drill should be installed and set to the proper length before installing the inner cartridge.



Install inner cartridge, then the outer insert.



Install inner insert into cartridge.

Customization

- Wear pads can be added for increased stability.
- Fully engineered solutions available.



HTS-R


inner cartridge


pilot drill


outer cartridge

HTS Ø 1.77–4.02"/45–102mm


inner cartridge*


pilot drill


outer cartridge*

HTS Ø 4.02–6.69"/102–170mm


inner cartridge


pilot drill


outer cartridge

HTS Ø 7.68–10.63"/195–270mm


inner cartridge


pilot drill


outer cartridge

HTS with SPHX outboard insert


inner cartridge


pilot drill


outer cartridge**

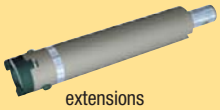
* for Ø 7.09–7.32"/180–186mm: 2 inner and outer cartridges are used

HTS-R head



HTS head

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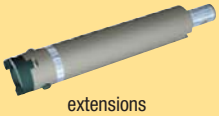
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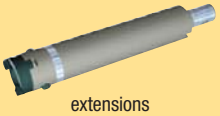
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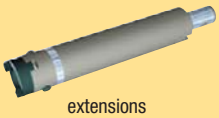

extensions


reducer


reducer

WARNING
- **DO NOT exceed 2 extensions or 1 extension plus reducer.**


DV


BT


CV with rotary ring


CV


HSK


KM™


HTS coolant coupling

** for Ø 4.02–6.69"/102–170mm & Ø 7.68–9.45"/195–240mm: the outer cartridge uses 3 inserts

HTS-R


inner cartridge


pilot drill


outer cartridge

HTS-R head



HTS Ø 1.77–4.02"/45–102mm


inner cartridge*


pilot drill


outer cartridge*

* for Ø 7.09–7.32"/180–186mm: 2 inner and outer cartridges are used

HTS Ø 4.02–6.69"/102–170mm


inner cartridge


pilot drill


outer cartridge

HTS Ø 7.68–10.63"/195–270mm


inner cartridge


pilot drill


outer cartridge

HTS with SPHX outboard insert


inner cartridge

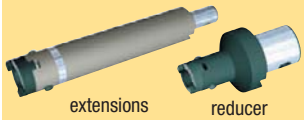

pilot drill


outer cartridge**

** for Ø 4.02–6.69"/102–170mm & Ø 7.68–9.45"/195–240mm: the outer cartridge uses 3 inserts

HTS head




extensions

reducer


extensions


reducer


basic shanks


DV


BT

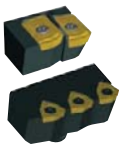
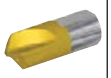

BT with coolant ring


CV

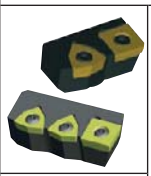
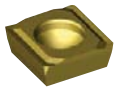
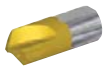

CV with coolant ring


HSK

To assemble your HTS(-R) head, choose the desired drill diameter range from the left-hand column.
Next, follow the columns to the right, and select the appropriate component from each column to complete your HTS(-R) head.

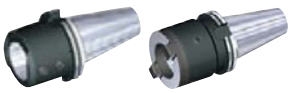
						HTS(-R) head with DFR™/DFT™ inserts								
						inner cartridge				outer cartridge				
	drilling range			L1										
	mm	in	HTS head	mm	in	cartridge	n	insert	n	cartridge	n	insert	n	pilot drill
HTS heads with DFR inserts	40–43	1.57–1.69	HTSR040R025M	60	2.36	HTSR10CI	1	DFR0302.	2	HTSR10CE	1	DFR0302.	2	B513S08.
	43–46	1.69–1.81	HTSR043R025M	70	2.76	HTSR11CI	1	DFR0302.	2	HTSR11CE	1	DFR0302.	2	B513S10.
	46–49	1.81–1.93	HTSR046R028M			HTSR12CI	1	DFR0403.	2	HTSR12CE	1	DFR0403.	2	B513S10.
	49–52	1.93–2.05	HTSR049R028M			HTSR13CI	1	DFR0403.	2	HTSR13CE	1	DFR0403..	2	B513S10.
	52–55	2.05–2.17	HTSR052R028M			HTSR14CI	1	DFR0403.	2	HTSR14CE	1	DFR0403..	2	B513S10.
HTS heads with DFT/SPHX inserts	45–50	1.77–1.97	3.76045R028V	50	1.97	3.77000R050V	1	DFT0303.	2	3.77000R051V	1	DFT0303.	2	B510S08.
	50–55	1.97–2.17	3.76050R028V			3.77000R052V	1	DFT0303.	2	3.77000R053V	1	DFT0303.	2	B510S08.
	55–58	2.17–2.28	3.76055R032V	60	2.36	3.77000R038V	1	DFT05T3.	2	3.77000R039V	1	DFT05T3.	2	B510S08.
	58–63	2.28–2.48	3.76058R032V			3.77000R023V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	63–68	2.48–2.68	3.76063R032V			3.77000R025V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	63–68	2.48–2.68	**3.76063R040V***	70	2.76	3.77000R025V	1	DFT05T3.	2	3.77000R024V	1	DFT05T3.	2	B510S10.
	68–73	2.68–2.87	3.76068R040V			3.77000R026V	1	DFT05T3.	2	3.77000R027V	1	DFT05T3.	2	B510S10.
	73–78	2.87–3.07	3.76073R040V			3.77000R026V	1	DFT05T3.	2	3.77000R027V	1	DFT05T3.	2	B510S15.
	78–84	3.07–3.31	3.76078R040V			3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	78–84	3.07–3.31	**3.76078R048V***	70	2.76	3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	84–90	3.31–3.54	3.76084R048V			3.77000R028V	1	DFT06T3.	2	3.77000R029V	1	DFT06T3.	2	B510S15.
	90–94°	3.54–3.70	3.76090R048V			–	–	–	–	–	–	–	–	–
	90–96	3.54–3.78	3.76090R048V			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S15.
	96–100°	3.78–3.93	3.76096R048V			–	–	–	–	–	–	–	–	–
	96–102	3.78–4.02	3.76096R048V			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S20.
	96–100°	3.78–3.93	**3.76096R058V***	80	3.15	–	–	–	–	–	–	–	–	–
	96–102	3.78–4.02	**3.76096R058V***			3.77000R030V	1	DFT06T3.	2	3.77000R031V	1	DFT06T3.	2	B510S20.
	102–108	4.02–4.25	3.76102R058V			3.77000R081V	1	DFT05T3.	3	3.77000R082V	1	DFT05T3.	3	B510S20.
	108–115	4.25–4.53	3.76108R058V			3.77000R083V	1	DFT06T3.	3	3.77000R084V	1	DFT06T3.	3	B510S20.
	115–122	4.53–4.80	3.76115R070V	90	3.54	3.77000R085V	1	DFT06T3.	3	3.77000R086V	1	DFT06T3.	3	B510S25.
	122–130	4.80–5.12	3.76122R070V			3.77000R079V	1	DFT06T3.	3	3.77000R080V	1	DFT06T3.	3	B510S25.
	130–140	5.12–5.51	3.76130R070V			3.77000R087V	1	DFT06T3.	3	3.77000R088V	1	DFT06T3.	3	B510S25.
	140–150	5.51–5.91	3.76140R080V	100	3.94	3.77000R077V	1	DFT0704.	3	3.77000R078V	1	DFT0704.	3	B510S25.
	150–158	5.91–6.22	3.76150R080V			3.77000R075V	1	DFT0704.	3	3.77000R076V	1	DFT0704.	3	B510S25.
	158–162	6.22–6.38	3.76158R080V			3.77000R073V	1	DFT0704.	3	3.77000R074V	1	DFT0704.	3	B510S25.
	162–170	6.38–6.70	3.76162R080V			3.77000R048V	1	DFT0704.	3	3.77000R049V	1	DFT0704.	3	B510S30.
	180–184°	7.08–7.24	3.76180R110	125	4.92	–	–	–	–	–	–	–	–	–
	180–186	7.08–7.32	3.76180R110			3.77000R030V	3	DFT06T3.	4	3.77000R031V	1	DFT06T3.	4	B510S30.
	195–201	7.68–7.91	3.76195R110			3.77000R081V	3	DFT05T3.	6	3.77000R082V	1	DFT05T3	6	B510S30.
	213–220	8.39–8.66	3.76213R125			3.77000R083V	3	DFT06T3.	6	3.77000R084V	1	DFT06T3.	6	B510S30.
	230–240	9.06–9.45	3.76230R160	150	5.91	3.77000R079V	2	DFT06T3.	6	3.77000R080V	2	DFT06T3.	6	B510S30.
	260–270	10.24–10.63	3.76260R160			3.77000R077V	2	DFT06T3.	6	3.77000R078V	2	DFT06T3.	6	B510S30.

° Decreased diameter range by using SPHX insert in exterior cartridge.
* Drill heads with reinforced body for short–chipping materials.
n = Required quantity.

	HTS head with DFT™ inserts and SPHX outboard insert												
	inner cartridge						outer cartridge						
													
	cartridge	n	cartridge	n	insert	n	cartridge	n	insert	n	insert	n	pilot drill
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R250V	1	–	–	DFT0303.	2	3.77000R251V	1	DFT0303.	1	SPHX0703.	1	B510S08.
	3.77000R252V	1	–	–	DFT0303.	2	3.77000R253V	1	DFT0303.	1	SPHX0703.	1	B510S08.
	3.77000R038V	1	–	–	DFT05T3.	2	3.77000R239V	1	DFT05T3.	1	SPHX0903.	1	B510S08.
	3.77000R023V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R025V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R025V	1	–	–	DFT05T3.	2	3.77000R224V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R026V	1	–	–	DFT05T3.	2	3.77000R227V	1	DFT05T3.	1	SPHX0903.	1	B510S10.
	3.77000R026V	1	–	–	DFT05T3.	2	3.77000R227V	1	DFT05T3.	1	SPHX0903.	1	B510S15.
	3.77000R028V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R028V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R228V	1	–	–	DFT06T3.	2	3.77000R229V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S15.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S20.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R230V	1	–	–	DFT06T3.	2	3.77000R231V	1	DFT06T3.	1	SPHX0903.	1	B510S20.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R081V	1	–	–	DFT05T3.	3	3.77000R282V	1	DFT05T3.	2	SPHX0903.	1	B510S20.
	3.77000R083V	1	–	–	DFT06T3.	3	3.77000R284V	1	DFT06T3.	2	SPHX1204.	1	B510S20.
	3.77000R085V	1	–	–	DFT06T3.	3	3.77000R286V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R079V	1	–	–	DFT06T3.	3	3.77000R280V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R087V	1	–	–	DFT06T3.	3	3.77000R288V	1	DFT06T3.	2	SPHX1204.	1	B510S25.
	3.77000R077V	1	–	–	DFT0704.	3	3.77000R278V	1	DFT0704.	2	SPHX1505.	1	B510S25.
	3.77000R075V	1	–	–	DFT0704.	3	3.77000R276V	1	DFT0704.	2	SPHX1204.	1	B510S25.
	3.77000R073V	1	–	–	DFT0704.	3	3.77000R274V	1	DFT0704.	2	SPHX1204.	1	B510S25.
	3.77000R248V	1	–	–	DFT0704.	3	3.77000R249V	1	DFT0704.	2	SPHX1505.	1	B510S30.
	3.77000R230V	3	–	–	DFT06T3.	4	3.77000R231V	1	DFT06T3.	3	SPHX0903.	1	B510S30.
	–	–	–	–	–	–	–	–	–	–	–	–	–
	3.77000R081V	3	–	–	DFT05T3.	9	3.77000R282V	1	DFT05T3.	2	SPHX0903.	1	B510S30.
	3.77000R083V	3	–	–	DFT06T3.	9	3.77000R284V	1	DFT06T3.	2	SPHX1204.	1	B510S30.
	3.77000R079V	2	3.77000R080V	1	DFT06T3.	9	3.77000R280V	1	DFT06T3.	2	SPHX1204.	1	B510S30.
	–	–	–	–	–	–	–	–	–	–	–	–	B510S30

HTS Tool Assembly Combinations

- Select your appropriate drill diameter range.
- Choose the appropriate adapter and shank size.
- Follow the columns to the right, and select the appropriate components from each column to complete your HTS(-R) tool.

	drilling range		shank		DV		BT		CV		HSK	
												
					assembly details		assembly details		assembly details		assembly details	
	mm	in		D1	40	50	40	50	40	50	50/63/100	
HTS heads with DFR™ inserts	40–43 43–46	1.57–1.69 1.69–1.81	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070M	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	–	
			SS(F)	1.50	–	–	–	–	CV40BSSF150575	CV50SS150400 (AD) CV50SS150600 (AD) CV50SS150800 (AD) CV50BSSF150450	–	
	46–49 49–52 52–55	1.81–1.93 1.93–2.05 2.05–2.17	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	–	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	–	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	–	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
HTS heads with DFT™/SPHX inserts	45–50 50–55	1.77–1.97 1.97–2.17	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070M	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	55–58 58–63 63–68	2.17–2.28 2.28–2.48 2.48–2.68	WD/ WN	32	DV40BWD32075M **DV40RMWD32115M****	DV50BWD32060M **DV50RMWD32140M****	BT40BWD32070	BT50BWD32080M	CV40BWD32M343 **CV40RMWD32M453****	CV50BWD32M343 **CV50RMWD32M453****	HSK50ASWN32110M HSK63ASWN32090M HSK100ASWN32100M	
				50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	63–68* 68–73 73–78 78–84	2.48–2.68 2.68–2.87 2.87–3.07 3.07–3.31	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	V50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	

* HTS drilling head with reinforced body for short-chipping materials.
** Adapter with coolant ring.
The shown combinations are not complete. Ask your Kennametal representative to get the most reasonable solution for your application.
Please note that the assembled total length of the drilling tool is not necessarily the total achievable drilling depth.

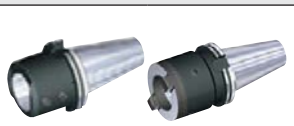
	KM	basic shank				reducer					extension			HTS head
	 assembly details		L4		L4		L1		 for use with coolant adapter			L1		
	80	metric	mm	inch	in		mm	in	coolant adapter	shell mill DV/BT		mm	in	
	–	5.34032–025115 5.34032–025200	110 195	–	–	–	–	–	–	–	5.34125R025150	160	6.30	HTSR040R025M HTSR043R025M
	–	5.34050–025300 5.34050–025450	270 420	–	–	–	–	–	–	–				
	–	–	–	SSF150HTS130239 SSF150HTS130664 SSF150HTS131114 SSF150HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	–	5.34032–028115 5.34032–028200	110 195	–	–	–	–	–	–	–	5.34128R028150	160	6.30	HTSR046R028M HTSR049R028M HTSR052R028M
	–	5.34050-028300 5.34050-028450	265 415	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS130239 SSF200HTS130664 SSF200HTS131114 SSF200HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R028080	90	3.54	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34032–025115 5.34032–025200	110 195	–	–	–	–	–	–	–	5.34128R028150	160	6.30	3.76045R028V 3.76050R028V
	–	5.34050–028300 5.34050–028450	265 415	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS130239 SSF200HTS130664 SSF200HTS131114 SSF200HTS131764	.39 4.65 9.14 15.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R028080	90	3.54	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34032–032125	120	–	–	–	–	–	–	–	5.34132R032100 5.34132R032200	110 210	4.33 8.27	3.76055R032V 3.76058R032V 3.76063R032V
	–	5.34050–032500 5.34050–032350 5.34050–032350	165 315 465	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS160239 SSF200HTS160714 SSF200HTS161214 SSF200HTS161964	.39 5.14 10.14 17.64	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R032080	90	3.5	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34050–040148 5.34050–040300 5.34050–040450 5.34050–040600	140 267 417 567	–	–	–	–	–	–	–	5.34140R040200	212	8.35	3.76063R040V* 3.76068R040V 3.76073R040V 3.76078R040V
	–	–	–	SSF200HTS220297 SSF200HTS220922 SSF200HTS221572 SSF200HTS222572	.47 7.22 13.72 23.72	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R040080	90	3.62	5.34350–090100	DV50SM60070M BT50SM60090M				

(continued)

(HTS Tool Assembly Combinations — continued)

HTS Tool Assembly Combinations

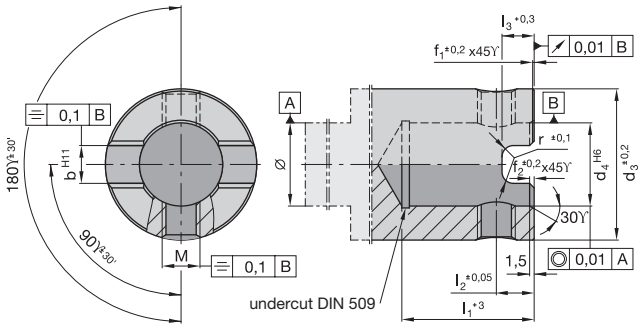
- Select your appropriate drill diameter range.
- Choose the appropriate adapter and shank size.
- Follow the columns to the right, and select the appropriate components from each column to complete your HTS(-R) tool.

					DV		BT		CV		HSK	
	drilling range		shank		 assembly details		 assembly details		 assembly details		 assembly details	
	mm	in		D1	40	50	40	50	40	50	50/63/100	
HTS heads with DFT™/SPHX inserts	**78–84*** 84–90 90–96 96–102	3.07–3.31 3.31–3.54 3.54–3.70 3.78–4.02	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 CV50RMHTS50M413**	–	
	96–102* 102–108 108–115	3.78–4.02 4.02–4.25 4.25–4.53	WD/ WN	50	–	DV50BWD50075M **DV50RMWD50144M****	–	BT50BWD50085M **BT50RMWD50162M****	–	CV50BWD50M343 **CV50RMWD50M472****	HSK100ASWN50110M	
			SS(F)	2.00	–	–	–	–	–	CV50SS200562 (AD) CV50SS200762 (AD) CV50BSSF200550	–	
			HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	–	
	115–122 122–130 130–140	4.53–4.80 4.80–5.12 5.12–5.51	SS(F)	40	–	–	–	–	–	CV50SS250800	–	
			HTS	40	5.36050154040	–	BT50BHTS40080M	–	CV50BHTS40M314 **CV50RMHTS40M412****	–	HSK100AHTS40085M	
				50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	HSK100AHTS50090M	
	140–150 150–158 158–162 162–170	5.51–5.91 5.91–6.22 6.22–6.38 6.38–6.70	HTS	50	–	5.36050–154050	–	BT50BHTS50080M	–	CV50BHTS50M314 **CV50RMHTS50M413****	HSK100AHTS50090M	
	180–186 195–201 213–220	7.08–7.32 7.68–7.91 8.39–8.66	customized solutions available upon request									
	230–240 260–270	9.06–9.45 10.24–10.63	customized solutions available upon request									

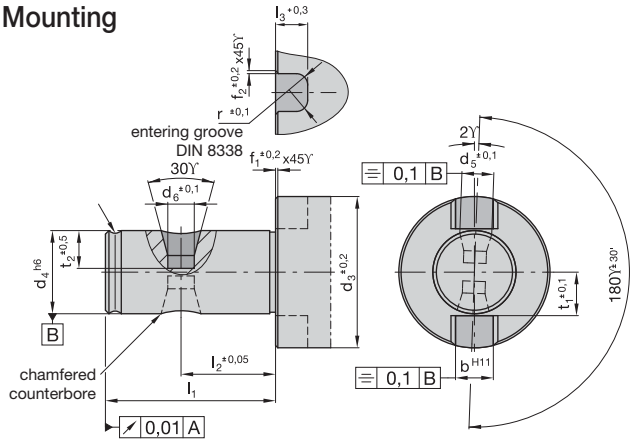
* HTS drilling head with reinforced body for short-chipping materials.
** Adapter with coolant ring.
The shown combinations are not complete. Ask your Kennametal representative to get the most reasonable solution for your application.
Please note that the assembled total length of the drilling tool is not necessarily the total achievable drilling depth.

	KM	basic shank				reducer					extension			HTS head
														
	assembly details		L4		L4		L1		for use with coolant adapter			L1		
	80	metric	mm	inch	in		mm	in	coolant adapter	shell mill DV/BT		mm	in	
	–	5.34050–048168 5.34050–048300 5.34050–048450 5.34050–048600	160 267 417 567	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS270297 SSF200HTS271122 SSF200HTS271922 SSF200HTS273122	1.47 9.22 17.22 29.22	–	–	–	–	–	5.34140R048200	212	8.35	**3.76078R048V*** 3.76084R048V 3.76090R048V 3.76096R048V
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R048080	92	3.62	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	5.34050–058186 5.34050–058300 5.34050–058450 5.34050–058600	180 254 404 554	–	–	–	–	–	–	–				
	–	–	–	SSF200HTS160239 SSF200HTS160714 SSF200HTS161214 SSF200HTS161964	.39 5.14 10.14 17.64	–	–	–	–	–	5.34158R058300	314	12.36	**3.76096R058V*** 3.76102R058V 3.76108R058V
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	5.34280R058080	94	3.70	5.34350–090100	DV50SM60070M BT50SM60090M				
	–	–	–	SSF250HTS400355 SSF250HTS401055 SSF250HTS401555 SSF250HTS402555	1.63 8.21 13.21 23.21	–	–	–	–	–	–	–	–	
	KM80ATCHTS40085M KM80ATCHTS40100M	–	–	–	–	5.34280R070150	164	6.45	5.34350–090100	DV50SM60070M BT50SM60090M	5.34170R070300 5.34170R070500	314 514	12.36 20.24	3.76115R070V 3.76122R070V 3.76130R070V
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	–	–	–	–	–	–	–				
	KM80ATCHTS50085M KM80ATCHTS50100M	–	–	SSF300HTS500413 SSF300HTS501313 SSF300HTS502113 SSF300HTS503113	1.87 10.55 18.55 28.55	–	–	–	5.34350–090100	DV50SM60070M BT50SM60090M	5.34180R080204 5.34180R080300 5.34180R080500	220 316 516	8.66 12.44 20.32	3.76140R080V 3.76150R080V 3.76158R080V 3.76162R080V
customized solution available upon request														3.76180R110 3.76195R110 3.76213R125
customized solution available upon request														3.76230R160 3.76260R160

Adapter



Mounting



Adapter Dimensions

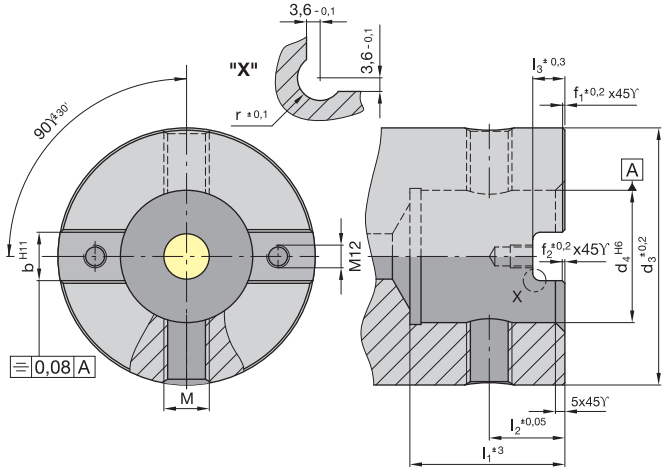


d3	d4	l1	l2	l3	M	b	r	f1	f2	drive ring	clamping screw	thread	MAn* Nm	sliding block	clamping screw M 12 x 25 for sliding block
25	13	28	12,4	7,0	M8 x 1,0	8,0	3	0,5	0,5	**193.371**	**193.372**	M8 x 1,0	10	–	–
28	13	28	12,4	7,0	M8 x 1,0	8,0	3	0,5	0,5	**192.419**	**193.372**	M8 x 1,0	10	–	–
32	16	32	14,4	7,5	M8 x 1,0	8,0	3	0,5	0,5	**192.420**	**192.156**	M8 x 1,0	10	–	–
40	22	35	13,4	8,5	M10 x 1,0	10,0	3	0,5	0,5	**192.421**	**192.157**	M10 x 1,0	16	–	–
48	27	40	15,4	9,0	M12 x 1,0	12,0	3	1,0	1,0	**192.422**	**191.727**	M12 x 1,0	16	–	–
58	32	38	15,4	10,0	M12 x 1,0	14,0	3	1,0	1,0	**192.423**	**191.727**	M12 x 1,0	20	–	–
70	40	43	16,4	10,0	M16 x 1,5	16,0	3	1,0	1,0	**192.424**	**191.728**	M16 x 1,5	34	–	–
80	50	46	20,4	12,5	M16 x 1,5	18,0	4	1,0	1,0	**192.425**	**191.728**	M16 x 1,5	34	–	–
90	50	46	20,4	12,5	M16 x 1,5	18,0	4	1,0	1,0	**192.426**	**191.729**	M16 x 1,5	34	–	–
110	60	46	20,4	12,5	M16 x 1,5	20,0	4	1,0	1,0	**192.427**	**191.729**	M16 x 1,5	34	–	–
125 1)	60	77	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**
140 1)	70	82	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**
160 1)	80	82	40,0	12,5	M24 x 2,0	25,5	4	1,0	1,0	–	**193.107**	M24 x 2,0	120	**191.019**	**125.225**

* MAn = Clamping torque of clamping screw in Nm.

Mounting Dimensions

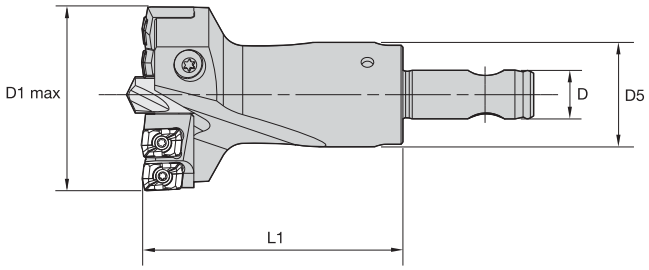
d3	d4	d5	d6	l1	l2	l3	t1	t2	b	r	f1	f2
25	13	8,50	6,5	35	22,0	7,00	6,7	6,50	8,0	3	0,5	0,5
28	13	8,50	6,5	35	22,0	7,00	7,0	6,50	8,0	3	0,5	0,5
32	16	8,30	6,5	40	24,0	7,50	8,5	7,50	8,0	3	0,5	0,5
40	22	10,50	7,0	45	25,0	8,50	11,5	10,00	10,0	3	0,5	0,5
48	27	12,75	9,0	50	27,0	9,00	14,0	12,00	12,0	3	1,0	1,0
58	32	11,50	9,0	50	29,0	10,00	16,5	7,25	14,0	3	1,0	1,0
70	40	15,25	12,2	55	30,0	10,50	20,5	10,00	16,0	3	1,0	1,0
80	50	15,25	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
90	50	16,50	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
110	60	14,50	12,2	60	36,0	13,65	30,5	10,00	20,0	4	1,0	1,0
125 1)	60	25,00	18,0	75	39,5	17,00	35,0	20,25	25,5	6	1,0	1,0
140 1)	70	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0
160 1)	80	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0



1) Adapter for d3 = 125, 140, and 160

- Head shipped with clamping and adjusting screws.
- Order pilot drill and cartridges separately; see page J76 for pilot drill.





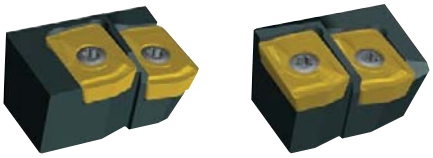


HTS Adjustable Heads with DFR™ Inserts

	D1		D1 max		D5			L1									
catalog number	mm	in	mm	in	mm	in	D	mm	in	pilot drill HSS	pilot drill carbide	cartridge interior	n	cartridge exterior	n	gage insert	ni
HTSR040R025M	40	1.57	43	1.69	25	0.98	13A	60	2	B513S08..	B514S08..	**HTSR10CI**	1	**HTSR10CE**	1	DFR0302..	4
HTSR043R025M	43	1.69	46	1.81	25	0.98	13A	70	3	B513S10..	B514S10..	**HTSR11CI**	1	**HTSR11CE**	1	DFR0302..	4
HTSR046R028M	46	1.81	49	1.93	28	1.10	13B	70	3	B513S10..	B514S10..	**HTSR12CI**	1	**HTSR12CE**	1	DFR0403..	4
HTSR049R028M	49	1.93	52	2.05	28	1.10	13B	70	3	B513S10..	B514S10..	**HTSR13CI**	1	**HTSR13CE**	1	DFR0403..	4
HTSR052R028M	52	2.05	55	2.17	28	1.10	13B	70	3	B513S10..	B514S10..	**HTSR14CI**	1	**HTSR14CE**	1	DFR0403..	4

NOTE: n: number of cartridges required by head.
ni: number of inserts required by head.

D1 diameter			
mm	in	clamping screw	adjusting screw
40–42	1.57–1.68	**190.116**	**128.610**
43–52	1.69 - 2.05	**193.397**	**190.458**

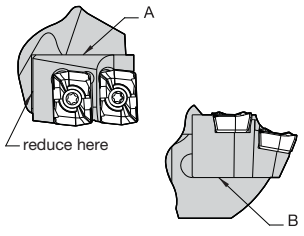


HTS DFR Cartridges

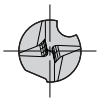


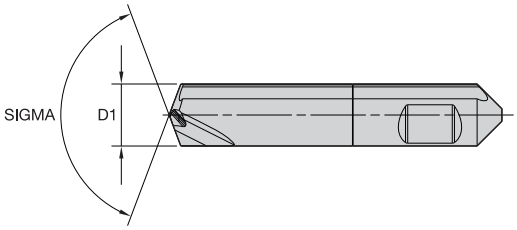
catalog number	gage insert	Nm	ft. lbs.	insert screw	cartridge screw	washer
HTSR10CE	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR10CI	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR11CE	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR11CI	DFR0302..	5,0	3.69	**192.416**	**192.592**	**192.902**
HTSR12CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR12CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR13CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR13CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR14CE	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**
HTSR14CI	DFR0403..	5,0	3.69	**192.432**	**192.592**	**192.902**

- Change drill diameter by shortening the outer cartridge.
- Shorten at 90° to the contact face A and the support face B.
- Shortening reduces the effective drill diameter by 2x the amount removed.



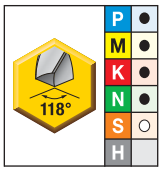
- Choose between HSS and solid carbide.

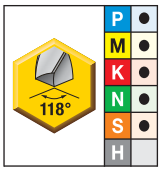


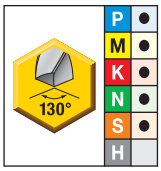




HTS DFR™ • Pilot Drills

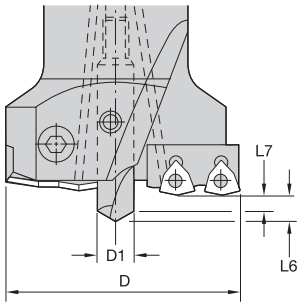






● first choice
○ alternate choice

high-speed steel uncoated	high-speed steel coated	solid carbide coated	D1	
A30	AS3	KC7030	mm	in
B513S08000 A30	B513S08000 AS3	B514S08000 KC7030	8	.32
B513S10000 A30	B513S10000 AS3	B514S10000 KC7030	10	.39



HTS DFR • Pilot Drills

		118° high-speed steel				130° solid carbide			
D1		L6		L7		L6		L7	
mm	in	mm	in	mm	in	mm	in	mm	in
8,00	.315	4,14	.163	1,73	.068	3,61	.142	1,73	.068
10,00	.394	4,88	.192	1,88	.074	4,19	.165	1,88	.074

HTS DFR™ • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter		
						min	Starting Value	max	Ø	DFR03... 40,00–46,00mm	DFR04 46,00–55,00mm
P	1	S	O	MD	KCU25	79	**190**	229	mm/r	0,10–0,14	0,12–0,18
			I	MD	KCU25						
		U	O	MD	KCU40	71	**130**	171	mm/r	0,10–0,14	0,12–0,18
			I	MD	KCU40						
		I	O	MD	KC7140	44	**80**	106	mm/r	0,10–0,14	0,12–0,18
			I	MD	KC7140						
	2	S	O	GD	KCU25	75	**180**	217	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	71	**120**	271	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	44	**70**	106	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	3	S	O	GD	KCU25	60	**140**	169	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	50	**100**	121	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	30	**60**	72	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	4	S	O	GD	KCU25	79	**120**	229	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU25						
		U	O	GD	KCU40	71	**100**	171	mm/r	0,10–0,14	0,12–0,18
			I	GD	KCU40						
		I	O	GD	KC7140	44	**80**	106	mm/r	0,10–0,14	0,12–0,18
			I	GD	KC7140						
	5	S	O	GD	KCU40	62	**100**	190	mm/r	0,06–0,11	0,07–0,14
			I	GD	KCU40						
		U	O	GD	KC7140	47	**60**	114	mm/r	0,06–0,11	0,07–0,14
			I	GD	KC7140						
		I	O	GD	KC7140	31	**40**	76	mm/r	0,06–0,11	0,07–0,14
			I	GD	KC7140						
	6	S	O	GD	KCU40	59	**95**	180	mm/r	0,07–0,11	0,08–0,13
			I	GD	KCU40						
		U	O	GD	KC7140	45	**57**	108	mm/r	0,07–0,11	0,08–0,13
			I	GD	KC7140						
		I	O	GD	KC7140	30	**38**	72	mm/r	0,07–0,11	0,08–0,13
			I	GD	KC7140						
M	1	S	O	MD	KCU40	40	**110**	134	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**70**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**50**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
	2	S	O	MD	KCU40	38	**99**	127	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**63**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**45**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
	3	S	O	MD	KCU40	32	**88**	107	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		U	O	MD	KC7140	31	**56**	86	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						
		I	O	MD	KC7140	22	**40**	61	mm/r	0,07–0,11	0,12–0,18
			I	MD	KC7140						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFR™ • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter		
						min	Starting Value	max	Ø	DFR03... 40,00–46,00mm	DFR04... 46,00–55,00mm
K	1	S	O	GD	KCPK10	79	**171**	229	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	LD	KCU25	64	**117**	156	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU25						
		I	O	LD	KCU40	40	**72**	96	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU40						
	2	S	O	GD	KCPK10	75	**162**	217	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	GD	KCU25	64	**111**	156	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU25						
		I	O	LD	KCU40	40	**68**	96	mm/r	0,11–0,20	0,13–0,27
			I	LD	KCU40						
	3	S	O	GD	KCPK10	68	**146**	195	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCPK10						
		U	O	GD	KCU25	59	**100**	144	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU25						
		I	O	GD	KCU40	35	**62**	84	mm/r	0,11–0,20	0,13–0,27
			I	GD	KCU40						
N	1	S	O	ST	KD1425	128	**240**	358	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**160**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**104**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	2	S	O	ST	KD1425	119	**223**	333	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	3	S	O	ST	KD1425	110	**206**	308	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**138**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**89**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	4	S	O	ST	KD1425	119	**223**	333	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
	5	S	O	ST	KD1425	92	**220**	262	mm/r	0,06–0,09	0,11–0,19
			I	ST	KD1425						
		U	O	LD	KCU40	72	**140**	167	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						
		I	O	LD	KCU40	46	**90**	107	mm/r	0,06–0,09	0,11–0,19
			I	LD	KCU40						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFR™ • Inch

Inch											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter		
						min	Starting Value	max	Ø	DFR03... .688–.750"	DFR04... .813–1.00"
P	1	S	O	MD	KCU25	260	**623**	750	IPR	.004–.006	.005–.007
			I	MD	KCU25						
		U	O	MD	KCU40	231	**427**	561	IPR	.004–.006	.005–.007
			I	MD	KCU40						
		I	O	MD	KC7140	143	**262**	348	IPR	.003–.006	.004–.008
			I	MD	KC7140						
	2	S	O	GD	KCU25	247	**591**	712	IPR	.004–.006	.005–.007
			I	GD	KCU25						
		U	O	GD	KCU40	231	**394**	561	IPR	.004–.006	.005–.007
			I	GD	KCU40						
		I	O	GD	KC7140	143	**230**	348	IPR	.004–.006	.005–.007
			I	GD	KC7140						
	3	S	O	GD	KCU25	197	**459**	555	IPR	.004–.006	.005–.007
			I	GD	KCU25						
		U	O	GD	KCU40	163	**328**	396	IPR	.004–.006	.005–.007
			I	GD	KCU40						
		I	O	GD	KC7140	98	**197**	238	IPR	.004–.006	.005–.007
			I	GD	KC7140						
	4	S	O	GD	KCU25	260	**394**	750	IPR	.004–.006	.005–.007
			I	GD	KCU25						
		U	O	GD	KCU40	231	**328**	561	IPR	.004–.006	.005–.007
			I	GD	KCU40						
		I	O	GD	KC7140	143	**262**	348	IPR	.004–.006	.005–.007
			I	GD	KC7140						
	5	S	O	GD	KCU40	205	**328**	622	IPR	.002–.004	.003–.006
			I	GD	KCU40						
		U	O	GD	KC7140	154	**197**	373	IPR	.002–.004	.003–.006
			I	GD	KC7140						
		I	O	GD	KC7140	103	**131**	250	IPR	.002–.004	.003–.006
			I	GD	KC7140						
	6	S	O	GD	KCU40	195	**312**	591	IPR	.003–.004	.003–.005
			I	GD	KCU40						
		U	O	GD	KC7140	146	**187**	355	IPR	.003–.004	.003–.005
			I	GD	KC7140						
		I	O	GD	KC7140	98	**125**	238	IPR	.003–.004	.003–.005
			I	GD	KC7140						
M	1	S	O	MD	KCU40	130	**361**	439	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		U	O	MD	KC7140	101	**230**	281	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		I	O	MD	KC7140	72	**164**	199	IPR	.003–.004	.005–.007
			I	MD	KC7140						
	2	S	O	MD	KCU40	124	**325**	417	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		U	O	MD	KC7140	101	**207**	281	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		I	O	MD	KC7140	72	**148**	199	IPR	.003–.004	.005–.007
			I	MD	KC7140						
	3	S	O	MD	KCU40	104	**289**	351	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		U	O	MD	KC7140	101	**184**	281	IPR	.003–.004	.005–.007
			I	MD	KC7140						
		I	O	MD	KC7140	72	**131**	199	IPR	.003–.004	.005–.007
			I	MD	KC7140						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFR™ • Inch

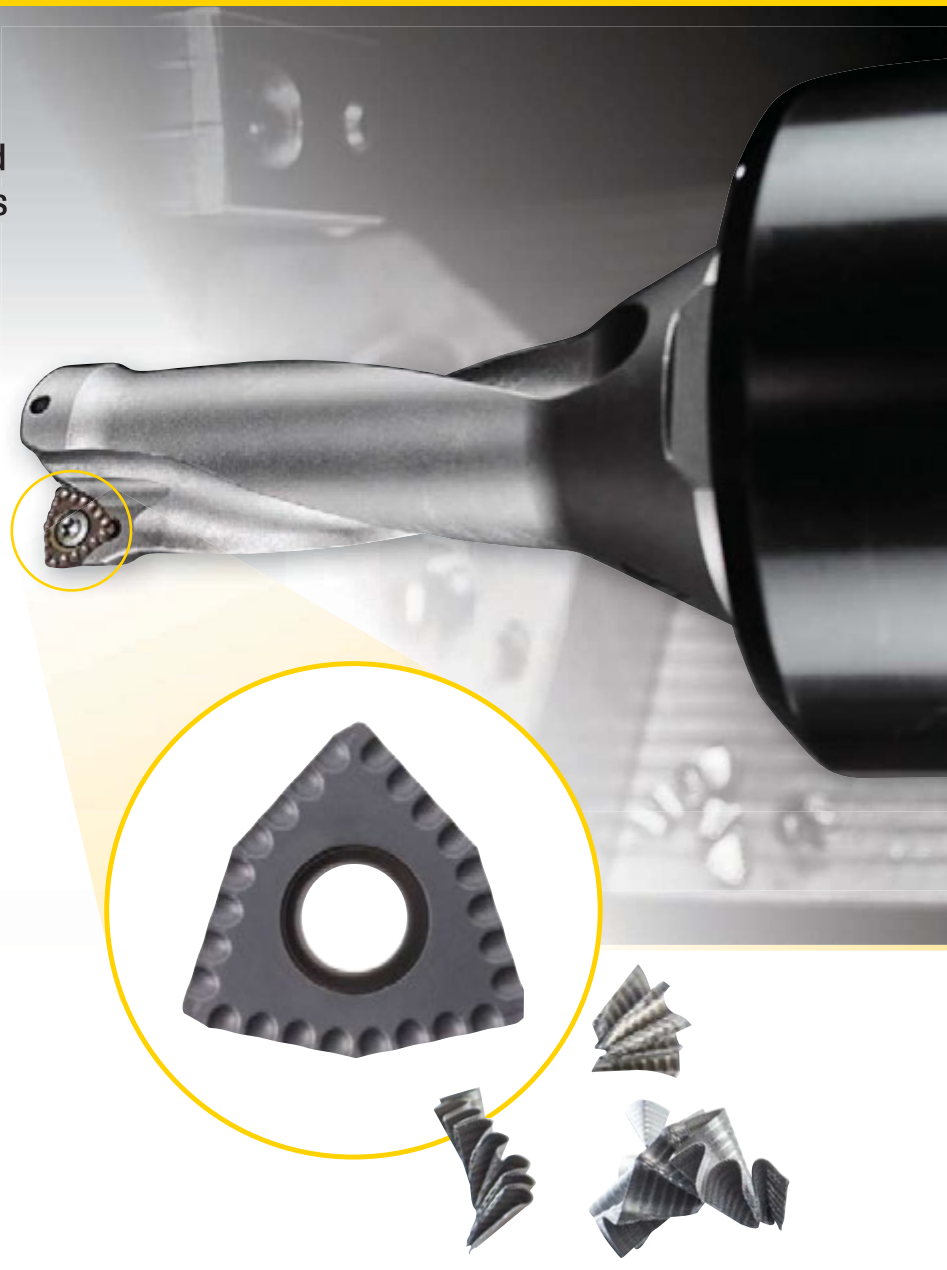
Inch											
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter		
						min	Starting Value	max	Ø	DFR03... .688–.750"	DFR04... .813–1.00"
K	1	S	O	GD	KCPK10	260	**561**	750	IPR	.004–.008	.005–.011
			I	GD	KCPK10						
		U	O	LD	KCU25	211	**384**	510	IPR	.004–.008	.005–.011
			I	LD	KCU25						
		I	O	LD	KCU40	131	**236**	316	IPR	.004–.008	.005–.011
			I	LD	KCU40						
	2	S	O	GD	KCPK10	247	**533**	712	IPR	.004–.008	.005–.011
			I	GD	KCPK10						
		U	O	GD	KCU25	211	**365**	510	IPR	.004–.008	.005–.011
			I	GD	KCU25						
		I	O	LD	KCU40	131	**224**	316	IPR	.004–.008	.005–.011
			I	LD	KCU40						
	3	S	O	GD	KCPK10	222	**480**	641	IPR	.004–.008	.005–.011
			I	GD	KCPK10						
		U	O	GD	KCU25	195	**328**	473	IPR	.004–.008	.005–.011
			I	GD	KCU25						
		I	O	GD	KCU40	113	**202**	274	IPR	.004–.008	.005–.011
			I	GD	KCU40						
N	1	S	O	ST	KD1425	420	**787**	1176	IPR	.002–.004	.004–.007
			I	ST	KD1425						
		U	O	LD	KCU40	336	**525**	784	IPR	.002–.004	.004–.007
			I	LD	KCU40						
		I	O	LD	KCU40	218	**341**	510	IPR	.002–.004	.004–.007
			I	LD	KCU40						
	2	S	O	ST	KD1425	391	**732**	1094	IPR	.002–.004	.004–.007
			I	ST	KD1425						
		U	O	LD	KCU40	336	**488**	784	IPR	.002–.004	.004–.007
			I	LD	KCU40						
		I	O	LD	KCU40	218	**317**	510	IPR	.002–.004	.004–.007
			I	LD	KCU40						
	3	S	O	ST	KD1425	361	**677**	1011	IPR	.002–.004	.004–.007
			I	ST	KD1425						
		U	O	LD	KCU40	336	**451**	784	IPR	.002–.004	.004–.007
			I	LD	KCU40						
		I	O	LD	KCU40	218	**293**	510	IPR	.002–.004	.004–.007
			I	LD	KCU40						
	4	S	O	ST	KD1425	391	**732**	1094	IPR	.002–.004	.004–.007
			I	ST	KD1425						
		U	O	LD	KCU40	336	**488**	784	IPR	.002–.004	.004–.007
			I	LD	KCU40						
		I	O	LD	KCU40	218	**317**	510	IPR	.002–.004	.004–.007
			I	LD	KCU40						
	5	S	O	ST	KD1425	302	**722**	858	IPR	.002–.004	.004–.007
			I	ST	KD1425						
		U	O	LD	KCU40	235	**459**	549	IPR	.002–.004	.004–.007
			I	LD	KCU40						
		I	O	LD	KCU40	151	**295**	351	IPR	.002–.004	.004–.007
			I	LD	KCU40						

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

Difficult Applications Made Easy

Use DS and LP geometries to avoid bird nesting and long, stringy chips in low-carbon steel applications.



- The new DS insert style can be used on Drill Fix™ DFT™, HTS, and KSEM PLUS™ tooling systems.
- LP-style inserts can be used on Drill Fix DFSP™ as outboard inserts.
- Use the new geometries in all applications where long chips are an issue.

See pages J4–J59 for Drill Fix indexable drills.

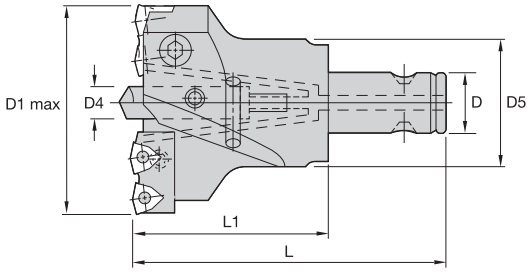
See pages H102–H106, H108–H125, and H133 for KSEM PLUS A1 and B1 head systems.

Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

- Head shipped with clamping and adjusting screws.
- Order pilot drill separately; see page J86.
- Order cartridges separately; see page J84.



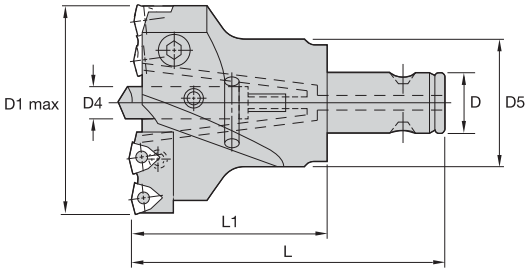


HTS Adjustable Heads with DFT™ Inserts

	D1		D1 max														
catalog number	mm	in	mm	in	D5	D	L	L1	pilot drill	cartridge interior	n	cartridge exterior	n	gage insert	ni	kg	lbs
3.76045R028V	45	1.770	50	1.970	28	13	85	50	B510S08.	3.77000R050V	1	3.77000R051V	1	DFT0303.	4	0.3	0.66
3.76050R028V	50	1.970	55	2.170	28	13	85	50	B510S08.	3.77000R052V	1	3.77000R053V	1	DFT0303.	4	0.4	0.88
3.76055R032V	55	2.170	58	2.280	33	16	100	60	B510S08.	3.77000R038V	1	3.77000R039V	1	DFT05T3.	4	0.4	0.88
3.76058R032V	58	2.280	63	2.480	33	16	100	60	B510S10.	3.77000R023V	1	3.77000R024V	1	DFT05T3.	4	0.4	0.88
3.76063R032V	63	2.480	68	2.680	33	16	100	60	B510S10.	3.77000R025V	1	3.77000R024V	1	DFT05T3.	4	0.4	0.88
3.76063R040V	63	2.480	68	2.680	41	22	115	70	B510S10.	3.77000R025V	1	3.77000R024V	1	DFT05T3.	4	0.5	1.10
3.76068R040V	68	2.680	73	2.870	41	22	115	70	B510S10.	3.77000R026V	1	3.77000R027V	1	DFT05T3.	4	0.8	1.76
3.76073R040V	73	2.870	78	3.070	41	22	115	70	B510S15.	3.77000R026V	1	3.77000R027V	1	DFT05T3.	4	0.8	1.76
3.76078R040V	78	3.070	84	3.310	41	22	115	70	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4	0.8	1.76
3.76078R048V	78	3.070	84	3.310	49	27	120	70	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4	0.9	1.98
3.76084R048V	84	3.310	90	3.540	49	27	120	70	B510S15.	3.77000R028V	1	3.77000R029V	1	DFT06T3.	4	1.0	2.20
3.76090R048V	90	3.540	96	3.780	49	27	120	70	B510S15.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4	1.0	2.20
3.76096R048V	96	3.780	102	4.020	49	27	120	70	B510S20.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4	1.1	2.43
3.76096R058V	96	3.780	102	4.020	59	32	130	80	B510S20.	3.77000R030V	1	3.77000R031V	1	DFT06T3.	4	1.2	2.65
3.76102R058V	102	4.020	108	4.250	59	32	130	80	B510S20.	3.77000R081V	1	3.77000R082V	1	DFT05T3.	6	1.7	3.75
3.76108R058V	108	4.250	115	4.530	59	32	130	80	B510S20.	3.77000R083V	1	3.77000R084V	1	DFT06T3.	6	1.8	3.97
3.76115R070V	115	4.530	122	4.800	71	40	145	90	B510S20.	3.77000R085V	1	3.77000R086V	1	DFT06T3.	6	2.9	6.39
3.76122R070V	122	4.800	130	5.120	71	40	145	90	B510S25.	3.77000R079V	1	3.77000R080V	1	DFT06T3.	6	2.9	6.39
3.76130R070V	130	5.120	140	5.510	71	40	145	90	B510S25.	3.77000R087V	1	3.77000R088V	1	DFT06T3.	6	3.0	6.61
3.76140R080V	140	5.510	150	5.910	81	50	160	100	B510S25.	3.77000R077V	1	3.77000R078V	1	DFT0704.	6	4.3	9.48
3.76150R080V	150	5.910	158	6.220	81	50	160	100	B510S25.	3.77000R075V	1	3.77000R076V	1	DFT0704.	6	4.5	9.92
3.76158R080V	158	6.220	162	6.380	81	50	160	100	B510S25.	3.77000R073V	1	3.77000R074V	1	DFT0704.	6	4.5	9.92
3.76162R080V	162	6.380	170	6.690	80	50	160	100	B510S30.	3.77000R048V	1	3.77000R049V	1	DFT0704.	6	4.5	9.92
3.76180R110	180	7.090	186	7.320	110	60	185	125	B510S30.	3.77000R030V	3	3.77000R031V	1	DFT06T3.	8	6.0	13.23
3.76195R110	195	7.680	201	7.910	110	60	185	125	B510S30.	3.77000R081V	3	3.77000R082V	1	DFT05T3.	12	6.5	14.33
3.76213R125	213	8.390	220	8.660	125	60	200	125	B510S30.	3.77000R083V	3	3.77000R084V	1	DFT06T3.	12	7.5	16.53
3.76230R160	230	9.060	240	9.450	160	80	230	150	B510S30.	3.77000R079V	2	3.77000R080V	2	DFT06T3.	12	8.5	18.74
3.76260R160 *	260	10.240	270	10.630	160	80	230	150	B510S30.	3.77000R077V	2	3.77000R078V	2	DFT06T3.	12	9.0	19.84

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
n: number of cartridges required by head.
ni: number of inserts required by head.

- Head shipped with clamping and adjusting screws.
- Order pilot drill separately; see page J86.
- Order cartridges separately; see pages J84–J85.





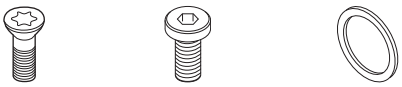
HTS Adjustable Heads • DFT™ and SPHX Inserts

catalog number	D1 mm	D1 in	D1 max mm	D1 max in	pilot drill	cartridge interior	n	cartridge interior 2	n	gage insert	ni	cartridge exterior SPHX	n	gage insert	ni
3.76045R028V	45	1.770	50	1.970	B510S08.	**3.77000R250V**	1	–	–	DFT0303.	3	3.77000R251V	1	SPHX0703.	1
3.76050R028V	50	1.970	55	2.170	B510S08.	**3.77000R252V**	1	–	–	DFT0303.	3	3.77000R253V	1	SPHX0703.	1
3.76055R032V	55	2.170	58	2.280	B510S08.	**3.77000R038V**	1	–	–	DFT05T3.	3	3.77000R239V	1	SPHX0903.	1
3.76058R032V	58	2.280	63	2.480	B510S10.	**3.77000R023V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76063R032V	63	2.480	68	2.680	B510S10.	**3.77000R025V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76063R040V	63	2.480	68	2.680	B510S10.	**3.77000R025V**	1	–	–	DFT05T3.	3	3.77000R224V	1	SPHX0903.	1
3.76068R040V	68	2.680	73	2.870	B510S10.	**3.77000R026V**	1	–	–	DFT05T3.	3	3.77000R227V	1	SPHX0903.	1
3.76073R040V	73	2.870	78	3.070	B510S15.	**3.77000R026V**	1	–	–	DFT05T3.	3	3.77000R227V	1	SPHX0903.	1
3.76078R040V	78	3.070	84	3.310	B510S15.	**3.77000R028V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76078R048V	78	3.070	84	3.310	B510S15.	**3.77000R028V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76084R048V	84	3.310	90	3.540	B510S15.	**3.77000R228V**	1	–	–	DFT06T3.	3	3.77000R229V	1	SPHX0903.	1
3.76090R048V	90	3.540	96	3.780	B510S15.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76096R048V	96	3.780	102	4.020	B510S20.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76096R058V	96	3.780	102	4.020	B510S20.	**3.77000R230V**	1	–	–	DFT06T3.	3	3.77000R231V	1	SPHX0903.	1
3.76102R058V	102	4.020	108	4.250	B510S20.	**3.77000R081V**	1	–	–	DFT05T3.	5	3.77000R282V	1	SPHX0903.	1
3.76108R058V	108	4.250	115	4.530	B510S20.	**3.77000R083V**	1	–	–	DFT06T3.	5	3.77000R284V	1	SPHX1204.	1
3.76115R070V	115	4.530	122	4.800	B510S20.	**3.77000R085V**	1	–	–	DFT06T3.	5	3.77000R286V	1	SPHX1204.	1
3.76122R070V	122	4.800	130	5.120	B510S25.	**3.77000R079V**	1	–	–	DFT06T3.	5	3.77000R280V	1	SPHX1204.	1
3.76130R070V	130	5.120	140	5.510	B510S25.	**3.77000R087V**	1	–	–	DFT06T3.	5	3.77000R288V	1	SPHX1204.	1
3.76140R080V	140	5.510	150	5.910	B510S25.	**3.77000R077V**	1	–	–	DFT0704.	5	3.77000R278V	1	SPHX1505.	1
3.76150R080V	150	5.910	158	6.220	B510S25.	**3.77000R075V**	1	–	–	DFT0704.	5	3.77000R276V	1	SPHX1204.	1
3.76158R080V	158	6.220	162	6.380	B510S25.	**3.77000R073V**	1	–	–	DFT0704.	5	3.77000R274V	1	SPHX1204.	1
3.76162R08`0V	162	6.380	170	6.690	B510S30.	**3.77000R248V**	1	–	–	DFT0704.	5	3.77000R249V	1	SPHX1505.	1
3.76180R110	180	7.090	186	7.320	B510S30.	**3.77000R230V**	3	–	–	DFT06T3.	7	3.77000R231V	1	SPHX0903.	1
3.76195R110	195	7.680	201	7.910	B510S30.	**3.77000R081V**	3	–	–	DFT05T3.	11	3.77000R282V	1	SPHX0903.	1
3.76213R125	213	8.390	220	8.660	B510S30.	**3.77000R083V**	3	–	–	DFT06T3.	11	3.77000R284V	1	SPHX1204.	1
3.76230R160	230	9.060	240	9.450	B510S30.	**3.77000R079V**	2	**3.77000R080V**	1	DFT06T3.	11	3.77000R280V	1	SPHX1204.	1
3.76260R160 *	260	10.240	270	10.630	B510S30.	–	2	–	1	DFT06T3.	11	3.77000R078V	1	SPHX1204.	1

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
n: number of cartridges required by head.
ni: number of inserts required by head.



HTS Interior and Exterior Cartridges • DFT™ Inserts



catalog number	gage insert	number of inserts	insert screw	cartridge screw	fan washer	Nm	ft. lbs.
3.77000R023V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R024V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R025V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R026V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R027V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R028V	DFT06T3..	2	**191.848**	**129.612**	**192.111**	10,0	7.38
3.77000R029V	DFT06T3..	2	**191.848**	**129.612**	**192.111**	10,0	7.38
3.77000R030V	DFT06T3..	2	**191.848**	**129.616**	**192.111**	10,0	7.38
3.77000R031V	DFT06T3..	2	**191.848**	**129.616**	**192.111**	10,0	7.38
3.77000R038V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R039V	DFT05T3..	2	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R048V	DFT0704..	3	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R049V	DFT0704..	3	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R050V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R051V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R052V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R053V	DFT0303..	2	**192.432**	**192.592**	**192.902**	5,0	3.69
3.77000R073V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R074V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R075V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R076V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R077V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R078V	DFT0704..	3	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R079V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R080V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R081V	DFT05T3..	3	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R082V	DFT05T3..	3	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R083V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R084V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R085V	DFT06T3..	3	**191.848**	**–**	**192.112**	35,0	25.81
3.77000R086V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R087V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81
3.77000R088V	DFT06T3..	3	**191.848**	**125.820**	**192.112**	35,0	25.81



HTS Finishing Interior Cartridges • For Use with Exterior Cartridges Equipped with SPHX Inserts




catalog number	gage insert	number of inserts	insert screw	washer	Nm	ft. lbs.
3.77000R228V	DFT06T3..	2	**191.848**	**192.111**	10,0	7.38
3.77000R230V	DFT06T3..	2	**191.848**	**192.111**	10,0	7.38
3.77000R248V	DFT0704..	3	**191.698**	**192.112**	35,0	25.81
3.77000R250V	DFT0303..	2	**192.432**	**192.902**	5,0	3.69
3.77000R252V	DFT0303..	2	**192.432**	**192.902**	5,0	3.69

NOTE: Modified interior cartridges for use with SPHX-equipped exterior cartridges only.

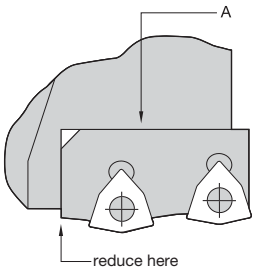
HTS Finishing Exterior Cartridges • SPHX Inserts

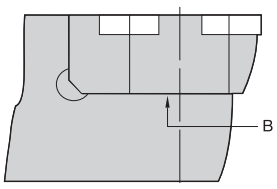


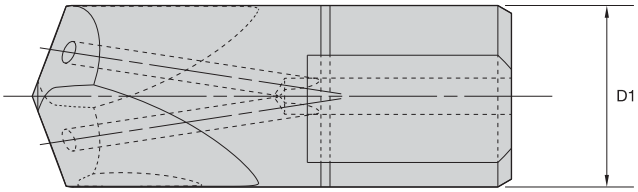


catalog number	gage insert inside	number of inserts	gage insert outside	number of inserts	insert screw	screw	washer	Nm	ft. lbs.
3.77000R224V	DFT05T3..	2	SPHX0903..	1	**191.924**	**193.451**	**192.903**	5,0	3.69
3.77000R227V	DFT05T3..	2	SPHX0903..	1	**191.924**	**192.593**	**192.903**	5,0	3.69
3.77000R229V	DFT06T3..	2	SPHX0903..	1	**191.916**	**129.612**	**192.111**	10,0	7.38
3.77000R231V	DFT06T3..	2	SPHX0903..	1	**191.916**	**129.616**	**192.111**	10,0	7.38
3.77000R239V	DFT05T3..	2	SPHX0903..	1	**191.924**	**193.451**	**192.903**	5,0	3.69
3.77000R249V	DFT0704..	3	SPHX1505..	1	**191.698**	**125.830**	**192.112**	35,0	25.81
3.77000R251V	DFT0303..	2	SPHX0703..	1	**192.432**	**193.450**	**192.902**	5,0	3.69
3.77000R253V	DFT0303..	2	SPHX0703..	1	**192.432**	**193.450**	**192.902**	5,0	3.69
3.77000R274V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R276V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R278V	DFT0704..	3	SPHX1505..	1	**191.698**	**–**	**192.112**	35,0	25.81
3.77000R280V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81
3.77000R282V	DFT05T3..	3	SPHX0903..	1	**191.924**	**125.820**	**192.112**	35,0	25.81
3.77000R284V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81
3.77000R286V	DFT06T3..	3	SPHX1204..	1	**191.916**	**–**	**192.112**	35,0	25.81
3.77000R288V	DFT06T3..	3	SPHX1204..	1	**191.916**	**125.820**	**192.112**	35,0	25.81

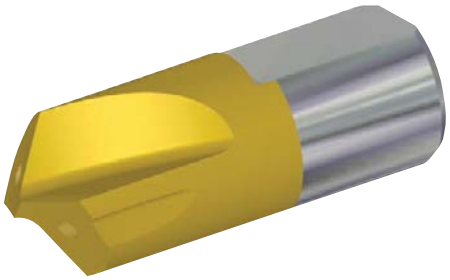
- Change drill diameter by shortening the outer cartridge.
- Shorten at 90° to the contact face A and the support face B.
- Shortening reduces the effective drill diameter by two times the amount removed.



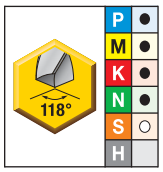


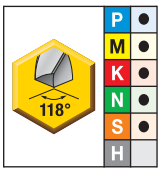


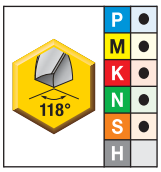
8–10mm sizes are without coolant.



HTS DFT™ • Pilot Drills

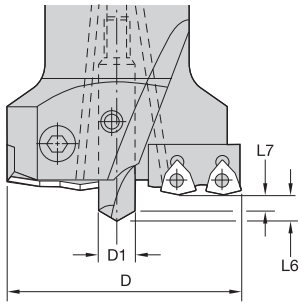






● first choice
○ alternate choice

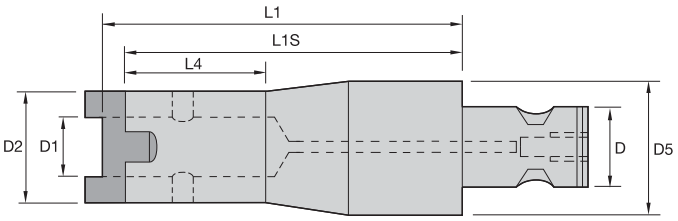
high-speed steel uncoated	high-speed steel coated	carbide drills	D1	
A30	AS3	KC7315	mm	in
B510S08000 A30	**B510S08000 AS3**	**B511S08000 KC7315**	8,00	0.315
B510S10000 A30	**B510S10000 AS3**	**B511S10000 KC7315**	10,00	0.394
B510S15000 A30	**B510S15000 AS3**	**B511S15000 KC7315**	15,00	0.591
B510S20000 A30	**B510S20000 AS3**	**B511S20000 KC7315**	20,00	0.787
B510S25000 A30	**B510S25000 AS3**	**B511S25000 KC7315**	25,00	0.984
B510S30000 A30	**B510S30000 AS3**	**B511S30000 KC7315**	30,00	1.181

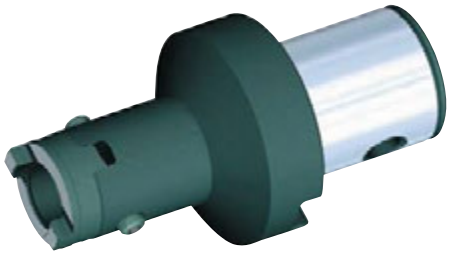


Pilot Drill Setting Lengths

D1		2–4 x D				4–6 x D				>6 x D			
		L6		L7		L6		L7		L6		L7	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
8,00	.315	3,00	.118	0,80	.032	3,40	.134	1,20	.047	3,80	.150	1,60	.063
10,00	.394	4,00	.158	1,30	.051	4,30	.169	1,60	.063	4,60	.181	1,90	.075
15,00	.591	6,20	.244	2,10	.083	6,50	.256	2,40	.095	6,80	.268	2,70	.106
20,00	.787	8,10	.319	2,60	.102	8,40	.331	2,90	.114	8,70	.343	3,20	.126
25,00	.984	10.50	.413	3,50	.138	7,40	.429	3,90	.154	11,30	.445	4,30	.169
30,00	1181	12,30	.484	4,10	.158	12,80	.504	4,50	.177	13,20	.520	5,00	.197

- Reducers are shipped with drive ring and clamping screws.



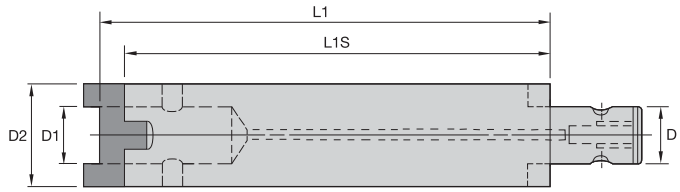


Reducers

			D2		D5		L1		L1S		L4					
catalog number	D1 coupling size	D coupling size	mm	in	mm	in	mm	in	mm	in	mm	in	drive ring	clamping screw	Nm	ft. lbs.
5.34280R028080	13B	50	27,6	1.09	80,0	3.15	90,0	3.54	80,0	3.15	50,0	1.97	**192.419**	**192.156**	10,2	7.5
5.34280R032080	16	50	31,6	1.24	80,0	3.15	90,0	3.54	80,0	3.15	55,0	2.17	**192.420**	**192.156**	10,2	7.5
5.34280R040080	22	50	39,6	1.56	80,0	3.15	92,0	3.62	80,0	3.15	57,0	2.24	**192.421**	**192.157**	16,3	12.0
5.34280R048080	27	50	47,6	1.87	80,0	3.15	92,0	3.62	80,0	3.15	57,0	2.24	**192.422**	**191.727**	20,3	15.0
5.34280R058080	32	50	57,6	2.27	80,0	3.15	93,9	3.70	80,0	3.15	58,9	2.32	**192.423**	**191.727**	20,3	15.0
5.34240R032100	16	22	31,6	1.24	40,0	1.57	110,0	4.33	100,0	3.94	55,0	2.17	**192.420**	**192.156**	10,2	7.5
5.34248R040100	22	27	39,6	1.56	48,0	1.89	112,0	4.41	100,0	3.94	57,0	2.24	**192.421**	**192.157**	16,3	12.0
5.34258R048100	27	32	47,6	1.87	58,0	2.28	112,0	4.41	100,0	3.94	57,0	2.24	**192.422**	**191.727**	20,3	15.0
5.34270R058100	32	40	57,6	2.27	70,0	2.76	113,9	4.48	100,0	3.94	58,9	2.32	**192.423**	**191.727**	20,3	15.0
5.34280R070150	40	50	69,6	2.74	80,0	3.15	163,9	6.45	150,0	5.91	68,9	2.71	**192.424**	**191.728**	33,9	25.0

NOTE: Assemble components using recommended torque values.

- Extensions are shipped with drive ring and clamping screws.





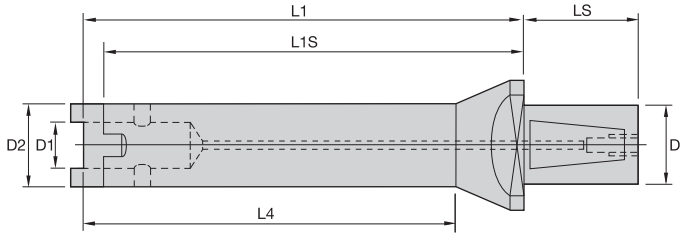
Extensions

			D2		L1		L1S					
catalog number	D1 coupling size	D coupling size	mm	in	mm	in	mm	in	drive ring	clamping screw	Nm	ft. lbs.
5.34132R032100	16	16	32,0	1.26	110,0	4.33	100,0	3.94	**192.420**	**192.156**	10,2	7.5
5.34125R025150	13A	13A	25,0	0.98	160,0	6.30	150,0	5.91	**193.371**	**193.372**	10,2	7.5
5.34128R028150	13B	13B	28,0	1.10	160,0	6.30	150,0	5.91	**192.419**	**192.156**	10,2	7.5
5.34170R070186	40	40	70,0	2.76	200,0	7.87	186,0	7.32	**192.424**	**191.728**	33,9	25.0
5.34132R032200	16	16	32,0	1.26	210,0	8.27	200,0	7.87	**192.420**	**192.156**	10,2	7.5
5.34140R040200	22	22	40,0	1.57	212,0	8.35	200,0	7.87	**192.421**	**192.157**	16,3	12.0
5.34148R048200	27	27	48,0	1.89	212,0	8.35	200,0	7.87	**192.422**	**191.727**	20,3	15.0
5.34180R080204	50	50	80,0	3.15	220,0	8.66	204,0	8.03	**192.425**	**191.728**	33,9	25.0
5.34158R058300	32	32	58,0	2.28	314,0	12.36	300,0	11.81	**192.423**	**191.727**	33,9	25.0
5.34170R070300	40	40	70,0	2.76	314,0	12.36	300,0	11.81	**192.424**	**191.728**	33,9	25.0
5.34180R080300	50	50	80,0	3.15	316,0	12.44	300,0	11.81	**192.425**	**191.728**	33,9	25.0
5.34170R070500	40	40	70,0	2.76	514,0	20.24	500,0	19.69	**192.424**	**191.728**	33,9	25.0
5.34180R080500	50	50	80,0	3.15	516,0	20.32	500,0	19.69	**192.425**	**191.728**	33,9	25.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screws.







Basic Shank WN/WD • Metric

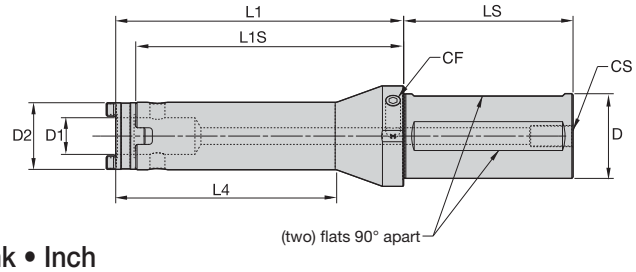




catalog number	D1 coupling size	D	D2	L1	L1S	L4	LS	drive ring	clamping screw	Nm
5.34032-025115	13A	32,0	25,0	125,0	115,0	110,0	58,0	**193.371**	**193.372**	10,2
5.34032-028115	13B	32,0	28,0	125,0	115,0	110,0	58,0	**192.419**	**192.156**	10,2
5.34032-032125	16	32,0	32,0	135,0	125,0	120,0	58,0	**192.420**	**192.156**	10,2
5.34050-040148	22	50,0	40,0	160,0	148,0	140,0	68,0	**192.421**	**192.157**	16,3
5.34050-048168	27	50,0	48,0	175,0	168,0	160,0	68,0	**192.422**	**191.727**	20,3
5.34050-058186	32	50,0	58,0	200,0	186,0	180,0	68,0	**192.423**	**191.727**	20,3
5.34032-025200	13A	32,0	25,0	210,0	200,0	195,0	58,0	**193.371**	**193.372**	10,2
5.34032-028200	13B	32,0	28,0	210,0	200,0	195,0	58,0	**192.419**	**192.156**	10,2
5.34050-032200	16	50,0	32,0	210,0	200,0	165,0	68,0	**192.420**	**192.156**	10,2
5.34050-025300	13A	50,0	25,0	310,0	300,0	270,0	68,0	**193.371**	**193.372**	10,2
5.34050-028300	13B	50,0	28,0	310,0	300,0	265,0	68,0	**192.419**	**192.156**	10,2
5.34050-040300	22	50,0	40,0	312,0	300,0	267,0	68,0	**192.421**	**192.157**	10,2
5.34050-048300	27	50,0	48,0	312,0	300,0	267,0	68,0	**192.422**	**191.727**	16,3
5.34050-058300	32	50,0	58,0	314,0	300,0	254,0	68,0	**192.423**	**191.727**	20,3
5.34050-032350	16	50,0	32,0	360,0	350,0	315,0	68,0	**192.420**	**192.156**	10,2
5.34050-025450	13A	50,0	25,0	460,0	450,0	420,0	68,0	**193.371**	**193.372**	10,2
5.34050-028450	13B	50,0	28,0	460,0	450,0	415,0	68,0	**192.419**	**192.156**	10,2
5.34050-040450	22	50,0	40,0	462,0	450,0	417,0	68,0	**192.421**	**192.157**	10,2
5.34050-048450	27	50,0	48,0	462,0	450,0	417,0	68,0	**192.422**	**191.727**	16,3
5.34050-058450	32	50,0	58,0	464,0	450,0	404,0	68,0	**192.423**	**191.727**	20,3
5.34050-032500	16	50,0	32,0	510,0	500,0	465,0	68,0	**192.420**	**192.156**	10,2
5.34050-040600	22	50,0	40,0	612,0	600,0	567,0	68,0	**192.422**	**192.157**	10,2
5.34050-048600	27	50,0	48,0	612,0	600,0	567,0	68,0	**192.422**	**191.727**	16,3
5.34050-058600	32	50,0	58,0	614,0	600,0	554,0	68,0	**192.423**	**191.727**	20,3

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screws.





Flanged Shank • Inch




catalog number	D1 coupling size	D	D2	L1	L1S	L4	LS	drive ring	clamping screw	ft. lbs.
SSF150HTS130239 *	13A	1.50	0.98	2.39	2.00	0.39	3.75	**193.371**	**193.372**	7.5
SSF150HTS130450	13A	1.50	0.98	4.50	4.11	2.50	3.75	**193.371**	**193.372**	7.5
SSF150HTS130664	13A	1.50	0.98	6.64	6.25	4.65	3.75	**193.371**	**193.372**	7.5
SSF150HTS131114	13A	1.50	0.98	11.14	10.75	9.14	3.75	**193.371**	**193.372**	7.5
SSF150HTS131764	13A	1.50	0.98	17.64	17.25	15.64	3.75	**193.371**	**193.372**	7.5
SSF200HTS130239	13B	2.00	1.10	2.39	2.00	0.39	4.00	**192.419**	**192.156**	7.5
SSF200HTS130450 *	13B	2.00	1.10	4.50	4.11	2.50	4.00	**192.419**	**192.156**	7.5
SSF200HTS130664	13B	2.00	1.10	6.64	6.25	4.65	4.00	**192.419**	**192.156**	7.5
SSF200HTS131114	13B	2.00	1.10	11.14	10.75	9.14	4.00	**192.419**	**192.156**	7.5
SSF200HTS131764	13B	2.00	1.10	17.64	17.25	15.64	4.00	**192.419**	**192.156**	7.5
SSF200HTS160239	16	2.00	1.26	2.39	2.00	0.39	4.00	**192.420**	**192.156**	7.5
SSF200HTS160450 *	16	2.00	1.26	4.50	4.11	2.50	4.00	**192.420**	**192.156**	7.5
SSF200HTS160714	16	2.00	1.26	7.14	6.75	5.14	4.00	**192.420**	**192.156**	7.5
SSF200HTS161214	16	2.00	1.26	12.14	11.75	10.14	4.00	**192.420**	**192.156**	7.5
SSF200HTS161964	16	2.00	1.26	19.64	19.25	17.64	4.00	**192.420**	**192.156**	7.5
SSF200HTS220297	22	2.00	1.57	2.97	2.50	0.47	4.00	**192.421**	**192.157**	12.0
SSF200HTS220550	22	2.00	1.58	5.50	5.03	3.50	4.00	**192.421**	**192.157**	12.0
SSF200HTS220922	22	2.00	1.57	9.22	8.75	7.22	4.00	**192.421**	**192.157**	12.0
SSF200HTS221572	22	2.00	1.57	15.72	15.25	13.72	4.00	**192.421**	**192.157**	12.0
SSF200HTS222572	22	2.00	1.57	25.72	25.25	23.72	4.00	**192.421**	**192.157**	12.0
SSF200HTS270297	27	2.00	1.89	2.97	2.50	1.47	4.00	**192.422**	**191.727**	15.0
SSF200HTS270550	27	2.00	1.89	5.50	5.03	3.50	4.00	**192.422**	**191.727**	15.0
SSF200HTS271122	27	2.00	1.89	11.22	10.75	9.22	4.00	**192.422**	**191.727**	15.0
SSF200HTS271922	27	2.00	1.89	19.22	18.75	17.22	4.00	**192.422**	**191.727**	15.0
SSF200HTS273122	27	2.00	1.89	31.22	30.75	29.22	4.00	**192.422**	**191.727**	15.0
SSF200HTS320305 *	32	2.00	2.28	3.05	2.50	1.55	4.00	**192.423**	**191.727**	15.0
SSF200HTS320550	32	2.00	2.28	5.50	4.95	3.50	4.00	**192.423**	**191.727**	15.0
SSF200HTS320805	32	2.00	2.28	8.05	7.50	6.05	4.00	**192.423**	**191.727**	15.0
SSF200HTS321305	32	2.00	2.28	13.05	12.50	11.05	4.00	**192.423**	**191.727**	15.0
SSF200HTS321805	32	2.00	2.28	18.05	17.50	16.05	4.00	**192.423**	**191.727**	15.0
SSF250HTS400355	40	2.50	2.76	3.55	3.00	1.63	4.25	**192.424**	**191.728**	26.0
SSF250HTS400650 *	40	2.50	2.76	6.50	5.95	4.50	4.25	**192.424**	**191.728**	26.0
SSF250HTS401055	40	2.50	2.76	10.55	10.00	8.21	4.25	**192.424**	**191.728**	26.0
SSF250HTS401555	40	2.50	2.76	15.55	15.00	13.21	4.25	**192.424**	**191.728**	26.0
SSF250HTS402555	40	2.50	2.76	25.55	25.00	23.21	4.25	**192.424**	**191.728**	26.0
SSF300HTS500413 *	50	3.00	3.15	4.13	3.50	1.87	4.50	**192.425**	**191.728**	26.0
SSF300HTS500700 *	50	3.00	3.15	7.00	6.37	5.00	4.50	**192.425**	**191.728**	26.0
SSF300HTS501313	50	3.00	3.15	13.13	12.50	10.55	4.50	**192.425**	**191.728**	26.0
SSF300HTS502113	50	3.00	3.15	21.13	20.50	18.55	4.50	**192.425**	**191.728**	26.0
SSF300HTS503113	50	3.00	3.15	31.13	30.50	28.55	4.50	**192.425**	**191.728**	26.0

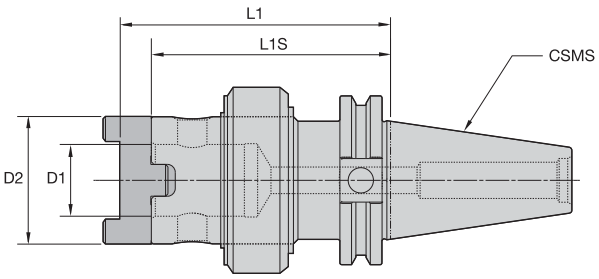
NOTE: Assemble components using recommended torque values.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



D	CF	CS	side pipe plug
1.500	1/8-27 NPT	1/4-18 NPT	**HSFS0125**
2.000	1/8-27 NPT	1/4-18 NPT	**HSFS0125**
2.500	1/8-27 NPT	1/4-18 NPT	**HSFS0125**
3.000	1/8-27 NPT	1/4-18 NPT	**HSFS0125**

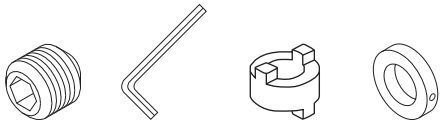
- Shanks are shipped with drive ring and clamping screws.







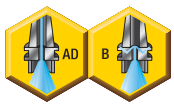
CV Taper Shank • Form AD • Rotary Coolant Ring

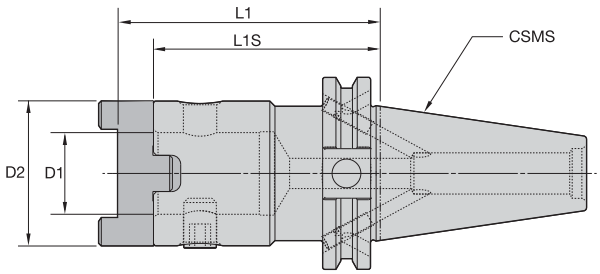


catalog number	CSMS system size	D1 coupling size	D2	L1	L1S	clamping screw	hex wrench	drive ring	coolant ring	ft. lbs.
CV50RMHTS13M394	CV50	13B	1.09	4.33	3.94	**192.156**	**170.004**	**192.419**	**302.011**	7.5
CV50RMHTS16M394	CV50	16	1.25	4.33	3.94	**192.156**	**170.004**	**192.420**	**302.011**	7.5
CV50RMHTS22M394	CV50	22	1.54	4.41	3.94	**192.157**	**170.004**	**192.421**	**302.011**	12.0
CV50RMHTS27M394	CV50	27	1.88	4.41	3.94	**191.727**	**170.006**	**192.422**	**302.011**	15.0
CV50RMHTS32M394 *	CV50	32	2.27	4.49	3.94	**191.727**	**170.006**	**192.423**	**302.011**	15.0
CV50RMHTS40M413	CV50	40	2.74	4.69	4.13	**191.728**	**170.008**	**192.424**	**302.009**	26.0
CV50RMHTS50M413	CV50	50	3.13	4.76	4.13	**191.728**	**170.008**	**192.425**	**302.010**	26.0

NOTE: Assemble components using recommended torque values.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

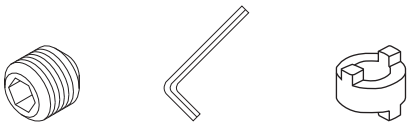
- Shanks are shipped with drive ring and clamping screws.







CV Taper Shank • Form B/AD Coolant

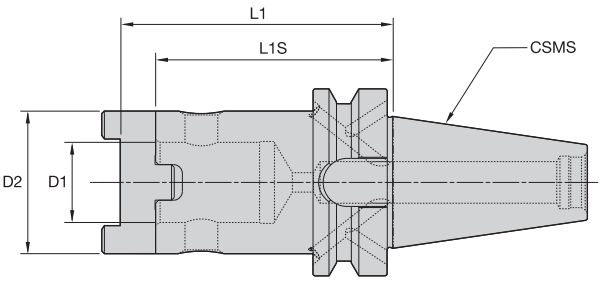


catalog number	CSMS system size	D1 coupling size	D2	L1	L1S	clamping screw	hex wrench	drive ring	ft. lbs.
CV50BHTS13M295	CV50	13B	1.10	3.35	2.95	**192.156**	**170.004**	**192.419**	7.5
CV50BHTS16M295	CV50	16	1.26	3.35	2.95	**192.156**	**170.004**	**192.420**	7.5
CV50BHTS22M295	CV50	22	1.57	3.43	2.95	**192.157**	**170.004**	**192.421**	12.0
CV50BHTS27M295	CV50	27	1.89	3.43	2.95	**191.727**	**170.006**	**192.422**	15.0
CV50BHTS32M314	CV50	32	2.28	3.70	3.15	**191.727**	**170.006**	**192.423**	15.0
CV50BHTS40M314	CV50	40	2.76	3.70	3.15	**191.728**	**170.008**	**192.424**	26.0
CV50BHTS50M314	CV50	50	3.15	3.78	3.15	**191.728**	**170.008**	**192.425**	26.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screw.





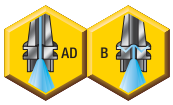


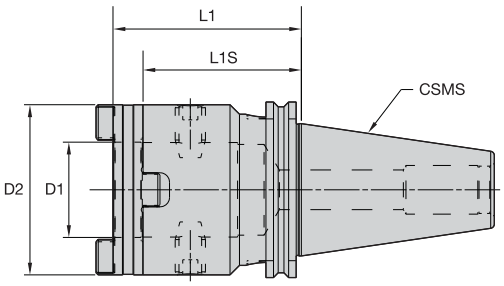
BT Taper Shank • Form B/AD Coolant

catalog number	CSMS system size	D1 coupling size	D2	L1 mm	L1 in	L1S mm	L1S in	clamping screw	hex wrench	drive ring	Nm	ft. lbs.
BT50BHTS22075M	BT50	22	40,0	87,0	3.43	75,0	2.95	**192.157**	**170.005**	**192.421**	16,0	12.0
BT50BHTS32080M	BT50	32	58,0	94,0	3.70	80,0	3.15	**MS1276**	**170.006**	**192.423**	20,0	15.0
BT50BHTS40080M	BT50	40	70,0	94,0	3.70	80,0	3.15	**191.728**	**170.008**	**192.424**	34,0	26.0
BT50BHTS50080M	BT50	50	80,0	96,0	3.78	80,0	3.15	**191.728**	**170.008**	**192.425**	34,0	26.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screw.



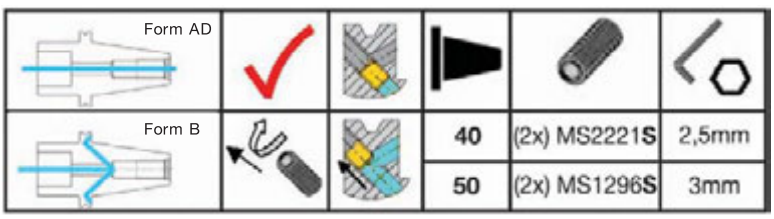




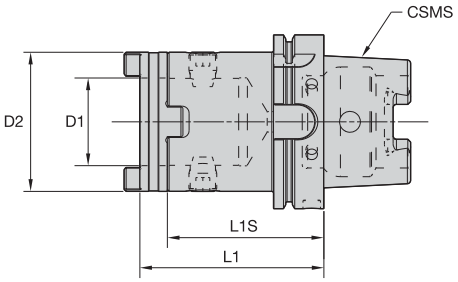
DV Taper Shank • Form B/AD Coolant

catalog number	CSMS system size	D1 coupling size	D2	L1 mm	L1 in	L1S mm	L1S in	clamping screw	hex wrench	drive ring
5.36050-154040	DV50	40	70,0	100,0	3.94	84,0	3.31	**191.728**	**170.008**	**192.424**
5.36050-154050	DV50	50	90,0	100,0	3.94	84,0	3.31	**191.729**	**170.008**	**192.426**

NOTE: Assemble components using recommended torque values.

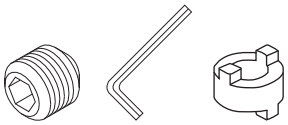


- Shanks are shipped with drive ring and clamping screw.





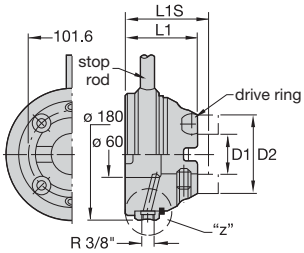
HSK100A Taper Shank

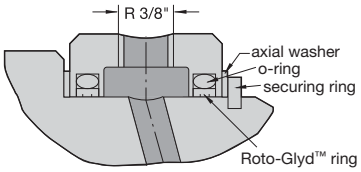


catalog number	CSMS system size	D1 coupling size	D2 mm	D2 in	L1 mm	L1 in	L1S mm	L1S in	clamping screw	hex wrench	drive ring	Nm	ft. lbs.
HSK100AHTS40085M	HSK100A	40	70,0	2.8	99,0	3.9	85,0	3.3	**191.728**	**170.008**	**192.424**	35,0	25.0
HSK100AHTS50090M	HSK100A	50	80,0	3.1	106,0	4.2	90,0	3.5	**191.728**	**170.008**	**192.425**	35,0	25.0

NOTE: Assemble components using recommended torque values.

- Shanks are shipped with drive ring and clamping screws.







Flanged Adapter (Including Drive Ring)

catalog number	D1	D2 mm	D2 in	L1 mm	L1 in	L1S mm	L1S in	kg	lbs
5.34350-090100	50,00	90,0	3.54	116,0	4.57	100,0	3.94	10,0	21.94

NOTE: Adapter includes all items shown except the nipple. Nipple must be ordered separately.
If replacement becomes necessary, the nipple is manufactured with a predetermined breaking point for safety purposes.
Maximum RPM is 1500. Maximum pressure is 72 psi or 5 bar.

Spare Parts



catalog number	drive ring	clamping screw	coolant ring	O-ring	securing ring	axial washer	ROTO-GLYD ring	stop bar	nipple
5.34350-090100	**192.426**	**191.729**	**302.014**	**192.731**	**192.126**	**192.158**	**192.730**	**460.716**	**192.759**

HTS DFT™ • Metric

Metric												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter			
						min	Starting Value	max	Ø	DFT03... 45,00–55,00mm	DFT05... 55,00–78,00mm	DFT06... 78,00–140,00mm	DFT07... 140,00–270,00mm
P	1	S	O	MD	KCU25	94	**190**	229	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KCU40								
		U	O	MD	KCU40	71	**130**	171	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KC7140								
		I	O	MD	KCU40	44	**80**	106	mm/r	0,06–0,10	0,08–0,12	0,10–0,14	0,13–0,19
			I	MD	KC7140								
	2	S	O	HP	KCU25	94	**180**	229	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	71	**120**	1714	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	44	**70**	106	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	3	S	O	HP	KCU25	70	**140**	169	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	50	**100**	121	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	30	**60**	72	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	4	S	O	HP	KCU25	94	**120**	229	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KCU40								
		U	O	HP	KCU40	71	**100**	171	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
		I	O	HP	KCU40	44	**80**	106	mm/r	0,10–0,14	0,12–0,18	0,12–0,18	0,12–0,20
			I	HP	KC7140								
	5	S	O	HP	KCU25	78	**100**	190	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KCU40								
		U	O	HP	KCU40	47	**60**	114	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
		I	O	HP	KCU40	31	**40**	76	mm/r	0,05–0,07	0,06–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
	6	S	O	HP	KCU25	74	**95**	180	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KCU40								
		U	O	HP	KCU40	45	**57**	108	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
		I	O	HP	KCU40	30	**38**	72	mm/r	0,04–0,07	0,05–0,08	0,06–0,10	0,08–0,12
			I	HP	KC7140								
M	1	S	O	MD	KCU25	48	**110**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**70**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**50**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
	2	S	O	MD	KCU25	48	**99**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**63**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**45**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
	3	S	O	MD	KCU25	48	**88**	134	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KCU40								
		U	O	MD	KCU40	31	**56**	86	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								
		I	O	MD	KC7140	22	**40**	61	mm/r	0,07–0,11	0,12–0,18	0,14–0,20	0,16–0,22
			I	MD	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFT™ • Metric

Metric													
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter				
						min	Starting Value	max	Ø	DFT03... 45,00–55,00mm	DFT05... 55,00–78,00mm	DFT06... 78,00–140,00mm	DFT07... 140,00–270,00mm
K	1	S	O	HP	KCPK10	94	**171**	229	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCPK10								
		U	O	HP	KCU25	64	**117**	156	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU25								
		I	O	HP	KCU40	40	**72**	96	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU40								
	2	S	O	HP	KCPK10	94	**162**	229	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCPK10								
		U	O	HP	KCU25	64	**111**	156	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU25								
		I	O	HP	KCU40	40	**68**	96	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,17–0,33
			I	HP	KCU40								
	3	S	O	HP	KCPK10	90	**146**	217	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCPK10								
		U	O	HP	KCU25	59	**100**	144	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCU25								
		I	O	HP	KCU40	35	**62**	84	mm/r	0,11–0,20	0,13–0,27	0,15–0,31	0,15–0,31
			I	HP	KCU40								
N	1	S	O	ST	KD1425	154	**240**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KC7140	102	**160**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KC7140								
		I	O	HP	KC7140	67	**104**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KC7140								
	2	S	O	ST	KD1425	154	**223**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	102	**149**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	67	**97**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
	3	S	O	ST	KD1425	154	**206**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	102	**138**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	67	**89**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
	4	S	O	ST	KD1425	154	**223**	358	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	LD	KC7140	102	**149**	239	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	LD	KC7140								
		I	O	LD	KC7140	67	**97**	155	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	LD	KC7140								
	5	S	O	ST	KD1425	112	**220**	262	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	ST	KD1425								
		U	O	HP	KCU40	72	**140**	167	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
		I	O	HP	KCU40	46	**90**	107	mm/r	0,06–0,09	0,11–0,19	0,12–0,20	0,14–0,25
			I	HP	KCU40								
S	1	S	O	HP	KC7140	24	**40**	49	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		U	O	HP	KC7140	18	**30**	37	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		I	O	HP	KC7140	15	**25**	30	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
	2	S	O	HP	KC7140	25	**35**	48	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		U	O	HP	KC7140	18	**25**	34	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								
		I	O	HP	KC7140	14	**20**	27	mm/r	0,04–0,07	0,05–0,08	0,07–0,10	0,07–0,10
			I	HP	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

HTS DFT™ • Inch

Inch												
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM min	Cutting Speed — vc Range — SFM Starting Value	Cutting Speed — vc Range — SFM max	Recommended Feed Rate (f) by Diameter Ø	DFT03... 1.77–2.17"	DFT05... 2.17–3.07"	DFT06... 3.07–5.51"	DFT07... 5.51–10.63"
P	1	S	O	MD	KCU25	309	**623**	750	IPR	.002–.004	.003–.005	.004–.006	.005–.007
			I	MD	KCU40								
		U	O	MD	KCU40	231	**427**	561	IPR	.002–.004	.003–.005	.004–.006	.005–.007
			I	MD	KC7140								
		I	O	MD	KCU40	143	**262**	348	IPR	.002–.004	.003–.005	.004–.006	.005–.007
			I	MD	KC7140								
	2	S	O	HP	KCU25	309	**591**	750	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KCU40								
		U	O	HP	KCU40	231	**394**	561	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
		I	O	HP	KCU40	143	**230**	348	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
	3	S	O	HP	KCU25	229	**459**	555	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KCU40								
		U	O	HP	KCU40	163	**328**	396	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
		I	O	HP	KCU40	98	**197**	238	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
	4	S	O	HP	KCU25	309	**394**	750	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KCU40								
		U	O	HP	KCU40	231	**328**	561	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
		I	O	HP	KCU40	143	**262**	348	IPR	.004–.006	.005–.007	.005–.007	.005–.008
			I	HP	KC7140								
	5	S	O	HP	KCU25	257	**328**	622	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KCU40								
		U	O	HP	KCU40	154	**197**	373	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KC7140								
		I	O	HP	KCU40	103	**131**	250	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KC7140								
	6	S	O	HP	KCU25	244	**312**	591	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KCU40								
		U	O	HP	KCU40	146	**187**	355	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KC7140								
		I	O	HP	KCU40	98	**125**	238	IPR	.002–.003	.002–.003	.002–.004	.003–.005
			I	HP	KC7140								
M	1	S	O	MD	KCU25	159	**361**	439	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KCU40								
		U	O	MD	KCU40	101	**230**	281	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								
		I	O	MD	KC7140	72	**164**	199	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								
	2	S	O	MD	KCU25	159	**325**	439	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KCU40								
		U	O	MD	KCU40	101	**207**	281	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								
		I	O	MD	KC7140	72	**148**	199	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								
	3	S	O	MD	KCU25	159	**289**	439	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KCU40								
		U	O	MD	KCU40	101	**184**	281	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								
		I	O	MD	KC7140	72	**131**	199	IPR	.003–.004	.005–.007	.006–.008	.006–.009
			I	MD	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert

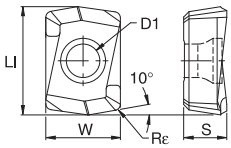
HTS DFT™ • Inch

Inch													
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter				
						min	Starting Value	max	Ø	DFT03... 1.77–2.17"	DFT05... 2.17–3.07"	DFT06... 3.07–5.51"	DFT07... 5.51–10.63"
K	1	S	O	HP	KCPK10	309	**561**	750	IPR	.004–.008	.005–.011	.006–.012	.007–.013
			I	HP	KCPK10								
		U	O	HP	KCU25	211	**384**	510	IPR	.004–.008	.005–.011	.006–.012	.007–.013
			I	HP	KCU25								
		I	O	HP	KCU40	131	**236**	316	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCU40								
	2	S	O	HP	KCPK10	309	**533**	750	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCPK10								
		U	O	HP	KCU25	211	**365**	510	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCU25								
		I	O	HP	KCU40	131	**224**	316	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCU40								
	3	S	O	HP	KCPK10	294	**480**	712	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCPK10								
		U	O	HP	KCU25	195	**328**	473	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCU25								
		I	O	HP	KCU40	113	**202**	274	IPR	.004–.008	.005–.011	.006–.012	.007 –.013
			I	HP	KCU40								
N	1	S	O	ST	KD1425	504	**787**	1176	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	ST	KD1425								
		U	O	HP	KC7140	336	**525**	784	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KC7140								
		I	O	HP	KC7140	218	**341**	510	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KC7140								
	2	S	O	ST	KD1425	504	**732**	1176	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	ST	KD1425								
		U	O	HP	KCU40	336	**488**	784	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KCU40								
		I	O	HP	KCU40	218	**317**	510	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KCU40								
	3	S	O	ST	KD1425	504	**677**	1176	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	ST	KD1425								
		U	O	HP	KCU40	336	**451**	784	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KCU40								
		I	O	HP	KCU40	218	**293**	510	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KCU40								
	4	S	O	ST	KD1425	504	**732**	1176	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	ST	KD1425								
		U	O	LD	KC7140	336	**488**	784	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	LD	KC7140								
		I	O	LD	KC7140	218	**317**	510	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	LD	KC7140								
	5	S	O	ST	KD1425	368	**722**	858	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	ST	KD1425								
		U	O	HP	KC7140	235	**459**	549	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KC7140								
		I	O	HP	KC7140	151	**295**	351	IPR	.002–.004	.004–.007	.005–.008	.006–.010
			I	HP	KC7140								
S	1	S	O	HP	KC7140	80	**131**	160	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								
		U	O	HP	KC7140	60	**98**	120	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								
		I	O	HP	KC7140	50	**82**	100	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								
	2	S	O	HP	KC7140	82	**115**	158	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								
		U	O	HP	KC7140	58	**82**	112	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								
		I	O	HP	KC7140	46	**66**	90	IPR	.002–.003	.002–.003	.003–.004	.003–.004
			I	HP	KC7140								

Condition: S = Stable cutting conditions;
U = Unstable cutting conditions;
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;
O = Outboard insert



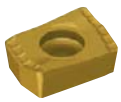


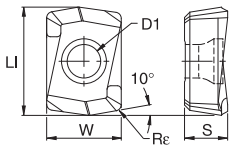
● first choice
○ alternate choice

P	●	●	●	●	
M	○	○	○	○	
K	●	●	○	○	
N	○		○	○	
S	○		●	●	
H			○	○	

DFR-GD

	LI		W		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCPK10	KCU25	KCU40	KC7140
DFR020204GD	7,12	.280	4,90	.193	2,30	.091	2,79	.110	0,40	.016	●	●	●	●
DFR030204GD	8,71	.343	6,00	.236	2,50	.098	2,88	.113	0,40	.016	●	●	●	●
DFR040304GD	10,76	.424	7,38	.291	2,85	.112	3,79	.149	0,40	.016	●	●	●	●



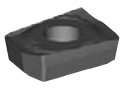


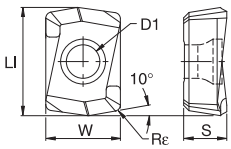
● first choice
○ alternate choice

P	●	●	●	
M	○	●	●	
K	○	○	○	
N	○	○	○	
S	○	●	●	
H				

DFR-MD

	LI		W		D1		S		Rε				
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCU25	KCU40	KC7140
DFR020204MD	7,12	.280	4,90	.193	2,30	.091	2,79	.110	0,40	.016	●	●	●
DFR030204MD	8,71	.343	6,00	.236	2,50	.098	2,88	.113	0,40	.016	●	●	●
DFR040304D28MD	10,76	.424	7,26	.286	2,85	.112	3,79	.149	0,40	.016	–	–	●
DFR040304MD	10,76	.424	7,38	.291	2,85	.112	3,79	.149	0,40	.016	●	●	●





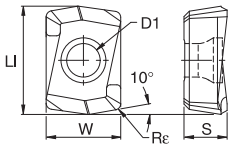
● first choice
○ alternate choice

P	○	●	○	●	
M		○	●	●	
K	●	●	●	○	
N		○	●	○	
S		○	●	○	
H			○		

DFR-LD

	LI		W		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCPK10	KCU25	KCU40	KC7140
DFR020204LD	7,12	.280	4,90	.193	2,30	.091	2,79	.110	0,40	.016	●	●	●	●
DFR030204LD	8,71	.343	6,00	.236	2,50	.098	2,86	.113	0,40	.016	●	●	●	●
DFR040304LD	10,76	.424	7,38	.291	2,85	.112	3,76	.148	0,40	.016	●	●	●	●



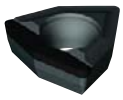


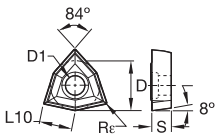
● first choice
○ alternate choice

P	
M	
K	
N	●
S	
H	

DFR • PCD • Single-Tipped

	LI		W		D1		S		Rε		KD1425
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
DFR040304ST	10,50	.413	7,40	.291	2,85	.112	3,18	.125	0,40	.015	●





DFT • PCD • Single-Tipped

	L10		D		D1		S		Rε		KD1425
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
DFT05T308ST	5,19	.205	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT06T308ST	6,52	.257	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT070408ST	7,84	.309	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT090508ST	9,83	.387	15,00	.591	5,50	.217	5,19	.204	0,80	.031	●
DFT110508ST	11,53	.454	17,60	.693	5,85	.230	4,81	.189	0,80	.031	●

DFR™ • PCD • Metric

Metric										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter	
						min	Starting Value	max	Ø	DFR04 20,50–24,00mm
N	1	S	O	ST	KD1425	396	**720**	841	mm/r	0,06–0,08
			I	ST	KD1425					
	2	S	O	ST	KD1425	369	**670**	782	mm/r	0,12–0,18
			I	ST	KD1425					
	3	S	O	ST	KD1425	341	**619**	723	mm/r	0,12–0,18
			I	ST	KD1425					
	4	S	O	ST	KD1425	475	**720**	841	mm/r	0,12–0,18
			I	ST	KD1425					
	5	S	O	ST	KD1425	480	**720**	864	mm/r	0,06–0,08
			I	ST	KD1425					

DFR™ • PCD • Inch

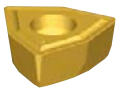
Inch										
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (fz) by Diameter	
						min	Starting Value	max	Ø	DFR04 .813–1.00"
N	1	S	O	ST	KD1425	1300	**2362**	2760	IPR	.002–.003
			I	ST	KD1425					
	2	S	O	ST	KD1425	1209	**2197**	2567	IPR	.005–.007
			I	ST	KD1425					
	3	S	O	ST	KD1425	1118	**2032**	2374	IPR	.005–.007
			I	ST	KD1425					
	4	S	O	ST	KD1425	1560	**2362**	2760	IPR	.005–.007
			I	ST	KD1425					
	5	S	O	ST	KD1425	1575	**2362**	2834	IPR	.002–.003
			I	ST	KD1425					

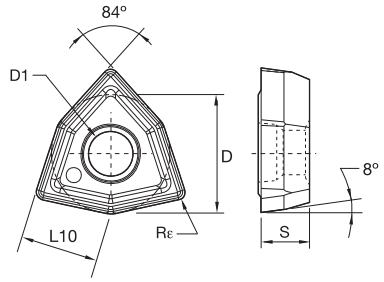
DFT™ • PCD • Metric

Metric														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — m/min			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 16–24,00mm	DFT05 25–32,00mm	DFT06 33–40,00mm	DFT07 41–48,00mm	DFT09 49–68,00mm	DFT11 69–82,00mm
N	1	S	O	ST/C	KD1425	480	**720**	864	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	2	S	O	ST/C	KD1425	447	**670**	804	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	3	S	O	ST/C	KD1425	413	**619**	743	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	4	S	O	ST/C	KD1425	447	**670**	804	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										
	5	S	O	ST/C	KD1425	480	**720**	864	mm/r	0,05–0,07	0,07–0,09	0,10–0,14	0,12–0,16	0,14–0,18	0,14–0,18
			I	ST/C	KD1425										

DFT™ • PCD • Inch

Inch														
Material Group		Condition	Pocket Seat	Geometry	Grade	Cutting Speed — vc Range — SFM			Recommended Feed Rate (f) by Diameter					
						min	Starting Value	max	Ø	DFT03 .625–.969"	DFT05 .984–1.250"	DFT06 1.313–1.563"	DFT07 1.625–1.875"	DFT09 1.938–2.125"	DFT11 2.750–3.250"
N	1	S	O	ST/C	KD1425	1575	**2362**	2834	IPR	.002–.003	.003–.004	.004–.006	.005–.006	.006–.007	.006–.007
			I	ST/C	KD1425										
	2	S	O	ST/C	KD1425	1465	**2197**	2636	IPR	.002–.003	.003–.004	.004–.006	.005–.006	.006–.007	.006–.007
			I	ST/C	KD1425										
	3	S	O	ST/C	KD1425	1355	**2032**	2438	IPR	.002–.003	.003–.004	.004–.006	.005–.006	.006–.007	.006–.007
			I	ST/C	KD1425										
	4	S	O	ST/C	KD1425	1465	**2197**	2636	IPR	.002–.003	.003–.004	.004–.006	.005–.006	.006–.007	.006–.007
			I	ST/C	KD1425										
	5	S	O	ST/C	KD1425	1575	**2362**	2834	IPR	.002–.003	.003–.004	.004–.006	.005–.006	.006–.007	.006–.007
			I	ST/C	KD1425										





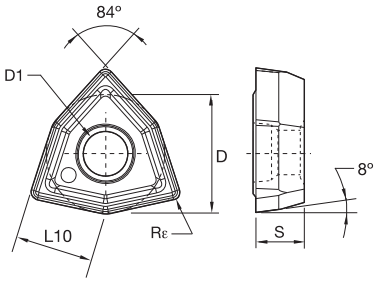
● first choice
○ alternate choice

P	●	●	●	●	
M	○	○	○	●	
K	●	●	●	○	
N	○		○	○	
S	○		●	○	
H			○		

DFT-GD

	L10		D		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCPK10	KCU25	KCU40	KC7140
DFT030204GD	3,97	.156	6,00	.236	2,25	.089	2,45	.096	0,40	.016	●	●	●	–
DFT030304GD	3,97	.156	6,00	.236	2,65	.104	2,95	.116	0,40	.016	●	●	●	●
DFT05T308GD	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●	●	●	●
DFT06T308GD	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●	●	●
DFT070408GD	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●	●	●	●
DFT090508GD	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,85	.034	●	●	●	●





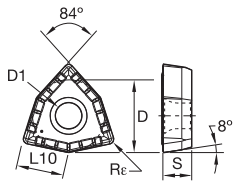
● first choice
○ alternate choice

P	●	●	●	●	
M	○	○	○	●	
K	●	●	●	○	
N	○		○	○	●
S	○		●	○	
H			○		

DFT-HP

	L10		D		D1		S		Rε						
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCPK10	KCU25	KCU40	KC7140	KMF
DFTX20204HP	3,31	.130	5,00	.197	2,25	.089	2,45	.097	0,40	.015	–	●	●	●	–
DFT030204HP	3,97	.156	6,00	.236	2,25	.089	2,45	.096	0,40	.016	●	●	●	●	●
DFT030304HP	3,97	.156	6,00	.236	2,65	.104	2,95	.116	0,40	.016	●	●	●	●	●
DFT05T308HP	5,29	.208	8,00	.315	3,50	.137	3,75	.148	0,80	.031	●	●	●	●	●
DFT06T308HP	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●	●	●	●
DFT070408HP	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●	●	●	●	●
DFT090508HP	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,85	.033	●	●	●	●	●





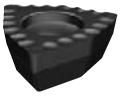
● first choice
○ alternate choice

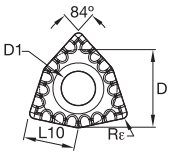
P	●	●	●	●	
M	○	○	○	●	
K	●	●	●	○	
N			○	○	
S			●	○	
H			○		

DFT-MD

	L10		D		D1		S		Rε				
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	KCU25	KCU40	KC7140
DFTX20204MD	3,31	.130	5,00	.197	2,25	.089	2,45	.097	0,40	.015	●	●	●
DFT030204MD	3,97	.156	6,00	.236	2,25	.089	2,45	.096	0,40	.016	●	●	●
DFT030304MD	3,97	.156	6,00	.236	2,65	.104	2,95	.116	0,40	.016	●	●	●
DFT05T308MD	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●	●	●
DFT06T308MD	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●	●	●
DFT070408MD	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●	●	●
DFT090508MD	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●	●	●
DFT110508MD	11,64	.458	17,60	.693	5,85	.230	4,88	.192	0,80	.031	–	–	●

- DS geometry for improved control of chip flow, chip breakage, and chip curling.
- These inserts support drilling in P0 and P1 steel, higher alloyed tool steels, and stainless steels where high feed rates cannot be used to provide short chips.





● first choice
○ alternate choice

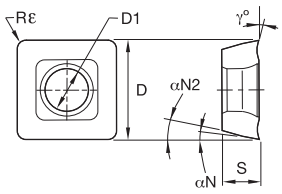
P	●
M	○
K	
N	○
S	○
H	

NEW!

DFT • DS

	L10		D		D1		S		Rε		KCU40
catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	
DFTX20204DS	3,31	.130	5,00	.197	2,25	.089	2,45	.097	0,40	.016	●
DFT030304DS	3,97	.156	6,00	.236	2,65	.104	2,95	.116	0,40	.016	●
DFT05T308DS	5,29	.208	8,00	.315	3,40	.134	3,75	.148	0,80	.031	●
DFT06T308DS	6,62	.260	10,00	.394	4,40	.173	3,75	.148	0,80	.031	●
DFT070408DS	7,94	.313	12,00	.472	4,40	.173	4,75	.187	0,80	.031	●
DFT090508DS	9,92	.391	15,00	.591	5,50	.217	5,25	.207	0,80	.031	●





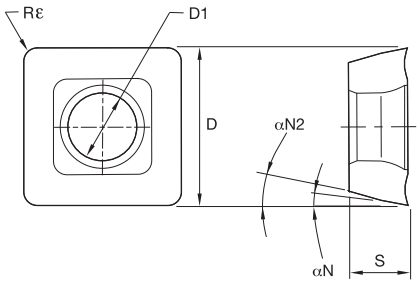
● first choice
○ alternate choice

P		●	●	●	●
M			○	●	●
K		●	●	●	○
N			○	○	○
S			○	●	○
H					

SP..X..(R)HP

	D		D1		S		Rε					KCPK10	KCU25	KCU40	KC7140
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN	αN2				
SPGX050204HP	5,56	.219	2,25	.089	2,38	.094	0,40	.016	10	7	11	–	●	●	●
SPGX060304RHP	6,35	.250	2,65	.104	3,18	.125	0,40	.016	10	7	11	–	●	●	●
SPGX070304RHP	7,94	.313	2,85	.112	3,18	.125	0,40	.016	10	7	11	–	●	●	●
SPGX070308HP	7,94	.313	2,85	.112	3,18	.125	0,80	.031	10	7	11	●	●	●	–
SPPX09T308RHP	9,53	.375	3,60	.142	3,97	.156	0,80	.031	10	7	11	–	●	●	●
SPPX09T310HP	9,53	.375	3,60	.142	3,97	.156	1,00	.039	10	7	11	●	●	●	–
SPPX120408RHP	12,70	.500	4,60	.181	4,76	.188	0,80	.031	10	7	11	–	●	●	●
SPPX120412HP	12,70	.500	4,60	.181	4,76	.188	1,20	.047	10	7	11	●	●	●	–
SPPX15T508RHP	15,73	.625	5,50	.234	5,95	.234	0,80	.031	10	7	11	–	●	●	●
SPPX15T512HP	15,73	.625	5,50	.217	5,95	.234	1,20	.047	10	7	11	●	●	●	–

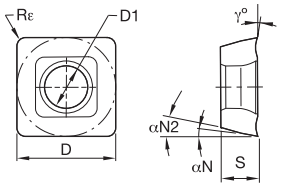




SP..X..MD

	D		D1		S		Rε					KCPK10	KCU25	KCU40	KC7140
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN	αN2				
SPGX050204MD	5,56	.219	2,25	.089	2,38	.094	0,40	.016	16	7	11	–	●	●	●
SPGX060304MD	6,35	.250	2,65	.104	3,18	.125	0,40	.016	20	7	11	●	●	●	●
SPGX070304MD	7,94	.313	2,85	.112	3,18	.125	0,40	.016	16	7	11	●	●	●	●
SPGX070308MD	7,94	.313	2,85	.112	3,18	.125	0,80	.031	16	7	11	●	●	●	–
SPPX09T308MD	9,53	.375	3,60	.142	3,97	.156	0,80	.031	16	7	11	–	●	●	●
SPPX09T310MD	9,53	.375	3,60	.142	3,97	.156	1,00	.039	16	7	11	●	●	●	–
SPPX120408MD	12,70	.500	4,60	.181	4,76	.188	0,80	.031	16	7	11	–	●	●	●
SPPX120412MD	12,70	.500	4,60	.181	4,76	.188	1,20	.047	16	7	11	●	●	●	–
SPPX15T508MD	15,73	.625	5,50	.234	5,95	.234	0,80	.031	16	7	11	–	●	●	●
SPPX15T512MD	15,73	.625	5,50	.217	5,95	.234	1,20	.047	16	7	11	●	●	●	–





● first choice
○ alternate choice

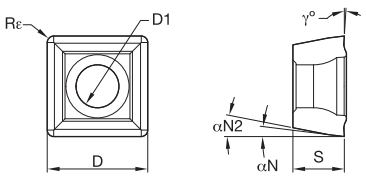
		KCPK10	KCU25	KCU40
P		●	●	●
M			○	●
K		●	●	●
N			○	○
S			○	●
H				

SP..X..FP

	D		D1		S		Rε							
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN	αN2	KCPK10	KCU25	KCU40
SPGX060304FP	6,35	.250	2,85	.112	3,18	.125	0,40	.016	6	7	11	●	●	●
SPGX070304FP	7,94	.313	2,85	.112	3,18	.125	0,40	.016	6	7	11	●	●	●
SPGX070308FP	7,94	.313	2,85	.112	3,18	.125	0,80	.031	6	7	11	●	●	●
SPPX09T308FP	9,53	.375	3,60	.142	3,97	.156	0,80	.031	6	7	11	●	●	●
SPPX09T310FP	9,53	.375	3,60	.142	3,97	.156	1,00	.039	6	7	11	●	●	●
SPPX120408FP	12,70	.500	4,60	.181	4,76	.188	0,80	.031	6	7	11	●	●	●
SPPX120412FP	12,70	.500	4,60	.181	4,76	.188	1,20	.047	6	7	11	●	●	●
SPPX15T508FP	15,73	.625	5,50	.234	5,95	.234	0,80	.031	6	7	11	●	●	●
SPPX15T512FP	15,73	.625	5,50	.217	5,95	.234	1,20	.047	6	7	11	●	●	●

- LP geometry for improved control of chip flow, chip breakage, and chip curling.
- These inserts support drilling in P0 and P1 steel, higher alloyed tool steels, and stainless steels where high feed rates cannot be used to provide short chips.





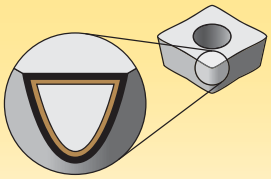
● first choice
○ alternate choice

		KCU40
P		●
M		○
K		
N		○
S		○
H		

NEW!

SP..X..LP

	D		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN	αN2	KCU40
SPGX050204LP	5,42	.213	2,25	.089	2,38	.094	0,40	.016	4	7	11	●
SPGX060304LP	6,35	.250	2,65	.104	3,18	.125	0,40	.016	4	7	11	●
SPPX070304LP	7,80	.307	2,85	.112	3,18	.125	0,40	.016	4	7	11	●
SPPX09T308LP	9,38	.369	3,60	.142	3,97	.156	0,80	.031	4	7	11	●
SPPX120408LP	12,56	.494	4,60	.181	4,76	.187	0,80	.031	4	7	11	●

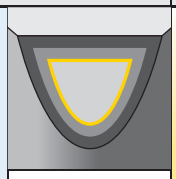
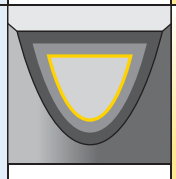
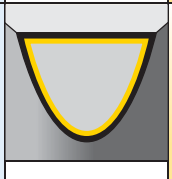


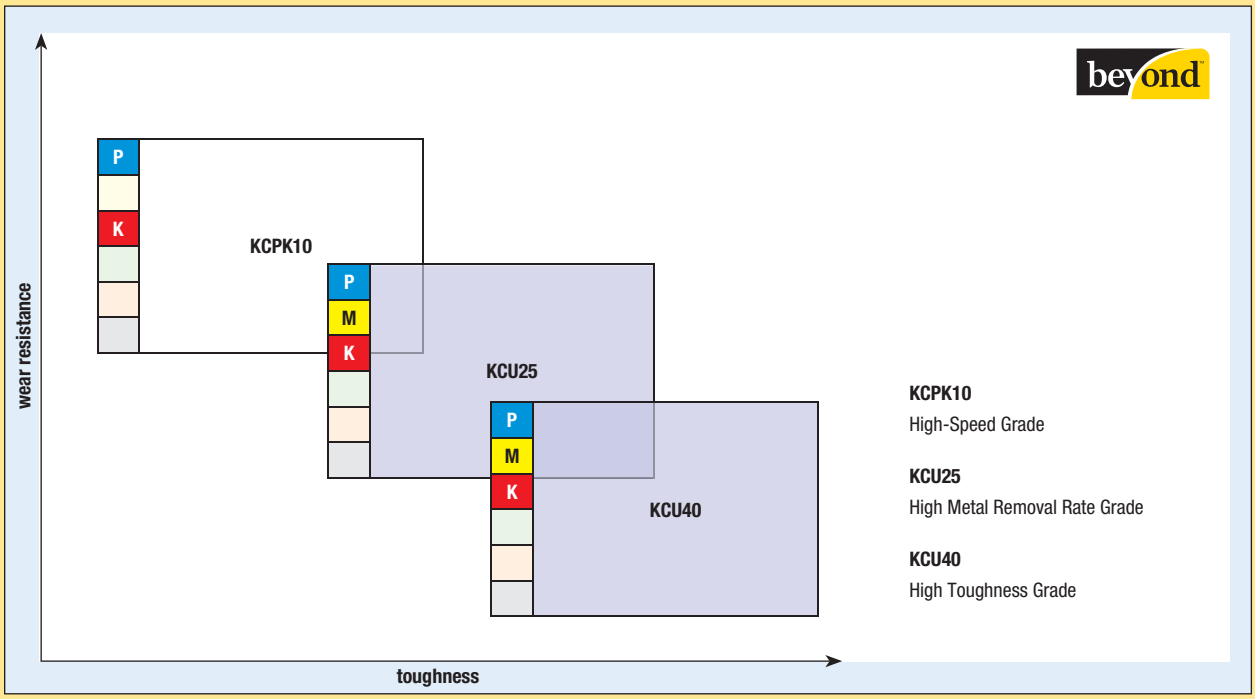
Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

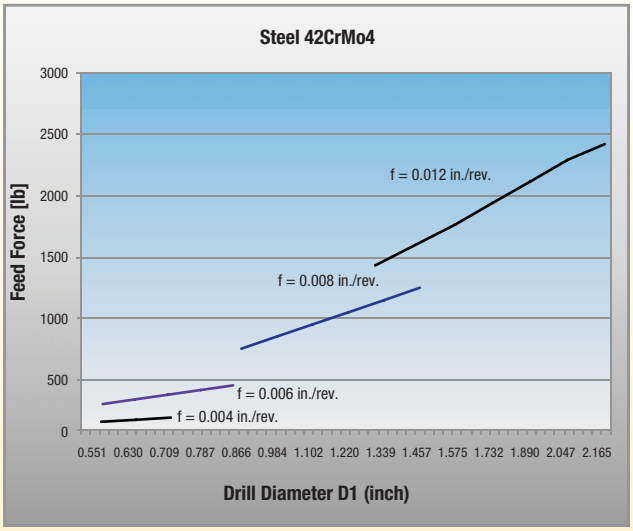
wear resistance ⟷ toughness

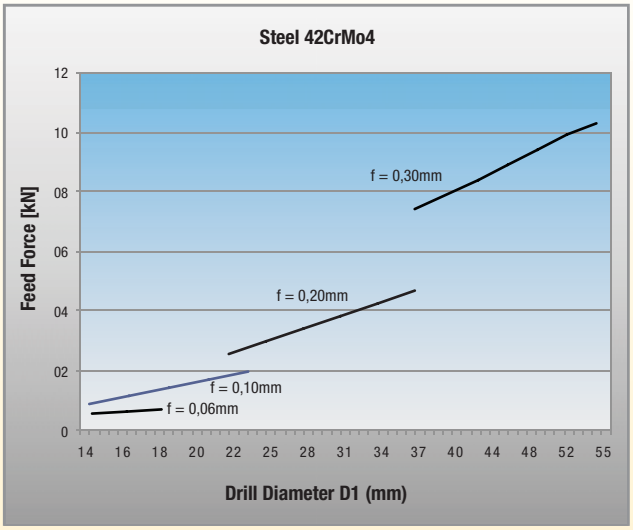
Grade

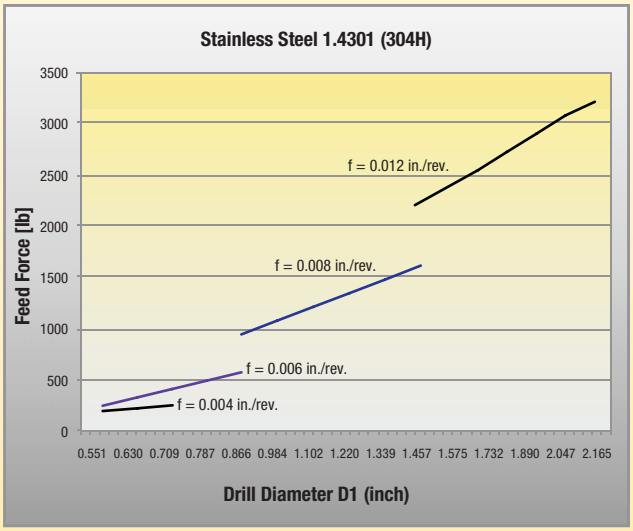
Coating	Grade Description	05	10	15	20	25	30	35	40	45
KCPK10  Al_2O_3 TiCN	**Composition:** With an advanced CVD TiCN-Al_2O_3 coating combined with a cobalt-enriched carbide substrate, this grade offers a balanced combination of deformation-resistance and edge toughness. **Application:** The KCPK10™ grade offers outstanding abrasion and crater wear resistance for high-speed machining of steels and cast irons. Use for very high cutting speeds with low to medium feed rates.	P	P	P	P					
		K	K	K	K					
KCU25  Al_2O_3 TiCN	**Composition:** This advanced CVD TiCN-Al_2O_3 coating, together with a newly engineered tough carbide substrate, ensures adequate deformation resistance along with excellent edge strength, and offers very good wear resistance over a wide range of machining conditions. **Application:** KCU25, as a high productivity grade with high speeds and feeds, is the first choice for productive process with very good reliability in steels, stainless steels, and cast irons.	P			P	P	P	P		
		M		M	M	M	M			
		K		K	K	K	K			
KCU40  PVD TiN_TiAlN	**Composition:** With a multilayered PVD TiN-TiAlN coating and a tough substrate, this grade withstands interruptions and provides high wear resistance for long tool life. **Application:** The KCU40 grade is the first choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper edges, and as a grade for high toughness applications. It covers steel, stainless steel, cast iron, and high-temp alloys under certain conditions.	P					P	P	P	P
		M				M	M	M	M	
		K			K	K	K	K		

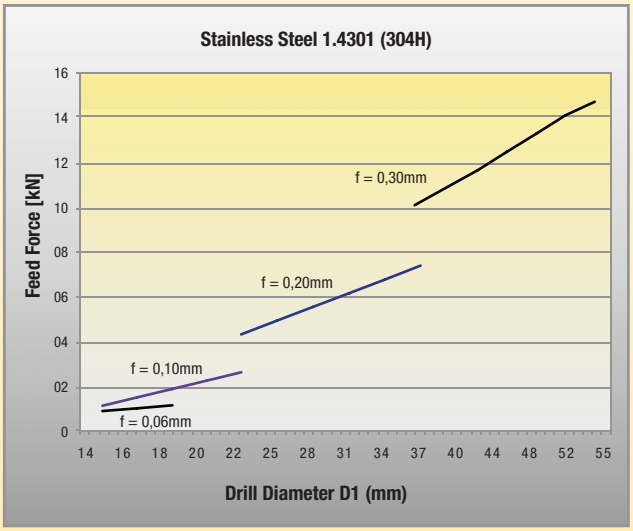


Feed Force Requirement

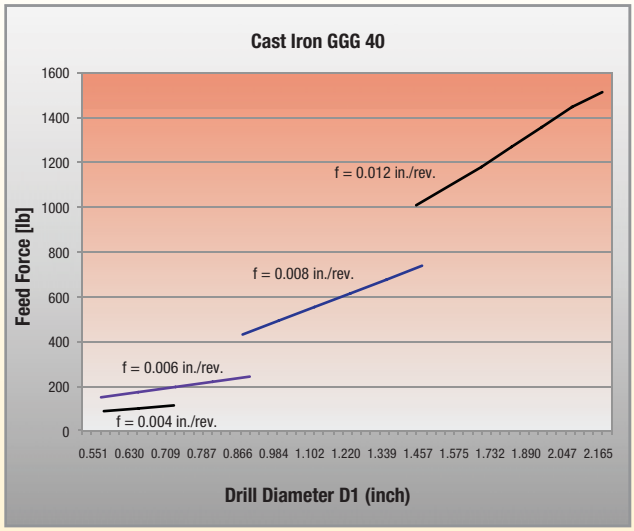


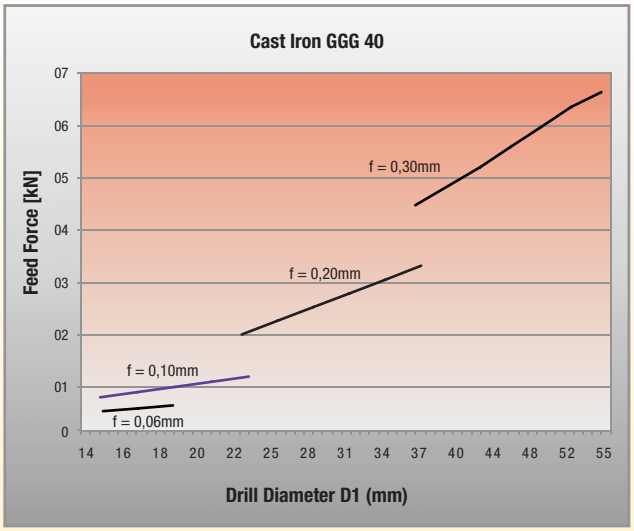


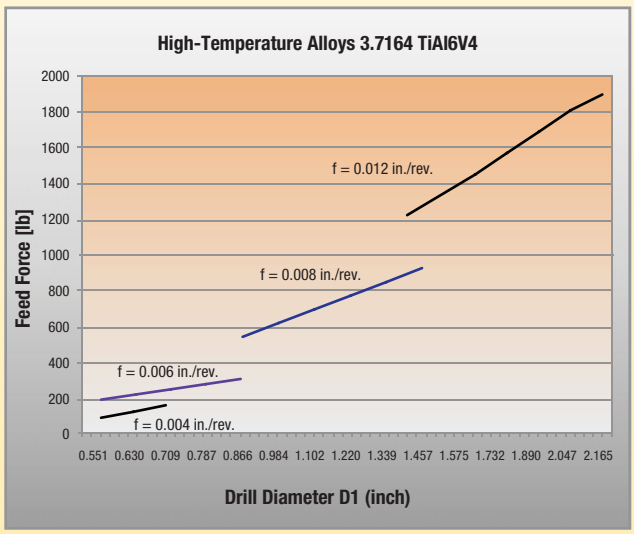


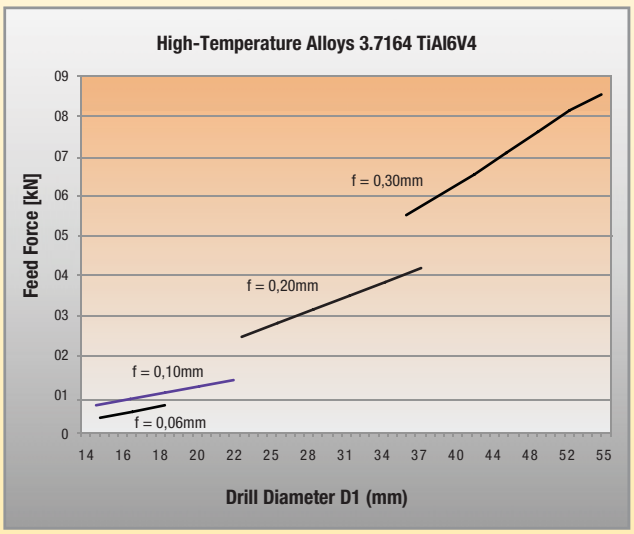


Feed Force Requirement

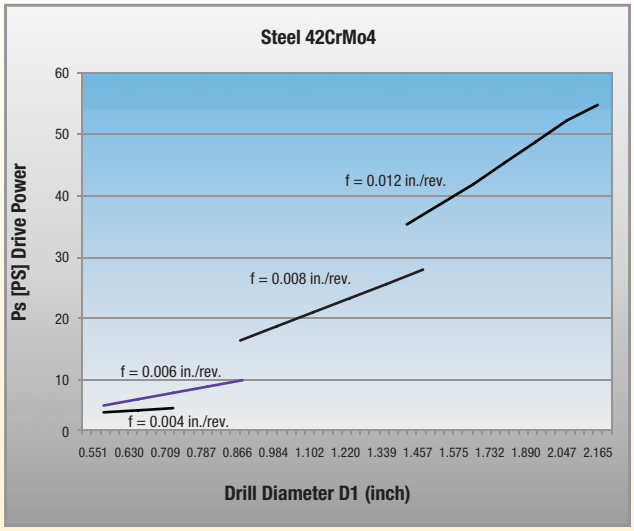


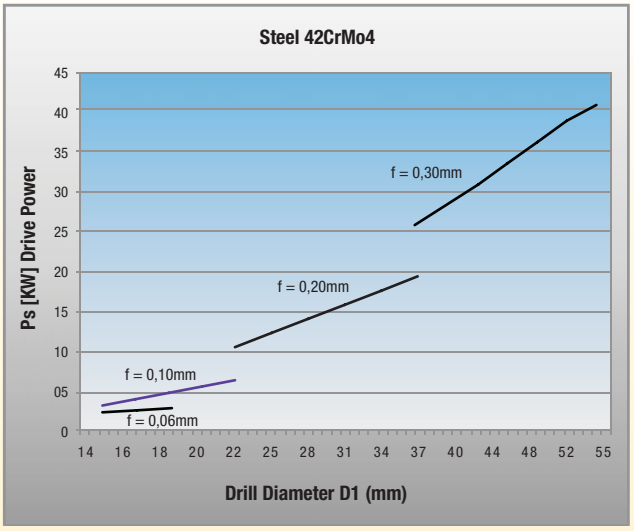


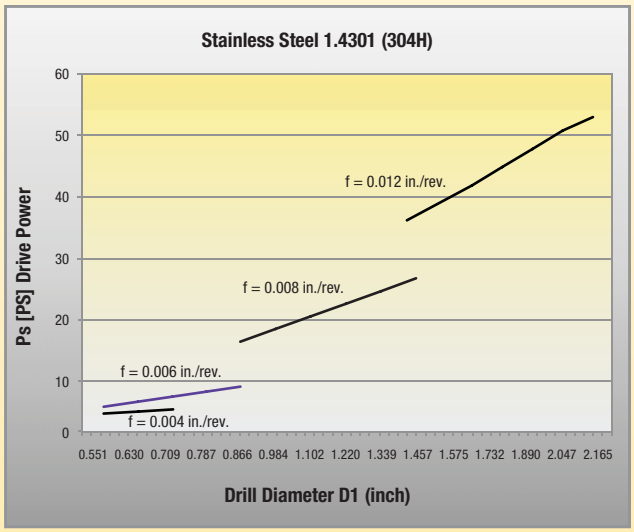


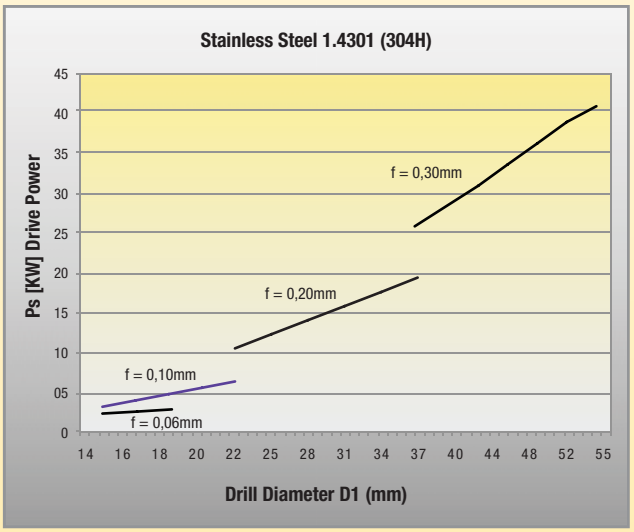


Power Recommendation

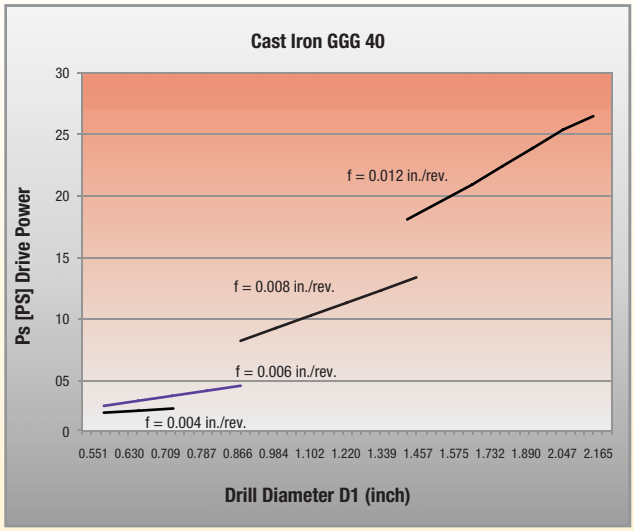


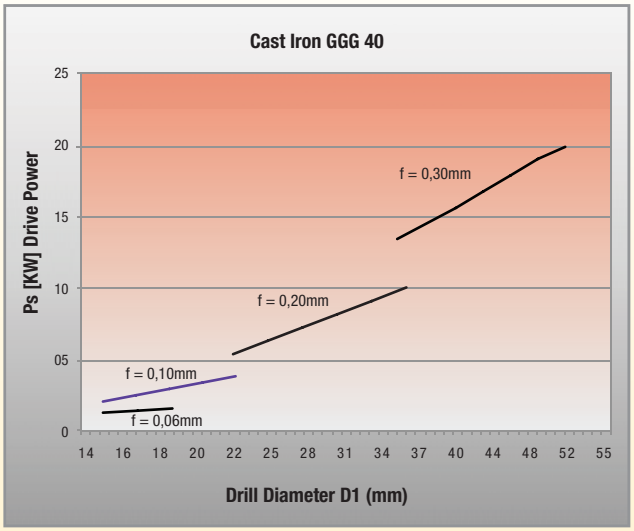


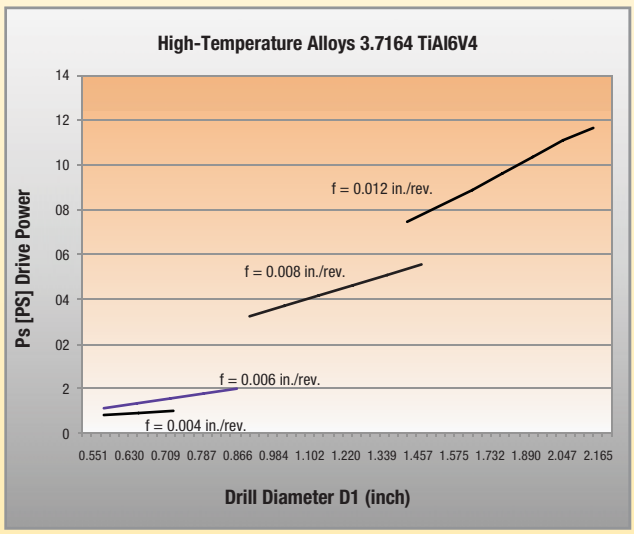


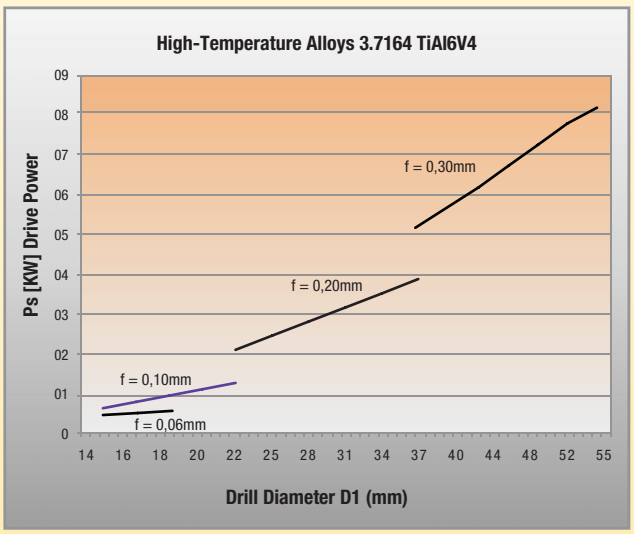


Power Recommendation

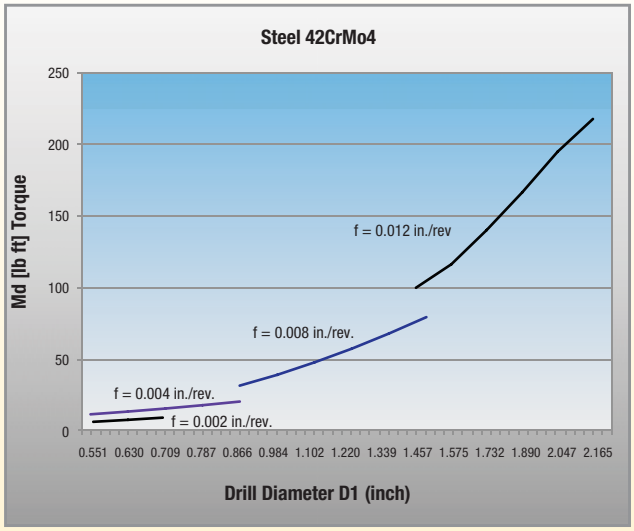


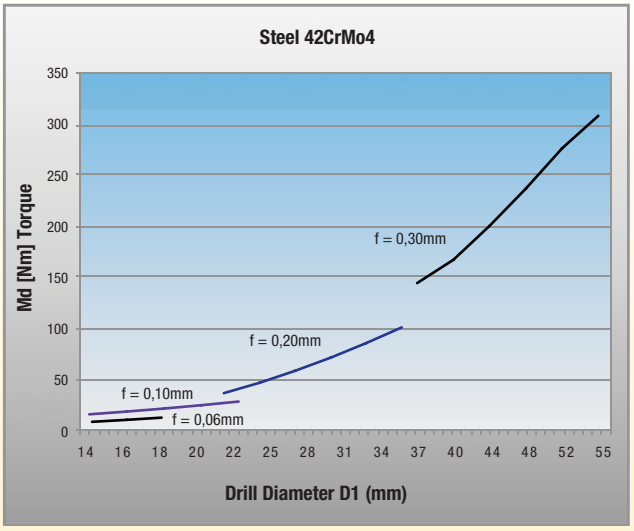


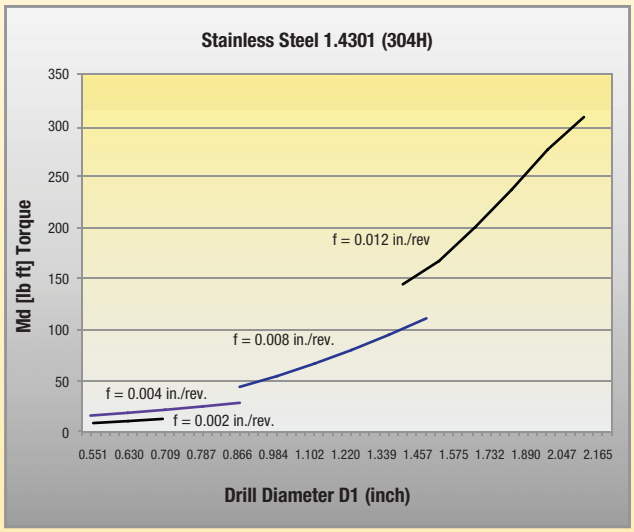


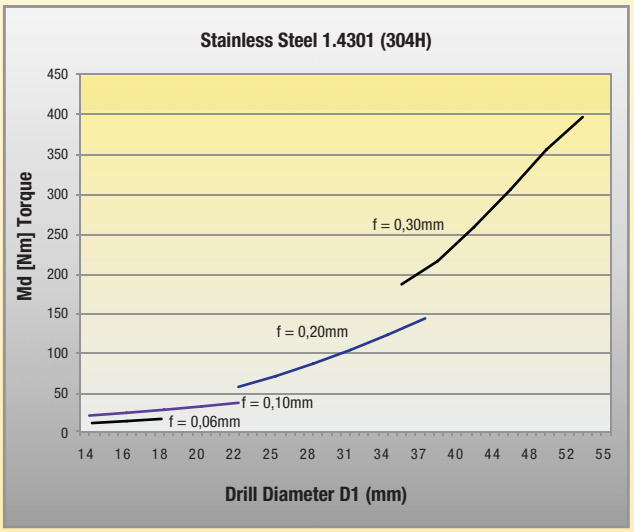


Torque Recommendation

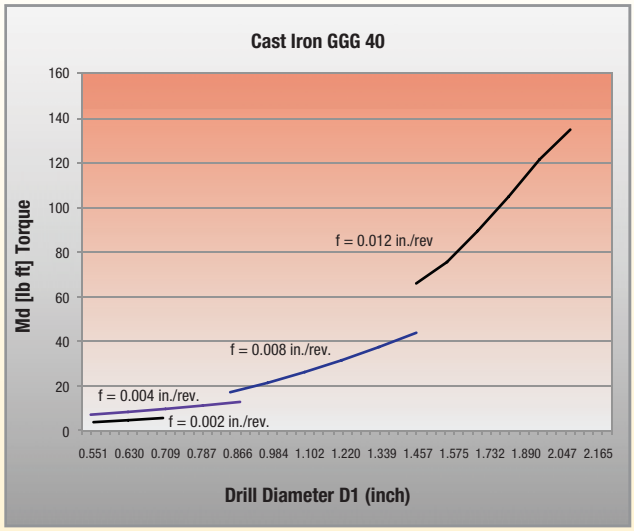


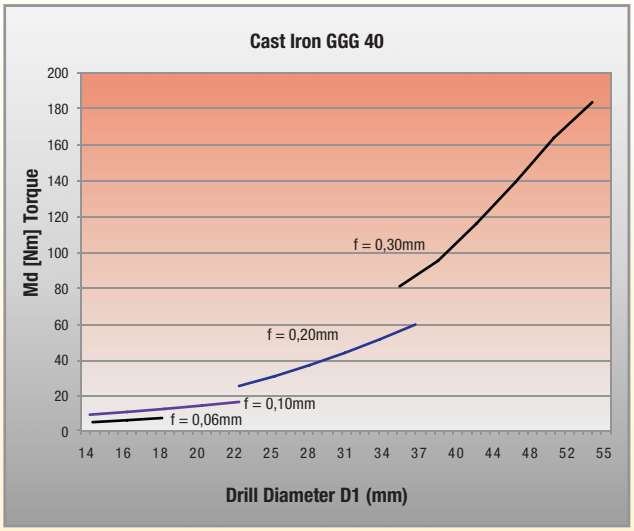


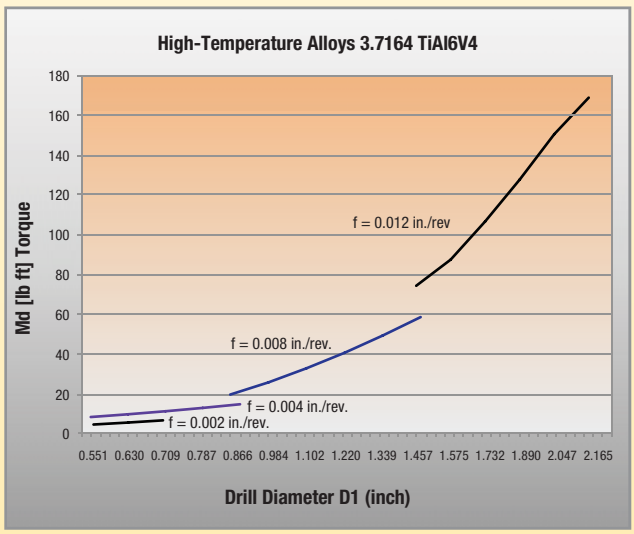


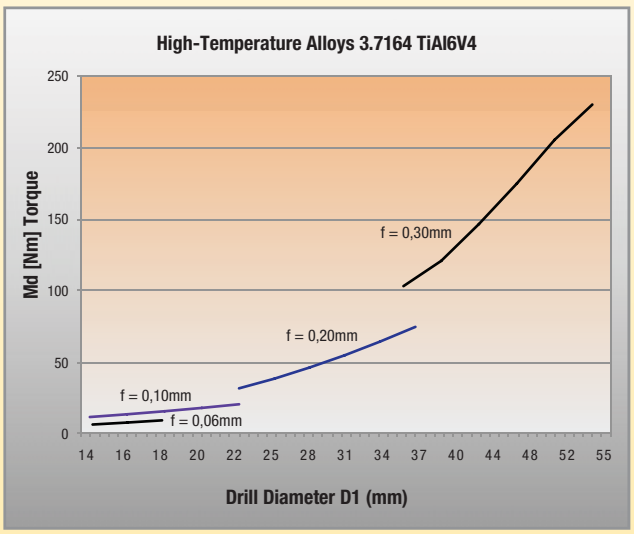


Torque Recommendation









CTR™ Counterboring Tools

CTR counterboring tools are designed for high-production screw-head counterbores and similar counterboring operations. Tools can be adapted to almost all applications for optimum cutting performance and long tool life.

Extremely unequal insert positioning and flutes prevent chattering and generate less noise. A precise 90° bottom can be achieved with the S2 S inserts.

Features and Benefits

Productivity and Reliability

- S2 S inserts reduce additional drill operations to achieve a precise 90° bottom.
- Chatter-free operations for improved surface quality due to extremely unequal insert positioning and flutes.
- Achieve high metal removal rates to reduce machine time and manufacturing costs.

Versatility

- Counterboring tools can be used in steel, stainless steel, non-ferrous materials, cast irons, and heat-resistant alloy applications.
- Toolholders are double- or triple-fluted at a diameter range of 15–46mm (.591–1.811") with through-coolant capabilities.
- S2 S standard inserts are double-edged and available in various grades and geometries.

Achieve high metal removal rates to reduce machine time and manufacturing costs.

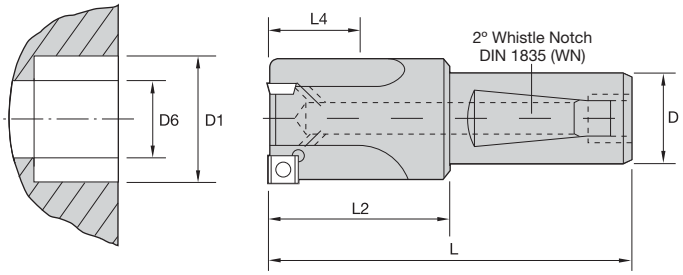


Customization

- Length and diameter variations with and without adjustable cartridges available.
- Combination and multistep tooling based on drilling tools, like the Drill Fix™ system, with short distance and small diameter steps.
- Various radii and customized grades available upon request.

- Counterboring tool shipped with insert screws and Torx wrench.
- Order inserts separately; see pages J115–J117.







S2 S Whistle Notch WN Shank • Metric

catalog number	D1 mm	D1 in	tol min D1 mm	tol min D1 in	tol max D1 mm	tol max D1 in	D	D6	L	L2	L4 max	gage insert	number of inserts
CBTF150R2WD20N2M	15,14	0.596	-0,120	-0.005	0,120	0.005	20	6,0	81	31	8,5	SPHX060204R..	2
CBTF160R2WD20N2M	16,14	0.635	-0,120	-0.005	0,120	0.005	20	7,0	81	31	8,5	SPHX060204R..	2
CBTF170R2WD20N2M	17,14	0.675	-0,120	-0.005	0,120	0.005	20	8,0	86	36	13,5	SPHX060204R..	2
CBTF180R2WD20N2M	18,14	0.714	-0,120	-0.005	0,120	0.005	20	8,4	86	36	13,5	SPHX070304R..	2
CBTF180R2WD20N3M	18,14	0.714	-0,120	-0.005	0,120	0.005	20	8,4	86	36	13,5	SPHX060204R..	3
CBTF200R2WD20N2M	20,17	0.794	-0,120	-0.005	0,120	0.005	20	8,5	86	36	16,0	SPHX070304R..	2
CBTF200R2WD20N3M	20,17	0.794	-0,120	-0.005	0,120	0.005	20	8,5	86	36	16,0	SPHX060204R..	3
CBTF210R2WD20N2M	21,17	0.833	-0,120	-0.005	0,120	0.005	20	8,5	86	36	16,0	SPHX070304R..	2
CBTF210R2WD20N3M	21,17	0.833	-0,120	-0.005	0,120	0.005	20	10,5	86	36	11,0	SPHX060204R..	3
CBTF220R2WD20N2M	22,17	0.873	-0,120	-0.005	0,120	0.005	20	10,4	86	36	16,0	SPHX070304R..	2
CBTF220R2WD20N3M	22,17	0.873	-0,120	-0.005	0,120	0.005	20	10,5	86	36	16,0	SPHX060204R..	3
CBTF230R2WD20N2M	23,17	0.912	-0,120	-0.005	0,120	0.005	20	10,5	91	41	21,0	SPHX090304R..	2
CBTF230R2WD20N3M	23,17	0.912	-0,120	-0.005	0,120	0.005	20	10,5	91	41	16,0	SPHX070304R..	3
CBTF240R2WD20N2M	24,17	0.951	-0,120	-0.005	0,120	0.005	20	10,5	91	41	18,5	SPHX090304R..	2
CBTF240R2WD20N3M	24,17	0.951	-0,120	-0.005	0,120	0.005	20	10,5	91	41	16,0	SPHX070304R..	3
CBTF250R2WD20N2M	25,17	0.991	-0,120	-0.005	0,120	0.005	20	12,0	96	46	23,5	SPHX090304R..	2
CBTF250R2WD20N3M	25,17	0.991	-0,120	-0.005	0,120	0.005	20	10,5	96	46	21,0	SPHX070304R..	3
CBTF260R2WD20N2M	26,17	1.030	-0,120	-0.005	0,120	0.005	20	13,0	96	46	23,5	SPHX090304R..	2
CBTF270R2WD20N3M	27,17	1.070	-0,120	-0.005	0,120	0.005	20	10,5	96	46	21,0	SPHX090304R..	3
CBTF280R2WD20N3M	28,17	1.109	-0,120	-0.005	0,120	0.005	20	15,0	101	51	23,5	SPHX090304R..	3
CBTF300R2WD20N3M	30,17	1.188	-0,120	-0.005	0,120	0.005	20	15,0	101	51	23,0	SPHX090304R..	3
CBTF320R2WD20N3M	32,20	1.268	-0,120	-0.005	0,120	0.005	20	17,0	101	51	23,0	SPHX090304R..	3
CBTF330R2WD20N3M	33,20	1.307	-0,120	-0.005	0,120	0.005	20	17,0	101	51	25,5	SPHX090304R..	3
CBTF340R2WD32N3M	34,20	1.346	-0,120	-0.005	0,120	0.005	32	18,0	111	51	25,5	SPHX090304R..	3
CBTF350R2WD32N3M	35,20	1.386	-0,120	-0.005	0,120	0.005	32	19,0	111	51	25,5	SPHX090304R..	3
CBTF360R2WD32N3M	36,20	1.425	-0,120	-0.005	0,120	0.005	32	19,0	116	56	27,5	SPHX090304R..	3
CBTF380R2WD32N3M	38,20	1.504	-0,120	-0.005	0,120	0.005	32	22,0	121	61	30,0	SPHX120404R..	3
CBTF400R2WD32N3M	40,20	1.582	-0,120	-0.005	0,120	0.005	32	21,0	121	61	30,5	SPHX120404R..	3
CBTF420R2WD32N3M	42,20	1.661	-0,120	-0.005	0,120	0.005	32	22,0	126	66	33,5	SPHX120404R..	3
CBTF460R2WD32N3M	46,20	1.819	-0,120	-0.005	0,120	0.005	32	25,0	126	66	33,5	SPHX120404R..	3

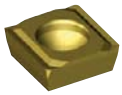
Spare Parts

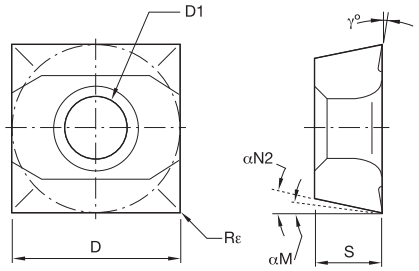




gage insert	insert screw	wrench	Torx size
SPHX060204R..	**192.432**	**170.028**	T8
SPHX070304R..	**192.432**	**170.028**	T8
SPHX090304R..	**191.924**	**170.024**	T9
SPHX120404R..	**191.916**	**170.025**	T15

- Double-sided insert style.





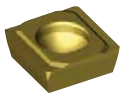
● first choice
○ alternate choice

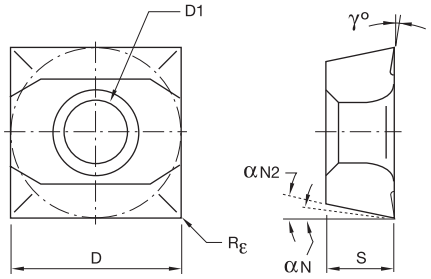
P		●	●	●	●
M		○	○	○	●
K		○	○	○	○
N					○
S					○
H					

SPHX..R-20

	D		D1		S		Rε							
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN2	αN M	KCU25	KCU40	KC7215	KC7140
SPHX060202R20	6,35	.250	2,85	.112	2,38	.094	0,20	.008	12	11	7	–	–	●	–
SPHX060204R20	6,35	.250	2,85	.112	2,38	.094	0,40	.016	12	11	7	●	●	–	●
SPHX060206R20	6,35	.250	2,85	.112	2,38	.094	0,60	.024	12	11	7	–	–	●	–
SPHX060208R20	6,35	.250	2,85	.112	2,38	.094	0,80	.031	12	11	7	–	–	●	–
SPHX070302R20	7,94	.313	2,85	.112	3,18	.125	0,20	.008	12	11	7	–	–	●	–
SPHX070304R20	7,94	.313	2,85	.112	3,18	.125	0,40	.016	12	11	7	●	●	–	●
SPHX070306R20	7,94	.313	2,85	.112	3,18	.125	0,60	.024	12	11	7	–	–	●	–
SPHX070308R20	7,94	.313	2,85	.112	3,18	.125	0,80	.031	12	11	7	–	–	●	–
SPHX070310R20	7,94	.313	2,85	.112	3,18	.125	1,00	.039	12	11	7	–	–	●	–
SPHX070312R20	7,94	.313	2,85	.112	3,18	.125	1,20	.047	12	11	7	–	–	●	–
SPHX090304R20	9,53	.375	3,50	.138	3,18	.125	0,40	.016	12	11	7	●	●	●	●
SPHX090308R20	9,53	.375	3,50	.138	3,18	.125	0,80	.031	12	11	7	●	●	–	–
SPHX090310R20	9,53	.375	3,50	.138	3,18	.125	1,00	.039	12	11	7	–	–	●	–
SPHX090312R20	9,53	.375	3,50	.138	3,18	.125	1,20	.047	12	11	7	–	–	●	–
SPHX090316R20	9,53	.375	3,50	.138	3,18	.125	1,60	.063	12	11	7	–	–	●	–
SPHX120404R20	12,70	.500	4,50	.177	4,76	.187	0,40	.016	12	11	7	●	●	–	●
SPHX120408R20	12,70	.500	4,50	.177	4,76	.187	0,80	.031	12	11	7	●	●	–	–
SPHX120410R20	12,70	.500	4,50	.177	4,76	.187	1,00	.039	12	11	7	–	–	●	–
SPHX120412R20	12,70	.500	4,50	.177	4,76	.187	1,20	.047	12	11	7	–	–	●	–
SPHX120416R20	12,70	.500	4,50	.177	4,76	.187	1,60	.063	12	11	7	–	–	●	–
SPHX120420R20	12,70	.500	4,50	.177	4,76	.187	2,00	.079	12	11	7	–	–	●	–
SPHX150504R20	15,88	.625	5,50	.217	5,95	.234	0,40	.016	12	11	7	●	●	–	–
SPHX150508R20	15,88	.625	5,50	.217	5,95	.234	0,80	.031	12	11	7	●	●	–	–
SPHX150512R20	15,88	.625	5,50	.217	5,95	.234	1,20	.047	12	11	7	–	–	●	–
SPHX150516R20	15,88	.625	5,50	.217	5,95	.234	1,60	.063	12	11	7	–	–	●	–
SPHX150520R20	15,88	.625	5,50	.217	5,95	.234	2,00	.079	12	11	7	–	–	●	–

NOTE: SPHX...R-20: This geometry is first choice for steel applications.





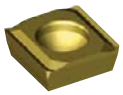
● first choice
○ alternate choice

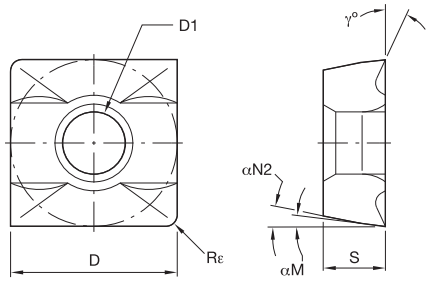
		KCPK10	KCU25	KCU40	KC7215	KM1
P		○	○	○	○	○
M				○	○	○
K		●	●	●	●	●
N						○
S				○	○	
H						

SPHX..R-21

catalog number	D mm	D in	D1 mm	D1 in	S mm	S in	Rε mm	Rε in	γ°	αN2	αN	KCPK10	KCU25	KCU40	KC7215	KM1
SPHX060202R21	6,35	.250	2,85	.112	2,38	.094	0,20	.008	4	11	7	–	–	–	●	–
SPHX060204R21	6,35	.250	2,85	.112	2,38	.094	0,40	.016	4	11	7	●	●	●	–	–
SPHX060204R-21	6,35	.250	2,85	.112	2,38	.094	0,40	.016	4	11	7	–	–	–	–	●
SPHX060206R21	6,35	.250	2,85	.112	2,38	.094	0,60	.024	4	11	7	–	–	–	●	–
SPHX060208R21	6,35	.250	2,85	.112	2,38	.094	0,80	.031	4	11	7	–	–	–	●	–
SPHX070304R21	7,94	.313	2,85	.112	3,18	.125	0,40	.016	4	11	7	●	●	●	–	–
SPHX070304R-21	7,94	.313	2,85	.112	3,18	.125	0,40	.016	4	11	7	–	–	–	–	●
SPHX070306R21	7,94	.313	2,85	.112	3,18	.125	0,60	.024	4	11	7	–	–	–	●	–
SPHX070308R21	7,94	.313	2,85	.112	3,18	.125	0,80	.031	4	11	7	●	–	●	–	–
SPHX070310R21	7,94	.313	2,85	.112	3,18	.125	1,00	.039	4	11	7	–	–	–	●	–
SPHX090304R21	9,53	.375	3,50	.138	3,18	.125	0,40	.016	4	11	7	●	●	●	–	–
SPHX090304R-21	9,53	.375	3,50	.138	3,18	.125	0,40	.016	4	11	7	–	–	–	–	●
SPHX090308R21	9,53	.375	3,50	.138	3,18	.125	0,80	.032	4	11	7	●	●	●	–	–
SPHX090310R21	9,53	.375	3,50	.138	3,18	.125	1,00	.039	4	11	7	–	–	–	●	–
SPHX090312R21	9,53	.375	3,50	.138	3,18	.125	1,20	.047	4	11	7	–	–	–	●	–
SPHX090316R21	9,53	.375	3,50	.138	3,18	.125	1,60	.063	4	11	7	–	–	–	●	–
SPHX120404R21	12,70	.500	4,50	.177	4,76	.187	0,40	.016	4	11	7	●	●	●	–	–
SPHX120404R-21	12,70	.500	4,50	.177	4,76	.187	0,40	.016	4	11	7	–	–	–	–	●
SPHX120408R21	12,70	.500	4,50	.177	4,76	.187	0,80	.031	4	11	7	–	–	–	●	–
SPHX120410R21	12,70	.500	4,50	.177	4,76	.187	1,00	.039	4	11	7	–	–	–	●	–
SPHX120412R21	12,70	.500	4,50	.177	4,76	.187	1,20	.047	4	11	7	–	–	–	●	–
SPHX120416R21	12,70	.500	4,50	.177	4,76	.187	1,60	.063	4	11	7	–	–	–	●	–
SPHX120420R21	12,70	.500	4,50	.177	4,76	.187	2,00	.079	4	11	7	–	–	–	●	–
SPHX150504R-21	15,88	.625	5,50	.217	5,95	.234	0,40	.016	4	11	7	–	–	–	–	●

NOTE: SPHX...R-21: This geometry is first choice for cast iron applications.





● first choice
○ alternate choice

P	
M	
K	○
N	●
S	
H	

SPHX..R-22

	D		D1		S		Rε					
catalog number	mm	in	mm	in	mm	in	mm	in	γ°	αN2	αN M	KM1
SPHX060204R-22	6,35	.250	2,85	.112	2,38	.094	0,40	.016	25	11	–	●
SPHX070304R-22	7,94	.313	2,85	.112	3,18	.125	0,40	.016	25	11	–	●
SPHX090304R-22	9,53	.375	3,50	.138	3,18	.125	0,40	.016	25	11	–	●
SPHX120404R-22	12,70	.500	4,50	.177	4,76	.187	0,40	.016	25	11	–	●
SPHX150504R-22	15,88	.625	5,50	.217	5,95	.234	0,40	.016	25	11	7	●

NOTE: SPHX...R-22: This geometry is first choice for aluminum applications.



Hole Finishing

Introduction **K2–K5**

Tool Selection Guide K4–K5

RMS Solid Carbide Reaming **K6–K11**

RMR, RMB, and RMB-E Tipped Reaming **K12–K25**

RMR Disc Tipped Reaming K12, K15–K16, K22

RMB Cermet Tipped Reaming K13, K17–K18, K23–K24

RMB-E Expansion Reaming K14, K19–K21, K23–K24

RHR, RHM, and RHM-E Modular Reaming **K26–K45**

RHR Disc Tipped Reaming K26, K29–K30, K38

RHM Cermet Tipped Reaming K27, K31–K34, K39–K40

RHM-E Expansion Reaming K28, K35–K37, K39–K40

Modular Reaming Bodies K42–K45

SIF Steerable Toolholder **K46–K52**

RIR and RIQ Guided Reaming **K53–K71**

Romicron High-Performance Boring System **K72–K117**

ModBORE Boring Systems **K118–K153**

PCD Customized Tooling **K154–K158**

Application Examples **K160–K220**

Hole Finishing with Kennametal

Owning the entire process chain from raw materials to reconditioning makes Kennametal one of the few sources in the metalworking industry where you can get complete hole finishing tooling, from reaming and fine boring to motion tooling. Kennametal provides customized solutions that are the best fit for any application or machining challenge, without limitations from product portfolio or capacity.



PCD Tooling

- Extremely productive and tailored for satisfying your high-volume production needs.
- Several standard PCD grades, like KD1415™ and KD1425™, are available to provide the highest tool life and cutting data as well as unmatched surface and diameter tolerance quality.
- Platforms are available depending on your application and preference from steel to carbide based, adjustable pocket seats, fine-boring components like Romicron™ or FB cartridges, spindle couplings, or SIF™ steerable adapters.



Multi-flute Reaming

- RMR™, RMB™, and RMB-E™ tipped reaming.
- RHR™, RHM™, and RHM-E™ modular reaming.
- Highly productive and easy to use.
- Large, standard, off-the-shelf portfolio of solid carbide, cermet, carbide-tipped, and modular reaming tools, all ground to achieve H7 without customization.
- Complex specials with multiple steps, coupling, and length variations are available.
- Intermediate sizes, grades, and lead chamfers available with short delivery.

Motion Tooling

- Sophisticated tooling achieves most challenging tasks.
- Large, customized complex solution portfolio of:
  - — Linear feed-out heads.
  - — Eccentric actuating heads.
  - — Pivot heads.
  - — Cylinder boring tools.
  - — Line boring bars.
  - — Bottle boring tools.
  - — Valve seat and guide tools.
  - — Machining center tools.
- Depending on your application and preference, tools are based on the positive-stop principle; use drawbars, like with engineered solution machines; or don't require machining center modification.



Padded Reaming

- RIQ™ Quattro Cut™ and RIR™ reaming systems.
- Highest precision and surface quality achievable but still easy to apply.
- RIQ is the market-leading reaming technology that eliminates back taper adjustment, dramatically reduces setup time while still offering highest accuracy and surface quality, and offers four cutting edges with PCD, CBN, carbide, or cermet styles.
- RIR provides the most stable pocket seat and fail-safe clamping, from smallest to largest diameters.
- Combine the large, standard RIQ and RIR insert offering with your customized tool body.



Fine Boring

- Romicron™ and ModBORE™ systems.
- Extremely flexible, with an extensive diameter and length range.
- Offers the latest grade technology using standard turning inserts.
- Romicron enables diameter modifications by hand directly at the machine without setup equipment or affecting lock screw accuracy.
- The ModBORE system offers a very large diameter range with each tool along, with roughing to finishing tooling, and can be easily and safely adapted to every KM™ spindle.



● first choice
○ alternate choice

			P	M	K	N	S	H	standard diameter range	standard diameter accuracy	custom solution diameter range	custom solution diameter accuracy	Position	Cylindricity
reaming tools		**RMS™** Solid *Carbide*	●	●	●	●	○		.196–.551" 5–14mm	IT7	.056–1.00" 1,4–25,4mm	IT6 >.39" >10mm	.0004" 10 µm	.0003" 7 µm
		**RMR™** Disc Style *Carbide*	●	●	●	●	○		.551–787" 14–20mm	IT7	.551–1.65" 14–42mm	IT6	.0004" 10 µm	.0003" 7 µm
		**RMB™** Cermet Tipped *Cermet*	●		○	○			.551–.787" 14–20mm	IT7	.551–2.55" 14–65mm	IT6	.0004" 10 µm	.0003" 7 µm
		**RMB-E™** Expandable Reamer *Carbide/Cermet*	●	●	●	●	○		.551–1.65" 14–42mm	IT6	.551–1.65" 14–42mm	IT5–IT6	.0004" 10 µm	.0003" 7 µm
		**RHR™** Modular Disc Style *Carbide*	●	●	●	●	○		.551–1.65" 14–42mm	IT7	.551–1.65" 14–42mm	IT6	.0004" 10 µm	.0003" 7 µm
		**RHM™** Modular Cermet Tipped *Cermet*	●		○	○			.551–1.65" 14–42mm	IT7	.551–1.96" 14–50mm	IT6	.0004" 10 µm	.0003" 7 µm
		**RHM-E™ (Expandable)** Modular Expandable Reamer *Carbide/Cermet*	●	●	●	●	○		.551–1.65" 14–42mm	IT6	.551–1.65" 14–42mm	IT5–IT6	.0004" 10 µm	.0003" 7 µm
		**RIR™** Reamer Insert Rectangular *Carbide*	●	●	●	●	●	○	–	–	.236–11.8" 6–300mm	IT5	.0004" 10 µm	.0002" 4 µm
		**Quattro Cut™ RIQ™** Reamer Insert Quattro Cut *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	–	–	.630–11.8" 16–300mm	IT5	.0004" 10 µm	.0002" 4 µm
boring/fine-boring tools		**Romicron™ SVU BB** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	.157–3.93" 4–100mm	IT6	.062–3.93" 1,6–100mm	IT6	.0002" 5 µm	.0002–.0004" 5–10 µm
		**Romicron AVS00B—3B/SVS4B—6B** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	●	.984–5.47" 25–139mm	IT6	.984–7.2" 25–183mm	IT6	.0002" 5 µm	.0002–.0004" 5–10 µm
		**Romicron SVU65/92** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	2.79–8.38" 71–213mm	IT6	.394–12.83" 10–326mm	IT6	.0002" 5 µm	.0002–.0004" 5–10 µm
		**Romicron SVS M** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	○	●	○	>1.57" >40mm	IT6	1.57–63.0" 40–1600mm	IT6	.0002" 5 µm	.0002–.0004" 5–10 µm
		**ModBORE™ RBHT** Roughing *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		.925–6.024" 23,5–153mm	IT9	.925–6.0" 23,5–153mm	IT9	.0004" 10 µm	>.0008" >20 µm
		**ModBORE FBHO** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	.383–3.469" 9,75–88,1mm	IT7	.118–3.4" 3,0–88,1mm	IT7	.0002" 5 µm	.0002–.0004" 5–10 µm
		**ModBORE FBHM** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	.383–12.598" 9,75–320mm	IT7	.118–12.5" 3,0–320mm	IT7	.0002" 5 µm	.0002–.0004" 5–10 µm
		**ModBORE FBHS** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●	○	.925–6.024" 23,5–153mm	IT7	.925–6.0" 23,5–153mm	IT7	.0002" 5 µm	.0002–.0004" 5–10 µm
		**ModBORE Bridge Tools** Roughing *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		5.9–86.8" 150–2205mm	IT9	5.9–86.8" 150–2205mm	IT9	.0004" 10 µm	>.0008" >20 µm
		**ModBORE Bridge Tools** Fine Boring *Carbide/Cermet/PCD/CBN*	●	●	●	●	●		5.9–86.8" 150–2205mm	IT7	5.9–86.8" 150–2205mm	IT7	.0002" 5 µm	>.0004" >10 µm
		**Fine Boring Cartridges** Fine Boring *Carbide/Cermet/PCD/CBN*	●	○	●	●	○		>1.10" >28mm	IT7	>1.10" >28mm	IT7	.0002" 5 µm	.0002–.0004" 5–10 µm
PCD		**PCD** Round Tools *Steel Base*				●			–	–	.394–4.00" 10–100mm	IT6	.0004" 10 µm	.0004" 10 µm
		**PCD** Round Tools *Carbide Base*				●			–	–	.197–1.00" 5–25mm	IT6	.0002" 5 µm	.0003" 7 µm

Cylindricity
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools mandatory to reach values.

Position
NOTE: Process- and application-dependent.
Highly dependent on the pre-machine hole accuracy.
Use of high-performance drilling/pre-machining tools mandatory to reach values.

achievable surface quality Ra						capability				cost/part	cycle time	required operator experience	page(s)
P	M	K	N	S	H								
20–40 µ-in 0,5–1,0 µm	20–40 µ-in 0,5–1,0 µm	20–60 µ-in 0,5–1,5 µm	–	20–40 µ-in 0,5–1,0 µm	–	●	●	●	●	moderate	low	low	K6–K11
8–24 µ-in 0,2–0,6 µm	20–40 µ-in 0,5–1,0 µm	20–40 µ-in 0,5–1,0 µm	–	20–40 µ-in 0,5–1,0 µm	–	●	●	●	●	low	low	low	K12, K15–K16, K22
8–24 µ-in 0,2–0,6 µm	–	20–60 µ-in 0,5–1,5 µm	4–24 µ-in 0,1–0,6 µm	–	–	●	●	●	●	moderate	low	low	K13, K17–K18, K23–K24
20–40 µ-in 0,5–1,0 µm	20–40 µ-in 0,5–1,0 µm	20–60 µ-in 0,5–1,5 µm	–	20–40 µ-in 0,5–1,0 µm	–	●	●	●	●	moderate	low	moderate	K14, K19–K21, K23–K24
8–24 µ-in 0,2–0,6 µm	20–40 µ-in 0,5–1,0 µm	20–40 µ-in 0,5–1,0 µm	–	20–40 µ-in 0,5–1,0 µm	–	●	●	●	●	moderate	low	low	K26, K29–K30, K38
8–24 µ-in 0,2–0,6 µm	–	20–60 µ-in 0,5–1,5 µm	4–24 µ-in 0,1–0,6 µm	–	–	●	●	●	●	moderate	low	low	K27, K31–K34, K39–K40
20–40 µ-in 0,5–1,0 µm	20–40 µ-in 0,5–1,0 µm	20–60 µ-in 0,5–1,5 µm	–	20–40 µ-in 0,5–1,0 µm	–	●	●	●	●	moderate	low	moderate	K28, K35–K37, K39–K40
8–24 µ-in 0,2–0,6 µm	20–63 µ-in 0,5–1,6 µm	20–72 µ-in 0,5–1,8 µm	4–24 µ-in 0,1–0,6 µm	<32 µ-in <08 µm	<32 µ-in <08 µm	●	●	●	●	low	moderate	high	K53–K57, K60–K64
8–24 µ-in 0,2–0,6 µm	20–63 µ-in 0,5–1,6 µm	20–72 µ-in 0,5–1,8 µm	4–24 µ-in 0,1–0,6 µm	<32 µ-in <08 µm	<32 µ-in <08 µm	●	●	●	●	low	moderate	moderate	K53–K55, K57–K65
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	○	○	low	moderate	low	K76–K80
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	●	●	low	moderate	low	K81–K86
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	○	○	low	moderate	low	K87–K90
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	●	●	low	moderate	low	please contact us
40–200 µ-in 1,0–5,0 µm	40–200 µ-in 1,0–5,0 µm	40–200 µ-in 1,0–5,0 µm	40–80 µ-in 1,0–2,0 µm	40–200 µ-in 1,0–5,0 µm	–	●	●	●	●	low	low	low–moderate	K122–K126
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	●	●	low	moderate	low–moderate	K128–K129, K134–K135
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	●	●	low	moderate	low–moderate	K131–K136
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	<48 µ-in <1,2 µm	●	●	●	●	low	moderate	low–moderate	K137–K141
40–200 µ-in 1,0–5,0 µm	40–200 µ-in 1,0–5,0 µm	40–200 µ-in 1,0–5,0 µm	40–80 µ-in 1,0–2,0 µm	40–200 µ-in 1,0–5,0 µm	–	●	●	●	●	low	low	low–moderate	K141–K145
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	–	●	●	●	●	low	moderate	low–moderate	K141–K145
32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	32–80 µ-in 0,8–2,0 µm	–	●	●	○	○	low	moderate	low–moderate	K116–K117
–	–	–	4–32 µ-in 0,1–0,8 µm	–	–	●	●	●	●	low	very low	moderate	K154–K158
–	–	–	4–32 µ-in 0,1–0,8 µm	–	–	●	●	●	●	low	very low	moderate	K154–K158

Ra Surface roughness

NOTE: Surface roughness values are guidelines and depend on the application, coolant situation, machine, and cutting data applied.

RMS™ Multi-Flute Reaming Tools

RMS™ multi-flute reaming tools achieve the highest metal removal rates in 5–14mm (.197-.551") diameters. All standard reamers are ground to an ISO H7 tolerance class hole to address common applications. Specific coatings and lead configurations enable high-speed machining of steel, stainless steel, cast iron, and non-ferrous materials at accelerated speeds.

Primary Application

Use standard SIF™ steerable hydraulic chucks or SIF adapters for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality.



Features and Benefits

Higher Productivity and Profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Highest metal removal rates at higher speeds and feeds due to reaming-specific grades and substrates.
- Improved straightness and cylindrical form compared to competitive tools, and reduced vibration due to unequal flutes.
- All RMS reamers have internal coolant capability.

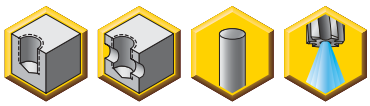
RMS™ multi-flute reaming tools achieve highest metal removal rates from 5–14mm (.197–.551").

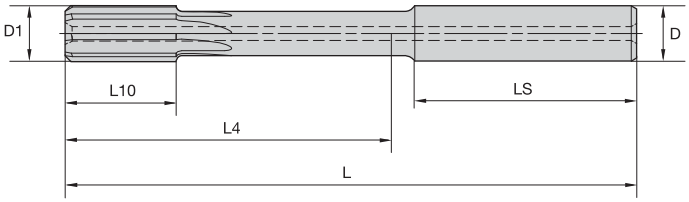


Customization

- Diameters 1,40–14,15mm (.055–.557") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters of standard program available as simple specials with short delivery time.
- Solid cermet reaming tools and tooling for heat-resistant materials are available on request.

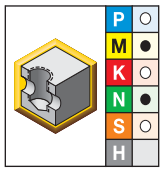
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø .393" (10mm) in IT6 hole tolerance available.

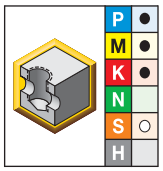






RMS • Blind Hole Solid Carbide Reamer with Internal Coolant





● first choice
○ alternate choice

K605	KC6305	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
RMS05000H7SF	RMS05000H7SF	5,00	.197	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS05500H7SF *	RMS05500H7SF	5,50	.217	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS06000H7SF	RMS06000H7SF	6,00	.236	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS06500H7SF	RMS06500H7SF	6,50	.256	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	4
RMS07000H7SF	RMS07000H7SF	7,00	.276	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	4
RMS08000H7SF	RMS08000H7SF	8,00	.315	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	6
RMS09000H7SF	RMS09000H7SF	9,00	.354	10,00	.394	103,0	4.055	57,0	2.240	20,0	.787	40,0	1.575	6
RMS10000H7SF	RMS10000H7SF	10,00	.394	10,00	.394	103,0	4.055	57,0	2.240	20,0	.787	40,0	1.575	6
RMS11000H7SF	RMS11000H7SF	11,00	.433	12,00	.472	118,0	4.646	67,0	2.640	24,0	.945	45,0	1.772	6
RMS12000H7SF	RMS12000H7SF	12,00	.472	12,00	.472	118,0	4.646	67,0	2.640	24,0	.945	45,0	1.772	6
RMS13000H7SF	RMS13000H7SF	13,00	.512	14,00	.551	132,0	5.197	81,0	3.190	28,0	1.102	45,0	1.772	6
RMS14000H7SF	RMS14000H7SF	14,00	.551	14,00	.551	132,0	5.197	81,0	3.190	28,0	1.102	45,0	1.772	6

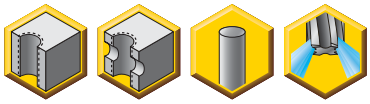
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

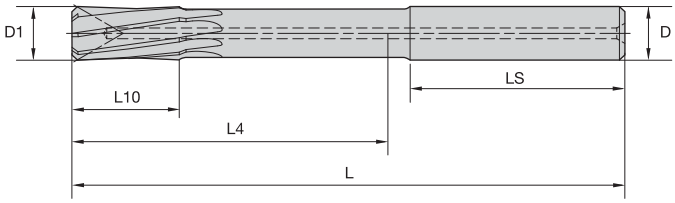
Dimensions for Engineered-Solution Reamers

D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
14,000	0.5512	15,999	0.6299	16	0.630	147,4	5.80	92,4	3.64	7,5	0.30	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	159,4	6.28	102,4	4.03	7,5	0.30	51	2.01	6
18,000	0.7087	20,000	0.7874	20	0.787	173,4	6.83	116,4	4.58	7,5	0.30	51	2.01	6
20,001	0.7874	22,499	0.8858	20	0.787	202,4	7.97	145,4	5.72	7,5	0.30	51	2.01	6
22,500	0.8858	24,999	0.9842	20	0.787	212,4	8.36	155,4	6.12	7,5	0.30	51	2.01	6
25,000	0.9843	27,499	1.0826	25	0.984	232,4	9.15	169,4	6.67	7,5	0.30	57	2.24	8
27,500	1.0827	29,999	1.1811	25	0.984	242,4	9.54	179,4	7.06	7,5	0.30	57	2.24	8
30,000	1.1811	32,499	1.2795	25	0.984	272,4	10.72	209,4	8.24	7,5	0.30	57	2.24	8
32,500	1.2795	34,999	1.3779	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
35,000	1.3780	37,499	1.4763	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
37,500	1.4764	39,999	1.5748	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
40,000	1.5748	42,500	1.6732	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

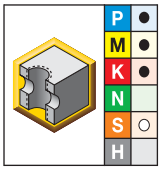
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT7 hole tolerance class available.
- Starting with Ø .393" (10mm) in IT6 hole tolerance available.

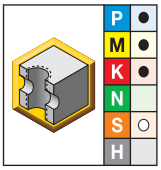






RMS • Through Hole Solid Carbide Reamer with Internal Coolant





● first choice
○ alternate choice

K605	KC6305	D1		D		L		L4		L10		LS		
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	Z
RMS05000H7HF	**RMS05000H7HF**	5,00	.197	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS05500H7HF	**RMS05500H7HF**	5,50	.217	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS06000H7HF	**RMS06000H7HF**	6,00	.236	6,00	.236	74,0	2.913	32,0	1.260	12,0	.472	36,0	1.417	4
RMS06500H7HF	**RMS06500H7HF**	6,50	.256	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	4
RMS07000H7HF	**RMS07000H7HF**	7,00	.276	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	4
RMS08000H7HF	**RMS08000H7HF**	8,00	.315	8,00	.315	91,0	3.583	49,0	1.930	16,0	.630	36,0	1.417	6
RMS09000H7HF *	**RMS09000H7HF**	9,00	.354	10,00	.394	103,0	4.055	57,0	2.240	20,0	.787	40,0	1.575	6
RMS10000H7HF	**RMS10000H7HF**	10,00	.394	10,00	.394	103,0	4.055	57,0	2.240	20,0	.787	40,0	1.575	6
RMS11000H7HF	**RMS11000H7HF**	11,00	.433	12,00	.472	118,0	4.646	67,0	2.640	24,0	.945	45,0	1.772	6
RMS12000H7HF	**RMS12000H7HF**	12,00	.472	12,00	.472	118,0	4.646	67,0	2.640	24,0	.945	45,0	1.772	6
RMS13000H7HF	**RMS13000H7HF**	13,00	.512	14,00	.551	132,0	5.197	81,0	3.190	28,0	1.102	45,0	1.772	6
RMS14000H7HF	**RMS14000H7HF**	14,00	.551	14,00	.551	132,0	5.197	81,0	3.190	28,0	1.102	45,0	1.772	6

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Dimensions for Engineered-Solution Reamers

D1 min		D1 max		D		L		L4		L10		LS		
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	Z
14,000	0.5512	15,999	0.6299	16	0.630	147,4	5.80	92,4	3.64	7,5	0.30	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	159,4	6.28	102,4	4.03	7,5	0.30	51	2.01	6
18,000	0.7087	20,000	0.7874	20	0.787	173,4	6.83	116,4	4.58	7,5	0.30	51	2.01	6
20,001	0.7874	22,499	0.8858	20	0.787	202,4	7.97	145,4	5.72	7,5	0.30	51	2.01	6
22,500	0.8858	24,999	0.9842	20	0.787	212,4	8.36	155,4	6.12	7,5	0.30	51	2.01	6
25,000	0.9843	27,499	1.0826	25	0.984	232,4	9.15	169,4	6.67	7,5	0.30	57	2.24	8
27,500	1.0827	29,999	1.1811	25	0.984	242,4	9.54	179,4	7.06	7,5	0.30	57	2.24	8
30,000	1.1811	32,499	1.2795	25	0.984	272,4	10.72	209,4	8.24	7,5	0.30	57	2.24	8
32,500	1.2795	34,999	1.3779	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
35,000	1.3780	37,499	1.4763	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
37,500	1.4764	39,999	1.5748	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
40,000	1.5748	42,500	1.6732	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

RMS™ • Metric



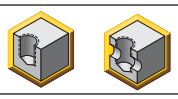
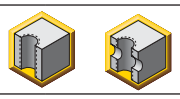
straight flute



helical flute

Material Group		Cutting Speed – vc Range – m/min						Metric Recommended Feed Rate per Tooth						
		K605			KC6305			Tool Diameter (mm)	4,16–7,15mm		7,16–9,59mm		9,60–14,00mm	
		min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max	min	max
P	1	40	**60**	70	90	**120**	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	2	40	**60**	70	90	**120**	155	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	3	35	**50**	60	75	**100**	130	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	25	**40**	45	60	**80**	105	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	5	15	**20**	25	30	**40**	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	6	15	**20**	25	30	**40**	55	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
M	1	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	2	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
	3	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,09	0,04	0,10
K	1	35	**50**	60	75	**100**	130	mm/z	0,05	0,16	0,05	0,18	0,05	0,20
	2	25	**40**	50	60	**90**	110	mm/z	0,05	0,14	0,05	0,16	0,05	0,18
	3	20	**30**	45	60	**80**	105	mm/z	0,05	0,12	0,05	0,14	0,05	0,16
N	1	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	2	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	3	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	4	110	**150**	195	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
	5	105	**140**	180	–	**–**	–	mm/z	0,06	0,16	0,06	0,18	0,06	0,20
S	1	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	2	8	**10**	15	15	**20**	28	mm/z	0,04	0,08	0,04	0,10	0,04	0,12
	3	15	**20**	30	20	**30**	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15
	4	15	**20**	30	20	**30**	40	mm/z	0,05	0,10	0,05	0,12	0,05	0,15

RMS™ • Inch

Material Group		 straight flute			 helical flute									
		K605			KC6305			Inch						
		Cutting Speed — vc			Cutting Speed — vc			Recommended Feed Rate per Tooth						
		Range — SFM			Range — SFM			Tool Diameter (inch)	.164–.281"		.282–.378"		.378–.551"	
		min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max	min	max
P	1	131	**197**	230	295	**394**	508	inch/z	.002	.004	.002	.005	.002	.006
	2	131	**197**	230	295	**394**	508	inch/z	.002	.004	.002	.005	.002	.006
	3	115	**164**	197	246	**328**	426	inch/z	.002	.004	.002	.005	.002	.006
	4	82	**131**	148	197	**262**	344	inch/z	.002	.004	.002	.005	.002	.006
	5	49	**66**	82	98	**131**	180	inch/z	.002	.003	.002	.004	.002	.005
	6	49	**66**	82	98	**131**	180	inch/z	.002	.003	.002	.004	.002	.005
M	1	26	**33**	49	49	**66**	92	inch/z	.002	.003	.002	.004	.002	.004
	2	26	**33**	49	49	**66**	92	inch/z	.002	.003	.002	.004	.002	.004
	3	26	**33**	49	49	**66**	92	inch/z	.002	.003	.002	.004	.002	.004
K	1	115	**164**	197	246	**328**	426	inch/z	.002	.006	.002	.007	.002	.008
	2	82	**131**	164	197	**295**	361	inch/z	.002	.006	.002	.006	.002	.007
	3	66	**98**	148	197	**262**	344	inch/z	.002	.005	.002	.006	.002	.006
N	1	361	**492**	640	–	**–**	–	inch/z	.002	.006	.002	.007	.002	.008
	2	361	**492**	640	–	**–**	–	inch/z	.002	.006	.002	.007	.002	.008
	3	361	**492**	640	–	**–**	–	inch/z	.002	.006	.002	.007	.002	.008
	4	361	**492**	640	–	**–**	–	inch/z	.002	.006	.002	.007	.002	.008
	5	344	**459**	590	–	**–**	–	inch/z	.002	.006	.002	.007	.002	.008
S	1	26	**33**	49	49	**66**	92	inch/z	.002	.003	.002	.004	.002	.005
	2	26	**33**	49	50	**66**	92	inch/z	.002	.003	.002	.004	.002	.005
	3	49	**66**	98	66	**98**	131	inch/z	.002	.004	.002	.005	.002	.006
	4	49	**66**	98	66	**98**	131	inch/z	.002	.004	.002	.005	.002	.006

RMR™ Disc Reaming

Primary Application

In comparison to solid carbide reamers or single-tipped reamers, RMR disc reamers are the economic alternative without disadvantages to productivity or hole quality. Combine RMR disc reamers with the Kennametal SIF™ steerable holder for best results.



Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- High-speed and high-performance ready.
- Superior surface finish due to lapped ground leads.
- Improved hole straightness and roundness due to unequal flute spacing (less vibrations) and runout <3 microns.
- Helical and straight flutes for chip control in through and blind holes.
- Adjustment screw with straight-fluted RMR reamers to change internal coolant supply from axial to radial.

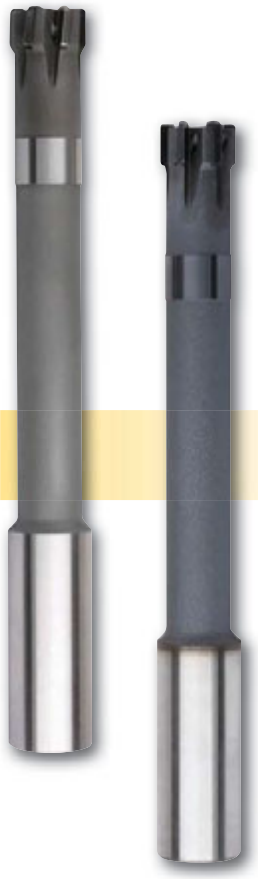
Customization

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimization.

RMB™ Cermet Tipped Reamers

Primary Application

RMB™ multi-flute reamers are tipped with cermet blanks and are available in 14–20mm (.5512–.7874") diameters off-the-shelf and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RMB reamers with the Kennametal SIF™ steerable holder for best results.



Features and Benefits

Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration due to unequal flutes.
- Adjustment screw with straight-fluted RMB reamers to change internal coolant supply from axial to radial.

Customization

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available as simple specials with short delivery time.
- RMB tooling for machining heat-resistant materials available on request.

RMB-E™ Expandable Reamers

Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. It offers a completely linear expansion rate of 2 microns per 30° turn, over an expansion rate of 48 microns. The micron adjustability of this system eliminates manufacturing tolerances and enables machining to the tightest tolerances, typically achieved only by using an uncoated tool or guide pad reaming. No presetting equipment is required.



Features and Benefits

Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

Increased Tool Life

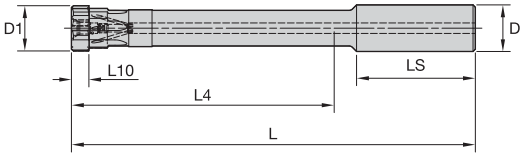
- Longer tool life at smaller tolerances.

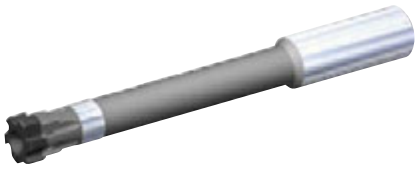
Customization

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

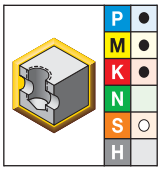
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMR • Disc Style Reamer • Straight Fluted for Blind Holes with Internal Coolant



● first choice
○ alternate choice

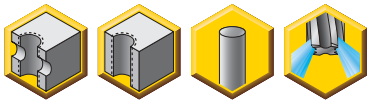
KCU05	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
RMR14000H7SF	14,00	.551	16,000	0.63	147,4	5.8	92,4	3.638	7,50	.295	49,00	1.929	6
RMR15000H7SF	15,00	.591	16,000	0.63	147,4	5.8	92,4	3.638	7,50	.295	49,00	1.929	6
RMR16000H7SF	16,00	.630	20,000	0.79	159,4	6.3	102,4	4.031	7,50	.295	51,00	2.008	6
RMR17000H7SF	17,00	.669	20,000	0.79	159,4	6.3	102,4	4.031	7,50	.295	51,00	2.008	6
RMR18000H7SF	18,00	.709	20,000	0.79	173,4	6.8	116,4	4.583	7,50	.295	51,00	2.008	6
RMR19000H7SF	19,00	.748	20,000	0.79	173,4	6.8	116,4	4.583	7,50	.295	51,00	2.008	6
RMR20000H7SF	20,00	.787	20,000	0.79	173,4	6.8	116,4	4.583	7,50	.295	51,00	2.008	6

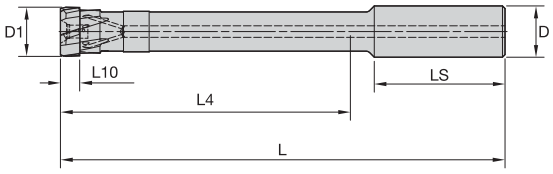
Dimensions for Engineered-Solution Reamers

D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
14,000	0.5512	15,999	0.6299	16	0.630	147,4	5.80	92,4	3.64	7,5	0.30	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	159,4	6.28	102,4	4.03	7,5	0.30	51	2.01	6
18,000	0.7087	20,000	0.7874	20	0.787	173,4	6.83	116,4	4.58	7,5	0.30	51	2.01	6
20,001	0.7874	22,499	0.8858	20	0.787	202,4	7.97	145,4	5.72	7,5	0.30	51	2.01	6
22,500	0.8858	24,999	0.9842	20	0.787	212,4	8.36	155,4	6.12	7,5	0.30	51	2.01	6
25,000	0.9843	27,499	1.0826	25	0.984	232,4	9.15	169,4	6.67	7,5	0.30	57	2.24	8
27,500	1.0827	29,999	1.1811	25	0.984	242,4	9.54	179,4	7.06	7,5	0.30	57	2.24	8
30,000	1.1811	32,499	1.2795	25	0.984	272,4	10.72	209,4	8.24	7,5	0.30	57	2.24	8
32,500	1.2795	34,999	1.3779	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
35,000	1.3780	37,499	1.4763	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
37,500	1.4764	39,999	1.5748	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
40,000	1.5748	42,500	1.6732	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

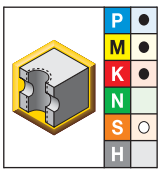
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.







RMR • Disc Style Reamer • Helical Fluted for Through Holes with Internal Coolant



● first choice
○ alternate choice

KCU05	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
RMR14000H7HF	14,00	.551	16,00	0.630	147,4	5.80	92,4	3.638	7,5	0.30	49,00	1.93	6
RMR15000H7HF	15,00	.591	16,00	0.630	147,4	5.80	92,4	3.638	7,5	0.30	49,00	1.93	6
RMR16000H7HF	16,00	.630	20,00	0.787	159,4	6.28	102,4	4.031	7,5	0.30	51,00	2.01	6
RMR17000H7HF	17,00	.669	20,00	0.787	159,4	6.28	102,4	4.031	7,5	0.30	51,00	2.01	6
RMR18000H7HF	18,00	.709	20,00	0.787	173,4	6.83	116,4	4.583	7,5	0.30	51,00	2.01	6
RMR19000H7HF	19,00	.748	20,00	0.787	173,4	6.83	116,4	4.583	7,5	0.30	51,00	2.01	6
RMR20000H7HF	20,00	.787	20,00	0.787	173,4	6.83	116,4	4.583	7,5	0.30	51,00	2.01	6

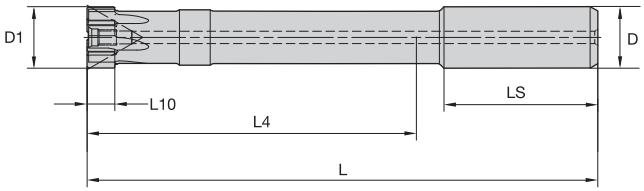
Dimensions for Engineered-Solution Reamers

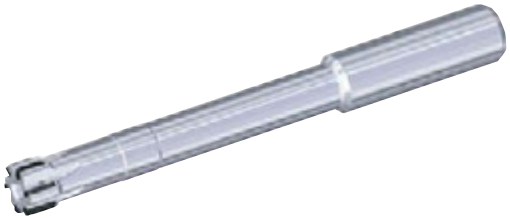
D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
14,000	0.5512	15,999	0.6299	16	0.630	147,4	5.80	92,4	3.64	7,5	0.30	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	159,4	6.28	102,4	4.03	7,5	0.30	51	2.01	6
18,000	0.7087	20,000	0.7874	20	0.787	173,4	6.83	116,4	4.58	7,5	0.30	51	2.01	6
20,001	0.7874	22,499	0.8858	20	0.787	202,4	7.97	145,4	5.72	7,5	0.30	51	2.01	6
22,500	0.8858	24,999	0.9842	20	0.787	212,4	8.36	155,4	6.12	7,5	0.30	51	2.01	6
25,000	0.9843	27,499	1.0826	25	0.984	232,4	9.15	169,4	6.67	7,5	0.30	57	2.24	8
27,500	1.0827	29,999	1.1811	25	0.984	242,4	9.54	179,4	7.06	7,5	0.30	57	2.24	8
30,000	1.1811	32,499	1.2795	25	0.984	272,4	10.72	209,4	8.24	7,5	0.30	57	2.24	8
32,500	1.2795	34,999	1.3779	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
35,000	1.3780	37,499	1.4763	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
37,500	1.4764	39,999	1.5748	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8
40,000	1.5748	42,500	1.6732	32	1.260	272,4	10.72	205,4	8.09	7,5	0.30	61	2.40	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

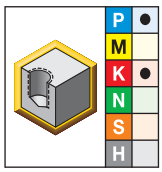
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMB • Blind Hole Cermet-Tipped Reamer



● first choice
○ alternate choice

KT6215	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
RMB14000H7SF *	14,00	.550	16,00	0.63	145,0	5.7	76,0	2.990	8,0	0.3	49,0	1.9	6
RMB15000H7SF	15,00	.590	16,00	0.63	145,0	5.7	76,0	2.990	8,0	0.3	49,0	1.9	6
RMB16000H7SF	16,00	.630	20,00	0.79	157,0	6.2	86,0	3.390	8,0	0.3	51,0	2.0	6
RMB17000H7SF *	17,00	.670	20,00	0.79	157,0	6.2	86,0	3.390	8,0	0.3	51,0	2.0	6
RMB18000H7SF *	18,00	.710	20,00	0.79	171,0	6.7	100,0	3.940	8,0	0.3	51,0	2.0	6
RMB19000H7SF *	19,00	.750	20,00	0.79	171,0	6.7	100,0	3.940	8,0	0.3	51,0	2.0	6
RMB20000H7SF *	20,00	.790	20,00	0.79	200,0	7.9	129,0	5.080	8,0	0.3	51,0	2.0	6

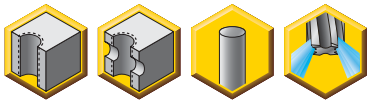
NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

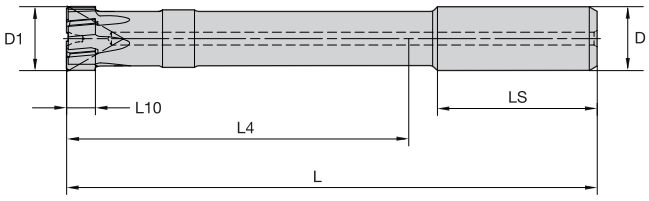
Dimensions for Engineered-Solution Reamers

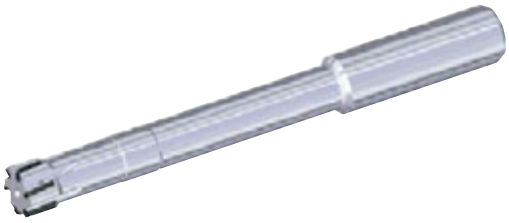
D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
14,000	0.5512	15,999	0.6299	16	0.630	145	5.71	76	2.99	8	0.31	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	157	6.18	86	3.39	8	0.31	51	2.01	6
18,000	0.7087	19,999	0.7874	20	0.787	171	6.73	100	3.94	8	0.31	51	2.01	6
20,000	0.7874	21,999	0.8661	20	0.787	200	7.87	129	5.08	8	0.31	51	2.01	6
22,000	0.8661	25,999	1.0236	20	0.787	210	8.27	139	5.47	10	0.39	51	2.01	6
26,000	1.0236	29,999	1.1811	25	0.984	240	9.45	163	6.42	10	0.39	57	2.24	8
30,000	1.1811	32,000	1.2598	25	0.984	270	10.63	193	7.60	12	0.47	57	2.24	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

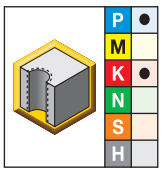
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Adjustment screw to change internal coolant supply from axial to radial.







RMB • Through Hole Cermet-Tipped Reamer



● first choice
○ alternate choice

KT6215	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
RMB14000H7HF *	14,00	.550	16,00	0.63	145,0	5.7	76,0	2.990	7,6	0.3	49,0	1.9	6
RMB15000H7HF *	15,00	.590	16,00	0.63	145,0	5.7	76,0	2.990	7,6	0.3	49,0	1.9	6
RMB16000H7HF	16,00	.630	20,00	0.79	157,0	6.2	86,0	3.390	7,6	0.3	51,0	2.0	6
RMB18000H7HF *	18,00	.710	20,00	0.79	171,0	6.7	100,0	3.940	7,6	0.3	51,0	2.0	6
RMB19000H7HF *	19,00	.750	20,00	0.79	171,0	6.7	100,0	3.940	7,6	0.3	51,0	2.0	6
RMB20000H7HF *	20,00	.790	20,00	0.79	200,0	7.9	129,0	5.080	7,6	0.3	51,0	2.0	6

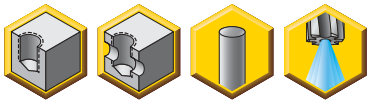
NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

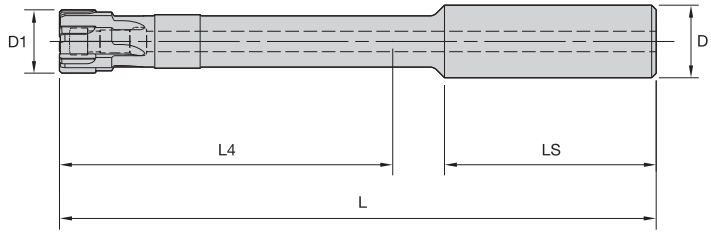
Dimensions for Engineered-Solution Reamers

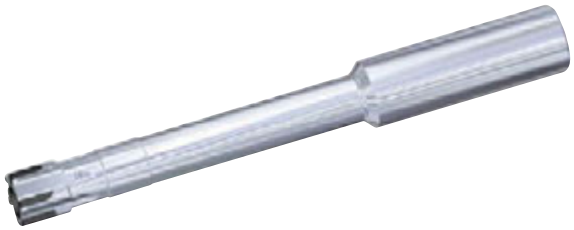
D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	L10 mm	L10 in	LS mm	LS in	Z
14,000	0.5512	15,999	0.6299	16	0.630	145	5.71	76	2.99	8	0.31	49	1.93	6
16,000	0.6299	17,999	0.7086	20	0.787	157	6.18	86	3.39	8	0.31	51	2.01	6
18,000	0.7087	19,999	0.7874	20	0.787	171	6.73	100	3.94	8	0.31	51	2.01	6
20,000	0.7874	21,999	0.8661	20	0.787	200	7.87	129	5.08	8	0.31	51	2.01	6
22,000	0.8661	25,999	1.0236	20	0.787	210	8.27	139	5.47	10	0.39	51	2.01	6
26,000	1.0236	29,999	1.1811	25	0.984	240	9.45	163	6.42	10	0.39	57	2.24	8
30,000	1.1811	32,000	1.2598	25	0.984	270	10.63	193	7.60	12	0.47	57	2.24	8

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.

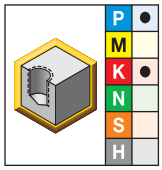
- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

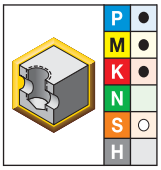






RMB-E • Blind Hole Expansion Reamer





● first choice
○ alternate choice

KC6005	KC6305	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	LS mm	LS in	Z
RMBE14000H6SF *	RMBE14000H6SF	14,00	.551	16,00	0.63	131,5	5.2	72,5	2.854	49,0	1.9	6
RMBE15000H6SF *	RMBE15000H6SF *	15,00	.591	16,00	0.63	136,5	5.4	77,5	3.051	49,0	1.9	6
RMBE16000H6SF *	RMBE16000H6SF *	16,00	.630	20,00	0.79	143,5	5.7	82,5	3.248	54,4	2.1	6
RMBE17000H6SF *	RMBE17000H6SF *	17,00	.669	20,00	0.79	148,5	5.8	87,5	3.445	51,0	2.0	6
RMBE18000H6SF *	RMBE18000H6SF *	18,00	.709	20,00	0.79	153,5	6.0	92,5	3.642	51,0	2.0	6
RMBE19000H6SF *	RMBE19000H6SF	19,00	.748	20,00	0.79	158,5	6.2	97,5	3.839	51,0	2.0	6
RMBE20000H6SF *	RMBE20000H6SF *	20,00	.787	25,00	0.98	169,8	6.7	102,5	4.035	57,0	2.2	6

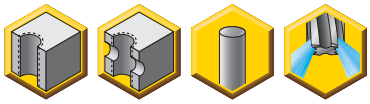
NOTE: Uncoated carbide grade K605™ and uncoated cermet grade KT325™ are available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

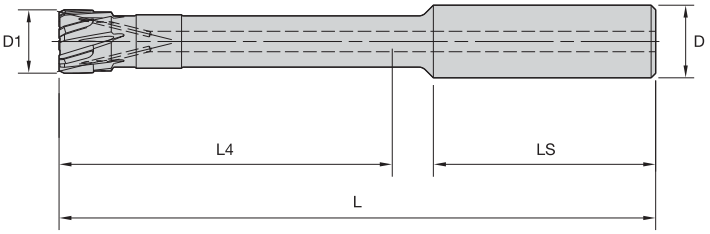
Dimensions for Engineered-Solution Reamers

D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	LS mm	LS in	Z
14,000	0.5512	14,499	0.5708	16	0.630	131,5	5.18	72,5	2.85	49	1.93	6
14,500	0.5709	14,999	0.5905	16	0.630	134,0	5.28	75,0	2.95	49	1.93	6
15,000	0.5906	15,499	0.6102	16	0.630	136,5	5.37	77,5	3.05	49	1.93	6
15,500	0.6102	15,999	0.6299	16	0.630	139,0	5.47	80,0	3.15	49	1.93	6
16,000	0.6299	16,499	0.6496	20	0.787	143,5	5.65	82,5	3.25	51	2.01	6
16,500	0.6496	16,999	0.6693	20	0.787	146,0	5.75	85,0	3.35	51	2.01	6
17,000	0.6693	17,499	0.6889	20	0.787	148,5	5.85	87,5	3.44	51	2.01	6
17,500	0.6890	17,999	0.7086	20	0.787	151,0	5.94	90,0	3.54	51	2.01	6
18,000	0.7087	18,499	0.7283	20	0.787	153,5	6.04	92,5	3.64	51	2.01	6
18,500	0.7283	18,999	0.7480	20	0.787	156,0	6.14	95,0	3.74	51	2.01	6
19,000	0.7480	19,499	0.7677	20	0.787	158,5	6.24	97,5	3.84	51	2.01	6
19,500	0.7677	19,999	0.7874	20	0.787	161,0	6.34	100,0	3.94	51	2.01	6
20,000	0.7874	20,499	0.8070	25	0.984	169,8	6.68	102,5	4.04	57	2.24	6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.
Custom expandable reamers available starting from a diameter of 8mm.

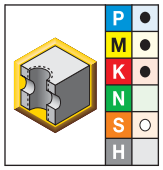
- For hole tolerance H6.
- Intermediate sizes available.
- Allen expansion screw.

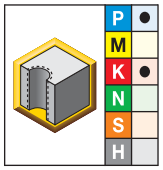






RMB-E • Through Hole Expansion Reamer





● first choice
○ alternate choice

KC6005	KC6305	D1 mm	D1 in	D mm	D in	L mm	L in	L4 mm	L4 in	LS mm	LS in	Z
RMBE14000H6HF	RMBE14000H6HF *	14,00	.551	16,00	0.63	131,5	5.2	72,5	2.854	49,0	1.9	6
RMBE15000H6HF *	RMBE15000H6HF	15,00	.591	16,00	0.63	136,5	5.4	77,5	3.051	49,0	1.9	6
RMBE16000H6HF *	RMBE16000H6HF	16,00	.630	20,00	0.79	143,5	5.7	82,5	3.248	51,0	2.0	6
RMBE17000H6HF *	RMBE17000H6HF *	17,00	.669	20,00	0.79	148,5	5.8	87,5	3.445	51,0	2.0	6
RMBE18000H6HF *	RMBE18000H6HF	18,00	.709	20,00	0.79	153,5	6.0	92,5	3.642	51,0	2.0	6
RMBE19000H6HF *	RMBE19000H6HF *	19,00	.748	20,00	0.79	158,5	6.2	97,5	3.839	51,0	2.0	6
RMBE20000H6HF *	RMBE20000H6HF	20,00	.787	25,00	0.98	169,8	6.7	102,5	4.035	57,0	2.2	6

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

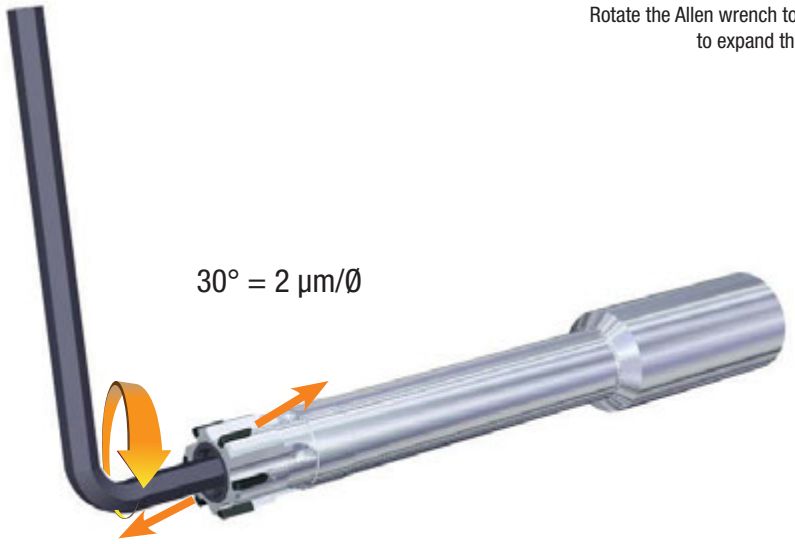
Dimensions for Engineered-Solution Reamers

D1 min mm	D1 min in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L4 mm	L4 in	LS mm	LS in	Z
14,000	0.5512	14,499	0.5708	16	0.630	131,5	5.18	72,5	2.85	49	1.93	6
14,500	0.5709	14,999	0.5905	16	0.630	134,0	5.28	75,0	2.95	49	1.93	6
15,000	0.5906	15,499	0.6102	16	0.630	136,5	5.37	77,5	3.05	49	1.93	6
15,500	0.6102	15,999	0.6299	16	0.630	139,0	5.47	80,0	3.15	49	1.93	6
16,000	0.6299	16,499	0.6496	20	0.787	143,5	5.65	82,5	3.25	51	2.01	6
16,500	0.6496	16,999	0.6693	20	0.787	146,0	5.75	85,0	3.35	51	2.01	6
17,000	0.6693	17,499	0.6889	20	0.787	148,5	5.85	87,5	3.44	51	2.01	6
17,500	0.6890	17,999	0.7086	20	0.787	151,0	5.94	90,0	3.54	51	2.01	6
18,000	0.7087	18,499	0.7283	20	0.787	153,5	6.04	92,5	3.64	51	2.01	6
18,500	0.7283	18,999	0.7480	20	0.787	156,0	6.14	95,0	3.74	51	2.01	6
19,000	0.7480	19,499	0.7677	20	0.787	158,5	6.24	97,5	3.84	51	2.01	6
19,500	0.7677	19,999	0.7874	20	0.787	161,0	6.34	100,0	3.94	51	2.01	6
20,000	0.7874	20,499	0.8070	25	0.984	169,8	6.68	102,5	4.04	57	2.24	6

NOTE: The above dimensions are used when ordering engineered-solution reamers on this page unless otherwise specified.
Custom expandable reamers available starting with a diameter of 8mm.

To Expand

Rotate the Allen wrench to the right to expand the reamer.



To Contract

Expansion always reversible: Rotate the Allen wrench to the left to contract the reamer.



- 30° = 2 µm linear expansion.
- 720° = 2 revolutions; = 48 µm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behavior.
- You cannot reduce the diameter below D1.

RMR • Metric

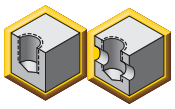
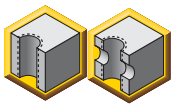
Material Group		KCU05 Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate per Tooth				
					Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm	
		min	Starting Value	max	Feed/Tooth	min	max	min	max
P	1	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	2	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	3	75	**100**	130	mm/z	0,10	0,22	0,10	0,25
	4	50	**80**	105	mm/z	0,10	0,22	0,10	0,25
	5	30	**40**	60	mm/z	0,10	0,22	0,10	0,25
	6	30	**40**	60	mm/z	0,08	0,20	0,08	0,22
M	1	15	**20**	40	mm/z	0,08	0,18	0,08	0,20
	2	15	**20**	30	mm/z	0,08	0,18	0,08	0,20
	3	15	**20**	30	mm/z	0,08	0,18	0,08	0,20
K	1	80	**110**	130	mm/z	0,10	0,22	0,10	0,25
	2	65	**90**	110	mm/z	0,10	0,22	0,10	0,25
	3	50	**70**	90	mm/z	0,10	0,20	0,10	0,25
S	1	15	**20**	30	mm/z	0,10	0,18	0,10	0,20
	2	15	**20**	30	mm/z	0,10	0,18	0,10	0,20
	3	20	**30**	40	mm/z	0,10	0,20	0,10	0,20
	4	20	**30**	40	mm/z	0,10	0,20	0,10	0,20

Hole Finishing

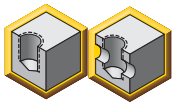
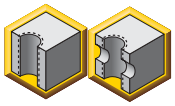
RMR • Inch

Material Group		KCU05 Cutting Speed — vc Range — SFM			Inch Recommended Feed Rate per Tooth				
					Tool Diameter (inch)	.551–.787"		.787–1.260"	
		min	Starting Value	max	Feed/Tooth	min	max	min	max
P	1	295	**394**	509	inch/z	.004	.009	.004	.010
	2	295	**394**	509	inch/z	.004	.009	.004	.010
	3	246	**328**	427	inch/z	.004	.009	.004	.010
	4	164	**262**	344	inch/z	.004	.009	.004	.010
	5	98	**131**	197	inch/z	.004	.009	.004	.010
	6	98	**131**	197	inch/z	.003	.008	.003	.009
M	1	49	**66**	131	inch/z	.003	.007	.003	.008
	2	49	**66**	98	inch/z	.003	.007	.003	.008
	3	49	**66**	98	inch/z	.003	.007	.003	.008
K	1	262	**361**	427	inch/z	.004	.009	.004	.010
	2	213	**295**	361	inch/z	.004	.009	.004	.010
	3	164	**230**	295	inch/z	.004	.008	.004	.010
S	1	49	**66**	98	inch/z	.004	.007	.004	.008
	2	49	**66**	98	inch/z	.004	.007	.004	.008
	3	66	**98**	131	inch/z	.004	.008	.004	.008
	4	66	**98**	131	inch/z	.004	.008	.004	.008

RMB™ and RMB-E™ • Metric

Material Group		RMB™ — Cermet Tipped						RMB-E™						Metric				
																		
		straight flute			helical flute			straight flute			helical flute							
		KT6215			KT6215			K605			KC6305							
		Cutting Speed — vc												Recommended Feed Rate per Tooth				
		Range — m/min												Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm	
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max
P	1	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	2	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,22	0,10	0,25
	3	130	**160**	180	150	**180**	210	30	**40**	50	75	**100**	130	mm/z	0,10	0,22	0,10	0,25
	4	100	**130**	150	120	**150**	170	25	**40**	45	50	**80**	105	mm/z	0,10	0,22	0,10	0,25
	5	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,20	0,08	0,22
	6	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,20	0,08	0,22
M	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
	3	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,18	0,08	0,20
K	1	150	**180**	200	180	**210**	240	30	**50**	60	80	**110**	130	mm/z	0,10	0,22	0,10	0,25
	2	130	**160**	180	150	**180**	210	25	**40**	45	65	**90**	110	mm/z	0,10	0,22	0,10	0,25
	3	100	**130**	160	120	**150**	170	20	**30**	40	50	**70**	90	mm/z	0,10	0,20	0,10	0,22
N	1	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	2	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	3	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	4	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
	5	–	**–**	–	–	**–**	–	105	**140**	180	–	**–**	–	mm/z	0,10	0,30	0,10	0,30
S	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,10	0,18	0,10	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,10	0,18	0,10	0,20
	3	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,10	0,20	0,10	0,20
	4	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,10	0,20	0,10	0,20

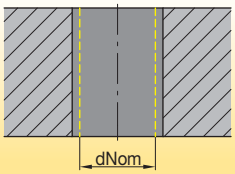
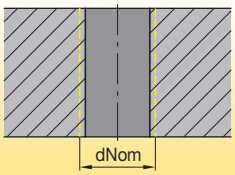
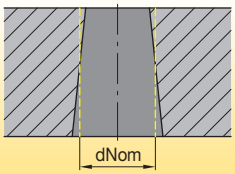
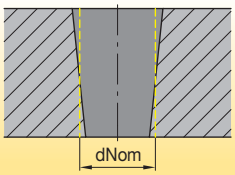
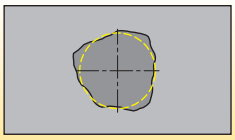
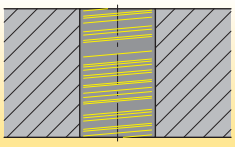
RMB™ and RMB-E™ • Inch

		RMB — Cermet Tipped						RMB-E						Inch				
																		
		straight flute			helical flute			straight flute			helical flute							
		KT6215			KT6215			K605			KC6305							
		Cutting Speed — vc												Recommended Feed Rate per Tooth				
		Range — SFM												Tool Diameter (inch)	.551–.787"		.787–1.260"	
Material Group		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max
P	1	492	**590**	689	590	**689**	787	131	**197**	230	295	**394**	508	inch/z	.004	.009	.004	.010
	2	492	**590**	689	590	**689**	787	131	**197**	230	295	**394**	508	inch/z	.004	.009	.004	.010
	3	426	**525**	590	492	**590**	689	98	**131**	164	246	**328**	426	inch/z	.004	.009	.004	.010
	4	328	**426**	492	394	**492**	558	82	**131**	148	164	**262**	344	inch/z	.004	.009	.004	.010
	5	262	**328**	394	328	**426**	492	33	**66**	98	98	**131**	180	inch/z	.003	.008	.003	.009
	6	262	**328**	394	328	**426**	492	33	**66**	98	98	**131**	180	inch/z	.003	.008	.003	.009
M	1	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.007	.003	.008
	2	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.007	.003	.008
	3	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.007	.003	.008
K	1	492	**590**	656	590	**689**	787	98	**164**	197	262	**361**	426	inch/z	.004	.009	.004	.010
	2	426	**525**	590	492	**590**	689	82	**131**	148	213	**295**	361	inch/z	.004	.009	.004	.010
	3	328	**426**	525	394	**492**	558	66	**98**	131	164	**230**	295	inch/z	.004	.008	.004	.009
N	1	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012
	2	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012
	3	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012
	4	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012
	5	–	**–**	–	–	**–**	–	344	**459**	590	–	**–**	–	inch/z	.004	.012	.004	.012
S	1	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.004	.007	.004	.008
	2	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.004	.007	.004	.008
	3	–	**–**	–	–	**–**	–	49	**66**	98	66	**98**	131	inch/z	.004	.008	.004	.008
	4	–	**–**	–	–	**–**	–	49	**66**	98	66	**98**	131	inch/z	.004	.008	.004	.008

Reaming Allowances for Multi-Blade Reaming

		reaming allowances in diameter					
		mm			in		
mm	in	min	middle	max	min	middle	max
1,40–4,80	.055–.189	0,08	0,12	0,20	.003	.005	.008
4,81–9,59	.189–.378	0,10	0,15	0,25	.004	.006	.010
9,60–15,00	.378–.591	0,15	0,20	0,30	.006	.008	.012
15,00–20,00	.591–.787	0,15	0,25	0,35	.006	.010	.014
20,00–50,00	.787–1.969	0,20	0,30	0,40	.008	.012	.016

Troubleshooting

Problem		Cause	Possible Remedy
Hole diameter too large.		• Reaming tool running out-of-center. • Concentricity of pilot hole and ream machining unsatisfactory. • Built-up edge. • Unsuitable cooling lubricant. • Reaming tool diameter too large.	• Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Hole diameter too small.		• Reamer worn. • Unsuitable cooling lubricant. • Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical hole profile wider towards drill runout.		• Concentricity of pilot hole and reaming unsatisfactory. • Positioning accuracy of pilot hole to reaming.	• Re-align, use equalizing adapter. • Correct positioning accuracy.
Conical hole profile wider at drill entry point.		• Concentricity of pilot hole and reaming unsatisfactory. • Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-center and/or showing chatter marks.		• Reaming tool running out-of-center. • Slanted cutting surface/asymmetrical cutting. • Workpiece twisted.	• Use equalizing adapter. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification.		• Tool cutters worn. • Reaming tool running out-of-center. • Incorrect technology data (cutting parameters). • Inadequate chip evacuation.	• Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Feed grooves		• Built-up edge.	• Change cooling lubricant. • Change cutting speed.

RHR™ Disc Reaming

Primary Application

The RHR modular disc reaming system combines the productivity of disc reamers with the idea of interchangeable reaming heads. Only five coupling sizes cover the whole diameter range, a comfortable interchange mechanism, and no need for setting fixtures or repeat measurements makes this system very attractive. Combine RHR disc reamers with the Kennametal SIF™ steerable holder for the best results.



Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating specifically for reaming applications.
- Unique patented coupling system enables same runout accuracy as monoblock systems (<3 microns), eliminating repeat runout checking.
- Quick radial clamping change-outs, even in narrow situations.
- No fixture for clamping or dismounting necessary.
- Helical and straight flutes for chip control in through and blind holes.
- Bodies available with straight shank, HSK back end, and SIF connection.

Customization

- All diameters between 14–42,5mm (.5512–1.6732").
- Variation of leads and cylindrical margin for application-specific optimization.

RHM™ Modular Cermet-Tipped System

Primary Application

RHM modular reamers are tipped with cermet blanks and available in diameters from 14–42,5mm (.5512–1.6732") as standards, and up to 50mm (1.968") as custom solutions. Cermet reamers provide excellent tool life and surface finishes in steel applications. Combine RHM module reamers with the Kennametal SIF™ steerable holder for best results.

Use SIF steerable hydraulic chucks or SIF adapters for easy compensation of radial runout and angular inaccuracies of the spindle to achieve the highest possible hole straightness and surface quality. Radial or axial tool bodies are available at diameter 20mm.



Features and Benefits

Taper-Face Contact with KST Coupling

- Symmetrical torque transmission near head.
- Higher feed rate than conventional reaming tools.
- Better surface quality and tool life due to less tendency to vibrate.
- No need for head to body orientation.

Customization

- Diameters up to 50mm (1.968") available with and without internal coolant in 0,001mm (.00004") steps.
- Intermediate diameters from standard offering available with short delivery time.
- RHM tooling for machining heat-resistant materials, as well as different lengths and couplings or shanks, available on request.

Higher productivity and profitability

- Longer tool life with increased hole and surface quality due to lapped ground leads.
- Cermet enables highest metal removal rates at higher speeds and feeds in steel.
- Improved straightness and cylindrical form compared to competitive tools and reduced vibration tendency due to unequal flutes.

RHM-E™ Expandable Reamers

Primary Application

The original idea behind an expansion reamer is to achieve more regrinds. The expansion mechanism is designed for this purpose only.

The Kennametal expandable reaming system is different. Over an expansion range of 48 microns, it comes with a completely linear expansion rate of 2 microns per 30° turn. The micron-adjustability of this system eliminates manufacturing tolerances and thus allows for machining tightest tolerances, usually only achievable by using an uncoated tool or guide pad reaming. No pre-setting equipment is required.



Features and Benefits

Precision and Productivity

- Use with SIF™ steerable chucks for KST toolholders for easy compensation of radial runout and angular inaccuracies.
- Tools are preadjusted to hit IT6 tolerance.
- Expansion range of 48 microns.
- Completely linear expansion.
- 2 microns per 30° turn.

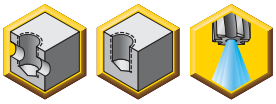
Increased Tool Life

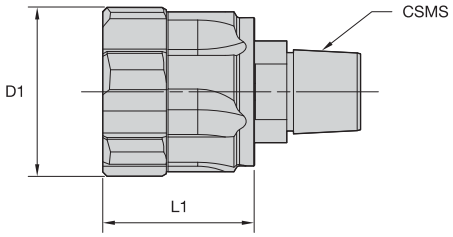
- Longer tool life at smaller tolerances.

Customization

- Diameters up to 42mm (1.65") available with helical and straight flutes in 0,001mm (.00004") increments.

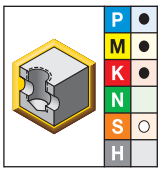
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.







RHR • Disc Style Reamer Head • Straight Fluted for Blind Holes with Internal Coolant

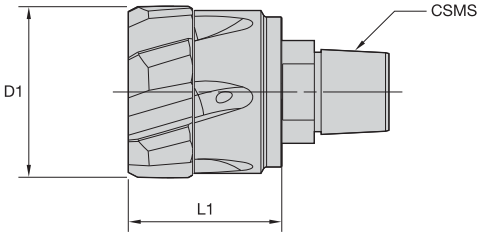


● first choice
○ alternate choice

KCU05	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHR14000KST115H7SF	KST115	14,00	.551	17,90	.705	6
RHR15000KST115H7SF	KST115	15,00	.591	17,90	.705	6
RHR16000KST135H7SF	KST135	16,00	.630	17,90	.705	6
RHR17000KST135H7SF	KST135	17,00	.669	17,90	.705	6
RHR18000KST155H7SF	KST155	18,00	.709	17,90	.705	6
RHR19000KST155H7SF	KST155	19,00	.748	17,90	.705	6
RHR20000KST175H7SF	KST175	20,00	.787	17,90	.705	6
RHR21000KST175H7SF	KST175	21,00	.827	17,90	.705	6
RHR22000KST175H7SF	KST175	22,00	.866	17,90	.705	6
RHR23000KST200H7SF	KST200	23,00	.906	18,90	.744	6
RHR24000KST200H7SF	KST200	24,00	.945	18,90	.744	6
RHR25000KST200H7SF	KST200	25,00	.984	18,90	.744	8
RHR26000KST200H7SF	KST200	26,00	1.024	18,90	.744	8
RHR27000KST200H7SF	KST200	27,00	1.063	18,90	.744	8
RHR28000KST250H7SF	KST250	28,00	1.102	18,90	.744	8
RHR29000KST250H7SF	KST250	29,00	1.142	18,90	.744	8
RHR30000KST250H7SF	KST250	30,00	1.181	18,90	.744	8
RHR31000KST250H7SF	KST250	31,00	1.221	18,90	.744	8
RHR32000KST250H7SF	KST250	32,00	1.260	18,90	.744	8
RHR33000KST300H7SF	KST300	33,00	1.299	20,40	.803	8
RHR34000KST300H7SF	KST300	34,00	1.339	20,40	.803	8
RHR35000KST300H7SF	KST300	35,00	1.378	20,40	.803	8
RHR36000KST300H7SF	KST300	36,00	1.417	20,40	.803	8
RHR37000KST300H7SF	KST300	37,00	1.457	20,40	.803	8
RHR38000KST350H7SF	KST350	38,00	1.496	20,40	.803	8
RHR39000KST350H7SF	KST350	39,00	1.535	20,40	.803	8
RHR40000KST350H7SF	KST350	40,00	1.575	20,40	.803	8
RHR41000KST350H7SF	KST350	41,00	1.614	20,40	.803	8
RHR42000KST350H7SF	KST350	42,00	1.654	20,40	.803	8

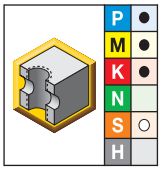
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.







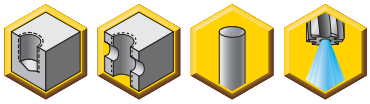
RHR • Disc Style Reamer Head • Helical Fluted for Through Holes with Internal Coolant

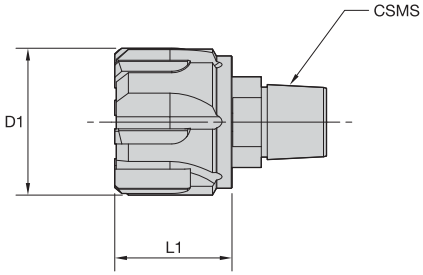


● first choice
○ alternate choice

KCU05	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHR14000KST115H7HF	KST115	14,00	.551	17,90	.705	6
RHR15000KST115H7HF	KST115	15,00	.591	17,90	.705	6
RHR16000KST135H7HF	KST135	16,00	.630	17,90	.705	6
RHR17000KST135H7HF	KST135	17,00	.669	17,90	.705	6
RHR18000KST155H7HF	KST155	18,00	.709	17,90	.705	6
RHR19000KST155H7HF	KST155	19,00	.748	17,90	.705	6
RHR20000KST175H7HF	KST175	20,00	.787	17,90	.705	6
RHR21000KST175H7HF	KST175	21,00	.827	17,90	.705	6
RHR22000KST175H7HF	KST175	22,00	.866	17,90	.705	6
RHR23000KST200H7HF	KST200	23,00	.906	18,90	.744	6
RHR24000KST200H7HF	KST200	24,00	.945	18,90	.744	6
RHR25000KST200H7HF	KST200	25,00	.984	18,90	.744	8
RHR26000KST200H7HF	KST200	26,00	1.024	18,90	.744	8
RHR27000KST200H7HF	KST200	27,00	1.063	18,90	.744	8
RHR28000KST250H7HF	KST250	28,00	1.102	18,90	.744	8
RHR29000KST250H7HF	KST250	29,00	1.142	18,90	.744	8
RHR30000KST250H7HF	KST250	30,00	1.181	18,90	.744	8
RHR31000KST250H7HF	KST250	31,00	1.221	18,90	.744	8
RHR32000KST250H7HF	KST250	32,00	1.260	18,90	.744	8
RHR33000KST300H7HF	KST300	33,00	1.299	20,40	.803	8
RHR34000KST300H7HF	KST300	34,00	1.339	20,40	.803	8
RHR35000KST300H7HF	KST300	35,00	1.378	20,40	.803	8
RHR36000KST300H7HF	KST300	36,00	1.417	20,40	.803	8
RHR37000KST300H7HF	KST300	37,00	1.457	20,40	.803	8
RHR38000KST350H7HF	KST350	38,00	1.496	20,40	.803	8
RHR39000KST350H7HF	KST350	39,00	1.535	20,40	.803	8
RHR40000KST350H7HF	KST350	40,00	1.575	20,40	.803	8
RHR41000KST350H7HF	KST350	41,00	1.614	20,40	.803	8
RHR42000KST350H7HF	KST350	42,00	1.654	20,40	.803	8

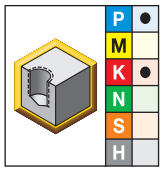
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.

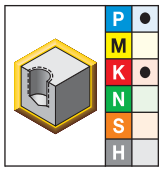






RHM • Blind Hole Cermet Tipped Reamer



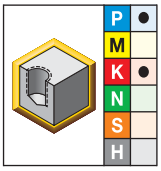


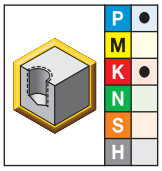
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHM14000KST115H7SF *	RHM14000KST115H7SF	KST115	14,00	.551	13,50	.531	6
RHM14288KST115H7SF *	RHM14288KST115H7SF	KST115	14,29	.563	13,50	.531	6
RHM15000KST115H7SF *	–	KST115	15,00	.591	13,50	.531	6
RHM15875KST115H7SF *	RHM15875KST115H7SF	KST115	15,88	.625	13,50	.531	6
RHM16000KST135H7SF *	RHM16000KST135H7SF	KST135	16,00	.630	13,50	.531	6
RHM17000KST135H7SF *	RHM17000KST135H7SF *	KST135	17,00	.669	15,50	.610	6
RHM17463KST135H7SF *	–	KST135	17,46	.688	15,50	.610	6
RHM18000KST155H7SF	RHM18000KST155H7SF	KST155	18,00	.709	15,50	.610	6
RHM19000KST155H7SF *	–	KST155	19,00	.748	15,50	.610	6
–	RHM19050KST155H7SF *	KST155	19,05	.750	15,50	.610	6
RHM20000KST175H7SF	RHM20000KST175H7SF	KST175	20,00	.787	15,50	.610	6
RHM20640KST175H7SF *	RHM20640KST175H7SF *	KST175	20,64	.813	15,50	.610	6
RHM21000KST175H7SF *	RHM21000KST175H7SF	KST175	21,00	.827	15,50	.610	6
–	RHM22000KST175H7SF *	KST175	22,00	.866	15,50	.610	6
RHM22230KST175H7SF *	RHM22230KST175H7SF *	KST175	22,23	.875	15,50	.610	6
RHM22500KST200H7SF *	RHM22500KST200H7SF *	KST200	22,50	.886	16,50	.650	6
RHM23000KST200H7SF *	RHM23000KST200H7SF *	KST200	23,00	.906	16,50	.650	6
RHM23810KST200H7SF *	RHM23810KST200H7SF *	KST200	23,81	.937	16,50	.650	6
RHM24000KST200H7SF *	RHM24000KST200H7SF *	KST200	24,00	.945	16,50	.650	6
RHM25000KST200H7SF *	RHM25000KST200H7SF	KST200	25,00	.984	16,50	.650	6
RHM25400KST200H7SF *	RHM25400KST200H7SF *	KST200	25,40	1.000	16,50	.650	6
RHM26000KST200H7SF *	–	KST200	26,00	1.024	16,50	.650	8
RHM26990KST200H7SF *	RHM26990KST200H7SF *	KST200	26,99	1.063	16,50	.650	8
RHM27000KST200H7SF	RHM27000KST200H7SF *	KST200	27,00	1.063	16,50	.650	8

(continued)

(RHM • Blind Hole Cermet Tipped Reamer — continued)



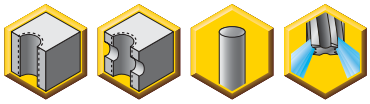


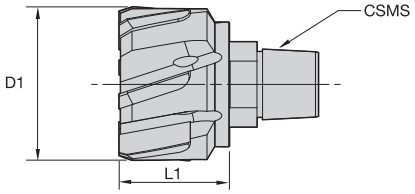
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHM27500KST250H7SF *	**RHM27500KST250H7SF** *	KST250	27,50	1.083	16,50	.650	8
RHM28000KST250H7SF *	**RHM28000KST250H7SF**	KST250	28,00	1.102	16,50	.650	8
RHM28580KST250H7SF *	**RHM28580KST250H7SF** *	KST250	28,58	1.125	16,50	.650	8
RHM29000KST250H7SF	**RHM29000KST250H7SF** *	KST250	29,00	1.142	16,50	.650	8
RHM30000KST250H7SF	**RHM30000KST250H7SF** *	KST250	30,00	1.181	16,50	.650	8
RHM30160KST250H7SF *	–	KST250	30,16	1.187	16,50	.650	8
RHM31000KST250H7SF *	**RHM31000KST250H7SF** *	KST250	31,00	1.221	16,50	.650	8
RHM31750KST250H7SF *	**RHM31750KST250H7SF** *	KST250	31,75	1.250	16,50	.650	8
RHM32000KST250H7SF *	–	KST250	32,00	1.260	16,50	.650	8
RHM32500KST300H7SF *	**RHM32500KST300H7SF** *	KST300	32,50	1.280	18,00	.709	8
RHM33000KST300H7SF *	**RHM33000KST300H7SF** *	KST300	33,00	1.299	18,00	.709	8
RHM33340KST300H7SF *	**RHM33340KST300H7SF** *	KST300	33,34	1.313	18,00	.709	8
RHM34000KST300H7SF *	–	KST300	34,00	1.339	18,00	.709	8
RHM34930KST300H7SF *	**RHM34930KST300H7SF** *	KST300	34,93	1.375	18,00	.709	8
RHM35000KST300H7SF *	**RHM35000KST300H7SF** *	KST300	35,00	1.378	18,00	.709	8
RHM36000KST300H7SF *	**RHM36000KST300H7SF** *	KST300	36,00	1.417	18,00	.709	8
RHM36510KST300H7SF *	**RHM36510KST300H7SF** *	KST300	36,51	1.437	18,00	.709	8
RHM37000KST300H7SF *	–	KST300	37,00	1.457	18,00	.709	8
RHM37500KST350H7SF *	**RHM37500KST350H7SF** *	KST350	37,50	1.476	18,00	.709	8
RHM38000KST350H7SF *	**RHM38000KST350H7SF** *	KST350	38,00	1.496	18,00	.709	8
RHM38100KST350H7SF *	**RHM38100KST350H7SF** *	KST350	38,10	1.500	18,00	.709	8
RHM39000KST350H7SF *	**RHM39000KST350H7SF** *	KST350	39,00	1.535	18,00	.709	8
RHM39690KST350H7SF *	**RHM39690KST350H7SF** *	KST350	39,69	1.563	18,00	.709	8
–	**RHM40000KST350H7SF** *	KST350	40,00	1.575	18,00	.709	8
RHM41000KST350H7SF *	**RHM41000KST350H7SF** *	KST350	41,00	1.614	18,00	.709	8
RHM41280KST350H7SF *	**RHM41280KST350H7SF** *	KST350	41,28	1.625	18,00	.709	8
RHM42000KST350H7SF	**RHM42000KST350H7SF** *	KST350	42,00	1.654	18,00	.709	8

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

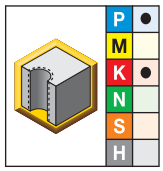
- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw for axial use or retention knob separately.

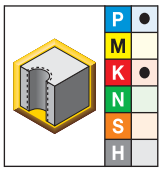






RHM • Through Hole Cermet Tipped Reamer



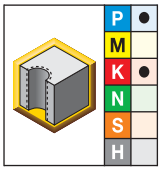


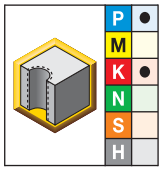
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHM14000KST115H7HF *	RHM14000KST115H7HF	KST115	14,00	.551	13,50	.531	6
RHM14288KST115H7HF *	RHM14288KST115H7HF *	KST115	14,29	.563	13,50	.531	6
RHM15875KST115H7HF *	–	KST115	15,88	.625	13,50	.531	6
RHM16000KST135H7HF	RHM16000KST135H7HF	KST135	16,00	.630	13,50	.531	6
RHM17000KST135H7HF *	RHM17000KST135H7HF	KST135	17,00	.669	15,50	.610	6
RHM17463KST135H7HF *	RHM17463KST135H7HF *	KST135	17,46	.688	15,50	.610	6
RHM18000KST155H7HF *	RHM18000KST155H7HF	KST155	18,00	.709	15,50	.610	6
RHM19000KST155H7HF *	RHM19000KST155H7HF	KST155	19,00	.748	15,50	.610	6
RHM19050KST155H7HF *	RHM19050KST155H7HF	KST155	19,05	.750	15,50	.610	6
RHM20000KST175H7HF	RHM20000KST175H7HF	KST175	20,00	.787	15,50	.610	6
RHM20640KST175H7HF *	RHM20640KST175H7HF	KST175	20,64	.813	15,50	.610	6
RHM21000KST175H7HF	RHM21000KST175H7HF	KST175	21,00	.827	15,50	.610	6
RHM22000KST175H7HF	RHM22000KST175H7HF *	KST175	22,00	.866	15,50	.610	6
RHM22230KST175H7HF *	RHM22230KST175H7HF *	KST175	22,23	.875	15,50	.610	6
RHM22500KST200H7HF *	RHM22500KST200H7HF *	KST200	22,50	.886	16,50	.650	6
RHM23000KST200H7HF *	RHM23000KST200H7HF *	KST200	23,00	.906	16,50	.650	6
RHM23810KST200H7HF *	RHM23810KST200H7HF *	KST200	23,81	.937	16,50	.650	6
RHM24000KST200H7HF	RHM24000KST200H7HF *	KST200	24,00	.945	16,50	.650	6
RHM25000KST200H7HF	RHM25000KST200H7HF	KST200	25,00	.984	16,50	.650	6
RHM25400KST200H7HF *	RHM25400KST200H7HF	KST200	25,40	1.000	16,50	.650	6
RHM26000KST200H7HF *	–	KST200	26,00	1.024	16,50	.650	8
RHM26990KST200H7HF *	RHM26990KST200H7HF *	KST200	26,99	1.063	16,50	.650	8
RHM27000KST200H7HF *	RHM27000KST200H7HF *	KST200	27,00	1.063	16,50	.650	8
RHM27500KST250H7HF *	RHM27500KST250H7HF *	KST250	27,50	1.083	16,50	.650	8

(continued)

(RHM • Through Hole Cermet Tipped Reamer — continued)



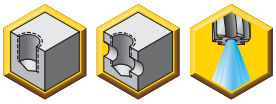


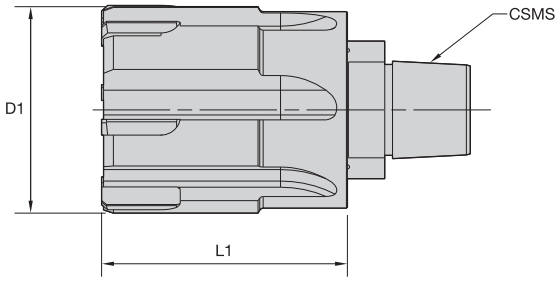
● first choice
○ alternate choice

KT325	KT6215	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHM28000KST250H7HF	**RHM28000KST250H7HF**	KST250	28,00	1.102	16,50	.650	8
RHM28580KST250H7HF *	–	KST250	28,58	1.125	16,50	.650	8
RHM29000KST250H7HF *	**RHM29000KST250H7HF** *	KST250	29,00	1.142	16,50	.650	8
RHM30000KST250H7HF	**RHM30000KST250H7HF**	KST250	30,00	1.181	16,50	.650	8
RHM30160KST250H7HF *	**RHM30160KST250H7HF** *	KST250	30,16	1.187	16,50	.650	8
RHM31000KST250H7HF *	**RHM31000KST250H7HF** *	KST250	31,00	1.221	16,50	.650	8
RHM31750KST250H7HF *	**RHM31750KST250H7HF** *	KST250	31,75	1.250	16,50	.650	8
RHM32000KST250H7HF *	**RHM32000KST250H7HF** *	KST250	32,00	1.260	16,50	.650	8
RHM32500KST300H7HF *	**RHM32500KST300H7HF** *	KST300	32,50	1.280	18,00	.709	8
RHM33000KST300H7HF *	**RHM33000KST300H7HF** *	KST300	33,00	1.299	18,00	.709	8
RHM33340KST300H7HF *	**RHM33340KST300H7HF** *	KST300	33,34	1.313	18,00	.709	8
–	**RHM34000KST300H7HF**	KST300	34,00	1.339	18,00	.709	8
RHM34930KST300H7HF *	**RHM34930KST300H7HF** *	KST300	34,93	1.375	18,00	.709	8
RHM35000KST300H7HF	**RHM35000KST300H7HF**	KST300	35,00	1.378	18,00	.709	8
RHM36000KST300H7HF	–	KST300	36,00	1.417	18,00	.709	8
RHM36510KST300H7HF *	**RHM36510KST300H7HF** *	KST300	36,51	1.437	18,00	.709	8
RHM37000KST300H7HF *	**RHM37000KST300H7HF**	KST300	37,00	1.457	18,00	.709	8
RHM37500KST350H7HF *	**RHM37500KST350H7HF** *	KST350	37,50	1.476	18,00	.709	8
RHM38100KST350H7HF *	–	KST350	38,10	1.500	18,00	.709	8
RHM39000KST350H7HF *	**RHM39000KST350H7HF** *	KST350	39,00	1.535	18,00	.709	8
RHM39690KST350H7HF *	**RHM39690KST350H7HF** *	KST350	39,69	1.563	18,00	.709	8
RHM40000KST350H7HF	**RHM40000KST350H7HF**	KST350	40,00	1.575	18,00	.709	8
RHM41000KST350H7HF *	**RHM41000KST350H7HF** *	KST350	41,00	1.614	18,00	.709	8
RHM41280KST350H7HF *	**RHM41280KST350H7HF** *	KST350	41,28	1.625	18,00	.709	8
RHM42000KST350H7HF	**RHM42000KST350H7HF** *	KST350	42,00	1.654	18,00	.709	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

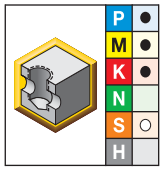
- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.

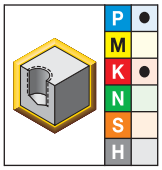






RHM-E • Blind Hole Expansion Reamer





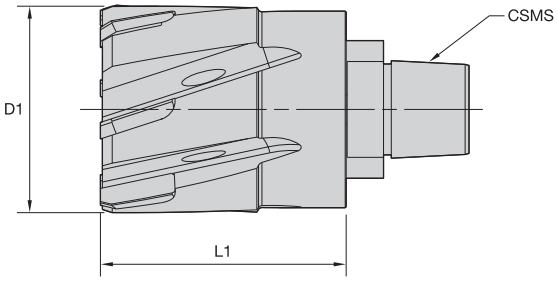
● first choice
○ alternate choice

KC6005	KC6305	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHME14000KST115H6SF *	RHME14000KST115H6SF	KST115	14,00	.551	25,00	.984	6
RHME14288KST115H6SF *	RHME14288KST115H6SF *	KST115	14,29	.563	25,00	.984	6
RHME15000KST115H6SF *	RHME15000KST115H6SF	KST115	15,00	.591	25,00	.984	6
RHME16000KST135H6SF	RHME16000KST135H6SF	KST135	16,00	.630	25,00	.984	6
RHME17000KST135H6SF *	RHME17000KST135H6SF	KST135	17,00	.669	25,00	.984	6
RHME17463KST135H6SF *	RHME17463KST135H6SF *	KST135	17,46	.688	25,00	.984	6
RHME18000KST155H6SF *	RHME18000KST155H6SF *	KST155	18,00	.709	25,00	.984	6
RHME19000KST155H6SF *	RHME19000KST155H6SF *	KST155	19,00	.748	25,00	.984	6
RHME19050KST155H6SF *	RHME19050KST155H6SF *	KST155	19,05	.750	25,00	.984	6
RHME20000KST175H6SF *	RHME20000KST175H6SF	KST175	20,00	.787	25,00	.984	6
RHME21000KST175H6SF	RHME21000KST175H6SF *	KST175	21,00	.827	25,00	.984	6
RHME22000KST175H6SF *	RHME22000KST175H6SF *	KST175	22,00	.866	25,00	.984	6
RHME22225KST175H6SF *	RHME22225KST175H6SF	KST175	22,23	.875	25,00	.984	6
RHME23000KST200H6SF *	RHME23000KST200H6SF *	KST200	23,00	.906	25,00	.984	6
RHME23813KST200H6SF *	RHME23813KST200H6SF *	KST200	23,81	.938	25,00	.984	6
RHME24000KST200H6SF	RHME24000KST200H6SF *	KST200	24,00	.945	25,00	.984	6
RHME25000KST200H6SF	RHME25000KST200H6SF	KST200	25,00	.984	30,00	1.181	6
RHME25400KST200H6SF *	RHME25400KST200H6SF *	KST200	25,40	1.000	30,00	1.181	6
RHME26000KST200H6SF *	RHME26000KST200H6SF *	KST200	26,00	1.024	30,00	1.181	8
RHME27000KST200H6SF *	RHME27000KST200H6SF	KST200	27,00	1.063	30,00	1.181	8
RHME28000KST250H6SF	RHME28000KST250H6SF	KST250	28,00	1.102	36,00	1.417	8
RHME30000KST250H6SF	RHME30000KST250H6SF	KST250	30,00	1.181	36,00	1.417	8
RHME31750KST250H6SF *	RHME31750KST250H6SF *	KST250	31,75	1.250	36,00	1.417	8
RHME32000KST250H6SF *	RHME32000KST250H6SF *	KST250	32,00	1.260	36,00	1.417	8
RHME34000KST300H6SF *	RHME34000KST300H6SF *	KST300	34,00	1.339	36,00	1.417	8
RHME36000KST300H6SF *	RHME36000KST300H6SF *	KST300	36,00	1.417	36,00	1.417	8
RHME38000KST350H6SF *	RHME38000KST350H6SF *	KST350	38,00	1.496	36,00	1.417	8
RHME40000KST350H6SF *	RHME40000KST350H6SF *	KST350	40,00	1.575	36,00	1.417	8
RHME42000KST350H6SF	RHME42000KST350H6SF *	KST350	42,00	1.654	36,00	1.417	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

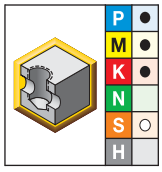
- For hole tolerance H6.
- Intermediate sizes available.
- Lock screw for axial use or retention knob comes with holder.
- Allen expansion screw.

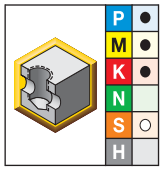






RHM-E • Through Hole Expansion Reamer





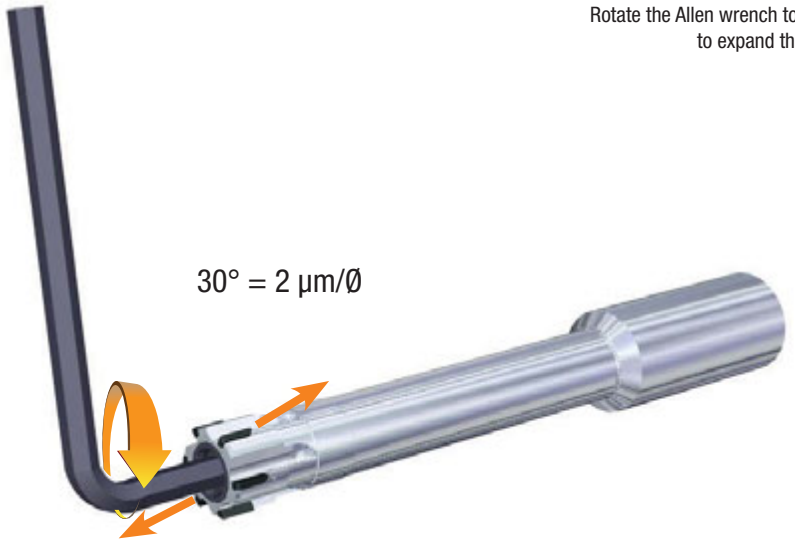
● first choice
○ alternate choice

KC6005	KC6305	CSMS system size	D1 mm	D1 in	L1 mm	L1 in	Z
RHME14000KST115H6HF *	RHME14000KST115H6HF *	KST115	14,00	.551	25,00	.984	6
RHME14288KST115H6HF *	RHME14288KST115H6HF *	KST115	14,29	.563	25,00	.984	6
RHME15000KST115H6HF *	RHME15000KST115H6HF *	KST115	15,00	.591	25,00	.984	6
RHME16000KST135H6HF	RHME16000KST135H6HF	KST135	16,00	.630	25,00	.984	6
RHME17000KST135H6HF	RHME17000KST135H6HF *	KST135	17,00	.669	25,00	.984	6
RHME17463KST135H6HF	RHME17463KST135H6HF *	KST135	17,46	.688	25,00	.984	6
RHME18000KST155H6HF *	RHME18000KST155H6HF	KST155	18,00	.709	25,00	.984	6
RHME19000KST155H6HF *	RHME19000KST155H6HF *	KST155	19,00	.748	25,00	.984	6
RHME19050KST155H6HF *	RHME19050KST155H6HF	KST155	19,05	.750	25,00	.984	6
RHME20000KST175H6HF	RHME20000KST175H6HF	KST175	20,00	.787	25,00	.984	6
RHME21000KST175H6HF *	RHME21000KST175H6HF *	KST175	21,00	.827	25,00	.984	6
RHME22000KST175H6HF	RHME22000KST175H6HF	KST175	22,00	.866	25,00	.984	6
RHME22225KST175H6HF *	RHME22225KST175H6HF	KST175	22,23	.875	25,00	.984	6
RHME23000KST200H6HF *	RHME23000KST200H6HF *	KST200	23,00	.906	25,00	.984	6
RHME23813KST200H6HF *	RHME23813KST200H6HF *	KST200	23,81	.938	25,00	.984	6
RHME24000KST200H6HF *	RHME24000KST200H6HF *	KST200	24,00	.945	25,00	.984	6
RHME25000KST200H6HF *	RHME25000KST200H6HF	KST200	25,00	.984	30,00	1.181	6
RHME25400KST200H6HF	RHME25400KST200H6HF	KST200	25,40	1.000	30,00	1.181	6
RHME26000KST200H6HF *	RHME26000KST200H6HF	KST200	26,00	1.024	30,00	1.181	8
RHME27000KST200H6HF *	RHME27000KST200H6HF *	KST200	27,00	1.063	30,00	1.181	8
RHME28000KST250H6HF	RHME28000KST250H6HF	KST250	28,00	1.102	36,00	1.417	8
RHME30000KST250H6HF	RHME30000KST250H6HF	KST250	30,00	1.181	36,00	1.417	8
RHME31750KST250H6HF *	RHME31750KST250H6HF	KST250	31,75	1.250	36,00	1.417	8
RHME32000KST250H6HF *	RHME32000KST250H6HF *	KST250	32,00	1.260	36,00	1.417	8
RHME34000KST300H6HF *	RHME34000KST300H6HF *	KST300	34,00	1.339	36,00	1.417	8
RHME36000KST300H6HF *	RHME36000KST300H6HF *	KST300	36,00	1.417	36,00	1.417	8
RHME38000KST350H6HF *	RHME38000KST350H6HF *	KST350	38,00	1.496	36,00	1.417	8
RHME40000KST350H6HF *	–	KST350	39,99	1.574	36,00	1.417	8
–	RHME40000KST350H6HF *	KST350	40,00	1.575	36,00	1.417	8
RHME42000KST350H6HF *	RHME42000KST350H6HF *	KST350	42,00	1.654	36,00	1.417	8

NOTE: Uncoated carbide grade K605™ is available on request.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

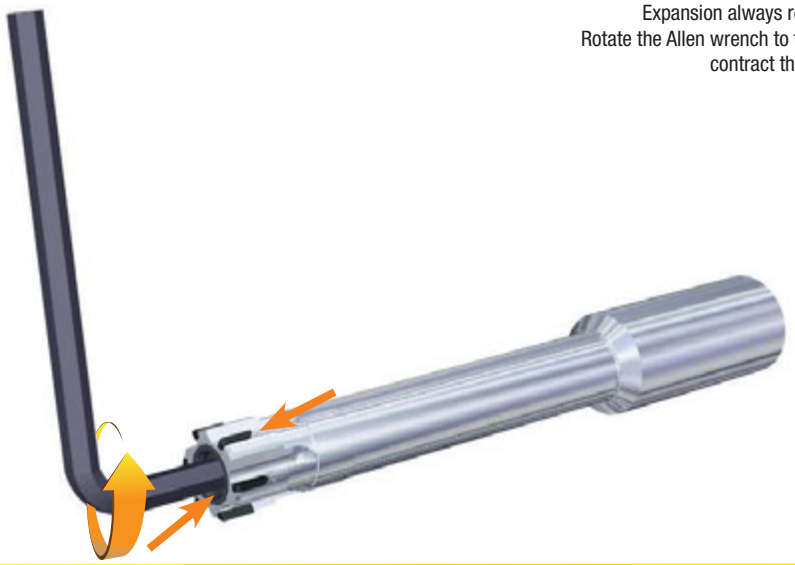
To Expand

Rotate the Allen wrench to the right to expand the reamer.



To Contract

Expansion always reversible:
Rotate the Allen wrench to the left to contract the reamer.



- 30° = 2 µm linear expansion.
- 720° = 2 revolutions; = 48 µm maximum expansion.
- Hard stop after 720° expansion. You cannot over expand!
- The expansion occurs in the elastic material behavior.
- You cannot reduce the diameter below D1.

RHR • Metric

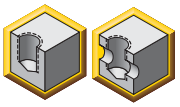
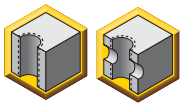
Material Group		KCU05 Cutting Speed — vc Range — m/min			Metric Recommended Feed Rate per Tooth						
					Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		32,50–42,00mm	
		min	Starting Value	max	Feed/Tooth	min	max	min	max	min	max
P	1	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	75	**100**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	4	50	**80**	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	5	30	**40**	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	6	30	**40**	60	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
M	1	15	**20**	40	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	2	15	**20**	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	3	15	**20**	30	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
K	1	80	**110**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	65	**90**	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	50	**70**	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
S	1	15	**20**	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	2	15	**20**	30	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	3	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20
	4	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20

Hole Finishing

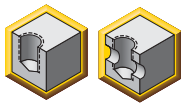
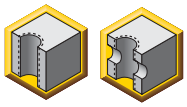
RHR • Inch

Material Group		KCU05 Cutting Speed — vc Range — SFM			Inch Recommended Feed Rate per Tooth						
					Tool Diameter (inch)	.551–.787"		.787–1.260"		1.260–1.654"	
		min	Starting Value	max	Feed/Tooth	min	max	min	max	min	max
P	1	295	**394**	509	inch/z	.004	.008	.004	.009	.004	.010
	2	295	**394**	509	inch/z	.004	.008	.004	.009	.004	.010
	3	246	**328**	427	inch/z	.004	.008	.004	.009	.004	.010
	4	164	**262**	344	inch/z	.004	.008	.004	.009	.004	.010
	5	98	**131**	197	inch/z	.003	.007	.004	.008	.004	.009
	6	98	**131**	197	inch/z	.003	.007	.003	.008	.003	.009
M	1	49	**66**	131	inch/z	.003	.006	.003	.007	.003	.008
	2	49	**66**	98	inch/z	.003	.006	.003	.007	.003	.008
	3	49	**66**	98	inch/z	.003	.006	.003	.007	.003	.008
K	1	262	**361**	427	inch/z	.004	.008	.004	.009	.004	.010
	2	213	**295**	361	inch/z	.004	.008	.004	.009	.004	.010
	3	164	**230**	295	inch/z	.004	.007	.004	.008	.004	.009
S	1	49	**66**	98	inch/z	.002	.006	.004	.007	.004	.008
	2	49	**66**	98	inch/z	.002	.006	.004	.007	.004	.008
	3	66	**98**	131	inch/z	.003	.007	.004	.008	.004	.008
	4	66	**98**	131	inch/z	.003	.007	.004	.008	.004	.008

RHM™ and RHM-E™ • Metric

Material Group		Cermet Tipped						Carbide Tipped						Metric						
																				
		straight flute			helical flute			straight flute			helical flute									
		KT325			KT6215			K605			KC6305									
		Cutting Speed — vc												Recommended Feed Rate per Tooth						
		Range — m/min												Tool Diameter (mm)	14,00–19,99mm		20,00–32,00mm		32,50–42,00mm	
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/ Tooth	min	max	min	max	min	max
P	1	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	150	**180**	210	180	**210**	240	40	**60**	70	90	**120**	155	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	130	**160**	180	150	**180**	210	30	**40**	50	75	**100**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	4	100	**130**	150	120	**150**	170	25	**40**	45	50	**80**	105	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	5	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
	6	80	**100**	120	100	**130**	150	10	**20**	30	30	**40**	55	mm/z	0,08	0,18	0,08	0,20	0,08	0,22
M	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
	3	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,08	0,15	0,08	0,18	0,08	0,20
K	1	150	**180**	200	180	**210**	240	30	**50**	60	80	**110**	130	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	2	130	**160**	180	150	**180**	210	25	**40**	45	65	**90**	110	mm/z	0,10	0,20	0,10	0,22	0,10	0,25
	3	100	**130**	160	120	**150**	170	20	**30**	40	50	**70**	90	mm/z	0,10	0,18	0,10	0,20	0,10	0,22
N	1	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	2	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	3	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	4	–	**–**	–	–	**–**	–	110	**150**	195	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
	5	–	**–**	–	–	**–**	–	105	**140**	180	–	**–**	–	mm/z	0,10	0,30	0,10	0,30	0,10	0,30
S	1	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	2	–	**–**	–	–	**–**	–	8	**10**	15	15	**20**	28	mm/z	0,06	0,15	0,10	0,18	0,10	0,20
	3	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20
	4	–	**–**	–	–	**–**	–	15	**20**	30	20	**30**	40	mm/z	0,08	0,18	0,10	0,20	0,10	0,20

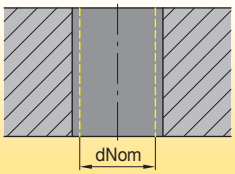
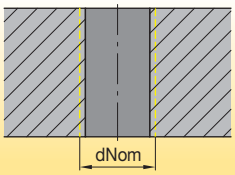
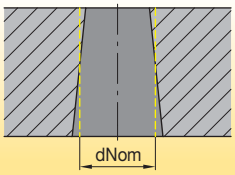
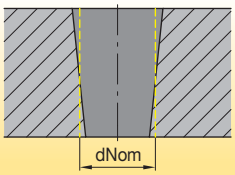
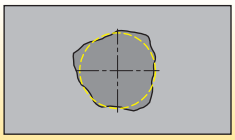
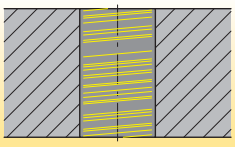
RHM™ and RHM-E™ • Inch

Material Group		Cermet Tipped						Carbide Tipped						Inch						
																				
		straight flute			helical flute			straight flute			helical flute									
		KT325			KT6215			K605			KC6305									
		Cutting Speed — vc												Recommended Feed Rate per Tooth						
		Range — SFM												Tool Diameter (inch)	.551–.787"		.787–1.260"		1.280–1.654"	
		min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	min	Starting Value	max	Feed/Tooth	min	max	min	max	min	max
P	1	492	**590**	689	590	**689**	787	131	**197**	230	295	**394**	508	inch/z	.004	.008	.004	.009	.004	.010
	2	492	**590**	689	590	**689**	787	131	**197**	230	295	**394**	508	inch/z	.004	.008	.004	.009	.004	.010
	3	426	**525**	590	492	**590**	689	98	**131**	164	246	**328**	426	inch/z	.004	.008	.004	.009	.004	.010
	4	328	**426**	492	394	**492**	558	82	**131**	148	164	**262**	344	inch/z	.004	.008	.004	.009	.004	.010
	5	262	**328**	394	328	**426**	492	33	**66**	98	98	**131**	180	inch/z	.003	.007	.003	.008	.003	.009
	6	262	**328**	394	328	**426**	492	33	**66**	98	98	**131**	180	inch/z	.003	.007	.003	.008	.003	.009
M	1	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.006	.003	.007	.003	.008
	2	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.006	.003	.007	.003	.008
	3	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.003	.006	.003	.007	.003	.008
K	1	492	**590**	656	590	**689**	787	98	**164**	197	262	**361**	426	inch/z	.004	.008	.004	.009	.004	.010
	2	426	**525**	590	492	**590**	689	82	**131**	148	213	**295**	361	inch/z	.004	.008	.004	.009	.004	.010
	3	328	**426**	525	394	**492**	558	66	**98**	131	164	**230**	295	inch/z	.004	.007	.004	.008	.004	.009
N	1	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012	.004	.012
	2	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012	.004	.012
	3	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012	.004	.012
	4	–	**–**	–	–	**–**	–	361	**492**	640	–	**–**	–	inch/z	.004	.012	.004	.012	.004	.012
	5	–	**–**	–	–	**–**	–	344	**459**	590	–	**–**	–	inch/z	.004	.012	.004	.012	.004	.012
S	1	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.002	.006	.004	.007	.004	.008
	2	–	**–**	–	–	**–**	–	26	**33**	49	49	**66**	92	inch/z	.002	.006	.004	.007	.004	.008
	3	–	**–**	–	–	**–**	–	49	**66**	98	66	**98**	131	inch/z	.003	.007	.004	.008	.004	.008
	4	–	**–**	–	–	**–**	–	49	**66**	98	66	**98**	131	inch/z	.003	.007	.004	.008	.004	.008

Reaming Allowances for Multi-Blade Reaming

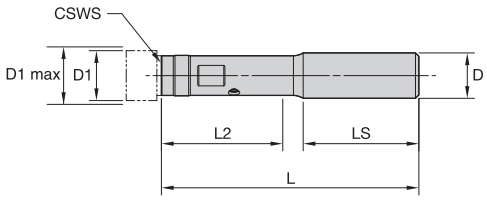
		reaming allowances in diameter					
		mm			in		
mm	in	min	middle	max	min	middle	max
1,40–4,80	.055–.189	0,08	0,12	0,20	.003	.005	.008
4,81–9,59	.189–.378	0,10	0,15	0,25	.004	.006	.010
9,60–15,00	.378–.591	0,15	0,20	0,30	.006	.008	.012
15,00–20,00	.591–.787	0,15	0,25	0,35	.006	.010	.014
20,00–50,00	.787–1.969	0,20	0,30	0,40	.008	.012	.016

Troubleshooting

Problem		Cause	Possible Remedy
Hole diameter too large.		• Reaming tool running out-of-center. • Concentricity of pilot hole and ream machining unsatisfactory. • Built-up edge. • Unsuitable cooling lubricant. • Reaming tool diameter too large.	• Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Hole diameter too small.		• Reamer worn. • Unsuitable cooling lubricant. • Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical hole profile wider towards drill runout.		• Concentricity of pilot hole and reaming unsatisfactory. • Positioning accuracy of pilot hole to reaming.	• Re-align, use equalizing adapter. • Correct positioning accuracy.
Conical hole profile wider at drill entry point.		• Concentricity of pilot hole and reaming unsatisfactory. • Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-center and/or showing chatter marks.		• Reaming tool running out-of-center. • Slanted cutting surface/asymmetrical cutting. • Workpiece twisted.	• Use equalizing adapter. • Spot face as drilling preparation. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification.		• Tool cutters worn. • Reaming tool running out-of-center. • Incorrect technology data (cutting parameters). • Inadequate chip evacuation.	• Use equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Feed grooves		• Built-up edge.	• Change cooling lubricant. • Change cutting speed.

- Tool body shipped with lock screw and wrench.
- Order reamer head separately.





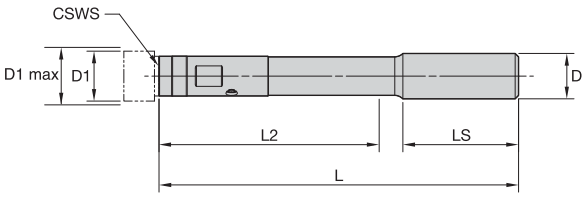


Straight Shank • Axial Clamping • 3 x D

order number	catalog number	CSWS system size	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L2 mm	L2 in	LS mm	LS in	central lock screw	Torx wrench	Nm	ft. lbs.
4056174	SS16KST115AR3M	KST115	14,00	.551	15,999	.630	16,00	.630	91,00	3.583	36,00	1.420	48,00	1.89	KST115115AS	FT8	3,0	2.2
4056175	SS20KST135AR3M	KST135	16,00	.630	17,999	.709	20,00	.787	99,00	3.898	39,00	1.540	51,00	2.01	KST135155AS	FT10	4,0	3.0
4056176	SS20KST155AR3M	KST155	18,00	.709	19,999	.787	20,00	.787	106,00	4.173	45,00	1.770	51,00	2.01	KST135155AS	FT10	4,0	3.0
3861185	SS20KST175AR3M	KST175	20,00	.787	22,499	.886	20,00	.787	113,50	4.469	51,50	2.028	51,00	2.01	KST175200AS	TT15	5,0	3.7
3861186	SS20KST200AR3M	KST200	22,50	.886	27,499	1.083	20,00	.787	130,50	5.138	65,50	2.579	51,00	2.01	KST175200AS	TT15	5,0	3.7
3861187	SS25KST250AR3M	KST250	27,50	1.083	32,499	1.280	25,00	.984	152,50	6.004	80,50	3.169	56,00	2.20	KST250250AS	TT25	9,0	6.7
3861188	SS32KST300AR3M	KST300	32,50	1.280	37,499	1.476	32,00	1.260	174,00	6.850	94,00	3.701	61,00	2.40	KST300350AS	TT30	13,0	9.7
3861189	SS32KST350AR3M	KST350	37,50	1.476	42,000	1.654	32,00	1.260	190,00	7.480	108,00	4.252	61,00	2.40	KST300350AS	TT30	13,0	9.7

- Tool body shipped with lock screw and wrench.
- Order reamer head separately.





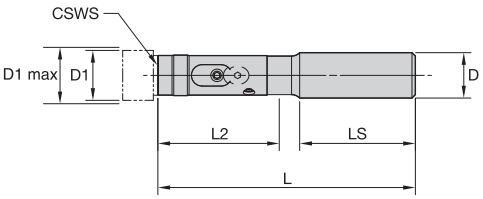


Straight Shank • Axial Clamping • 5 x D

order number	catalog number	CSWS system size	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L2 mm	L2 in	LS mm	LS in	central lock screw	Torx wrench	Nm	ft. lbs.
4056177	SS16KST115AR5M	KST115	14,00	.551	15,999	.630	16,00	.630	123,00	4.843	68,00	2.680	48,00	1.89	KST115115AS	FT8	3,0	2.2
4056178	SS20KST135AR5M	KST135	16,00	.630	17,999	.709	20,00	.787	135,00	5.315	75,00	2.950	51,00	2.01	KST135155AS	FT10	4,0	3.0
4056179	SS20KST155AR5M	KST155	18,00	.709	19,999	.787	20,00	.787	146,00	5.748	85,00	3.350	51,00	2.01	KST135155AS	FT10	4,0	3.0
3861190	SS20KST175AR5M	KST175	20,00	.787	22,499	.886	20,00	.787	158,50	6.240	96,50	3.799	51,00	2.01	KST175200AS	TT15	5,0	3.7
3861191	SS20KST200AR5M	KST200	22,50	.886	27,499	1.083	20,00	.787	185,50	7.303	120,50	4.744	51,00	2.01	KST175200AS	TT15	5,0	3.7
3861192	SS25KST250AR5M	KST250	27,50	1.083	32,499	1.280	25,00	.984	217,50	8.563	145,50	5.728	56,00	2.20	KST250250AS	TT25	9,0	6.7
3861193	SS32KST300AR5M	KST300	32,50	1.280	37,499	1.476	32,00	1.260	249,00	9.803	169,00	6.654	61,00	2.40	KST300350AS	TT30	13,0	9.7
3861194	SS32KST350AR5M	KST350	37,50	1.476	42,000	1.654	32,00	1.260	274,00	10.787	192,00	7.559	61,00	2.40	KST300350AS	TT30	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.





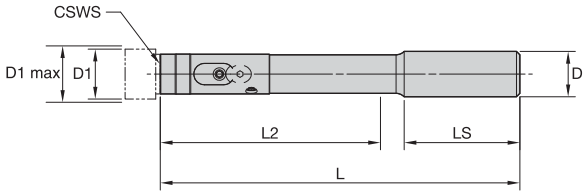


Straight Shank • Radial Clamping • 3 x D

order number	catalog number	CSWS system size	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L2 mm	L2 in	LS mm	LS in	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861195	SS20KST175RR3M	KST175	20,00	.787	22,499	.886	20,00	.787	113,50	4.469	51,50	2.028	51,00	2.01	KST175200RK	KST175CS	TT15	5,0	3.7
3861196	SS20KST200RR3M	KST200	22,50	.886	27,499	1.083	20,00	.787	130,50	5.138	65,50	2.579	51,00	2.01	KST175200RK	KST200CS	TT15	5,0	3.7
3861197	SS25KST250RR3M	KST250	27,50	1.083	32,499	1.280	25,00	.984	152,50	6.004	80,50	3.169	56,00	2.21	KST250250RK	KST250CS	TT25	9,0	6.7
3861198	SS32KST300RR3M	KST300	32,50	1.280	37,499	1.476	32,00	1.259	174,00	6.850	94,00	3.701	61,00	2.40	KST300350RK	KST300CS	TT30	13,0	9.7
3861199	SS32KST350RR3M	KST350	37,50	1.476	42,000	1.654	32,00	1.259	190,00	7.480	108,00	4.252	61,00	2.40	KST300350RK	KST350CS	TT30	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.





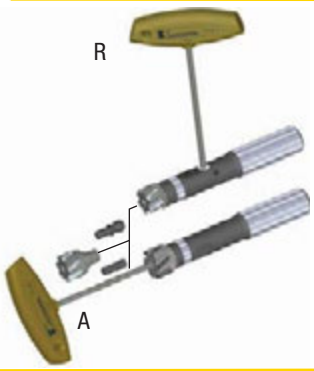


Straight Shank • Radial Clamping • 5 x D

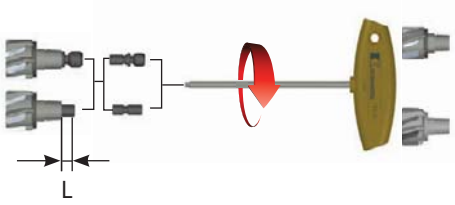
order number	catalog number	CSWS system size	D1 mm	D1 in	D1 max mm	D1 max in	D mm	D in	L mm	L in	L2 mm	L2 in	LS mm	LS in	retention knob	clamp set	Torx wrench	Nm	ft. lbs.
3861200	SS20KST175RR5M	KST175	20,00	.787	22,499	.886	20,00	.787	158,50	6.24	96,50	3.80	51,00	2.01	KST175200RK	KST175CS	TT15	5,0	3.7
3861201	SS20KST200RR5M	KST200	22,50	.886	27,499	1.083	20,00	.787	185,50	7.30	120,50	4.74	51,00	2.01	KST175200RK	KST200CS	TT15	5,0	3.7
3861202	SS25KST250RR5M	KST250	27,50	1.083	32,499	1.280	25,00	.984	217,50	8.56	145,50	5.73	56,00	2.21	KST250250RK	KST250CS	TT25	9,0	6.7
3861203	SS32KST300RR5M	KST300	32,50	1.280	37,499	1.476	32,00	1.259	249,00	9.80	169,00	6.65	61,00	2.40	KST300350RK	KST300CS	TT30	13,0	9.7
3861204	SS32KST350RR5M	KST350	37,50	1.476	42,000	1.654	32,00	1.259	274,00	10.79	192,00	7.56	61,00	2.40	KST300350RK	KST350CS	TT30	13,0	9.7

Assemble

1

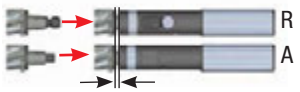


2

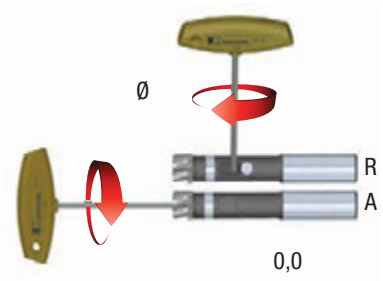


Ø (mm)		Ø (in)		L (mm)
14,000	27,499	0.549	1.078	5–5,5
27,500	42,000	1.078	1.647	5,5–6

3



4

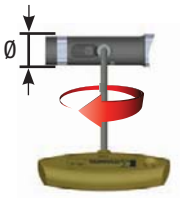


Ø (mm)		Ø (in)			(Nm)	(ft. lbs.)
14,000	15,999	0.549	0.627	DT - 8	2	1.5
16,000	19,999	0.627	0.784	DT - 10	3	2.2
20,000	27,499	0.784	1.078	TT - 15	4	3.7
27,500	32,499	1.078	1.274	TT - 25	5	6.7
32,500	42,000	1.275	1.647	TT- 30	13	9.7

Disassemble 4 → 3 → 2 → 1

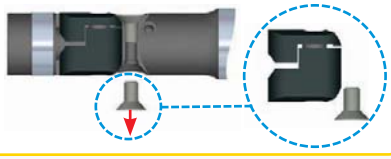
Disassemble

1

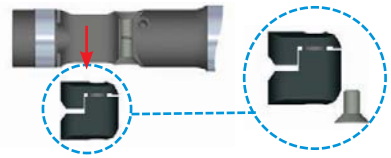


Ø (mm)	Ø (in)			(Nm)	(ft. lbs.)
17,5	0.686	KST175CS	2,5	2,5	1.9
20	0.784	KST200CS	2,5	2,5	1.9
25	0.980	KST250CS	3	5	3.7
30	1.176	KST300CS	4	9	6.7
35	1.373	KST350CS	4	9	9.7

2



3

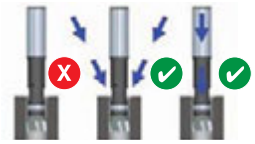


Assemble 3 → 2 → 1

SIF™



Coolant flow





Application



SIF™ Steerable Toolholder

Primary Application

SIF steerable toolholders should be used for easy compensation of radial runout and angular inaccuracies caused by the machine spindle or gravity. SIF tooling improves hole roundness for highest possible hole straightness and surface quality. Runout-optimized reaming tools provide higher process stability and longer tool life.

Use a separate SIF tooling package for each machine to ensure best configuration between reaming tool and spindle and HSK bushes. This enables faster tool change to avoid repeating adjustments.



Features and Benefits

Higher Productivity and Profitability

- Easy compensation of radial runout and angular inaccuracies increases process control and tool life.
- Less time-consuming adjustment due to eight radial screws.
- Increased rigidity by using a SIF back-end as a monoblock solution with the reamer.

Versatility

- Use standard DV, BT, CV, and HSK adapters in combination with SIF hydraulic chucks for precise concentric clamping, highest accuracy, and flexible clamping using hydraulic chuck sleeves.
- HSK bushes with SIF coupling enable fast tool exchange and eliminate repeated runout adjustment, reducing adjustment and downtime.

SIF™ adaptation practically eliminates all spindle errors in terms of runout and angular misalignment.

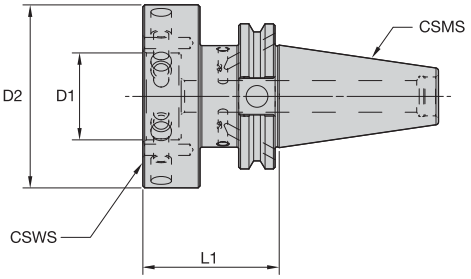


Customization

- Different length versions and coupling size combinations are available.

- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.







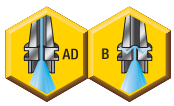
SIF-CV50 Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738506	**CV50BSIF70236**	CV50	SIF70	70	3	38	1.496	60	2.362	**121.808**	**170.004**	**170.005**	**125.625**	3,49	7.700
3738507	**CV50BSIF100236**	CV50	SIF100	100	4	58	2.283	60	2.362	**121.812**	**170.004**	**170.006**	**—**	4,14	9.140



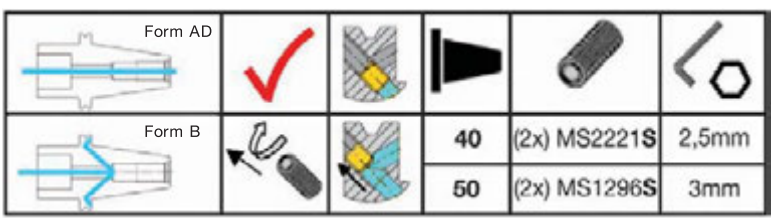
SIF-CV40 Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738505	**CV40BSIF80248**	CV40	SIF80	80	3	38	1.496	63	2.480	**121.812**	**170.004**	**170.005**	**125.625**	1,77	3.900



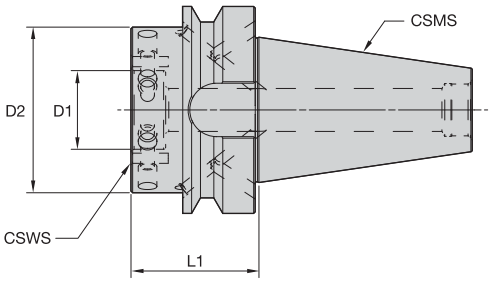
SIF-BT40 Form B/AD

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738492	**BT40BSIF80063M**	BT40	SIF80	80	3	38	1.496	63	2.480	**121.812**	**170.004**	**170.005**	**125.625**	1,86	4.110



- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.







SIF-BT50 Form B/AD

				D2		D1		L1							
order number	catalog number	CSMS system size	CSWS system size	mm	in	mm	in	mm	in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738503	BT50BSIF70063M	BT50	SIF70	70	3	38	1.496	63	2.480	121.808	170.004	170.005	125.625	4,08	9.000
3738504	BT50BSIF100068M	BT50	SIF100	100	4	58	2.283	68	2.677	121.812	170.004	170.006	–	4,94	10.890



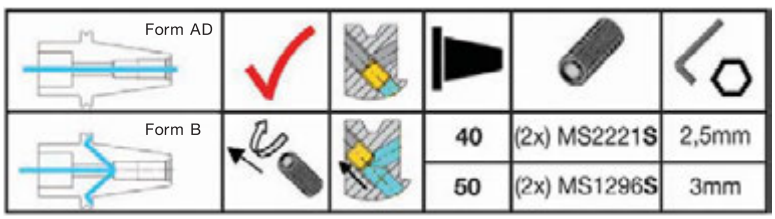
SIF-DV40 Form B/AD

				D2		D1		L1							
order number	catalog number	CSMS system size	CSWS system size	mm	in	mm	in	mm	in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738488	DV40BSIF80061M	DV40	SIF80	80	3	38	1.496	61	2.402	121.812	170.004	170.005	125.625	1,83	4.020



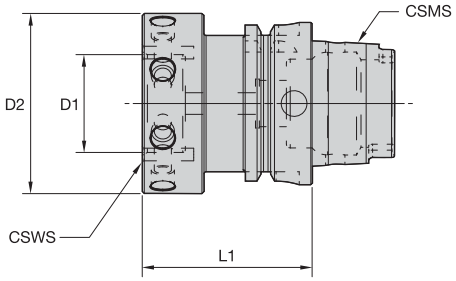
SIF-DV50 Form B/AD

				D2		D1		L1							
order number	catalog number	CSMS system size	CSWS system size	mm	in	mm	in	mm	in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738490	DV50BSIF70060M	DV50	SIF70	70	3	38	1.496	60	2.362	121.808	170.004	170.005	125.625	3,60	7.930
3738491	DV50BSIF100060M	DV50	SIF100	100	4	58	2.283	60	2.362	121.812	170.004	170.006	–	4,30	9.480



- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.







SIF-HSK63 Form A

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738508	**HSK63ASIF70066M**	HSK63A	SIF70	70	3	38	1.496	66	2.598	**121.808**	**170.004**	**170.005**	**125.625**	1,44	3.180
3878347	**HSK63ASIF80063M**	HSK63A	SIF80	80	3	38	1.496	63	2.480	**121.812**	**170.004**	**170.005**	**125.625**	1,48	3.250

SIF-HSK80 Form A

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738510	**HSK80ASIF70066M**	HSK80A	SIF70	70	3	38	1.496	66	2.598	**121.808**	**170.004**	**170.005**	**125.625**	2,05	4.520

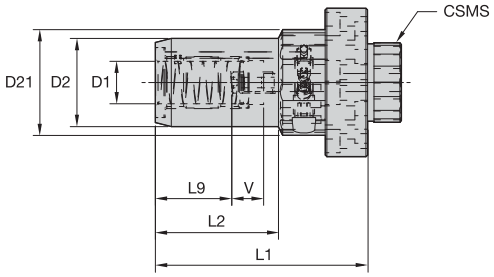
NOTE: HSK coolant unit and wrench are available and must be ordered separately.

SIF-HSK100 Form A

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	D1 mm	D1 in	L1 mm	L1 in	dog-point set screw	hex wrench	hex wrench	socket-head cap screw	kg	lbs
3738511	**HSK100ASIF70050M**	HSK100A	SIF70	70	3	38	1.496	50	1.969	**121.808**	**170.004**	**170.005**	**125.625**	2,43	5.360
3738512	**HSK100ASIF100070M**	HSK100A	SIF100	100	4	58	2.283	70	2.756	**121.812**	**170.004**	**170.006**	**–**	3,84	8.460

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

- Runout < .0001" (0,003mm).
- External side actuation adjustment stop, giving 3/8" (10mm) axial adjustment.





HC HP Line • SIF70

order number	catalog number	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	D21 mm	D21 in	L1 mm	L1 in	L2 mm	L2 in	L9 mm	L9 in	V mm	V in	hex wrench	T-handle hex wrench	kg	lbs
3667056	**SIF70HC12090M**	SIF70	12	.472	32	1.244	44	1.724	90	3.543	45	1.752	36	1.417	10	.394	**170.002**	**170.135**	1,13	2.49
3667057	**SIF70HC20100M**	SIF70	20	.787	42	1.636	44	1.724	100	3.937	58	2.283	41	1.614	10	.394	**170.003**	**170.135**	2,00	4.41

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

HC HP Line • SIF80

order number	catalog number	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	D21 mm	D21 in	L1 mm	L1 in	L2 mm	L2 in	L9 mm	L9 in	V mm	V in	hex wrench	T-handle hex wrench	kg	lbs
3667058	**SIF80HC12090M**	SIF80	12	.472	32	1.244	50	1.963	90	3.543	45	1.752	36	1.417	10	.394	**170.002**	**170.135**	9,00	19.84
3667059	**SIF80HC20100M**	SIF80	20	.787	42	1.638	50	1.963	100	3.937	58	2.283	41	1.614	10	.394	**170.003**	**170.135**	1,60	3.53
3667060	**SIF80HC25100M**	SIF80	25	.984	50	1.959	54	2.118	100	3.937	51	2.008	47	1.850	10	.394	**170.003**	**170.136**	1,83	4.03

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

HC HP Line • SIF100

order number	catalog number	CSMS system size	D1	D2	D21	L1	L2	L9	V	hex wrench	T-handle hex wrench	kg	lbs
3667061	**SIF100HC12090M**	SIF100	12	32	50	90	45	36	10	**170.002**	**170.135**	1,98	4.37
3667062	**SIF100HC20100M**	SIF100	20	42	50	100	58	41	10	**170.003**	**170.135**	2,19	4.84
3668023	**SIF100HC25100M**	SIF100	25	50	63	100	51	47	10	**170.004**	**170.136**	2,56	5.64

NOTE: HSK coolant unit and wrench are available and must be ordered separately.

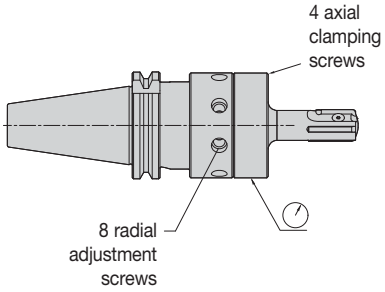
IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

SIF Tooling Setup

Step 1: Rough setup of runout at flange

1

- Set gage (TIR) at SIF flange.
- Tight axial clamping screws 4.4–5.9 ft. lbs. (6–8 Nm).
- Use radial adjustment screws to achieve .0002" (5 µm) runout.

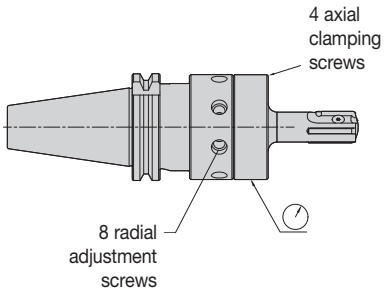




Step 2: Fine setup of runout at the flange

2

- Tight axial clamping screws crosswise:
  SIF70/80 13.3 ft. lbs. (18 Nm).
  SIF100 23.6 ft. lbs. (32 Nm).
- Use radial adjustment screws to achieve .00008" (2 µm) runout.
- All radial adjustment screws to be clamped tight at 3.0 ft. lbs. (4 Nm).

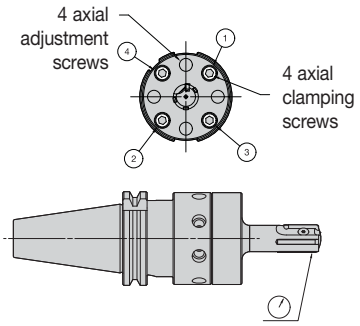




Step 3: Adjustment of runout at front

3

- Set gage (TIR) at control grind, cylindrical land, or guide pads.
- Use axial adjustment screws to achieve a maximum runout error of .00008" (2 µm).
- All axial adjustment screws to be clamped tight at 3.0 ft. lbs. (4 Nm).

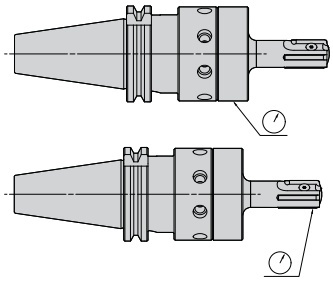




Step 4: Final runout check

4

- Check using gage (TIR) at flange; no deviation by theory.
- If needed, use radial adjustment screws to set runout below .00008" (2 µm).
- Any modification of radial setup demands an axial runout check and adjustment, if necessary.





RIQ™ (Quattro Cut™) and RIR™
Padded Reamers

Primary Application

Master the highest precision reaming with standard inserts in almost all materials with two unique systems:
RIR padded reamers for small-diameter applications and RIQ padded reamers for easy setup in large-diameters applications.

RIQ reamers are available starting at diameter 16mm (.630") with four cutting edges for lowest cost per hole. The proprietary pocket seat only requires setup of the diameter, which is a huge benefit in simplicity compared to systems that require the diameter and back taper to be adjusted simultaneously. RIR padded reamers are also proprietary and available starting at diameter 6mm (.236") with one cutting edge, and diameter 8mm (.315") with two edges.



Features and Benefits

Higher Productivity and Profitability

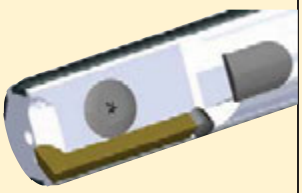
- Longer tool life with Kennametal grades.
- User friendly — RIQ padded reamers reduce setup time.
- Use four full edges even in PCD or PcBN styles of RIQ inserts.

Complete Insert Portfolio

- Large standard offering of lead geometries — E13, EDS, EDR, EGU, EGR, radius, and taper inserts.
- Large offering of grades — coated and uncoated carbide, cermet, PcBN, and PCD.

Customization

- All RIQ tooling engineered to specific needs in diameters 16–245mm (.630–9.645") with internal coolant.
- All RIR tooling engineered to specific needs in diameters 6–245mm (.236–9.645") with internal coolant.
- RIR taper reamers available upon request.
- Multiflute and step reaming applications and special blade shapes available upon request.
- Measuring and adjustment equipment available as standard.

Application recommendation	RIR	RIQ
	Bore tolerances less than 10 µm (can be greater). Geometric tolerances down to 2 µm. Skilled workforce experience required. 	Bore tolerances less than 10 µm. Geometric tolerances down to 2 µm. Lower skilled workforce, easier adjustment. Multidiameter bores. 
Pocket seat	Flat with clamping groove in blade.	Serrated. Greater insert stability.
Cutting edges	2 (1 with PCD or CBN and 1 within diameter range 6–8mm [.236–.315"])	4 (SC, cermet, PCD, CBN)
Special blade forms	yes	yes
Multiple inserts on diameter	no	yes
Blade adjustment	Diameter and back taper.	Diameter only (back taper defined by serration).
Blade adjusting screws	2	1
Chamfer or valve seat machining	Yes, but adjustment required on position and angle.	Yes, only adjustment of position. Angle adjustment not required due to precision of serrated pocket seat.
General comments	For small diameters with high setup effort.	For larger diameters with low setup effort.

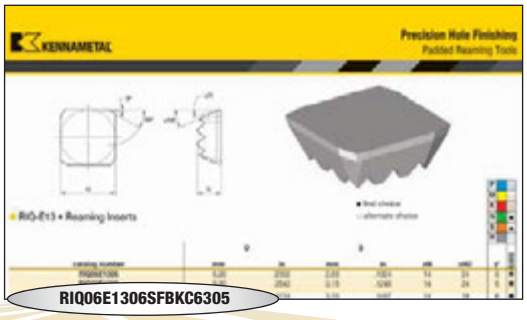

RIR™ Reamer


RIQ™ Reamer


RIQ™ Valve Seat Tool

How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



RIQ	06	E13	06	S	FB	KC6305
Type	Size	Lead	Rake	Edge	Chipbreaker	Grade

RIR = Reamer Insert Rectangular

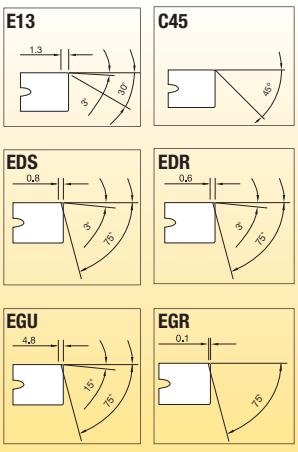
RIQ = Reamer Insert Quattro Cut™

Blade Size

Ø [mm]	RIQ	
16,0–24,99	**06**	6,0 x 6,0mm
Valve Seat	**B6**	6,0 x 6,0mm
Valve Seat	**B7**	6,5 x 6,5mm
Valve Seat	**07**	7,0 x 7,0mm
Valve Seat	**08**	8,0 x 8,0mm
>25	**09**	9,0 x 9,0mm
>25	**12**	12,0 x 12,0mm

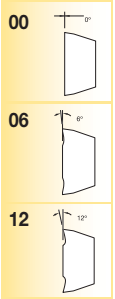
Ø [mm]	RIR	
6,0–7,99	**A0**	10,5 x 2,50mm
8,0–10,99	**01**	15,0 x 2,80mm
11,0–13,99	**02**	18,0 x 4,00mm
14,0–17,99	**03**	20,0 x 4,76mm
18,0–45,99	**04**	27,0 x 5,56mm
>46	**05**	27,0 x 6,75mm
Taper Reamer	**T4**	45,0 x 5,56mm

Cutting Lead



R = Radius Blade
R02
R04
R05

Rake Angle

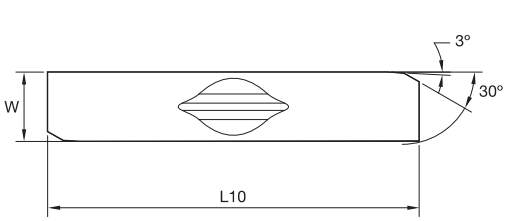


S  Chamfered and Rounded

FB = Finishing Blind Hole

FT = Finishing Through Hole

Grade	
Carbide	KC6005
Carbide	KC6105
Carbide	KC6305
Cermet	KT6225
Cermet	KT6315
PCD	KD1415
CBN	KB1610





● first choice
○ alternate choice

P	●	●	○
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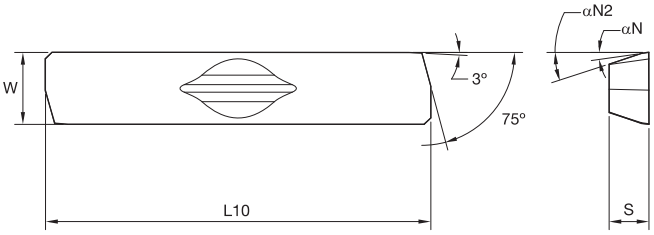
H			

RIR-E13 • Reaming Inserts

ISO catalog number	ANSI catalog number	L10 mm	L10 in	S mm	S in	W mm	W in	αN°	αN2°	γ°	KC6005	KC6105	KC6305
RIR01E1306 *	RIR01E1306 *	15,00	.5906	1,53	.0602	2,80	.1102	8	18	6	–	●	–
RIR01E1312 *	RIR01E1312 *	15,00	.5910	1,53	.0600	2,80	.1100	8	18	12	–	●	–
RIR02E1312 *	RIR02E1312 *	18,00	.7090	1,93	.0760	4,00	.1575	8	18	12	–	●	●
RIR03E1312 *	RIR03E1312 *	20,00	.7870	2,33	.0920	4,76	.1870	8	18	12	–	–	●
RIR04E1312	RIR04E1312	27,00	1.0630	3,13	.1230	5,56	.2190	8	18	12	●	–	–
RIR04E1312 *	RIR04E1312 *	27,00	1.0630	3,13	.1230	5,56	.2190	8	18	12	–	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





● first choice
○ alternate choice

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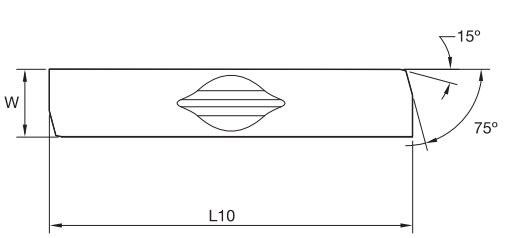
RIR-EDS • Reaming Inserts

ISO catalog number	ANSI catalog number	L10 mm	L10 in	S mm	S in	W mm	W in	αN°	αN2°	γ°	KD1415
RIR04EDS06 *	RIR04EDS06 *	27,00	1.0630	3,15	.1240	5,56	.2190	8	18	6	

NOTE: All KD1415™ inserts are single tipped except full face at size RIR01.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





● first choice
○ alternate choice

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M	○
K	●
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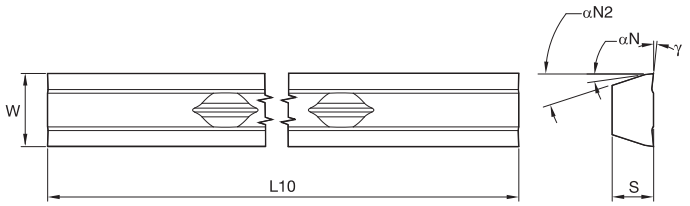
RIR-EGU • Reaming Inserts

ISO catalog number	ANSI catalog number	L10 mm	L10 in	S mm	S in	W mm	W in	αN°	αN2°	KC6105
RIR01EGU00	RIR01EGU00	14,48	.5699	1,55	.0610	2,80	.1100	8	18	
RIR05EGU00 *	RIR05EGU00 *	27,00	1.0630	3,15	.1240	6,75	.2660	8	18	

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





● first choice
○ alternate choice

P	●
M	○
K	●
N	○
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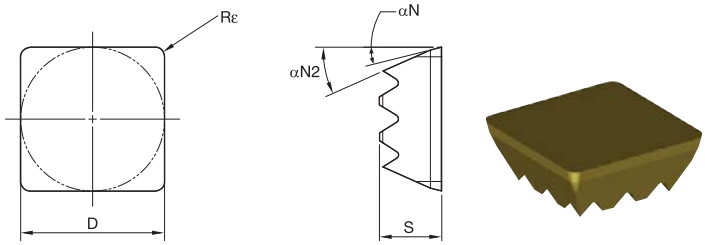
H	

RIR-C45 • Reaming Inserts

ISO catalog number	ANSI catalog number	L10 mm	L10 in	S mm	S in	W mm	W in	αN°	αN2°	γ°	KC6005
RIRT4C4512	**RIRT4C4512**	45,00	1.7720	3,15	.1240	5,56	.2190	8	18	12	●

NOTE: For use with taper reamer bodies.



● first choice
○ alternate choice

P	
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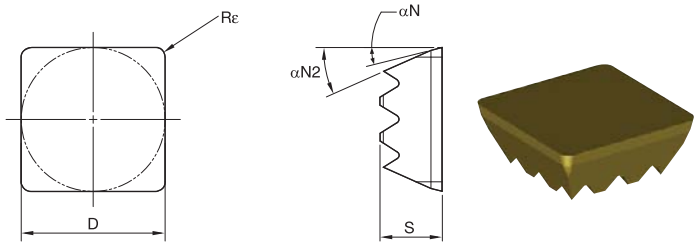
RIQ-R02 • Reaming Inserts

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	Rε mm	Rε in	αN°	αN2°	γ°	KD1415
RIQ06R0200 *	**RIQ06R0200 ***	6,00	.2362	2,60	.1024	0,20	.0079	8	18	0	●

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



● first choice
○ alternate choice

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M	○
K	○
N	
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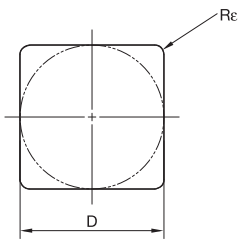
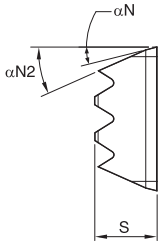
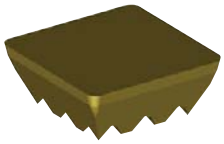
H	●

RIQ-R04 • Reaming Inserts

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	Rε mm	Rε in	αN°	αN2°	γ°	KB1610	KT6225
RIQ06R0400S	**RIQ06R0400S**	6,00	.2362	2,60	.1024	0,40	.0160	8	18	0	●	–
RIQ09R0400S	**RIQ09R0400S**	9,00	.3540	3,15	.1240	0,40	.0160	8	18	0	●	–





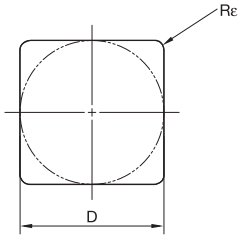


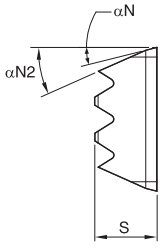
● first choice
○ alternate choice

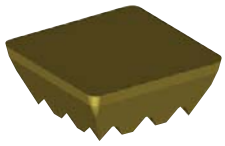
P		●
M		○
K	○	
N		
S		
H	●	

RIQ-R04-FB • Reaming Inserts • With Chipbreaker • For Blind Holes

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	Rε mm	Rε in	αN°	αN2°	γ°	KB1610	KT6225
RIQ06R0400FB	RIQ06R0400FB	6,00	.2362	2,60	.1024	0,40	.0169	3	18	12	–	●
RIQ09R0400FB	RIQ09R0400FB	9,00	.3543	3,15	.1240	0,40	.0156	3	18	12	–	●





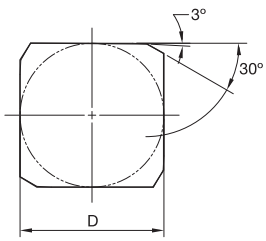


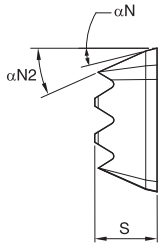
● first choice
○ alternate choice

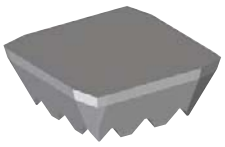
P		●
M		○
K		
N		
S		
H		

RIQ-R05 • Reaming Inserts • With Chipbreaker • For Through Holes

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	Rε mm	Rε in	αN°	αN2°	γ°	KT6315
RIQ06R0500FT	RIQ06R0500FT	6,00	.2362	2,60	.1024	0,50	.0197	8	18	0	●
RIQ09R0506FT	RIQ09R0506FT	9,00	.3543	3,15	.1240	0,50	.0197	14	24	6	●







● first choice
○ alternate choice

P	●	●	○
M	○	○	●
K	●	●	●
N	○	○	○
S			
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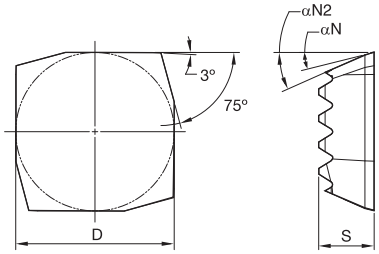
RIQ-E13 • Reaming Inserts

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	αN°	αN2°	γ°	KC6005	KC6105	KC6305
RIQ06E1300 *	RIQ06E1300 *	6,00	.2362	2,60	.1024	8	18	0	●	●	●
RIQ06E1306 *	RIQ06E1306 *	6,00	.2362	2,60	.1024	14	24	6	●	●	●
RIQ06E1312 *	RIQ06E1312 *	6,00	.2362	2,60	.1024	20	30	12	●	●	●
RIQ09E1300 *	RIQ09E1300 *	9,00	.3543	3,15	.1240	8	18	0	●	●	●
RIQ09E1306 *	RIQ09E1306 *	9,00	.3543	3,15	.1240	14	24	6	●	●	●
RIQ09E1312 *	RIQ09E1312 *	9,00	.3543	3,15	.1240	20	30	12	●	●	●

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





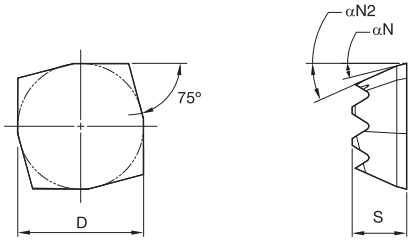
● first choice
○ alternate choice

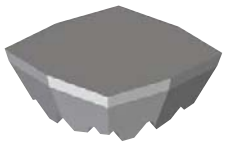
P		●	●	○		
M		○	○	●		
K		●	●	●		
N		○	○	○	●	
S						
H						

RIQ-EDR • Reaming Inserts

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	αN°	αN2°	γ°	KC6005	KC6105	KC6305	KD1415
RIQ06EDR00	RIQ06EDR00	6,00	.2362	2,60	.1024	8	18	0	●	–	●	–
RIQ06EDR00 *	RIQ06EDR00 *	6,00	.2362	2,60	.1024	8	18	0	–	●	–	–
RIQ06EDR06 *	RIQ06EDR06 *	6,00	.2362	2,60	.1024	14	24	6	●	–	–	–
RIQ06EDR06	RIQ06EDR06	6,00	.2362	2,60	.1024	14	24	6	–	●	●	●
RIQ06EDR12 *	RIQ06EDR12 *	6,00	.2362	2,60	.1024	20	30	12	●	●	●	–
RIQ09EDR00 *	RIQ09EDR00 *	9,00	.3543	3,15	.1240	8	18	0	●	●	●	–
RIQ09EDR06 *	RIQ09EDR06 *	9,00	.3543	3,15	.1240	14	24	6	●	●	●	●
RIQ09EDR12 *	RIQ09EDR12 *	9,00	.3543	3,15	.1240	20	30	12	●	●	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

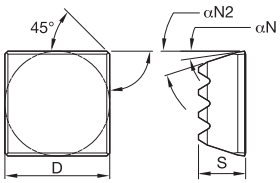


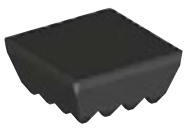


RIQ-EGR • Reaming Inserts

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	αN°	αN2°	γ°	KC6005	KC6105	KC6305	KD1415
RIQ06EGR00	RIQ06EGR00	6,00	.2362	2,60	.1020	8	18	0	●	–	–	–
RIQ06EGR00 *	RIQ06EGR00 *	6,00	.2362	2,60	.1020	8	18	0	–	●	●	–
RIQ06EGR06	RIQ06EGR06	6,00	.2362	2,60	.1020	14	24	6	●	–	–	●
RIQ06EGR06 *	RIQ06EGR06 *	6,00	.2362	2,60	.1020	14	24	6	–	●	●	–
RIQ06EGR12 *	RIQ06EGR12 *	6,00	.2362	2,60	.1020	20	30	12	●	●	●	–
RIQ09EGR00	RIQ09EGR00	9,00	.3543	3,15	.1240	8	18	0	●	–	–	–
RIQ09EGR00 *	RIQ09EGR00 *	9,00	.3543	3,15	.1240	8	18	0	–	●	●	–
RIQ09EGR06 *	RIQ09EGR06 *	9,00	.3543	3,15	.1240	14	24	6	●	●	–	–
RIQ09EGR06	RIQ09EGR06	9,00	.3543	3,15	.1240	14	24	6	–	–	●	●
RIQ09EGR12 *	RIQ09EGR12 *	9,00	.3543	3,15	.1240	20	30	12	●	●	●	–

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.





● first choice
○ alternate choice

P			
M			
K		●	●
N			
S			
H		●	●

RIQ-C45 • Valve Seat Finishing

ISO catalog number	ANSI catalog number	D mm	D in	S mm	S in	αN°	αN2°	KBHK10	KBHK15
RIQB6C4500S	RIQB6C4500S	6,00	.2362	2,60	.1024	8	18	●	●
RIQB7C4500S	RIQB7C4500S	6,50	.2559	2,60	.1024	8	18	●	●
RIQ07C4500S	RIQ07C4500S	7,00	.2756	3,15	.1240	8	18	●	●
RIQ08C4500S	RIQ08C4500S	8,00	.3150	3,15	.1240	8	18	●	●
RIQ09C4500S	RIQ09C4500S	9,00	.3540	3,15	.1240	8	18	●	●

RIR™/RIQ™ • Metric

Material Group		Grade	Cutting Speed — vc Range — m/min			Hole Types	 1	 2	 3	 4	 5		
						Metric							
						Recommended Feed Rate per Tooth							
			min	Starting Value	max		E13	EDS	EDR	EGR	EGU	R0X	C45*
P	1	KC6005	30	**60**	100	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30
	2	KC6005	20	**50**	90	mm/r	0,10–0,20	–	–	–	–	–	0,20–0,30
	3	KC6005	20	**40**	80	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30
		KT6225	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
		KT6315	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
	4	KC6005	15	**30**	50	mm/r	0,05–0,20	–	–	–	–	–	0,20–0,30
		KC6105	15	**30**	50	mm/r	0,05–0,20	–	–	–	–	–	–
		KT6225	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
		KT6315	120	**180**	240	mm/r	–	–	–	–	–	0,15–0,20	–
	5	KC6105	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	6	KC6105	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
M	1	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	2	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
	3	KC6305	10	**25**	40	mm/r	0,05–0,20	–	–	–	–	–	–
K	1	KC6005	20	**70**	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30
		K6105	20	**70**	100	mm/r	–	–	–	–	0,20	–	–
	2	KC6005	20	**60**	100	mm/r	0,10–0,20	0,15–0,20	0,15–0,20	0,18–0,20	–	–	0,20–0,30
		K6105	20	**60**	100	mm/r	–	–	–	–	0,20	–	–
	3	KC6005	20	**60**	100	mm/r	0,10–0,20	0,13–0,20	0,13–0,20	0,15–0,20	0,17–0,20	–	0,20–0,30
N	1	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	2	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	3	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
	4	KD1415	100	**250**	600+	mm/r	–	0,10–0,20	0,10–0,20	0,10–0,20	–	–	–
S	1	–	–	**–**	–	mm/r	Recommendations available on request						
	2	–	–	**–**	–	mm/r							
	3	–	–	**–**	–	mm/r							
	4	–	–	**–**	–	mm/r							
H	1	KB1610	150	**180**	200	mm/r	–	–	–	–	–	0,05–0,10	–

*For taper reamers vc min 16 SFM (5 m/min), starting vc 33 SFM (10 m/min), max. vc 66 SFM (20 m/min).

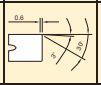
RIR™/RIQ™ • Inch

Material Group		Grade	Cutting Speed – vc Range – SFM min	Starting Value	max	Hole Types	1	2	3	4	5		
							Inch						
							Recommended Feed Rate per Tooth						
							E13	EDS	EDR	EGR	EGU	R0X	C45*
P	1	KC6005	98	**197**	328	IPR	0.004–0.008	–	–	–	–	–	0.008–0.012
	2	KC6005	66	**164**	295	IPR	0.004–0.008	–	–	–	–	–	0.008–0.012
	3	KC6005	66	**131**	262	IPR	0.002–0.008	–	–	–	–	–	0.008–0.012
		KT6225	394	**590**	787	IPR	–	–	–	–	–	0.006–0.008	–
		KT6315	394	**590**	787	IPR	–	–	–	–	–	0.006–0.008	–
	4	KC6005	49	**98**	164	IPR	0.002–0.008	–	–	–	–	–	0.008–0.012
		KC6105	49	**98**	164	IPR	0.002–0.008	–	–	–	–	–	–
		KT6225	394	**590**	787	IPR	–	–	–	–	–	0.006–0.008	–
		KT6315	394	**590**	787	IPR	–	–	–	–	–	0.006–0.008	–
	5	KC6105	33	**82**	131	IPR	0.002–0.008	–	–	–	–	–	–
	6	KC6105	33	**82**	131	IPR	0.002–0.008	–	–	–	–	–	–
M	1	KC6305	33	**82**	131	IPR	0.002–0.008	–	–	–	–	–	–
	2	KC6305	33	**82**	131	IPR	0.002–0.008	–	–	–	–	–	–
	3	KC6305	33	**82**	131	IPR	0.002–0.008	–	–	–	–	–	–
K	1	KC6005	66	**230**	328	IPR	0.004–0.008	0.006–0.008	0.006–0.008	0.007–0.008	–	–	0.008–0.012
		K6105	66	**230**	328	IPR	–	–	–	–	0.008	–	–
	2	KC6005	66	**197**	328	IPR	0.004–0.008	0.006–0.008	0.006–0.008	0.007–0.008	–	–	0.008–0.012
		K6105	66	**197**	328	IPR	–	–	–	–	0.008	–	–
	3	KC6005	66	**197**	328	IPR	0.004–0.008	0.005–0.008	0.005–0.008	0.006–0.008	0.007–0.008	–	0.008–0.012
N	1	KD1415	328	**820**	1968+	IPR	–	0.004–0.008	0.004–0.008	0.004–0.008	–	–	–
	2	KD1415	328	**820**	1968+	IPR	–	0.004–0.008	0.004–0.008	0.004–0.008	–	–	–
	3	KD1415	328	**820**	1968+	IPR	–	0.004–0.008	0.004–0.008	0.004–0.008	–	–	–
	4	KD1415	328	**820**	1968+	IPR	–	0.004–0.008	0.004–0.008	0.004–0.008	–	–	–
S	1	–	–	**–**	–	IPR	Recommendations available on request						
	2	–	–	**–**	–	IPR							
	3	–	–	**–**	–	IPR							
	4	–	–	**–**	–	IPR							
H	1	KB1610	492	**590**	656	IPR	–	–	–	–	–	0.002–0.004	–

*For taper reamers vc min 16 SFM (5 m/min), starting vc 33 SFM (10 m/min), max. vc 66 SFM (20 m/min).

Overview of RIR and RIQ insert leads

Alternative insert lead that can be used

Tool designed for below listed lead	E06	E13	EDS	EGS	EKS	EGU	EGR	EDR	EKR	ESR	EUR	R02	R04	R06	R08
															R
E06	●	–	–	–	–	–	–	–	–	–	–	●	–	–	–
E13	●	●	–	–	–	–	○	○	○	○	○	●	○	–	–
EDS	●	–	●	●	–	–	●	●	○	–	–	●	○	–	–
EGS	○	–	–	●	–	–	●	–	–	–	–	●	○	–	–
EKS	●	–	–	–	●	–	●	●	●	–	–	●	○	–	–
EGU	○	–	○	○	○	●	●	○	○	○	○	●	○	○	–
EGR	●	–	–	–	–	–	●	–	–	–	–	●	○	–	–
EDR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
EKR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
ESR	●	–	–	○	–	–	●	●	●	●	○	●	○	–	–
EUR	●	–	–	○	–	–	●	●	●	●	●	●	●	–	–
R02	–	–	–	–	–	–	○	–	–	–	–	●	–	–	–
R04	–	–	–	–	–	–	○	–	–	–	–	●	●	–	–
R06	●	–	–	–	–	–	●	●	●	●	●	●	●	●	–
R08	●	–	–	–	–	–	●	●	●	●	●	●	●	●	●

Insert Lead

Surface finish	●●●	●●●	●●	●	●●	●●	●	●●	●●	●●	●●	●●	●●	●●	●●
Postioning accuracy	–	–	●●	●●●	●●	●●	●●●	●●	●●	●●	●●	●	●	●	●

Legend

●	Alternative Inserts	Delivery condition of tool. Insert lead = tool lead.
●		90% compatible. Later support of guide pads at the bore entrance can happen, if leads are not identical.
○		Under certain circumstances compatible. Refer to a Kennametal expert for further support.
–		Do not use in this tool. Can lead to tool damage.

●●●	Surface/ Positioning	Excellent results
●●		Good results
●		Sufficient results
–		Not given

General advice: To mount an insert, where the lead is not identical to the tool lead, the rake angle and insert size have to be identical.

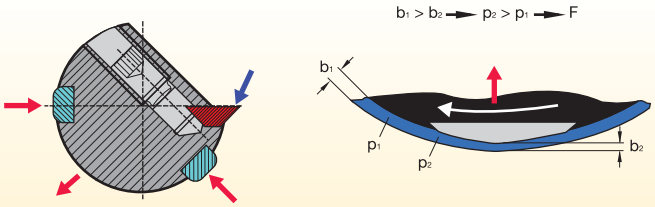
coolant selection		
	recommended	alternative
material type	mineral-oil-based emulsions	semi-synthetic
steel	6%	10%
nickel chrome steel	6%	12%
stainless steel	6%	12%
cast iron	6%	6%
aluminum	6%	12%
zinc alloys	6%	12%
copper	6%	12%
brass	6%	6%

pressure and flow rates					
cut diameter (mm)	cut diameter (in)	flow rate (L/min)	flow rate (gal/min)	pressure (bar)	pressure (psi)
6–12	.25–.468	15–20	55–75	>10	>150
12–16	.468–.625	20–40	75–150	>8	>120
16–20	.625–.781	30–50	115–190	>7	>100
20–32	.781–1.25	40–75	150–285	>5	>75
32–50	1.25–2.0	65–250	245–950	>4	>50
50–100	2.0–4.0	175–350	660–1325	>3	>40

Basic Principle

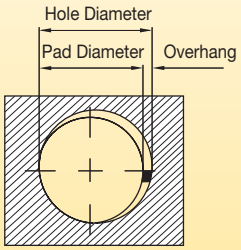
The Kennametal padded reaming tools follow two basic rules. The result, perfectly cylindrical bores with exceptional straightness and superior surface finishes combined with a bore diameter tolerance held to microns:

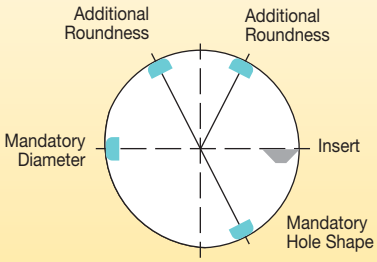
1. A SINGLE-POINT BORING TOOL SUPPORTED BY BEARING PADS, FLOATING ON A COOLANT FILM.
2. A TOOL MUST DEFLECT ONTO THE PADS, ON ENTERING THE HOLE, IN ORDER TO OBTAIN THE CORRECT SIZE.



Each padded reamer hosts a selection of guide pads that are positioned to resist the cutting forces created during machining. A minimum of two guide pads are necessary guiding the reamer in the predrilled hole.

The lubricant, in the form of coolant, gets between the pad and component surface, resulting in frictionless stability during cutting.





Guide pads are ground slightly smaller than the targeted diameter, this allows for blade/insert wear. Most common is a 10 µm overhang but can vary depending on the material to be cut.

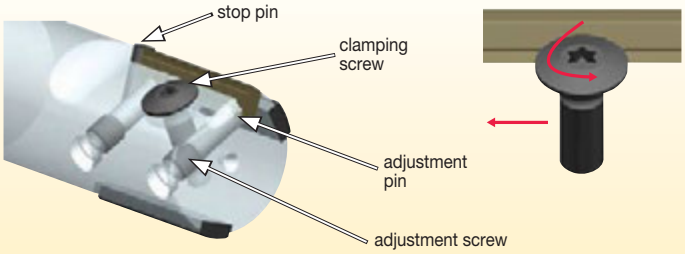
As padded reamers are specifically ground, relative to diameter and tolerance, guide pads are not flexible or adjustable. The pad below the insert ensures hole roundness while the pad opposite the insert defines the bore diameter. Each further pad improves the roundness, straightness, and bridges interruptions within the bore.

These carbide, cermet, PCD, and ceramic guide pads are selected and brazed or bonded to the body depending on coolant availability/type and abrasiveness of the material to be cut. Especially with high L/D ratio tooling (e.g., cam and crank boring bars), bonding of guide pads offers higher precision due to less thermal influence to the steel base body.

● first choice ○ alternate choice

material	P	M	K	N	S	H	MQL
carbide	●	○	●	●		○	○
cermet	●	○	●			○	●
PCD			○		●		●

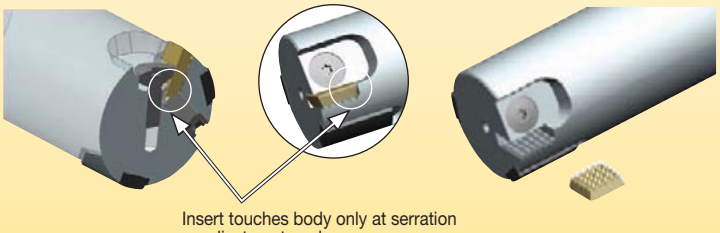
RIR Clamping



RIR reaming inserts are clamped by a single screw to avoid weakening of the pocket seat against common clamping wedges. This clamp screw has a left hand thread to move and securely hold the blade against the stop pin. The stop pin ensures correct advancement of cutting insert to guiding pad.

Like other types of padded reamers using rectangular reaming inserts, two adjustment screws and wedges are required to adjust diameter and back taper accurately. Therefore, RIR is the preferred solution for diameters below RIQ range.

RIQ Clamping



There is no need to adjust back taper as this is already predefined by the serrations. Only the overhang of the cutting edge, relative to the guide pads, needs to be adjusted.

The right-hand clamp screw locks the insert securely onto the high-precision serration. The three cutting edges that are not in use are completely protected by the body while not touching them. All four cutting edges of full-face CBN and PCD inserts can be completely used without the danger of accidently damaging one of them.

The special form of the clamp screw provides the highest clamping forces enabling less loss of diameter by bedding in effects than known on finger-clamp systems

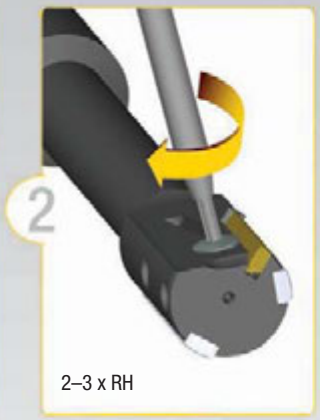
The proprietary adjustment wedge prevents any unpredictable rotation. This avoids errors during setup that cause tool damages.

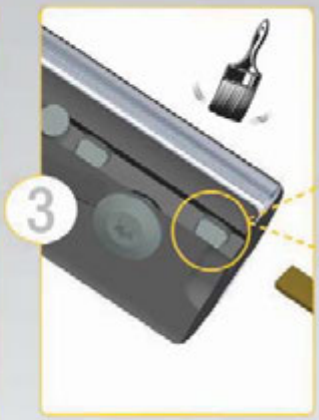
Adjustment Pin and Screw

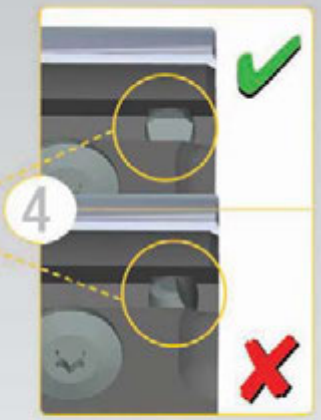


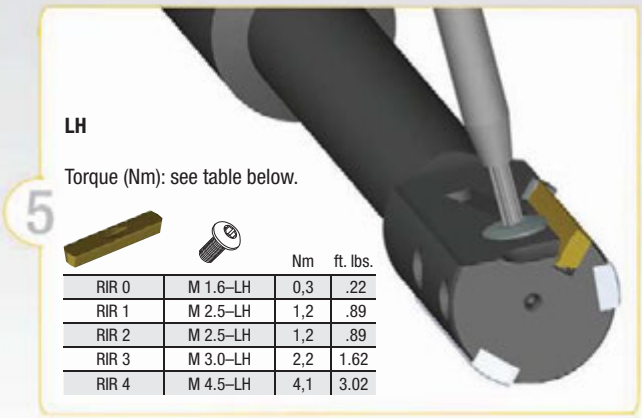
RIR Tooling Setup



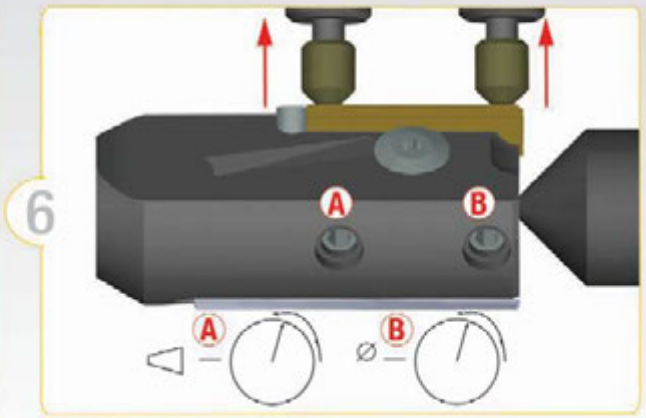








		Nm	ft. lbs.
RIR 0	M 1.6–LH	0,3	.22
RIR 1	M 2.5–LH	1,2	.89
RIR 2	M 2.5–LH	1,2	.89
RIR 3	M 3.0–LH	2,2	1.62
RIR 4	M 4.5–LH	4,1	3.02

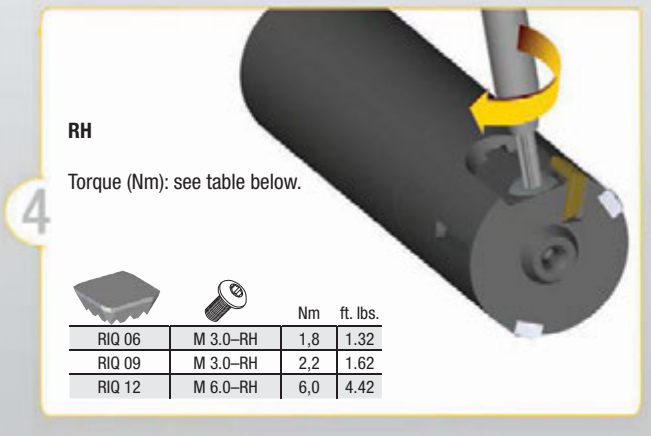


RIQ Tooling Setup

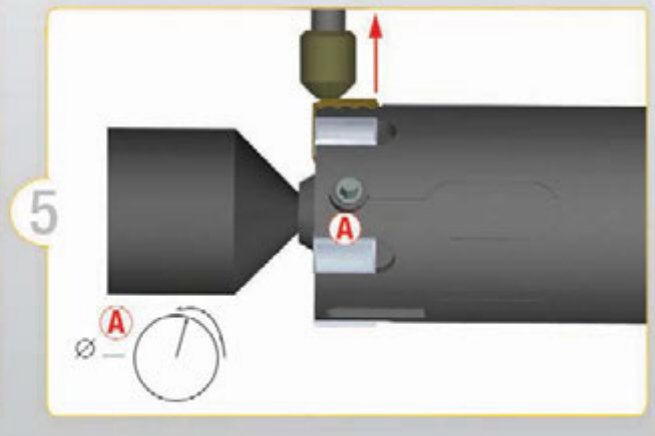






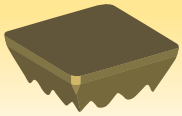


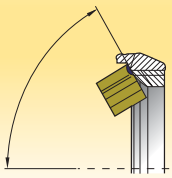
		Nm	ft. lbs.
RIQ 06	M 3.0–RH	1,8	1.32
RIQ 09	M 3.0–RH	2,2	1.62
RIQ 12	M 6.0–RH	6,0	4.42

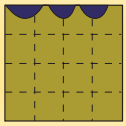


Valve Seat Tools • RIQ™ Quattro Cut™ Based Tooling

RIQ technology enables bypassing any angular adjustment of the insert and provides up to 12 cutting edges.







- Causing in three wear areas per edge.
- Resulting into 12 usable cutting edges per insert.

Valve Seat Tools • Machining Center Solutions

RIQ valve seat tooling with integrated hydraulic chuck to clamp multiflute RMS™ or RIR™ guide pad reamer.

Machining Center • Integrated Hydraulic Chuck

RMS Multiflute Reamer
for regular runout accuracy of valve seat to value guide demands



RIR Guide Pad Reamer
for highest requests regarding valve guide roundness and cylindricity



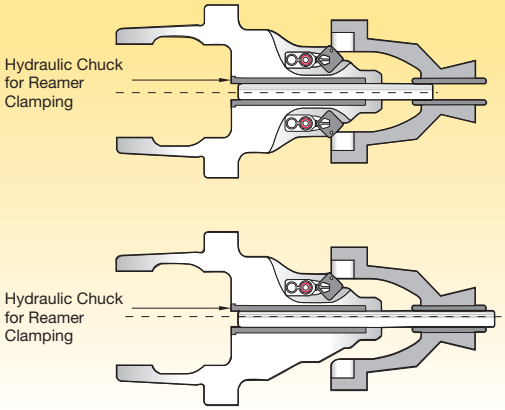
Machining Center Process • All Angles Formed to Finish Specifications in TWO Passes

Process A (Preferred)
Tool 1 • Semi-Finish:
- Finish of secondary angles.
- Semi-finish of primary angles.
- Create pilot bore (short version of RMS or RIR reamer).

Tool 2 • Finish:
- Finish of primary angles.
- Finish of guide bore (long version of RMS or RIR reamer).

Process B (Alternate)
Tool 1 • Finish Valve Seat:
- Finish of primary and secondary angles.
- Create pilot bore (short version of RMS or RIR reamer).

Tool 2 • Finish Valve Guide:
- Finish of guide bore (long version of RMS or RIR reamer).





Valve Seat Tools • Transfer Line Solutions

RIQ valve seat tooling with carbide bushing guiding RMS or RIR reamer machining the valve guide on transfer lines.

Transfer Line • Integrated Carbide Bushing

Multiflute Reamer RMS
for regular runout accuracy of valve seat to value guide demands



RIR Guide Pad Reamer
for highest requests regarding valve guide roundness and cylindricity

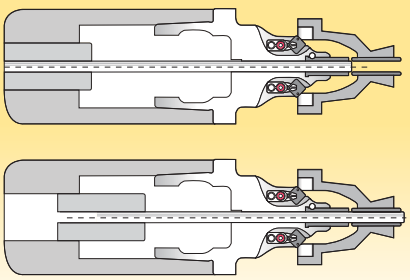


Transfer Line Process • All Angles Formed to Finish Specifications in TWO Passes/ONE Pass

Process A (Preferred)
Tool 1 • Semi-Finish:
- Semi-finish of secondary angles.
- Semi-finish of primary angles.

Tool 2 • Finish:
- Finish of primary angles.
- Finish of secondary angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).

Process B (Alternate)
Tool 1 • Semi-Finish and Finish Combined:
- Finish of primary and secondary seat angles.
- Finish of guide bore with feed out multiflute or guide pad reamer (squirt-through type).





Fine Boring Application Sheet

Feature tolerances, surface finishes, and geometric tolerances have to be content of the workpiece drawing

Q-Number:		**Date:**	
Customer:		**Sales eng.:**	
Location:		**Application eng.:**	
Contact person:		**Competitors:**	

General

Status:	❒ Launch	❒ Running progress	❒ Process change	
Volume:		Holes/Year	**Similar tool:**	

Workpiece

Operation name:						
Diameters/features to be machined	**1:**	**2:**	**3:**	**4:**	**5:**	**6:**

Tolerance target:	❒ Upper third ❒ Middle third (e.g., if CpK is needed) ❒ Lower third (e.g., if Go/NoGo Gage)		**Interrupted cut:**	❒ Yes	❒ No
			Facing included:	❒ Yes	❒ No
			Max lead length:		
CpK-value:	❒ Yes	❒ No	**Hole type:**	❒ Blind	❒ Through
Workpiece material:			**Hardness/ strength:**		(N/mm², HRC,...)
Premachining: (detailed description including stock amounts)					

Machine/Fixture/Hole Gaging

Machine type:	❒ Machining center	❒ Transfer line	❒ Lathe	❒ Special purpose machine		
Machine name:						
Tool:	❒ Rotating	❒ Stationary	**Spindle connection:**			(HSK80A, DV50, BT40,...)
Spindle orientation:	❒ Horizontal	❒ Vertical	**Number of spindles:**			(for same operation on same machine)
Workpiece clamping:	❒ Rigid	❒ Weak	**M/C spindle adjustment:**	❒ Radial runout	❒ Axial runout	❒ No
Setting device available: (only for adjustable tools)	❒ Yes:		Description	❒ No		
Gauging method:	❒ Go/NoGo-gage	❒ Air or electronic gage	❒ Other			
Coolant type	❒ Soluble	❒ Semi-synthetic	❒ Synthetic	❒ MQL		
Coolant supply:	❒ Internal	❒ External	❒ None			

Coolant pressure:	bar	**Coolant concentration:**		%
		Coolant flow:		l/min

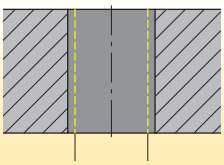
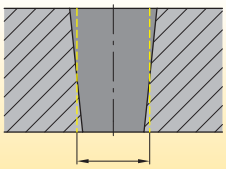
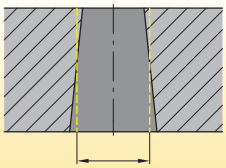
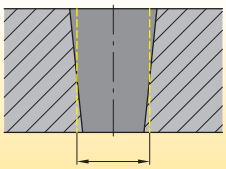
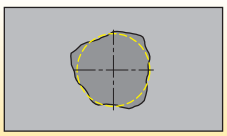
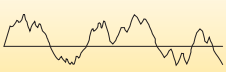
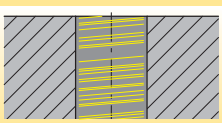
Additional Information: (e.g. interferences, weight or dimensional restrictions, customer reason for change, known issues,...)

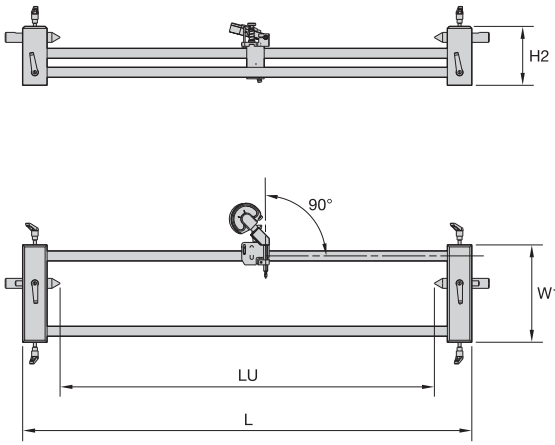
Quotation Processing Only with Workpiece Drawing and Filled Out Form

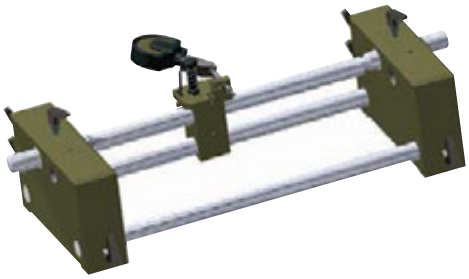
Reaming Allowances for Single Blade Reaming

		reaming allowance in diameter					
		mm			in		
mm	in	min	middle	max	min	middle	max
6,00–9,59	.189–.378	0,10	0,15	0,25	.004	.006	.010
9,60–15,00	.378–.591	0,15	0,20	0,30	.006	.008	.012
15,00–20,00	.591–.787	0,15	0,25	0,35	.006	.010	.014
20,00–50,00	.787–1.969	0,20	0,30	0,40	.008	.012	.016

Causes of and Remedies for Reaming Problems

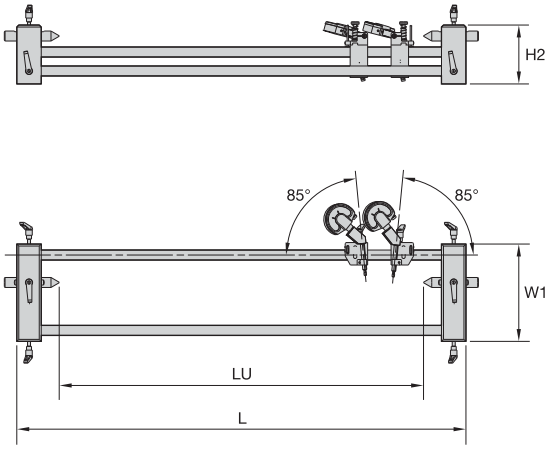
Problem		Cause	Possible Remedy
Drill diameter too large	 d_{Nom}	1. Reaming tool running out-of-center. 2. Concentricity of pilot hole and ream machining unsatisfactory. 3. Built-up edge. 4. Unsuitable cooling lubricant. 5. Reaming tool Ø too large.	• Use SIF™ equalizing adapter. • Re-align, use floating head. • Change cooling lubricant. • Change cutting speed. • Measure reamers and send for repairs.
Drill diameter too small	 d_{Nom}	1. Reamer worn. 2. Unsuitable cooling lubricant. 3. Reaming allowance too small.	• Replace and refit tool. • Change cooling lubricant. • Increase reaming allowance.
Conical drill profile wider towards drill runout	 d_{Nom}	1. Concentricity of pilot hole and reaming unsatisfactory. 2. Positioning accuracy of pilot hole to reaming.	• Re-align, use SIF equalizing adapter. • Correct positioning accuracy.
Conical drill profile wider at drill entry point	 d_{Nom}	1. Concentricity of pilot hole and reaming unsatisfactory. 2. Reaming tool skim cutting with ledger.	• Re-align, use floating head. • Securely clamp reaming tool axially.
Hole out-of-center and/or showing chatter marks		1. Reaming tool running out-of-center. 2. Slanted cutting surface/asymmetrical cutting. 3. Workpiece twisted.	• Use SIF equalizing adapter. • Flatten surface before drilling or reaming. • Take the direction of impact into account when clamping the workpiece.
Surface quality does not meet specification		1. Tool cutters worn. 2. Reaming tool running out-of-center. 3. Incorrect technology data (cutting parameters). 4. Inadequate chip evacuation.	• Replace and refit tool. • Use SIF equalizing adapter. • Change cutting parameters in machining range. • Optimize coolant supply; increase coolant pressure and volume.
Feed grooves		1. Built-up edge.	• Change cooling lubricant. • Change cutting speed.

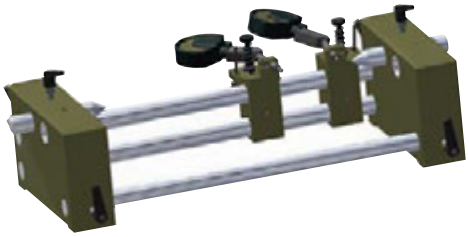




Setting Fixture • One Gage

		H2		L		LU		W1	
order number	catalog number	mm	in	mm	in	mm	in	mm	in
5025599	SF300M1RS	118	4.646	450	17.717	300	11.811	195	7.677
5025670	SF750M1RS	118	4.646	900	35.443	750	29.527	195	7.677





Setting Fixture • Two Gage

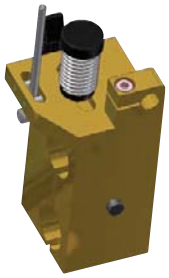
		H2		L		LU		W1	
order number	catalog number	mm	in	mm	in	mm	in	mm	in
5025597	SF300M1LA1RA	118	4.646	450	17.717	300	11.811	195	7.677
5025598	SF750M1LA1RA	118	4.646	900	35.443	750	29.527	195	7.677



Left Hand Right Hand

Axial Slide • 90° with Angle Fine Adjustment

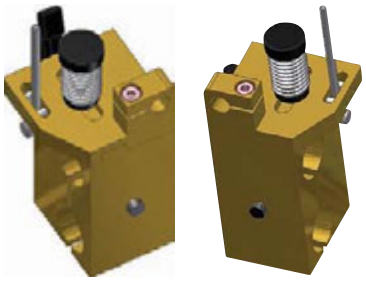
order number	catalog number
5025672	SFSLLS
5025671	SFSLRS



SM Screw Sets for Slides

Axial Slides

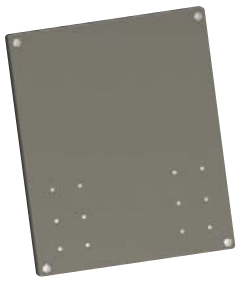
order number	catalog number
5025683	SFSLSS



Left Hand Right Hand

Axial Slide • 85°

order number	catalog number
5025674	SFSLLA
5025673	SFSLRA



Base Plate for Vertical Setup

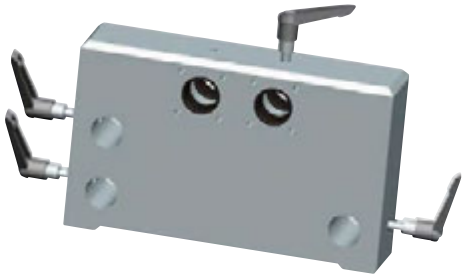
order number	catalog number
5025680	SFVB



SM Clamp Handle

Clamp Handle for End Blocks and Axial Slides

order number	catalog number
5025682	SFEBCH



SM End Block

End Block Including Screws

order number	catalog number
5025681	SFEBS



Contact Pins Set

order number	catalog number
5025686	SFCPS



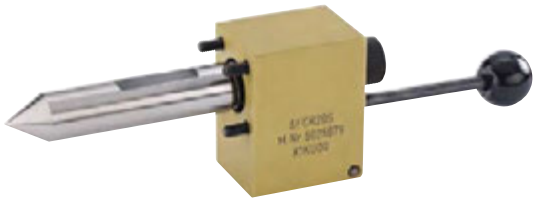
Support Bars (450mm and 900mm)

order number	catalog number
5025684	SFSB450
5025685	SFSB900



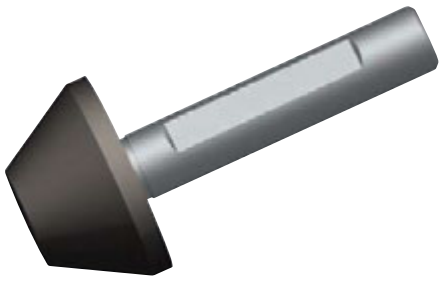
Gage Set

order number	catalog number
5025675	SFMGS



Spring-Loaded Center Ø 20mm

order number	catalog number
5025679	SFCR20S



HSK Center

order number	catalog number
5025677	SFCRHSK3263
5025678	SFCRHSK63100



Standard Center Ø 20mm

order number	catalog number
5025676	SFCR20

Romicron™ Fine-Boring System

Primary Application

The Romicron tooling portfolio has a diameter range of 4–213mm (.1575-8.3858") and reduces setup time and scrap rates while increasing overall equipment efficiency. This premium fine-boring system can be used in most materials in metalcutting applications by applying the latest Kennametal standard ISO turning inserts. Its closed loop boring (CLB) provides a unique opportunity to automate insert wear compensation with minimal investment due to the precise 2 µm diameter adjustment per increment.

The Romicron system should be used where extremely close tolerances are critical to the overall process or where fast and easy diameter adjustments are needed.



Features and Benefits

Higher Productivity and Profitability

- Reduce scrap rates and setup time with backlash-free adjustment.
- Diameter adjustment can be done inside the machine, avoiding routine insert changes in the setup room.
- Avoid time-consuming control cuts or sister tooling.
- No training or experience needed for use, resulting in less stressful adjustments.

Versatility

- Retrofit existing machines to automated wear compensation using standard CLB pin. No electronic equipment needed, except hole measuring device.
- AVS00B-SVS6B prebalanced heads are preferred solution for diameter 25–139mm (.984–5.472").
- SVUBB1 tooling for high-speed applications 4–16,5mm (.157–.650").
- Broad diameter range of 6–100mm (.236–3.937") using SVUBB2 tooling.
- SVU65 and SVU92 for larger diameters of 71–213mm (2.79–8.386").

100% mechanical system with micron adjustment by hand or fully automated.



Ease of Adjustment

- No tools are needed so adjustment is done on the machine tool. Eliminates need to remove and return boring head to the presetting area, increasing productivity.
- SEE, FEEL, and HEAR the adjustment mechanism for fail-safe size control.

Customization

- Engineered solutions available for multistep or high length-to-diameter tooling.
- Anti-chatter devices and various non-standard machine spindle coupling sizes available.



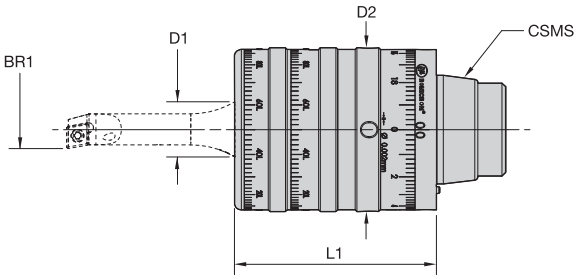
Boring range, coolant capacity, and maximum RPM features for all Romicron boring heads.

	head size	bore range
• 25,000 RPM max. • Balanceable. • 1,050 psi coolant capacity. • 1,050 psi/70 bar coolant capacity. • Movable zero reference.	**SVUBB1**	.157" 4mm — .650" 16,5mm
• 10,000 RPM max. • Balanceable. • 1,050 psi coolant capacity. • 1,050 psi/70 bar coolant capacity. • Movable zero reference.	**SVUBB2**	.236" 6mm — 1.00" 25,5mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS00B**	.984" 25mm — 1.26" 32mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS0B**	1.24" 31,5mm — 1.67" 42,5mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS1B**	1.65" 42mm — 2.08" 53mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS2B**	2.04" 52mm — 2.59" 66mm
• 20,000 RPM. • Prebalanced. • 1740 psi/120 bar coolant capacity.	**AVS3B**	2.55" 65mm — 3.11" 79mm
• 4,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS4B**	3.07" 78mm — 3.85" 98mm
• 4,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS5B**	3.81" 97mm — 4.60" 117mm
• 3,500 RPM. • Prebalanced. • 300 psi/20 bar coolant capacity.	**SVS6B**	4.56" 116mm — 5.47" 139mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU65**	2.79" 71mm — 4.37" 111mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU92**	3.97" 101mm — 8.38" 213mm
• 6,000 RPM. • Balanceable. • 300 psi/20 bar coolant capacity. • Movable zero reference.	**SVU120**	5.47" 139mm — 12.83" 326mm

range mm	range in	order number	catalog number	content	
4,00–16,50	.1575–.6496	**4046076**	**SVUBB1KR32KIT**	KR32SVUBB1060M KRBB10FADRS102C KRBB10SCLDRS4060C KRBB10SCFPR06085C KRBB10SCFPR06110C KRBB10SCFPR06135C	
6,00–25,50	.2362–1.0040	**4046077**	**SVUBB2KR32KITD025M**	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	
6,00–25,50	.2362–1.0040	**4046078**	**SVUBB2KR50KITD025M**	KRBB16SCFPR06220A KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A	
6,00–100,00	.2362–3.9370	**4052608**	**SVUBB2KR32KITD100M**	KR32SVUBB2085M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A	
6,00–100,00	.2362–3.9370	**4052609**	**SVUBB2KR50KITD100M**	KR50SVUBB2075M KRBB16SCLDRS4060A KRBB16SCFPR06085A KRBB16SCFPR06110A KRBB16SCFPR06135A KRBB16SCFPR06160A KRBB16SCFPR06190A KRBB16SCFPR06220A KRDEA046AM KRDE025010M KRDE033010M KRDEA051AM KRDE043010M KRDEA012AM KRDE065012M KRCW032A	

- For correct balance ring settings, see page K100–K101.
- Order boring bar separately; see page K78.
- Order taper shank seperately; see page K91.





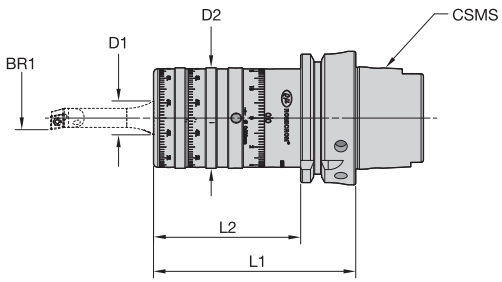


SVU BB1 • KR Back End with CLB Capability

		BR1 bore range			D1		D2		L1					
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	mm	in	Torx wrench	hex wrench	kg	lbs
4054737	KR32SVUBB1060MCLB	4,000-16,500	0.1575-0.6496	KR32	10,0	.39	46,5	1.83	58,6	2.31	KT8	170.000	0,94	2.07

- For correct balance ring settings, see page K100–K101.
- Order boring bar separately; see page K78.





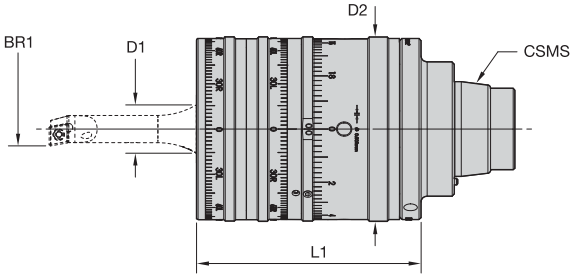


SVU BB1 • HSK Back End with CLB Capability

		BR1 bore range			D1		D2		L1		L2				
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	mm	in	mm	in	Torx wrench	radial adjusting screw	kg	lbs
4054734	HSK63ASVUBB1095MCLB	4,000-16,500	0.1575-0.6496	HSK63A	10,0	.39	46,5	1.83	95,5	3.76	69,4	2.73	KT15	191.282	1,45	3.20

- For correct balance ring settings, see page K102–K107.
- Order boring bar separately; see page K79.
- Order taper shank separately; see page K91.





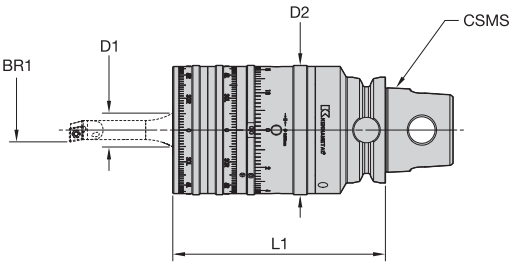


SVU BB2 • KR Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	Torx wrench	kg	lbs
4054738	KR32SVUBB2085MCLB	6,000-25,500	0.2362-1.0039	KR32	16,0	.63	60,0	2.36	85,0	3.35	KT27	1,81	3.99
4054739	KR50SVUBB2075MCLB	6,000-25,500	0.2362-1.0039	KR50	16,0	.63	60,0	2.36	75,0	2.95	KT27	1,61	3.55

- For correct balance ring settings, see page K102–K107.
- Order boring bar separately; see page K79.





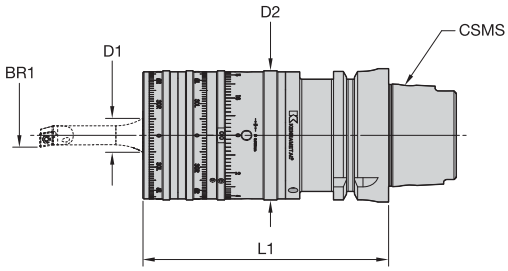


SVU BB2 • KM™ Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	Torx wrench	kg	lbs
4054736	KM50TSSVUBB2100MCLB	6,000-25,500	0.2362-1.0039	KM50TS	16,0	.63	60,0	2.36	100,0	3.94	KT27	1,91	4.21

- For correct balance ring settings, see page K102–K107.
- Order boring bar separately; see page K79.



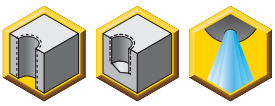


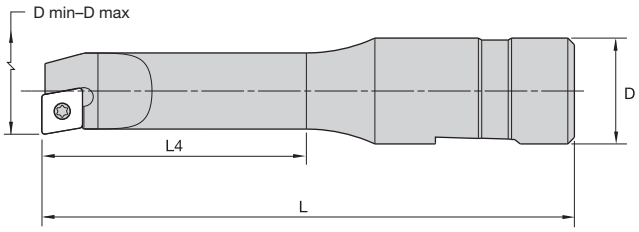


SVU BB2 • HSK Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	Torx wrench	kg	lbs
4054735	HSK63ASVUBB2116MCLB	6,000-25,500	0.2362-1.0039	HSK63A	16,0	.63	60,0	2.36	116,0	4.57	KT27	2,52	5.56
4054733	HSK100ASVUBB2124MCLB	6,000-25,500	0.2362-1.0039	HSK100A	16,0	.63	60,0	2.36	124,4	4.90	KT27	4,21	9.28

- Order inserts separately.





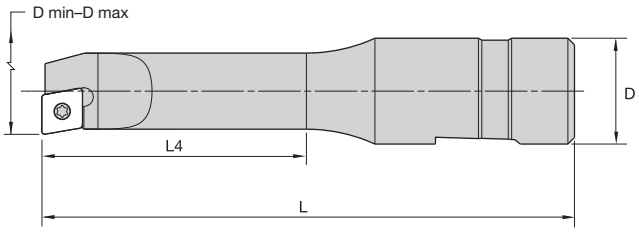


SVU BB1 • Universal Boring Bars

order number	catalog number	D min mm	D min in	D max mm	D max in	D mm	D in	L mm	L in	L4 mm	L4 in	gage insert	insert screw	Torx wrench	kg	lbs
2202438	KRBB10FABDRS204C	4,00	.158	7,00	.276	10	.394	57	2.23	14	.56	–	–	–	0,05	.11
2202439	KRBB10SCLDR4060C	6,00	.236	9,00	.354	10	.394	53	2.09	22	.85	CD..S4T004	MS1454	FT5	0,05	.11
2202440	KRBB10SCFPR06085C	8,50	.335	11,50	.453	10	.394	58	2.28	31	1.20	CP..060204	MS2005	FT7	0,08	.17
2202450	KRBB10SCFPR06110C	11,00	.433	14,00	.551	10	.394	60	2.36	33	1.28	CP..060204	MS2005	FT7	0,08	.18
2202451	KRBB10SCFPR06135C	13,50	.532	16,50	.650	10	.394	65	2.56	39	1.52	CP..060204	MS1153	FT7	0,09	.20

NOTE: Carbide shank and customized boring bars are available upon request to meet your specific requirements.
Please contact Kennametal for a design and quotation.

• Order inserts separately.

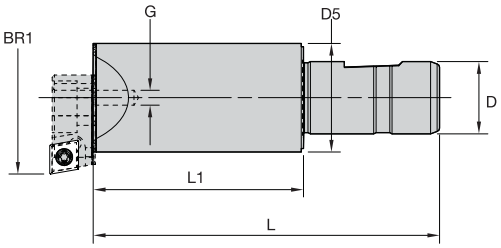




SVU BB2 • Universal Boring Bars

order number	catalog number	D min mm	D min in	D max mm	D max in	D mm	D in	L mm	L in	L4 mm	L4 in	gage insert	insert screw	Torx wrench	kg	lbs
1522063	KRBB16SCFPR06085A	8,50	.335	12,00	.472	16	.630	68	2.70	26	1.04	CP..060204	MS1153	FT7	0,06	.14
1522062	KRBB16SCLDRS406A	6,00	.236	9,50	.374	16	.630	62	2.44	20	.80	CD..S4T004	MS1454	FT6	0,06	.13
1522064	KRBB16SCFPR0611A	11,00	.433	14,50	.571	16	.630	78	3.09	36	1.42	CP..060204	MS1153	FT7	0,08	.17
1522068	KRBB16SCFPR06135A	13,50	.532	17,00	.669	16	.630	80	3.17	40	1.57	CP..060204	MS1153	FT7	0,09	.20
1522069	KRBB16SCFPR0616A	16,00	.630	19,50	.768	16	.630	90	3.54	55	2.17	CP..060204	MS1153	FT7	0,11	.25
1522070	KRBB16SCFPR0619A	19,00	.748	22,50	.886	16	.630	90	3.54	60	2.36	CP..060204	MS1153	FT7	0,12	.27
1522071	KRBB16SCFPR0622A	22,00	.866	25,50	1.004	16	.630	90	3.54	60	2.36	CP..060204	MS1153	FT7	0,15	.32

NOTE: Carbide shank and customized boring bars are available upon request to meet your specific requirements.
Please contact Kennametal for a design and quotation.

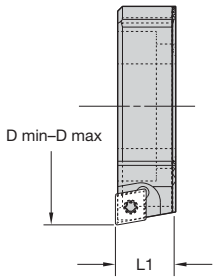




SVU BB2 • Universal Adapters

order number	catalog number	BR1 bore range mm	BR1 bore range in	D mm	D in	D5 mm	D5 in	G	L mm	L in	L1 mm	L1 in	kg	lbs
2541200	KRDEA046AM	25,500-43,500	1.0039-1.7126	16	.63	24,0	.94	M4X0.70	76,4	3.01	46,4	1.83	0,2	.50
2541201	KRDEA051AM	43,000-65,000	1.6929-2.5591	16	.63	25,0	.98	M6X1.00	81,7	3.22	51,7	2.04	0,2	.52
2541202	KRDEA012AM	65,000-100,000	2.5591-3.9371	16	.63	63,5	2.50	M8X1.25	42,5	1.67	12,5	.49	0,2	.42

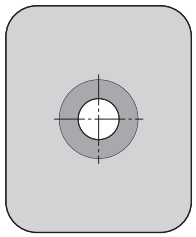
- Order inserts separately.

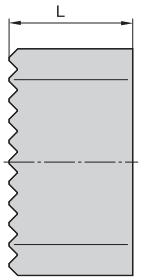


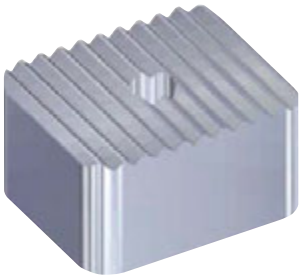


SVU BB2 • Universal Diameter Extenders

		D min		D max		L1						
order number	catalog number	mm	in	mm	in	mm	in	gage insert	insert screw	Torx wrench	kg	lbs
2541213	**KRDE025010M**	25,50	1.004	33,50	1.319	10,0	.39	CP..0602../CP..215...	**MS1153**	**FT7**	0,02	.04
2541214	**KRDE033010M**	33,50	1.319	43,50	1.713	10,0	.39	CP..0602../CP..215...	**MS1153**	**FT7**	0,02	.05
2541215	**KRDE043010M**	43,00	1.693	65,00	2.559	10,0	.39	CP..0602../CP..215...	**MS1153**	**FT7**	0,03	.07
2541216	**KRDE065012M**	65,00	2.559	100,00	3.937	12,0	.47	CP..0602../CP..215...	**MS1153**	**FT7**	0,05	.10







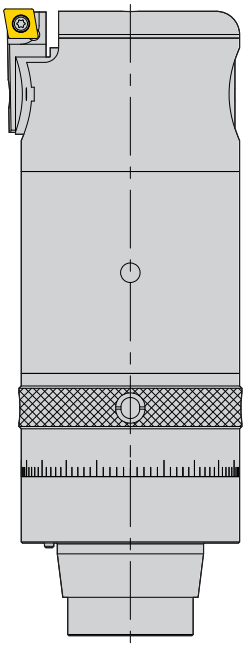
SVU BB2 • Counterweight

		L			
order number	catalog number	mm	in	kg	lbs
2541217	**KRCW032A**	12,0	.47	0,04	.08

NOTE: Counterweight must be used with KRDEA012M adapter and KRDEA065012M extender.

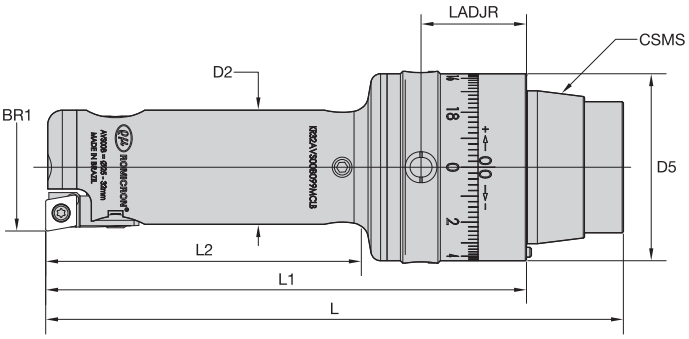
AVS and SVS Systems • Tooling Tree

cartridge range	cartridge size	bore range	head size
.984–1.083" (25–27,5mm)	1Y	.984–1.260" (25–32mm)	AVS00B
1.073–1.171" (27,25–29,75mm)	2Y		
1.161–1.260" (29,5–32mm)	3Y		
1.240–1.398" (31,5–35,5mm)	1X	1.240–1.673" (31,5–42,5mm)	AVS0B
1.378–1.535" (35–39mm)	2X		
1.516–1.673" (38,5–42,5mm)	3X		
1.654–1.811" (42–46mm)	1X	1.654–2.087" (42–53mm)	AVS1B
1.791–1.949" (45,5–49,5mm)	2X		
1.929–2.087" (49–53mm)	3X		
2.047–2.244" (52–57mm)	1W	2.047–2.598" (52–66mm)	AVS2B
2.224–2.421" (56,5–61,5mm)	2W		
2.402–2.598" (61–66mm)	3W		
2.559–2.756" (65–70mm)	1W	2.559–3.110" (65–79mm)	AVS3B
2.736–2.933" (69,5–74,5mm)	2W		
2.913–3.110" (74–79mm)	3W		



- Order cartridges separately.
- Order taper shank separately.





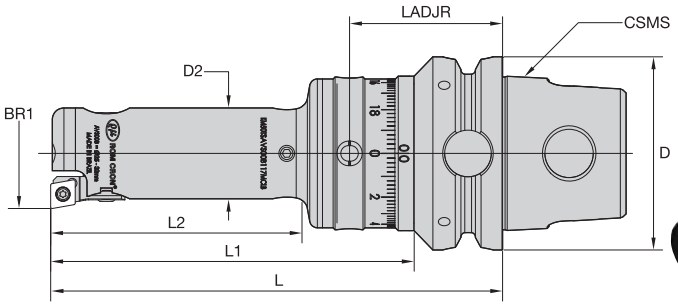


AVS • KR Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	D5 mm	D5 in	L mm	L in	L1 mm	L1 in	L2 mm	L2 in	LADJR mm	LADJR in	kg	lbs
5124812	KR32AVS00B099MCLB	25,000-32,000	0.9840-1.2600	KR32	23,5	.93	39,5	1.56	119,0	4.68	99,0	3.90	64,0	2.50	21,7	.86	0,6	1.20
5124814	KR32AVS0B116MCLB	31,500-42,500	1.2400-1.6730	KR32	30,0	1.18	39,5	1.55	136,0	5.36	116,0	4.57	85,0	3.35	21,7	.86	0,8	1.81
5124816	KR32AVS1B100MCLB	42,000-53,000	1.6530-2.0860	KR32	38,5	1.52	39,5	1.55	120,0	4.73	100,0	3.94	100,0	3.94	21,7	.85	1,0	2.13
5124818	KR32AVS2B115MCLB	52,000-66,000	2.0470-2.5980	KR32	47,0	1.85	48,0	1.89	135,0	5.32	115,0	4.53	115,0	4.53	29,2	1.15	1,5	3.27
5124820	KR32AVS3B115MCLB	65,000-79,000	2.5590-3.1100	KR32	47,0	1.85	48,0	1.89	135,0	5.32	115,0	4.53	115,0	4.53	29,2	1.15	1,5	3.36

- Order cartridges separately.





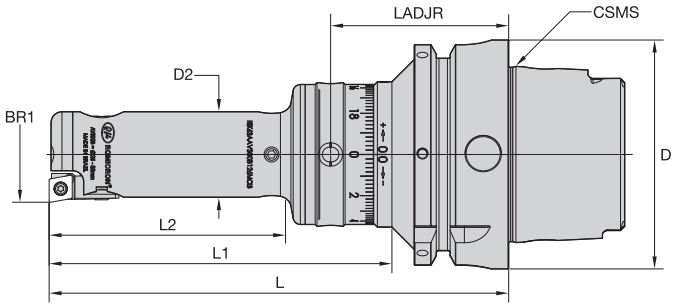


AVS • KM™ Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D mm	D in	D2 mm	D2 in	L mm	L in	L1 mm	L1 in	L2 mm	L2 in	LADJR mm	LADJR in	kg	lbs
5124801	KM40TSAVS00B111MCLB	25.000-32.000	0.9840-1.2600	KM40TS	40,000	1.5730	23,5	.93	136,0	5.36	111,0	4.38	63,5	2.50	34,0	1.34	0,6	1.36
5124802	KM40TSAVS0B128MCLB	31.500-42.500	1.2400-1.6730	KM40TS	40,000	1.5730	30,0	1.18	153,0	6.04	128,0	5.06	—	—	34,0	1.34	0,8	1.82
5124803	KM40TSAVS1B112MCLB	42.000-53.000	1.6530-2.0860	KM40TS	40,000	1.5730	38,5	1.52	137,0	5.40	112,0	4.42	112,0	4.42	34,0	1.34	1,0	2.18
5124804	KM40TSAVS2B127MCLB	52.000-66.000	2.0470-2.5980	KM40TS	40,000	1.5730	47,0	1.85	152,0	6.00	127,0	5.01	127,0	5.01	41,3	1.63	1,6	3.41
5124805	KM50TSAVS00B117MCLB	25.000-32.000	0.9840-1.2600	KM50TS	50,000	1.9670	23,5	.93	149,0	5.86	117,0	4.60	63,5	2.50	39,7	1.56	0,8	1.79
5124807	KM50TSAVS0B134MCLB	31.500-42.500	1.2400-1.6730	KM50TS	50,000	1.9670	30,0	1.18	166,0	6.53	134,0	5.27	83,0	3.27	39,7	1.56	1,0	2.25
5124808	KM50TSAVS1B118MCLB	42.000-53.000	1.6530-2.0860	KM50TS	50,000	1.9670	38,5	1.52	150,0	5.90	118,0	4.65	—	—	39,6	1.56	1,2	2.57
5124809	KM50TSAVS2B128MCLB	52.000-66.000	2.0470-2.5980	KM50TS	50,000	1.9670	47,0	1.85	160,0	6.31	128,0	5.05	128,0	5.05	42,3	1.67	1,7	3.67
5124810	KM50TSAVS3B128MCLB	65.000-79.000	2.5590-3.1100	KM50TS	50,000	1.9670	47,0	1.85	160,0	6.31	128,0	5.05	128,0	5.05	42,3	1.67	1,7	3.82
5124811	KM63TSAVS3B130MCLB	65.000-79.000	2.5590-3.1100	KM63TS	63,000	2.4780	47,0	1.85	170,0	6.70	130,0	5.13	130,0	5.13	44,3	1.74	2,0	4.46

- Order cartridges separately.



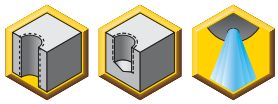


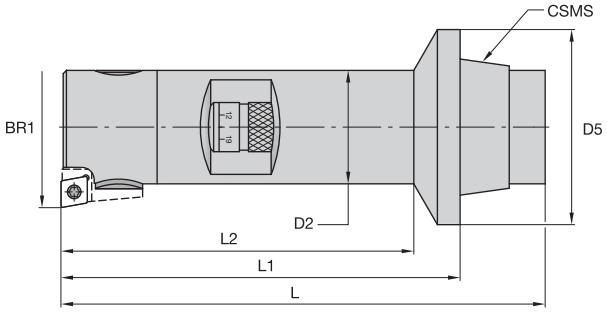


AVS • HSK Back End with CLB Capability

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D mm	D in	D2 mm	D2 in	L mm	L in	L1 mm	L1 in	L2 mm	L2 in	LADJR mm	LADJR in	kg	lbs
5124576	**HSK63AAVS00B126MCLB**	25.000-32.000	0.9840-1.2600	HSK63A	63,000	.2478	23,5	.93	158,0	6.23	126,0	4.97	63,5	2.50	49,0	1.93	1,2	2.71
5124577	**HSK63AAVS0B143MCLB**	31.500-42.500	1.2400-1.6730	HSK63A	63,000	.2478	30,0	1.18	175,0	6.89	143,0	5.64	83,0	3.27	49,0	1.93	1,4	3.17
5124578	**HSK63AAVS1B127MCLB**	42.000-53.000	1.6530-2.0860	HSK63A	63,000	.2478	38,5	1.52	159,0	6.27	127,0	5.02	95,0	3.75	49,0	1.93	1,6	3.53
5124579	**HSK63AAVS2B139MCLB**	52.000-66.000	2.0400-2.5900	HSK63A	63,000	.2478	47,0	1.85	171,0	6.75	139,0	5.47	109,0	4.31	53,5	2.11	2,2	4.73
5124800	**HSK63AAVS3B139MCLB**	65.000-79.000	2.5500-3.1100	HSK63A	63,000	.2478	47,0	1.85	171,0	6.75	139,0	5.47	109,0	4.30	53,5	2.11	2,2	4.85

- Order cartridges separately; see page K86.
- Order taper shank separately; see page K91.





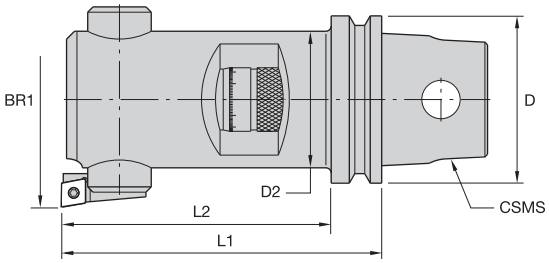


SVS • KR Back End

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	L mm	L in	L1 mm	L1 in	kg	lbs
1192281	**KR50SVS4B094M**	78,000-98,000	3.0709-3.8583	KR50	65,0	2.56	119,0	4.69	94,0	3.70	2,4	5.21
1279787	**KR50SVS5B094M**	97,000-117,000	3.8189-4.6063	KR50	65,0	2.56	119,0	4.69	94,0	3.70	3,0	6.49
1279793	**KR63SVS6B126M**	116,000-139,000	4.5669-5.4724	KR63	85,0	3.35	162,0	6.38	126,0	4.96	5,7	12.63

- Order cartridges separately; see page K86.



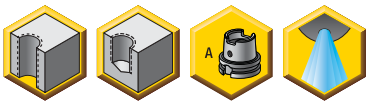


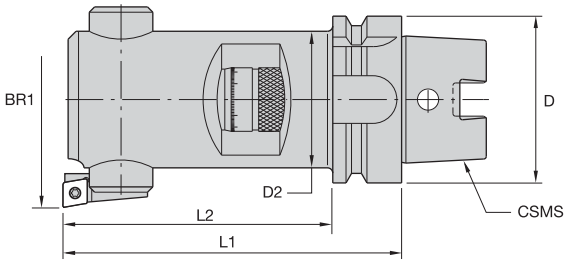


SVS • KM™ Back End

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D mm	D in	D2 mm	D2 in	L1 mm	L1 in	L2 mm	L2 in	kg	lbs
1763375	KM50SVS4B125M	78,000-98,000	3.0710-3.8580	KM50	50,000	1.9685	65,0	2.56	125,0	4.92	110,0	4.33	2,2	4.90
1763378	KM50SVS5B125M	97,000-117,000	3.8190-4.6060	KM50	50,000	1.9685	65,0	2.56	125,0	4.92	110,0	4.33	3,2	7.10
1763376	KM63SVS4B110M	78,000-98,000	3.0710-3.8580	KM63	63,000	2.4803	65,0	2.56	110,0	4.33	92,0	3.62	2,4	5.30
1763379	KM63SVS5B110M	97,000-117,000	3.8190-4.6060	KM63	63,000	2.4803	65,0	2.56	110,0	4.33	92,0	3.62	3,2	7.10
1763382	KM80SVS6B150M	116,000-139,000	4.5670-5.4720	KM80	80,000	3.1496	85,0	3.35	150,0	5.91	128,0	5.04	7,8	17.20

- Order cartridges separately.





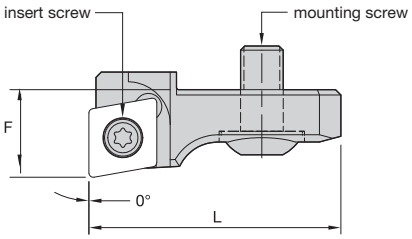


SVS • HSK Back End

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D mm	D in	D2 mm	D2 in	L1 mm	L1 in	L2 mm	L2 in	kg	lbs
1763116	HSK63ASVS4B139M	78,000-98,000	3.0710-3.8580	HSK63A	63,000	2.4803	65,0	2.56	139,0	5.47	113,0	4.45	3,6	8.00
1763118	HSK63ASVS5B139M	97,000-117,000	3.8190-4.6060	HSK63A	63,000	2.4803	65,0	2.56	139,0	5.47	113,0	4.45	5,9	13.00

- Order inserts separately.







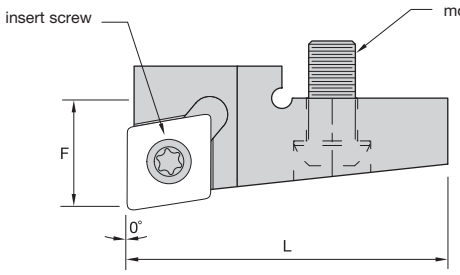
AVS • Cartridges SCF



order number	catalog number	L mm	L in	F mm	F in	gage insert	reference head	cartridge size	mounting screw	Torx wrench	insert screw	Torx wrench	kg	lbs
5124822	**KRCSCFPR061Y**	19,20	.76	4,76	.19	CP..0602../CP..215...	AVS00B	1Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124823	**KRCSCFPR062Y**	19,20	.76	5,88	.23	CP..0602../CP..215...	AVS00B	2Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124824	**KRCSCFPR063Y**	19,20	.76	7,01	.28	CP..0602../CP..215...	AVS00B	3Y	**MS2006**	**FT8**	**MS2005**	**FT7**	0,00	.010
5124825	**KRCSCFPR061X**	23,75	.94	6,46	.25	CP..0602../CP..215...	AVS1B,AVS0B	1X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124826	**KRCSCFPR062X**	23,60	.93	8,21	.32	CP..0602../CP..215...	AVS1B,AVS0B	2X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124827	**KRCSCFPR063X**	23,60	.93	9,96	.39	CP..0602../CP..215...	AVS1B,AVS0B	3X	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020
5124828	**KRCSCFPR061W**	26,60	1.05	6,45	.25	CP..0602../CP..215...	AVS3B1,AVS2B1	1W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.030
5124829	**KRCSCFPR062W**	26,75	1.05	8,70	.34	CP..0602../CP..215...	AVS2B1,AVS3B1	2W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.030
5124850	**KRCSCFPR063W**	26,60	1.05	10,95	.43	CP..0602../CP..215...	AVS3B1,AVS2B1	3W	**MS-1896**	**FT15**	**MS1153**	**FT7**	0,01	.020

- Order inserts separately.



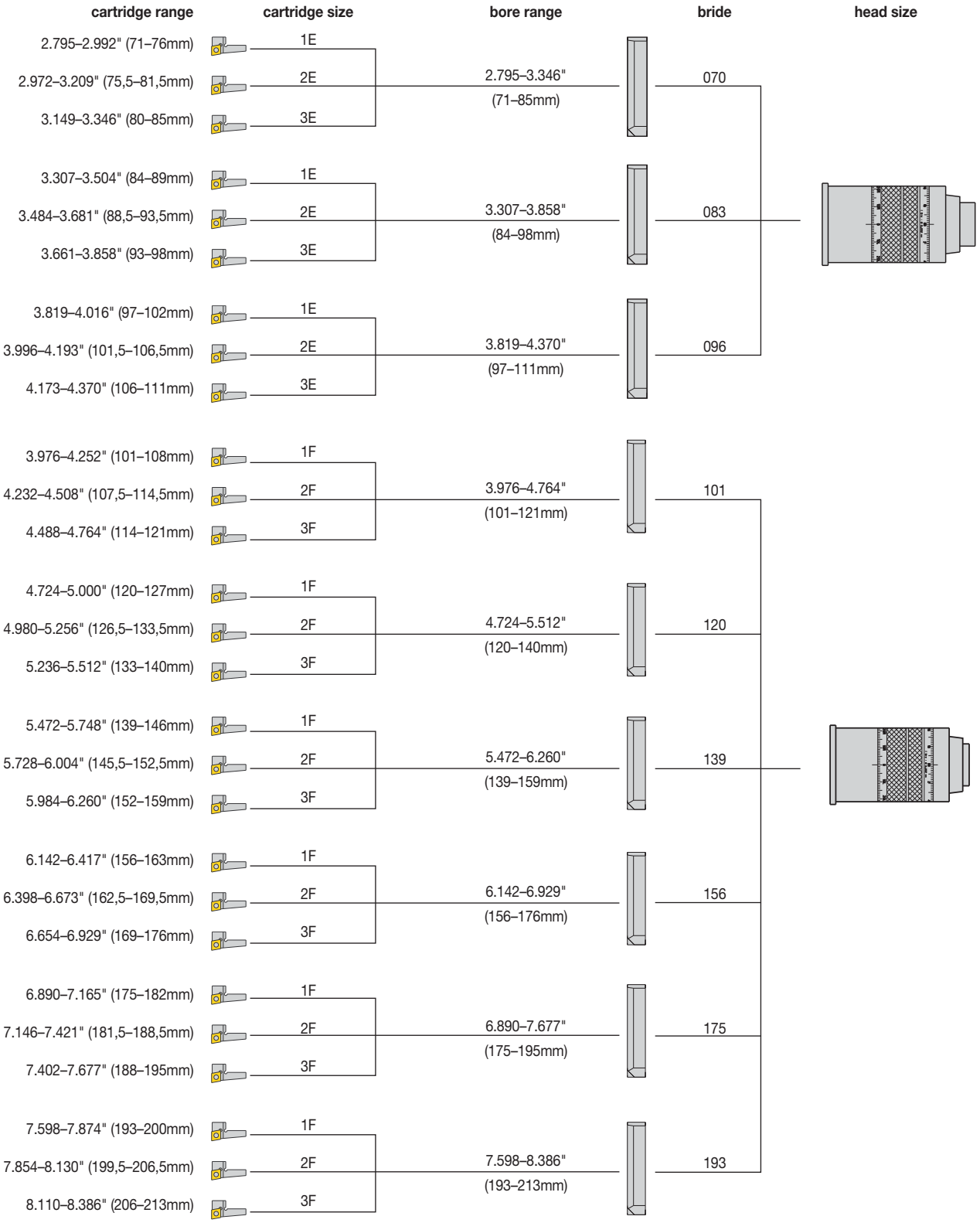




SVS • Cartridges SCF

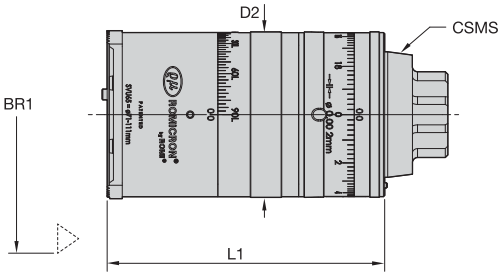
order number	catalog number	L mm	L in	F mm	F in	gage insert	reference head	cartridge size	kg	lbs
1501356	**KRCSCFPR061L**	19,15	.75	4,76	.19	CP..0602../CP..215...	AVS00B	1L.	0,01	.02
1500650	**KRCSCFPR062L**	19,15	.75	5,89	.23	CP..0602../CP..215...	KRMSVS00M50049M,AVS00B	2L.	0,01	.02
1501357	**KRCSCFPR063L**	19,15	.75	7,01	.28	CP..0602../CP..215...	AVS00B	3L.	0,01	.03
1099162	**KRCSCFPR061A**	23,65	.93	6,45	.25	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	1A.	0,01	.02
1099163	**KRCSCFPR062A**	23,70	.93	8,20	.32	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	2A.	0,01	.02
1099164	**KRCSCFPR063A**	23,70	.93	9,95	.39	CP..0602../CP..215...	AVS0B,AVS1B,AVS1B	3A.	0,01	.03
1099166	**KRCSCFPR062B**	24,65	.97	8,70	.34	CP..0602../CP..215...	SVS3B,SVS2B	2B.	0,01	.03
1099167	**KRCSCFPR063B**	24,65	.97	10,95	.43	CP..0602../CP..215...	SVS3B,SVS2B	3B.	0,02	.04
1099165	**KRCSCFPR061B**	24,70	.97	6,45	.25	CP..0602../CP..215...	SVS3B,SVS2B	1B.	0,01	.02
1099168	**KRCSCFPR061C**	30,70	1.21	8,45	.33	CP..0602../CP..215..	SVS5B,SVS4B	1C.	0,02	.05
1099169	**KRCSCFPR062C**	30,70	1.21	11,70	.46	CP..0602../CP..215...	SVS5B,SVS4B	2C.	0,03	.06
1099170	**KRCSCFPR063C**	30,70	1.21	14,95	.59	CP..0602../CP..215...	SVS5B,SVS4B	3C.	0,04	.08
1099171	**KRCSCFPR061D**	38,70	1.52	8,45	.33	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	1D.	0,03	.07
1099172	**KRCSCFPR062D**	38,70	1.52	12,20	.48	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	2D.	0,05	.10
1099173	**KRCSCFPR063D**	38,70	1.52	15,95	.63	CP..0602../CP..215...	SVS8B,SVS7B,SVS6B	3D.	0,06	.13

SVU System • Tooling Tree



- For correct balance ring settings, see page K108–K109.
- Order diameter extenders, cartridges, and taper shanks separately.





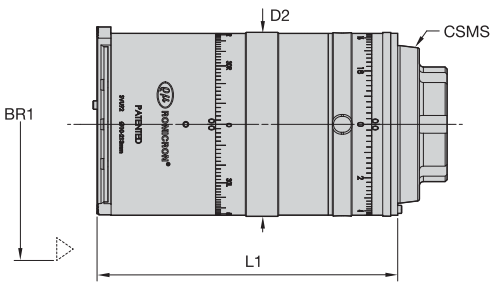


SVU65 • KR Boring Head with CLB Capability

		BR1 bore range			D2		L1				
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	Torx wrench	kg	lbs
1582600	KR50SVU65110MCLB	71,000-111,000	2.7950-4.3700	KR50	65,0	2.56	110,0	4.33	KT27	2,8	6.20

- For correct balance ring settings, see page K110–K114.
- Order diameter extenders, cartridges, and taper shanks separately.

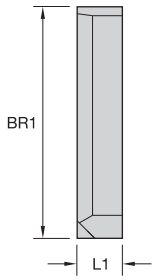






SVU92 • KR Boring Head with CLB Capability

		BR1 bore range			D2		L1				
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	Torx wrench	kg	lbs
4054740	KR80SVU92152MCLB	101,000-213,000	3.9764-8.3858	KR80	92,0	3.62	152,0	5.98	KT27	7,5	16.54



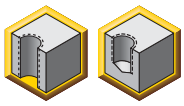


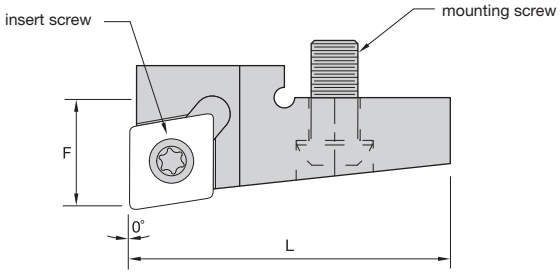


SVU • Diameter Extenders

order number	catalog number	BR1 bore range mm	BR1 bore range in	L1 assy mm	L1 assy in	kg	lbs
1279736	KRDE070019M	70,000-85,000	2.7559-3.3465	19,2	.76	0,2	.48
1279739	KRDE083019M	83,000-98,000	3.2677-3.8583	19,2	.76	0,3	.62
1279740	KRDE096019M	96,000-111,000	3.7795-4.3701	19,2	.76	0,3	.76
1279741	KRDE101023M	101,000-121,000	3.9764-4.7638	23,2	.91	0,6	1.25
1279742	KRDE120023M	120,000-140,000	4.7244-5.5118	23,2	.91	0,7	1.54
1279743	KRDE139026M	139,000-159,000	5.4724-6.2598	26,2	1.03	1,0	2.15
1279745	KRDE156026M	156,000-176,000	6.1417-6.9291	26,2	1.03	1,1	2.51
1279746	KRDE175026M	175,000-195,000	3.8898-7.6772	26,2	1.03	1,3	2.83
1279748	KRDE193026M	193,000-213,000	7.5984-8.3858	26,2	1.03	1,4	3.14

- Order inserts separately.

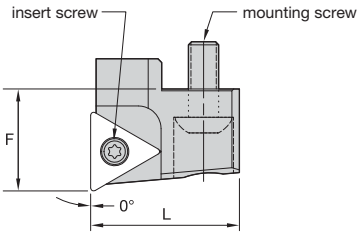






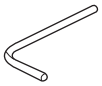
SVU • Cartri1dges SCF

order number	catalog number	reference head	F mm	F in	L mm	L in	gage insert	insert screw	mounting screw	insert Torx wrench	Torx wrench	cartridge size	kg	lbs
1099174	KRCSCFPR061E	SVU65	6,75	.27	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	1E.	0,01	.02
1099175	KRCSCFPR062E	SVU65	9,00	.35	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	2E.	0,01	.02
1099176	KRCSCFPR063E	SVU65	11,25	.44	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	3E.	0,01	.03
1099177	KRCSCFPR061F	SVU92	6,75	.27	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	1F.	0,01	.02
1099178	KRCSCFPR062F	SVU92	10,00	.39	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	2F.	0,01	.03
1099179	KRCSCFPR063F	SVU92	13,25	.52	19,70	.78	CP..0602../CP..215...	MS1375	MS1153	FT7	KT15	3F.	0,02	.03

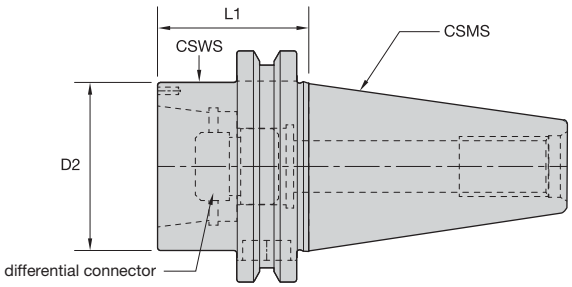




SVU92 • Cartridges STF 0° Lead Angle

order number	catalog number	reference head	F mm	F in	L mm	L in	gage insert	 insert screw	 mounting screw	 insert Torx wrench	 Torx wrench	kg	lbs
1279732	**KRCSTFPR113F**	SVU92	13,25	.52	19,70	.78	TP..1102../TP..215...	**MS1375**	**MS1153**	**FT7**	**KT15**	0,02	.03

- Differential connector included.





CV to KR Adapters AD/B

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
3554366	CV40BKR32157	CV40	KR32	47	1.85	40	1.58	KRDCKR32M	1,08	2.40	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554367	CV40BKR50236	CV40	KR50	65	2.56	60	2.37	KRDCKR50M	1,23	2.70	SVS4B,5B,SVU65,SVUBB2
3554368	CV50BKR32157	CV50	KR32	50	1.97	40	1.57	KRDCKR32M	3,25	7.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554369	CV50BKR50157	CV50	KR50	65	2.56	40	1.57	KRDCKR50M	3,05	6.70	SVS4B,5B,SVU65,SVUBB2
3554370	CV50BKR63236	CV50	KR63	85	3.35	60	2.36	KRDCKR63M	3,50	7.70	SVS6B,7B,8B
3554371	CV50BKR80275	CV50	KR80	95	3.74	70	2.75	KRDCKR80M	4,28	9.40	SVU92,120

DV to KR DIN 69871 AD/B

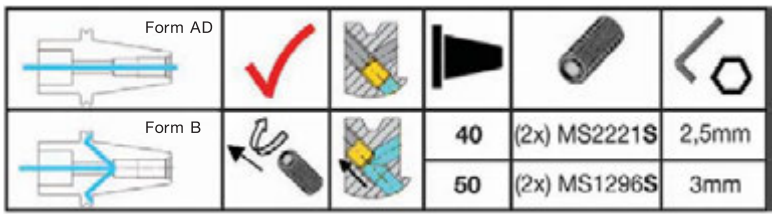


order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
1539005	DV40BKR32041M	DV40	KR32	44	1.75	41	1.61	KRDCKR32M	1,00	2.20	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1263816	DV40BKR50060M	DV40	KR50	65	2.56	60	2.36	KRDCKR50M	1,40	3.08	SVS4B,5B,SVU65,SVUBB2
1528328	DV50BKR32041M	DV50	KR32	50	1.96	41	1.61	KRDCKR32M	2,80	6.16	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1191970	DV50BKR32040M	DV50	KR32	50	1.96	40	1.57	KRDCKR32M	2,80	6.16	AVS0B, AVS2B, AVS3B
1191971	DV50BKR50040M	DV50	KR50	65	2.56	40	1.57	KRDCKR50M	2,80	6.16	SVS4B,5B,SVU65,SVUBB2
1264135	DV50BKR63060M	DV50	KR63	85	3.34	60	2.36	KRDCKR63M	3,30	7.26	SVS6B,7B,8B
1264136	DV50BKR80070M	DV50	KR80	95	3.73	70	2.76	KRDCKR80M	4,10	9.02	SVU92,120

BT to KR JIS B6339 Adapters AD/B

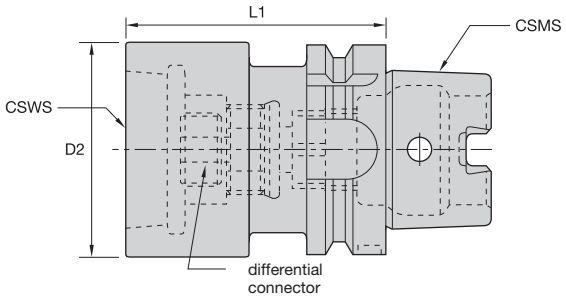


order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
3554372	BT40BKR32030M	BT40	KR32	50	1.97	30	1.18	KRDCKR32M	1,20	2.63	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554373	BT40BKR50050M	BT40	KR50	63	2.48	50	1.97	KRDCKR50M	1,26	2.80	SVS4B,5B,SVU65,SVUBB2
3554374	BT50BKR32040M	BT50	KR32	50	1.97	40	1.57	KRDCKR32M	3,90	8.60	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
3554375	BT50BKR50040M	BT50	KR50	65	2.56	40	1.57	KRDCKR50M	3,17	7.00	SVS4B,5B,SVU65,SVUBB2
3554376	BT50BKR63060M	BT50	KR63	85	3.35	60	2.36	KRDCKR63M	4,31	9.50	SVS6B,7B,8B
3554377	BT50BKR80060M	BT50	KR80	95	3.74	60	2.36	KRDCKR80M	4,53	9.98	SVU92,120



- Differential connector included.







ERICKSON

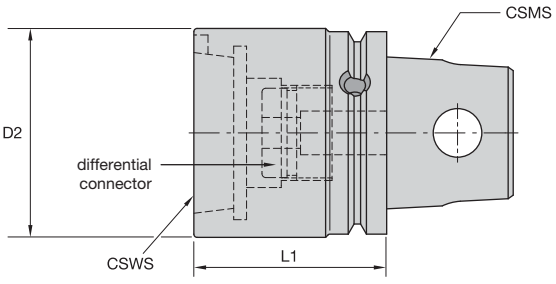
HSK Form A to KR Adapters

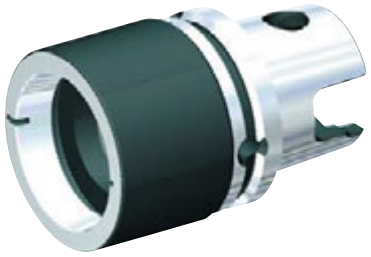
order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
1153403	**HSK63AKR32075M**	HSK63A	KR32	50	1.96	75	2.95	**KRDCKR32M**	1,20	2.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1153604	**HSK63AKR50080M**	HSK63A	KR50	65	2.56	80	3.15	**KRDCKR50M**	1,60	3.52	SVS4B,5B,SVU65,SVUBB2
1153606	**HSK100AKR32075M**	HSK100A	KR32	50	1.96	75	2.95	**KRDCKR32M**	2,56	5.64	AVS00B,0B,1B,2B,3B,SVUBB1,BB2
1107188	**HSK100AKR50085M**	HSK100A	KR50	65	2.56	85	3.35	**KRDCKR50M**	3,12	6.87	SVS4B,5B,SVU65,SVUBB2
1173988	**HSK100AKR63100M**	HSK100A	KR63	85	3.34	100	3.94	**KRDCKR63M**	4,26	9.40	SVS6B,7B,8B
1153612	**HSK100AKR80090M**	HSK100A	KR80	95	3.73	90	3.54	**KRDCKR80M**	4,36	9.62	SVU92,120

NOTE: Plug may need to be removed to access the differential screw drive through the HSK taper.

- Differential connector included.







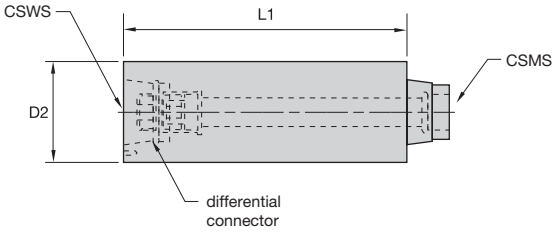
KM QUICK CHANGE

KM63XMZ to KR Adapters

order number	catalog number	CSMS system size	CSWS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
1831590	**KM63XMZKR5060Y**	KM63XMZ	KR50	65	2.56	60	2.36	**KRDCKR50M**	1,37	3.02	SVS4B,5B,SVU65,SVUBB2

NOTE: Do not overtighten lock screw; use torque recommendations above.
Supplied with lock screw.
Lock screw wrench not included.

- Differential connector included.

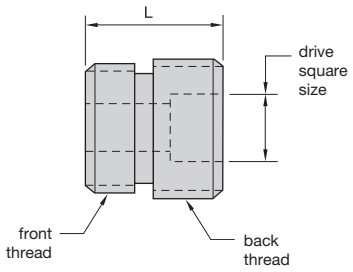




Length Extenders and Spare Differential Connectors



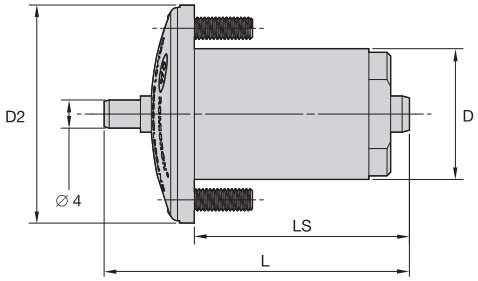
order number	catalog number	CSWS system size	CSMS system size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs	reference head
1279772	**KR32KR32038050M**	KR32	KR32	38	1.50	50	1.97	**KRDCKR32M**	0,45	.99	AVS00B,1B
1192275	**KR32KR32038100M**	KR32	KR32	38	1.50	100	3.94	**KRDCKR32M**	0,82	1.81	AVS00B,1B
1279775	**KR32KR32047050M**	KR32	KR32	47	1.85	50	1.97	**KRDCKR32M**	0,69	1.52	AVS0B,2B,3B,SVUBB1
1192276	**KR32KR32047100M**	KR32	KR32	47	1.85	100	3.94	**KRDCKR32M**	1,28	2.82	AVS0B,2B,3B,SVUBB1
1279785	**KR50KR50065050M**	KR50	KR50	65	2.56	50	1.97	**KRDCKR50M**	1,16	2.56	SVS4B,5B,SVU65,SVUBB2
1192280	**KR50KR50065100M**	KR50	KR50	65	2.56	100	3.94	**KRDCKR50M**	2,25	4.96	SVS4B,5B,SVU65,SVUBB2
1279791	**KR63KR63085050M**	KR63	KR63	85	3.35	50	1.97	**KRDCKR63M**	2,00	4.41	SVS6B,7B,8B
1279792	**KR63KR63085100M**	KR63	KR63	85	3.35	100	3.94	**KRDCKR63M**	4,02	8.86	SVS6B,7B,8B
1279797	**KR80KR80095050M**	KR80	KR80	95	3.74	50	1.97	**KRDCKR80M**	2,50	5.51	SVU92,120
1279798	**KR80KR80095100M**	KR80	KR80	95	3.74	100	3.94	**KRDCKR80M**	5,00	11.02	SVU92,120





Spare Differential Connectors

order number	catalog number	L mm	L in	back thread	front thread	drive square size
1192295	**KRDCKR32M**	22	.87	M20 X 2	M18 X 1	3/8 SQ
1192296	**KRDCKR50M**	22	.87	M28 X 2	M26 X 1	3/8 SQ
1279733	**KRDCKR63M**	25	.98	M36 X 2	M32 X 1	1/2 SQ
1279734	**KRDCKR80M**	28	1.10	M42 X 2	M38 X 1	1/2 SQ



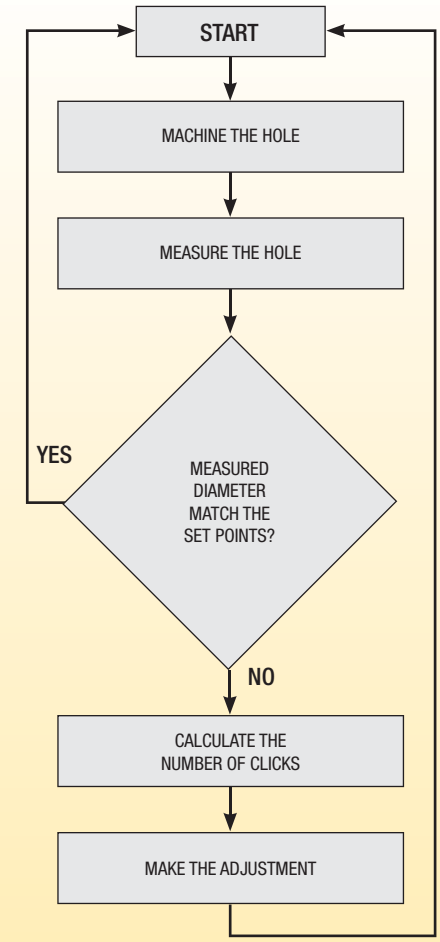


KRM • CLB Pin

		D		D2		LS		L			
order number	catalog number	mm	in	mm	in	mm	in	mm	in	kg	lbs
4052592	KRM018030CLB004NE	18,0	.71	30,0	1.18	29,6	1.17	42,0	1.65	0,1	.15

The Romicron Closed Loop Boring Process

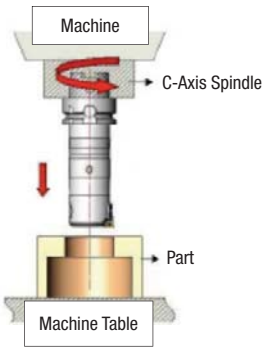
Closed Loop Boring (CLB) provides the unique possibility to automate the insert wear compensation with minimal investment due to the precise 2 µm adjustment in diameter of these tools per increment. Retrofit existing machines to automated wear compensation using the standard CLB pin without any electronic equipment needed besides a measuring device of holes produced.



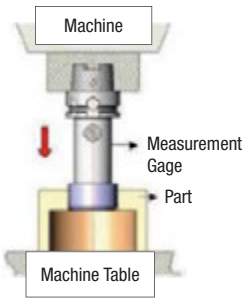
NOTE: This process is only possible with the Romicron system because it does not require tools to make the adjustment.

1. A precision system measures the holes after the machine process. The data is sent to the CNC.
2. The values are compared to the set points.
3. If the diameter is in the range of the specified set points, the machine goes to the next hole. Otherwise, the software calculates the necessary increment and automatically adjusts the Romicron using the CLB pin.

Step 1



Step 2



CNC Machine Command

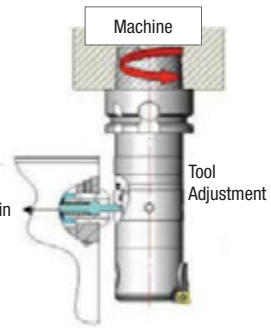


CNC calculates the correction and commands the tool.

Step 3



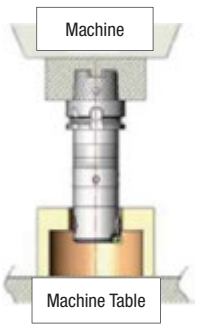
CLB retractable pin to lock the dial ring during diameter adjustment.



Step 4



Four CLB holes positioned at diameter dial ring.



Finishing Hole

Romicron™ • Cutting Data

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
P	1		KCP05			–	180	**435**	495	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**435**	495	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**400**	495	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**395**	465	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**395**	495	0,06–0,25	0,04–0,16	–	–
			KCP25				140	**280**	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	140	**280**	360	0,06–0,10	0,04–0,08	–	–
	2		KCP05			–	180	**265**	400	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**265**	400	–	–	0,06–0,25	–
			KT315	–	–	KT315	190	**270**	390	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**240**	330	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**240**	330	0,06–0,25	0,04–0,16	–	–
			KCP25				145	**195**	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	145	**195**	320	0,06–0,10	0,04–0,08	–	–
	3		KCP05			–	180	**205**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**205**	275	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**210**	275	0,06–0,25	–	–	0,08–0,30
			KCP10			–	160	**190**	250	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	155	**190**	240	0,06–0,25	0,04–0,16	–	–
			KCP25				135	**155**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	135	**155**	225	0,06–0,10	0,04–0,08	–	–
	4		KCP05			–	90	**160**	220	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	90	**160**	220	–	–	0,06–0,25	–
			KT315	–	–	KT315	90	**180**	220	0,06–0,25	–	–	0,08–0,30
			KCP10			–	90	**145**	195	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	90	**145**	195	0,06–0,25	0,04–0,16	–	–
			KCP25				75	**105**	180	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	75	**105**	180	0,06–0,10	0,04–0,08	–	–
	5		KCP05			–	150	**240**	315	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	150	**240**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	150	**250**	315	0,06–0,25	–	–	0,08–0,30
			KCP10			–	150	**215**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	150	**215**	300	0,06–0,25	0,04–0,16	–	–
			KCP25				120	**195**	255	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	120	**195**	255	0,06–0,10	0,04–0,08	–	–
	6		KCP05			–	140	**200**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KCP10			–	120	**180**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	120	**180**	225	0,06–0,25	0,04–0,16	–	–
			KCP25				105	**150**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	105	**150**	225	0,06–0,10	0,04–0,08	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
M	1		–	–	KTP10	–	140	**230**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**230**	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**215**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**180**	240	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	105	**180**	240	0,06–0,12	–	–	0,08–0,16
	2		–	–	KTP10	–	140	**215**	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**215**	295	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**200**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**165**	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	**160**	230	0,06–0,12	–	–	0,08–0,16
	3		–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**185**	230	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	115	**150**	255	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	110	**150**	230	0,06–0,12	–	–	0,08–0,16

Romicron™ • Cutting Data

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
K	1		KCK20	–	KCK20		200	**300**	540	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	165	**275**	490	0,06–0,25	–	–	0,08–0,30
			KC9315	–	–	–	110	**275**	450	0,06–0,25	–	–	–
			KC9320	–	–	–	100	**240**	400	0,06–0,12	–	–	–
	2		KCK20	–	KCK20		150	**240**	420	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**275**	360	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	100	**200**	265	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**260**	360	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**240**	330	0,06–0,12	–	–	–
	3		KCK20	–	KCK20		140	**210**	350	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**230**	320	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	120	**150**	225	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**215**	275	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**210**	260	0,06–0,12	–	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-FWL20	–	–	min	Starting Value	max	-LF	-FWL20	–	–
N	1		KC5410		–	–	200	**550**	1000	0,10–0,40	0,20–0,50	–	–
			KC5410	–	–	–	200	**550**	1000	0,10–0,20	–	–	–
			–	–	KD1400	–	450	**765**	3000	–	–	0,06–0,15	–
	2		–	–	KD1425	–	375	**580**	1150	–	–	0,06–0,25	–
			–	–	KD1400	–	400	**650**	1250	–	–	0,06–0,15	–
	3		KC5410		–	–	125	**275**	525	0,10–0,40	0,20–0,50	–	–
			–	–	KD1425	–	250	**500**	875	–	–	0,06–0,25	–
			KC5410	–	–	–	125	**275**	525	0,10–0,20	–	–	–
			–	–	KD1400	–	375	**520**	1000	–	–	0,06–0,12	–
	5		KC5410	–	–	–	125	**200**	375	0,10–0,40	–	–	–
			KC5410	–	–	–	125	**200**	375	0,10–0,20	–	–	–

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1		–	–	KCU10	–	30	**55**	125	–	–	0,06-0,25	–
			K313	–	–	–	10	**30**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**55**	120	0,06-0,25	0,04-0,16	–	0,08-0,30
			–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**55**	120	0,06-0,25	0,04-0,16	–	0,08-0,30
			–	–	KCU25	–	10	**40**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**40**	50	0,06-0,10	–	–	–
	2		–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**35**	60	0,06-0,25	–	–	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06-0,25	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**30**	50	–	–	0,06-0,12	–
			KC5025	–	–	–	10	**30**	50	0,06–0,10	–	–	–
	3		–	–	KCU10	–	30	**70**	125	–	–	0,06-0,25	–
			K313	–	–	–	10	**40**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**70**	120	0,06-0,25	0,04-0,16	–	0,08-0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**40**	60	–	–	0,06–0,12	–
			KC5025	–	–	–	25	**40**	60	0,06-0,10	–	–	–
	4		–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			K313	–	–	–	15	**45**	65	0,06-0,25	–	–	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	45	**70**	140	–	–	0,06-0,25	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**55**	90	–	–	0,06-0,12	–
			KC5025	–	–	–	15	**55**	90	0,06–0,10	–	–	–

Romicron Assembly Instructions

The required parts for the adapter assembly are identified on Figures 1 and 2. The SVS model is shown. The instructions are also valid to the SVU and SVUBB models.

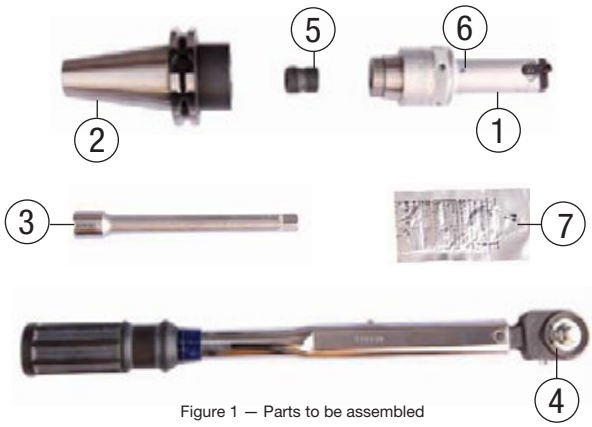


Figure 1 — Parts to be assembled

1	Boring head
2	Taper shank
3	Square extension (3/8" or 1/2")
4	Torque wrench
5	Differential connector
6	Positioning pin
7	Lubricant ASL-3G

WARNING:
Before starting the assembly procedure, ensure that all surfaces to be assembled together are free of dirt and completely clean.



Figure 2 — Assembled Tool

A



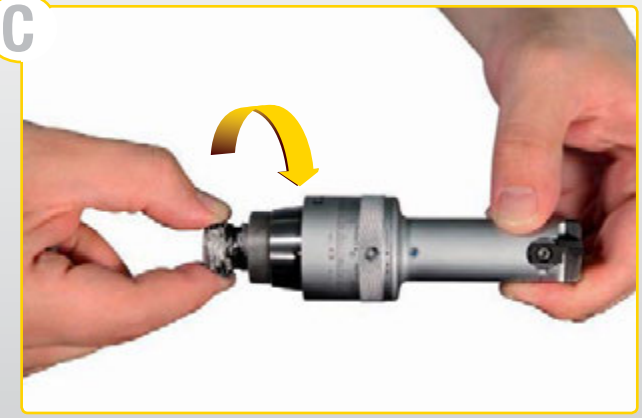
A. Remove the Differential Connector (5) from the Taper Shank (2).

B



B. Lubricate the thread on the Differential Connector (5) with Lubricant ASK-3G (7), supplied with the Taper Shank (2).

C



C. Screw the Differential Connector (5) into the rear thread on the Boring Head (1) until the end of the thread. At this time it is not necessary to tighten the Differential Connector (5). Remember that the Differential Connector (5) has two different screws, so there is no way to assemble the wrong side.

Romicron Assembly Instructions

D



D. Screw the front end of the Taper Shank (2) onto the Differential Connector (5), now located at the back on the Boring Head (1). Screw carefully until the Positioning Pin (6) gently touches the Taper (2) face. Stop!

F



F. Insert the square end of the Extension (3) through the Taper Shank (2) and into the Differential Connector (5). Keeping the Positioning Pin (6) and the positioning slot aligned, turn the Extensions (3) counter-clockwise until you see that two Romicron faces are meshing. Ensure that the Positioning Pin (6) is inserted into the slot on the Taper Shank (2).

E



E. Unscrew the Taper Shank (2) a little bit until the Positioning Pin (6) is aligned with the positioning slot mark in the Taper Shank (2) face.

G



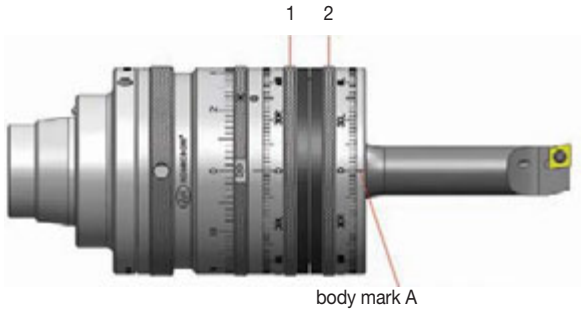
G. Tighten the Differential Connector (5) with the specified required torque, as shown on the table below. Use the Torque Wrench (4) to do this.

Tightening Torque Specifications

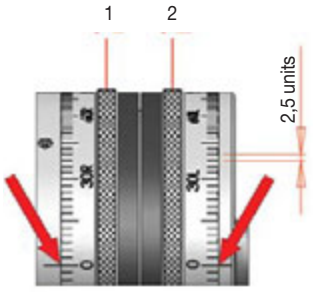
joint size	Torque Nm	drive square
KR32	30	3/8"
KR50	40	3/8"
KR63	55	1/2"
KR80	65	1/2"

Following these procedures will result in a rigid surface contact between the taper and the boring head face.

1. There are 2 balancing dials on the SVUBB system. Align ring 2 “zero” with body mark A. Align “zero” mark of ring 1 with the “zero” mark of ring 2.



2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



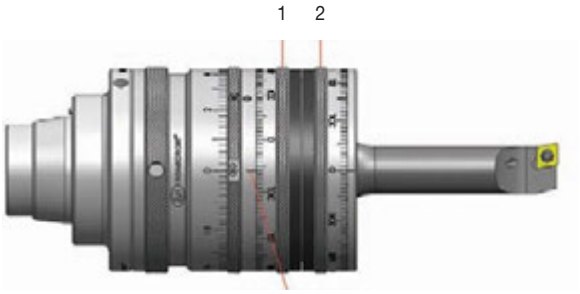
Balancing Table • SVU-BB1 Boring Head

KRBB10FABDRS204C 4–6,4mm						KRBB10SCLDR4060C 6–9mm						KRBB10SCFPR06085C 8,5–11,5mm					
diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in				
4	0.1575	40	L	58	L	6	0.2362	34	L	66	L	8,5	0.3346	34	L	66	L
4,1	0.1614	42	L	58	L	6,1	0.2402	36	L	66	L	8,6	0.3386	36	L	68	L
4,2	0.1654	42	L	54	L	6,2	0.2441	36	L	64	L	8,7	0.3425	36	L	64	L
4,3	0.1693	44	L	54	L	6,3	0.2480	38	L	62	L	8,8	0.3465	38	L	62	L
4,4	0.1732	44	L	50	L	6,4	0.2520	38	L	62	L	8,9	0.3504	36	L	60	L
4,5	0.1772	46	L	50	L	6,5	0.2559	40	L	60	L	9	0.3543	40	L	60	L
4,6	0.1811	46	L	48	L	6,6	0.2598	40	L	58	L	9,1	0.3583	40	L	58	L
4,7	0.1850	46	L	46	L	6,7	0.2638	40	L	56	L	9,2	0.3622	42	L	56	L
4,8	0.1890	46	L	42	L	6,8	0.2677	40	L	54	L	9,3	0.3661	40	L	54	L
4,9	0.1929	46	L	40	L	6,9	0.2717	42	L	52	L	9,4	0.3701	42	L	52	L
5	0.1969	22	R	20	R	7	0.2756	42	L	54	L	9,5	0.3740	42	L	50	L
5,1	0.2008	32	R	26	R	7,1	0.2795	54	R	60	R	9,6	0.3780	40	L	46	L
5,2	0.2047	40	R	32	R	7,2	0.2835	54	R	60	R	9,7	0.3819	38	L	42	L
5,3	0.2087	44	R	34	R	7,3	0.2874	60	R	60	R	9,8	0.3858	30	L	32	L
5,4	0.2126	48	R	36	R	7,4	0.2913	70	R	72	R	9,9	0.3898	24	R	22	R
5,5	0.2165	50	R	36	R	7,5	0.2953	42	R	40	R	10	0.3937	24	R	22	R
5,6	0.2205	52	R	34	R	7,6	0.2992	48	R	44	R	10,1	0.3976	26	R	22	R
5,7	0.2244	54	R	34	R	7,7	0.3031	50	R	42	R	10,2	0.4016	44	R	38	R
5,8	0.2283	56	R	32	R	7,8	0.3071	50	R	42	R	10,3	0.4055	48	R	38	R
5,9	0.2323	58	R	32	R	7,9	0.3110	52	R	40	R	10,4	0.4094	52	R	38	R
6	0.2362	60	R	30	R	8	0.3150	54	R	40	R	10,5	0.4134	52	R	38	R
6,1	0.2402	62	R	30	R	8,1	0.3189	54	R	38	R	10,6	0.4173	56	R	36	R
6,2	0.2441	64	R	28	R	8,2	0.3228	56	R	38	R	10,7	0.4213	56	R	36	R
6,3	0.2480	66	R	28	R	8,3	0.3268	58	R	36	R	10,8	0.4252	58	R	34	R
6,4	0.2520	68	R	24	R	8,4	0.3307	58	R	34	R	10,9	0.4291	58	R	32	R
–	–	–	–	–	–	8,5	0.3346	60	R	36	R	11	0.4331	62	R	32	R
–	–	–	–	–	–	8,6	0.3386	62	R	34	R	11,1	0.4370	60	R	30	R
–	–	–	–	–	–	8,7	0.3425	62	R	32	R	11,2	0.4409	62	R	28	R
–	–	–	–	–	–	8,8	0.3465	62	R	32	R	11,3	0.4449	62	R	28	R
–	–	–	–	–	–	8,9	0.3504	66	R	28	R	11,4	0.4488	68	R	26	R
–	–	–	–	–	–	9	0.3543	66	R	28	R	11,5	0.4528	68	R	26	R

(continued)

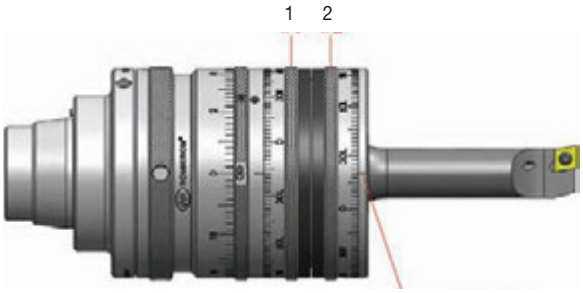
(Balancing Table • SVU-BB1 Boring Head — continued)

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).



body mark B

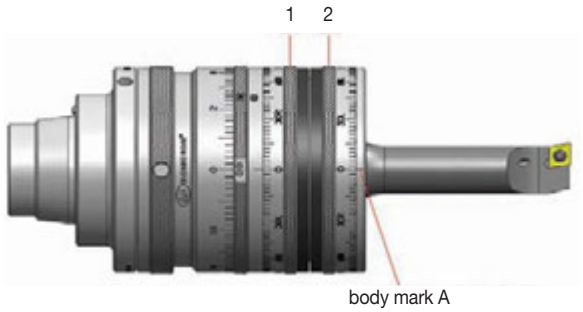
4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).



body mark A

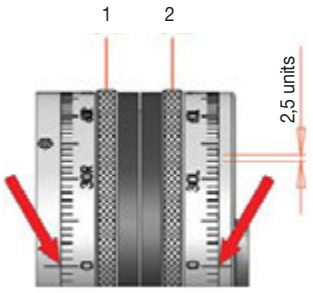
KRBB10SCFPR06110C 11–14mm						KRBB10SCFPR06135C 13,5–16,5mm					
diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in				
11	0.4331	32	L	66	L	13,5	0.5315	34	L	62	L
11,1	0.4370	34	L	64	L	13,6	0.5354	36	L	60	L
11,2	0.4409	34	L	62	L	13,7	0.5394	38	L	58	L
11,3	0.4449	36	L	60	L	13,8	0.5433	38	L	56	L
11,4	0.4488	36	L	58	L	13,9	0.5472	40	L	56	L
11,5	0.4528	38	L	58	L	14	0.5512	42	L	44	L
11,6	0.4567	38	L	56	L	14,1	0.5551	42	L	52	L
11,7	0.4606	40	L	54	L	14,2	0.5591	44	L	50	L
11,8	0.4646	40	L	52	L	14,3	0.5630	42	L	46	L
11,9	0.4685	40	L	52	L	14,4	0.5669	34	L	36	L
12	0.4724	38	L	46	L	14,5	0.5709	18	L	20	L
12,1	0.4764	34	L	42	L	14,6	0.5748	10	R	6	R
12,2	0.4803	26	L	30	L	14,7	0.5787	18	R	10	R
12,3	0.4843	24	R	22	R	14,8	0.5827	40	R	30	R
12,4	0.4882	28	L	26	L	14,9	0.5866	44	R	32	R
12,5	0.4921	44	L	38	R	15	0.5906	48	R	34	R
12,6	0.4961	44	R	36	R	15,1	0.5945	48	R	32	R
12,7	0.5000	50	R	40	R	15,2	0.5984	50	R	30	R
12,8	0.5039	50	R	38	R	15,3	0.6024	52	R	30	R
12,9	0.5079	52	R	36	R	15,4	0.6063	56	R	32	R
13	0.5118	52	R	36	R	15,5	0.6102	54	R	28	R
13,1	0.5157	54	R	34	R	15,6	0.6142	58	R	28	R
13,2	0.5197	54	R	32	R	15,7	0.6181	60	R	26	R
13,3	0.5236	56	R	32	R	15,8	0.6220	64	R	26	R
13,4	0.5276	56	R	30	R	15,9	0.6260	64	R	26	R
13,5	0.5315	60	R	28	R	16	0.6299	66	R	24	R
13,6	0.5354	60	R	28	R	16,1	0.6339	66	R	22	R
13,7	0.5394	62	R	26	R	16,2	0.6378	70	R	20	R
13,8	0.5433	64	R	26	R	16,3	0.6417	74	R	18	R
13,9	0.5472	68	R	24	R	16,4	0.6457	76	R	16	R
14	0.5512	68	R	24	R	16,5	0.6496	78	R	14	R

1. There are 2 balancing dials on the SVUBB system. Align ring 2 "zero" with body mark A. Align "zero" mark of ring 1 with the "zero" mark of ring 2.



body mark A

2. Look up your diameter in the table below and read the setting values for ring 1 and ring 2.



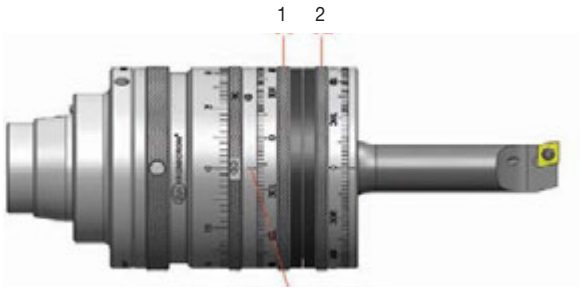
Balancing Table • SVU-BB2 Boring Head

KRBB16SCLDRS406A 6–9,5mm						KRBB16SCFPR06085A 8,5–12mm						KRBB16SCFPR0611A 11–14,5mm						KRBB16SCFPR06135A 13,5–17mm					
diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in					mm	in				
6	0.2362	67.5	L	67.5	L	8,5	0.3346	67.5	L	67.5	L	11	0.4331	67.5	L	70	L	13,5	0.5315	65	L	70	L
6,1	0.2402	62.5	L	62.5	L	8,6	0.3386	62.5	L	62.5	L	11,1	0.4370	60	L	62.5	L	13,6	0.5354	60	L	65	L
6,2	0.2441	57.5	L	57.5	L	8,7	0.3425	57.5	L	57.5	L	11,2	0.4409	57.5	L	60	L	13,7	0.5394	55	L	60	L
6,3	0.2480	55	L	55	L	8,8	0.3465	52.5	L	55	L	11,3	0.4449	52.5	L	55	L	13,8	0.5433	50	L	55	L
6,4	0.2520	50	L	50	L	8,9	0.3504	50	L	50	L	11,4	0.4488	47.5	L	50	L	13,9	0.5472	47.5	L	52.5	L
6,5	0.2559	47.5	L	47.5	L	9	0.3543	47.5	L	47.5	L	11,5	0.4528	45	L	47.5	L	14	0.5512	42.5	L	47.5	L
6,6	0.2598	45	L	45	L	9,1	0.3583	42.5	L	45	L	11,6	0.4567	42.5	L	45	L	14,1	0.5551	40	L	45	L
6,7	0.2638	40	L	40	L	9,2	0.3622	40	L	40	L	11,7	0.4606	37.5	L	42.5	L	14,2	0.5591	35	L	42.5	L
6,8	0.2677	37.5	L	37.5	L	9,3	0.3661	37.5	L	37.5	L	11,8	0.4646	35	L	37.5	L	14,3	0.5630	32.5	L	40	L
6,9	0.2717	35	L	35	L	9,4	0.3701	35	L	35	L	11,9	0.4685	32.5	L	35	L	14,4	0.5669	30	L	37.5	L
7	0.2756	32.5	L	32.5	L	9,5	0.3740	30	L	32.5	L	12	0.4724	30	L	32.5	L	14,5	0.5709	25	L	35	L
7,1	0.2795	30	L	30	L	9,6	0.3780	27.5	L	30	L	12,1	0.4764	27.5	L	30	L	14,6	0.5748	22.5	L	32.5	L
7,2	0.2835	27.5	L	27.5	L	9,7	0.3819	25	L	27.5	L	12,2	0.4803	25	L	27.5	L	14,7	0.5787	20	L	30	L
7,3	0.2874	25	L	25	L	9,8	0.3858	22.5	L	25	L	12,3	0.4843	22.5	L	25	L	14,8	0.5827	17.5	L	27.5	L
7,4	0.2913	22.5	L	22.5	L	9,9	0.3898	20	L	22.5	L	12,4	0.4882	17.5	L	25	L	14,9	0.5866	15	L	25	L
7,5	0.2953	20	L	20	L	10	0.3937	17.5	L	20	L	12,5	0.4921	15	L	22.5	L	15	0.5906	10	L	25	L
7,6	0.2992	17.5	L	17.5	L	10,1	0.3976	15	L	17.5	L	12,6	0.4961	12.5	L	20	L	15,1	0.5945	7.5	L	22.5	L
7,7	0.3031	15	L	15	L	10,2	0.4016	12.5	L	15	L	12,7	0.5000	10	L	17.5	L	15,2	0.5984	2.5	L	22.5	L
7,8	0.3071	12.5	L	12.5	L	10,3	0.4055	10	L	15	L	12,8	0.5039	5	L	17.5	L	15,3	0.6024	2.5	R	22.5	L
7,9	0.3110	10	L	12.5	L	10,4	0.4094	7.5	L	12.5	L	12,9	0.5079	2.5	L	15	L	15,4	0.6063	7.5	R	22.5	L
8	0.3150	7.5	L	10	L	10,5	0.4134	5	L	10	L	13	0.5118	2.5	R	15	L	15,5	0.6102	17.5	R	27.5	L
8,1	0.3189	5	L	7.5	L	10,6	0.4173	0	L	10	L	13,1	0.5157	10	R	17.5	L	15,6	0.6142	37.5	R	42.5	L
8,2	0.3228	2.5	L	5	L	10,7	0.4213	5	R	10	L	13,2	0.5197	25	R	30	L	15,7	0.6181	85	L	90	R
8,3	0.3268	2.5	R	5	L	10,8	0.4252	45	R	45	L	13,3	0.5236	62.5	L	65	R	15,8	0.6220	35	L	42.5	R
8,4	0.3307	10	L	12.5	R	10,9	0.4291	10	L	15	R	13,4	0.5276	17.5	L	22.5	R	15,9	0.6260	17.5	L	27.5	R
8,5	0.3346	0	R	5	R	11	0.4331	2.5	L	10	R	13,5	0.5315	5	L	15	R	16	0.6299	7.5	L	22.5	R
8,6	0.3386	2.5	R	7.5	R	11,1	0.4370	2.5	R	10	R	13,6	0.5354	0	R	15	R	16,1	0.6339	2.5	L	22.5	R
8,7	0.3425	7.5	R	7.5	R	11,2	0.4409	5	R	12.5	R	13,7	0.5394	5	R	15	R	16,2	0.6378	2.5	R	22.5	R
8,8	0.3465	10	R	10	R	11,3	0.4449	10	R	12.5	R	13,8	0.5433	7.5	R	17.5	R	16,3	0.6417	7.5	R	22.5	R
8,9	0.3504	12.5	R	12.5	R	11,4	0.4488	12.5	R	15	R	13,9	0.5472	10	R	20	R	16,4	0.6457	10	R	25	R
9	0.3543	12.5	R	15	R	11,5	0.4528	15	R	17.5	R	14	0.5512	15	R	20	R	16,5	0.6496	15	R	25	R
9,1	0.3583	15	R	17.5	R	11,6	0.4567	17.5	R	20	R	14,1	0.5551	17.5	R	22.5	R	16,6	0.6535	17.5	R	27.5	R
9,2	0.3622	17.5	R	20	R	11,7	0.4606	20	R	22.5	R	14,2	0.5591	20	R	25	R	16,7	0.6575	20	R	30	R
9,3	0.3661	20	R	22.5	R	11,8	0.4646	22.5	R	25	R	14,3	0.5630	22.5	R	27.5	R	16,8	0.6614	22.5	R	32.5	R
9,4	0.3701	22.5	R	25	R	11,9	0.4685	25	R	27.5	R	14,4	0.5669	25	R	30	R	16,9	0.6654	27.5	R	35	R
9,5	0.3740	25	R	27.5	R	12	0.4724	27.5	R	30	R	14,5	0.5709	27.5	R	32.5	R	17	0.6693	30	R	37.5	R

(continued)

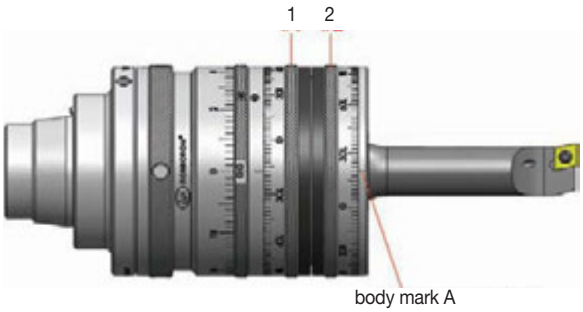
(Balancing Table • SVU-BB2 Boring Head — continued)

3. Set ring 1 first, referencing to body mark B (one dial mark equals 2.5 units).



body mark B

4. Set ring 2, referencing to body mark A (one dial mark equals 2.5 units).



body mark A

KRBB16SCFPR0616A 16–19,5mm						KRBB16SCFPR0619A 19–22,5mm						KRBB16SCFPR0622A 22–25,5mm					
diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in				
16	0.6299	65	L	72.5	L	19	0.7480	60	L	75	L	22	0.8661	57.5	L	80	L
16,1	0.6339	57.5	L	65	L	19,1	0.7520	55	L	70	L	22,1	0.8701	50	L	72.5	L
16,2	0.6378	52.5	L	62.5	L	19,2	0.7559	50	L	65	L	22,2	0.8740	45	L	70	L
16,3	0.6417	47.5	L	57.5	L	19,3	0.7598	45	L	60	L	22,3	0.8780	37.5	L	65	L
16,4	0.6457	42.5	L	52.5	L	19,4	0.7638	40	L	57.5	L	22,4	0.8819	32.5	L	62.5	L
16,5	0.6496	40	L	50	L	19,5	0.7677	35	L	52.5	L	22,5	0.8858	27.5	L	60	L
16,6	0.6535	35	L	47.5	L	19,6	0.7717	30	L	50	L	22,6	0.8898	22.5	L	57.5	L
16,7	0.6575	32.5	L	45	L	19,7	0.7756	27.5	L	47.5	L	22,7	0.8937	20	L	55	L
16,8	0.6614	27.5	L	42.5	L	19,8	0.7795	22.5	L	45	L	22,8	0.8976	15	L	52.5	L
16,9	0.6654	25	L	40	L	19,9	0.7835	20	L	42.5	L	22,9	0.9016	10	L	52.5	L
17	0.6693	20	L	37.5	L	20	0.7874	15	L	42.5	L	23	0.9055	5	L	50	L
17,1	0.6732	17.5	L	35	L	20,1	0.7913	10	L	40	L	23,1	0.9094	0	R	50	L
17,2	0.6772	12.5	L	32.5	L	20,2	0.7953	5	L	40	L	23,2	0.9134	7.5	R	52.5	L
17,3	0.6811	10	L	30	L	20,3	0.7992	0	L	40	L	23,3	0.9173	12.5	R	52.5	L
17,4	0.6850	5	L	30	L	20,4	0.8031	5	R	40	L	23,4	0.9213	20	R	55	L
17,5	0.6890	0	L	30	L	20,5	0.8071	10	R	40	L	23,5	0.9252	30	R	60	L
17,6	0.6929	5	R	30	L	20,6	0.8110	17.5	R	42.5	L	23,6	0.9291	40	R	65	L
17,7	0.6969	12.5	R	32.5	L	20,7	0.8150	27.5	R	47.5	L	23,7	0.9331	52.5	R	75	L
17,8	0.7008	22.5	R	37.5	L	20,8	0.8189	40	R	57.5	L	23,8	0.9370	67.5	R	90	L
17,9	0.7047	35	R	47.5	L	20,9	0.8228	57.5	R	72.5	L	23,9	0.9409	77.5	L	97.5	R
18	0.7087	60	R	67.5	L	21	0.8268	80	R	92.5	L	24	0.9449	60	L	82.5	R
18,1	0.7126	75	L	82.5	R	21,1	0.8307	65	L	77.5	R	24,1	0.9488	47.5	L	72.5	R
18,2	0.7165	45	L	55	R	21,2	0.8346	45	L	60	R	24,2	0.9528	35	L	62.5	R
18,3	0.7205	25	L	40	R	21,3	0.8386	30	L	50	R	24,3	0.9567	25	L	57.5	R
18,4	0.7244	15	L	32.5	R	21,4	0.8425	20	L	45	R	24,4	0.9606	17.5	L	55	R
18,5	0.7283	7.5	L	30	R	21,5	0.8465	12.5	L	40	R	24,5	0.9646	10	L	52.5	R
18,6	0.7323	2.5	L	30	R	21,6	0.8504	5	L	40	R	24,6	0.9685	5	L	50	R
18,7	0.7362	2.5	R	30	R	21,7	0.8543	0	L	40	R	24,7	0.9724	2.5	R	50	R
18,8	0.7402	7.5	R	30	R	21,8	0.8583	5	R	40	R	24,8	0.9764	7.5	R	50	R
18,9	0.7441	12.5	R	32.5	R	21,9	0.8622	10	R	40	R	24,9	0.9803	12.5	R	52.5	R
19	0.7480	15	R	35	R	22	0.8661	12.5	R	42.5	R	25	0.9843	17.5	R	52.5	R
19,1	0.7520	20	R	35	R	22,1	0.8701	17.5	R	42.5	R	25,1	0.9882	20	R	55	R
19,2	0.7559	22.5	R	37.5	R	22,2	0.8740	22.5	R	45	R	25,2	0.9921	25	R	57.5	R
19,3	0.7598	27.5	R	40	R	22,3	0.8780	25	R	47.5	R	25,3	0.9961	30	R	60	R
19,4	0.7638	30	R	42.5	R	22,4	0.8819	30	R	50	R	25,4	1.0000	35	R	62.5	R
19,5	0.7677	35	R	45	R	22.5	0.8858	35	R	52.5	R	25,5	1.0039	40	R	67.5	R

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA046AM • KRDE025010M 25,5–33,5mm

diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in				
25,5	1.0039	62.5	L	65	L	28,5	1.1220	57.5	L	60	L	31,5	1.2402	52.5	L	55	L
25,6	1.0079	57.5	L	60	L	28,6	1.1260	52.5	L	55	L	31,6	1.2441	47.5	L	50	L
25,7	1.0118	50	L	52.5	L	28,7	1.1299	45	L	50	L	31,7	1.2480	42.5	L	45	L
25,8	1.0157	45	L	47.5	L	28,8	1.1339	40	L	45	L	31,8	1.2520	37.5	L	42.5	L
25,9	1.0197	40	L	45	L	28,9	1.1378	37.5	L	40	L	31,9	1.2559	32.5	L	37.5	L
26,0	1.0236	35	L	40	L	29,0	1.1417	32.5	L	37.5	L	32,0	1.2598	27.5	L	35	L
26,1	1.0276	32.5	L	35	L	29,1	1.1457	27.5	L	32.5	L	32,1	1.2638	25	L	30	L
26,2	1.0315	27.5	L	32.5	L	29,2	1.1496	25	L	30	L	32,2	1.2677	20	L	27.5	L
26,3	1.0354	22.5	L	30	L	29,3	1.1535	20	L	27.5	L	32,3	1.2717	17.5	L	22.5	L
26,4	1.0394	20	L	25	L	29,4	1.1575	15	L	25	L	32,4	1.2756	12.5	L	22.5	L
26,5	1.0433	62.5	L	65	L	29,5	1.1614	55	L	57.5	L	32,5	1.2795	50	L	55	L
26,6	1.0472	55	L	57.5	L	29,6	1.1654	50	L	52.5	L	32,6	1.2835	45	L	50	L
26,7	1.0512	50	L	52.5	L	29,7	1.1693	45	L	47.5	L	32,7	1.2874	40	L	45	L
26,8	1.0551	45	L	47.5	L	29,8	1.1732	40	L	45	L	32,8	1.2913	37.5	L	40	L
26,9	1.0591	40	L	42.5	L	29,9	1.1772	35	L	40	L	32,9	1.2953	32.5	L	37.5	L
27,0	1.0630	35	L	40	L	30,0	1.1811	32.5	L	35	L	33,0	1.2992	27.5	L	32.5	L
27,1	1.0669	30	L	35	L	30,1	1.1850	27.5	L	32.5	L	33,1	1.3031	22.5	L	30	L
27,2	1.0709	25	L	32.5	L	30,2	1.1890	22.5	L	30	L	33,2	1.3071	20	L	25	L
27,3	1.0748	22.5	L	27.5	L	30,3	1.1929	20	L	25	L	33,3	1.3110	15	L	22.5	L
27,4	1.0787	17.5	L	25	L	30,4	1.1969	15	L	22.5	L	33,4	1.3150	12.5	L	20	L
27,5	1.0827	60	L	62.5	L	30,5	1.2008	55	L	57.5	L	33,5	1.3189	50	L	52.5	L
27,6	1.0866	52.5	L	55	L	30,6	1.2047	47.5	L	52.5	L	33,6	1.3228	45	L	47.5	L
27,7	1.0906	47.5	L	50	L	30,7	1.2087	42.5	L	47.5	L	33,7	1.3268	40	L	42.5	L
27,8	1.0945	42.5	L	45	L	30,8	1.2126	37.5	L	42.5	L	33,8	1.3307	35	L	40	L
27,9	1.0984	37.5	L	42.5	L	30,9	1.2165	35	L	37.5	L	33,9	1.3346	30	L	35	L
28,0	1.1024	32.5	L	37.5	L	31,0	1.2205	30	L	35	L	34,0	1.3386	27.5	L	32.5	L
28,1	1.1063	30	L	35	L	31,1	1.2244	25	L	32.5	L	34,1	1.3425	22.5	L	27.5	L
28,2	1.1102	25	L	30	L	31,2	1.2283	22.5	L	27.5	L	34,2	1.3465	20	L	25	L
28,3	1.1142	20	L	27.5	L	31,3	1.2323	17.5	L	25	L	34,3	1.3504	15	L	22.5	L
28,4	1.1181	17.5	L	25	L	31,4	1.2362	12.5	L	22.5	L	34,4	1.3543	10	L	20	L

KRDEA046AM • KRDE033010M 33,5–44,4mm

diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in					mm	in				
33,5	1.3189	55	L	57.5	L	36,5	1.4370	47.5	L	52.5	L	39,5	1.5551	42.5	L	47.5	L	42,5	1.6732	37.5	L	40	L
33,6	1.3228	50	L	52.5	L	36,6	1.4409	42.5	L	47.5	L	39,6	1.5591	37.5	L	42.5	L	42,6	1.6772	32.5	L	37.5	L
33,7	1.3268	45	L	47.5	L	36,7	1.4449	37.5	L	42.5	L	39,7	1.5630	32.5	L	37.5	L	42,7	1.6811	27.5	L	35	L
33,8	1.3307	40	L	42.5	L	36,8	1.4488	35	L	37.5	L	39,8	1.5669	27.5	L	35	L	42,8	1.6850	25	L	30	L
33,9	1.3346	35	L	40	L	36,9	1.4528	30	L	35	L	39,9	1.5709	25	L	30	L	42,9	1.6890	20	L	27.5	L
34,0	1.3386	30	L	35	L	37,0	1.4567	25	L	32.5	L	40,0	1.5748	20	L	27.5	L	43,0	1.6929	15	L	25	L
34,1	1.3425	25	L	32.5	L	37,1	1.4606	22.5	L	27.5	L	40,1	1.5787	15	L	25	L	43,1	1.6969	10	L	22.5	L
34,2	1.3465	22.5	L	27.5	L	37,2	1.4646	17.5	L	25	L	40,2	1.5827	10	L	22.5	L	43,2	1.7008	5	L	20	L
34,3	1.3504	17.5	L	25	L	37,3	1.4685	12.5	L	22.5	L	40,3	1.5866	7.5	L	20	L	43,3	1.7047	0	L	17.5	L
34,4	1.3543	12.5	L	22.5	L	37,4	1.4724	7.5	L	20	L	40,4	1.5906	2.5	L	17.5	L	43,4	1.7087	7.5	R	20	L
34,5	1.3583	52.5	L	57.5	L	37,5	1.4764	47.5	L	50	L	40,5	1.5945	40	L	45	L	43,5	1.7126	35	L	40	L
34,6	1.3622	47.5	L	50	L	37,6	1.4803	42.5	L	45	L	40,6	1.5984	35	L	40	L	43,6	1.7165	30	L	35	L
34,7	1.3661	42.5	L	47.5	L	37,7	1.4843	37.5	L	40	L	40,7	1.6024	30	L	37.5	L	43,7	1.7205	25	L	32.5	L
34,8	1.3701	37.5	L	42.5	L	37,8	1.4882	32.5	L	37.5	L	40,8	1.6063	27.5	L	32.5	L	43,8	1.7244	22.5	L	27.5	L
34,9	1.3740	32.5	L	37.5	L	37,9	1.4921	27.5	L	35	L	40,9	1.6102	22.5	L	30	L	43,9	1.7283	17.5	L	25	L
35,0	1.3780	27.5	L	35	L	38,0	1.4961	25	L	30	L	41,0	1.6142	17.5	L	27.5	L	44,0	1.7323	15	L	22.5	L
35,1	1.3819	25	L	30	L	38,1	1.5000	20	L	27.5	L	41,1	1.6181	15	L	22.5	L	44,1	1.7362	10	L	20	L
35,2	1.3858	20	L	27.5	L	38,2	1.5039	15	L	25	L	41,2	1.6220	10	L	20	L	44,2	1.7402	5	L	17.5	L
35,3	1.3898	15	L	25	L	38,3	1.5079	10	L	22.5	L	41,3	1.6260	5	L	20	L	44,3	1.7441	2.5	R	17.5	L
35,4	1.3937	10	L	22.5	L	38,4	1.5118	5	L	20	L	41,4	1.6299	0	R	17.5	L	44,4	1.7480	12.5	R	22.5	L
35,5	1.3976	50	L	55	L	38,5	1.5157	45	L	47.5	L	41,5	1.6339	37.5	L	42.5	L	–	–	–	–	–	–
35,6	1.4016	45	L	50	L	38,6	1.5197	40	L	42.5	L	41,6	1.6378	35	L	37.5	L	–	–	–	–	–	–
35,7	1.4055	40	L	45	L	38,7	1.5236	35	L	40	L	41,7	1.6417	30	L	35	L	–	–	–	–	–	–
35,8	1.4094	35	L	40	L	38,8	1.5276	30	L	35	L	41,8	1.6457	25	L	32.5	L	–	–	–	–	–	–
35,9	1.4134	30	L	37.5	L	38,9	1.5315	25	L	32.5	L	41,9	1.6496	22.5	L	27.5	L	–	–	–	–	–	–
36,0	1.4173	27.5	L	32.5	L	39,0	1.5354	22.5	L	27.5	L	42,0	1.6535	17.5	L	25	L	–	–	–	–	–	–
36,1	1.4213	22.5	L	30	L	39,1	1.5394	17.5	L	25	L	42,1	1.6575	12.5	L	22.5	L	–	–	–	–	–	–
36,2	1.4252	17.5	L	27.5	L	39,2	1.5433	15	L	22.5	L	42,2	1.6614	7.5	L	20	L	–	–	–	–	–	–
36,3	1.4291	15	L	22.5	L	39,3	1.5472	10	L	20	L	42,3	1.6654	2.5	L	17.5	L	–	–	–	–	–	–
36,4	1.4331	10	L	20	L	39,4	1.5512	5	L	17.5	L	42,4	1.6693	5	R	20	L	–	–	–	–	–	–

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA051AM • KRDE043010M 43–65,9mm

diameter						diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
43,0	1.6929	55	L	65	L	46,0	1.8110	42.5	L	55	L	49,0	1.9291	32.5	L	47.5	L	52,0	2.0472	25	L	40	L
43,1	1.6969	47.5	L	57.5	L	46,1	1.8150	37.5	L	50	L	49,1	1.9331	27.5	L	42.5	L	52,1	2.0512	20	L	37.5	L
43,2	1.7008	40	L	52.5	L	46,2	1.8189	30	L	45	L	49,2	1.9370	22.5	L	40	L	52,2	2.0551	12.5	L	35	L
43,3	1.7047	35	L	47.5	L	46,3	1.8228	25	L	42.5	L	49,3	1.9409	17.5	L	35	L	52,3	2.0591	7.5	L	32.5	L
43,4	1.7087	30	L	42.5	L	46,4	1.8268	20	L	37.5	L	49,4	1.9449	12.5	L	32.5	L	52,4	2.0630	0	L	32.5	L
43,5	1.7126	22.5	L	40	L	46,5	1.8307	15	L	35	L	49,5	1.9488	5	L	32.5	L	52,5	2.0669	7.5	R	32.5	L
43,6	1.7165	17.5	L	37.5	L	46,6	1.8346	7.5	L	32.5	L	49,6	1.9528	2.5	R	32.5	L	52,6	2.0709	20	R	37.5	L
43,7	1.7205	12.5	L	32.5	L	46,7	1.8386	2.5	L	30	L	49,7	1.9567	12.5	R	35	L	52,7	2.0748	42.5	R	52.5	L
43,8	1.7244	5	L	32.5	L	46,8	1.8425	7.5	R	32.5	L	49,8	1.9606	27.5	R	42.5	L	52,8	2.0787	85	L	92.5	R
43,9	1.7283	2.5	R	32.5	L	46,9	1.8465	17.5	R	35	L	49,9	1.9646	60	R	70	L	52,9	2.0827	40	L	52.5	R
44,0	1.7323	50	L	60	L	47,0	1.8504	40	L	52.5	L	50,0	1.9685	30	L	45	L	53,0	2.0866	22.5	L	37.5	L
44,1	1.7362	42.5	L	55	L	47,1	1.8543	35	L	47.5	L	50,1	1.9724	25	L	40	L	53,1	2.0906	17.5	L	35	L
44,2	1.7402	37.5	L	50	L	47,2	1.8583	27.5	L	42.5	L	50,2	1.9764	20	L	37.5	L	53,2	2.0945	10	L	32.5	L
44,3	1.7441	32.5	L	45	L	47.3	1.8622	22.5	L	40	L	50,3	1.9803	12.5	L	35	L	53,3	2.0984	2.5	L	32.5	L
44,4	1.7480	25	L	42.5	L	47,4	1.8661	17.5	L	35	L	50,4	1.9843	7.5	L	32.5	L	53,4	2.1024	5	R	32.5	L
44,5	1.7520	20	L	37.5	L	47,5	1.8701	12.5	L	32.5	L	50,5	1.9882	0	L	32.5	L	53,5	2.1063	15	R	35	L
44,6	1.7559	15	L	35	L	47,6	1.8740	5	L	32.5	L	50,6	1.9921	7.5	R	32.5	L	53,6	2.1102	30	R	45	L
44,7	1.7598	10	L	32.5	L	47,7	1.8780	2.5	R	32.5	L	50,7	1.9961	20	R	37.5	L	53,7	2.1142	62.5	R	72.5	L
44,8	1.7638	2.5	L	30	L	47,8	1.8819	12.5	R	35	L	50,8	2.0000	40	R	52.5	L	53,8	2.1181	57.5	L	67.5	R
44,9	1.7677	7.5	R	32.5	L	47,9	1.8858	27.5	R	42.5	L	50,9	2.0039	87.5	R	95	L	53,9	2.1220	27.5	L	42.5	R
45,0	1.7717	47.5	L	57.5	L	48,0	1.8898	37.5	L	50	L	51,0	2.0079	27.5	L	42.5	L	54,0	2.1260	20	L	37.5	L
45,1	1.7756	40	L	52.5	L	48,1	1.8937	30	L	45	L	51,1	2.0118	22.5	L	40	L	54,1	2.1299	12.5	L	35	L
45,2	1.7795	35	L	47.5	L	48,2	1.8976	25	L	40	L	51,2	2.0157	17.5	L	35	L	54,2	2.1339	7.5	L	32.5	L
45,3	1.7835	30	L	42.5	L	48,3	1.9016	20	L	37.5	L	51,3	2.0197	10	L	35	L	54,3	2.1378	0	L	32.5	L
45,4	1.7874	22.5	L	40	L	48,4	1.9055	15	L	35	L	51,4	2.0236	5	L	32.5	L	54,4	2.1417	7.5	R	32.5	L
45,5	1.7913	17.5	L	35	L	48,5	1.9094	7.5	L	32.5	L	51,5	2.0276	2.5	R	30	L	54,5	2.1457	20	R	37.5	L
45,6	1.7953	12.5	L	32.5	L	48,6	1.9134	0	L	32.5	L	51,6	2.0315	12.5	R	32.5	L	54,6	2.1496	45	R	55	L
45,7	1.7992	5	L	32.5	L	48,7	1.9173	7.5	R	32.5	L	51,7	2.0354	30	R	45	L	54,7	2.1535	82.5	L	90	R
45,8	1.8031	2.5	R	32.5	L	48,8	1.9213	20	R	37.5	L	51,8	2.0394	60	R	70	L	54,8	2.1575	40	L	52.5	R
45,9	1.8071	12.5	R	35	L	48,9	1.9252	40	R	52.5	L	51,9	2.0433	60	L	70	R	54,9	2.1614	20	L	37.5	R
55,0	2.1654	17.5	L	35	L	58,0	2.2835	7.5	L	32.5	L	61,0	2.4016	5	R	32.5	L	64,0	2.5197	25	R	40	L
55,1	2.1693	10	L	32.5	L	58,1	2.2874	0	R	30	L	61,1	2.4055	15	R	35	L	64,1	2.5236	55	R	65	L
55,2	2.1732	2.5	L	32.5	L	58,2	2.2913	10	R	32.5	L	61,2	2.4094	35	R	47.5	L	64,2	2.5276	67.5	L	77.5	R
55,3	2.1772	5	R	32.5	L	58,3	2.2953	22.5	R	40	L	61,3	2.4134	75	R	82.5	L	64,3	2.5315	32.5	L	45	R
55,4	2.1811	15	R	35	L	58,4	2.2992	47.5	R	57.5	L	61,4	2.4173	50	L	60	R	64,4	2.5354	15	L	35	R
55,5	2.1850	32.5	R	45	L	58,5	2.3031	75	L	82.5	R	61,5	2.4213	25	L	40	R	64,5	2.5394	5	L	32.5	R
55,6	2.1890	65	R	75	L	58,6	2.3071	35	L	47.5	R	61,6	2.4252	10	L	32.5	R	64,6	2.5433	2.5	R	32.5	R
55,7	2.1929	55	L	65	R	58,7	2.3110	17.5	L	37.5	R	61,7	2.4291	0	L	30	R	64,7	2.5472	10	R	32.5	R
55,8	2.1969	27.5	L	42.5	R	58,8	2.3150	5	L	32.5	R	61,8	2.4331	5	R	32.5	R	64,8	2.5512	15	R	35	R
55,9	2.2008	12.5	L	35	R	58,9	2.3189	2.5	R	32.5	R	61,9	2.4370	12.5	R	35	R	64,9	2.5551	22.5	R	37.5	R
56,0	2.2047	12.5	L	35	L	59,0	2.3228	2.5	L	32.5	L	62,0	2.4409	10	R	32.5	L	65,0	2.5591	37.5	R	50	L
56,1	2.2087	7.5	L	32.5	L	59,1	2.3268	5	R	32.5	L	62,1	2.4449	25	R	40	L	65,1	2.5630	80	R	87.5	L
56,2	2.2126	0	R	32.5	L	59,2	2.3307	15	R	35	L	62,2	2.4488	52.5	R	62.5	L	65,2	2.5669	47.5	L	57.5	R
56,3	2.2165	10	R	32.5	L	59,3	2.3346	35	R	47.5	L	62,3	2.4528	70	L	77.5	R	65,3	2.5709	22.5	L	40	R
56,4	2.2205	22.5	R	40	L	59,4	2.3386	72.5	R	80	L	62,4	2.4567	35	L	47.5	R	65,4	2.5748	7.5	L	32.5	R
56,5	2.2244	47.5	R	57.5	L	59,5	2.3425	52.5	L	62.5	R	62,5	2.4606	15	L	35	R	65,5	2.5787	0	L	32.5	R
56,6	2.2283	80	L	87.5	R	59,6	2.3465	25	L	40	R	62,6	2.4646	5	L	32.5	R	65,6	2.5827	7.5	R	32.5	R
56,7	2.2323	37.5	L	50	R	59,7	2.3504	10	L	32.5	R	62,7	2.4685	2.5	R	32.5	R	65,7	2.5866	12.5	R	35	R
56,8	2.2362	17.5	L	35	R	59,8	2.3543	2.5	L	32.5	R	62,8	2.4724	10	R	32.5	R	65,8	2.5906	17.5	R	37.5	R
56,9	2.2402	7.5	L	32.5	R	59,9	2.3583	5	R	32.5	R	62,9	2.4764	15	R	35	R	65,9	2.5945	25	R	40	R
57,0	2.2441	10	L	32.5	L	60,0	2.3622	0	R	30	L	63,0	2.4803	17.5	R	37.5	L	–	–	–	–	–	–
57,1	2.2480	2.5	L	32.5	L	60,1	2.3661	10	R	32.5	L	63,1	2.4843	37.5	R	50	L	–	–	–	–	–	–
57,2	2.2520	5	R	32.5	L	60,2	2.3701	25	R	40	L	63,2	2.4882	77.5	R	85	L	–	–	–	–	–	–
57,3	2.2559	15	R	35	L	60,3	2.3740	50	R	60	L	63,3	2.4921	47.5	L	57.5	R	–	–	–	–	–	–
57,4	2.2598	32.5	R	45	L	60,4	2.3780	72.5	L	80	R	63,4	2.4961	22.5	L	40	R	–	–	–	–	–	–
57,5	2.2638	67.5	R	77.5	L	60,5	2.3819	35	L	47.5	R	63,5	2.5000	10	L	32.5	R	–	–	–	–	–	–
57,6	2.2677	52.5	L	62.5	R	60,6	2.3858	15	L	35	R	63,6	2.5039	0	L	30	R	–	–	–	–	–	–
57,7	2.2717	25	L	40	R	60,7	2.3898	5	L	32.5	R	63,7	2.5079	7.5	R	32.5	R	–	–	–	–	–	–
57,8	2.2756	10	L	32.5	R	60,8	2.3937	2.5	R	32.5	R	63,8	2.5118	12.5	R	35	R	–	–	–	–	–	–
57,9	2.2795	2.5	L	32.5	R	60,9	2.3976	10	R	32.5	R	63,9	2.5157	17.5	R	37.5	R	–	–	–	–	–	–

(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA012AM • KRDE065012M 65–82,9mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
65,0	2.5591	5	L	37.5	R	68,0	2.6772	12.5	R	37.5	R	71,0	2.7953	25	R	45	R
65,1	2.5630	2.5	R	37.5	R	68,1	2.6811	17.5	R	40	R	71,1	2.7992	32.5	R	47.5	R
65,2	2.5669	10	R	37.5	R	68,2	2.6850	22.5	R	42.5	R	71,2	2.8031	37.5	R	52.5	R
65,3	2.5709	15	R	40	R	68,3	2.6890	27.5	R	47.5	R	71,3	2.8071	42.5	R	57.5	R
65,4	2.5748	20	R	42.5	R	68,4	2.6929	32.5	R	50	R	71,4	2.8110	47.5	R	62.5	R
65,5	2.5787	25	R	45	R	68,5	2.6969	40	R	55	R	71,5	2.8150	55	R	67.5	R
65,6	2.5827	30	R	47.5	R	68,6	2.7008	45	R	60	R	71,6	2.8189	65	R	77.5	R
65,7	2.5866	35	R	52.5	R	68,7	2.7047	52.5	R	65	R	71,7	2.8228	65	R	77.5	R
65,8	2.5906	42.5	R	57.5	R	68,8	2.7087	60	R	72.5	R	71,8	2.8268	65	R	77.5	R
65,9	2.5945	47.5	R	62.5	R	68,9	2.7126	70	R	82.5	R	71,9	2.8307	65	R	77.5	R
66,0	2.5984	2.5	R	35	R	69,0	2.7165	17.5	R	40	R	72,0	2.8346	30	R	47.5	R
66,1	2.6024	7.5	R	37.5	R	69,1	2.7205	22.5	R	42.5	R	72,1	2.8386	35	R	52.5	R
66,2	2.6063	12.5	R	40	R	69,2	2.7244	27.5	R	45	R	72,2	2.8425	40	R	55	R
66,3	2.6102	20	R	40	R	69,3	2.7283	32.5	R	50	R	72,3	2.8465	47.5	R	60	R
66,4	2.6142	25	R	45	R	69,4	2.7323	37.5	R	52.5	R	72,4	2.8504	55	R	67.5	R
66,5	2.6181	30	R	47.5	R	69,5	2.7362	45	R	57.5	R	72,5	2.8543	62.5	R	75	R
66,6	2.6220	35	R	52.5	R	69,6	2.7402	50	R	62.5	R	72,6	2.8583	80	R	90	R
66,7	2.6260	40	R	55	R	69,7	2.7441	57.5	R	70	R	72,7	2.8622	80	R	90	R
66,8	2.6299	47.5	R	60	R	69,8	2.7480	67.5	R	80	R	72,8	2.8661	80	R	90	R
66,9	2.6339	55	R	67.5	R	69,9	2.7520	67.5	R	80	R	72,9	2.8701	80	R	90	R
67,0	2.6378	7.5	R	37.5	R	70,0	2.7559	22.5	R	42.5	R	73,0	2.8740	40	R	55	R
67,1	2.6417	12.5	R	40	R	70,1	2.7598	27.5	R	45	R	73,1	2.8780	47.5	R	60	R
67,2	2.6457	17.5	R	42.5	R	70,2	2.7638	32.5	R	50	R	73,2	2.8819	52.5	R	65	R
67,3	2.6496	22.5	R	45	R	70,3	2.7677	37.5	R	52.5	R	73,3	2.8858	62.5	R	75	R
67,4	2.6535	30	R	47.5	R	70,4	2.7717	42.5	R	57.5	R	73,4	2.8898	75	R	87.5	R
67,5	2.6575	35	R	50	R	70,5	2.7756	50	R	62.5	R	73,5	2.8937	75	R	87.5	R
67,6	2.6614	40	R	55	R	70,6	2.7795	57.5	R	70	R	73,6	2.8976	75	R	87.5	R
67,7	2.6654	45	R	60	R	70,7	2.7835	65	R	77.5	R	73,7	2.9016	75	R	87.5	R
67,8	2.6693	52.5	R	65	R	70,8	2.7874	65	R	77.5	R	73,8	2.9055	75	R	87.5	R
67,9	2.6732	60	R	72.5	R	70,9	2.7913	65	R	77.5	R	73,9	2.9094	75	R	87.5	R
74,0	2.9134	40	R	55	R	77,0	3.0315	55	R	67.5	R	80,0	3.1496	22.5	L	45	L
74,1	2.9173	45	R	60	R	77,1	3.0354	65	R	77.5	R	80,1	3.1535	17.5	L	42.5	L
74,2	2.9213	52.5	R	65	R	77,2	3.0394	65	R	77.5	R	80,2	3.1575	12.5	L	40	L
74,3	2.9252	60	R	72.5	R	77,3	3.0433	65	R	77.5	R	80,3	3.1614	5	L	40	L
74,4	2.9291	70	R	82.5	R	77,4	3.0472	65	R	77.5	R	80,4	3.1654	2.5	R	40	L
74,5	2.9331	70	R	82.5	R	77,5	3.0512	65	R	77.5	R	80,5	3.1693	10	R	40	L
74,6	2.9370	70	R	82.5	R	77,6	3.0551	65	R	77.5	R	80,6	3.1732	22.5	R	45	L
74,7	2.9409	70	R	82.5	R	77,7	3.0591	65	R	77.5	R	80,7	3.1772	37.5	R	55	L
74,8	2.9449	70	R	82.5	R	77,8	3.0630	65	R	77.5	R	80,8	3.1811	65	R	77.5	L
74,9	2.9488	70	R	82.5	R	77,9	3.0669	65	R	77.5	R	80,9	3.1850	70	L	82.5	R
75,0	2.9528	52.5	R	65	R	78,0	3.0709	62.5	R	75	R	81,0	3.1890	20	L	42.5	L
75,1	2.9567	57.5	R	70	R	78,1	3.0748	82.5	R	92.5	R	81,1	3.1929	12.5	L	40	L
75,2	2.9606	70	R	82.5	R	78,2	3.0787	82.5	R	92.5	R	81,2	3.1969	5	L	40	L
75,3	2.9646	70	R	82.5	R	78,3	3.0827	82.5	R	92.5	R	81,3	3.2008	0	R	37.5	L
75,4	2.9685	70	R	82.5	R	78,4	3.0866	82.5	R	92.5	R	81,4	3.2047	10	R	40	L
75,5	2.9724	70	R	82.5	R	78,5	3.0906	82.5	R	92.5	R	81,5	3.2087	20	R	45	L
75,6	2.9764	70	R	82.5	R	78,6	3.0945	82.5	R	92.5	R	81,6	3.2126	35	R	52.5	L
75,7	2.9803	70	R	82.5	R	78,7	3.0984	82.5	R	92.5	R	81,7	3.2165	57.5	R	72.5	L
75,8	2.9843	70	R	82.5	R	78,8	3.1024	82.5	R	92.5	R	81,8	3.2205	75	L	87.5	R
75,9	2.9882	70	R	82.5	R	78,9	3.1063	82.5	R	92.5	R	81,9	3.2244	45	L	60	R
76,0	2.9921	50	R	62.5	R	79,0	3.1102	75	R	87.5	R	82,0	3.2283	15	L	40	L
76,1	2.9961	57.5	R	70	R	79,1	3.1142	75	R	87.5	R	82,1	3.2323	7.5	L	40	L
76,2	3.0000	67.5	R	80	R	79,2	3.1181	75	R	87.5	R	82,2	3.2362	0	L	40	L
76,3	3.0039	67.5	R	80	R	79,3	3.1220	75	R	87.5	R	82,3	3.2402	7.5	R	40	L
76,4	3.0079	67.5	R	80	R	79,4	3.1260	75	R	87.5	R	82,4	3.2441	17.5	R	42.5	L
76,5	3.0118	67.5	R	80	R	79,5	3.1299	75	R	87.5	R	82,5	3.2480	30	R	50	L
76,6	3.0157	67.5	R	80	R	79,6	3.1339	75	R	87.5	R	82,6	3.2520	52.5	R	67.5	L
76,7	3.0197	67.5	R	80	R	79,7	3.1378	75	R	87.5	R	82,7	3.2559	82.5	L	95	R
76,8	3.0236	67.5	R	80	R	79,8	3.1417	75	R	87.5	R	82,8	3.2598	50	L	65	R
76,9	3.0276	67.5	R	80	R	79,9	3.1457	75	R	87.5	R	82,9	3.2638	30	L	50	R

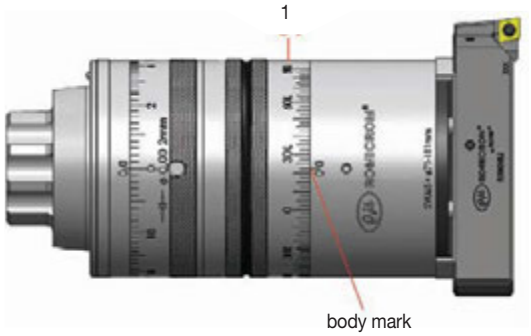
(continued)

(Balancing Table • SVU-BB2 Boring Head — continued)

KRDEA012AM • KRDE065012M 65–100mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
83,0	3.2677	10	L	40	L	86,0	3.3858	10	R	40	L	89,0	3.5039	42.5	R	57.5	L
83,1	3.2717	2.5	L	37.5	L	86,1	3.3898	20	R	45	L	89,1	3.5079	72.5	R	85	L
83,2	3.2756	5	R	40	L	86,2	3.3937	35	R	52.5	L	89,2	3.5118	62.5	L	75	R
83,3	3.2795	15	R	42.5	L	86,3	3.3976	57.5	R	72.5	L	89,3	3.5157	37.5	L	55	R
83,4	3.2835	27.5	R	47.5	L	86,4	3.4016	75	L	87.5	R	89,4	3.5197	22.5	L	45	R
83,5	3.2874	47.5	R	62.5	L	86,5	3.4055	45	L	60	R	89,5	3.5236	10	L	40	R
83,6	3.2913	77.5	R	90	L	86,6	3.4094	27.5	L	47.5	R	89,6	3.5276	0	L	37.5	R
83,7	3.2953	55	L	70	R	86,7	3.4134	15	L	42.5	R	89,7	3.5315	5	R	40	R
83,8	3.2992	32.5	L	50	R	86,8	3.4173	5	L	40	R	89,8	3.5354	12.5	R	40	R
83,9	3.3031	17.5	L	42.5	R	86,9	3.4213	2.5	R	40	R	89,9	3.5394	17.5	R	42.5	R
84,0	3.3071	5	L	37.5	L	87,0	3.4252	17.5	R	42.5	L	90,0	3.5433	65	R	77.5	L
84,1	3.3110	2.5	R	37.5	L	87,1	3.4291	30	R	50	L	90,1	3.5472	70	L	82.5	R
84,2	3.3150	12.5	R	40	L	87,2	3.4331	52.5	R	67.5	L	90,2	3.5512	40	L	57.5	R
84,3	3.3189	25	R	47.5	L	87,3	3.4370	82.5	L	95	R	90,3	3.5551	22.5	L	45	R
84,4	3.3228	42.5	R	57.5	L	87,4	3.4409	50	L	65	R	90,4	3.5591	12.5	L	40	R
84,5	3.3268	72.5	R	85	L	87,5	3.4449	30	L	50	R	90,5	3.5630	2.5	L	37.5	R
84,6	3.3307	62.5	L	75	R	87,6	3.4488	17.5	L	42.5	R	90,6	3.5669	5	R	37.5	R
84,7	3.3346	37.5	L	55	R	87,7	3.4528	7.5	L	40	R	90,7	3.5709	10	R	40	R
84,8	3.3386	22.5	L	45	R	87,8	3.4567	2.5	R	37.5	R	90,8	3.5748	17.5	R	42.5	R
84,9	3.3425	10	L	40	R	87,9	3.4606	7.5	R	40	R	90,9	3.5787	22.5	R	45	R
85,0	3.3465	2.5	R	40	L	88,0	3.4646	27.5	R	47.5	L	91,0	3.5827	75	L	87.5	R
85,1	3.3504	10	R	40	L	88,1	3.4685	47.5	R	62.5	L	91,1	3.5866	47.5	L	62.5	R
85,2	3.3543	22.5	R	45	L	88,2	3.4724	77.5	R	90	L	91,2	3.5906	27.5	L	47.5	R
85,3	3.3583	37.5	R	55	L	88,3	3.4764	55	L	70	R	91,3	3.5945	15	L	42.5	R
85,4	3.3622	65	R	77.5	L	88,4	3.4803	35	L	52.5	R	91,4	3.5984	5	L	40	R
85,5	3.3661	70	L	82.5	R	88,5	3.4843	17.5	L	42.5	R	91,5	3.6024	2.5	R	40	R
85,6	3.3701	40	L	57.5	R	88,6	3.4882	7.5	L	40	R	91,6	3.6063	10	R	40	R
85,7	3.3740	22.5	L	45	R	88,7	3.4921	0	R	40	R	91,7	3.6102	15	R	42.5	R
85,8	3.3780	12.5	L	40	R	88,8	3.4961	7.5	R	40	R	91,8	3.6142	22.5	R	45	R
85,9	3.3819	2.5	L	37.5	R	88,9	3.5000	12.5	R	42.5	R	91,9	3.6181	27.5	R	47.5	R
92,0	3.6220	50	L	65	R	95,0	3.7402	12.5	L	40	R	98,0	3.8583	7.5	R	40	R
92,1	3.6260	30	L	50	R	95,1	3.7441	2.5	L	37.5	R	98,1	3.8622	12.5	R	42.5	R
92,2	3.6299	17.5	L	42.5	R	95,2	3.7480	5	R	37.5	R	98,2	3.8661	20	R	42.5	R
92,3	3.6339	7.5	L	40	R	95,3	3.7520	10	R	40	R	98,3	3.8701	25	R	47.5	R
92,4	3.6378	2.5	R	37.5	R	95,4	3.7559	17.5	R	42.5	R	98,4	3.8740	30	R	50	R
92,5	3.6417	7.5	R	40	R	95,5	3.7598	22.5	R	45	R	98,5	3.8780	37.5	R	55	R
92,6	3.6457	15	R	40	R	95,6	3.7638	27.5	R	47.5	R	98,6	3.8819	42.5	R	60	R
92,7	3.6496	20	R	45	R	95,7	3.7677	35	R	52.5	R	98,7	3.8858	50	R	65	R
92,8	3.6535	25	R	47.5	R	95,8	3.7717	40	R	57.5	R	98,8	3.8898	57.5	R	72.5	R
92,9	3.6575	32.5	R	50	R	95,9	3.7756	47.5	R	62.5	R	98,9	3.8937	70	R	82.5	R
93,0	3.6614	35	L	52.5	R	96,0	3.7795	5	L	40	R	99,0	3.8976	12.5	R	40	R
93,1	3.6654	17.5	L	42.5	R	96,1	3.7835	2.5	R	40	R	99,1	3.9016	17.5	R	42.5	R
93,2	3.6693	7.5	L	40	R	96,2	3.7874	10	R	40	R	99,2	3.9055	25	R	45	R
93,3	3.6732	0	R	37.5	R	96,3	3.7913	15	R	42.5	R	99,3	3.9094	30	R	50	R
93,4	3.6772	7.5	R	40	R	96,4	3.7953	22.5	R	45	R	99,4	3.9134	35	R	52.5	R
93,5	3.6811	12.5	R	42.5	R	96,5	3.7992	27.5	R	47.5	R	99,5	3.9173	42.5	R	57.5	R
93,6	3.6850	20	R	42.5	R	96,6	3.8031	32.5	R	52.5	R	99,6	3.9213	47.5	R	62.5	R
93,7	3.6890	25	R	47.5	R	96,7	3.8071	40	R	55	R	99,7	3.9252	55	R	70	R
93,8	3.6929	30	R	50	R	96,8	3.8110	45	R	60	R	99,8	3.9291	67.5	R	80	R
93,9	3.6969	37.5	R	55	R	96,9	3.8150	52.5	R	67.5	R	99,9	3.9331	67.5	R	80	R
94,0	3.7008	22.5	L	45	R	97,0	3.8189	2.5	R	37.5	R	100,0	3.9370	17.5	R	42.5	R
94,1	3.7047	10	L	40	R	97,1	3.8228	7.5	R	40	R	100,1	3.9409	22.5	R	45	R
94,2	3.7087	2.5	L	40	R	97,2	3.8268	15	R	40	R	100,2	3.9449	27.5	R	47.5	R
94,3	3.7126	5	R	40	R	97,3	3.8307	20	R	45	R	100,3	3.9488	35	R	52.5	R
94,4	3.7165	12.5	R	40	R	97,4	3.8346	25	R	47.5	R	100,4	3.9528	40	R	57.5	R
94,5	3.7205	17.5	R	42.5	R	97,5	3.8386	32.5	R	50	R	100,5	3.9567	47.5	R	62.5	R
94,6	3.7244	25	R	45	R	97,6	3.8425	37.5	R	55	R	100,6	3.9606	55	R	70	R
94,7	3.7283	30	R	50	R	97,7	3.8465	45	R	60	R	100,7	3.9646	65	R	77.5	R
94,8	3.7323	35	R	52.5	R	97,8	3.8504	50	R	65	R	100,8	3.9685	65	R	77.5	R
94,9	3.7362	42.5	R	57.5	R	97,9	3.8543	60	R	72.5	R	100,9	3.9724	65	R	77.5	R

Balancing Table • SVU-65 Boring Head





1. There is one balancing dial on the SVU system.
2. Look up your diameter in the table below and read the setting values for ring 1.
3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units).

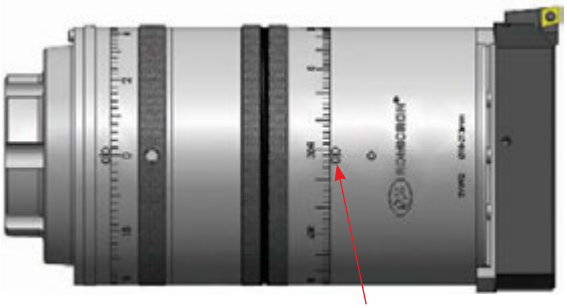
KRDE070019M												KRDE083019M							
KRCSCFPR061E 71–76mm				KRCSCFPR062E 75,5–81,5mm				KRCSCFPR063E 80–85mm				KRCSCFPR061E 84–89mm				KRCSCFPR062E 88,5–93,5mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in			mm	in			mm	in		
70,99	2.795	40	L	75,49	2.972	35	L	80,01	3.150	30	L	84,00	3.307	47.5	L	88,49	3.484	40	L
71,12	2.800	37.5	L	75,59	2.976	32.5	L	80,16	3.156	27.5	L	84,12	3.312	45	L	88,65	3.490	37.5	L
71,27	2.806	35	L	75,77	2.983	30	L	80,34	3.163	25	L	84,25	3.317	42.5	L	88,80	3.496	35	L
71,42	2.812	32.5	L	75,95	2.990	27.5	L	80,52	3.170	22.5	L	84,38	3.322	40	L	88,95	3.502	32.5	L
71,60	2.819	30	L	76,10	2.996	25	L	80,70	3.177	20	L	84,51	3.327	37.5	L	89,08	3.507	30	L
71,78	2.826	27.5	L	76,28	3.003	22.5	L	80,87	3.184	17.5	L	84,66	3.333	35	L	89,26	3.514	27.5	L
71,96	2.833	25	L	76,48	3.011	20	L	81,08	3.192	15	L	84,81	3.339	32.5	L	89,41	3.520	25	L
72,14	2.840	22.5	L	76,66	3.018	17.5	L	81,25	3.199	12.5	L	84,96	3.345	30	L	89,56	3.526	22.5	L
72,31	2.847	20	L	76,84	3.025	15	L	81,46	3.207	10	L	85,12	3.351	27.5	L	89,74	3.533	20	L
72,49	2.854	17.5	L	77,04	3.033	12.5	L	81,64	3.214	7.5	L	85,27	3.357	25	L	89,89	3.539	17.5	L
72,69	2.862	15	L	77,22	3.040	10	L	81,84	3.222	5	L	85,42	3.363	22.5	L	90,07	3.546	15	L
72,87	2.869	12.5	L	77,42	3.048	7.5	L	82,02	3.229	2.5	L	85,60	3.370	20	L	90,22	3.552	12.5	L
73,08	2.877	10	L	77,62	3.056	5	L	82,22	3.237	0	–	85,78	3.377	17.5	L	90,40	3.559	10	L
73,25	2.884	7.5	L	77,80	3.063	2.5	L	82,42	3.245	2.5	R	85,93	3.383	15	L	90,58	3.566	7.5	L
73,46	2.892	5	L	78,00	3.071	0	–	82,60	3.252	5	R	86,11	3.390	12.5	L	90,75	3.573	5	L
73,66	2.900	2.5	L	78,21	3.079	2.5	R	82,80	3.260	7.5	R	86,28	3.397	10	L	90,93	3.580	2.5	L
73,86	2.908	0	–	78,38	3.086	5	R	82,98	3.267	10	R	86,46	3.404	7.5	L	91,11	3.587	0	–
74,04	2.915	2.5	R	78,59	3.094	7.5	R	83,19	3.275	12.5	R	86,64	3.411	5	L	91,29	3.594	2.5	R
74,24	2.923	5	R	78,77	3.101	10	R	83,36	3.282	15	R	86,82	3.418	2.5	L	91,47	3.601	5	R
74,45	2.931	7.5	R	78,97	3.109	12.5	R	83,57	3.290	17.5	R	87,00	3.425	0	–	91,64	3.608	7.5	R
74,63	2.938	10	R	79,15	3.116	15	R	83,74	3.297	20	R	87,17	3.432	2.5	R	91,80	3.614	10	R
74,83	2.946	12.5	R	79,35	3.124	17.5	R	83,92	3.304	22.5	R	87,33	3.438	5	R	91,97	3.621	12.5	R
75,01	2.953	15	R	79,53	3.131	20	R	84,10	3.311	25	R	87,50	3.445	7.5	R	92,15	3.628	15	R
75,21	2.961	17.5	R	79,71	3.138	22.5	R	84,28	3.318	27.5	R	87,68	3.452	10	R	92,33	3.635	17.5	R
75,39	2.968	20	R	79,88	3.145	25	R	84,46	3.325	30	R	87,86	3.459	12.5	R	92,48	3.641	20	R
75,57	2.975	22.5	R	80,06	3.152	27.5	R	84,61	3.331	32.5	R	88,04	3.466	15	R	92,66	3.648	22.5	R
75,74	2.982	25	R	80,24	3.159	30	R	84,79	3.338	35	R	88,21	3.473	17.5	R	92,81	3.654	25	R
75,92	2.989	27.5	R	80,42	3.166	32.5	R	84,94	3.344	37.5	R	88,37	3.479	20	R	92,96	3.660	27.5	R
76,00	2.992	30	R	80,49	3.169	35	R	84,99	3.346	40	R	88,54	3.486	22.5	R	93,12	3.666	30	R
–	–	–	–	–	–	–	–	–	–	–	–	88,70	3.492	25	R	93,27	3.672	32.5	R
–	–	–	–	–	–	–	–	–	–	–	–	88,85	3.498	27.5	R	93,42	3.678	35	R
–	–	–	–	–	–	–	–	–	–	–	–	89,00	3.504	30	R	93,50	3.681	37.5	R

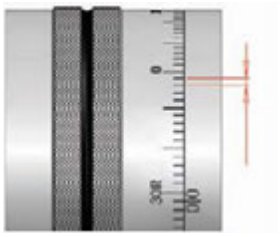
(continued)

(Balancing Table • SVU-65 Boring Head — continued)

KRDE083019M				KRDE096019M											
KRCSCFPR063E 93–98mm				KRCSCFPR061E 97–102mm				KRCSCFPR062E 101,5–106,5mm				KRCSCFPR063E 106–111mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in			mm	in		
92,99	3.661	35	L	97,00	3.819	55	L	101,50	3.996	45	L	105,99	4.173	37.5	L
93,14	3.667	32.5	L	97,05	3.821	52.5	L	101,60	4.000	42.5	L	106,17	4.180	35	L
93,29	3.673	30	L	97,16	3.825	50	L	101,73	4.005	40	L	106,32	4.186	32.5	L
93,45	3.679	27.5	L	97,28	3.830	47.5	L	101,85	4.010	37.5	L	106,45	4.191	30	L
93,60	3.685	25	L	97,38	3.834	45	L	101,98	4.015	35	L	106,58	4.196	27.5	L
93,78	3.692	22.5	L	97,51	3.839	42.5	L	102,13	4.021	32.5	L	106,73	4.202	25	L
93,93	3.698	20	L	97,61	3.843	40	L	102,26	4.026	30	L	106,88	4.208	22.5	L
94,11	3.705	17.5	L	97,74	3.848	37.5	L	102,41	4.032	27.5	L	107,04	4.214	20	L
94,26	3.711	15	L	97,87	3.853	35	L	102,54	4.037	25	L	107,19	4.220	17.5	L
94,44	3.718	12.5	L	98,02	3.859	32.5	L	102,69	4.043	22.5	L	107,34	4.226	15	L
94,62	3.725	10	L	98,15	3.864	30	L	102,84	4.049	20	L	107,49	4.232	12.5	L
94,79	3.732	7.5	L	98,30	3.870	27.5	L	103,00	4.055	17.5	L	107,65	4.238	10	L
94,95	3.738	5	L	98,45	3.876	25	L	103,15	4.061	15	L	107,82	4.245	7.5	L
95,12	3.745	2.5	L	98,58	3.881	22.5	L	103,30	4.067	12.5	L	107,98	4.251	5	L
95,30	3.752	0	–	98,73	3.887	20	L	103,48	4.074	10	L	108,13	4.257	2.5	L
95,48	3.759	2.5	R	98,88	3.893	17.5	L	103,63	4.080	7.5	L	108,31	4.264	0	–
95,66	3.766	5	R	99,06	3.900	15	L	103,78	4.086	5	L	108,46	4.270	2.5	R
95,83	3.773	7.5	R	99,21	3.906	12.5	L	103,96	4.093	2.5	L	108,61	4.276	5	R
96,01	3.780	10	R	99,36	3.912	10	L	104,11	4.099	0	–	108,79	4.283	7.5	R
96,19	3.787	12.5	R	99,52	3.918	7.5	L	104,27	4.105	2.5	R	108,94	4.289	10	R
96,34	3.793	15	R	99,70	3.925	5	L	104,44	4.112	5	R	109,09	4.295	12.5	R
96,52	3.800	17.5	R	99,85	3.931	2.5	L	104,60	4.118	7.5	R	109,25	4.301	15	R
96,67	3.806	20	R	100,03	3.938	0	–	104,75	4.124	10	R	109,40	4.307	17.5	R
96,85	3.813	22.5	R	100,18	3.944	2.5	R	104,90	4.130	12.5	R	109,55	4.313	20	R
97,00	3.819	25	R	100,33	3.950	5	R	105,08	4.137	15	R	109,70	4.319	22.5	R
97,16	3.825	27.5	R	100,51	3.957	7.5	R	105,23	4.143	17.5	R	109,86	4.325	25	R
97,31	3.831	30	R	100,66	3.963	10	R	105,38	4.149	20	R	110,01	4.331	27.5	R
97,46	3.837	32.5	R	100,81	3.969	12.5	R	105,54	4.155	22.5	R	110,13	4.336	30	R
97,61	3.843	35	R	100,97	3.975	15	R	105,69	4.161	25	R	110,29	4.342	32.5	R
97,76	3.849	37.5	R	101,14	3.982	17.5	R	105,82	4.166	27.5	R	110,41	4.347	35	R
97,89	3.854	40	R	101,30	3.988	20	R	105,97	4.172	30	R	110,54	4.352	37.5	R
97,99	3.858	42.5	R	101,45	3.994	22.5	R	106,10	4.177	32.5	R	110,67	4.357	40	R
–	–	–	–	101,57	3.999	25	R	106,25	4.183	35	R	110,79	4.362	42.5	R
–	–	–	–	101,73	4.005	27.5	R	106,38	4.188	37.5	R	110,90	4.366	45	R
–	–	–	–	104,39	4.110	30	R	106,43	4.190	40	R	111,00	4.370	47.5	R
–	–	–	–	102,01	4.016	32.5	R	106,53	4.194	42.5	R	–	–	–	–

Balancing Table • SVU-92 Boring Head





1. There is one balancing dial on the SVU system.
2. Look up your diameter in the table below and read the setting values for ring 1.
3. Set ring 1, referencing to the body mark (one dial mark equals 2.5 units).

KRDE101023M												KRDE120023M							
KRCSCFPR061F 101–108mm				KRCSCFPR062F 107,5–114,5mm				KRCSCFPR063F 114–121mm				KRCSCFPR061F 120–127mm				KRCSCFPR062F 126,5–133,5mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in			mm	in			mm	in		
100,99	3.976	36	L	107,49	4.232	34	L	114,00	4.488	30	L	119,99	4.724	40	L	126,49	4.980	36	L
101,19	3.984	34	L	107,62	4.237	32	L	114,22	4.497	28	L	120,19	4.732	38	L	126,72	4.989	34	L
101,40	3.992	32	L	107,80	4.244	30	L	114,40	4.504	26	L	120,35	4.738	36	L	126,90	4.996	32	L
101,57	3.999	30	L	108,00	4.252	28	L	114,60	4.512	24	L	120,52	4.745	34	L	127,08	5.003	30	L
101,78	4.007	28	L	108,20	4.260	26	L	114,81	4.520	22	L	120,70	4.752	32	L	127,25	5.010	28	L
101,98	4.015	26	L	108,41	4.268	24	L	115,01	4.528	20	L	120,88	4.759	30	L	127,43	5.017	26	L
102,18	4.023	24	L	108,61	4.276	22	L	115,24	4.537	18	L	121,06	4.766	28	L	127,61	5.024	24	L
102,39	4.031	22	L	108,81	4.284	20	L	115,44	4.545	16	L	121,23	4.773	26	L	127,81	5.032	22	L
102,59	4.039	20	L	109,02	4.292	18	L	115,67	4.554	14	L	121,41	4.780	24	L	127,99	5.039	20	L
102,79	4.047	18	L	109,25	4.301	16	L	115,87	4.562	12	L	121,62	4.788	22	L	128,19	5.047	18	L
103,02	4.056	16	L	109,45	4.309	14	L	116,10	4.571	10	L	121,79	4.795	20	L	128,40	5.055	16	L
103,23	4.064	14	L	109,68	4.318	12	L	116,31	4.579	8	L	122,00	4.803	18	L	128,57	5.062	14	L
103,45	4.073	12	L	109,88	4.326	10	L	116,54	4.588	6	L	122,20	4.811	16	L	128,78	5.070	12	L
103,66	4.081	10	L	110,11	4.335	8	L	116,76	4.597	4	L	122,38	4.818	14	L	128,98	5.078	10	L
103,89	4.090	8	L	110,34	4.344	6	L	116,97	4.605	2	L	122,58	4.826	12	L	129,18	5.086	8	L
104,11	4.099	6	L	110,57	4.353	4	L	117,20	4.614	0	–	122,78	4.834	10	L	129,39	5.094	6	L
104,32	4.107	4	L	110,77	4.361	2	L	117,42	4.623	2	R	122,99	4.842	8	L	129,59	5.102	4	L
104,55	4.116	2	L	111,00	4.370	0	–	117,65	4.632	4	R	123,19	4.850	6	L	129,79	5.110	2	L
104,78	4.125	0	–	111,23	4.379	2	R	117,86	4.640	6	R	123,39	4.858	4	L	130,00	5.118	0	–
105,00	4.134	2	R	111,46	4.388	4	R	118,08	4.649	8	R	123,60	4.866	2	L	130,20	5.126	2	R
105,23	4.143	4	R	111,66	4.396	6	R	118,31	4.658	10	R	123,80	4.874	0	–	130,40	5.134	4	R
105,44	4.151	6	R	111,89	4.405	8	R	118,52	4.666	12	R	124,00	4.882	2	R	130,61	5.142	6	R
105,66	4.160	8	R	112,12	4.414	10	R	118,75	4.675	14	R	124,21	4.890	4	R	130,81	5.150	8	R
105,89	4.169	10	R	107,19	4.220	12	R	118,95	4.683	16	R	124,41	4.898	6	R	131,01	5.158	10	R
106,10	4.177	12	R	112,55	4.431	14	R	119,18	4.692	18	R	124,61	4.906	8	R	131,22	5.166	12	R
106,32	4.186	14	R	112,75	4.439	16	R	119,38	4.700	20	R	124,82	4.914	10	R	131,42	5.174	14	R
106,53	4.194	16	R	112,98	4.448	18	R	119,58	4.708	22	R	125,02	4.922	12	R	131,62	5.182	16	R
106,76	4.203	18	R	113,18	4.456	20	R	119,79	4.716	24	R	125,22	4.930	14	R	131,80	5.189	18	R
106,96	4.211	20	R	113,39	4.464	22	R	119,99	4.724	26	R	125,43	4.938	16	R	132,00	5.197	20	R
107,16	4.219	22	R	113,59	4.472	24	R	120,19	4.732	28	R	125,63	4.946	18	R	132,18	5.204	22	R
107,37	4.227	24	R	113,79	4.480	26	R	120,37	4.739	30	R	125,81	4.953	20	R	132,38	5.212	24	R
107,57	4.235	26	R	114,00	4.488	28	R	120,57	4.747	32	R	126,01	4.961	22	R	132,56	5.219	26	R
107,77	4.243	28	R	114,20	4.496	30	R	120,75	4.754	34	R	126,19	4.968	24	R	132,74	5.226	28	R
107,98	4.251	30	R	114,38	4.503	32	R	120,93	4.761	36	R	126,37	4.975	26	R	132,92	5.233	30	R
108,00	4.252	32	R	114,50	4.508	34	R	121,01	4.764	38	R	126,57	4.983	28	R	133,10	5.240	32	R
–	–	–	–	–	–	–	–	–	–	–	–	126,75	4.990	30	R	133,27	5.247	34	R
–	–	–	–	–	–	–	–	–	–	–	–	126,92	4.997	32	R	133,45	5.254	36	R
–	–	–	–	–	–	–	–	–	–	–	–	127,00	5.000	34	R	133,50	5.256	38	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE120023M				KRDE139026M											
KRCSCFPR063F				KRCSCFPR061F				KRCSCFPR062F				KRCSCFPR063F			
133–140mm				139–146mm				145,5–152,5mm				152–159mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in			mm	in		
132,99	5.236	34	L	138,99	5.472	50	L	145,49	5.728	44	L	151,99	5.984	40	L
133,10	5.240	32	L	139,09	5.476	48	L	145,67	5.735	42	L	152,12	5.989	38	L
133,27	5.247	30	L	139,22	5.481	46	L	145,80	5.740	40	L	152,27	5.995	36	L
133,45	5.254	28	L	139,34	5.486	44	L	145,95	5.746	38	L	152,40	6.000	34	L
133,63	5.261	26	L	139,47	5.491	42	L	146,08	5.751	36	L	152,55	6.006	32	L
133,81	5.268	24	L	139,60	5.496	40	L	146,23	5.757	34	L	152,70	6.012	30	L
133,99	5.275	22	L	139,73	5.501	38	L	146,35	5.762	32	L	152,86	6.018	28	L
134,19	5.283	20	L	139,88	5.507	36	L	146,51	5.768	30	L	153,01	6.024	26	L
134,37	5.290	18	L	140,00	5.512	34	L	146,66	5.774	28	L	153,16	6.030	24	L
134,57	5.298	16	L	140,16	5.518	32	L	146,81	5.780	26	L	153,31	6.036	22	L
134,77	5.306	14	L	140,31	5.524	30	L	146,99	5.787	24	L	153,49	6.043	20	L
134,98	5.314	12	L	140,46	5.530	28	L	147,14	5.793	22	L	153,64	6.049	18	L
135,18	5.322	10	L	140,61	5.536	26	L	147,29	5.799	20	L	153,82	6.056	16	L
135,36	5.329	8	L	140,77	5.542	24	L	147,47	5.806	18	L	153,97	6.062	14	L
135,56	5.337	6	L	140,92	5.548	22	L	147,62	5.812	16	L	154,15	6.069	12	L
135,76	5.345	4	L	141,10	5.555	20	L	147,80	5.819	14	L	154,33	6.076	10	L
135,97	5.353	2	L	141,25	5.561	18	L	147,96	5.825	12	L	154,48	6.082	8	L
136,17	5.361	0	–	141,43	5.568	16	L	148,13	5.832	10	L	154,66	6.089	6	L
136,37	5.369	2	R	141,58	5.574	14	L	148,31	5.839	8	L	154,84	6.096	4	L
136,58	5.377	4	R	141,76	5.581	12	L	148,49	5.846	6	L	155,02	6.103	2	L
162,18	6.385	6	R	141,94	5.588	10	L	148,64	5.852	4	L	155,19	6.110	0	–
136,98	5.393	8	R	142,11	5.595	8	L	148,82	5.859	2	L	155,35	6.116	2	R
137,19	5.401	10	R	142,27	5.601	6	L	149,00	5.866	0	–	155,52	6.123	4	R
137,39	5.409	12	R	142,44	5.608	4	L	149,17	5.873	2	R	155,70	6.130	6	R
137,59	5.417	14	R	142,62	5.615	2	L	149,35	5.880	4	R	155,88	6.137	8	R
137,80	5.425	16	R	142,80	5.622	0	–	149,53	5.887	6	R	156,03	6.143	10	R
137,97	5.432	18	R	142,98	5.629	2	R	149,68	5.893	8	R	156,21	6.150	12	R
138,18	5.440	20	R	143,15	5.636	4	R	149,86	5.900	10	R	156,39	6.157	14	R
138,38	5.448	22	R	143,31	5.642	6	R	150,04	5.907	12	R	156,54	6.163	16	R
138,56	5.455	24	R	143,48	5.649	8	R	150,19	5.913	14	R	156,72	6.170	18	R
138,73	5.462	26	R	143,66	5.656	10	R	150,37	5.920	16	R	156,87	6.176	20	R
138,91	5.469	28	R	143,84	5.663	12	R	150,55	5.927	18	R	157,05	6.183	22	R
139,09	5.476	30	R	143,99	5.669	14	R	150,70	5.933	20	R	157,20	6.189	24	R
139,27	5.483	32	R	144,17	5.676	16	R	150,85	5.939	22	R	157,35	6.195	26	R
139,45	5.490	34	R	144,32	5.682	18	R	151,03	5.946	24	R	157,51	6.201	28	R
139,60	5.496	36	R	144,50	5.689	20	R	151,18	5.952	26	R	157,66	6.207	30	R
139,78	5.503	38	R	144,65	5.695	22	R	151,33	5.958	28	R	157,81	6.213	32	R
139,93	5.509	40	R	144,83	5.702	24	R	151,49	5.964	30	R	157,96	6.219	34	R
140,00	5.512	42	R	144,98	5.708	26	R	151,64	5.970	32	R	158,09	6.224	36	R
–	–	–	–	145,14	5.714	28	R	151,79	5.976	34	R	158,24	6.23	38	R
–	–	–	–	145,29	5.720	30	R	151,92	5.981	36	R	158,37	6.235	40	R
–	–	–	–	145,44	5.726	32	R	152,07	5.987	38	R	158,50	6.24	42	R
–	–	–	–	145,57	5.731	34	R	152,20	5.992	40	R	158,62	6.245	44	R
–	–	–	–	145,72	5.737	36	R	152,32	5.997	42	R	158,75	6.25	46	R
–	–	–	–	145,87	5.743	38	R	152,45	6.002	44	R	158,88	6.255	48	R
–	–	–	–	145,97	5.747	40	R	152,50	6.004	46	R	158,98	6.259	50	R
–	–	–	–	146,00	5.748	42	R	–	–	–	–	159,00	6.26	52	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE156026M

KRCSCFPR061F 156–163mm				KRCSCFPR062F 162,5–169,5mm				KRCSCFPR063F 169–176mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in		
156,01	6.142	56	L	162,51	6.398	50	L	169,01	6.654	44	L
156,11	6.146	54	L	162,61	6.402	48	L	169,11	6.658	42	L
156,21	6.150	52	L	162,71	6.406	46	L	169,24	6.663	40	L
156,31	6.154	50	L	162,81	6.410	44	L	169,37	6.668	38	L
156,41	6.158	48	L	162,94	6.415	42	L	169,49	6.673	36	L
156,51	6.162	46	L	163,07	6.420	40	L	169,62	6.678	34	L
156,62	6.166	44	L	163,20	6.425	38	L	169,75	6.683	32	L
156,74	6.171	42	L	163,32	6.430	36	L	169,90	6.689	30	L
156,87	6.176	40	L	163,45	6.435	34	L	170,03	6.694	28	L
157,00	6.181	38	L	163,58	6.440	32	L	170,18	6.700	26	L
157,12	6.186	36	L	163,70	6.445	30	L	170,33	6.706	24	L
157,25	6.191	34	L	163,86	6.451	28	L	170,46	6.711	22	L
157,38	6.196	32	L	164,01	6.457	26	L	170,61	6.717	20	L
157,53	6.202	30	L	164,13	6.462	24	L	170,76	6.723	18	L
157,66	6.207	28	L	164,29	6.468	22	L	170,92	6.729	16	L
157,81	6.213	26	L	164,44	6.474	20	L	171,07	6.735	14	L
157,94	6.218	24	L	164,59	6.480	18	L	171,22	6.741	12	L
158,09	6.224	22	L	164,74	6.486	16	L	171,37	6.747	10	L
158,24	6.230	20	L	164,90	6.492	14	L	171,55	6.754	8	L
158,39	6.236	18	L	165,05	6.498	12	L	171,70	6.760	6	L
158,55	6.242	16	L	165,20	6.504	10	L	171,86	6.766	4	L
158,70	6.248	14	L	165,35	6.510	8	L	172,01	6.772	2	L
158,85	6.254	12	L	165,53	6.517	6	L	172,19	6.779	0	–
159,00	6.260	10	L	165,68	6.523	4	L	172,34	6.785	2	R
159,18	6.267	8	L	165,84	6.529	2	L	172,49	6.791	4	R
159,33	6.273	6	L	165,99	6.535	0	–	172,64	6.797	6	R
159,49	6.279	4	L	166,17	6.542	2	R	172,82	6.804	8	R
159,64	6.285	2	L	166,32	6.548	4	R	172,97	6.810	10	R
159,82	6.292	0	–	166,47	6.554	6	R	173,13	6.816	12	R
159,97	6.298	2	R	166,62	6.560	8	R	173,28	6.822	14	R
160,12	6.304	4	R	166,80	6.567	10	R	173,43	6.828	16	R
160,27	6.310	6	R	166,95	6.573	12	R	173,58	6.834	18	R
160,45	6.317	8	R	167,11	6.579	14	R	173,74	6.840	20	R
160,60	6.323	10	R	167,26	6.585	16	R	173,89	6.846	22	R
160,76	6.329	12	R	167,41	6.591	18	R	174,04	6.852	24	R
160,91	6.335	14	R	167,56	6.597	20	R	174,17	6.857	26	R
161,06	6.341	16	R	167,72	6.603	22	R	174,32	6.863	28	R
161,21	6.347	18	R	167,87	6.609	24	R	174,45	6.868	30	R
161,37	6.353	20	R	168,00	6.614	26	R	174,60	6.874	32	R
161,52	6.359	22	R	168,15	6.620	28	R	174,73	6.879	34	R
161,67	6.365	24	R	168,28	6.625	30	R	174,85	6.884	36	R
161,82	6.371	26	R	168,43	6.631	32	R	174,98	6.889	38	R
161,95	6.376	28	R	168,55	6.636	34	R	175,11	6.894	40	R
162,10	6.382	30	R	168,68	6.641	36	R	175,23	6.899	42	R
162,23	6.387	32	R	168,81	6.646	38	R	175,34	6.903	44	R
162,36	6.392	34	R	168,94	6.651	40	R	175,46	6.908	46	R
162,51	6.398	36	R	169,06	6.656	42	R	175,56	6.912	48	R
162,64	6.403	38	R	169,16	6.660	44	R	175,67	6.916	50	R
162,74	6.407	40	R	169,29	6.665	46	R	175,77	6.920	52	R
162,86	6.412	42	R	169,39	6.669	48	R	175,87	6.924	54	R
162,99	6.417	44	R	169,49	6.673	50	R	175,95	6.927	56	R
162,99	6.417	46	R	169,49	6.673	52	R	176,00	6.929	58	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE175026M

KRCSCFPR061F 175–182mm				KRCSCFPR062F 181,5–188,5mm				KRCSCFPR063F 188–195mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in		
175,01	6.890	64	L	181,51	7.146	56	L	188,0108	7.402	48	L
175,06	6.892	62	L	181,56	7.148	54	L	188,1124	7.406	46	L
175,13	6.895	60	L	181,64	7.151	52	L	188,214	7.410	44	L
175,21	6.898	58	L	181,74	7.155	50	L	188,3156	7.414	42	L
175,29	6.901	56	L	181,84	7.159	48	L	188,4426	7.419	40	L
175,36	6.904	54	L	181,94	7.163	46	L	188,5442	7.423	38	L
175,46	6.908	52	L	182,04	7.167	44	L	188,6712	7.428	36	L
175,56	6.912	50	L	182,14	7.171	42	L	188,7982	7.433	34	L
175,64	6.915	48	L	182,27	7.176	40	L	188,8998	7.437	32	L
175,74	6.919	46	L	182,37	7.180	38	L	189,0268	7.442	30	L
175,87	6.924	44	L	182,50	7.185	36	L	189,1792	7.448	28	L
175,97	6.928	42	L	182,63	7.190	34	L	189,3062	7.453	26	L
176,07	6.932	40	L	182,75	7.195	32	L	189,4332	7.458	24	L
176,20	6.937	38	L	182,88	7.200	30	L	189,5602	7.463	22	L
176,30	6.941	36	L	183,01	7.205	28	L	189,7126	7.469	20	L
176,43	6.946	34	L	183,13	7.210	26	L	189,8396	7.474	18	L
176,56	6.951	32	L	183,26	7.215	24	L	189,992	7.480	16	L
176,68	6.956	30	L	183,41	7.221	22	L	190,1444	7.486	14	L
176,81	6.961	28	L	183,54	7.226	20	L	190,2714	7.491	12	L
176,96	6.967	26	L	183,69	7.232	18	L	190,4238	7.497	10	L
177,09	6.972	24	L	183,82	7.237	16	L	114,3762	4.503	8	L
177,22	6.977	22	L	183,97	7.243	14	L	190,7286	7.509	6	L
177,37	6.983	20	L	184,12	7.249	12	L	190,8556	7.514	4	L
177,50	6.988	18	L	184,25	7.254	10	L	191,008	7.520	2	L
177,65	6.994	16	L	184,40	7.260	8	L	191,1604	7.526	0	–
177,80	7.000	14	L	184,56	7.266	6	L	191,3128	7.532	2	R
177,93	7.005	12	L	184,71	7.272	4	L	191,4652	7.538	4	R
178,08	7.011	10	L	184,86	7.278	2	L	191,6176	7.544	6	R
178,23	7.017	8	L	184,99	7.283	0	–	191,7446	7.549	8	R
178,38	7.023	6	L	185,14	7.289	2	R	191,897	7.555	10	R
178,54	7.029	4	L	185,29	7.295	4	R	192,0494	7.561	12	R
178,66	7.034	2	L	185,45	7.301	6	R	192,2018	7.567	14	R
178,82	7.040	0	–	185,60	7.307	8	R	192,3288	7.572	16	R
178,97	7.046	2	R	185,75	7.313	10	R	192,4812	7.578	18	R
179,12	7.052	4	R	185,88	7.318	12	R	192,6082	7.583	20	R
179,27	7.058	6	R	186,03	7.324	14	R	192,7606	7.589	22	R
179,43	7.064	8	R	186,18	7.330	16	R	192,8876	7.594	24	R
179,55	7.069	10	R	186,31	7.335	18	R	193,04	7.600	26	R
179,71	7.075	12	R	186,46	7.341	20	R	193,167	7.605	28	R
179,86	7.081	14	R	186,59	7.346	22	R	193,294	7.610	30	R
180,01	7.087	16	R	186,74	7.352	24	R	193,421	7.615	32	R
180,14	7.092	18	R	186,87	7.357	26	R	193,548	7.620	34	R
180,29	7.098	20	R	186,99	7.362	28	R	193,675	7.625	36	R
180,42	7.103	22	R	187,12	7.367	30	R	193,7766	7.629	38	R
180,57	7.109	24	R	187,25	7.372	32	R	193,9036	7.634	40	R
180,70	7.114	26	R	187,38	7.377	34	R	194,0052	7.638	42	R
180,82	7.119	28	R	187,50	7.382	36	R	194,1068	7.642	44	R
180,95	7.124	30	R	187,63	7.387	38	R	194,2338	7.647	46	R
181,08	7.129	32	R	187,73	7.391	40	R	194,3354	7.651	48	R
181,20	7.134	34	R	187,86	7.396	42	R	194,4116	7.654	50	R
181,33	7.139	36	R	187,96	7.400	44	R	194,5132	7.658	52	R
181,46	7.144	38	R	188,06	7.404	46	R	194,6148	7.662	54	R
181,56	7.148	40	R	188,16	7.408	48	R	194,691	7.665	56	R
181,69	7.153	42	R	188,26	7.412	50	R	194,7672	7.668	58	R
181,79	7.157	44	R	188,37	7.416	52	R	194,8434	7.671	60	R
181,89	7.161	46	R	188,44	7.419	54	R	194,9196	7.674	62	R
181,99	7.165	48	R	188,49	7.421	56	R	194,9958	7.677	64	R
181,99	7.165	50	R	–	–	–	–	194,9958	7.677	66	R

(continued)

(Balancing Table • SVU-92 Boring Head — continued)

KRDE193026M

KRCSCFPR061F 193–200mm				KRCSCFPR062F 199,5–206,5mm				KRCSCFPR063F 206–213mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
mm	in			mm	in			mm	in		
192,99	7.598	64	L	199,49	7.854	54	L	205,994	8.11	46	L
193,07	7.601	62	L	199,62	7.859	52	L	206,1464	8.116	44	L
193,14	7.604	60	L	199,72	7.863	50	L	206,248	8.12	42	L
193,22	7.607	58	L	199,80	7.866	48	L	206,375	8.125	40	L
193,29	7.610	56	L	199,90	7.870	46	L	206,4766	8.129	38	L
193,37	7.613	54	L	200,03	7.875	44	L	206,6036	8.134	36	L
193,47	7.617	52	L	200,13	7.879	42	L	206,7306	8.139	34	L
193,57	7.621	50	L	200,23	7.883	40	L	206,8576	8.144	32	L
193,65	7.624	48	L	200,36	7.888	38	L	206,9846	8.149	30	L
193,75	7.628	46	L	200,48	7.893	36	L	207,1116	8.154	28	L
193,88	7.633	44	L	200,61	7.898	34	L	207,2386	8.159	26	L
193,98	7.637	42	L	200,71	7.902	32	L	207,391	8.165	24	L
194,08	7.641	40	L	200,86	7.908	30	L	207,518	8.17	22	L
194,21	7.646	38	L	200,99	7.913	28	L	207,6704	8.176	20	L
194,34	7.651	36	L	201,12	7.918	26	L	207,7974	8.181	18	L
194,46	7.656	34	L	201,24	7.923	24	L	207,9498	8.187	16	L
194,59	7.661	32	L	201,40	7.929	22	L	208,1022	8.193	14	L
194,72	7.666	30	L	201,52	7.934	20	L	208,2292	8.198	12	L
194,84	7.671	28	L	201,68	7.940	18	L	208,3816	8.204	10	L
194,97	7.676	26	L	201,80	7.945	16	L	208,534	8.21	8	L
195,10	7.681	24	L	201,96	7.951	14	L	208,6864	8.216	6	L
195,25	7.687	22	L	202,11	7.957	12	L	208,8388	8.222	4	L
195,38	7.692	20	L	202,26	7.963	10	L	208,9912	8.228	2	L
195,53	7.698	18	L	202,41	7.969	8	L	209,1182	8.233	0	–
195,68	7.704	16	L	202,54	7.974	6	L	209,2706	8.239	2	R
195,81	7.709	14	L	202,69	7.980	4	L	209,423	8.245	4	R
195,96	7.715	12	L	202,84	7.986	2	L	209,5754	8.251	6	R
196,11	7.721	10	L	203,00	7.992	0	–	209,7278	8.257	8	R
196,27	7.727	8	L	203,15	7.998	2	R	209,8802	8.263	10	R
196,42	7.733	6	L	203,30	8.004	4	R	210,0326	8.269	12	R
196,57	7.739	4	L	203,45	8.010	6	R	210,1596	8.274	14	R
196,70	7.744	2	L	203,61	8.016	8	R	210,312	8.28	16	R
196,85	7.750	0	–	203,76	8.022	10	R	210,4644	8.286	18	R
197,00	7.756	2	R	203,89	8.027	12	R	210,5914	8.291	20	R
197,15	7.762	4	R	204,04	8.033	14	R	210,7438	8.297	22	R
197,31	7.768	6	R	204,19	8.039	16	R	210,8708	8.302	24	R
197,46	7.774	8	R	204,32	8.044	18	R	210,9978	8.307	26	R
197,61	7.780	10	R	204,47	8.050	20	R	211,1502	8.313	28	R
197,76	7.786	12	R	204,60	8.055	22	R	211,2772	8.318	30	R
197,89	7.791	14	R	204,75	8.061	24	R	211,4042	8.323	32	R
198,04	7.797	16	R	204,88	8.066	26	R	211,5312	8.328	34	R
198,20	7.803	18	R	205,03	8.072	28	R	211,6582	8.333	36	R
198,32	7.808	20	R	205,16	8.077	30	R	211,7598	8.337	38	R
198,48	7.814	22	R	205,28	8.082	32	R	84,8868	3.342	40	R
198,60	7.819	24	R	205,41	8.087	34	R	211,9884	8.346	42	R
198,76	7.825	26	R	205,54	8.092	36	R	212,1154	8.351	44	R
198,88	7.830	28	R	205,64	8.096	38	R	212,217	8.355	46	R
199,01	7.835	30	R	205,77	8.101	40	R	212,3186	8.359	48	R
199,14	7.840	32	R	205,87	8.105	42	R	212,4202	8.363	50	R
199,26	7.845	34	R	205,99	8.110	44	R	212,4964	8.366	52	R
199,39	7.850	36	R	206,10	8.114	46	R	212,598	8.37	54	R
199,52	7.855	38	R	206,20	8.118	48	R	212,6742	8.373	56	R
199,62	7.859	40	R	206,30	8.122	50	R	212,7758	8.377	58	R
199,75	7.864	42	R	206,38	8.125	52	R	212,852	8.38	60	R
199,85	7.868	44	R	206,48	8.129	54	R	212,9028	8.382	62	R
199,95	7.872	46	R	206,50	8.130	56	R	212,979	8.385	64	R
200,00	7.874	48	R	–	–	–	–	213,0044	8.386	66	R

Ready for **Takeoff**

Machining carbon-fiber reinforced polymers (CFRP) is a common challenge in the aerospace industry, and these solid carbide drills address the challenge head on. Our SPF drills feature a material-specific design and grade to machine CFRP composite materials by minimizing delamination and increasing tool life. These drills feature a combination of point design, substrate, and coating for longer tool life and substantially less cutting force.

The new PCD-tipped PDC251_ drill provides outstanding wear resistance and tool life, and withstands the most abrasive CFRP materials with high-fiber content. Multiple regrinds are possible with these drills, making them extremely economical to use.

SPF DRILL
For composite exits



FULL PCD-TIP DRILL
For composite/
metal stacks

Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

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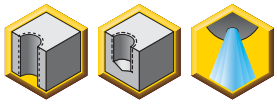
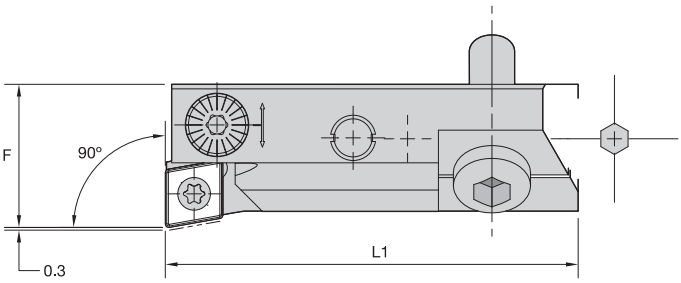


- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment respective 0.00008" (2 µm) with vernier scale within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).
- Smallest diameters can be machined starting from 1.102" (28,0mm).

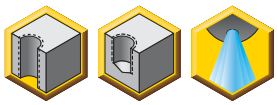




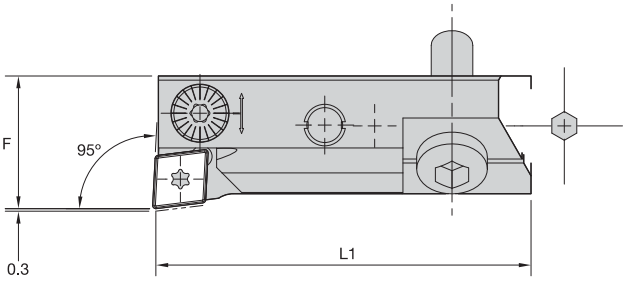
90° Lead • Micro-Adjustable Cartridge • C-Style

order number	catalog number	F mm	F in	L1 mm	L1 in	gage insert	insert screw	set screw
right hand 3784474	FBSCFCR09CA06F	16,15	.636	45,50	1.791	CCMT060204	12148068700	12147629800
left hand 3784475	FBSCFCL09CA06F	16,15	.636	45,50	1.791	CCMT060204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.



- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment respective 0.00008" (2 µm) with vernier scale within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).
- Smallest diameters can be machined starting from 1.102" (28,0mm).



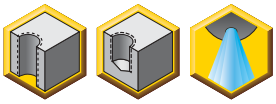


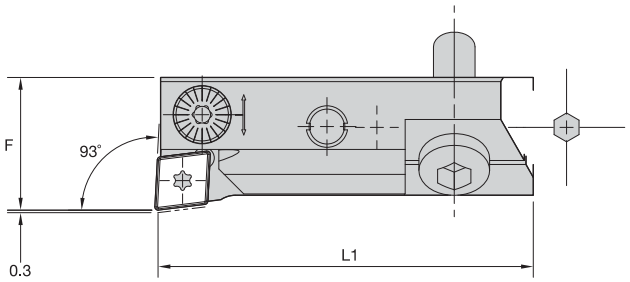
95° Lead • Micro-Adjustable Cartridge • C-Style

order number	catalog number	F mm	F in	L1 mm	L1 in	gage insert	insert screw	set screw
right hand 3784476	FBSCLCR09CA06F	16,15	.636	45,50	1.791	CCMT060204	12148068700	12147629800
left hand 3784477	FBSCLCL09CA06F	16,15	.636	45,50	1.791	CCMT060204	12148068700	12147629800

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment respective 0.00008" (2 µm) with vernier scale within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).
- Smallest diameters can be machined starting from 1.102" (28,0mm).





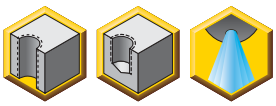


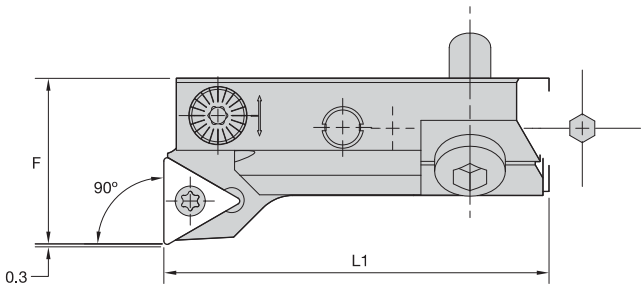
93° Lead • Micro-Adjustable Cartridge • C-Style

order number	catalog number	F mm	F in	L1 mm	L1 in	gage insert	insert screw	set screw
right hand								
2907289	**FBSCUCR09CA06F**	16,15	.636	45,50	1.791	CCMT060204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

- All cartridges have internal coolant supply directed to the cutting edge.
- .0004" (0,01mm) diameter adjustment respective 0.00008" (2 µm) with vernier scale within a range of .0118" (0,3mm).
- Radial adjustment without influence on axial position.
- Axial adjustment range of .039" (1mm).
- Smallest diameters can be machined starting from 1.102" (28,0mm).







90° Lead • Micro-Adjustable Cartridge • T-Style

order number	catalog number	F mm	F in	L1 mm	L1 in	gage insert	insert screw	set screw
right hand								
2907291	**FBSTFCR09CA11F**	20,15	.793	45,50	1.791	TCMT110204	**12148068700**	**12147629800**

NOTE: For use with custom solution fine-boring and countersinking tools.

ModBORE™

One system includes highly flexible roughing and fine-boring heads to large bridge tooling with optimum amount of tooling components.

Primary Application

This premium boring line enables roughing to fine-boring operations using one system with a large diameter range from 9,75–2,205mm (.384–86.8"). The ModBORE system can be used in most workpiece materials in metalcutting applications along with the latest Kennametal standard ISO turning inserts.

Features and Benefits

Complete System

- Twin blade heads for roughing to semi-finishing operations starting from diameter 23,5mm (.925").
- Fine-boring heads for finishing in diameters 9,75–2,205mm (.384–86.8").
- Bridge tooling for large diameters up to 2,205mm (86.8") standard with both roughing and fine-finishing heads.
- Through-coolant capability in all styles.

Resolution

- Fine adjustable roughing heads.
- 0,01mm (.0004") diameter adjustment respective 2 µm (.00008") with easy-to-read large vernier scale with fine-boring heads.

Highest versatility possible on the shop floor with the ModBORE™ roughing and fine boring systems.



Product Variety

- KM™ shanks for use in all spindles with compatible adapters.
- HSK shanks for use without adapters.
- Inch shanks are most economical to use with compatible adapters.



Customization

- Engineered solutions available.
- Anti-chatter devices available.
- Cartridges can be designed into standard boring heads for added versatility.

ModBORE™ Fine-Boring System

Based on KM™, HSK, and inch SSF couplings, match all spindle specifications direct or indirect via adapters. The ModBORE fine-boring system uses standard ISO/ANSI turning inserts for maximum performance and flexibility.

RBHT • Twin Cutters for Rough and Semi-Finish Boring

- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end versions available.
- Preloaded serration and ground support face for stable connection, minimal vibration, and maximum accuracy, with easy diameter adjustment.
- Large selection of blades sets:
  — Staggered — efficient machining of large depths of cut.
  — 70° — for challenging applications requiring stable corner radii and full use of inserts.
  — 90° — most precise machining results.
- Generous clearance and through coolant enable free chip flow and improved tool life.
- All toolholders accept positive standard inserts. Toolholders in diameter 65,5mm (2.58") and greater for negative standard inserts.



FBHM • Offset Boring Bar and Cartridge Heads for Fine Finishing

- Diameters 9,75–320mm (.384–12.59").
- KM-TS™, HSK, CV, DV, and BT steep taper back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008"). Large TiN-coated dial is easy to adjust and read.
- Standard steel and carbide boring bars adjust in length for maximum stability.
- Aluminum diameter extender with insert cartridges and counterweight used for diameters starting at 3.38" (86mm) for maximum flexibility.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.



FBHO • Offset Boring Bar Heads for Fine Finishing



- Diameters 9,75–88,1mm (.384–3.46").
- KM™, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Standard steel and carbide boring bars can be adjusted in length for maximum stability.
- Through coolant at the cutting edge improves tool life, surface finish, and chip evacuation.

FBHS • Cartridge Boring Heads for Fine Finishing



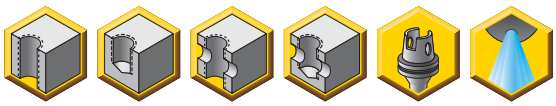
- Diameters 23,5–153mm (.925–6.024").
- KM, HSK, and inch straight shank back end styles available.
- Precision-ground micrometric screw enables fine adjustment of 2 µm (.00008") via easy-to-read vernier scale.
- Large selection of insert holders:
  — 95° — for use with wiper turning inserts.
  — 90° regular diameter — for efficient machining in large depths of cut.
  — 90° oversized diameter — for enhanced boring head diameter capabilities.
- Generous clearance and through coolant at the cutting edge improve tool life, surface finish, and chip evacuation.

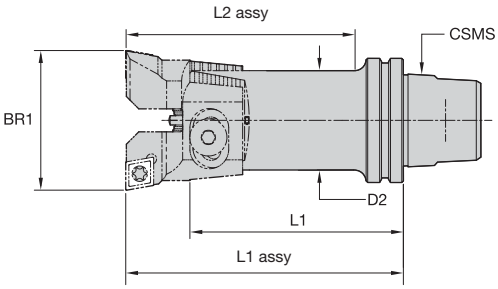
BT • Bridge Tools for Rough and Finish Boring



- Diameters 150–2,205mm (5.91–86.81").
- Sophisticated ground serration and T-style bolt clamping provide high cutting forces, and prevent diameter changes when heads are clamped.
- Only 10 bridge consoles are needed for diameters up to 655mm (25.7").
- KM, HSK, and some steep taper adapters with ground serration available as standard. Through coolant at the cutting edge improves tool life and surface finish.
- Diameters 650–2,205mm (25.5–86.81") covered by three aluminum-based consoles and two sets of steel slides for mounting rough and finish boring heads.
- 90° roughing head sets ensure precise height alignment, and negative standard inserts enable high metal removal rates.
- Counterweight for better balancing and fine-boring head with precision-ground micrometric screw for adjustments of 2 µm (.00008").

- Order blade sets separately; see page K124–K126.





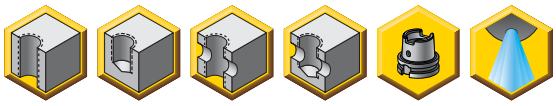


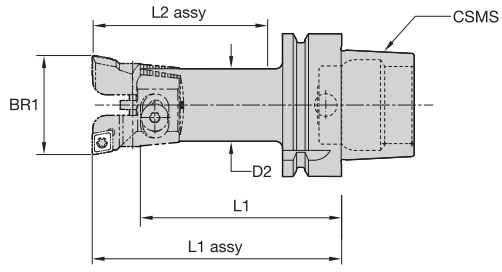
KM QUICK CHANGE

RBHT • KM™ Rough-Boring Twin Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	L1 mm	L1 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	blade screw	washer	pin
3586519	KM32RBHT24	23.500-30.500	0.9252-1.2008	KM32	20,0	.79	75,4	2.97	90,0	3.54	76,0	2.99	840.142.200	841.142.200	841.342.200
3586520	KM32RBHT30	29.500-40.000	1.1614-1.5748	KM32	25,0	.98	83,8	3.30	100,0	3.94	86,0	3.39	840.142.250	841.142.250	841.342.200
3586521	KM40RBHT40	39.500-50.500	1.5551-1.9882	KM40	32,0	1.26	68,8	2.71	90,0	3.54	74,0	2.91	840.142.320	841.142.320	841.342.200
3586522	KM50RBHT50	49.500-66.500	1.9488-2.6181	KM50	42,0	1.65	62,2	2.45	90,0	3.54	70,0	2.76	840.142.420	841.142.200	841.342.420
3586543	KM50RBHT66	65.500-87.500	2.5787-3.4449	KM50	55,0	2.17	63,0	2.48	100,0	3.94	100,0	3.94	840.142.550	841.142.550	841.342.420
3586544	KM50RBHT87	86.500-115.500	3.4055-4.5472	KM50	72,0	2.83	70,5	2.78	120,0	4.72	120,0	4.72	840.142.720	841.142.720	841.342.420
3586545	KM63UTRBHT87	86.500-115.500	3.4055-4.5472	KM63UT	72,0	2.83	70,5	2.78	120,0	4.72	120,0	4.72	840.142.720	841.142.720	841.342.420
3586546	KM63UTRBHT115	114.500-153.000	4.5079-6.0236	KM63UT	94,0	3.70	83,2	3.28	150,0	5.91	150,0	5.91	840.142.940	841.142.940	841.342.420

- Order blade sets separately; see page K124–K126.



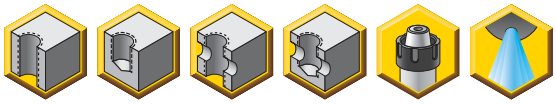


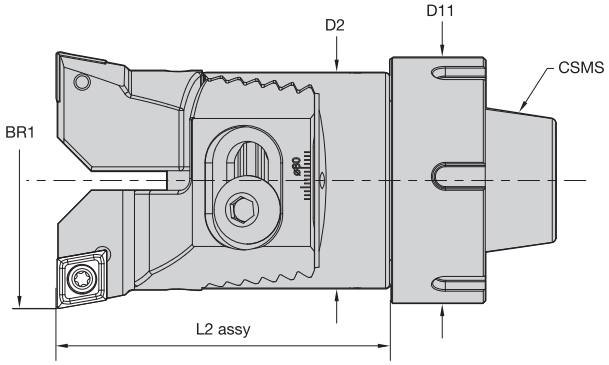


RBHT • HSK Rough-Boring Twin Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	L1 mm	L1 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	blade screw	washer	pin
3586547	HSK63RBHT24	23.500-30.500	0.9252-1.2008	HSK63A	20,0	.79	75,4	2.97	90,0	3.54	64,1	2.52	840.142.200	841.142.200	841.342.200
3586548	HSK63RBHT30	29.500-40.000	1.1614-1.5748	HSK63A	25,0	.98	88,8	3.50	105,0	4.13	79,1	3.11	840.142.250	841.142.250	841.342.200
3586549	HSK63RBHT40	39.500-50.500	1.5551-1.9882	HSK63A	32,0	1.26	92,2	3.63	110,0	4.33	84,1	3.31	840.142.320	841.142.320	841.342.200
3586550	HSK63RBHT50	49.500-66.500	1.9488-2.6181	HSK63A	42,0	1.65	92,2	3.63	120,0	4.72	94,1	3.70	840.142.420	841.142.420	841.342.200
3586551	HSK63RBHT66	65.500-87.500	2.5787-3.4449	HSK63A	55,0	2.17	95,5	3.76	125,0	4.92	125,0	4.92	840.142.550	841.142.720	841.342.420
3586563	HSK63RBHT87	86.500-115.500	3.4055-4.5472	HSK63A	72,0	2.83	95,5	3.76	145,0	5.71	145,0	5.71	840.142.720	841.142.720	841.342.420

• Order blade sets separately; see page K124–K126.



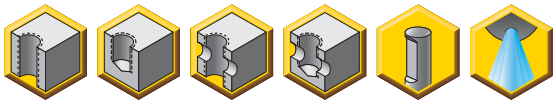


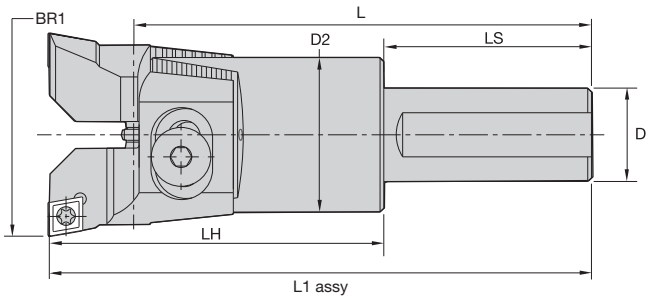


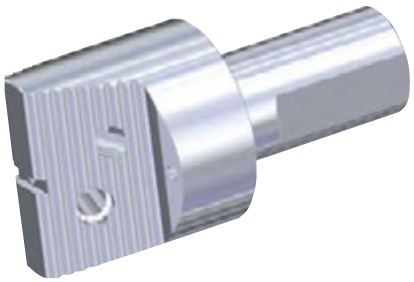
RBHT • ER Rough-Boring Twin Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D11 mm	D11 in	D2 mm	D2 in	L2 assy mm	L2 assy in	blade screw	washer	pin
5544148	ER25RBHT40	39,500-50,500	1.5550-1.9880	ER25	39,0	1.5	32,0	1.26	65,5	2.58	840.142.320	841.142.320	841.342.200
5544190	ER32RBHT50	49,500-66,500	1.9480-2.6180	ER32	49,5	1.9	42,0	1.65	75,5	2.97	840.142.420	841.142.200	841.342.420
5544192	ER40RBHT66	65,500-87,500	2.5780-3.4440	ER40	62,7	2.5	55,0	2.17	85,5	3.37	840.142.550	841.142.550	841.342.420

• Order blade sets separately; see page K124–K126.



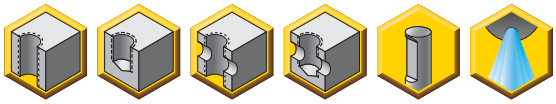


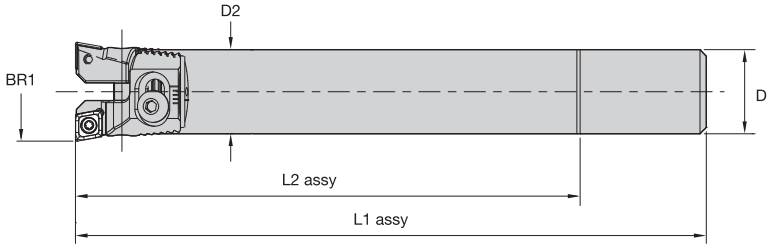


RBHT • Steel Straight Shank Rough Boring Twin Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	D mm	D in	D2 mm	D2 in	L mm	L in	LH mm	LH in	L1 assy mm	L1 assy in	LS mm	LS in	blade screw	washer	pin
3586564	SF075RBHT24	23,500-30,500	0.9252-1.2008	19,1	.75	20,0	.79	135,4	5.33	27,8	1.09	150,0	5.91	107,6	4.24	840.142.200	841.142.200	841.342.200
3586565	SF100RBHT30	29,500-40,000	1.1614-1.5748	25,4	1.00	25,0	.98	153,8	6.06	30,6	1.20	170,0	6.69	123,2	1.85	840.142.250	841.142.250	841.342.200
3586566	SF125RBHT40	39,500-50,500	1.5551-1.9882	31,8	1.25	32,0	1.26	168,8	6.65	31,3	1.23	190,0	7.48	137,5	5.41	840.142.320	841.142.320	841.342.200
3586567	SF100RBHT50	49,500-66,500	1.9488-2.6181	25,4	1.00	42,0	1.65	118,1	4.65	62,2	2.45	145,9	5.74	55,9	2.20	840.142.420	841.142.420	841.342.420
3586569	SF125RBHT66	65,500-87,500	2.5787-3.4449	31,8	1.25	55,0	2.17	123,7	4.87	63,0	2.48	160,7	6.33	60,7	2.39	840.142.550	841.142.720	841.342.420
3586570	SF150RBHT87	86,500-115,500	3.4055-4.5472	38,1	1.50	72,0	2.83	142,1	5.59	70,5	2.78	191,6	7.54	71,6	2.82	840.142.720	841.142.720	841.342.420
3586571	SF200RBHT115	114,500-153,000	4.5079-6.0236	50,8	2.00	94,0	3.70	169,1	6.66	82,6	3.25	235,9	9.29	86,5	3.41	840.142.940	841.142.940	841.342.420

- Order blade sets separately; see page K124–K126.

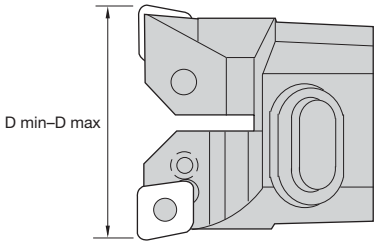


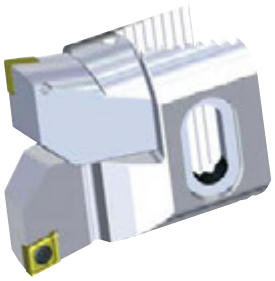




RBHT • Straight Shank Rough-Boring Twin Cutters • Metric

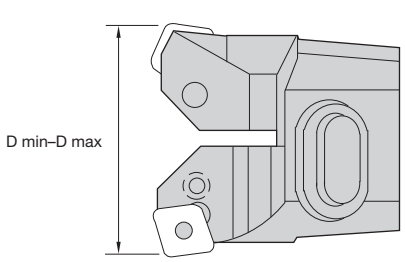
order number	catalog number	BR1 bore range mm	BR1 bore range in	D mm	D in	D2 mm	D2 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	blade screw	washer	pin
5544143	SS20RBHT24	23,500-30,500	0.9250-1.2000	20,0	.79	20,0	.79	150,0	5.10	120,0	4.72	840.142.200	841.142.200	841.342.200
5544145	SS25RBHT30	29,500-40,000	1.1610-1.5740	25,0	.98	25,0	.98	170,0	6.69	140,0	5.51	840.142.250	841.142.250	841.342.200

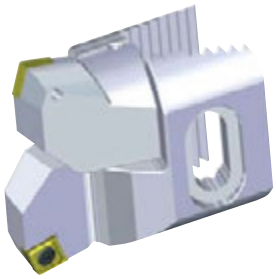




90° Lead Blade Sets

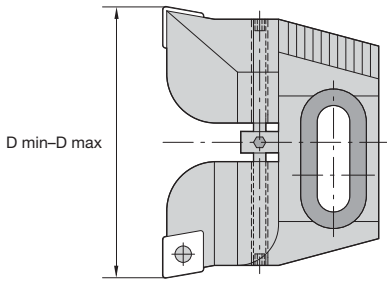
order number	catalog number	D min mm	D min in	D max mm	D max in	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size
3556346	MB24RBHT06F	23,50	.925	30,50	1.201	CC..0602../CC..215..	848.200.407	843.006.000	–	–	–	FT7	T7
3556347	MB30RBHT06F	29,50	1.161	40,10	1.579	CC..0602../CC..215..	848.250.409	843.006.000	–	–	–	FT7	T7
3556348	MB40RBHT09F	39,50	1.555	50,50	1.988	CC..09T3../CC..325..	848.320.413	843.009.000	–	–	–	FT15	T15
3556349	MB50RBHT09F	49,50	1.949	66,50	2.618	CC..09T3../CC..325..	848.420.614	843.009.000	–	–	–	FT15	T15
3556350	MB66RBHT12F	65,50	2.579	87,50	3.445	CC..1204../CC..43..	848.550.620	843.012.000	–	–	–	FT20	T20
3556352	MB66RBHT12LF	65,50	2.579	87,50	3.445	CN..1204../CN..43..	847.012.000	–	845.012.000	844.012.000	846.012.000	–	–
3556393	MB87RBHT12F	86,50	3.406	115,50	4.547	CC..1204../CC..43..	848.720.000	843.012.000	–	–	–	FT20	T20
3556394	MB87RBHT16LF	86,50	3.406	115,50	4.547	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–
3556395	MB115RBHT12F	114,50	4.508	153,00	6.024	CC..1204../CC..43..	848.940.640	843.012.000	–	–	–	FT20	T20
3556396	MB115RBHT16LF	114,50	4.508	153,00	6.024	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–

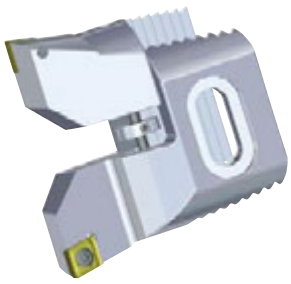




70° Lead Blade Sets

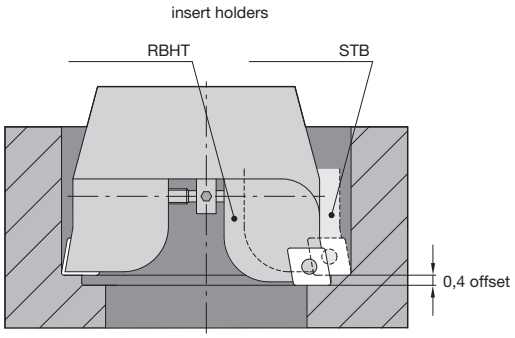
order number	catalog number	D min mm	D min in	D max mm	D max in	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size	hex size
3556397	MB24RBHT06K	23,50	.925	30,50	1.201	CC..0602../CC..215..	848.200.407	843.006.000	–	–	–	FT7	T7	–
3556398	MB30RBHT06K	29,50	1.161	40,10	1.579	CC..0602../CC..215..	848.250.409	843.006.000	–	–	–	FT7	T7	–
3556399	MB40RBHT09K	39,50	1.555	50,50	1.988	CC..09T3../CC..325..	848.320.413	843.009.000	–	–	–	FT15	T15	–
3556400	MB50RBHT09K	49,50	1.949	66,50	2.618	CC..09T3../CC..325..	848.420.614	843.009.000	–	–	–	FT15	T15	–
3556401	MB66RBHT12K	65,50	2.579	87,50	3.445	CC..1204../CC..43..	848.550.620	843.012.000	–	–	–	FT20	T20	–
3556402	MB66RBHT12LK	65,50	2.579	87,50	3.445	CN..1204../CN..43..	847.012.000	–	845.012.000	844.012.000	846.012.000	–	–	3 mm
3556403	MB87RBHT12K	86,50	3.406	115,50	4.547	CC..1204../CC..43..	848.720.000	843.012.000	–	–	–	FT20	T20	–
3556404	MB87RBHT16LK	86,50	3.406	115,50	4.547	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–	3 mm
3556405	MB115RBHT16LK	114,50	4.508	153,00	6.024	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000	–	–	3 mm

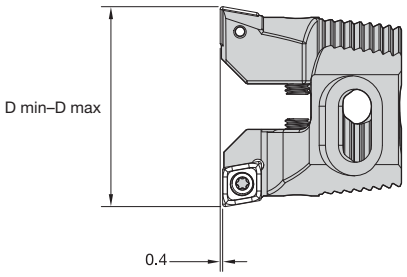




90° Lead Simultaneous Adjusting Blade Sets

order number	catalog number	D min mm	D min in	D max mm	D max in	gage insert	adjusting screw	insert screw	simultaneous adj spindle	shim	shim pin	toggle lever
2652965	SYB24RBHT06F	23,50	.925	30,50	1.201	CC..0602../CC..215..	848.200.407	843.006.000	848.200.005	–	–	–
2652967	SYB30RBHT06F	29,50	1.161	40,10	1.579	CC..0602../CC..215..	848.250.409	843.006.000	848.250.005	–	–	–
2652968	SYB40RBHT09F	39,50	1.555	50,50	1.988	CC..09T3../	848.320.413	843.009.000	848.320.005	–	–	–
2652969	SYB50RBHT09F	49,50	1.949	66,50	2.618	CC..09T3../	848.420.614	843.009.000	848.420.005	–	–	–
2652970	SYB66RBHT12F	65,50	2.579	87,50	3.445	CC..1204../CC..43..	–	843.012.000	848.550.005	–	–	–
2652971	SYB66RBHT12LF	65,50	2.579	87,50	3.445	CN..1204../CN..43..	–	848.550.620	848.550.005	845.012.000	844.012.000	846.012.000
2652972	SYB87RBHT12F	86,50	3.406	115,50	4.547	CC..1204../CC..43..	–	843.012.000	848.720.005	–	–	–
2652983	SYB87RBHT16LF	86,50	3.406	115,50	4.547	CNMG543	847.016.000	–	848.720.005	845.016.000	844.016.000	846.016.000
2652984	SYB115RBHT16LF	114,50	4.508	153,00	6.024	CNMG543	847.016.000	–	848.720.005	845.016.000	844.016.000	846.016.000







90° Lead Split Depth of Cut Blades

order number	catalog number	D min mm	D min in	D max mm	D max in	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever
4063996	SDB24RBHT06F	23,50	.925	30,50	1.201	CC..0602../CC..215..	848.200.407	843.006.000	–	–	–
4063997	SDB30RBHT06F	29,50	1.161	40,10	1.579	CC..0602../CC..215..	848.250.409	843.006.000	–	–	–
4063998	SDB40RBHT09F	39,50	1.555	50,50	1.988	CC..09T3../CC..325..	848.320.413	843.009.000	–	–	–
4063999	SDB50RBHT09F	49,50	1.949	66,50	2.618	CC..09T3../CC..325..	848.420.614	843.009.000	–	–	–
4064000	SDB66RBHT12F	65,50	2.579	87,50	3.445	CC..1204../CC..43..	848.550.620	843.012.000	–	–	–
4064001	SDB66RBHT12LF	65,50	2.579	87,50	3.445	CN..1204../CN..43..	847.012.000	–	845.012.000	844.012.000	846.012.000
4064002	SDB87RBHT12F	86,50	3.406	115,50	4.547	CC..1204../CC..43..	848.720.000	843.012.000	–	–	–
4064203	SDB87RBHT16LF	86,50	3.406	115,50	4.547	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000
4064204	SDB115RBHT16LF	114,50	4.508	153,00	6.024	CN..1606../CN..54..	847.016.000	–	845.016.000	844.016.000	846.016.000
4064205	SDB115RBHT12F	114,50	4.508	153,00	6.024	CC..1204../CC..43..	848.940.640	843.012.000	–	–	–

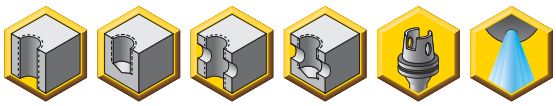
FBHM • Fine-Boring Kits

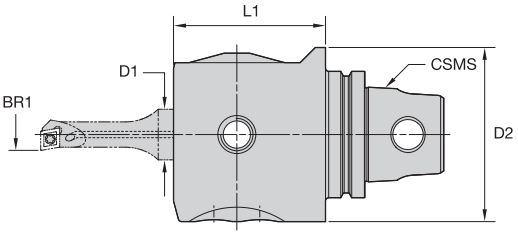
order number	catalog number	range mm	range in	contents	
4057101	KM50TSFBHMKIT164M	9,75-164,0	.383-6.456	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057098	HSK63FBHMKIT164M	9,75-164,0	.383-6.456	HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057099	DV40FBHMKIT164M	9,75-164,0	.383-6.456	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057100	BT40FBHMKIT164M	9,75-164,0	.383-6.456	BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4167882	CV40FBHMKIT645	9,75-164,0	.383-6.456	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09

NOTE: Counterweight 886038045 is not part of the kits and needs to be ordered separately.



- Order boring bars separately for required diameter; see page K134–K135.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.





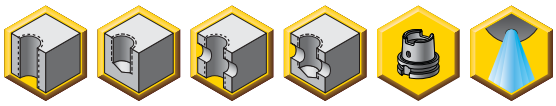


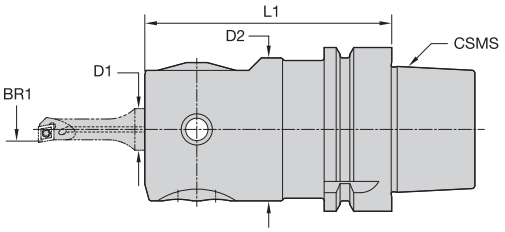
KM QUICK CHANGE

FBHO • KM™ Offset Boring Head

		BR1 bore range			D1		D2		L1		
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	mm	in	ModBORE FBHO parts package
1131111	**KM40FBHO1660**	9.750-53.100	0.3840-2.0910	KM40	16	.63	55,0	2.17	60,0	2.36	**PKG7001**
1132036	**KM50FBHO1670**	9.750-53.100	0.3840-2.0910	KM50	16	.63	55,0	2.17	70,0	2.76	**PKG7001**

- Order boring bars separately for required diameter; see page K134–K135.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



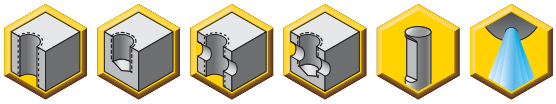


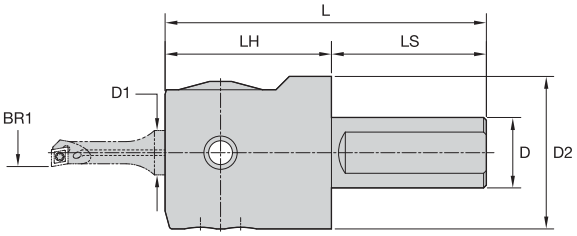


FBHO • HSK Boring Head

		BR1 bore range			D1		D2		L1		
order number	catalog number	mm	in	CSMS system size	mm	in	mm	in	mm	in	ModBORE FBHO parts package
2651037	**HSK63FBHO1695**	9.750-53.100	0.3840-2.0910	HSK63A	16	.63	55,0	2.17	95,0	3.74	**PKG7001**

- Order boring bars separately for required diameter; see page K134–K135.

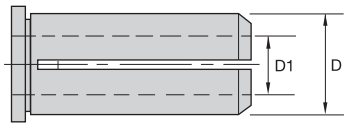






FBHO • Straight Shank Boring Head

		BR1 bore range		D		D1		D2		L		LH		LS	
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
3077141	SF100FBHO1660	3.000-88.100	0.1810-3.4685	25	1.000	16	.63	55,0	2.17	115,9	4.56	60,0	2.36	55,9	2.20
3077140	SF150FBHO1660	3.000-88.100	0.1811-3.4685	38	1.500	16	.63	55,0	2.17	131,6	5.18	60,0	2.36	71,6	2.82



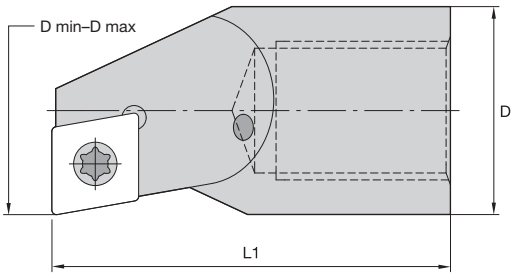


RS Series Sleeves • Metric I.D.

order number	catalog number	D	D1
2651042	RS1605	16	5
1125092	RS1606	16	6
1133914	RS1608	16	8
1135642	RS1610	16	10
1135662	RS1612	16	12

- Match boring head diameter to carbide bar diameter.
- Order inserts separately.



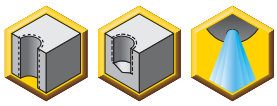


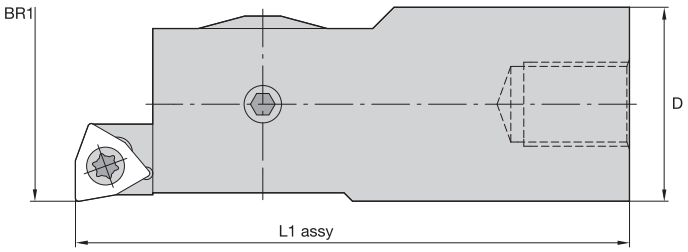


Fixed Pocket Boring Head

order number	catalog number	D min mm	D min in	D max mm	D max in	D mm	D in	L1 mm	L1 in	gage insert	insert screw	Torx size
2651168	**HFB1023SCFPR06**	10,75	.423	16,10	.634	10	.39	23	0.91	CC..0602../CC..215..	**PKG0011**	**T7**
2651169	**HFB1223SCFPR06**	12,75	.502	18,10	.713	12	.47	23	0.91	CC..0602../CC..215..	**PKG0011**	**T7**
2651170	**HFB1627SCFPR06**	16,75	.659	22,10	.870	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**
2651171	**HFB2127SCFPR06**	21,75	.856	27,10	1.067	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**
2651172	**HFB2427SCFPR06**	24,75	.974	30,10	1.185	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**
2651173	**HFB2727SCFPR06**	27,75	1.093	33,10	1.303	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**
2651174	**HFB3127SCFPR06**	31,75	1.250	37,10	1.461	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**
2651175	**HFB3427SCFPR06**	34,75	1.368	40,10	1.579	16	.63	27	1.06	CC..0602../CC..215..	**PKG0011**	**T7**

- Match boring head diameter to carbide bar diameter.
- Order insert cartridge separately.







Fine Adjustable Screw On Boring Head for Carbide Bars

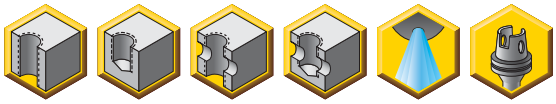
order number	catalog number	BR1 bore range mm	BR1 bore range in	L1 assy mm	L1 assy in	D mm	D in	cartridge mounting screw
2651176	**HFB14FBHS1440**	14.700-17.100	0.5787-0.6732	40,0	1.57	14	0.55	**PKG1402**
2651177	**HFB16FBHS1640**	16.700-20.100	0.6575-0.7913	40,0	1.57	16	0.63	**PKG1602**
2651178	**HFB19FBHS1840**	19.700-24.100	0.7756-0.9488	40,0	1.57	18	0.71	**PKG1802**

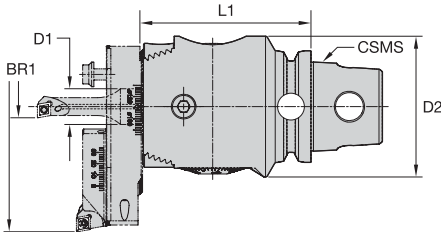
FBHM Fine-Boring Kits

order number	catalog number	range mm	range in	contents	
4057101	KM50TSFBHMKIT164M	9,75-164,0	.383-6.456	KM50TSFBHM1677 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057098	HSK63FBHMKIT164M	9,75-164,0	.383-6.456	HSK63FBHM1696 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057099	DV40FBHMKIT164M	9,75-164,0	.383-6.456	DV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4057100	BT40FBHMKIT164M	9,75-164,0	.383-6.456	BT40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09
4167882	CV40FBHMKIT645	9,75-164,0	.383-6.456	CV40FBHM1691 AFB09075SCFCR06 AFB13085SCFCR06 AFB17100SCFCR06 AFB21110SCFCR09 AFB24115SCFCR09	AFM29115 AFM47115 EBM8015086 AFM29SCFPR06 AFM47SCFPR09



- Order boring bars, diameter extension bridge, and cartridges separately.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



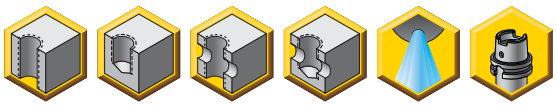


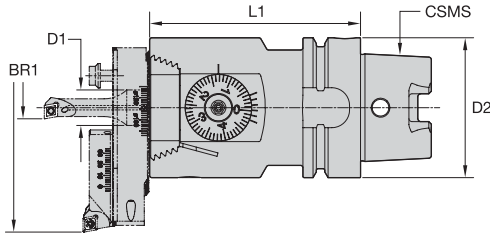


FBHM • KM™ Boring Head

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHS parts package	kg	lbs
4057060	**KM50TSFBHM1677**	9,750-164,000	.3838-6.4566	KM50TS	16,0	.63	63,0	2.48	76,6	3.02	**PKG-8001**	1,5	3.31

- Order boring bars, diameter extension bridge, and cartridges separately.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



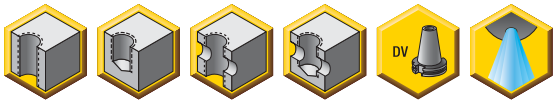


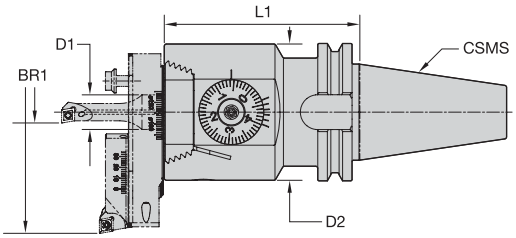


FBHM • HSK Boring Head

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHS parts package	kg	lbs
4057057	**HSK63FBHM1696**	9,750-164,000	.3838-6.4566	HSK63A	16,0	.63	63,0	2.48	95,0	3.74	**PKG-8001**	2,0	4.30

- Order boring bars, diameter extension bridge, and cartridges separately.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



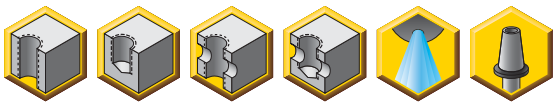


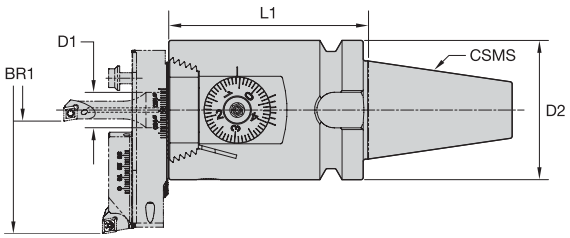


FBHM • DV40 Boring Head

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHS parts package	kg	lbs
4057058	**DV40FBHM1691**	9,750-154,000	.3838-6.0630	DV40	16,0	63.00	63,0	2.48	90,0	3.54	**PKG-8001**	2,1	4.64

- Order boring bars, diameter extension bridge, and cartridges separately.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



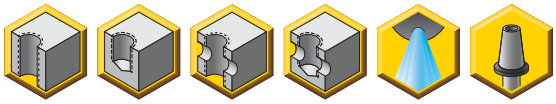


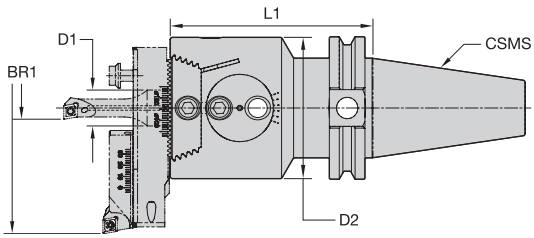


FBHM • BT40 Boring Head

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHS parts package	kg	lbs
4057059	**BT40FBHM1691**	9,750-164,000	.3838-6.4566	BT40	16,0	.63	63,0	2.48	90,0	3.54	**PKG-8001**	2,2	4.94

- Order boring bars, diameter extension bridge, and cartridges separately.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.



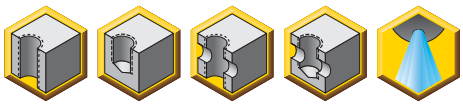


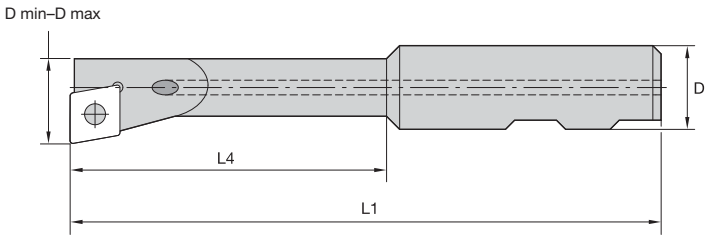


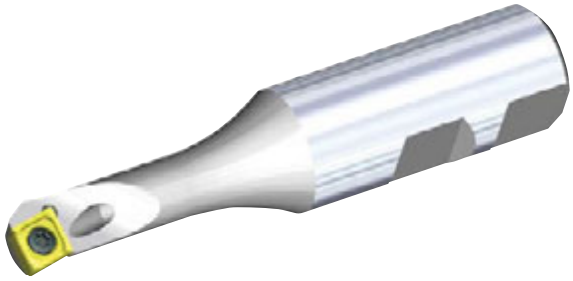
FBHM • CV40 Boring Head

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHS parts package	kg	lbs
4167881	**CV40FBHM1691**	9,750-164,000	.3838-6.4566	CV40	16,0	.63	63,0	2.48	91,2	3.59	**PKG-8001**	2,1	4.52

- Order inserts separately.



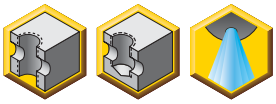


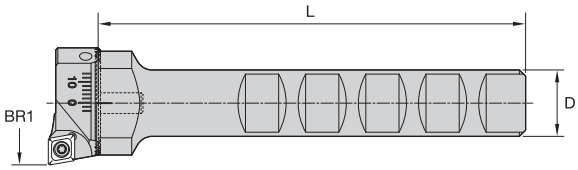


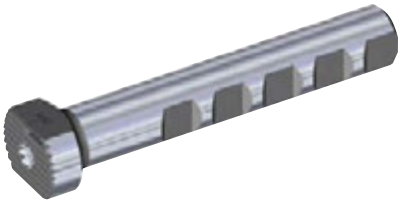
FBHO/FBHM • Universal Boring Bars

order number	catalog number	D min mm	D min in	D max mm	D max in	D mm	D in	L1 mm	L1 in	L4 mm	L4 in	gage insert	insert screw	Torx size
1125110	**AFB09075SCFCR06**	9,75	.384	14,75	.581	16	.63	75,0	2.95	30,0	1.18	CC..0602../CC..215..	**PKG2025**	T7
1133883	**AFB13085SCFCR06**	13,75	.541	18,75	.738	16	.63	85,0	3.35	40,0	1.57	CC..0602../CC..215..	**PKG2025**	T7
1133894	**AFB17100SCFCR06**	17,75	.699	22,75	.896	16	.63	100,0	3.94	55,0	2.17	CC..0602../CC..215..	**PKG2025**	T7
1137835	**AFB21110SCFCR09**	21,75	.856	26,75	1.053	16	.63	110,0	4.33	60,0	2.36	CC..09T3../CC..325..	**PKG3242**	T15
1128324	**AFB24115SCFCR09**	24,75	.974	29,75	1.171	16	.63	115,0	4.53	65,0	2.56	CC..09T3../CC..325..	**PKG3242**	T15
1126838	**AFB27115SCFCR09**	27,75	1.093	32,75	1.289	16	.63	115,0	4.53	70,0	2.76	CC..09T3../CC..325..	**PKG3242**	T15
1120731	**AFB31115SCFCR09**	31,75	1.250	36,75	1.447	16	.63	115,0	4.53	70,0	2.76	CC..09T3../CC..325..	**PKG3242**	T15
1127271	**AFB34115SCFCR09**	34,75	1.368	39,75	1.565	16	.63	115,0	4.53	70,0	2.76	CC..09T3../CC..325..	**PKG3242**	T15
2651038	**AFB38115SCFPR09**	38,75	1.526	44,10	1.736	16	.63	115,0	4.53	85,0	3.35	CC..09T3../CC..325..	**PKG3242**	T15
2651039	**AFB42115SCFPR09**	42,75	1.683	48,10	1.894	16	.63	115,0	4.53	85,0	3.35	CC..09T3../CC..325..	**PKG3242**	T15
2651040	**AFB47115SCFPR09**	47,75	1.880	53,10	2.091	16	.63	115,0	4.53	85,0	3.35	CC..09T3../CC..325..	**PKG3242**	T15

• Order AFM insert cartridge separately.



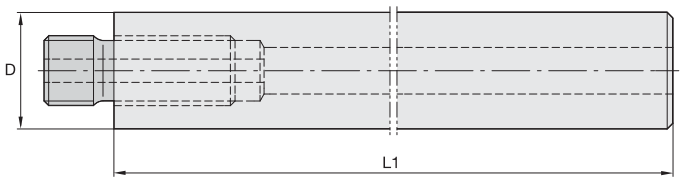




FBHO/FBHM • AFM Boring Bars

		BR1 bore range		D		D2		L	
order number	catalog number	mm	in	mm	in	mm	in	mm	in
4057061	AFM29115	29.750-48.100	1.1712-1.8940	16,0	.63	25,0	.98	103,000	4.06
4057062	AFM47115	47.750-88.100	1.8800-3.4680	16,0	.63	44,0	1.73	101,580	4.00



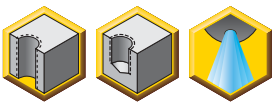


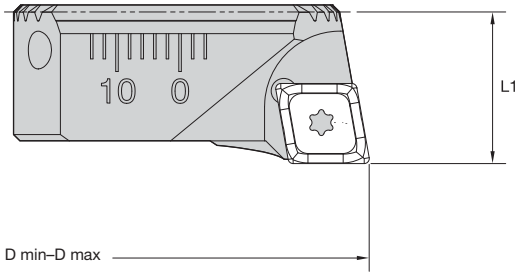


Carbide Shanks for Screw-On Boring Heads

		D		L1	
order number	catalog number	mm	in	mm	in
2651163	CFB10082	10	.39	82	3.23
2651164	CFB12096	12	.47	96	3.78
2651165	CFB14110	14	.55	110	4.33
2651166	CFB16120	16	.63	120	4.72
2651167	CFB18140	18	.71	140	5.51

- For use with AFM boring bars.
- Order inserts separately.



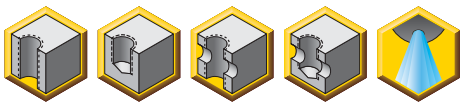


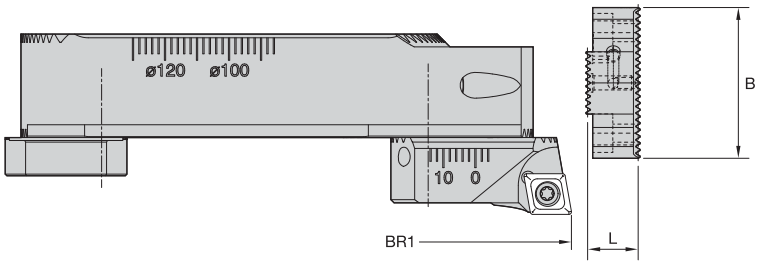


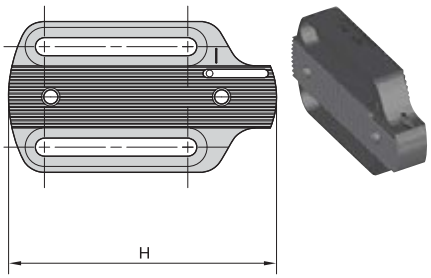
AFM • Insert Cartridges

order number	catalog number	D min mm	D min in	D max mm	D max in	L1 mm	L1 in	gage insert	ModBORE parts package	insert screw ID drive size
4057093	**AFM29SCFPR06**	29,75	1.171	48,10	1.894	12,0	.472	CC..0602../CC..2151..	**PKG2025**	T7
4057094	**AFM47SCFPR09**	47,75	1.880	88,10	3.469	14,0	.551	CC..09T3../CC..3252..	**PKG3242**	T15

- For use with FBHM insert holders and FBHM counterweight.
- Order AFM47SCFPR09 insert cartridge separately to achieve diameter range.



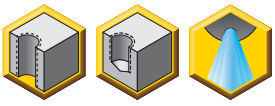


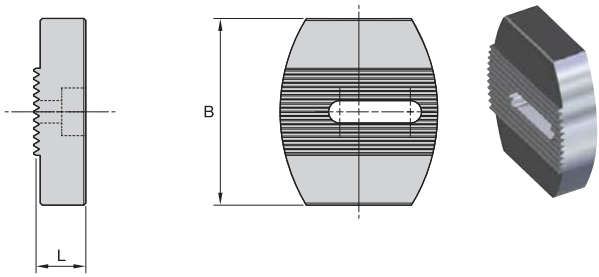


FBHM • Extension Bridge

order number	catalog number	BR1 bore range mm	BR1 bore range in	B mm	B in	H mm	H in	L mm	L in
4057095	**EBM8015086**	86.000-164.000	3.3900-6.4600	45,0	1.77	80,0	3.15	15,0	.59
4168063	**EBM1580160162**	162.000-320.000	6.3778-12.5984	45,0	1.77	158,0	6.22	16,2	.64

- For use with FBHM extension bridge.

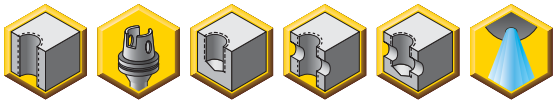


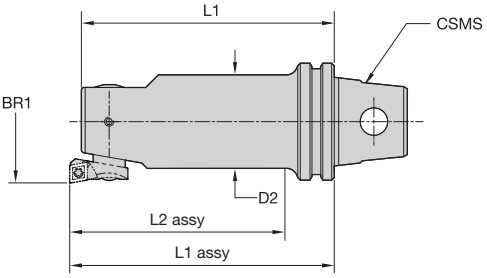


FBHM • Counterweight

order number	catalog number	B mm	B in	L mm	L in
4057096	**886038045**	45	1.77	12	.47

- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K140.







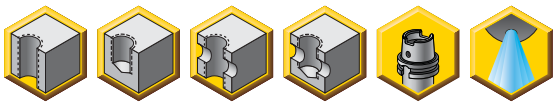
FBHS • KM™ Fine-Boring Single Cutters

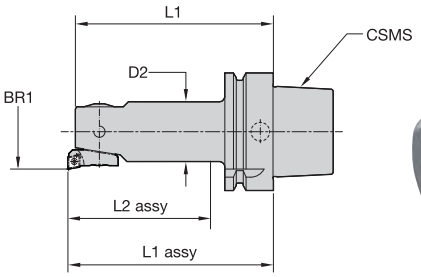




order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	L1 mm	L1 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	cartridge mounting screw	lock screw
3586572	KM32FBHS24	23,900-37,100	0.9409-1.4606	KM32	20,0	.79	86,0	3.39	90,0	3.54	76,1	2.99	880.252.200	881.252.200
3586573	KM32FBHS31	30,900-47,100	1.2165-1.8543	KM32	25,0	.98	96,0	3.78	100,0	3.94	86,1	3.39	880.252.250	881.252.250
3586574	KM40FBHS40	39,900-59,100	1.5709-2.3268	KM40	32,0	1.26	86,0	3.39	90,0	3.54	74,0	2.92	880.252.320	881.252.320
3586575	KM50FBHS51	50,900-81,100	2.0039-3.1929	KM50	42,0	1.65	86,0	3.39	90,0	3.54	70,0	2.76	880.252.420	881.252.420
3586576	KM50FBHS67	66,900-105,100	2.6339-4.1378	KM50	55,0	2.17	96,0	3.78	100,0	3.94	100,0	3.94	880.252.550	881.252.550
3586577	KM50FBHS87	86,900-134,100	3.4213-5.2795	KM50	72,0	2.84	116,0	4.57	120,0	4.72	120,0	4.72	880.252.550	881.252.720
3586578	KM63UTFBHS87	86,900-134,100	3.4213-5.2795	KM63UT	72,0	2.84	116,0	4.57	120,0	4.72	120,0	4.72	880.252.550	881.252.720
3586579	KM63UTFBHS116	115,900-191,100	4.5630-7.5236	KM63UT	94,0	3.70	146,0	5.75	150,0	5.91	150,0	5.91	880.252.550	881.252.940

- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K140.







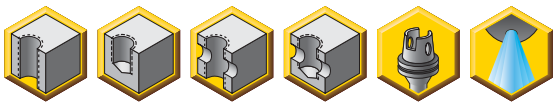
FBHS • HSK Fine-Boring Single Cutters

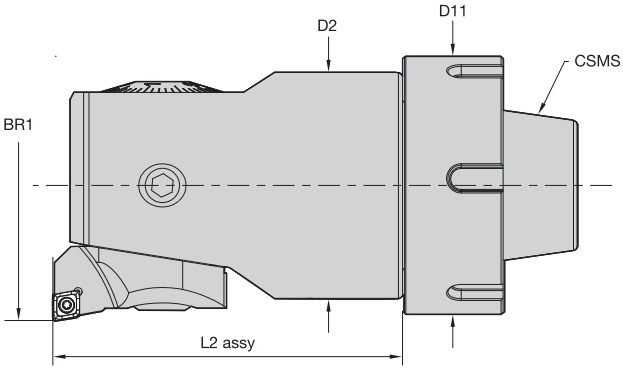




order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D2 mm	D2 in	L1 mm	L1 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	cartridge mounting screw	lock screw
3586580	HSK63FBHS24	23,900-37,100	0.9409-1.4606	HSK63A	20,0	.79	86,0	3.39	90,0	3.54	61,1	2.40	880.252.200	881.252.200
3586581	HSK63FBHS31	30,900-47,100	1.2165-1.8543	HSK63A	25,0	.98	101,0	3.98	105,0	4.13	76,1	2.99	880.252.250	881.252.250
3586582	HSK63FBHS40	39,900-59,100	1.5709-2.3268	HSK63A	32,0	1.26	106,0	4.17	110,0	4.33	81,1	3.19	880.252.320	881.252.320
3586583	HSK63FBHS51	50,900-81,100	2.0039-3.1929	HSK63A	42,0	1.65	116,0	4.57	120,0	4.72	91,1	3.58	880.252.420	881.252.420
3586584	HSK63FBHS67	66,900-105,100	2.6339-4.1378	HSK63A	55,0	2.17	121,0	4.76	125,0	4.92	99,1	3.90	880.252.550	881.252.550
3586585	HSK63FBHS87	86,900-134,100	3.4213-5.2795	HSK63A	72,0	2.84	141,0	5.55	145,0	5.71	145,0	5.71	880.252.550	881.252.720

- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K140.



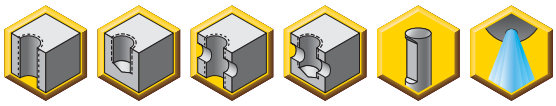


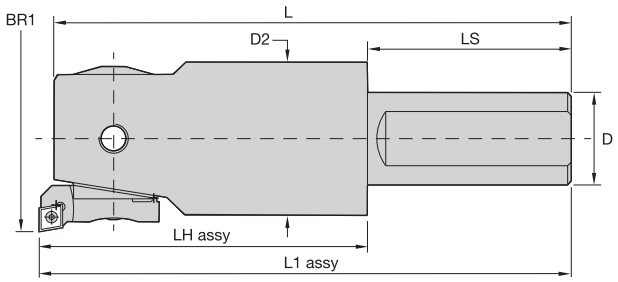


FBHS • ER Fine-Boring Single Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	CSMS system size	D11 mm	D11 in	D2 mm	D2 in	L2 assy mm	L2 assy in	cartridge mounting screw	lock screw
5544149	ER25FBHS40	39,900-59,100	1.5700-2.3260	ER25	39,0	1.54	32,0	1.26	65,5	2.58	880.252.320	881.252.320
5544191	ER32FBHS51	50,900-81,100	2.0030-3.1920	ER32	49,5	1.95	42,0	1.65	75,5	2.97	880.252.420	881.252.420
5544193	ER40FBHS67	66,900-105,100	2.6330-4.1370	ER40	62,7	2.47	55,0	2.17	85,5	3.37	880.252.550	881.252.550

- .0004" (0.01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K140.



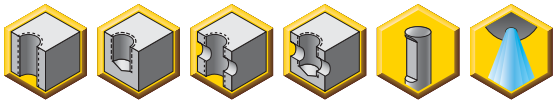


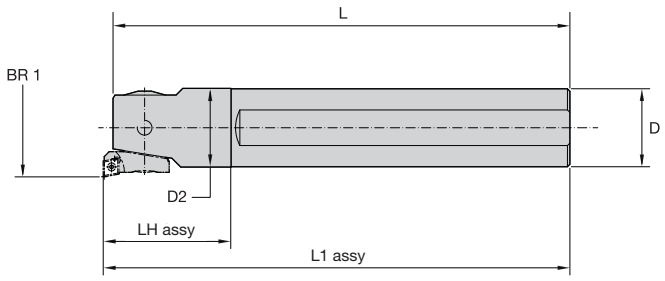


FBHS • Straight Shank Fine-Boring Single Cutters

order number	catalog number	BR1 bore range mm	BR1 bore range in	D	D2	L	LH assy	L1 assy	LS	cartridge mounting screw	lock screw
3586586	SF075FBHS24	23,900-37,100	0.9409-1.4606	.75	.79	5.75	1.65	5.91	4.2370	880.252.200	881.252.200
3586587	SF100FBHS31	30,900-47,100	1.2165-1.8543	1.00	.98	6.54	1.85	6.69	.8940	880.252.250	881.252.250
3586588	SF125FBHS40	39,900-59,100	1.5709-2.3268	1.25	1.26	7.32	2.05	7.48	5.4130	880.252.320	881.252.320
3586589	SF100FBHS51	50,900-81,100	2.0039-3.1929	1.00	1.65	5.59	3.54	5.74	2.2008	880.252.420	881.252.420
3586590	SF125FBHS67	66,900-105,100	2.6339-4.1378	1.25	2.17	6.17	3.94	6.33	2.3898	880.252.550	881.252.550
3586591	SF150FBHS87	86,900-134,100	3.4213-5.2795	1.50	2.84	7.39	4.72	7.54	2.8189	880.252.550	881.252.720
3586592	SF200FBHS116	115,900-191,100	4.5630-7.5236	2.00	3.70	9.13	5.91	9.29	3.3819	880.252.550	881.252.940

- 0.0004" (0,01mm) diameter adjustment respective 0.00008" (2 µm) with vernier scale.
- Order insert cartridges separately for required bore range, see page K140.



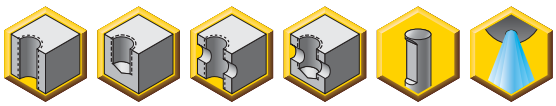


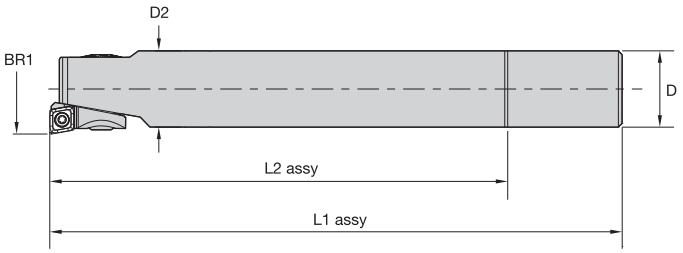


FBHS • Fine Boring Single Cutters • Carbide Straight Shank Series

order number	catalog number	BR1 bore range mm	BR1 bore range in	D	D2	L	LH assy	L1 assy	cartridge mounting screw	lock screw
3586593	SSE075FBHS24	23,900-37,100	0.9409-1.4606	.75	.79	9.69	3.15	9.84	880.252.200	881.252.200
3586594	SSE100FBHS31	30,900-47,100	1.2165-1.8543	1.00	.98	11.89	3.94	12.05	880.252.250	881.252.250
3586595	SSE125FBHS40	39,900-59,100	1.5709-2.3268	1.25	1.26	14.80	5.04	14.96	880.252.320	881.252.320

- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Internal coolant directed to indexable insert.
- Order insert cartridges separately for required bore range; see page K140.



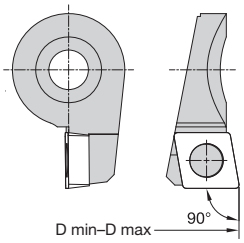


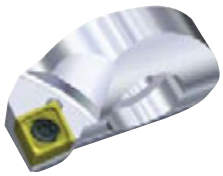


FBHS • Straight Shank Fine-Boring Single Cutters • Metric

order number	catalog number	BR1 bore range mm	BR1 bore range in	D mm	D in	D2 mm	D2 in	L1 assy mm	L1 assy in	L2 assy mm	L2 assy in	cartridge mounting screw	lock screw
5544144	SS20FBHS24	23,900-37,100	0.9400-1.4600	20,0	.79	20,0	.79	150,0	5.10	120,0	4.72	880.252.200	881.252.200
5544146	SS25FBHS31	30,900-47,100	1.2160-1.8540	25,0	.98	25,0	.98	170,0	6.69	140,0	5.51	880.252.250	881.252.250

- Order inserts separately.

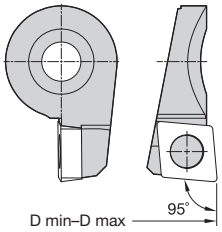




90° Lead • Insert Holders for FBHS Fine-Boring Heads

order number	catalog number	D min	D max	gage insert	Torx size	insert screw
1137487	R24FBHS06	23,9	31,1	CC..0602../CC..215..	T7	843.006.000
2649548	R30FBHS06	29,9	37,1	CC..0602../CC..215..	T7	843.006.000
1133669	R31FBHS06	30,9	40,1	CC..0602../CC..215..	T7	843.006.000
2649549	R38FBHS06	37,9	47,1	CC..0602../CC..215..	T7	843.006.000
1135369	R40FBHS06	39,9	51,1	CC.0602../CC..215..	T7	843.006.000
2649550	R48FBHS06	47,9	59,1	CC..0602../CC..215..	T7	843.006.000
1137479	R51FBHS06	50,9	67,1	CC..0602../CC..215..	T7	843.006.000
2649551	R65FBHS06	64,9	81,1	CC..0602../CC..215..	T7	843.006.000
1834274	R67FBHS06	66,9	153,1	CC..0602../CC..215..	T7	843.006.000
1137505	R67FBHS09	66,9	153,1	CC..09T3../CC..325..	T15	843.009.000
2649552	R85FBHS06	84,9	171,1	CC..0602../CC..215..	T7	843.006.000
2649553	R85FBHS09	84,9	171,1	CC..09T3../CC..325..	T15	843.009.000
2649554	R125FBHS09	153,9	191,1	CC..09T3../CC..325..	T15	843.009.000

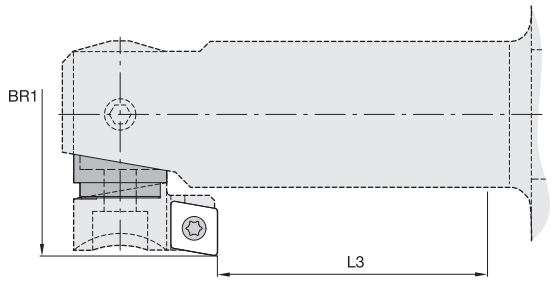
- Order inserts separately.





95° Lead • Insert Holders for FBHS

order number	catalog number	D min	D max	gage insert	insert screw ID drive size	insert screw
2649555	R24FBHS06LF	23,9	31,1	CC..0602../CC..215..	T7	843.006.000
2649556	R31FBHS06LF	30,9	40,1	CC..0602../CC..215..	T7	843.006.000
2649557	R40FBHS06LF	39,9	51,1	CC..0602../CC..215..	T7	843.006.000
2649558	R51FBHS06LF	50,9	67,1	CC..0602../CC..215..	T7	843.006.000
2649559	R67FBHS09LF	66,9	153,1	CC..09T3../CC..325..	T15	843.009.000



Reversal Adapters

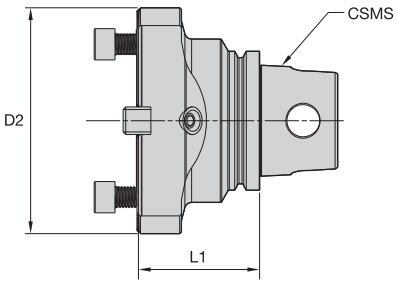
reversal adapter	use with cartridges				L3	
catalog number	90° lead	90° lead	95° lead	fine boring head series	mm	inch
R37FBHSRB	**R24FBHS06**	**–**	**R24FBHS06LF**	**..FBHS24**	13,0	0.512
R40FBHSRB	**R30FBHS06**	**–**	**–**	**..FBHS24**	13,0	0.512
R44FBHSRB	**R31FBHS06**	**–**	**R31FBHS06LF**	**..FBHS31**	17,6	0.693
R51FBHSRB	**R38FBHS06**	**–**	**–**	**..FBHS31**	17,6	0.693
R53FBHSRB	**R40FBHS06**	**–**	**R40FBHS06LF**	**..FBHS40**	31,3	1.232
R60FBHSRB	**R48FBHS06**	**–**	**–**	**..FBHS40**	31,3	1.232
R64FBHSRB	**R51FBHS06**	**–**	**R51FBHS06LF**	**..FBHS51**	49,2	1.937
R75FBHSRB	**R65FBHS06**	**–**	**–**	**..FBHS51**	49,2	1.937
R87FBHSRB	**R67FBHS06**	**R67FBHS09**	**R67FBHS09LF**	**..FBHS-67**	62,0	2.441

NOTE: Use the chart above to match the insert holder to the reversal adapter.

ModBORE™ Bridge Boring Systems

- Extension bridge required.
- Order extension bridge separately; see pages K143–K144.
- Match adapter and extension bridge series.





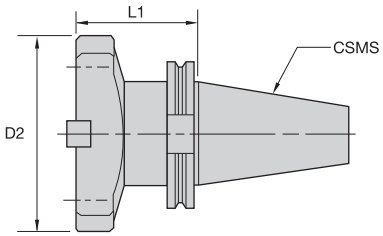


KM™ Bridge Tool Adapters

				D2		L1			
order number	catalog number	CSMS system size	extension bridge series	mm	in	mm	in	spare parts package	socket-head cap screw
1135802	**KM63BT13065**	KM63	A	130,0	5.12	65,0	2.56	**PKG1565**	**MS1085PKG**
1197315	**KM80BT13070**	KM80	B,A	130,0	5.12	70,0	2.76	**PKG1565**	**MS1085PKG**

- Extension bridge required.
- Order extension bridge separately; see pages K143–K144.
- Order coolant cartridge set separately.
- Match adapter and extension bridge series.







CV Bridge Tool Adapters

order number	catalog number	CSMS system size	extension bridge series	D2 mm	D2 in	L1 mm	L1 in	spare parts package	socket-head cap screw
1122185	**CV50BT13069**	CV50	A,B,C	130,0	5.12	69,1	2.72	**PKG1565**	**MS1085PKG**



BT Bridge Tool Adapters

order number	catalog number	CSMS system size	extension bridge series	D2 mm	D2 in	L1 mm	L1 in	spare parts package	socket-head cap screw
1121711	**BT50BT13088**	BT50	A,B,C	130,0	5.12	88,0	3.46	**PKG1565**	**MS1085PKG**

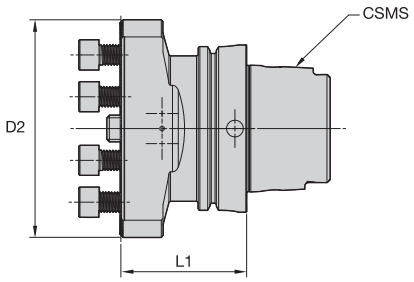


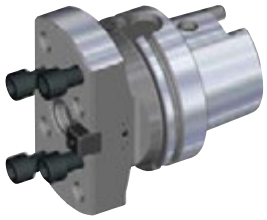
DV Bridge Tool Adapters

order number	catalog number	CSMS system size	extension bridge series	D2 mm	D2 in	L1 mm	L1 in	spare parts package	socket-head cap screw
1263825	**DV40BT13069**	DV40	A	130,0	5.12	69,1	2.72	**PKG1565**	**MS1085PKG**
1133581	**DV50BT13069**	DV50	A,B,C	130,0	5.12	69,1	2.72	**PKG1565**	**MS1085PKG**

- Extension bridge required.
- Order extension bridge separately; see pages K143–K144.
- Match adapter and extension bridge series.





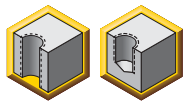


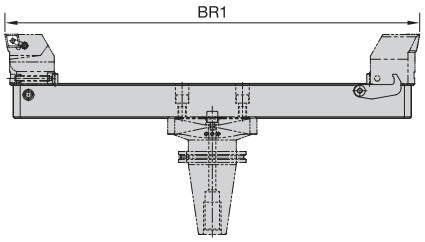
HSK Bridge Tool Adapters

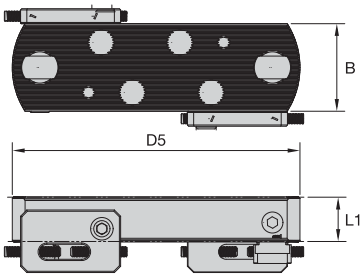
order number	catalog number	CSMS system size	extension bridge series	D2 mm	D2 in	L1 mm	L1 in	spare parts package	socket-head cap screw
4062112	**HSK100BT13075**	HSK100A	A,B,C	130,0	5.12	75,0	2.95	**PKG1565**	**MS1085PKG**

NOTE: Tool adapters combined with small-scale extension bridges cover boring range 5.91–25.79" (150–655mm).
Tool adapters combined with large-scale extension bridge and bridge slides cover boring range from 25.59–86.81" (650–2205mm).

- Match extension bridge series to adapter.







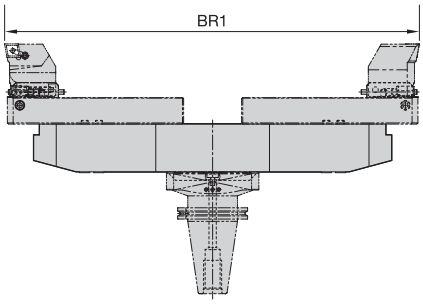


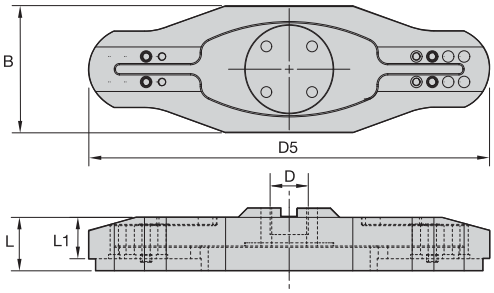
Small-Scale Extension Bridges

order number	catalog number	BR1 bore range mm	BR1 bore range in	max RPM	extension bridge series	B mm	B in	D5 mm	D5 in	L1 mm	L1 in	spare parts package	hex size	kg	lbs
1133280	**EB13030150**	150.000-205.000	5.9055-8.0709	1250	A	70,0	2.76	130,0	5.12	30,0	1.18	**PKG156502**	8 mm	1,95	4.30
1125085	**EB18030200**	200.000-255.000	7.8740-10.0394	1000	A	70,0	2.76	180,0	7.09	30,0	1.18	**PKG156502**	8 mm	2,77	6.10
1132857	**EB23035250**	250.000-305.000	9.8425-12.0079	850	B	70,0	2.76	230,0	9.06	35,0	1.38	**PKG156502**	8 mm	4,00	8.80
1126830	**EB28035300**	300.000-355.000	11.8110-13.9764	700	B	70,0	2.76	280,0	11.02	35,0	1.38	**PKG156502**	8 mm	5,14	11.30
1121703	**EB33040350**	350.000-405.000	13.7795-15.9449	600	B	70,0	2.76	330,0	12.99	40,0	1.57	**PKG156502**	8 mm	6,86	15.10
1140602	**EB38040400**	400.000-455.000	15.7480-17.9134	530	C	70,0	2.76	380,0	14.96	40,0	1.57	**PKG156502**	8 mm	7,95	17.50
1121036	**EB43040450**	450.000-505.000	17.7165-19.8819	480	C	70,0	2.76	430,0	16.93	40,0	1.57	**PKG156502**	8 mm	9,23	20.30
1270619	**EB48040500**	500.000-550.000	19.6850-21.8504	440	C	70,0	2.76	480,0	18.90	40,0	1.57	**PKG156502**	8 mm	10,23	22.50
1270620	**EB53050550**	550.000-605.000	21.6535-23.8189	400	C	70,0	2.76	530,0	20.87	50,0	1.97	**PKG156502**	8 mm	13,91	30.60
1270621	**EB58050600**	600.000-655.000	23.6220-25.7874	370	C	70,0	2.76	580,0	22.84	50,0	1.97	**PKG156502**	8 mm	15,32	33.70

- For use with shell mill adapters or direct connection to the machine spindle.
- Order bridge slides separately.









Large Scale Extension Bridge

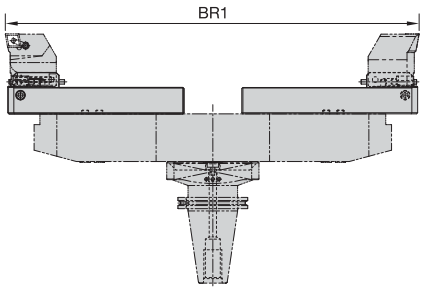
		BR1 bore range		D		D5		B		L		L1			
order number	catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	kg	lbs
4057204	EB630128650	650.000-1105.000	25.5900-43.5000	60,0	2.36	630,0	24.80	200,0	7.87	99,0	3.90	84,0	3.31	17,20	37.84
4057205	EB10801281100	1100.000-1655.000	43.3100-65.1600	60,0	2.36	1080,0	42.52	200,0	7.87	99,0	3.90	84,0	3.31	28,10	61.82
4057206	EB16301281650	1650.000-2205.000	64.9600-86.8100	60,0	2.36	1630,0	64.17	200,0	7.87	99,0	3.90	84,0	3.31	43,00	94.60

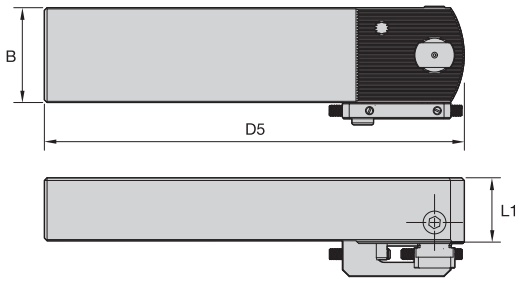
max RPM		
BR1 bore range (mm)	BR1 bore range inch	maximum RPM
650–705	25.59–27.76	300
700–755	27.56–29.72	285
750–805	29.53–31.69	270
800–855	31.50–33.66	255
850–905	33.46–35.63	240
900–955	35.43–37.60	225
950–1005	37.40–39.57	210
1000–1055	39.37–41.54	195
1050–1105	41.34–43.50	180

max RPM		
BR1 bore range (mm)	BR1 bore range inch	maximum RPM
1100–1155	43.31–45.47	170
1150–1205	45.28–47.44	163
1200–1255	47.24–49.41	156
1250–1305	49.21–51.38	149
1300–1355	51.18–53.35	142
1350–1405	53.15–55.31	135
1400–1455	55.12–57.28	128
1450–1505	57.09–59.25	121
1500–1555	59.06–61.22	114
1550–1605	61.02–63.19	107
1600–1655	62.99–65.16	100

max RPM		
BR1 bore range (mm)	BR1 bore range inch	maximum RPM
1650–1705	64.96–67.13	95
1700–1755	66.93–69.09	90
1750–1805	68.90–71.06	85
1800–1855	70.87–73.03	80
1850–1905	72.83–75.00	75
1900–1955	74.80–76.97	70
1950–2005	76.77–78.94	65
2000–2055	78.74–80.91	60
2050–2105	80.71–82.87	55
2100–2155	82.68–84.84	50
2150–2205	84.65–86.81	45

- For use with large-scale bridge extensions.
- Delivered as a set of two.



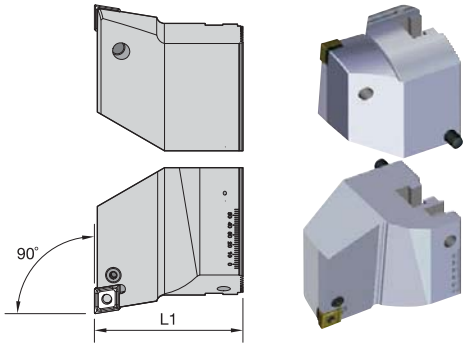




Bridge Slides

		BR1 bore range		B		D5		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	spare parts package	kg	lbs
4057207	EBSLD1105	650.000-1105.000	25.5900-43.5000	70,0	2.76	310,0	12.20	48,0	1.89	PKG156502	7,00	15.40
4057208	EBSLD2205	1100.000-2205.000	43.3100-86.8100	70,0	2.76	360,0	14.17	48,0	1.89	PKG156502	7,90	17.38

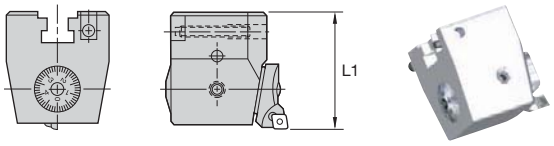
- Packaged as a matched set of two to enable twin cutting operations.



90° Lead • Bridge Tool Rough-Boring Head

order number	catalog number	L1 mm	L1 in	gage insert	spare parts package	insert screw ID drive size	kg	lbs
1624878	**EBURF1975PKG**	75,0	2.95	CN..1906../CN..64..	**PKG7994**	4 mm	1,64	3.60

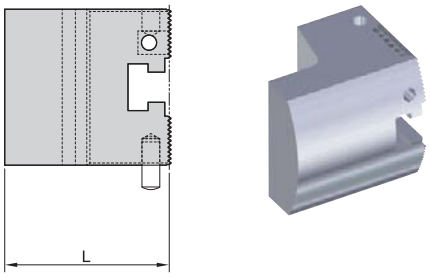
- Insert holder included.
- .0004" (0,01mm) diameter adjustment respective .00008" (2 µm) with vernier scale.
- Use with counterweight for balance.



90° Lead • Bridge Tool Fine-Boring Head

order number	catalog number	L1 mm	L1 in	cartridge	spare parts package	wrench size-adjusting screw	kg	lbs
1135375	**EBUFF0975**	75,0	2.95	R67-FBHS-09	**PKG0002**	5 mm	2,14	4.70

- Use to balance the extension bridge when using an EBUFF fine-boring head.



Bridge Tool Counterweight

order number	catalog number	L mm	L in	kg	lbs
4062443	**EBUCW0074**	74,0	2.91	2,10	4.63

ModBORE™ • Roughing • Inch

Material Group		Condition	Geometry -MP	Geometry -MN	Geometry -MF	Cutting Speed SFM min	Cutting Speed SFM Starting Value	Cutting Speed SFM max	Feed Rate IPR -MP	Feed Rate IPR -MN	Feed Rate IPR -MF
P	1		–	KCP05	–	590	**1430**	1620	–	.006–.025	–
			KCP10			590	**1300**	1180	.004–.016	.006–.025	.004–.016
			–	KC9110		590	**1300**	1180	–	.006–.025	.004–.016
			KCP25			410	**900**	1180	.004–.008	.006–.012	.004–.008
			–	KC9125		510	**920**	1180	–	.006–.012	.004–.008
	2		–	KCP05	–	590	**870**	1310	–	.006–.025	–
			KCP10			590	**790**	1540	.004–.016	.006–.025	.004–.016
			–	KC9110		590	**820**	1120	–	.006–.025	.004–.016
			KCP25			410	**640**	920	.004–.008	.006–.012	.004–.008
			–	KC9125		460	**660**	970	–	.006–.012	.004–.008
	3		–	KCP05	–	590	**670**	900	–	.006–.025	–
			KCP10			520	**620**	1150	.004–.016	.006–.025	.004–.016
			–	KC9110		510	**620**	770	–	.006–.025	.004–.016
			KCP25			440	**510**	740	.004–.008	.006–.012	.004–.008
			–	KC9125		440	**510**	740	–	.006–.012	.004–.008
	4		–	KCP05	–	300	**520**	720	–	.006–.025	–
			KCP10			300	**480**	770	.004–.016	.006–.025	.004–.016
			–	KC9110		300	**480**	640	–	.006–.025	.004–.016
			KCP25			250	**340**	590	.004–.008	.006–.012	.004–.008
			–	KC9125		250	**360**	570	–	.006–.012	.004–.008
	5		–	KCP05	–	490	**790**	1030	–	.006–.025	–
			KCP10			490	**710**	980	.004–.016	.006–.025	.004–.016
			–	KC9110		490	**710**	980	–	.006–.025	.004–.016
			KCP25			390	**640**	850	.004–.008	.006–012	.004–.008
			–	KC9125		390	**640**	850	–	.006–.012	.004–.008
	6		–	KCP05	–	460	**660**	980	–	.006–.025	–
			KCP10			360	**590**	890	.004–.016	.006–.025	.004–.016
			–	KC9110		390	**590**	740	–	.006–.025	.004–.016
			KCP25			340	**490**	740	.004–.008	.006–.012	.004–.008
			–	KC9125		340	**490**	740	–	.006–.012	.004–.008

ModBORE™ • Roughing • Inch

Material Group		Condition	Geometry -MP	Geometry -MF	Cutting Speed SFM min	Cutting Speed SFM Starting Value	Cutting Speed SFM max	Feed Rate IPR -MP	Feed Rate IPR -MF
M	1		KCM15		330	**590**	790	.004–.016	.003–.012
			KC5010	–	430	**710**	820	.004–.016	–
			KC9225		570	**610**	820	.004–.016	.003–.012
			KCM25		300	**490**	660	.004–.008	.003–.006
			KC9240		300	**390**	440	.004–.008	.003–.006
	2		KCM15		360	**540**	820	.004–.016	.003–.012
			KC5010	–	410	**660**	820	.004–.016	–
			KC9225		360	**560**	750	.004–.016	.003–.012
			KCM25		300	**490**	740	.004–.008	.003–.006
			KC9240		260	**340**	440	.004–.008	.003–.006
	3		KCM15		360	**490**	820	.004–.016	.003–.012
			KC5010	–	360	**490**	750	.004–.016	–
			KC9225		360	**490**	750	.004–.016	.003–.012
			KCM25		300	**390**	660	.004– .008	.003–.006
			KC9240		260	**300**	440	.004–.008	.003–.006

ModBORE™ • Roughing • Inch

Material Group		Condition	Geometry -MP	Geometry -MW	Cutting Speed SFM min	Cutting Speed SFM Starting Value	Cutting Speed SFM max	Feed Rate IPR -MP	Feed Rate IPR -MW
K	1		KCK20		720	**980**	1770	.004–.016	.006–.039
			–	KT315	520	**900**	1610	–	.006–.039
			KCK20		720	**900**	1150	.004–.016	.006–.039
			–	KC9315	490	**900**	1150	–	.006–.039
			KCK20		460	**690**	1120	.004–.008	.006–.018
			–	KC9325	230	**690**	1120	–	.006–.018
	2		KCK20		720	**900**	1150	.004–.016	.006–.039
			–	KT315	590	**900**	1180	–	.006–.039
			KCK20		720	**900**	1150	.004–.016	.006–.039
			–	KC9315	430	**850**	1120	–	.006–.039
			KCK20		720	**900**	1150	.004–.008	.006–.018
	3		KCK20		360	**490**	750	.004–.016	.006–.039
			–	KT315	560	**750**	1180	–	.006–.039
			KCK20		360	**490**	750	.004–.016	.006–.039
			–	KC9315	430	**710**	1150	–	.006–.039
			KCK20		360	**490**	750	.004–.008	.006–.018

ModBORE™ • Roughing • Inch

Material Group		Condition	Geometry -HP	Geometry –	Cutting Speed SFM min	Cutting Speed SFM Starting Value	Cutting Speed SFM max	Feed Rate IPR -HP	Feed Rate IPR –
N	1		KC5410	–	660	**1800**	3280	.006–.025	–
			–	KD1400	1480	**2510**	8200	–	.010–.025
			KC5410	–	660	**1800**	3280	.006–.012	–
	2		–	KD1425	980	**1710**	2950	–	.010–.025
			–	KD1425	980	**1710**	2950	–	.010–.016
	3		KC5410	–	330	**900**	1640	.006–.025	–
			K313	–	390	**850**	1610	.006–.025	–
			KC5410	–	330	**900**	1640	.006–.012	–
	5		KC5410	–	330	**660**	1150	.006–.025	–
			KC5410	–	330	**660**	1150	.006–.012	–

ModBORE™ • Roughing • Inch

Material Group		Condition	Geometry -MP	Geometry -FP	Geometry -UP	Cutting Speed SFM min	Cutting Speed SFM Starting Value	Cutting Speed SFM max	Feed Rate IPR -MP	Feed Rate IPR -FP	Feed Rate IPR -UP
S	1		KCU10		–	100	**180**	380	.004–.016	.002–.010	–
			KC5010			100	**180**	380	.004–.016	.002–.010	.006–.020
			KCU25		–	30	**130**	180	.004–.008	.002–.005	–
			KC9240	–	KC9240	30	**130**	200	.004–.008	–	.006–.011
	2		KCU10		–	100	**200**	390	.004–.016	.002–.010	–
			KC5010			100	**200**	380	.004–.016	.002–.010	.006–.020
			KCU25		–	30	**100**	180	.004–.008	.002–.005	–
			KC9240	–	KC9240	30	**100**	180	.004–.008	–	.006–.011
	3		KCU10		–	100	**230**	380	.004–.016	.002–.010	–
			KC5010			100	**230**	380	.004–.016	.002–.010	.006–.020
			KCU25		–	70	**130**	180	.004–.008	.002–.005	–
			KC9240	–	KC9240	70	**130**	200	.004–.008	–	.006–.011
	4		KCU10		–	150	**230**	460	.004–.016	.002–.010	–
			KC5010			150	**230**	560	.004–.016	.002–.010	.006–.020
			KCU25		–	70	**180**	300	.004–.008	.002–.005	–
			KC9240	–	KC9240	50	**180**	300	.004–.008	–	.006–.011

ModBORE™ • Roughing • Metric

Material Group		Condition	Geometry -MP	Geometry -MN	Geometry -MF	Cutting Speed — vc m/min min	Cutting Speed — vc m/min Starting Value	Cutting Speed — vc m/min max	Feed Rate mm/r -MP	Feed Rate mm/r -MN	Feed Rate mm/r -MF
P	1		–	KCP05	–	180	**435**	495	–	0,16–0,63	–
			KCP10			180	**395**	360	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		180	**395**	360	–	0,16–0,63	0,10–0,40
			KCP25			125	**275**	360	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		155	**280**	360	–	0,16–0,31	0,10–0,20
	2		–	KCP05	–	180	**265**	400	–	0,16–0,63	–
			KCP10			180	**240**	470	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		180	**250**	340	–	0,16–0,63	0,10–0,40
			KCP25			125	**195**	280	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		140	**200**	295	–	0,16–0,31	0,10–0,20
	3		–	KCP05	–	180	**205**	275	–	0,16–0,63	–
			KCP10			160	**190**	350	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		155	**190**	235	–	0,16–0,63	0,10–0,40
			KCP25			135	**155**	225	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		135	**155**	225	–	0,16–0,31	0,10–0,20
	4		–	KCP05	–	90	**160**	220	–	0,16–0,63	–
			KCP10			90	**145**	235	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		90	**145**	195	–	0,16–0,63	0,10–0,40
			KCP25			75	**105**	180	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		75	**110**	175	–	0,16–0,31	0,10–0,20
	5		–	KCP05	–	150	**240**	315	–	0,16–0,63	–
			KCP10			150	**215**	300	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		150	**215**	300	–	0,16–0,63	0,10–0,40
			KCP25			120	**195**	260	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		120	**195**	260	–	0,16–0,31	0,10–0,20
	6		–	KCP05	–	140	**200**	300	–	0,16–0,63	–
			KCP10			110	**180**	270	0,10–0,40	0,16–0,63	0,10–0,40
			–	KC9110		120	**180**	225	–	0,16–0,63	0,10–0,40
			KCP25			105	**150**	225	0,10–0,20	0,16–0,31	0,10–0,20
			–	KC9125		105	**150**	225	–	0,16–0,31	0,10–0,20

ModBORE™ • Roughing • Metric

Material Group		Condition	Geometry -MP	Geometry -MF	Geometry —	Cutting Speed — vc m/min min	Cutting Speed — vc m/min Starting Value	Cutting Speed — vc m/min max	Feed Rate mm/r -MP	Feed Rate mm/r -MF	Feed Rate mm/r —
M	1		KCM15		–	100	**180**	240	0,10–0,40	0,08–0,30	–
			KC5010	–	–	130	**215**	250	0,10–0,40	–	–
			KC9225		–	175	**185**	250	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**150**	200	0,10–0,20	0,08–0,15	–
			KC9240		–	90	**120**	135	0,10–0,20	0,08–0,15	–
	2		KCM15		–	110	**165**	250	0,10–0,40	0,08–0,30	–
			KC5010	–	–	125	**200**	250	0,10–0,40	–	–
			KC9225		–	110	**170**	230	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**150**	225	0,10–0,20	0,08–0,15	–
			KC9240		–	80	**105**	135	0,10–0,20	0,08–0,15	–
	3		KCM15		–	110	**150**	250	0,10–0,40	0,08–0,30	–
			KC5010	–	–	110	**150**	230	0,10–0,40	–	–
			KC9225		–	110	**150**	230	0,10–0,40	0,08–0,30	–
			KCM25		–	90	**120**	200	0,10–0,20	0,08–0,15	–
			KC9240		–	80	**90**	135	0,10–0,20	0,08–0,15	–

ModBORE™ • Roughing • Metric

Material Group		Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
			-MP	-MW	–	min	Starting Value	max	-MP	-MW	–
K	1		KCK20		–	220	**300**	540	0,10–0,40	0,16–1,00	–
			–	KT315	–	160	**275**	490	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KC9315	–	150	**275**	350	–	0,16–1,00	–
			KCK20		–	140	**210**	340	0,10–0,20	0,16–0,45	–
			–	KC9325	–	70	**210**	340	–	0,16–0,45	–
	2		KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KT315	–	180	**275**	360	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,40	0,16–1,00	–
			–	KC9315	–	130	**260**	340	–	0,16–1,00	–
			KCK20		–	220	**275**	350	0,10–0,20	0,16–0,45	–
	3		KCK20		–	110	**150**	230	0,10–0,40	0,16–1,00	–
			–	KT315	–	170	**230**	360	–	0,16–1,00	–
			KCK20		–	110	**150**	230	0,10–0,40	0,16–1,00	–
			–	KC9315	–	130	**215**	350	–	0,16–1,00	–
			KCK20		–	110	**150**	230	0,10–0,20	0,16–0,45	–

ModBORE™ • Roughing • Metric

Material Group		Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
			-HP	–	–	min	Starting Value	max	-HP	–	–
N	1		KC5410	–	–	200	**550**	1000	0,16–0,63	–	–
			–	KD1400	–	450	**765**	2500	–	0,25–0,63	–
			KC5410	–	–	200	**550**	1000	0,16–0,31	–	–
	2		–	KD1425	–	300	**520**	900	–	0,25–0,63	–
			–	KD1425	–	300	**520**	900	–	0,25–0,40	–
	3		KC5410	–	–	100	**275**	500	0,16–0,63	–	–
			K313	–	–	120	**260**	490	0,16–0,63	–	–
			KC5410	–	–	100	**275**	500	0,16–0,31	–	–
	5		KC5410	–	–	100	**200**	350	0,16–0,63	–	–
			KC5410	–	–	100	**200**	350	0,16–0,31	–	–

ModBORE™ • Roughing • Metric

Material Group		Condition	Geometry			Cutting Speed – vc m/min			Feed Rate mm/r		
			-MP	-FP	-UP	min	Starting Value	max	-MP	-FP	-UP
S	1		KCU10		–	30	**55**	115	0,10–0,40	0,06–0,25	–
			KC5010			30	**55**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	10	**40**	55	0,10–0,20	0,06–0,12	–
			KC9240	–	KC9240	10	**40**	60	0,10–0,20	–	0,16–0,27
	2		KCU10		–	30	**60**	120	0,10–0,40	0,06–0,25	–
			KC5010			30	**60**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	10	**30**	55	0,10–0,20	0,06–0,12	–
			KC9240	–	KC9240	10	**30**	55	0,10–0,20	–	0,16–0,27
	3		KCU10		–	30	**70**	115	0,10–0,40	0,06–0,25	–
			KC5010			30	**70**	115	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	20	**40**	55	0,10–0,20	0,06–0,12	–
			KC9240	–	KC9240	20	**40**	60	0,10–0,20	–	0,16–0,27
	4		KCU10		–	45	**70**	140	0,10–0,40	0,06–0,25	–
			KC5010			45	**70**	170	0,10–0,40	0,06–0,25	0,16–0,50
			KCU25		–	20	**55**	90	0,10–0,20	0,06–0,12	–
			KC9240	–	KC9240	15	**55**	90	0,10–0,20	–	0,16–0,27

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Material Group		Condition	Geometry				Cutting Speed — vc SFM			Feed Rate IPR			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
P	1		KCP05			–	590	**1430**	1620	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	590	**1430**	1620	–	–	.002–.010	–
			KT315	–	–	–	590	**1310**	1620	.002–.010	–	–	.003–.012
			KCP10			–	590	**1300**	1530	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	590	**1300**	1620	.002–.010	.002–.006	–	–
			KCP25				460	**920**	1180	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	460	**920**	1180	.002–.004	.002–.003	–	–
	2		KCP05			–	590	**870**	1310	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	590	**870**	1310	–	–	.002–.010	–
			KT315	–	–	KT315	620	**890**	1280	.002–.010	–	–	.003–.012
			KCP10			–	590	**790**	1080	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	590	**790**	1080	.002–.010	.002–.006	–	–
			KCP25				480	**640**	1050	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	480	**640**	1050	.002–.004	.002–.003	–	–
	3		KCP05			–	590	**670**	900	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	590	**670**	900	–	–	.002–.010	–
			KT315	–	–	KT315	590	**690**	900	.002–.010	–	–	.003–.012
			KCP10			–	520	**620**	820	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	510	**620**	790	.002–.010	.002–.006	–	–
			KCP25				440	**510**	740	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	440	**510**	740	.002–.004	.002–.003	–	–
	4		KCP05			–	300	**520**	720	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	300	**520**	720	–	–	.002–.010	–
			KT315	–	–	KT315	300	**590**	720	.002–.010	–	–	.003–.012
			KCP10			–	300	**480**	640	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	300	**480**	640	.002–.010	.002–.006	–	–
			KCP25				250	**340**	590	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	250	**340**	590	.002–.004	.002–.003	–	–
	5		KCP05			–	490	**790**	1030	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	490	**790**	1030	–	–	.002–.010	–
			KT315	–	–	KT315	490	**820**	1030	.002–.010	–	–	.003–.012
			KCP10			–	490	**710**	980	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	490	**710**	980	.002–.010	.002–.006	–	–
			KCP25				390	**640**	840	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	390	**640**	840	.002–.004	.002–.003	–	–
	6		KCP05			–	460	**660**	980	.002–.010	.002–.006	.002–.010	–
			–	–	KTP10	–	460	**660**	980	–	–	.002–.010	–
			KT315	–	–	KT315	460	**660**	980	.002–.010	–	–	.003–.012
			KCP10			–	390	**590**	900	.002–.010	.002–.006	.002–.010	–
			KC9110		–	–	390	**590**	740	.002–.010	.002–.006	–	–
			KCP25				340	**490**	740	.002–.004	.002–.003	.002–.005	.003–.006
			KC9125		–	–	340	**490**	740	.002–.004	.002–.003	–	–

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Material Group		Condition	Geometry				Cutting Speed — vc SFM			Feed Rate IPR			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
M	1		–	–	KTP10	–	460	**750**	1030	–	–	.002–.010	–
			KT315	–	–	KT315	460	**750**	1030	.002–.010	–	–	.003–.012
			KC5010	–	–	KC5010	430	**710**	800	.002–.010	–	–	.003–.012
			KCM15	–	KCM15	–	340	**590**	790	.002–.005	–	.002–.005	–
			KC9225	–	–	KC9225	340	**590**	790	.002–.005	–	–	.003–.006
	2		–	–	KTP10	–	460	**710**	970	–	–	.002–.010	–
			KT315	–	–	KT315	460	**710**	970	.002–.010	–	–	.003–.012
			KC5010	–	–	KC5010	430	**660**	800	.002–.010	–	–	.003–.012
			KCM15	–	KCM15	–	340	**540**	820	.002–.005	–	.002–.005	–
			KC9225	–	–	KC9225	330	**520**	750	.002–.005	–	–	.003–.006
	3		–	–	KTP10	–	460	**660**	980	–	–	.002–.010	–
			KT315	–	–	KT315	460	**660**	980	.002–.010	–	–	.003–.012
			KC5010	–	–	KC5010	430	**610**	750	.002–.010	–	–	.003–.012
			KCM15	–	KCM15	–	380	**490**	840	.002–.005	–	.002–.005	–
			KC9225	–	–	KC9225	360	**490**	750	.002–.005	–	–	.003–.006

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Material Group		Condition	Geometry				Cutting Speed — vc SFM			Feed Rate IPR			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
K	1		KCK20	–	KCK20		660	980	1770	.002–.010	–	.002–.010	.003–.012
			KT315	–	–	KT315	540	900	1610	.002–.010	–	–	.003–.012
			KC9315	–	–	–	360	900	1480	.002–.010	–	–	–
			KC9320	–	–	–	330	790	1310	.002–.005	–	–	–
	2		KCK20	–	KCK20		490	790	1380	.002–.010	–	.002–.010	.003–.012
			KT315	–	–	KT315	590	900	1180	.002–.010	–	–	.003–.012
			KC5010		–	KC5010	330	660	870	.002–.010	.002–.006	–	.003–.012
			KC9315	–	–	–	480	850	1180	.002–.010	–	–	–
			KC9320	–	–	–	460	790	1080	.002–.005	–	–	–
	3		KCK20	–	KCK20		460	690	1150	.002–.010	–	.002–.010	.003–.012
			KT315	–	–	KT315	590	750	1050	.002–.010	–	–	.003–.012
			KC5010		–	KC5010	390	490	740	.002–.010	.002–.006	–	.003–.012
			KC9315	–	–	–	480	710	900	.002–.010	–	–	–
			KC9320	–	–	–	460	690	850	.002–.005	–	–	–

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Material Group		Condition	Geometry				Cutting Speed — vc SFM			Feed Rate IPR			
			-LF	–	–	–	min	Starting Value	max	-LF	–	–	–
N	1		KC5410	–	–	–	660	1800	3280	.004–.016	–	–	–
			KC5410	–	–	–	660	1800	3280	.004–.008	–	–	–
			–	KD1400	–	–	1480	2510	9840	–	.002–.006	–	–
	2		–	KD1425	–	–	1230	1900	3770	–	.002–.010	–	–
			–	KD1400	–	–	1310	2130	4100	–	.002–.006	–	–
	3		KC5410	–	–	–	410	900	1720	.004–.016	–	–	–
			–	KD1425	–	–	820	1640	2870	–	.002–.010	–	–
			KC5410	–	–	–	410	900	1720	.004–.008	–	–	–
			–	KD1400	–	–	1230	1710	3280	–	.002–.005	–	–
	5		KC5410	–	–	–	410	660	1230	.004–.016	–	–	–
			KC5410	–	–	–	410	660	1230	.004–.008	–	–	–

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Material Group		Condition	Geometry				Cutting Speed — vc SFM			Feed Rate IPR			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1		–	–	KCU10	–	100	180	410	–	–	.002–.010	–
			K313	–	–	–	30	100	200	.002–.010	–	–	–
			KC5010		–	KC5010	100	180	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU10	–	100	180	410	–	–	.002–.010	–
			KC5010		–	KC5010	100	180	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU25	–	30	130	160	–	–	.002–.005	–
			KC5025	–	–	–	30	130	160	.002–.004	–	–	–
	2		–	–	KCU10	–	100	110	410	–	–	.002–.010	–
			K313	–	–	–	30	110	200	.002–.010	–	–	–
			KC5010		–	KC5010	100	200	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU10	–	100	110	410	–	–	.002–.010	–
			KC5010		–	KC5010	100	200	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU25	–	30	100	160	–	–	.002–.005	–
			KC5025	–	–	–	30	100	160	.002–.004	–	–	–
	3		–	–	KCU10	–	100	230	410	–	–	.002–.010	–
			K313	–	–	–	30	130	200	.002–.010	–	–	–
			KC5010		–	KC5010	100	230	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU10	–	100	110	410	–	–	.002–.010	–
			KC5010		–	KC5010	100	230	390	.002–.010	.002–.006	–	.003–.012
			–	–	KCU25	–	80	130	200	–	–	.002–.005	–
			KC5025	–	–	–	80	130	200	.002–.004	–	–	–
	4		–	–	KCU10	–	150	230	460	–	–	.002–.010	–
			K313	–	–	–	50	150	210	.002–.010	–	–	–
			KC5010		–	KC5010	150	230	460	.002–.010	.002–.006	–	.003–.012
			–	–	KCU10	–	150	230	460	–	–	.002–.010	–
			KC5010		–	KC5010	150	230	460	.002–.010	.002–.006	–	.003–.012
			–	–	KCU25	–	80	180	300	–	–	.002–.005	–
			KC5025	–	–	–	50	180	300	.002–.004	–	–	–

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Material Group		Condition	Geometry -LF	-UF	-FP	-FW	Cutting Speed — vc m/min min	Starting Value	max	Feed Rate mm/r -LF	-UF	-FP	-FW
P	1		KCP05			–	180	**435**	495	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**435**	495	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**400**	495	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**395**	465	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**395**	495	0,06–0,25	0,04–0,16	–	–
			KCP25				140	**280**	360	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	140	**280**	360	0,06–0,10	0,04–0,08	–	–
	2		KCP05			–	180	**265**	400	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**265**	400	–	–	0,06–0,25	–
			KT315	–	–	KT315	190	**270**	390	0,06–0,25	–	–	0,08–0,30
			KCP10			–	180	**240**	330	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	180	**240**	330	0,06–0,25	0,04–0,16	–	–
			KCP25				145	**195**	320	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	145	**195**	320	0,06–0,10	0,04–0,08	–	–
	3		KCP05			–	180	**205**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	180	**205**	275	–	–	0,06–0,25	–
			KT315	–	–	KT315	180	**210**	275	0,06–0,25	–	–	0,08–0,30
			KCP10			–	160	**190**	250	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	155	**190**	240	0,06–0,25	0,04–0,16	–	–
			KCP25				135	**155**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	135	**155**	225	0,06–0,10	0,04–0,08	–	–
	4		KCP05			–	90	**160**	220	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	90	**160**	220	–	–	0,06–0,25	–
			KT315	–	–	KT315	90	**180**	220	0,06–0,25	–	–	0,08–0,30
			KCP10			–	90	**145**	195	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	90	**145**	195	0,06–0,25	0,04–0,16	–	–
			KCP25				75	**105**	180	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	75	**105**	180	0,06–0,10	0,04–0,08	–	–
	5		KCP05			–	150	**240**	315	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	150	**240**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	150	**250**	315	0,06–0,25	–	–	0,08–0,30
			KCP10			–	150	**215**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	150	**215**	300	0,06–0,25	0,04–0,16	–	–
			KCP25				120	**195**	255	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	120	**195**	255	0,06–0,10	0,04–0,08	–	–
	6		KCP05			–	140	**200**	300	0,06–0,25	0,04–0,16	0,06–0,25	–
			–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KCP10			–	120	**180**	275	0,06–0,25	0,04–0,16	0,06–0,25	–
			KC9110		–	–	120	**180**	225	0,06–0,25	0,04–0,16	–	–
			KCP25				105	**150**	225	0,06–0,10	0,04–0,08	0,06–0,12	0,08–0,16
			KC9125		–	–	105	**150**	225	0,06–0,10	0,04–0,08	–	–

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Material Group		Condition	Geometry -LF	-UF	-FP	-FW	Cutting Speed — vc m/min min	Starting Value	max	Feed Rate mm/r -LF	-UF	-FP	-FW
M	1		–	–	KTP10	–	140	**230**	315	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**230**	315	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**215**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**180**	240	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	105	**180**	240	0,06–0,12	–	–	0,08–0,16
	2		–	–	KTP10	–	140	**215**	295	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**215**	295	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**200**	245	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	105	**165**	250	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	100	**160**	230	0,06–0,12	–	–	0,08–0,16
	3		–	–	KTP10	–	140	**200**	300	–	–	0,06–0,25	–
			KT315	–	–	KT315	140	**200**	300	0,06–0,25	–	–	0,08–0,30
			KC5010	–	–	KC5010	130	**185**	230	0,06–0,25	–	–	0,08–0,30
			KCM15	–	KCM15	–	115	**150**	255	0,06–0,12	–	0,06–0,12	–
			KC9225	–	–	KC9225	110	**150**	230	0,06–0,12	–	–	0,08–0,16

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Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
K	1		KCK20	–	KCK20		200	**300**	540	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	165	**275**	490	0,06–0,25	–	–	0,08–0,30
			KC9315	–	–	–	110	**275**	450	0,06–0,25	–	–	–
			KC9320	–	–	–	100	**240**	400	0,06–0,12	–	–	–
	2		KCK20	–	KCK20		150	**240**	420	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**275**	360	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	100	**200**	265	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**260**	360	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**240**	330	0,06–0,12	–	–	–
	3		KCK20	–	KCK20		140	**210**	350	0,06–0,25	–	0,06–0,25	0,08–0,30
			KT315	–	–	KT315	180	**230**	320	0,06–0,25	–	–	0,08–0,30
			KC5010		–	KC5010	120	**150**	225	0,06–0,25	0,04–0,16	–	0,08–0,30
			KC9315	–	–	–	145	**215**	275	0,06–0,25	–	–	–
			KC9320	–	–	–	140	**210**	260	0,06–0,12	–	–	–

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Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	—	—	—	min	Starting Value	max	-LF	—	—	—
N	1		KC5410	–	–	–	200	**550**	1000	0,10–0,40	–	–	–
			KC5410	–	–	–	200	**550**	1000	0,10–0,20	–	–	–
			–	KD1400	–	–	450	**765**	3000	–	0,06–0,15	–	–
	2		–	KD1425	–	–	375	**580**	1150	–	0,06–0,25	–	–
			–	KD1400	–	–	400	**650**	1250	–	0,06–0,15	–	–
	3		KC5410	–	–	–	125	**275**	525	0,10–0,40	–	–	–
			–	KD1425	–	–	250	**500**	875	–	0,06–0,25	–	–
			KC5410	–	–	–	125	**275**	525	0,10–0,20	–	–	–
			–	KD1400	–	–	375	**520**	1000	–	0,06–0,12	–	–
	5		KC5410	–	–	–	125	**200**	375	0,10–0,40	–	–	–
			KC5410	–	–	–	125	**200**	375	0,10–0,20	–	–	–

ModBORE™ • Finishing • Metric

Material Group		Condition	Geometry				Cutting Speed — vc m/min			Feed Rate mm/r			
			-LF	-UF	-FP	-FW	min	Starting Value	max	-LF	-UF	-FP	-FW
S	1		–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**30**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**55**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**55**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**40**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**40**	50	0,06–0,10	–	–	–
	2		–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**35**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**60**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	10	**30**	50	–	–	0,06–0,12	–
			KC5025	–	–	–	10	**30**	50	0,06–0,10	–	–	–
	3		–	–	KCU10	–	30	**70**	125	–	–	0,06–0,25	–
			K313	–	–	–	10	**40**	60	0,06–0,25	–	–	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	30	**35**	125	–	–	0,06–0,25	–
			KC5010		–	KC5010	30	**70**	120	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**40**	60	–	–	0,06–0,12	–
			KC5025	–	–	–	25	**40**	60	0,06–0,10	–	–	–
	4		–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			K313	–	–	–	15	**45**	65	0,06–0,25	–	–	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU10	–	45	**70**	140	–	–	0,06–0,25	–
			KC5010		–	KC5010	45	**70**	140	0,06–0,25	0,04–0,16	–	0,08–0,30
			–	–	KCU25	–	25	**55**	90	–	–	0,06–0,12	–
			KC5025	–	–	–	15	**55**	90	0,06–0,10	–	–	–

PCD Customized Tooling

PCD tooling offers the highest productivity and accuracy, reduced tooling costs due to long tool life, and secure process control due to close tolerances. All of this increases overall quality and reduces scrap rates and inspection costs.

Primary Application

Use Kennametal PCD tooling for machining aluminum and aluminum alloys, magnesium, copper, brass, bronze, plastics (GFRP, CFRP), MMC (Metal Matrix Composite), graphite, tungsten carbide green-stages, and ceramic. Choose from various PCD products for drilling, counterboring, and reaming. Steel- and solid carbide-based tool body designs are available for direct spindle coupling with or without adjustable PCD pocket seats or with steerable SIF™ backend.



Features and Benefits

Higher Productivity and Profitability

- Highest chip removal rates and fewer tool changes using multistep tooling.
- Extremely long tool life while maintaining very tight tolerances.
- Reduced built-up edge and bur formation, improved hole shape with multistep tooling, and better surface finish of the workpiece.

Choose Kennametal as your trusted partner for PCD applications and benefit from our years of experience and global presence.

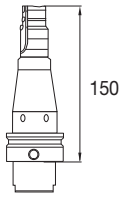


Product Platform Versatility

- All PCD drilling, counterboring, and reaming tools are designed to specific needs for diameter, shape, radii, and steps.
- Various PCD grades are available to match specific material.
- Multistep drilling, profiling, countersinking, and reaming platforms available.
- Coolant channel for optimized chip evacuation in regular and MQL styles.
- Steel-based tool body designs for direct spindle coupling or adjustable pocket seat for highest accuracy even in larger sizes.
- Carbide-based tool bodies enable highest accuracy and tool life in high L/D ratio applications.
- SIF™ steerable interface optimizes runout and enables highest accuracy and tool life.
- All PCD tooling prebalanced by design. Further precision balancing available on request.

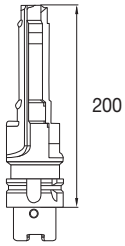
PCD Tooling Basic Design Overview

Kennametal offers you certain PCD design platforms to optimally fulfill your machining task.
These basic designs are independent, whether you are drilling, countersinking, profiling, reaming, or milling.
All tooling designs are capable of internal coolant, MQL coolant, and are balanced by design.

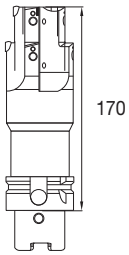


PCD ..ST —
Steel body

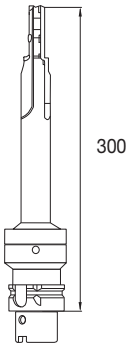
PCD ..SC —
Solid carbide body



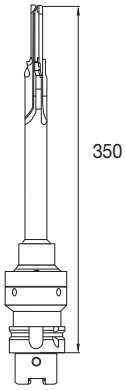
PCD ..STM —
Steel body monoblock



PCD ..STMJ —
Steel body monoblock
Ø adjustable



PCD ..STA —
Steel body with steerable SIF™ backend



PCD ..SCA —
Solid carbide shank and steerable SIF backend

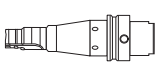
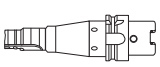
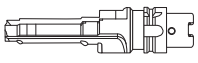
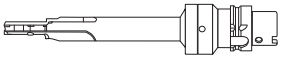
PCDRSC02CCE

PCD	R	SC	02	CC	E
	Technology	Type	Teeth	Point Geometry	Coolant
HF = Helix Flute	**D** = Drilling	**SC** = Solid carbide body	**02**	**RL** = Reaming lead	**E** = Emulsion
SF = Straight Flute	**R** = Reaming	**ST** = Steel body	**03**	**CC** = Center cut	**M** = MQL
	C = Countersinking	**STM** = Steel monoblock	**04**	**CT** = Drill point	**A** = Air
	E = End milling	**STMJ** = Steel monoblock adjustable	**...**	**CTE** = Drill point	**D** = Dry
	F = Face milling	**STA** = Steel steerable	**12**	**SW** = Drill point	
	P = Profile milling	**SCA** = Carbide steerable	**...**	**MT** = Drill point	
	M = Multioperation tool		**22***		

*Exception for **Type** Reamer **22** = **2** teeth + **2** additional land = **4** guiding lands.

Runout of the Spindle

Depending on spindle runout and/or higher L/D ratios

runout ≤ 0,005mm		runout ≥ 0,006mm	
	**PCD-ST** **PCD-SC**		**PCD-ST or PCD-SC with hydraulic chuck and SIF shank**
	**PCD-STM**		**PCD-STA with SIF** **PCD-SCA with SIF**

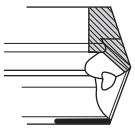
PCD Drill-Point Design Overview

CT
- PCD corner tipped.
- Carbide-based body design.
- Diameter >.166" (4,2mm).



Use for general application at moderate cutting speeds up to 12 x D drilling depth.

CTE
- PCD corner tipped, E point.
- Carbide-based body design.
- Diameter >.166" (4,2mm).



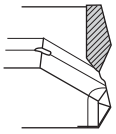
Use at precasted holes at moderate cutting speeds up to 12 x D drilling depth.

SW
- Full-face sandwich PCD.
- Carbide-based body design.
- Diameter >.97" (5mm).



Use at high cutting speeds and abrasive materials up to 5 x D drilling depth.

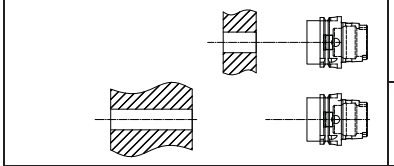
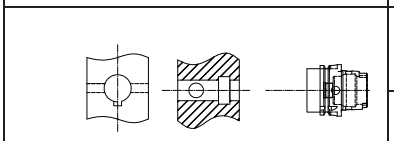
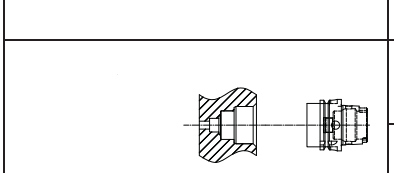
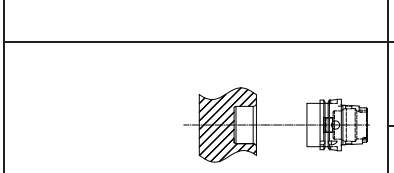
MT
- PCD corner tipped.
- Steel- and carbide-based body design.
- Diameter >.4736" (12mm).



Use for drilling casted surfaces up to 3 x D drilling depth.

Cutting Edge and Margin Land Requirements

Determine correlations between spindle to edge overhang, amount of cutting, and margin lands for guidance and increased precision.

		number of cutting edges				
						
		2 flutes	2 flutes	3 flutes	4 flutes	6 flutes
application/shape of bore	overhang	2 lands	2 lands	3 lands	4 lands	6 lands
	short	●	●	●	●	●
	long	○	●	◑	●	●
	short	◑	●	◑	●	●
	long	○	●	○	○	○
	short	◑	●	◑	○	○
	long	○	●	◑	○	○
	short	●	●	●	◑	○
	long	○	●	◑	◑	○

● First Choice ◑ Suitable with Limitations ○ Not Recommended

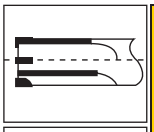
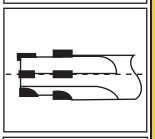
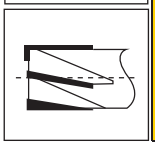
Cutting Grade, Tooling Design

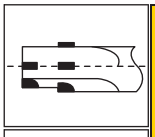
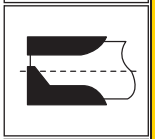
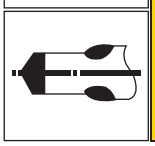
Select cutting data and tooling design based on stability and surface quality demands.

material	coolant	drilling	counterboring	reaming	milling	grade
Al <7%	MQL, emulsion	vc = 350–600 m/min	vc = 650–900 m/min	vc = 400–900 m/min	vc = 1.500–5.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,031 IPR	fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	
Al <12%	MQL, emulsion	vc = 200–800 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–4.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
Al >12%	emulsion	vc = 100–700 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–3000 m/min	KD1415
		fz = 0,004–0,012 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
mg alloys	emulsion	vc = 350–1.000 m/min	vc = 650–900 m/min	vc = 400–600 m/min	vc = 1.500–6.000 m/min	KD1415
		fz = 0,004–0,016 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	
CFRP, GFRP	dry, air	vc = 350–1.800 m/min	vc = 650–900 m/min	vc = 60–200 m/min	vc = 1.500–4.000 m/min	KD1425
		fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	fz = 0,004–0,010 IPR	

Quick-Ship Delivery • Tooling Ranges

Please contact us if this special service is available in your region.

		PCD tool		flutes[1]	chip flute length[2]	cutting diameter	max steps	through coolant	step difference
	non-center cutting		reamer, corner tipped	2–6	max 5 x D	–	2	axial and radial	max 50%
			countersinker, corner tipped	2–4	max 5 x D	.236–1.26"	3		max 40%
			milling tool, corner tipped	1–6	max 5 x D	–	2		max 50%

		PCD tool		flutes[1]	chip flute length[2]	cutting diameter	max steps	through coolant	step difference
	center cutting		drilling tool, corner tipped	2	max 20 x D	.197–1.26"	3	axial and radial	max 50%
			countersinker, center cut	2–4	max 10 x D				
			drilling tool, center cut	2	max 12 x D	.197–.472"			

NOTE: 310mm max overall
[1]Depending on the diameter [2]Based on the max diameter

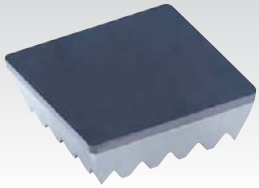
Valve Seat and **Guide Experts**





RMS™-BASED SOLID CARBIDE REAMER

- Best stiffness and accuracy.



CBN-BASED RIQ™ INSERT

- Cross-serration technology for pre-defined guide chamfer angles.
- Same type of insert for all angles.
- 12 effective cutting edges.



OPTIMIZED HYDRO CHUCK

- Maximum flexural strength.
- Lowest runout error between seat and guide.

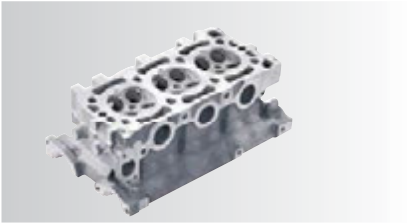


Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

Cylinder Head



RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE PARENT BORE

CHALLENGE

- Valve seat and guide parent bore machining combined.
- Tolerance range 8 µm.
- Cast iron.
- Machining center with internal coolant.

SOLUTION

- RIQ padded reamer with integrated hydraulic chuck.
- RIQ full face CBN KB1630™ insert.
- RMS™ reamer for guide parent bore.

CUTTING DATA

• vc 425 m/min	f 0,10 mm/rev	valve seat.
• vc 130 m/min	f 0,60 mm/rev	valve guide.

RESULT

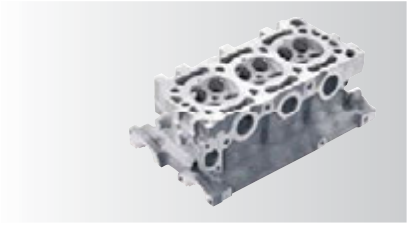
- **Four usable cutting edges per CBN insert.**
- **CBN RIQ insert with 28,000 bore tool life.**
- **1,400 bores with regrindable RMS reamer.**

BENEFIT

- **Cost savings due to four-edged full face CBN insert.**
- **No insert back taper adjustment needed.**
- **Same RPM at both stages saving time on spindle acceleration and deceleration.**



Cylinder Head







Polished flutes
for improved
chip evacuation

PCD SEAT & GUIDE PARENT BORE PCDRSC04RLE

CHALLENGE

- Valve seat and guide parent bore machining combined.
- Tolerance range H7.
- Aluminum.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool (valve seat) with shrink in PCD tip, carbide based reamer (valve guide) with less than 4 µm total runout.

CUTTING DATA

• vc 344 m/min	f 0,60 mm/rev	valve seat.
• vc 985 m/min	f 0,60 mm/rev	valve guide.

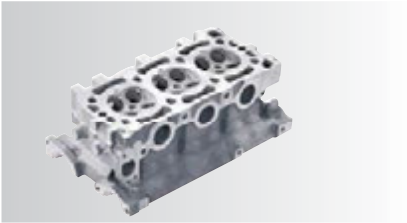
RESULT

- **Tool life of 456,000 bores.**

BENEFIT

- **Productivity increases as same RPM applied to both seat and guide stages.**
- **Lowest possible runout resulting in higher tool life.**

Cylinder Head





RIQ serration defines valve seat angle

RIQ™ QUATTRO CUT™ VALVE SEAT & GUIDE MACHINING

CHALLENGE

- Valve guide machining combined with primary and secondary seat angles.
- Sinter metal.
- Concentricity of seat to guide less than 50 µm.
- Machining center with internal coolant.

SOLUTION

- RIQ valve seat tooling with integrated hydraulic chuck.
- RIQ K68™ carbide inserts and solid carbide RMS™ multi-flute reamer.
- Alternative solution with KST coupling for higher stiffness.
- RIQ CBN inserts for valve seat machining available in KBHK10 and KBHK15.

CUTTING DATA

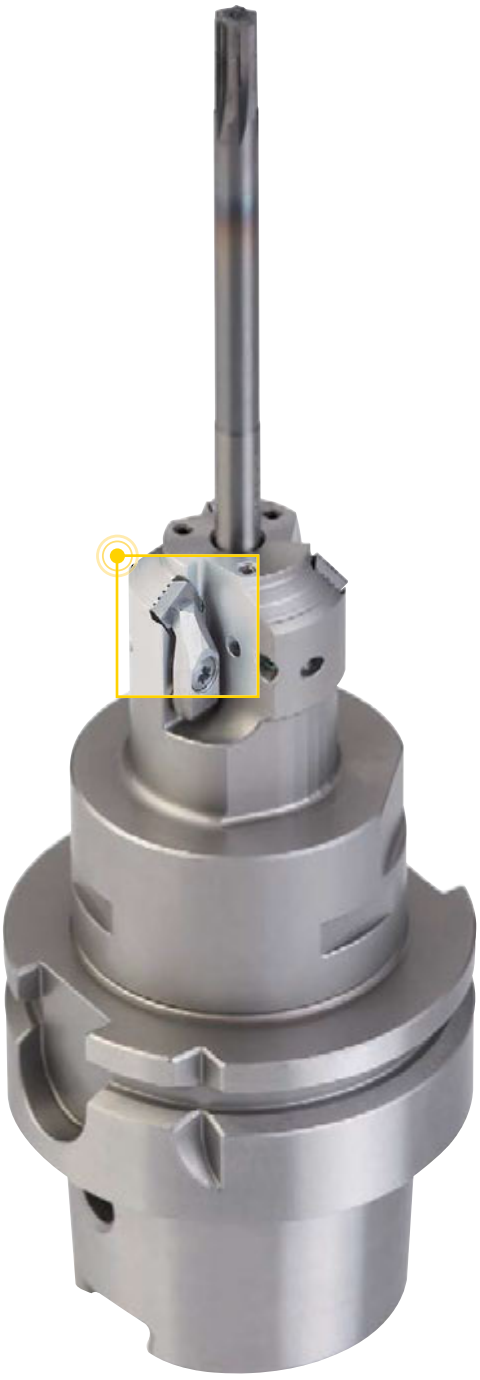
• vc 80 m/min	f 0,10 mm/rev	valve seat.
• vc 80 m/min	f 0,32 mm/rev	valve guide.

RESULT

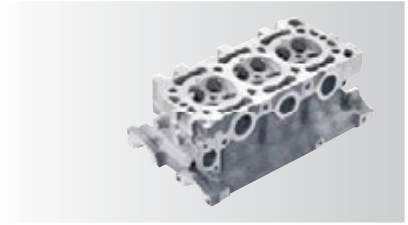
- **Tool life of 12,000 valve seats per insert.**

BENEFIT

- **Twelve usable cutting edges per carbide insert.**
- **Due to high precision RIQ pocket seat there is less setup effort as no angular adjustment of the insert is needed.**
- **Able to adapt RIR™ padded reamer machining the valve guide.**



Cylinder Head







Polished flutes for improved chip evacuation





Chipformer in carbide body

PCD STEP REAMING

CHALLENGE

- Valve lifter bore Ø .472" (12mm).
- Tolerance range 18 µm G7.
- Aluminum AlSi7Mg.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, carbide-based reamer and counter sinker with internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 1.312 SFM (400 m/min).
- f .004 IPR (0,10 mm/rev).

RESULT

- **Tool life of 125,000 holes.**
- **Surface finish better than Rz 1.5 µm.**

BENEFIT

- **Secure process and very good concentricity.**

PCD STEP REAMING

CHALLENGE

- Injector bore Ø .305–.768" (7,75–19,5mm).
- Tolerance range 5 µm.
- Aluminum G-AlSi7Mg.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, carbide based tool with PCD guide pads at Ø 19,5mm and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 722 SFM (220 m/min).
- f .014 IPR (0,35 mm/rev).

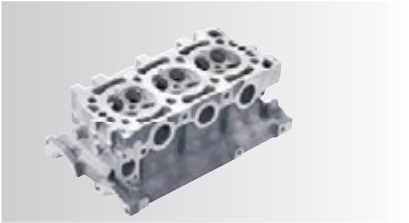
RESULT

- **Tool life of 400,000 bores.**
- **Surface finish better than Rz 3 µm.**

BENEFIT

- **Secure process due to chipformer in carbide body improving chip formation.**

Cylinder Head





Self-aligning
padded reamer

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Oil seal bore finishing Ø 2.220" (56,4mm).
- Tolerance range 30 µm H7.
- Aluminum.
- Cambore to oil seal bore self alignment.
- Transfer line with internal coolant.

SOLUTION

- RIQ padded reamer with two PCD KD1415™ full-face inserts floating on finish machined cam bore.
- Self-aligning reamer body to ensure cam bore to oil seal bore concentricity.

CUTTING DATA

- vc 1.070 SFM (326 m/min).
- f .004 IPR (0,32 mm/rev).

RESULT

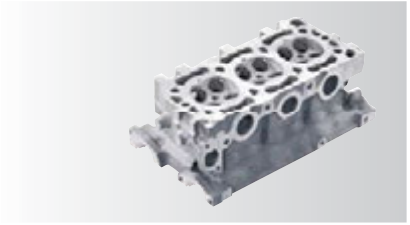
- **Tool life of 80,000 cylinder heads.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Cost savings due to four-edged full face PCD RIQ insert.**



Cylinder Head







Semi-finish and finish stage combined

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Cambore finishing Ø .984" (25mm).
- Tolerance range 21 µm H7.
- Aluminum.
- Deflection less than 20 µm over total length.
- Machining center with internal coolant.

SOLUTION

- RIQ padded reamer with two PCD KD1415™ full-face inserts for semi-finishing and two PCD KD1415 full-face inserts for finishing.

CUTTING DATA

- vc 1.096 SFM (334 m/min).
- f .006 IPR (0,16 mm/rev).

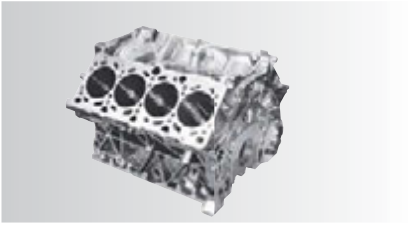
RESULT

- **Tool life of 160,000 cylinder heads.**
- **Surface finish Ra 0.3 µm.**

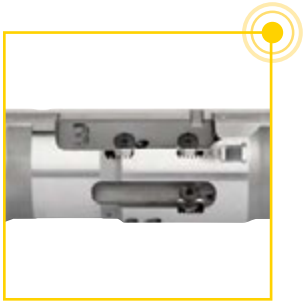
BENEFIT

- **No insert back taper adjustment is needed.**
- **Cost savings due to four-edged full face PCD RIQ insert.**
- **Setup time reduction from 8 hours with competitive tooling to less than 1/2 hour with RIQ.**

Cylinder Block







ASYMMETRICAL LINE BORING BAR

CHALLENGE

- Crank Bore finishing.
- Material: AlSi7/Sinter or AlSi7/GGG60.
- Machine: Hor. M/C.
- Roundness 0.01mm.
- Concentricity 0.025mm.

SOLUTION

- Patented asymmetrical LBB, which supports the before finished last journal of the crank bore.
- RI8 inserts with 8 cutting edges per inserts in PCD or carbide.
- Hybrid body made of heavy-metal and steel.

CUTTING DATA

- Speed: 100m/min
- Feed/tooth: SF = 0.2/rev. ; F = 0.16/rev.

RESULT

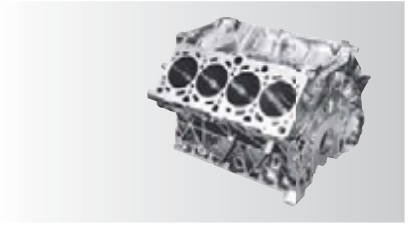
- **Roundness measured: 0.005mm.**
- **Concentricity measured: 0.005mm.**

BENEFIT

- **All advantages of a line boring bar, but applicable on MC.**
- **No disadvantage of typical line boring bars.**
- **Setup possible outside the machine on standard optical presetter.**



Cylinder Block







CLB screw for automatic wear compensation

MOTION TOOLING

CHALLENGE

- Cylinder bore Ø 2.953" (75mm).
- Cast iron GG25.
- Semi-finish and finish operation combined in one tool with coolant pressure activated finish stage.
- Machining center with internal coolant.

SOLUTION

- Motion tool with feed-out cartridges.
- Two-channel coolant system with coolant supply for inserts and feed-out cartridges.
- Solid CBN inserts with eight cutting edges; KB1340™.

CUTTING DATA

• vc 600 m/min	f 0,05 mm/rev	semi-finish.
• vc 600 m/min	f 0,11 mm/rev	finish.

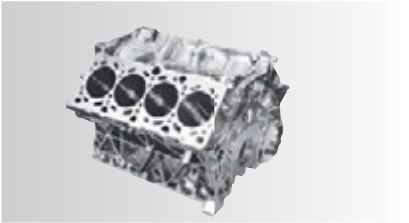
RESULT

- **Tool life of 2,000 bores per tooling setup.**
- **Cylindricity better than 8 µm.**

BENEFIT

- **Higher productivity as roughing at forward and finishing at backward movement — with coolant feed-out.**
- **Finish diameter adjustable with CLB process.**
- **Improved cylindricity in more than two separate operations.**

Cylinder Block





Bayonet quick-change system

ROMICRON™ FINE BORING

CHALLENGE

- Cylinder bore Ø 3.108" (78,933mm).
- Cast iron GG25.
- Reduce setup and adjustment effort with roughing and finishing at various cylinder blocks.
- Engineered solutions vertical mill with internal coolant.

SOLUTION

- Romicron engineered solutions tool with quick-change interface and drawbar actuated finish cartridge.
- SNGN090308T00520 KY1615 roughing insert.
- CPMT09T308LF KT315™ finishing insert.

CUTTING DATA

• vc 580 m/min	f 0,26 mm/rev	roughing.
• vc 580 m/min	f 0,19 mm/rev	finishing.

RESULT

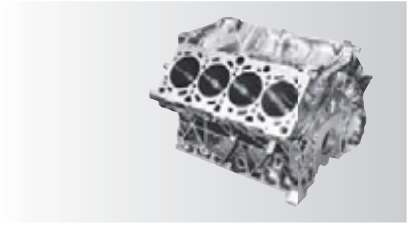
- **Tool life of 100 components per setup.**
- **Cylindricity 13 µm.**
- **Surface finish Ra 1.5 µm.**

BENEFIT

- **Bore tolerance easily and consistently achieved due to 1 µm per click in radius adjustment.**
- **Weight reduction from 11 kg to 1.8 kg.**
- **Setup time reduction from 1.5 hours to 15 minutes.**
- **Secure process resulting in higher cpk value.**



Cylinder Block







Semi-finish and finish stage combined

FINE BORING

CHALLENGE

- Crank bore finishing Ø 1.457" (37mm).
- Tolerance range 5 µm.
- Cast iron.
- Maintain tolerance for minimum of 50 bores.
- Machining center with internal coolant.

SOLUTION

- Line boring bar with tool bits adjusted by differential screw for more sensitivity.
- Dynamically balanced by design with axial holes ensuring highest stiffness of tool.

CUTTING DATA

• vc 160 m/min	f 0,12 mm/rev	semi-finish.
• vc 160 m/min	f 0,08 mm/rev	finish.

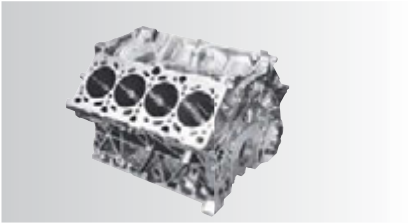
RESULT

- **Customer proprietary information.**

BENEFIT

- **Use of standard C-style inserts in LF reduce tooling costs in KCK15.**
- **Reduction of cycle time.**
- **Easy and fine adjustments ensure a stable process.**

Cylinder Block





RIQ chamfering, plunging, and reaming insert

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Balancing shaft bore Ø 31–39mm.
- Cast iron.
- Reaming of three diameters, machining of three chamfers, and one facing operation in one tool.
- Minimum quantity lubrication MQL.

SOLUTION

- RIQ padded reamer with one effective cutting edge combining chamfering, countersinking, and reaming stage in one tool, using two reaming RIQ and one special RIQ insert.

CUTTING DATA

- vc 328 SFM (100 m/min).
- f .006 IPR (0,14 mm/rev).

RESULT

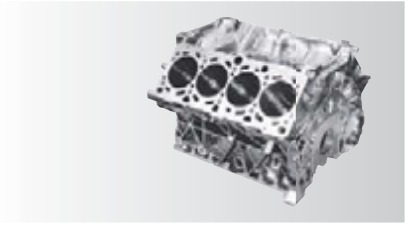
- **Tool life of 8,000 bores per insert.**
- **Surface finish Rz 10 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Highest angular precision without any adjustment with RIQ at chamfering stage.**



Cylinder Block





RHM™ MODULAR REAMING

CHALLENGE

- Position bore Ø .787" (20mm).
- Tolerance range 21 µm N7.
- Cast iron GG26Cr.
- Replace padded double-edged reamer.
- Machining center with internal coolant.

SOLUTION

- Special RHM head with six cutting edges.
- Engineered solution KC6105 TiN coated carbide grade.

CUTTING DATA

- vc 207 SFM (63 m/min).
- f .033 IPR (0,84 mm/rev).

RESULT

- **Tool life of 336m.**

BENEFIT

- **8x higher productivity due to higher feed rate.**
- **Tool life increased by 240% when compared to previous solution.**

Conrod





ROMICRON™ FINE BORING

CHALLENGE

- Pin bore Ø 2.285" (58,033mm).
- Brass.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining center with internal coolant.

SOLUTION

- Romicron engineered-solution tool with two Romicron mechanisms in one tool body.
- KC5010™.

CUTTING DATA

- vc 1.476 SFM (450 m/min).
- f .004 IPR (0,10 mm/rev).

RESULT

- **Tool life of 350 pin bores per insert.**
- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **Combination tool increases productivity.**
- **Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**

ROMICRON FINE BORING

CHALLENGE

- Crank bore Ø 3.692" (93,777mm).
- Steel C70.
- Combine finishing of crank and pin bore into one tool to increase productivity.
- Machining center with internal coolant.

SOLUTION

- Romicron engineered solution tool with two Romicron mechanisms in one tool body.
- KT315™.

CUTTING DATA

- vc 1.312 SFM (400 m/min).
- f .004 IPR (0,10 mm/rev).

RESULT

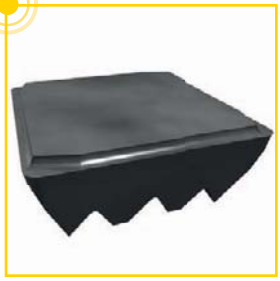
- **Tool life of 260 crank bores per insert.**
- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **Combination tool increases productivity.**
- **Bore tolerance range of 26 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**

Conrod





RIQ cermet insert with chipformer geometry

RIQ™ QUATTRO CUT™ PADDED REAMING



CHALLENGE

- Pin bore Ø .748" (19mm).
- Tolerance range 33 µm H8.
- Steel C70.
- Entry/exit inclined and chip control improvement.
- Transfer line with MQL internal coolant.

SOLUTION

- RIQ padded reamer with two axial staggered RIQ inserts in microfinishing setup.
- Coated cermet RIQ inserts with four edges and special chip former.

CUTTING DATA

- vc 328 SFM (200 m/min).
- f .006 IPR (0,20 mm/rev).

RESULT

- **Tool life of more than 5,000 components per insert.**
- **Surface finish Rz 12–14 µm.**
- **Cylindricity 5 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **High productivity increase due to higher feed rate when compared to previous fine boring tools.**
- **Very short chips improve chip evacuation.**
- **Secure process as surface requirement of Rz 8 µm to Rz 16 µm are achieved.**

Conrod



ROMICRON™ FINE BORING

CHALLENGE

- Pin bore Ø .660" (16,77mm).
- Crank bore Ø .818" (20,77mm).
- Steel C70.
- Combines roughing, semi-finishing, and finishing operations into one tool.

SOLUTION

- Romicron standard head HSK63ASVUBB2116M with engineered-solution boring bar.
- CPMT060204LF KC5010™.

CUTTING DATA

• vc 120 m/min	f 0,10 mm/rev	roughing.
• vc 120 m/min	f 0,05 mm/rev	finishing.

RESULT

- **Tool life of 2,500 components per insert edge.**
- **Surface fi nish Ra 0.5 µm.**
- **Cylindricity 3 µm.**

BENEFIT

- **Productivity increase due to combination tool.**
- **Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Steering Column







Adjustable cartridge
with PCD insert

PCD COUNTERSINKING

CHALLENGE

- Bore Ø 26,2; 37,6; and 44mm.
- Tolerance range 21 µm N7.
- Aluminum G-AlSi9Cu3.
- Varying depth of cut ca. 1,5mm.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with internal coolant.
- Three effective cutting teeth; KD1415™.
- Standard cartridge SCFCR08CA06 achieves required surface finish range.

CUTTING DATA

- 1,640 SFM (vc 500 m/min).
- .012 IPR (f 0,30 mm/rev).

RESULT

- **Surface finish Ra 1.6–2.3 µm.**

BENEFIT

- **Secure process.**

Steering Column



PCD COUNTERSINKING

CHALLENGE

- Bore Ø 17,07, 39,1, and 50,9mm.
- Tolerance range 21 µm N7.
- Aluminum G-AlSi10Mg.
- Varying depth of cut ca. 2,5mm.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 1,969 SFM (600 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Tool life of 2,000 meters.**

BENEFIT

- **Productivity increased due to higher cutting data.**



Gear Housing





PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 13,5 and 18mm.
- Tolerance range 18 µm H7.
- Aluminum G-AlSi10Mg.
- Varying depth of cut ca. 0,5mm.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with SIF™ steerable interface with internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 755 SFM (230 m/min).
- f .010 IPR (0,25 mm/rev).

RESULT

- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process.**

Gear Housing





Adjustable PCD pocket seat

PCD COUNTERSINKING

CHALLENGE

- Bearing bore Ø 40, 62, 85mm.
- Tolerance range 25 µm S7.
- Aluminum AlSi9Cu3.
- Machine three different diameters with one tool.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats, SIF™ steerable interface, and internal coolant.
- Four effective cutting and chamfering teeth; KD1415™.

CUTTING DATA

- vc 630–1,340 m/min n = 5,010 RPM.
- f .013 IPR (0,32 mm/rev).

RESULT

- **Tool life of 500 workpieces.**

BENEFIT

- **Secure process with only 1.2 seconds cutting time per operation.**
- **Higher productivity due to combining three operations into one tool.**
- **Very stable process without chip control issues.**



Gear Housing





Highly uneven spacing

PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 130mm.
- Tolerance range 25 µm S6.
- Aluminum AlSi8Cu3.
- Varying depth of cut ca. 0,5–5mm.
- Machining center with internal coolant.



SOLUTION

- PCD-tipped, steel-based tool with HSK interface and internal coolant.
- Six effective cutting and chamfering teeth in positive cutting position; KD1415™.

CUTTING DATA

- vc 1,148 SFM (350 m/min).
- f .024 IPR (0,60 mm/rev).

RESULT

- **Tool life increase versus previous solution.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process.**

Gear Housing



PCD REAMING

CHALLENGE

- Bearing bore Ø .984" (35mm).
- Tolerance range 21 µm H7.
- Aluminum G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 771 SFM (235 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Tool life of 100,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process despite high L/D ratio.**
- **Very good surface quality.**



Gear Housing





PCD REAMING

CHALLENGE

- Index bore Ø .435" (11,5mm).
- Tolerance range 18 µm H7.
- Aluminum G-AlSi10Mg.
- Varying depth of cut ca. 3mm.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, carbide based tool with shrink in HSK63A adapter with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 3,297 SFM (1,005 m/min).
- f .024 IPR (0,16 mm/rev).

RESULT

- **Tool life of 200,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Very short overhang length resulting in very good stability.**

Gear Housing



PCD REAMING

CHALLENGE

- Bearing bore Ø 3.150" (80mm).
- Tolerance range 30 µm H7.
- Aluminum G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Four effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 1,312 SFM (400 m/min).
- f .013 IPR (0,32 mm/rev).

RESULT

- **Tool life of more than 30,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**



Gear Housing





PCD REAMING

CHALLENGE

- Bearing bore Ø 28 and 90mm.
- Tolerance range 21 and 35 µm H7.
- Aluminum G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with two individual adjustable SIF™ steerable interfaces and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 400 m/min (1,312 SFM).
- f 0,32 mm/rev (.013 IPR).

RESULT

- **Tool life of more than 95,000 holes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**

Gear Housing



PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 80 and 120mm.
- Tolerance range 30 and 35 µm H7.
- Aluminum G-AlSi7Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 2,625 SFM (800 m/min).
- f .013 IPR (0,32 mm/rev).

RESULT

- **Tool life of more than 400 minutes.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Tool life increase versus previous solution.**



Gear Housing





PCD COUNTERSINKING

CHALLENGE

- Bearing bore Ø 81,25 and 90,3mm.
- Tolerance range 30 and 35 µm H7.
- Aluminum G-AlSi7Mg.
- Pre drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 1,312 SFM (400 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Tool life of 10,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**

Gear Housing



PCD STEP REAMING

CHALLENGE

- Bearing bore Ø 17,984 and 66,037mm.
- Tolerance range 8 and 20 µm.
- Aluminum GD-AlSi7.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Three effective cutting teeth.
- KD1415™.

CUTTING DATA

• vc 315 m/min	f 0,24 mm/rev	Ø 17,984mm.
• vc 1.156 m/min	f 0,15 mm/rev	Ø 66,037mm.

RESULT

- **Tool life of 35,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and very good surface quality.**
- **Achieves high concentricity and straightness.**



Gear Housing





PCD PROFILE MILLING

CHALLENGE

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminum G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 4,921 SFM (1,500 m/min).
- f .002 IPR (0,06 mm/rev).

RESULT

- **Tool life of 50,000 parts.**
- **Surface finish better than Ra 0.4 µm.**

BENEFIT

- **Secure process.**
- **Combining two operations in one tool increases productivity.**
- **High accuracy in the distance between the two machined grooves.**



PCD PROFILE MILLING

CHALLENGE

- Retraining grooves Ø 60,4 and 90,7mm.
- Tolerance range 60 µm.
- Aluminum G-AlSi10Mg.
- Pre-drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 4,921 SFM (1,500 m/min).
- f .002 IPR (0,06 mm/rev).

RESULT

- **Tool life of 50,000 parts.**
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BENEFIT

- **Secure process.**
- **Combining two operations in one tool increases productivity.**
- **High accuracy in the distance between the two machined grooves.**

Differential Housing



REAMING AND BACK BORING

CHALLENGE

- Bearing seat finishing of gearbox.
- Material: G-AlSi9Cu3.
- Machine: M/C.
- IC 40 bar, 20 l/min.
- Ae = 0,25mm.

SOLUTION

- PCD reaming/back boring combination tool.
- 2 step reapers with 6 PCD teeth.
- Back boring with Romicron™ and PCD insert.

CUTTING DATA

- Speed: 350 m/min.
- Feed per tooth: 0,12mm.
- 1500 rev/min and 1080 mm/min.

RESULT

- **Roughness of Rz < 16 µm.**
- **One tool-chance saved.**

BENEFIT

- **Finish of 3 diameters with one tool.**
- **Perfect balanced tool, considering extreme asymmetrical shape.**
- **Easy adjustment with Romicron.**



Differential Housing





DIFFERENTIAL HOUSING–FINISH BORING

CHALLENGE

- Bearing seat finishing of gearbox.
- Material: GGG40.
- Machine: M/C.
- Diameter: 60H6.
- Surface Finish: Ra 1.6.

SOLUTION

- Fine boring tool Romicron™ AVS.
- Cartridge for SPHX inserts.
- SPHX-inserts KC7215 with 2 cutting edges.
- Special back taper grind for similar surface finishes to wiper inserts.

CUTTING DATA

- vc = 180 m/min
- fz = 0.05mm

RESULT

- **All geometric and dimensional tolerances including surface finish achieved.**
- **Very robust process.**
- **Tool life with standard SPHX insert 4000 pieces (within this tool life, 3 diameter adjustments with the “Romicron-Click-Mechanism” were required).**

BENEFIT

- **Excellent surface finish similar to wiper inserts.**
- **Huge portfolio of SPHX-inserts for all kind of workpiece materials.**
- **Romicron-Click-Mechanism.**
- **No need for wrench or gage for the diameter adjustment.**

Differential Housing





Adjustable pocket seat

DIFFERENTIAL HOUSING–FINISH BORING

CHALLENGE

- Bore Ø 1.575 and 2.165" (40 and 55mm).
- Tolerance range 30 µm R7.
- Aluminum GD-AlSi10Mg.
- Fine boring two diameters with one tool.
- Machining center with internal coolant.

SOLUTION

- PCD steel-based fine boring tool with four effective cutting edges, adjustable pocket seats at Ø 55mm, SIF™ steerable interface, and internal coolant.
- CCMT060202 KM™ – one uncoated carbide.

CUTTING DATA

- vc 340 and 520 m/min n = 3,000 RPM.
- f .024 IPR (0,60 mm/rev).

RESULT

- **Tool life of more than 15,000 components per insert.**
- **Surface finish Rz 10–12 µm.**
- **Cylindricity better than 20 µm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 16 µm continuously achieved.**
- **Higher productivity due to combining three operations in one tool.**



Water Pump Housing





PCD COUNTERSINKING

CHALLENGE

- Bore positions of Ø .827 and .945" (21 and 24mm).
- Tolerance range 13 and 33 µm.
- Aluminum AlSi9Cu3.
- Pre drilled hole with 0,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
- Four effective cutting teeth; KD1415™.

CUTTING DATA

- vc 1,969 SFM (600 m/min).
- f .005 IPR (0,12 mm/rev).

RESULT

- **Tool life of 80,000 components.**
- **Surface finish Rz 0.8 µm with Ø 21mm and Rz 12 µm with Ø 24mm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality between Rz 8 µm and Rz 15 µm at Ø 24mm are continuously achieved.**

Water Pump Housing



PCD MULTI-OPERATION TOOL

CHALLENGE

- Position bore Ø .311" (7,9mm).
- Tolerance range 22 µm H8.
- Aluminum AlSi9Cu3.
- Combine drilling, back chamfering, and facing.
- Machining center BT40 with internal coolant.

SOLUTION

- Solid carbide, PCD-tipped, steel-based tool with back chamfering capability and internal coolant.
- Two effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 1,148 SFM (350 m/min).
- f .008 IPR (0,20 mm/rev).

RESULT

- **Tool life of 50,000 components.**
- **Surface finish Rz 0.8 µm.**

BENEFIT

- **Higher productivity due to combining three operations in one tool.**



Water Pump Housing





PCD STEP REAMING

CHALLENGE

- Bearing bores Ø 10,14–18,45mm.
- Tolerance range 3–10 µm.
- Aluminum GD-AlSi9Cu3.
- Pre-casted hole with 0,3mm depth of cut.
- Machining center HSK32A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with adjustable pocket seats; SIF™ steerable interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- n = 2800 RPM vc 89–162 m/min.
- f .015 IPR (0,4 mm/rev).

RESULT

- **Tool life of 40,000 components.**
- **Surface finish Rz 0.8 µm.**

BENEFIT

- **The quality criterion with an exact alignment of rightness, concentricity, and a high value of surface quality was reached.**

Water Pump Housing



PCD END MILLING

CHALLENGE

- Face milling of connection face Ø 32mm.
- Aluminum AlSi10Mg.
- Casted face with 2,5mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based end mill with HSK63A interface and internal coolant.
- Five effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 3,294 SFM (1,005 m/min).
- f .002 IPR (0,06 mm/rev).

RESULT

- **Tool life of 3,000 min.**
- **Surface finish Ra 0.3 µm.**

BENEFIT

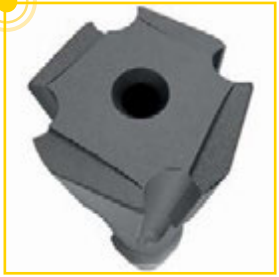
- **Very low bur formation.**



Planetary Gear Carrier







Chip control geometry

RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Bearing bores Ø .346" (8,8mm).
- Tolerance range 9 µm M6.
- Steel 42CrMo4 and 31CrMoV9.
- Increase tool life with long chipping material.
- Machining center with internal coolant.

SOLUTION

- RMS engineered-solution reamer with four effective cutting edges, internal coolant hole, and coolant channels at shank.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 230 SFM (70 m/min).
- f .012 IPR (0,30 mm/rev).

RESULT

- **Tool life of 300 components.**
- **Surface finish Rz 1.0–2.0 µm.**

BENEFIT

- **All requirements regarding perpendicularity, roundness, and surface quality below Rz 4 µm are continuously achieved.**

Planetary Gear Carrier



ROMICRON™ FINE BORING

CHALLENGE

- Bearing bores Ø 35 and 36,5mm.
- Tolerance range 20 µm.
- Steel 20MnCr5.
- Replace padded step reamer.
- Machining center with internal coolant.

SOLUTION

- Romicron™ standard AVS heads.
- CCMT06020411 KT315™ cermet insert.

CUTTING DATA

- vc 230 SFM (290 m/min).
- f .012 IPR (0,10 mm/rev).

RESULT

- **Surface finish better than Ra 1.0 µm.**
- **Cylindricity better than 5 µm.**

BENEFIT

- **More than 25% reduction in machining time.**
- **Removing setup of padded reamer outside of the machine results in increased uptime.**
- **Bore tolerance range of 20 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Padded reaming pin machining







RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Bearing pin machining Ø 1.772" (45mm).
- Tolerance range 16 µm k6.
- Ductile cast iron GGG40.
- Surface quality of Rmax 10 µm to achieve.
- Special dimensional accuracy requirement.

SOLUTION

- RIQ padded reamer with SIF™ steerable tooling interface and special gashing for external coolant supply.
- Balanced-by-design and fine balanced.

CUTTING DATA

- vc 344 SFM (105 m/min).
- f .002 IPR (0,02 mm/rev).

RESULT

- **Surface finish better than Rz 2.5 µm.**
- **Roundness 3 µm.**
- **Cylindricity 6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Faster setup and less scrap.**

Brake Caliper



BRAKE CALIPER–ROUGHING/FINISHING MAIN BORE

CHALLENGE

- Component: Brake caliber
- Material: GGG55
- Operation: Cylinder hole
- Coolant: Yes
- Machine: Machine center
- Objective: Surface finish and roundness

SOLUTION

- HSK100A special tool with radial adjustments and guide pad.
- Fix-Perfect™ insert.
- Internal coolant.
- Decreasing vibration by means of heavy metal shank.

CUTTING DATA

- vc = 107 m/min
- vf = 300 mm/min
- FPT = 0,13mm

RESULT

- **Tool life: 2.238 parts.**
- **Roundness 0,01mm.**
- **H8 — Tolerance kept, and even smaller would be feasible if requested.**

BENEFIT

- **From cast to finish hole in one go, i.e., with one single "One-Shot-Tool".**
- **4 effective teeth.**
- **4 edges per insert.**
- **Very fine, consistent adjustment mechanism.**



Brake Caliper





RMS™ MULTIFLUTE REAMING

CHALLENGE

- Pin hole Ø .472" (12mm).
- Tolerance range 30 µm.
- Cast iron.
- Machining center HSK63A with internal coolant.

SOLUTION

- UpSharp engineered-solution solid carbide reamer with six cutting edges.
- TICN coated carbide.

CUTTING DATA

- vc 246 SFM (75 m/min).
- f .031 IPR (0,8 mm/rev).

RESULT

- **Tool life of 5,000 holes.**
- **Surface finish Ra 1.0 µm.**

BENEFIT

- **Productivity increase.**
- **Longer tool life than competition.**
- **Ease of use due to shrink technology.**

Brake Caliper



RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Main bore Ø 2.127" (54,02mm).
- Tolerance range 40 µm.
- Cast iron GGG.
- Reduce setup time and cost-per-part.

SOLUTION

- RIQ padded reamer with customer specific shank.
- Coated carbide RIQ insert with four edges.
- KC6305™.

CUTTING DATA

- vc 262 SFM (80 m/min).
- f .016 IPR (0,40 mm/rev).

RESULT

- **Tool life of 16,000 bores per insert.**
- **Surface finish better than Ra 1.6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **High cost savings due to more than 100% increase in tool life.**



Brake Caliper





PCD REAMING

CHALLENGE

- Main bore Ø 1.654" (42mm).
- Tolerance range 8 µm.
- Aluminum.
- Varying depth of cut between 1–2mm.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 1,640 SFM (500 m/min).
- f .039 IPR (1 mm/rev).

RESULT

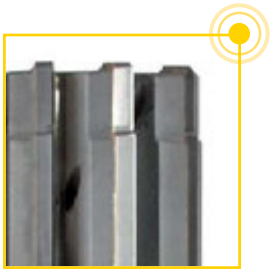
- **Tool life of 400,000–600,000 bores.**
- **Surface finish better than Ra 1.6 µm.**

BENEFIT

- **Secure process and high tool life.**
- **Productivity increase compared to previous solution.**

Brake Caliper





Producing two different diameters

RMB™ MULTI-FLUTE REAMING

CHALLENGE

- Location holes Ø 39 and 40mm.
- Tolerance range 39 µm H8.
- Cast iron GGG60.
- Produces both diameters with one tool.
- Machining center with internal coolant.



SOLUTION

- RMB engineered-solution carbide tipped reamer with 10 teeth and internal coolant supply.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 230 SFM (70 m/min).
- f .130 IPR (3,30 mm/rev).

RESULT

- **Tool life of 5,000 holes.**
- **Surface finish Rz 20 µm better than required Rz 25 µm.**

BENEFIT

- **Very stable and highly productive process as multiple operations are combined at very high cutting data.**

Brake Master Cylinder





RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Piston bore Ø 1.001" (25,431mm).
- Tolerance range 10 µm.
- Ductile cast iron.
- Replace honing process with reaming.
- Machining center with internal coolant.

SOLUTION

- RIQ padded reamer in angular micro-finishing setup with semi- and fine-finishing insert.
- RIQ full face PCD KD1415™ as finishing insert.

CUTTING DATA

- vc 394 SFM (120 m/min).
- f .008 IPR (0,20 mm/rev).

RESULT

- **Tool life of 1,600 bores per insert.**
- **Surface finish better than Ra 0.4 µm.**
- **Cylindricity 6 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Higher productivity due to combining two operations in one tool.**

Steering Knuckle



ROMICRON™ FINE BORING

CHALLENGE

- Main bearing bore Ø 3.228" (82mm).
- Replace setup of padded reamer and cover various diameters with one tool.
- Machining center with internal coolant.

SOLUTION

- Romicron™ engineered solution. HSK80ASVSB156M SVS4B head.
- CPMT 060204 FW KCK20™.

CUTTING DATA

- vc 1,312 SFM (400 m/min).
- f .008 IPR (0,20 mm/rev).

RESULT

- **Tool life of 1,000 components.**
- **Surface finish 1.2 µm.**
- **Cylindricity better than 6 µm.**

BENEFIT

- **Reduce setup time and cost reduction when standard inserts are used.**
- **Bore tolerance range of 30 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**



Suspension Sub-frame





REAMING PIVOT BEARING

CHALLENGE

- Location hole Ø .728–.906" (18,5–23,0mm).
- Tolerance range 0,1°.
- Steel.
- Improvement in roundness and angularity.
- Transfer line with internal coolant.

SOLUTION

- RIR taper reamer with HSK interface.
- R904S00771 KC6005™ with two edges.

CUTTING DATA

- vc 105 SFM (32 m/min).
- f .005 IPR (0,133 mm/rev).

RESULT

- **Tool life of 800 bores per insert.**
- **Surface finish Ra 1.6 µm.**

BENEFIT

- **Predictable performance and cost savings because inserts can be reconditioned.**
- **Easy to set with three clock padded reamer setting fixtures.**
- **Roundness improvement over competitive solid carbide multi-flute reamer.**

Mounting Lever



PCD COUNTERSINKING

CHALLENGE

- Reaming pre-casted hole Ø .787" (20mm).
- Tolerance range 21 µm H7.
- Aluminum AlSi9Cu3.
- 220mm overhang due to workpiece fixture.
- Machining center with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with HSK63A interface and internal coolant.
- Four effective cutting teeth.
- KD1415™.

CUTTING DATA

- vc 410 SFM (125 m/min).
- f .003 IPR (0,70 mm/rev).

RESULT

- **Tool life of 60,000 components.**
- **Surface finish Ra 0.2 µm.**

BENEFIT

- **Secure process and less scrap than previous competitive solution.**
- **No adjustment effort due to solid solution.**



Turbocharger





RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Mounting holes Ø .472" (12mm).
- Tolerance range 18 µm H7.
- Ductile cast iron.
- Machining center with internal coolant

SOLUTION

- RMS standard reamer with six effective cutting edges and internal coolant.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 20 m/min (66 SFM).
- f 0,30 mm/rev (.012 IPR).

RESULT

- **Tool life of 1,000 components.**
- **Surface finish better than Rz 10 µm.**

BENEFIT

- **Productivity and tool life increase compared to previous solution.**

Compressor



ROMICRON™ FINE BORING

CHALLENGE

- Piston bore Ø .925" (23,5mm).
- Tolerance range 18 µm.
- Aluminum 12% Si.
- Machining center BT40 with external coolant.

SOLUTION

- Standard SVUBB2 head with KR coupling.
- Standard steel boring bar.
- CPGW060204FST KD1400™.

CUTTING DATA

- vc 1,204 SFM (367 m/min).
- f .003 IPR (0,07 mm/rev).

RESULT

- **Surface finish Ra 0.6 µm.**
- **Roundness better than 5 µm.**

BENEFIT

- **2x the productivity compared to the current solution.**
- **80% less adjustment time needed.**
- **Bore tolerance range of 18 µm easily and consistently achieved due to 1 µm per click in radius adjustment.**





Compressor





Polished flutes improving chip evacuation

PCD COUNTERSINKING

CHALLENGE

- Bearing hole Ø .472–1.220" (12–31mm).
- Tolerance range 50 µm.
- Aluminum G-AlSi12.
- Machining center HSK40 with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with four guiding lands, flat-bottom drilling point, and internal coolant.
- Two effective cutting and chamfering teeth; KD1415™.

CUTTING DATA

- vc 1,444 SFM (440 m/min).
- f .008 IPR (0,20 mm/rev).

RESULT

- **Surface finish Rz 1–2 µm.**
- **Roundness better than 5 µm.**

BENEFIT

- **Productivity increases due to combining different tools in one.**
- **Tool life increase versus previous solution.**

Compressor





KST pre-loaded taper face contact interface

RHM™ MODULAR REAMING

CHALLENGE

- Piston bore Ø 1.220" (23,5mm).
- Tolerance range 10 µm.
- Cast iron GGG60.
- Machining center HSK63 with internal coolant.

SOLUTION

- RHM modular reamer with six cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- SIF™ steerable tooling.

CUTTING DATA

- vc 410 SFM (125 m/min).
- f .030 IPR (0,75 mm/rev).

RESULT

- **Surface finish better than Rz 4 µm.**

BENEFIT

- **Higher productivity than single-edged padded reamer.**



Hydraulic Valve Block





RIR™ PADDED REAMING

CHALLENGE

- Spool bore Ø .728" (18,5mm).
- Tolerance range 10 µm.
- Cast iron.
- Up to 4mm varying depth of cut.
- Machining center with internal coolant.

SOLUTION

- RIR padded reamer with up to 100mm long cermet guide pads.
- Engineered solution RIR insert with modified chipformer.

CUTTING DATA

- vc 230 SFM (70 m/min).
- f .005 IPR (0,125 mm/rev).

RESULT

- **Tool life of 400 min per double-edged insert.**
- **Roundness and straightness within 10 µm.**

BENEFIT

- **Very stable process control and predictable performance.**

Hydraulic Valve Block





RMS™ MULTI-FLUTE REAMING

CHALLENGE

- Rinse slider bore Ø .375" (9,534mm).
- Tolerance range 6 µm.
- Ductile cast iron 0.7060.
- Three interrupted cuts at a reaming depth of 100mm.
- Special dimensional accuracy requirement.

SOLUTION

- RMS solid carbide reamer engineered solution.
- Special back taper configuration and support margins lands.
- KC6305™ TiAlN coated carbide.

CUTTING DATA

- vc 492 SFM (150 m/min).
- f .028 IPR (0,72 mm/rev).

RESULT

- **Tool life of 500 pieces.**

BENEFIT

- **Speed and feed rates are almost 30x faster, resulting in higher productivity.**
- **Less scrap due to consistent accuracy.**

Hydraulic Valve Block





PCD COUNTERSINKING

CHALLENGE

- Thread core hole Ø .945" (24mm).
- Tolerance range 21 µm F7.
- Aluminum AlSi9Cu3.
- Pre-drilled hole.
- Machining center DV40 with internal coolant.

SOLUTION

- PCD-tipped, carbide-based tool with internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 360–750 m/min (n = 7,500 RPM.)
- f .008 IPR (0,20 mm/rev).

RESULT

- **Tool life of 100,000 holes.**
- **Surface finish Ra 0.1 µm.**

BENEFIT

- **Productivity increase due to combining two operations into one.**
- **Carbide base increases tool life and accuracy.**

ABS Valve Block



PCD COUNTERSINKING

CHALLENGE

- Bearing bores Ø 20,99 and 24,275mm.
- Tolerance range 20 µm.
- Aluminum AlSi1.
- Pre-casted hole with 0,15mm depth of cut.
- Machining center HSK63A with internal coolant.

SOLUTION

- PCD-tipped, steel-based tool with SIF™ steerable interface and internal coolant.
- Two effective cutting and chamfering teeth.
- KD1415™.

CUTTING DATA

- vc 984 SFM (300 m/min).
- f .014 IPR (0,35 mm/rev).

RESULT

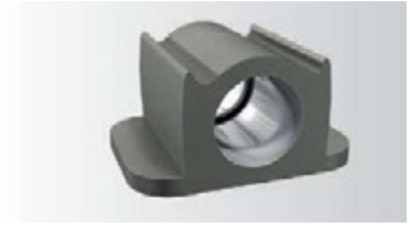
- **Surface finish Ra 0.4–0.6 µm.**

BENEFIT

- **Very stable process control and predictable performance.**
- **Very favorable chip creation.**



Bearing Seat





KST pre-loaded taper face contact interface



RHM™ MODULAR REAMING

CHALLENGE

- Reaming Ø 1.378" (35mm).
- Tolerance range 20 µm.
- Carbon steel, annealed, long-chipping.
- Blind hole limiting chip evacuation.
- Machining center with internal coolant.

SOLUTION

- RHM modular reamer with eight cutting edges.
- KT325™ uncoated cermet.
- Standard lead geometry.
- Short engineered-solution axial clamping tool body.

CUTTING DATA

- vc 394 SFM (120 m/min).
- f .046 IPR (1,18 mm/rev).

RESULT

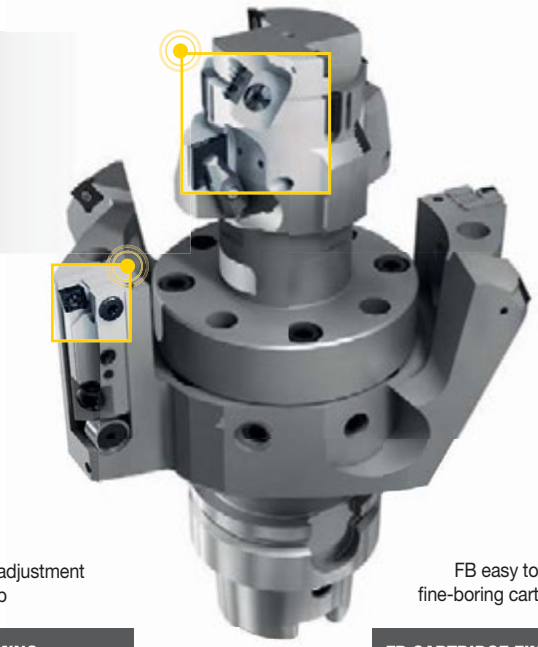
- **Tool life of 145,000 holes.**
- **Surface finish better than Rz 6.3 µm.**

BENEFIT

- **Predictable tool life as only 2 µm diameter deviation after 10,000 holes.**

Bearing Seat







RIQ single adjustment screw setup



FB easy to setup fine-boring cartridges

RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Reaming Ø 1.850" (47mm).
- Tolerance range 19 µm N6.
- Aluminum AlSi9Cu3.
- Machine four different diameters, two spot faces, and four different chamfers with one tool.

SOLUTION

- RIQ padded reamer with full-face PCD KD1415™ insert having four cutting edges.
- SIF™ steerable interface between reaming and fine boring section.

CUTTING DATA

- vc 774 SFM (236 m/min).
- f .003 IPR (R0,08 mm/rev).

RESULT

- **Surface finish better than Rz 16 µm.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Less operations increase productivity.**
- **Higher accuracy than multiple operations.**
- **Full-face PCD inserts reduce cost per hole.**

FB CARTRIDGE FINE–BORING

CHALLENGE

- Reaming Ø 5.669" (144mm).
- Tolerance range 40 µm H7.
- Aluminum AlSi9Cu3.
- Machine two different diameters.

SOLUTION

- Standard FB fine-boring cartridges with almost backlash-free fine adjustment.
- CCGW060204 KD1415™.

CUTTING DATA

- vc 2,372 SFM (723 m/min).
- f .003 IPR (0,08 mm/rev).

RESULT

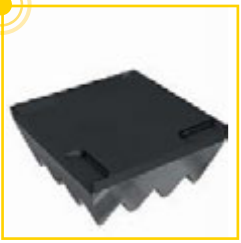
- **Surface finish better than Rz 16 µm.**

BENEFIT

- **Radial adjustment does not influence axial adjustment of inserts resulting in faster setup.**
- **Productivity increase with less operations.**
- **More accurate than previous solution.**

Pump Housing





Full-face PCD insert with chipformer geometry



RIQ™ QUATTRO CUT™ PADDED REAMING

CHALLENGE

- Piston bore Ø .728" (18,5mm).
- Tolerance range 21 µm H7.
- Aluminum.
- Heavy interrupted cut and surface finish Rz 6.3.
- Machining center with internal coolant.

SOLUTION

- RIQ padded reamer with helical chip flute and helical solid carbide guide pad.
- Full-face KD1415™ insert having four cutting edges.
- Positive wiper insert geometry.

CUTTING DATA

- vc 755 SFM (230 m/min).
- f .006 IPR (0,15 mm/rev).

RESULT

- **No chip evacuation issues.**
- **No bur, marks, or scratches at entrance or exit of interruptions.**

BENEFIT

- **No insert back taper adjustment needed.**
- **Half cycle time compared to previous competitive tooling.**

Valve Housing



ROMICRON™ FINE BORING

CHALLENGE

- Various bore Ø 6.7–18.9" (170–480mm).
- Tolerance range 75 µm.
- Cast iron GG25.
- Automated wear compensation at interrupted cut.
- Machining center HSK100 with internal coolant.



SOLUTION

- Semi-standard SVU120 CLB head with engineered-solution diameter extender and automatic wear compensation with CLB.
- CPGW09T308S01015C KB1630™.

CUTTING DATA

- vc 2,625 SFM (800 m/min).
- f .005 IPR (0,12 mm/rev).

RESULT

- **Tool life of 1,200 minutes per insert.**
- **Surface finish better than Rz 16 µm.**

BENEFIT

- **More than 30% reduction in manufacturing lead time.**
- **Third shift and weekend without operators.**
- **1 µm per click in radius adjustment executed by machine.**

Wind Energy Housing







1 µm per click in
radius adjustment

ROMICRON™ FINE BORING

CHALLENGE

- Flange Ø 49.6–55.1" (1260–1400mm).
- Tolerance range 125 µm H7.
- Cast iron GGG40.
- One base bridge for multiple diameters.
- Machining center without coolant.

SOLUTION

- Romicron standard modular MF40 element with engineered-solution aluminum bridge.
- CPGT060204/08HP KC5410™.

CUTTING DATA

- vc 650 SFM (200 m/min).
- f .005 IPR (0,12 mm/rev).

RESULT

- **Tool life of 73 min.**

BENEFIT

- **Investment saving as only one base bridge needed.**
- **Use of standard off-the-shelf Romicron tool.**
- **Ease of use due to Romicron.**

Synchronous Joint





Balanced-by-design

ROMICRON™ FINE BORING

CHALLENGE

- Pin machining Ø .512" (13mm).
- Tolerance range 6 µm.
- Steel 42CrMo4 (4140).
- Machining center with internal coolant.

SOLUTION

- Romicron standard HSK63ASVUBB1095MCLB head with engineered solution pin boring bar.
- TCMT110202FP KTP10™.

CUTTING DATA

- vc 525 SFM (160 m/min).
- f .004 IPR (0,1 mm/rev).

RESULT

- **Tool life of 300–450 components per insert.**
- **Surface finish Ra 0.3** µm.
- **Cpk value ≥1,33.**

BENEFIT

- **Use of standard off-the-shelf Romicron tooling.**
- **Bore tolerance of 6 µm consistently achieved due to 1 µm per click in radius adjustment.**



Wind Energy

ModBORE™

For the **Big Jobs!**

The ModBore system includes tooling ranges from highly flexible roughing and fine-boring heads to large bridge tooling, with an optimum amount of tooling components. This premium boring line enables roughing to fine-boring operations using one system with a large diameter range from 9,75–2,205mm (.384–86.8"). ModBORE can be used in most workpiece materials in metalcutting applications with the latest Kennametal standard ISO turning inserts.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

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Tapping

Taps Introduction L2–L19

Spiral-Point/Left-Hand Spiral-Flute Taps M2–M41

Spiral-Flute Taps M42–M104

Straight-Flute Taps M106–M134

Forming Taps M136–M148

Pipe Taps M150–M158

Solid Carbide Thread Mills M160–M177

Technical Information M178–M216

Spiral-Point and Left-Hand Spiral-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H
	**T320**	KC7542	6535 HA	●		○			
	T320	KC7542	6535 HA	●		○			
	**T321**	KC7542	6535 HA	●		○			
	**T620**	KP6525, KM6515	ANSI 302A	●	●	○	○		
	**T620**	KP6525	DIN 371, 376	●	○	○			
	T620	KP6525	DIN 371, 376	●	○	○			
	**T621**	KP6525	DIN 371, 376	●	○	○			
	**T620**	KP6525, KM6515	ANSI 302A	●	●	○	○		
	**T620**	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	**T621**	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	**T620**	KP6525	DIN 376	●		●			
	**T620**	KP6525	XL	●		●			
	**T690**	KSP27, KSS29	ANSI 302A					●	
	**T690**	KSP27, KSS29	ANSI 302A					●	
	**T660**	KSSM24, KSS20	ANSI 302A					●	
	**T660**	KSSM24, KSS20	ANSI 302A					●	
	**T672**	KSMN34	DIN/ANSI				●		
	T672	KSMN34	DIN/ANSI				●		
	**T600**	KSP21	DIN 371, 374, 376	●				○	
	**T820**	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	**T820**	KSP39	DIN 371, 376	○	○	○			
	**T822**	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	T820	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	T822	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	**T820**	KSP32, KSP39	DIN 371, 374, 376	●	○	●	○		
	**T820**	KSU31, KSU30	JIS	●	○	○	○		
	**T820**	KSP39	Extend 4"	○	○	○			
	T820	KSP39	Extend 6"	○	○	○			
	**KHSST Spiral Point**	TiCN, TiN, oxide, uncoated	ANSI 302	●	●	●	●	●	
	**KHSST Spiral Point Oversized PD**	uncoated	ANSI 302	●	○	○	○		
	**KHSST Spiral Point Extended Length**	uncoated	Extend 6"	●	○	○	○		
	**KHSST Spiral Point Heavy Duty**	oxide/nitride	ANSI 302	●	○	○	○		
	**KHSST Spiral Point Bottoming**	uncoated	ANSI 302	●	○	○	○		
	**KHSST Spiral Point**	TiN, uncoated	ANSI 302	●	○	○	●		

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	3/8–1/2"	●		plug	D	L15°	●		M4	M178
	M6–M16	●		plug	D	L15°	●		M4	M178
	M10–M16	●		plug	D	L15°		●	M5	M178
	#2–3/4"	●		plug	D	L15°	●		M6–M7	M179–M180
	#6–1/2"	●		plug	D	L15°	●		M8	M179–M180
	#6–1/2"	●		plug	D	L15°	●		M8	M179–M180
	1/4–1/2"	●		plug	D	L15°		●	M9	M179–M180
	M3–M12	●		plug	D	L15°	●		M10	M179–M180
	M3–M20	●		plug	D	L15°	●		M11	M179–M180
	M5–M18	●		plug	D	L15°		●	M12	M179–M180
	M24–M42	●		plug	D	L15°	●		M13	M179–M180
	M24–M42	●		plug	D	L15°		●	M14	M179–M180
	#2–3/4"	●		plug	D	L15°	●		M15–16	M179–M180
	M2,5–M12	●		plug	D	L15°	●		M17	M179–M180
	#2–1"	●		plug	D	L15°	●		M18	M179–M180
	M2,5–M12	●		plug	D	L15°	●		M19	M179–M180
	#2–1/2"	●		plug	D	L15°	●		M20	M179–M180
	M3–M12	●		plug	D	L15°	●		M21	M179–M180
	M3–M20	●		plug	B	0°	●		M22	M179–M180
	#2–1 1/4"	●		plug	B	0°	●		M23–M25	M181–M182
	#4–1"	●		plug	B	0°	●		M26–M27	M181–M182
	#5–#12	●		plug	B	0°	●		M28	M181–M182
	M3–M16	●		plug	B	0°	●		M29	M181–M182
	M3–M5	●		plug	B	0°	●		M30	M181–M182
	M2–M36	●		plug	B	0°	●		M31–M32	M181–M182
	M3–M20	●		plug	B	0°	●		M33	M181–M182
	#4–1/4"	●		plug	B	0°	●		M34	M181–M182
	#4–5/8"	●		plug	B	0°	●		M35	M181–M182
	#0–3/4"	●		plug	–	0°	●		M36	M183
	1/4–1/2"	●		plug	–	0°	●		M37	M183
	#6–3/8"	●		plug	–	0°	●		M38	M183
	#6–3/4"	●		plug	–	0°	●		M39	M183
	#0–5/16"		●	bottoming	–	0°	●		M40	M183
	M1,6–M20	●		plug	–	0°	●		M41	M183

Spiral-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice					
				P	M	K	N	S	H
	T331	KC7542	6535 HA	●		○			
	T331	KC7542	6535 HA	●		○			
	T630	KP6525, KM6515	ANSI 302A	●	●	○	○		
	T630	KP6525	DIN 371, 376	●	○	○			
	T630	KP6525	DIN 371, 376	●	○	○			
	T631	KP6525	DIN 371, 376	●	○	○			
	T630	KP6525, KM6515	ANSI 302A	●	●	○	○		
	T630	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	T631	KP6525, KM6515	DIN 371, 374, 376	●	●	○	○		
	T632	KP6525	DIN 371, 374, 376	●		○			
	T633	KP6525	DIN 371, 374, 376	●		○			
	T630	KP6525	DIN 376	●		●			
	T631	KP6525	DIN 376	●		●			
	T630	KP6525	XL	●		●			
	T631	KP6525	XL	●		●			
	T650	KP6525	DIN 376	●		●			
	T651	KP6525	DIN 376	●		●			
	T650	KP6525	XL	●		●			
	T651	KP6525	XL	●		●			
	T692	KSP27, KSS29	ANSI 302A					●	
	T692	KSP27, KSS29	ANSI 302A					●	
	T694	KSP27, KSS29	ANSI 302A					●	
	T662	KSSM24, KSS20	ANSI 302A					●	
	T662	KSSM24, KSS20	ANSI 302A					●	
	T682	KSMN34	DIN/ANSI				●		
	T682	KSMN34	DIN/ANSI				●		
	T686	KSMN34	DIN/ANSI				●		
	T686	KSMN34	DIN/ANSI				●		
	T604	KSH26	DIN 371, 374, 376	●				○	

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	1/4–1/2”		●	semi-bottoming	C	45°		●	M44	M178
	M6–M16		●	semi-bottoming	C	45°		●	M45	M178
	#2–1”		●	semi-bottoming	C	45°	●		M46	M179–M180
	#6–1/2”		●	semi-bottoming	C	45°	●		M47	M179–M180
	#6–1/2”		●	semi-bottoming	C	45°	●		M47	M179–M180
	1/4–1/2”		●	semi-bottoming	C	45°		●	M48	M179–M180
	M3–M16		●	semi-bottoming	C	45°	●		M49	M179–M180
	M3–M20		●	semi-bottoming	C	45°	●		M50	M179–M180
	M5–M18		●	semi-bottoming	C	45°		●	M51	M179–M180
	M5–M16		●	bottoming	E	45°	●		M52	M179–M180
	M5–M16		●	bottoming	E	45°		●	M53	M179–M180
	M24–M42		●	semi-bottoming	C	45°	●		M54	M179–M180
	M24–M42		●	semi-bottoming	C	45°		●	M55	M179–M180
	M24–M42		●	semi-bottoming	C	45°	●		M56	M179–M180
	M24–M42		●	semi-bottoming	C	45°		●	M57	M179–M180
	M24–M42		●	semi-bottoming	C	15°	●		M58	M179–M180
	M24–M42		●	semi-bottoming	C	15°		●	M59	M179–M180
	M24–M42		●	semi-bottoming	C	15°	●		M60	M179–M180
	M24–M42		●	semi-bottoming	C	15°		●	M61	M179–M180
	#2–3/4”		●	3-4 pitches	–	10°	●		M62–M63	M179–M180
	M2,5–M12		●	3-4 pitches	–	10°	●		M64	M179–M180
	#4–5/8”		●	bottoming	E	10°	●		M65	M179–M180
	#2–1”		●	semi-bottoming	C	10°	●		M66–M67	M179–M180
	M2,5–M12		●	semi-bottoming	C	10°	●		M68	M179–M180
	#2–1/2”		●	semi-bottoming	C	45°	●		M69	M179–M180
	M3–M12		●	semi-bottoming	C	45°	●		M70	M179–M180
	#2–1/2”		●	semi-bottoming	C	25°	●		M71	M179–M180
	M3–M12		●	semi-bottoming	C	25°	●		M72	M179–M180
	M3–M20		●	semi-bottoming	C	42°	●		M73	M179–M180

(continued)

(Spiral-Flute Taps Selection Guide — continued)

Spiral-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H
	**T830**	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	**T832**	KSP39	ANSI 302A	○	○	○			
	**T838**	KSP32, KSP39	ANSI 302A	●	○	●	○		
	**T839**	KSP39	ANSI 302A	○	○	○			
	**T830**	KSP39	DIN 371, 376	○	○	○			
	**T838**	KSU31, KSP39	DIN 371, 374, 376	●	○	○	○		
	**T830**	KSP32, KSMN24, KSP39	ANSI 302A	●	●	●	●		
	**T832**	KSP39	ANSI 302A	○	○	○			
	**T838**	KSP32, KSP39	ANSI 302A	●	○	●	○		
	**T839**	KSP39	ANSI 302A	○	○	○			
	**T830**	KSP32, KSP39	DIN 371, 374, 376	●	○	●	○		
	T832	KSP32, KSP39	DIN 371, 374, 376	●	○	●	○		
	T838	KSU31, KSP39	DIN 371, 374, 376	●	○	○	○		
	T839	KSU31, KSP39	DIN 371, 376	●	○	○	○		
	**T830**	KSU31, KSU30	JIS	●	○	○	○		
	**T830**	KSP39	Extend 4"	○	○	○			
	T830	KSP39	Extend 6"	○	○	○			
	T832	KSP39	Extend 6"	○	○	○			
	**KHSST Spiral Flute**	TiN, uncoated	ANSI 302A	●	○	○	●		
	KHSST Spiral Flute	TiCN, TiN, uncoated	ANSI 302A	●	○	○	●		
	**KHSST Spiral Flute Heavy Duty**	Oxide	ANSI 302A	●	○	○			

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	#2–1 1/8"		●	semi-bottoming	C	45°	●		M74–M76	M181–M182
	#4–3/4"		●	bottoming	E	45°	●		M77–M78	M181–M182
	#2–1 1/8"		●	semi-bottoming	C	45°	●		M79–M81	M181–M182
	#4–3/4"		●	bottoming	E	45°	●		M82–M83	M181–M182
	#4–1"		●	semi-bottoming	C	45°	●		M84, M87	M181–M182
	#6–2"		●	semi-bottoming	C	45°	●		M85–M86	M181–M182
	M3–M18		●	semi-bottoming	C	45°	●		M88	M181–M182
	M3–M18		●	bottoming	E	45°	●		M89	M181–M182
	M3–M18		●	semi-bottoming	C	45°	●		M90	M181–M182
	M3–M18		●	bottoming	E	45°	●		M91	M181–M182
	M2–M36		●	semi-bottoming	C	45°	●		M92–M93	M181–M182
	M3–M20		●	bottoming	E	45°	●		M94	M181–M182
	M2–M52		●	semi-bottoming	C	45°	●		M95–M96	M181–M182
	M3–M20		●	bottoming	E	45°	●		M97	M181–M182
	M3–M20		●	semi-bottoming	C	45°	●		M98	M181–M182
	#4–1/4"		●	semi-bottoming	C	45°	●		M99	M181–M182
	#4–5/8"		●	semi-bottoming	C	45°	●		M100	M181–M182
	#4–7/16"		●	bottoming	E	45°	●		M101	M181–M182
	#4–3/4"		●	bottoming	–	45°	●		M102	M183
	M3–M10		●	bottoming	–	45°	●		M103	M183
	#6–3/4"		●	plug	–	45°	●		M104	M183

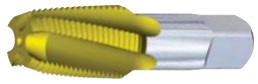
Straight-Flute Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H
	**T340**	KCK17	6535 HA	○		●			
	T340	KCK17	6535 HA	○		●			
	**T351**	KCK17	6535 HA	○		●			
	T351	KCK17	6535 HA	○		●			
	**T351**	KCK17	DIN 371, 374, 376	○		●			
	**T353**	KCK17	DIN 371, 376	○		●			
	**T471**	KCN14	6535 HA				●		
	**T471**	KCN14	DIN 371				●		
	**T410**	KCU36	DIN 371, 374, 376						●
	**T640**	KP6525	ANSI 302A			●	●		
	**T640**	KP6525	DIN 371, 376			●	●		
	T640	KP6525	DIN 371, 376			●	●		
	**T641**	KP6525	DIN 371, 376			●	●		
	**T640**	KP6525	DIN 371, 376			●	●		
	**T641**	KP6525	DIN 371, 376			●	●		
	**T642**	KP6525	DIN 371, 374, 376			●	●		
	**T643**	KP6525	DIN 371, 374, 376			●	●		
	**KHSST Hand Plug**	TiCN, TiN, oxide, uncoated	ANSI 302	●	●	●	●	●	
	**KHSST Hand Bottoming**	TiCN, TiN, oxide, uncoated	ANSI 302	●	●	●	●	●	
	**KHSST Hand Plug**	TiN, uncoated	ANSI 302	●	○	○	●		
	**KHSST Hand Bottoming**	uncoated	ANSI 302	●	○	○	●		
	**KHSST Hand Left Hand Plug**	uncoated	ANSI 302	●	○	○	○		
	KHSST Hand Ext. Length Plug	uncoated	Extend 6"	●	○	○	○		
	KHSST Hand Ext. Length Bottoming	uncoated	Extend 6"	●	○	○	○		

* Through coolant 1/4", M6 and larger.

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	#6–9/16"	●		plug	D	0°	●		M108	M178
	M4–M20	●		plug	D	0°	●		M109	M178
	#6*–3/4"		●	bottoming	E	0°		●	M110	M178
	M4*–M16		●	bottoming	E	0°		●	M111	M178
	M6–M14		●	bottoming	E	0°		●	M112	M178
	M4*–M14		●	semi-bottoming	C	0°		●	M113	M178
	M6–M14		●	bottoming	E	0°		●	M114	M178
	M6–M10		●	bottoming	E	0°		●	M115	M178
	M3–M16		●	semi-bottoming	C	0°	●		M116	M178
	#10–3/4"	●	●	semi-bottoming	C	0°	●		M117	M179–M180
	#6–1/2"	●	●	semi-bottoming	C	0°	●		M118	M179–M180
	#6–1/2"	●	●	semi-bottoming	C	0°	●		M118	M179–M180
	1/4–1/2"		●	semi-bottoming	C	0°		●	M119	M179–M180
	M4–M22	●	●	semi-bottoming	C	0°	●		M120	M179–M180
	M5–M20		●	semi-bottoming	C	0°		●	M121	M179–M180
	M5–M16	●	●	bottoming	E	0°	●		M122	M179–M180
	M5–M16		●	bottoming	E	0°		●	M123	M179–M180
	#0–1 1/2"	●		plug	–	0°	●		M124–M126	M183
	#0–1 1/2"		●	bottoming	–	0°	●		M127–M129	M183
	M1,6–M36	●		plug	–	0°	●		M130	M183
	M2–M24		●	bottoming	–	0°	●		M131	M183
	1/4–3/4"	●		plug	–	0°	●		M132	M183
	#6–3/8"	●		plug	–	0°	●		M133	M183
	#10–3/8"		●	bottoming	–	0°	●		M134	M183

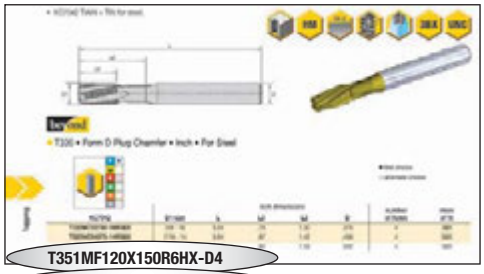
Forming Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice						
				P	M	K	N	S	H	
	**T491**	KCN14	6535 HA				●			
	**T491**	KCN14	DIN 2174				●			
	**T622**	KSP21, KSN28	DIN 2174	●			●			
	**T623**	KSP21, KSN28	DIN 2174	●			●			
	**T624**	KSP27	DIN/ANSI	●	○					
	**T625**	KSP27	DIN/ANSI	●	○					
	**T626**	KSP27	DIN/ANSI	●	○					
	**T627**	KSP27	DIN/ANSI	●	○					
	**T624**	KSP27	DIN/ANSI	●	○					
	**T625**	KSP27	DIN/ANSI	●	○					
	**T626**	KSP27	DIN/ANSI	●	○					
	**T627**	KSP27	DIN/ANSI	●	○					

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	M5–M12		●	bottoming	E	–		●	M138	M178
	M6–M10		●	bottoming	E	–		●	M138	M178
	M3–M16	●	●	semi-bottoming	C	–	●		M139	M179–M180
	M5–M16		●	semi-bottoming	C	–		●	M140	M179–M180
	#6–3/4"	●	●	semi-bottoming	C	–	●		M141	M179–M180
	1/4–3/4"		●	semi-bottoming	C	–		●	M142	M179–M180
	#2–3/4"		●	bottoming	E	–	●		M143	M179–M180
	1/4–3/4"		●	bottoming	E	–		●	M144	M179–M180
	M3–M16	●	●	semi-bottoming	C	–	●		M145	M179–M180
	M6–M16		●	semi-bottoming	C	–		●	M146	M179–M180
	M3–M16		●	bottoming	E	–	●		M147	M179–M180
	M6–M16		●	bottoming	E	–		●	M148	M179–M180

Pipe Taps	series	grade/coating	shank/dimension	● first choice ○ alternate choice P	M	K	N	S	H	
	**T854**	KSU31, KSP39	ANSI	●	○	○	○			
	**T846**	KSU30	ANSI	○		○				
	**T877**	KSU31, KSP39	DIN 5156	●	○	○	○			
	**T857**	KSU31, KSP39	DIN 5156	●	○	○	○			
	**T848**	KSU30	DIN 5156	○		○				
	**KHSST Taper Pipe**	TiN, uncoated	ANSI	●	○	○	●			
	**KHSST Straight Pipe**	uncoated	ANSI	●	○	○	○			

	size range min-max	hole		chamfer		helix angle	coolant		page(s)	recommended cutting parameters
		through	blind	type	form		flood	through		
	1/16–1"	●	●	standard	–	15°	●		M152	M181–M182
	1/8–3/4"	●	●	standard	–	0°	●		M153	M181–M182
	1/8–1"	●		plug	B	0°	●		M154	M181–M182
	1/8–1"		●	semi-bottoming	C	42°	●		M155	M181–M182
	1/16–1"	●	●	semi-bottoming	C	0°	●		M156	M181–M182
	1/16–2"	●	●	standard	–	0°	●		M157	M183
	1/8–1"	●	●	standard	–	0°	●		M158	M183

Solid Carbide Tap Identification System



Metric							
T351	**MF**	**120**	**X**	**150**	**R**	**6HX**	**-D4**
Inch							
T320	**NC**	**05000**	**–**	**13**	**R**	**3BX**	
Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
		mm or inch (depending on type)		mm or TPI (depending on type)			

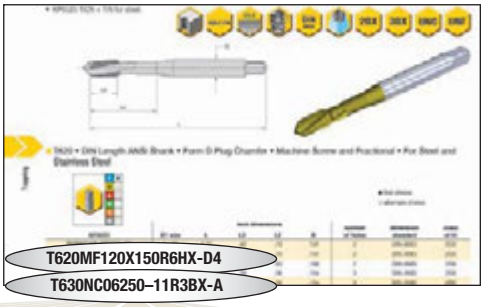
M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D74 = DIN 2174
blank = 6535 HA

Tap design

T320 = Steel, through holes, LH spiral flute, solid
T321 = Steel, through holes, LH spiral flute, through coolant
T331 = Steel, blind holes, RH spiral flute, through coolant
T340 = Cast iron and cast aluminum, through holes, straight flute, solid
T351 = Cast iron and cast aluminum, blind holes, straight flute, through coolant
T353 = Cast iron and cast aluminum, blind holes, straight flute, through coolant
T410 = Hard steel 55–63 HRC, through and blind holes, straight flute, solid
T471 = Aluminum, blind holes, straight flute, through coolant
T491 = Aluminum, blind holes, forming tap, through coolant

HSS-E-PM Tap Identification System



Metric	**T620**	**MF**	**120**	**X**	**150**	**R**	**6HX**	**-D4**
Inch	**T630**	**NC**	**06250**	**–**	**11**	**R**	**3BX**	**-A**
	Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
			mm or inch (depending on type)		mm or TPI (depending on type)			

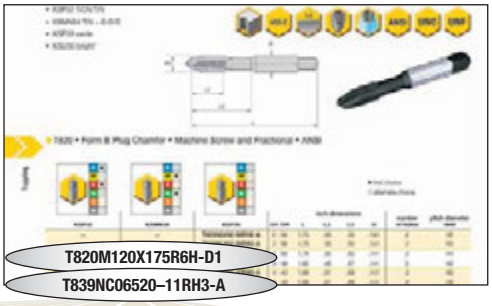
M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

Tap design

T620 = Steel and stainless steel, through holes, LH spiral flute, solid
T621 = Steel and stainless steel, through holes, LH spiral flute, through coolant
T624 = Steel and stainless steel, blind and through holes, forming tap, solid
T625 = Steel and stainless steel, blind holes, forming tap, through coolant
T626 = Steel and stainless steel, blind holes, forming tap, solid
T627 = Steel and stainless steel, blind holes, forming tap, through coolant
T630 = Steel and stainless steel, blind holes, RH spiral flute, solid
T631 = Steel and stainless steel, blind holes, RH spiral flute, through coolant
T632 = Steel and stainless steel, blind holes, RH spiral flute, solid
T633 = Steel and stainless steel, blind holes, RH spiral flute, through coolant
T640 = Cast iron and cast aluminum, through and blind holes, straight flute, solid
T641 = Cast iron and cast aluminum, blind holes, straight flute, through coolant
T642 = Cast iron and cast aluminum, blind holes, straight flute, solid
T643 = Cast iron and cast aluminum, blind holes, straight flute, through coolant
T650 = Steel and cast iron, blind holes, RH spiral flute, large sizes, solid
T651 = Steel and cast iron, blind holes, RH spiral flute, large sizes, through coolant
T660 = Titanium and titanium alloys, through holes, LH spiral flute, solid
T662 = Titanium and titanium alloys, blind holes, RH spiral flute, solid
T672 = Wrought and cast aluminum, through holes, LH spiral flutes, solid
T682 = Wrought aluminum, blind holes, RH 45° spiral flutes, solid
T686 = Cast aluminum, blind holes, RH 25° spiral flutes, solid
T690 = Nickel and cobalt based alloys, through holes, LH spiral flute, solid
T692 = Nickel and cobalt based alloys, blind holes, RH spiral flute, 3–4 pitches chamfer, solid
T694 = Nickel and cobalt based alloys, blind holes, RH spiral flute, bottoming, solid

A = ANSI
DA = DIN length and ANSI shank
D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D74 = DIN 2174
XL = DIN extra length

GOtap HSS-E Tap Identification System



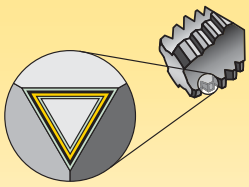
Metric	**T820**	**M**	**120**	**X**	**175**	**R**	**6H**	**-D1**
Inch	**T839**	**NC**	**06520**	**–**	**11**	**R**	**H3**	**-A**
	Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
			mm or inch (depending on type)		mm or TPI (depending on type)			

M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread
NPT = American standard taper pipe thread
NPTF = Dryseal American standard taper pipe thread
G = DIN EN ISO 228

A = ANSI
AS = ANSI Small Shank
D1 = DIN 371
D4 = DIN 374
D6 = DIN 376
D56 = DIN 5156
J = JIS

Tap design

T820 = Steel, stainless steel, ductile iron, and cast aluminum, through holes, spiral point, solid
T822 = Steel, stainless steel, ductile iron, and cast aluminum, through holes, spiral point, 3 flute small tap, solid
T830 = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, semi-bottoming, solid
T832 = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, bottoming, solid
T838 = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, TC, semi-bottoming, solid
T839 = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, TC, bottoming, solid
T846 = Mold steels, NPT, straight flute, solid
T848 = Steel, stainless steel, ductile iron, and cast aluminum, straight flute, NPT, NPTF, solid
T854 = Steel, stainless steel, ductile iron, and cast aluminum, spiral flute, NPT, NPTF, solid
T857 = Steel, stainless steel, ductile iron, and cast aluminum, spiral flute, G, solid
T877 = Steel, stainless steel, ductile iron, and cast aluminum, spiral point, G, solid



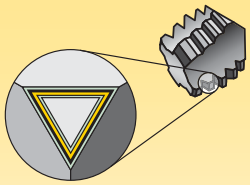
Coatings are designed for optimized tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Grade

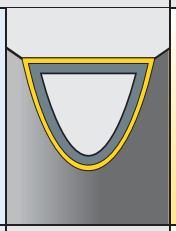
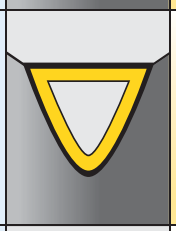
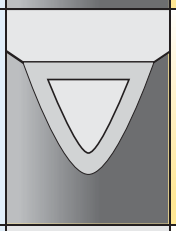
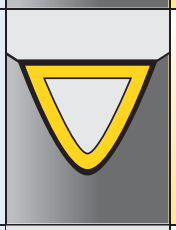
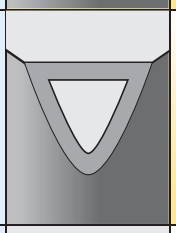
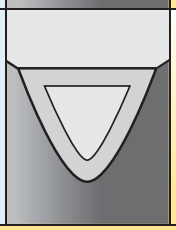
Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC7542	Coated carbide, PVD — multilayer coating with TiAlN and TiN over a high-strength carbide substrate specifically designed for tap application. Use in steel up to 32 HRC and cast iron at 4x faster speeds than HSS-E-PM taps.	P	■	■	■						
		K	■	■	■						
KCK17	Multilayer PVD AlCrN-coated fine-grain carbide. Newly-developed unique coating. Extraordinary wear resistance when tapping cast iron. High-temperature hardness enables long life at up to 4x faster speed than HSS-E-PM taps.	K	■	■	■						
KCN14	Coated carbide, PVD — two-layer coating over fine-grain carbide. Coating consists of low-friction CrC/C over wear-resistant TiN. CrC/C resists galling of non-ferrous materials to the tap. Provides superior performance for tapping cast aluminum and other non-ferrous materials.	N	■	■	■						
KCU36	Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use in hardened steel 55–63 HRC.	H				■	■	■			
KSP21	Coated HSS-E-PM. PVD — powder metal HSS-E substrate with TiN coating. Use for tapping steel 32–44 HRC and for forming threads in steel 32 HRC.	P						■	■	■	
KSH26	Coated HSS-E-PM. PVD — powder metal HSS-E substrate coated with TiN base layer and low-friction MoS_2 top layer. Use in deep blind steel holes 32–44 HRC.	P						■	■	■	

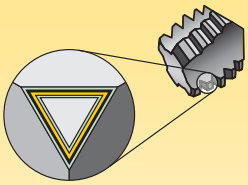


Coatings are designed for optimized tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ←→ toughness

Grade	Coating	Grade Description		05	10	15	20	25	30	35	40	45
KP6525		Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate coated with wear-resistant TiCN base layer and low-friction TiN top layer. Use in steel, cast iron, and cast aluminum with silicon.	P				■	■	■			
			K					■	■	■		
KM6515		Coated HSS-E-PM. PVD — heat- and wear-resistant high vanadium — cobalt powder metal HSS substrate. Coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.	M				■	■	■			
			N					■	■	■		
KSS20		Surface treated HSS-E-PM: powder metal HSS-E-PM substrate with nitride surface treatment that provides wear resistance in non-ferrous materials including titanium. Use for tapping titanium and titanium alloys.	S								■	■
KSSM24		Coated HSS-E-PM, PVD: heat- and wear-resistant high- vanadium, high-cobalt powder metal HSS-E-PM substrate. Coating consists of low friction CrC/C over wear-resistant TiN base layer. Use for tapping titanium and titanium alloys.	S					■	■	■		
KSP27		Coated HSS-E-PM, PVD high vanadium cobalt powder metal HSS substrate coated with heat and wear-resistant multilayer AlCrTiN. Use in cobalt- or nickel-based heat-resistant alloys and steel.	P				■	■	■			
			S				■	■	■			
KSS29		Surface treated HSS-E-PM powder metal HSS-E substrate with oxide/nitride surface treatment that provides wear resistance in nickel alloys.	S							■	■	■

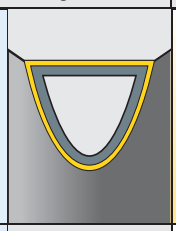
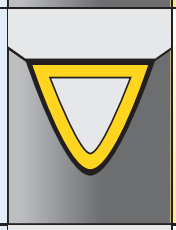
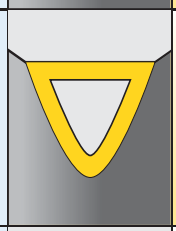
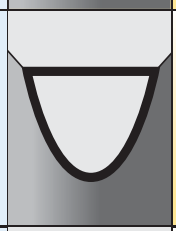
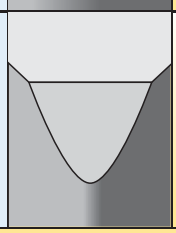


Coatings are designed for optimized tapping performance in specific materials.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

Grade

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KSP32		High-vanadium HSS-E substrate coated with wear-resistant TiCN base layer and low-friction TiN top layer. Use in multiple applications, including steel, stainless steel, ductile cast iron, and cast aluminum. KSP32 is abrasion resistant.	P									
			M									
			K									
			N									
KSMN34		High-vanadium HSS-E substrate with a coating consists of low-friction CrC/C over wear-resistant TiN base layer. Use for tapping stainless steel and non-ferrous materials.	M									
			N									
KSU31		Coated HSS-E substrate with TiN PVD layer. Use in multiple applications, including steel, stainless steel, ductile cast iron, and cast aluminum.	P									
			M									
			K									
			N									
KSP39		HSS-E substrate with black oxide surface treatment. Use in a variety of materials, including steel, stainless steel, and ductile iron. Not recommended for non-ferrous materials.	P									
			M									
			K									
KSU30		Uncoated HSS-E grade with bright surface. Use in easy to machine, general-purpose applications.	P									
			M									
			K									
			N									



Tapping Portfolio

Spiral-Point/Left-Hand Spiral-Flute Taps M2–M41

Beyond High-Performance Solid Carbide Taps M4–M5

High-Performance HSS-E-PM Taps M6–M22

Multipurpose GOtap M23–M35

General-Purpose Taps M36–M41

Spiral-Flute Taps M42–M104

Beyond High-Performance Solid Carbide Taps M44–M45

High-Performance HSS-E-PM Taps M46–M73

Multipurpose GOtap M74–M101

General-Purpose Taps M102–M104

Straight-Flute Taps M106–M134

Beyond High-Performance Solid Carbide Taps M108–M116

High-Performance HSS-E-PM Taps M117–M123

General-Purpose Taps M124–M134

Forming Taps M136–M148

Beyond High-Performance Solid Carbide Taps M138

High-Performance HSS-E-PM Taps M139–M148

Pipe Taps M150–M158

Multipurpose GOtap M152–M156

General-Purpose Taps M157–M158

Solid Carbide Thread Mills M160–M177

Taps and Thread Milling Application and Technical Information M178–M216

Spiral-Point and Left-Hand Spiral-Flute Taps



High-Performance Taps for Through-Hole Applications

- Steel and steel alloys.
- Stainless steel.
- Cast iron.
- Nickel- and cobalt-based alloys.
- Titanium and titanium alloys.
- Aluminum.
- Hard steel.

High-Performance Beyond™ Solid Carbide Taps

- Left-hand spiral flute for optimal chip evacuation ahead of the tap.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

High-Performance Beyond™ HSS-E-PM Taps

- Left-hand spiral flute for optimal chip evacuation ahead of the tap.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.

Multipurpose HSS-E GOtap™ Taps

- Optimized spiral-point geometry for efficient chip evacuation in through-hole applications.
- Manufactured with high vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.

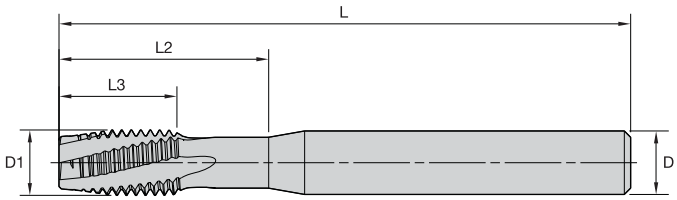


General-Purpose Taps

- High-quality spiral-point HSS taps for reliable, consistent performance.
- Wide range of sizes and pitch limits offered with PVD coatings and surface treatments.

• KC7542 TiAlN + TiN for steel.

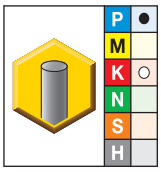






beyond

T320 • Form D Plug Chamfer • Inch • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	inch dimensions D1 size	L	L3	L2	D	number of flutes	class of fit
T320NC03750-16R3BX	3/8 - 16	3.54	.75	1.30	.375	4	3BX
T320NC04375-14R3BX	7/16 - 14	3.94	.87	1.42	.438	4	3BX
T320NC05000-13R3BX	1/2 - 13	3.94	.94	1.58	.500	4	3BX

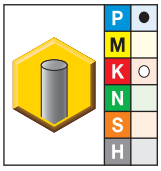
Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004



beyond

T320 • Form D Plug Chamfer • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	metric dimensions D1 size	L	L3	L2	D	number of flutes	class of fit
T320M060X100R6HX	M6 X 1	70	12	23	6,0	3	6HX
T320M080X125R6HX	M8 X 1,25	80	15	28	8,0	3	6HX
T320M100X150R6HX	M10 X 1,5	90	18	33	10,0	4	6HX
T320M120X175R6HX	M12 X 1,75	100	21	40	12,0	4	6HX
T320MF140X150R6HX *	M14 X 1,5	110	24	47	12,0	4	6HX
T320M160X200R6HX	M16 X 2	110	24	53	14,0	4	6HX

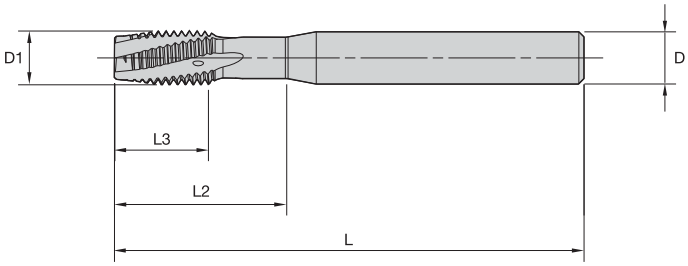
NOTE: Proprietary technology.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

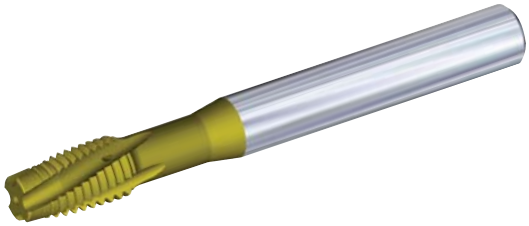
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KC7542 TiAlN + TiN for steel.

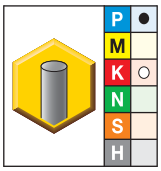






beyond

T321 • Form D Plug Chamfer • Through Coolant • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	metric dimensions D1 size	L	L3	L2	D	number of flutes	class of fit
T321M100X150R6HX	M10 X 1,5	90	18	33	10,0	4	6HX
T321MF120X150R6HX	M12 X 1,5	100	21	40	12,0	4	6HX
T321M120X175R6HX	M12 X 1,75	100	21	40	12,0	4	6HX
T321MF140X150R6HX	M14 X 1,5	110	24	47	12,0	4	6HX
T321M140X200R6HX	M14 X 2	110	24	47	12,0	4	6HX
T321M160X200R6HX *	M16 X 2	110	24	53	14,0	4	6HX

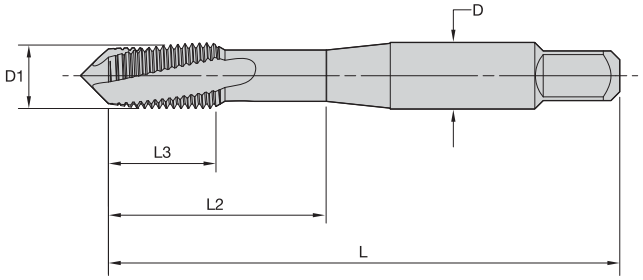
NOTE: Proprietary technology.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

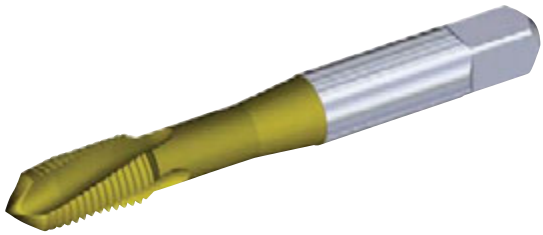
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

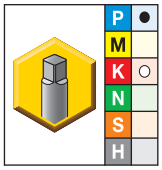
- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.

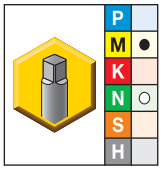






T620 • Machine Screw and Fractional • Form D Plug Chamfer • ANSI • For Steel and Stainless Steel



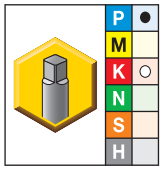


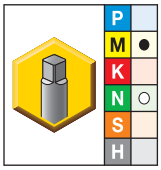
● first choice
○ alternate choice

KP6525	KM6515	inch dimensions D1 size	L	L3	L2	D	number of flutes	class of fit
T620NC#02-56R3BX-A *	T620NC#02-56R3BX-A	2 - 56	1.75	.44	.49	.141	2	3BX
T620NC#02-56R2BX-A *	T620NC#02-56R2BX-A *	2 - 56	1.75	.44	.49	.141	2	2BX
T620NC#04-40R3BX-A	T620NC#04-40R3BX-A *	4 - 40	1.88	.56	.68	.141	2	3BX
T620NC#04-40R2BX-A *	T620NC#04-40R2BX-A	4 - 40	1.88	.56	.68	.141	2	2BX
T620NC#05-40R3BX-A *	T620NC#05-40R3BX-A	5 - 40	1.94	.63	.75	.141	2	3BX
T620NC#06-32R3BX-A	T620NC#06-32R3BX-A	6 - 32	2.00	.36	.71	.141	2	3BX
T620NC#06-32R2BX-A	T620NC#06-32R2BX-A	6 - 32	2.00	.36	.71	.141	2	2BX
T620NC#08-32R3BX-A	T620NC#08-32R3BX-A *	8 - 32	2.13	.31	.76	.168	2	3BX
T620NC#08-32R2BX-A	T620NC#08-32R2BX-A	8 - 32	2.13	.31	.76	.168	2	2BX
T620NF#08-36R3BX-A	T620NF#08-36R3BX-A	8 - 36	2.13	.31	.76	.168	2	3BX
T620NC#10-24R3BX-A	T620NC#10-24R3BX-A	10 - 24	2.38	.47	.91	.194	3	3BX
T620NF#10-32R3BX-A	T620NF#10-32R3BX-A	10 - 32	2.36	.47	.91	.194	3	3BX
T620NF#10-32R2BX-A	T620NF#10-32R2BX-A	10 - 32	2.36	.47	.91	.194	3	2BX
T620NC#12-24R3BX-A *	T620NC#12-24R3BX-A *	12 - 24	2.37	.42	.96	.220	3	3BX
T620NC02500-20R3BX-A	T620NC02500-20R3BX-A	1/4 - 20	1.88	.44	1.01	.255	3	3BX
T620NC02500-20R2BX-A	T620NC02500-20R2BX-A	1/4 - 20	1.75	.44	1.01	.255	3	2BX
T620NF02500-28R3BX-A	T620NF02500-28R3BX-A	1/4 - 28	2.50	.44	1.00	.255	3	3BX
T620NF02500-28R2BX-A	T620NF02500-28R2BX-A	1/4 - 28	2.50	.44	1.00	.255	3	2BX
T620NC03125-18R3BX-A	T620NC03125-18R3BX-A	5/16 - 18	2.12	.49	1.13	.318	3	3BX
T620NC03125-18R2BX-A	T620NC03125-18R2BX-A	5/16 - 18	2.12	.49	1.01	.318	3	2BX
T620NF03125-24R3BX-A	T620NF03125-24R3BX-A	5/16 - 24	2.72	.49	1.13	.318	3	3BX
T620NC03750-16R3BX-A	T620NC03750-16R3BX-A	3/8 - 16	2.94	.60	1.27	.381	3	3BX
T620NC03750-16R2BX-A	T620NC03750-16R2BX-A	3/8 - 16	2.94	.60	1.27	.381	3	2BX
T620NF03750-24R3BX-A	T620NF03750-24R3BX-A *	3/8 - 24	2.94	.60	1.27	.381	3	3BX

(continued)

(T620 • Machine Screw and Fractional • Form D Plug Chamfer • ANSI • For Steel and Stainless Steel — continued)





● first choice
○ alternate choice

KP6525	KM6515	inch dimensions D1 size	L	L3	L2	D	number of flutes	class of fit
T620NC04375-14R3BX-A *	T620NC04375-14R3BX-A	7/16 - 14	3.16	.71	1.49	.323	3	3BX
T620NF04375-20R3BX-A	T620NF04375-20R3BX-A	7/16 - 20	3.16	.71	1.49	.323	3	3BX
T620NC05000-13R3BX-A	T620NC05000-13R3BX-A	1/2 - 13	3.38	.77	1.74	.367	3	3BX
T620NF05000-20R3BX-A	T620NF05000-20R3BX-A	1/2 - 20	3.38	.77	1.74	.367	3	3BX
T620NC06250-11R3BX-A	T620NC06250-11R3BX-A	5/8 - 11	3.81	.91	1.89	.480	4	3BX
T620NC07500-10R3BX-A	T620NC07500-10R3BX-A	3/4 - 10	4.25	1.00	2.08	.590	4	3BX

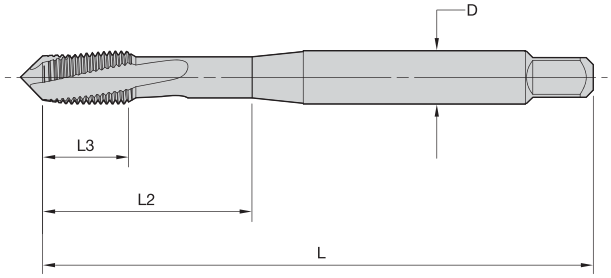
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

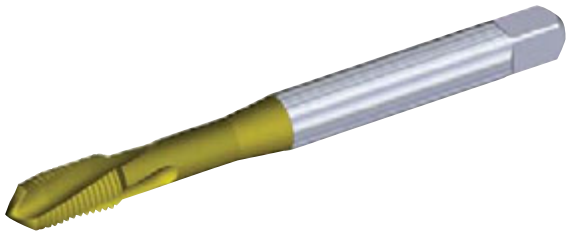
Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

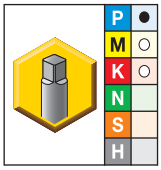
- KP6525 TiCN + TiN for steel.







T620 • DIN 371 and 376 • Form D Plug Chamfer • Machine Screw and Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

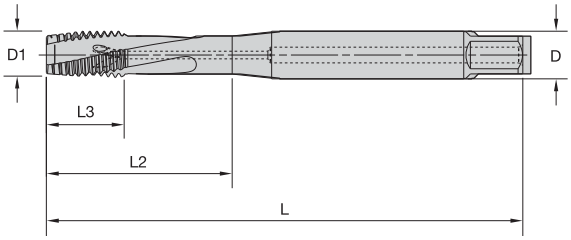
KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	2	DIN 371	2BX
T620NF#06-40R2BX-D1	6 - 40	56	9	20	4,0	2	DIN 371	2BX
T620NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	2	DIN 371	2BX
T620NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T620NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T620NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T620NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T620NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T620NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T620NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	3	DIN 376	3BX
T620NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	3	DIN 376	3BX
T620NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T620NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T620NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	3	DIN 376	3BX
T620NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	3	DIN 376	3BX

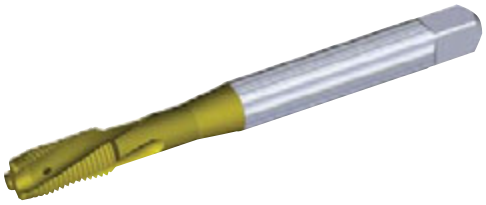
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

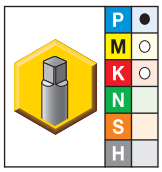
- KP6525 TiCN + TiN for steel.







T621 • DIN 371 and 376 • Form D Plug Chamfer • Through Coolant • Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

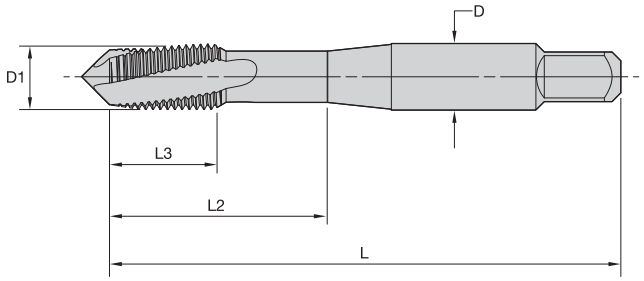
KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T621NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T621NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T621NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T621NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T621NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T621NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T621NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	3	DIN 376	3BX
T621NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	3	DIN 376	3BX
T621NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	3	DIN 376	3BX
T621NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	3	DIN 376	3BX

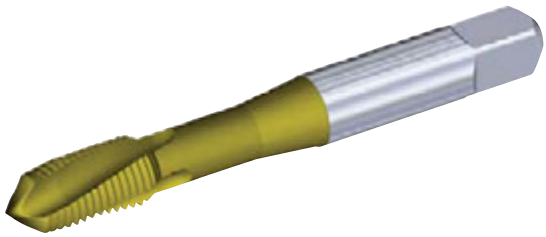
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.







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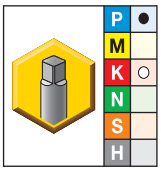
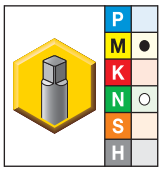




● first choice
○ alternate choice

KP6525	KM6515	D1 size	inch dimensions L	L3	L2	D	number of flutes	class of fit
T620M030X050R6HX-A *	**T620M030X050R6HX-A**	M3 X 0,5	1.94	.63	.75	.141	2	6HX
T620M040X070R6HX-A	**T620M040X070R6HX-A**	M4 X 0,7	2.12	.32	.76	.168	2	6HX
T620M050X080R6HX-A	**T620M050X080R6HX-A**	M5 X 0,8	2.37	.47	.91	.194	2	6HX
T620M060X100R6HX-A	**T620M060X100R6HX-A**	M6 X 1	2.50	.46	1.01	.255	3	6HX
T620M080X100R6HX-A *	**T620MF080X100R6HX-A** *	M8 X 1	2.72	.48	1.12	.318	3	6HX
T620M080X125R6HX-A	**T620M080X125R6HX-A**	M8 X 1,25	2.71	.48	1.13	.318	3	6HX
T620M100X150R6HX-A	**T620M100X150R6HX-A**	M10 X 1,5	2.92	.53	1.26	.381	3	6HX
T620M120X175R6HX-A	**T620M120X175R6HX-A**	M12 X 1,75	3.38	.77	1.74	.367	3	6HX

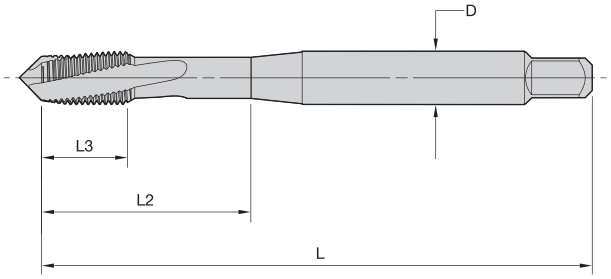
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

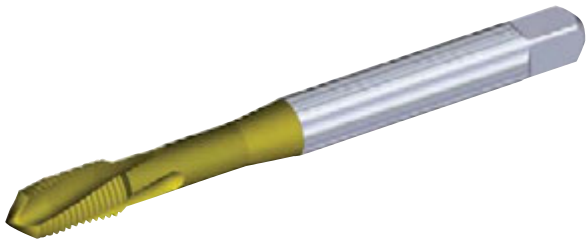
Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

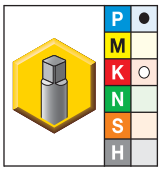
- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.

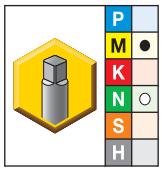






T620 • DIN 371, 374, and 376 • Form D Plug Chamfer • Metric • for Steel and Stainless Steel





● first choice
○ alternate choice

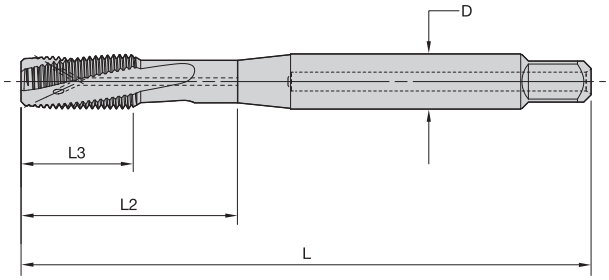
KP6525	KM6515	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620M030X050R6HX-D1	T620M030X050R6HX-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6HX
T620M040X070R6HX-D1	T620M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	2	DIN 371	6HX
T620M050X080R6HX-D1	T620M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
T620M060X100R6HX-D1	T620M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T620MF080X100R6HX-D4	T620MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T620M080X125R6HX-D1	T620M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T620MF100X100R6HX-D4	T620MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T620MF100X125R6HX-D4	–	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T620M100X150R6HX-D1	T620M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T620MF120X150R6HX-D4	T620MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	3	DIN 374	6HX
T620M120X175R6HX-D6	T620M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
T620MF140X150R6HX-D4	T620MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T620M140X200R6HX-D6	T620M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T620MF160X150R6HX-D4	T620MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T620M160X200R6HX-D6	T620M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T620MF180X150R6HX-D4	T620MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T620M200X250R6HX-D6	T620M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

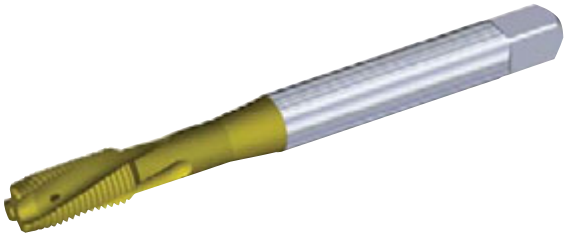
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

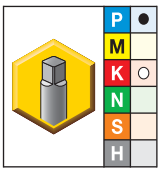
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

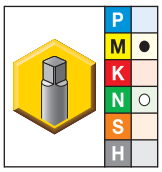






T621 • DIN 371, 374, and 376 • Form D Plug Chamfer • Through Coolant • Metric • For Steel and Stainless Steel





● first choice
○ alternate choice

KP6525	KM6515	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T621M050X080R6HX-D1	T621M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	2	DIN 371	6HX
T621M060X100R6HX-D1	T621M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T621MF080X100R6HX-D4 *	T621MF080X100R6HX-D4 *	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T621M080X125R6HX-D1	T621M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T621MF100X100R6HX-D4	T621MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T621MF100X125R6HX-D4	T621MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T621M100X150R6HX-D1	T621M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T621MF120X125R6HX-D4	—	M12 X 1,25	100	15	39	9,0	3	DIN 374	6HX
T621MF120X150R6HX-D4	T621MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	3	DIN 374	6HX
T621M120X175R6HX-D6	T621M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	3	DIN 376	6HX
T621MF140X125R6HX-D4	—	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T621MF140X150R6HX-D4	T621MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T621M140X200R6HX-D6	T621M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T621MF160X150R6HX-D4	T621MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T621M160X200R6HX-D6	T621M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T621MF180X150R6HX-D4	T621MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T621M180X250R6HX-D6	T621M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

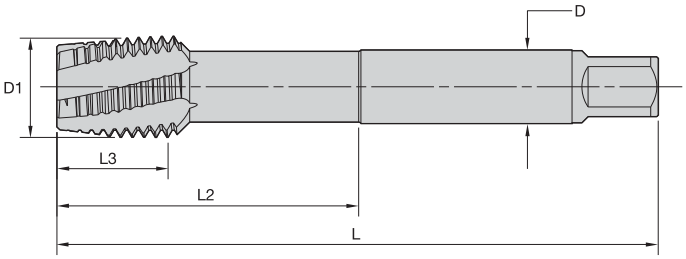
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

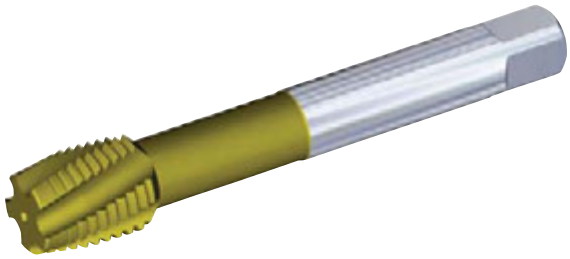
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

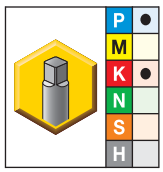
- KP6525 TiCN + TiN for tapping steel and cast iron.







T620 • DIN 376 • Form D Plug Chamfer • Large Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

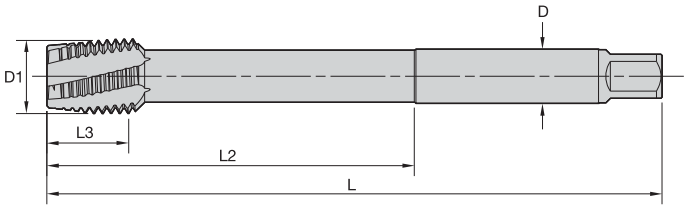
KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T620M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T620M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T620M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T620M360X400R6HX-D6	M36 X 4	200	40	110	28,0	6	DIN 376	6HX
T620M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

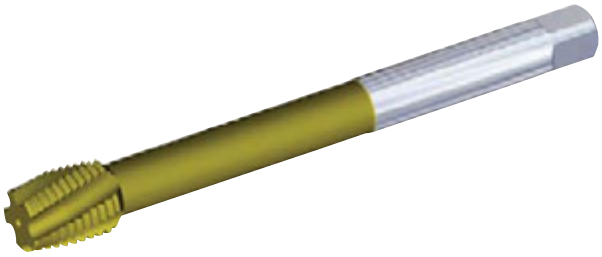
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

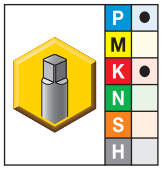
- KP6525 TiCN + TiN for tapping steel and cast iron.







T620 • Extra Long • Form D Plug Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

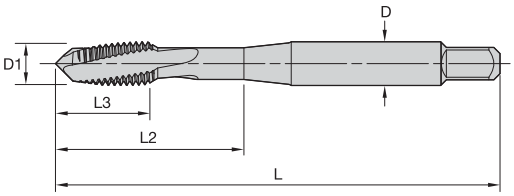
KP6525	D1 size	metric dimensions L	L3	L2	D	number of flutes	class of fit
T620M240X300R6H-XL	M24 X 3	200	30	120	18,0	5	6HX
T620M300X350R6H-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T620M330X350R6H-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T620M360X400R6H-XL	M36 X 4	250	40	150	28,0	6	6HX
T620M420X450R6H-XL	M42 X 4,5	300	45	180	32,0	6	6HX

Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

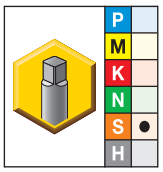
- KSS29 oxide/nitride for nickel- and cobalt-based alloys.
- KSP27 AlCrTiN for nickel- and cobalt-based alloys.

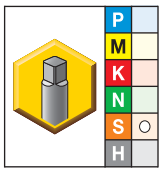






T690 • Machine Screw and Fractional • Form D Plug Chamfer • For Nickel- and Cobalt-Based Alloys



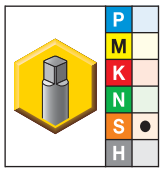


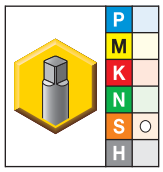
● first choice
○ alternate choice

KSP27	KSS29	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T690NC#02-56RH2-A *	T690NC#02-56RH2-A	2 - 56	1.75	.44	.50	.141	2	H2
T690NC#04-40RH2-A	T690NC#04-40RH2-A	4 - 40	1.88	.56	.69	.141	2	H2
T690NC#04-40RH3-A	T690NC#04-40RH3-A	4 - 40	1.88	.56	.69	.141	2	H3
—	T690NC#04-40RH4-A	4 - 40	1.88	.56	.69	.141	2	H4
T690NF#04-48RH2-A	T690NF#04-48RH2-A	4 - 48	1.88	.56	.69	.141	2	H2
T690NC#05-40RH2-A	T690NC#05-40RH2-A	5 - 40	1.94	.63	.75	.141	3	H2
—	T690NF#06-40RH2-A	6 - 40	2.00	.36	.72	.141	3	H2
T690NC#06-32RH3-A	T690NC#06-32RH3-A	6 - 32	2.00	.36	.72	.141	3	H3
T690NC#06-32RH5-A	T690NC#06-32RH5-A *	6 - 32	2.00	.36	.72	.141	3	H5
T690NC#08-32RH3-A	T690NC#08-32RH3-A	8 - 32	2.13	.31	.77	.168	3	H3
T690NC#08-32RH4-A	T690NC#08-32RH4-A	8 - 32	2.13	.31	.77	.168	3	H4
—	T690NC#08-32RH5-A	8 - 32	2.13	.31	.77	.168	3	H5
—	T690NC#08-32RH6-A	8 - 32	2.13	.31	.77	.168	3	H6
T690NC#10-24RH3-A	T690NC#10-24RH3-A	10 - 24	2.38	.47	.92	.194	3	H3
—	T690NC#10-24RH5-A	10 - 24	2.38	.47	.92	.194	3	H5
T690NF#10-32RH2-A *	T690NF#10-32RH2-A	10 - 32	2.38	.47	.92	.194	3	H2
T690NF#10-32RH3-A	T690NF#10-32RH3-A	10 - 32	2.38	.47	.92	.194	3	H3
T690NF#10-32RH4-A *	T690NF#10-32RH4-A	10 - 32	2.38	.47	.92	.194	3	H4
T690NF#10-32RH5-A *	T690NF#10-32RH5-A	10 - 32	2.38	.47	.92	.194	3	H5
T690NF#10-32RH6-A *	T690NF#10-32RH6-A *	10 - 32	2.38	.47	.92	.194	3	H6
T690NC02500-20RH3-A	T690NC02500-20RH3-A	1/4 - 20	2.51	.44	1.02	.255	3	H3
T690NC02500-20RH5-A *	T690NC02500-20RH5-A	1/4 - 20	2.51	.44	1.02	.255	3	H5
T690NF02500-28RH3-A	T690NF02500-28RH3-A	1/4 - 28	2.51	.44	1.02	.255	3	H3
T690NF02500-28RH4-A	T690NF02500-28RH4-A	1/4 - 28	2.51	.44	1.02	.255	3	H4
T690NF02500-28RH5-A	T690NF02500-28RH5-A	1/4 - 28	2.49	.44	1.02	.255	3	H5
T690NF02500-28RH6-A	T690NF02500-28RH6-A	1/4 - 28	2.51	.44	1.02	.255	3	H6
—	T690NF02500-28RH7-A	1/4 - 28	2.51	.44	1.02	.255	3	H7
T690NC03125-18RH3-A	T690NC03125-18RH3-A	5/16 - 18	2.73	.49	1.15	.318	3	H3
T690NC03125-18RH5-A *	T690NC03125-18RH5-A	5/16 - 18	2.73	.49	1.15	.318	3	H5
—	T690NC03125-18RH7-A	5/16 - 18	2.73	.49	1.15	.318	3	H7
T690NF03125-24RH3-A	T690NF03125-24RH3-A	5/16 - 24	2.73	.49	1.15	.318	3	H3
—	T690NF03125-24RH4-A	5/16- 24	2.73	.49	1.15	.318	3	H4

(continued)

(T690 • Machine Screw and Fractional • Form D Plug Chamfer • For Nickel- and Cobalt-Based Alloys — continued)





● first choice
○ alternate choice

KSP27	KSS29	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	T690NF03125-24RH5-A	5/16- 24	2.73	.49	1.15	.318	3	H5
—	T690NF03125-24RH6-A	5/16- 24	2.73	.49	1.15	.318	3	H6
—	T690NF03125-24RH7-A *	5/16- 24	2.73	.49	1.15	.318	3	H7
T690NC03750-16RH3-A	T690NC03750-16RH3-A	3/8 - 16	2.95	.60	1.28	.381	3	H3
T690NC03750-16RH5-A	T690NC03750-16RH5-A	3/8 - 16	2.95	.60	1.28	.381	3	H5
—	T690NC03750-16RH7-A	3/8 - 16	2.95	.60	1.28	.381	3	H7
T690NF03750-24RH3-A	T690NF03750-24RH3-A	3/8 - 24	2.95	.60	1.28	.381	3	H3
—	T690NF03750-24RH4-A	3/8 - 24	2.95	.60	1.28	.381	3	H4
—	T690NF03750-24RH5-A	3/8 - 24	2.95	.60	1.28	.381	3	H5
—	T690NF03750-24RH6-A	3/8 - 24	2.95	.60	1.28	.381	3	H6
—	T690NF03750-24RH7-A *	3/8 - 24	2.95	.60	1.28	.381	3	H7
T690NC04375-14RH3-A	T690NC04375-14RH3-A	7/16 - 14	3.16	.71	1.49	.323	3	H3
T690NF04375-20RH3-A	T690NF04375-20RH3-A	7/16 - 20	3.16	.71	1.49	.323	3	H3
T690NF04375-20RH5-A	T690NF04375-20RH5-A	7/16 - 20	3.16	.71	1.49	.323	3	H5
T690NC05000-13RH3-A	T690NC05000-13RH3-A	1/2 - 13	3.38	.77	1.74	.367	3	H3
—	T690NC05000-13RH5-A	1/2 - 13	3.38	.77	1.74	.367	3	H5
—	T690NC05000-13RH7-A	1/2 - 13	3.38	.77	1.74	.367	3	H7
T690NF05000-20RH3-A	T690NF05000-20RH3-A	1/2 - 20	3.38	.77	1.74	.367	3	H3
—	T690NF05000-20RH5-A	1/2 - 20	3.38	.77	1.74	.367	3	H5
—	T690NF05000-20RH7-A	1/2 - 20	3.38	.77	1.74	.367	3	H7
T690NC06250-11RH3-A	T690NC06250-11RH3-A	5/8 - 11	3.81	.91	1.89	.480	3	H3
T690NF06250-18RH3-A	T690NF06250-18RH3-A *	5/8 - 18	3.81	.91	1.89	.480	3	H3
—	T690NC07500-10RH3-A	3/4 - 10	4.25	1.00	2.08	.590	3	H3
—	T690NF07500-16RH3-A	3/4 - 16	4.25	1.00	2.08	.590	3	H3

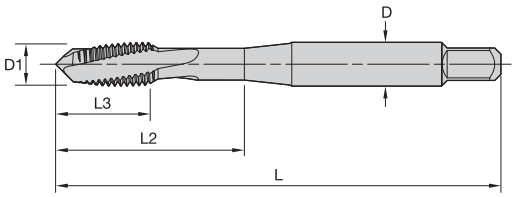
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

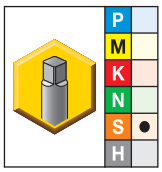
- KSS29 oxide/nitride for nickel- and cobalt-based alloys.
- KSP27 AlCrTiN for nickel- and cobalt-based alloys.

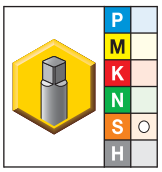






T690 • Form D Plug Chamfer • Metric ANSI • For Nickel- and Cobalt-Based Alloys





● first choice
○ alternate choice

KSP27	KSS29	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T690M025X045RD3-A	T690M025X045RD3-A	M2,5 X 0,45	1.81	.50	.56	.141	2	D3
T690M030X050RD3-A	T690M030X050RD3-A	M3 X 0,5	1.94	.63	.75	.141	2	D3
T690M035X060RD4-A	T690M035X060RD4-A	M3,5 X 0,6	1.99	.36	.72	.141	3	D4
T690M040X070RD4-A	T690M040X070RD4-A	M4 X 0,7	2.12	.32	.77	.168	3	D4
T690M050X080RD4-A	T690M050X080RD4-A	M5 X 0,8	2.38	.47	.92	.194	3	D4
T690M060X100RD5-A	T690M060X100RD5-A	M6 X 1	2.51	.46	1.01	.255	3	D5
T690MF080X100RD5-A *	T690MF080X100RD5-A *	M8 X 1	2.72	.48	1.14	.318	3	D5
T690M080X125RD5-A	T690M080X125RD5-A	M8 X 1,25	2.72	.48	1.14	.318	3	D5
T690M100X150RD6-A *	T690M100X150RD6-A	M10 X 1,5	2.94	.53	1.27	.381	3	D6
T690M120X175RD6-A	T690M120X175RD6-A	M12 X 1,75	3.38	.77	1.74	.367	3	D6

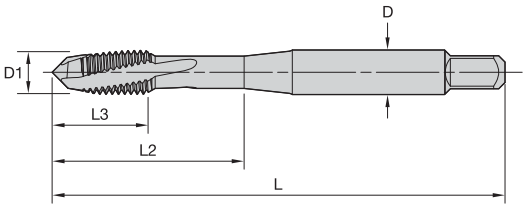
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

- KSS20 nitride for titanium and titanium alloys.
- KSSM24 TiN + CrC/C for titanium and titanium alloys.







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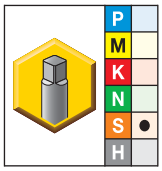
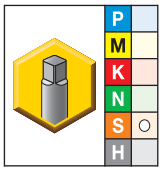




● first choice
○ alternate choice

KSSM24	KSS20	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T660NC#02-56RH2-A	T660NC#02-56RH2-A	2 - 56	1.75	.44	.50	.141	2	H2
T660NC#04-40RH2-A	T660NC#04-40RH2-A	4 - 40	1.88	.56	.69	.141	2	H2
T660NC#06-32RH2-A	T660NC#06-32RH2-A	6 - 32	1.99	.36	.71	.141	3	H2
T660NC#06-32RH3-A	T660NC#06-32RH3-A	6 - 32	1.99	.36	.71	.141	3	H3
T660NF#06-40RH2-A	T660NF#06-40RH2-A	6 - 40	1.99	.36	.71	.141	3	H2
T660NC#08-32RH2-A	T660NC#08-32RH2-A	8 - 32	2.12	.31	.76	.168	3	H2
T660NC#08-32RH3-A	T660NC#08-32RH3-A	8 - 32	2.12	.31	.76	.168	3	H3
T660NF#08-36RH2-A	T660NF#08-36RH2-A	8 - 36	2.12	.31	.76	.168	3	H2
T660NC#10-24RH3-A *	T660NC#10-24RH3-A	10 - 24	2.37	.47	.91	.194	3	H3
T660NF#10-32RH2-A	T660NF#10-32RH2-A	10 - 32	2.37	.47	.91	.194	3	H2
T660NF#10-32RH3-A *	T660NF#10-32RH3-A	10 - 32	2.37	.47	.91	.194	3	H3
T660NC02500-20RH3-A	T660NC02500-20RH3-A	1/4 - 20	2.50	.44	1.00	.255	3	H3
T660NC02500-20RH5-A	T660NC02500-20RH5-A *	1/4 - 20	2.50	.44	1.00	.255	3	H5
T660NF02500-28RH3-A *	T660NF02500-28RH3-A	1/4 - 28	2.50	.44	1.00	.255	3	H3
T660NF02500-28RH4-A	T660NF02500-28RH4-A	1/4 - 28	2.50	.44	1.00	.255	3	H4
T660NC03125-18RH3-A	T660NC03125-18RH3-A	5/16 - 18	2.72	.49	1.13	.318	3	H3
T660NC03125-18RH5-A	T660NC03125-18RH5-A	5/16 - 18	2.72	.49	1.13	.318	3	H5
T660NF03125-24RH3-A	T660NF03125-24RH3-A *	5/16 - 24	2.72	.49	1.13	.318	3	H3
T660NF03125-24RH4-A	T660NF03125-24RH4-A	5/16 - 24	2.72	.49	1.13	.318	3	H4
T660NC03750-16RH3-A	T660NC03750-16RH3-A	3/8 - 16	2.93	.59	1.26	.381	3	H3
T660NC03750-16RH5-A *	T660NC03750-16RH5-A	3/8 - 16	2.93	.59	1.26	.381	3	H5
T660NF03750-24RH3-A	T660NF03750-24RH3-A	3/8 - 24	2.93	.59	1.26	.381	3	H3
T660NF03750-24RH4-A	T660NF03750-24RH4-A	3/8 - 24	2.93	.59	1.26	.381	3	H4
T660NC04375-14RH3-A	T660NC04375-14RH3-A *	7/16 - 14	3.16	.71	1.49	.323	3	H3
T660NF04375-20RH3-A	T660NF04375-20RH3-A	7/16 - 20	3.16	.71	1.49	.323	3	H3
T660NC05000-13RH3-A	T660NC05000-13RH3-A	1/2 - 13	3.38	.77	1.74	.367	3	H3
T660NF05000-20RH3-A	T660NF05000-20RH3-A	1/2 - 20	3.38	.77	1.74	.367	3	H3
T660NF05625-18RH3-A	—	9/16 - 18	3.59	.83	1.74	.429	4	H3
T660NF05625-18RH5-A	—	9/16 - 18	3.59	.83	1.74	.429	4	H5
T660NC06250-11RH3-A	—	5/8 - 11	3.81	.91	1.89	.480	4	H3
T660NF06250-18RH3-A *	—	5/8 - 18	3.81	.91	1.89	.480	4	H3
T660NF06250-18RH5-A	—	5/8 - 18	3.81	.91	1.89	.480	4	H5
T660NC07500-10RH5-A	—	3/4 - 10	4.25	1.00	2.08	.590	4	H5
T660NF07500-16RH3-A	—	3/4 - 16	4.25	1.00	2.08	.590	4	H3
T660NF07500-16RH5-A	—	3/4 - 16	4.25	1.00	2.08	.590	4	H5
T660NC10000-08RH5-A *	—	1 - 8	5.13	1.25	2.58	.800	5	H5

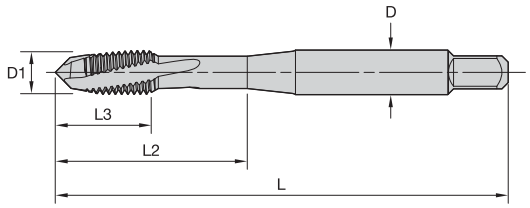
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

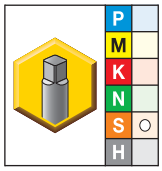
- KSS20 nitride for titanium and titanium alloys.
- KSSM24 TiN + CrC/C for titanium and titanium alloys.

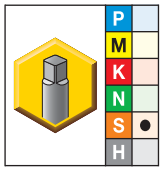






T660 • Form D Plug Chamfer • Metric ANSI • For Titanium and Titanium Alloys





● first choice
○ alternate choice

KSSM24	KSS20	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T660M025X045RD3-A *	**T660M025X045RD3-A** *	M2,5 X 0,45	1.81	.49	.56	.141	3	D3
T660M030X050RD3-A *	**T660M030X050RD3-A**	M3 X 0,5	1.94	.63	.75	.141	3	D3
T660M040X070RD4-A *	**T660M040X070RD4-A** *	M4 X 0,7	2.12	.32	.76	.168	3	D4
T660M050X080RD4-A	**T660M050X080RD4-A** *	M5 X 0,8	2.37	.47	.91	.194	3	D4
T660M060X100RD5-A	**T660M060X100RD5-A** *	M6 X 1	2.50	.16	1.00	.255	3	D5
T660M070X100RD5-A	**T660M070X100RD5-A**	M7 X 1	2.73	.52	1.15	.318	3	D5
T660M080X125RD5-A	**T660M080X125RD5-A**	M8 X 1,25	2.71	.48	1.12	.318	3	D5
T660MF100X125RD5-A *	**T660MF100X125RD5-A**	M10 X 1,25	2.92	.53	1.26	.381	3	D5
T660M100X150RD6-A	**T660M100X150RD6-A** *	M10 X 1,5	2.92	.53	1.26	.381	3	D6
T660M120X175RD6-A	**T660M120X175RD6-A**	M12 X 1,75	3.38	.77	1.74	.367	3	D6

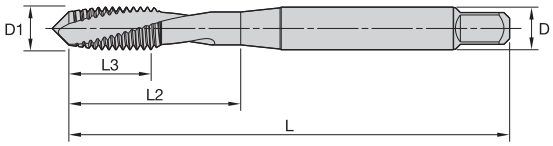
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

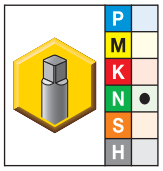
• KSMN34 TiN + CrC/C for aluminum.







T672 • Machine Screw and Fractional • Form D Plug Chamfer • DIN Length ANSI Shank • For Aluminum



● first choice
○ alternate choice

KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T672NC#02-56R2B-DA	2 - 56	1.77	.31	.71	.141	2	2B
T672NC#04-40R3B-DA	4 - 40	2.20	.31	.71	.141	2	3B
T672NC#05-40R3B-DA	5 - 40	2.20	.31	.71	.141	2	3B
T672NC#06-32R2B-DA	6 - 32	2.20	.35	.79	.141	2	2B
T672NC#08-32R2B-DA	8 - 32	2.48	.43	.83	.168	2	2B
T672NC#10-24R2B-DA	10 - 24	2.76	.47	.98	.194	2	2B
T672NF#10-32R2B-DA	10 - 32	2.76	.47	.98	.194	2	2B
T672NC02500-20R2B-DA	1/4 - 20	3.15	.59	1.18	.255	2	2B
T672NC02500-20R3B-DA	1/4 - 20	3.15	.59	1.18	.255	2	3B
T672NF02500-28R2B-DA	1/4 - 28	3.15	.59	1.18	.255	2	2B
T672NF02500-28R3B-DA	1/4 - 28	3.15	.59	1.18	.255	2	3B
T672NC03125-18R2B-DA *	5/16 - 18	3.54	.59	1.38	.318	2	2B
T672NC03125-18R3B-DA	5/16 - 18	3.54	.59	1.38	.318	2	3B
T672NF03125-24R2B-DA *	5/16 - 24	3.54	.59	1.38	.318	2	2B
T672NF03125-24R3B-DA	5/16 - 24	3.54	.59	1.38	.318	2	3B
T672NC03750-16R2B-DA *	3/8 - 16	3.94	.75	1.54	.381	2	2B
T672NC03750-16R3B-DA *	3/8 - 16	3.94	.75	1.54	.381	2	3B
T672NF03750-24R2B-DA	3/8 - 24	3.94	.75	1.54	.381	2	2B
T672NF03750-24R3B-DA	3/8 - 24	3.94	.75	1.54	.381	2	3B
T672NC04375-14R2B-DA	7/16 - 14	3.94	.71	1.61	.323	3	2B
T672NC04375-14R3B-DA	7/16 - 14	3.94	.71	1.61	.323	3	3B
T672NF04375-20R2B-DA	7/16 - 20	3.94	.71	1.61	.323	3	2B
T672NF04375-20R3B-DA	7/16 - 20	3.94	.71	1.61	.323	3	3B
T672NC05000-13R2B-DA	1/2 - 13	4.33	.91	1.85	.367	3	2B
T672NC05000-13R3B-DA	1/2 - 13	4.33	.91	1.85	.367	3	3B
T672NF05000-20R2B-DA	1/2 - 20	4.33	.91	1.85	.367	3	2B
T672NF05000-20R3B-DA	1/2 - 20	4.33	.91	1.85	.367	3	3B

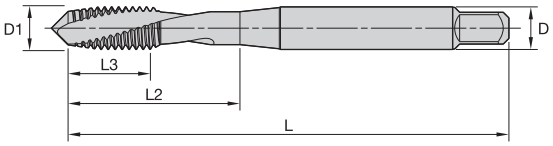
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

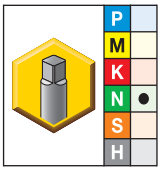
• KSMN34 TiN + CrC/C for aluminum.







T672 • Form D Plug Chamfer • Metric • DIN Length ANSI Shank • For Aluminum



● first choice
○ alternate choice

KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T672M030X050R6H-DA	M3 X 0,5	2.20	.31	.71	.141	2	6H
T672M035X060R6H-DA	M3,5 X 0,6	2.20	.35	.79	.141	2	6H
T672M040X070R6H-DA	M4 X 0,7	2.48	.43	.83	.168	2	6H
T672M050X080R6H-DA	M5 X 0,8	2.76	.47	.98	.194	2	6H
T672M060X100R6H-DA	M6 X 1	3.15	.47	1.18	.255	2	6H
T672M070X100R6H-DA	M7 X 1	3.54	.59	1.38	.318	2	6H
T672MF080X100R6H-DA *	M8 X 1	3.54	.59	1.38	.318	2	6H
T672M080X125R6H-DA	M8 X 1,25	3.54	.59	1.38	.318	2	6H
T672MF100X125R6H-DA	M10 X 1,25	3.94	.71	1.54	.381	2	6H
T672M100X150R6H-DA	M10 X 1,5	3.94	.71	1.54	.381	2	6H
T672MF120X125R6H-DA	M12 X 1,25	4.33	.83	1.73	.367	3	6H
T672MF120X150R6H-DA	M12 X 1,5	4.33	.83	1.73	.367	3	6H
T672M120X175R6H-DA	M12 X 1,75	4.33	.83	1.73	.367	3	6H

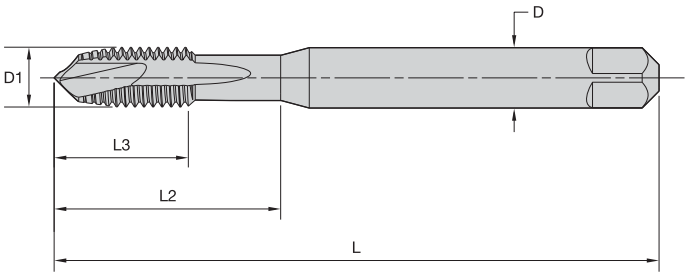
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

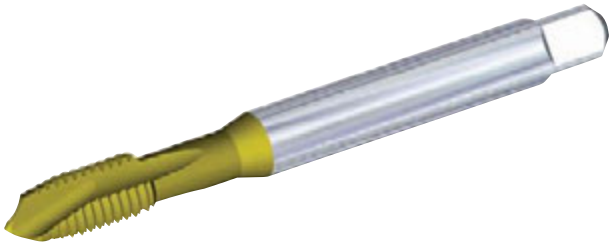
Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

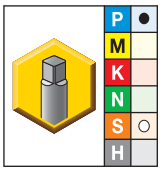
- KSP21 TiN for tapping steel 32–44 HRC.







T600 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric • For Hard Steel



● first choice
○ alternate choice

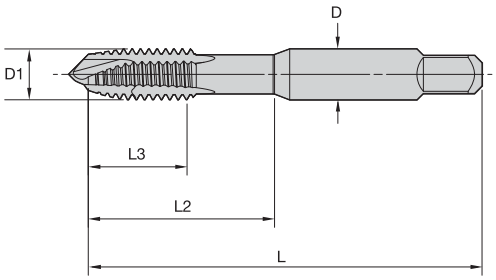
KSP21	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T600M030X050R6HX-D1	M3 X 0,5	56	11	18	3,5	2	DIN 371	6HX
T600M040X070R6HX-D1	M4 X 0,7	63	13	21	4,5	2	DIN 371	6HX
T600M050X080R6HX-D1	M5 X 0,8	70	15	25	6,0	2	DIN 371	6HX
T600M060X100R6HX-D1	M6 X 1	80	17	30	6,0	3	DIN 371	6HX
T600MF080X100R6HX-D4	M8 X 1	90	17	–	6,0	3	DIN 374	6HX
T600M080X125R6HX-D1	M8 X 1,25	90	20	35	8,0	3	DIN 371	6HX
T600MF100X100R6HX-D4	M10 X 1	90	18	–	7,0	3	DIN 374	6HX
T600MF100X125R6HX-D4	M10 X 1,25	100	22	–	7,0	3	DIN 374	6HX
T600M100X150R6HX-D1	M10 X 1,5	100	22	39	10,0	3	DIN 371	6HX
T600MF120X125R6HX-D4	M12 X 1,25	100	22	–	9,0	3	DIN 374	6HX
T600MF120X150R6HX-D4	M12 X 1,5	100	22	–	9,0	3	DIN 374	6HX
T600M120X175R6HX-D6	M12 X 1,75	110	24	–	9,0	3	DIN 376	6HX
T600MF140X150R6HX-D4	M14 X 1,5	100	22	–	11,0	3	DIN 374	6HX
T600M140X200R6HX-D6	M14 X 2	110	26	–	11,0	3	DIN 376	6HX
T600MF160X150R6HX-D4	M16 X 1,5	100	22	–	12,0	4	DIN 374	6HX
T600M160X200R6HX-D6	M16 X 2	110	27	–	12,0	4	DIN 376	6HX
T600M180X250R6HX-D6	M18 X 2	125	30	–	14,0	4	DIN 376	6HX
T600M200X250R6HX-D6	M20 X 2,5	140	32	–	16,0	4	DIN 376	6HX

Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

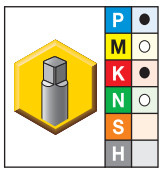
- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide
- KSU30 bright**

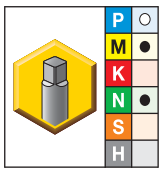


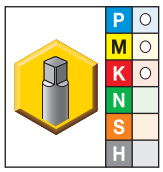




T820 • Form B Plug Chamfer • Machine Screw and Fractional • ANSI





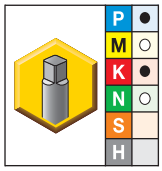


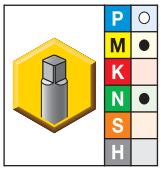
● first choice
○ alternate choice

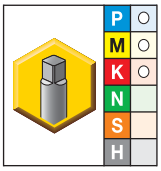
KSP32	KSMN34	KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	T820NC#02-56RH2-A	2 - 56	1.75	.39	.50	.141	2	H2
–	–	T820NC#02-56RH3-A	2 - 56	1.75	.39	.50	.141	2	H3
–	–	T820NC#02-56RH4-A	2 - 56	1.75	.39	.50	.141	2	H4
–	–	T820NC#03-48RH2-A	3 - 48	1.82	.45	.57	.141	2	H2
T820NC#04-40RH2-A	T820NC#04-40RH2-A	T820NC#04-40RH2-A	4 - 40	1.88	.51	.69	.141	2	H2
–	–	T820NC#04-40RH3-A	4 - 40	1.88	.51	.69	.141	2	H3
–	–	T820NC#04-40RH4-A	4 - 40	1.88	.51	.69	.141	2	H4
T820NC#04-40RH5-A	–	T820NC#04-40RH5-A	4 - 40	1.88	.51	.69	.141	2	H5
–	–	T820NC#04-40RH6-A	4 - 40	1.88	.51	.69	.141	2	H6
–	–	T820NF#04-48RH2-A	4 - 48	1.88	.51	.69	.141	2	H2
–	–	T820NF#04-48RH4-A	4 - 48	1.88	.51	.69	.141	2	H4
–	–	T820NC#05-40RH2-A	5 - 40	1.94	.58	.75	.141	2	H2
–	–	T820NC#06-32RH2-A	6 - 32	1.99	.38	.71	.141	2	H2
T820NC#06-32RH3-A	T820NC#06-32RH3-A	T820NC#06-32RH3-A	6 - 32	1.99	.38	.71	.141	2	H3
–	–	T820NC#06-32RH4-A	6 - 32	1.99	.38	.71	.141	2	H4
–	–	T820NC#06-32RH5-A	6 - 32	1.99	.38	.71	.141	2	H5
–	–	T820NC#06-32RH6-A	6 - 32	1.99	.38	.71	.141	2	H6
–	–	T820NC#06-32RH7-A *	6 - 32	1.99	.38	.71	.141	2	H7
–	–	T820NF#06-40RH2-A	6 - 40	1.99	.38	.71	.141	2	H2
–	–	T820NF#06-40RH3-A	6 - 40	1.99	.38	.76	.141	2	H3
–	–	T820NF#08-36RH2-A	8 - 36	2.11	.38	.76	.168	2	H2
–	–	T820NC#08-32RH2-A	8 - 32	2.12	.38	.76	.168	2	H2
T820NC#08-32RH3-A	T820NC#08-32RH3-A	T820NC#08-32RH3-A	8 - 32	2.12	.38	.76	.168	2	H3
T820NC#08-32RH4-A	–	–	8 - 32	2.12	.38	.76	.168	2	H4
–	–	T820NC#08-32RH5-A	8 - 32	2.12	.38	.76	.168	2	H5
–	–	T820NC#08-32RH6-A	8 - 32	2.12	.38	.76	.168	2	H6
–	–	T820NC#08-32RH7-A	8 - 32	2.12	.38	.76	.168	2	H7
T820NF#10-32RH3-A	T820NF#10-32RH3-A	T820NF#10-32RH3-A	10 - 32	2.36	.50	.91	.194	2	H3
–	–	T820NF#10-32RH4-A	10 - 32	2.36	.50	.91	.194	2	H4
–	–	T820NF#10-32RH5-A	10 - 32	2.36	.50	.91	.194	2	H5
–	–	T820NF#10-32RH6-A	10 - 32	2.36	.50	.91	.194	2	H6
–	–	T820NF#10-32RH7-A	10 - 32	2.36	.50	.91	.194	2	H7

(continued)

(T820 • Form B Plug Chamfer • Machine Screw and Fractional • ANSI — continued)





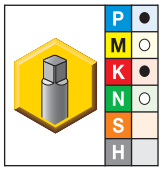


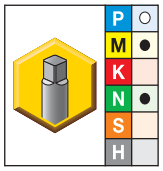
● first choice
○ alternate choice

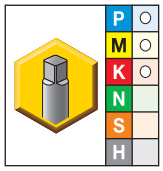
KSP32	KSMN34	KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
T820NC#10-24RH3-A	T820NC#10-24RH3-A	T820NC#10-24RH3-A	10 - 24	2.37	.50	.91	.194	2	H3
—	—	T820NC#10-24RH5-A	10 - 24	2.37	.50	.91	.194	2	H5
—	—	T820NC#10-24RH7-A	10 - 24	2.37	.50	.91	.194	2	H7
—	—	T820NF#12-28RH3-A	12 - 28	2.37	.50	.96	.220	2	H3
—	—	T820NC02500-20RH2-A	1/4 - 20	2.50	.63	1.00	.255	3	H2
T820NC02500-20RH3-A	T820NC02500-20RH3-A	T820NC02500-20RH3-A	1/4 - 20	2.50	.63	1.00	.255	3	H3
—	—	T820NC02500-20RH5-A	1/4 - 20	2.50	.63	1.00	.255	3	H5
—	—	T820NC02500-20RH7-A	1/4 - 20	2.50	.63	1.00	.255	3	H7
—	—	T820NF02500-28RH2-A	1/4 - 28	2.50	.63	1.00	.255	3	H2
T820NF02500-28RH3-A	T820NF02500-28RH3-A	T820NF02500-28RH3-A	1/4 - 28	2.50	.63	1.00	.255	3	H3
—	—	T820NF02500-28RH4-A	1/4 - 28	2.50	.63	1.00	.255	3	H4
—	—	T820NF02500-28RH5-A	1/4 - 28	2.50	.63	1.01	.255	3	H5
—	—	T820NF02500-28RH6-A	1/4 - 28	2.50	.63	1.01	.255	3	H6
—	—	T820NF02500-28RH7-A	1/4 - 28	2.50	.63	1.01	.255	3	H7
T820NC03125-18RH3-A	T820NC03125-18RH3-A	T820NC03125-18RH3-A	5/16 - 18	2.72	.69	1.14	.318	3	H3
—	—	T820NC03125-18RH5-A	5/16 - 18	2.72	.69	1.14	.318	3	H5
—	—	T820NC03125-18RH7-A	5/16 - 18	2.72	.69	1.14	.318	3	H7
T820NF03125-24RH3-A	T820NF03125-24RH3-A	T820NF03125-24RH3-A	5/16 - 24	2.72	.69	1.14	.318	3	H3
—	—	T820NF03125-24RH4-A	5/16 - 24	2.72	.69	1.14	.318	3	H4
—	—	T820NF03125-24RH5-A	5/16 - 24	2.72	.69	1.14	.318	3	H5
—	—	T820NF03125-24RH6-A	5/16 - 24	2.72	.69	1.14	.318	3	H6
—	—	T820NF03125-24RH7-A	5/16 - 24	2.72	.69	1.14	.318	3	H7
T820NC03750-16RH3-A	T820NC03750-16RH3-A	T820NC03750-16RH3-A	3/8 - 16	2.94	.75	1.27	.381	3	H3
—	—	T820NC03750-16RH5-A	3/8 - 16	2.94	.75	1.27	.381	3	H5
—	—	T820NC03750-16RH7-A	3/8 - 16	2.94	.75	1.27	.381	3	H7
T820NF03750-24RH3-A	T820NF03750-24RH3-A	T820NF03750-24RH3-A	3/8 - 24	2.94	.75	1.27	.381	3	H3
—	—	T820NF03750-24RH4-A	3/8 - 24	2.94	.75	1.27	.381	3	H4
—	—	T820NF03750-24RH5-A	3/8 - 24	2.94	.75	1.27	.381	3	H5
—	—	T820NF03750-24RH6-A	3/8 - 24	2.94	.75	1.27	.381	3	H6
—	—	T820NF03750-24RH7-A	3/8 - 24	2.94	.75	1.27	.381	3	H7
—	T820NC04375-14RH3-A	T820NC04375-14RH3-A	7/16 - 14	3.16	.88	1.49	.323	3	H3
—	—	T820NC04375-14RH5-A	7/16 - 14	3.16	.88	1.49	.323	3	H5
—	T820NF04375-20RH3-A	T820NF04375-20RH3-A	7/16 - 20	3.16	.88	1.49	.323	3	H3
—	—	T820NF04375-20RH5-A	7/16 - 20	3.16	.88	1.49	.323	3	H5
—	—	T820NF04375-20RH6-A	7/16 - 20	3.16	.88	1.49	.323	3	H6
—	—	T820NF04375-20RH7-A	7/16 - 20	3.16	.88	1.49	.323	3	H7
T820NC05000-13RH3-A	T820NC05000-13RH3-A	T820NC05000-13RH3-A	1/2 - 13	3.38	.94	1.74	.367	3	H3
—	—	T820NC05000-13RH5-A	1/2 - 13	3.38	.94	1.74	.367	3	H5
—	—	T820NC05000-13RH7-A	1/2 - 13	3.38	.94	1.74	.367	3	H7
T820NF05000-20RH3-A	T820NF05000-20RH3-A	T820NF05000-20RH3-A	1/2 - 20	3.38	.94	1.74	.367	3	H3
—	—	T820NF05000-20RH5-A	1/2 - 20	3.38	.94	1.74	.367	3	H5
—	—	T820NF05000-20RH6-A	1/2 - 20	3.38	.94	1.74	.367	3	H6
—	—	T820NF05000-20RH7-A	1/2 - 20	3.38	.94	1.74	.367	3	H7
T820NC05625-12RH3-A	—	T820NC05625-12RH3-A	9/16 - 12	3.59	1.00	1.74	.429	3	H3
—	T820NF05625-18RH3-A	T820NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
T820NC06250-11RH3-A	T820NC06250-11RH3-A	T820NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
—	—	T820NC06250-11RH5-A	5/8 - 11	3.81	1.09	1.89	.480	3	H5
—	—	T820NC06250-11RH7-A	5/8 - 11	3.81	1.09	1.89	.480	3	H7
T820NF06250-18RH3-A	—	T820NF06250-18RH3-A	5/8 - 18	3.81	1.09	1.89	.480	3	H3
T820NF06250-18RH5-A *	—	T820NF06250-18RH5-A	5/8 - 18	3.81	1.09	1.89	.480	3	H5
—	—	T820NF06250-18RH6-A	5/8 - 18	3.81	1.09	1.89	.480	3	H6
T820NC07500-10RH3-A	T820NC07500-10RH3-A	T820NC07500-10RH3-A	3/4 - 10	4.25	1.22	2.08	.590	3	H3

(continued)

(T820 • Form B Plug Chamfer • Machine Screw and Fractional • ANSI — continued)







● first choice
○ alternate choice

KSP32	KSMN34	KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
T820NF07500-16RH3-A	**T820NF07500-16RH3-A**	**T820NF07500-16RH3-A**	3/4 - 16	4.25	1.22	2.08	.590	3	H3
T820NC08750-9RH4-A	**T820NC08750-9RH4-A**	**—**	7/8 - 9	4.69	1.34	2.30	.697	3	H4
—	**—**	**T820NF08750-14RH4-A**	7/8 - 14	4.69	1.34	2.30	.697	3	H4
T820NC10000-8RH5-A	**T820NC10000-8RH5-A**	**T820NC10000-8RH5-A**	1 - 8	5.13	1.50	2.58	.800	3	H5
—	**—**	**T820NF10000-12RH4-A**	1 - 12	5.13	1.50	2.58	.800	3	H4
—	**—**	**T820NC11250-7RH6-A**	1 1/8 - 7	5.44	1.71	2.56	.895	4	H6
—	**—**	**T820NF11250-12RH5-A**	1 1/8 - 12	5.44	1.71	2.56	.895	4	H5
—	**—**	**T820NC12500-7RH6-A**	1 1/4 - 7	5.75	1.71	2.56	1.021	4	H6

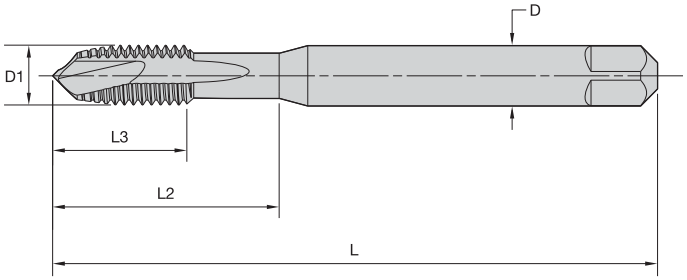
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
**Bright taps (KSU30) available.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

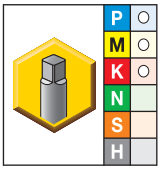
• KSP39 oxide







T820 • DIN 371 and 376 • Form B Plug Chamfer • UNC/UNF



● first choice
○ alternate choice

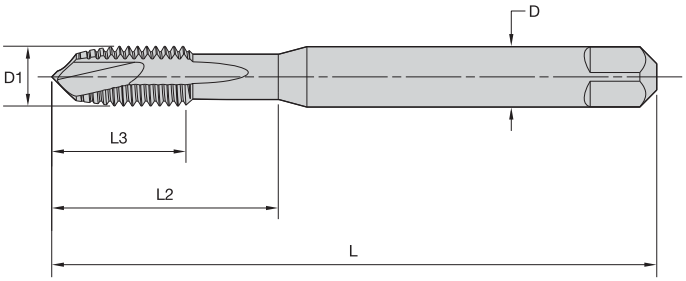
KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820NC#04-40R2B-D1	4 - 40	56	8	18	3,5	2	DIN 371	2B
T820NC#05-40R2B-D1	5 - 40	56	9	20	4,0	2	DIN 371	2B
T820NC#06-32R2B-D1	6 - 32	56	9	20	4,0	2	DIN 371	2B
T820NF#06-40R2B-D1	6 - 40	56	9	20	4,0	2	DIN 371	2B
T820NC#08-32R2B-D1	8 - 32	63	11	21	4,5	2	DIN 371	2B
T820NC#10-24R2B-D1	10 - 24	70	12	25	6,0	2	DIN 371	2B
T820NF#10-32R2B-D1	10 - 32	70	12	25	6,0	2	DIN 371	2B
T820NC02500-20R2B-D1	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
T820NF02500-28R2B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
T820NC03125-18R2B-D1	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
T820NF03125-24R2B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
T820NC03750-16R2B-D1	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
T820NF03750-24R2B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
T820NC04375-14R2B-D6	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
T820NF04375-20R2B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
T820NC05000-13R2B-D6	1/2 - 13	110	23	47	9,0	3	DIN 376	2B
T820NF05000-20R2B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	2B
T820NC05625-12R2B-D6	9/16 - 12	110	25	53	11,0	3	DIN 376	2B
T820NF05625-18R2B-D6	9/16 - 18	110	25	53	11,0	3	DIN 376	2B
T820NC06250-11R2B-D6	5/8 - 11	110	24	51	12,0	3	DIN 376	2B
T820NF06250-18R2B-D6	5/8 - 18	110	24	51	12,0	3	DIN 376	2B
T820NC07500-10R2B-D6	3/4 - 10	140	30	64	16,0	3	DIN 376	2B
T820NF07500-16R2B-D6	3/4 - 16	140	30	64	16,0	3	DIN 376	2B
T820NC08750-9R2B-D6	7/8 - 9	140	34	71	18,0	3	DIN 376	2B
T820NF08750-14R2B-D6	7/8 - 14	140	34	71	18,0	3	DIN 376	2B
T820NC10000-8R2B-D6	1 - 8	160	38	81	18,0	3	DIN 376	2B
T820NF10000-12R2B-D6	1 - 12	160	38	81	18,0	3	DIN 376	2B

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

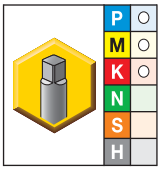
• KSP39 oxide







T820 • DIN 371 and 376 • Form B Plug Chamfer • UNJC/UNJF



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820NC#04-40R3B-D1	4 - 40	56	8	18	3,5	2	DIN 371	3B
T820NC#06-32R3B-D1	6 - 32	56	9	20	4,0	2	DIN 371	3B
T820NC#08-32R3B-D1	8 - 32	63	11	21	4,5	2	DIN 371	3B
T820NF#10-32R3B-D1	10 - 32	70	12	25	6,0	2	DIN 371	3B
T820NF02500-28R3B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
T820NF03125-24R3B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
T820NF03750-24R3B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
T820NF04375-20R3B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
T820NF05000-20R3B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	3B

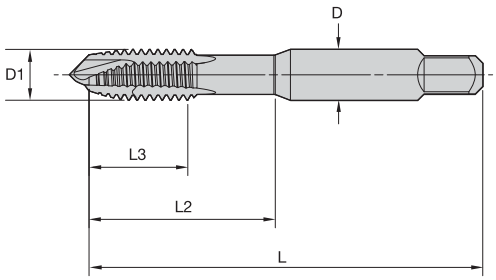
NOTE: Internal UNJC/UNJF threads may be produced with ground thread UNC/UNF taps.

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

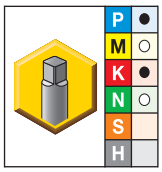
- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide
- KSU30 bright**

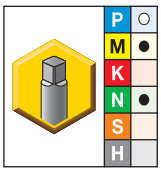


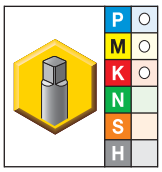




T822 • Form B Plug Chamfer • Machine Screw • 3 Flute • ANSI







● first choice
○ alternate choice

KSP32	KSMN34	KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	T822NC#05-40RH2-A	5 - 40	1.94	.58	.75	.141	3	H2
–	–	T822NC#06-32RH2-A	6 - 32	1.99	.38	.71	.141	3	H2
T822NC#06-32RH3-A	T822NC#06-32RH3-A	T822NC#06-32RH3-A	6 - 32	1.99	.38	.71	.141	3	H3
–	–	T822NC#06-32RH4-A	6 - 32	1.99	.38	.71	.141	3	H4
–	–	T822NC#06-32RH5-A	6 - 32	1.99	.38	.71	.141	3	H5
–	–	T822NC#06-32RH6-A	6 - 32	1.99	.38	.71	.141	3	H6
–	–	T822NC#06-32RH7-A	6 - 32	1.99	.38	.71	.141	3	H7
–	–	T822NF#06-40RH2-A	6 - 40	1.99	.38	.71	.141	3	H2
–	–	T822NF#06-40RH3-A	6 - 40	1.99	.38	.71	.141	3	H3
–	–	T822NC#08-32RH2-A	8 - 32	2.12	.38	.76	.168	3	H2
T822NC#08-32RH3-A *	T822NC#08-32RH3-A	T822NC#08-32RH3-A	8 - 32	2.12	.38	.76	.168	3	H3
T822NC#08-32RH4-A	–	–	8 - 32	2.12	.38	.76	.168	3	H4
–	–	T822NC#08-32RH5-A	8 - 32	2.12	.38	.76	.168	3	H5
–	–	T822NC#08-32RH6-A	8 - 32	2.12	.38	.76	.168	3	H6
–	–	T822NC#08-32RH7-A	8 - 32	2.12	.38	.76	.168	3	H7
–	–	T822NF#08-36RH2-A	8 - 36	2.12	.38	.76	.168	3	H2
T822NF#10-32RH3-A	T822NF#10-32RH3-A *	T822NF#10-32RH3-A	10 - 32	2.36	.50	.91	.194	3	H3
–	–	T822NF#10-32RH4-A	10 - 32	2.36	.50	.91	.194	3	H4
–	–	T822NF#10-32RH5-A	10 - 32	2.36	.50	.91	.194	3	H5
–	–	T822NF#10-32RH6-A	10 - 32	2.36	.50	.91	.194	3	H6
–	–	T822NF#10-32RH7-A	10 - 32	2.36	.50	.91	.194	3	H7
T822NC#10-24RH3-A	T822NC#10-24RH3-A	T822NC#10-24RH3-A *	10 - 24	2.37	.50	.91	.194	3	H3
–	–	T822NC#10-24RH5-A	10 - 24	2.37	.50	.91	.194	3	H5
–	–	T822NC#10-24RH7-A	10 - 24	2.37	.50	.91	.194	3	H7
–	–	T822NF#12-28RH3-A *	12 - 28	2.37	.50	.96	.220	3	H3

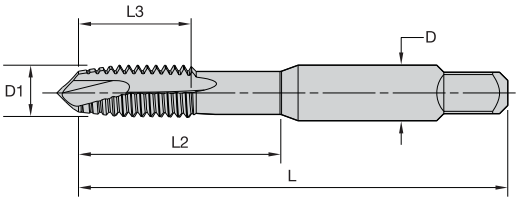
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
**Bright taps (KSU30) available.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide
- KSU30 bright**







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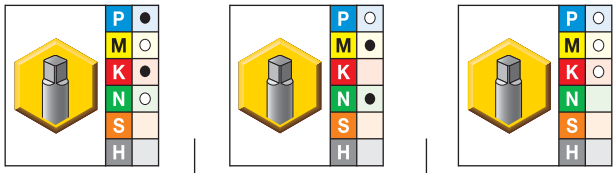


● first choice
○ alternate choice

KSP32	KSMN34	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T820M030X050RD3-A	T820M030X050RD3-A	T820M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
–	–	T820M035X060RD4-A	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
T820M040X070RD4-A	T820M040X070RD4-A	T820M040X070RD4-A	M4 X 0,7	2.12	.38	.76	.168	2	D4
T820M050X080RD4-A	T820M050X080RD4-A	T820M050X080RD4-A	M5 X 0,8	2.37	.50	.91	.194	2	D4
T820M060X100RD5-A	T820M060X100RD5-A	T820M060X100RD5-A	M6 X 1	2.50	.63	1.00	.255	3	D5
–	–	T820M070X100RD5-A	M7 X 1	2.72	.69	1.15	.318	3	D5
–	–	T820MF080X100RD5-A	M8 X 1,0	2.71	.69	1.12	.318	3	D5
T820M080X125RD5-A	T820M080X125RD5-A	T820M080X125RD5-A	M8 X 1,25	2.71	.69	1.13	.318	3	D5
–	–	T820MF100X125RD5-A	M10 X 1,25	2.92	.74	1.25	.381	3	D5
T820M100X150RD6-A	T820M100X150RD6-A *	T820M100X150RD6-A	M10 X 1,50	2.92	.75	1.26	.381	3	D6
–	–	T820MF120X125RD6-A	M12 X 1,25	3.38	.94	1.74	.367	3	D6
–	–	T820MF120X150RD6-A	M12 X 1,5	3.38	.94	1.74	.367	3	D6
T820M120X175RD6-A	T820M120X175RD6-A	T820M120X175RD6-A	M12 X 1,75	3.38	.94	1.74	.367	3	D6
–	–	T820MF140X150RD6-A	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
–	–	T820M140X200RD7-A	M14 X 2,0	3.59	1.00	1.74	.429	3	D7
–	T820MF160X150RD6-A	T820MF160X150RD6-A	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
T820M160X200RD7-A	T820M160X200RD7-A	T820M160X200RD7-A	M16 X 2,0	3.81	1.09	1.89	.480	3	D7

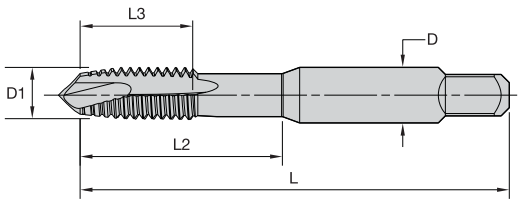
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
**Bright taps (KSU30) available.

Shank Tolerance

D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide
- KSU30 bright**







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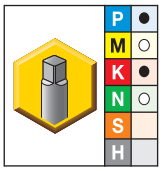
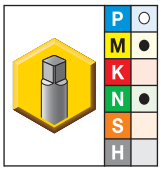
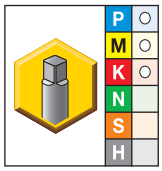






● first choice
○ alternate choice

KSP32	KSMN34	KSP39	D1 size	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T822M030X050RD3-A	**T822M030X050RD3-A**	**T822M030X050RD3-A**	M3 X 0,5	1.94	.58	.75	.141	3	D3
—	**—**	**T822M035X060RD4-A ***	M3,5 X 0,6	1.99	.38	.71	.141	3	D4
T822M040X070RD4-A *	**T822M040X070RD4-A ***	**T822M040X070RD4-A ***	M4 X 0,7	2.12	.38	.76	.168	3	D4
T822M050X080RD4-A	**T822M050X080RD4-A**	**T822M050X080RD4-A**	M5 X 0,8	2.37	.50	.91	.194	3	D4

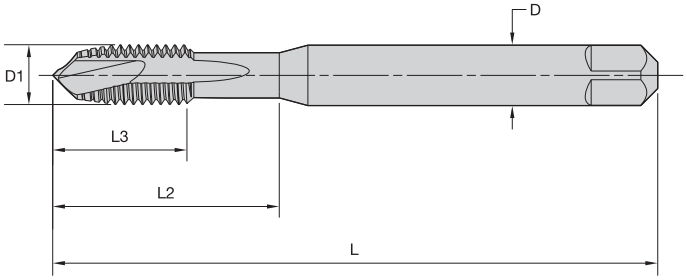
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
**Bright taps (KSU30) available.

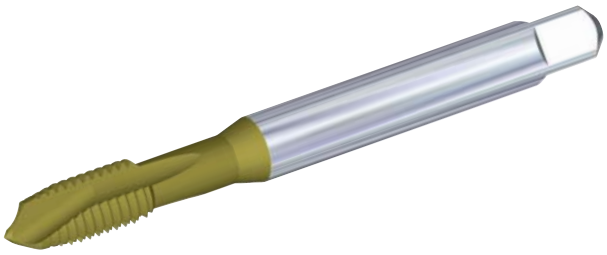
Shank Tolerance

D inch	tolerance
0.141–0.635	+0, -.0015
>0.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

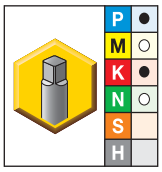
- KSP32 TiCN/TiN
- KSP39 oxide

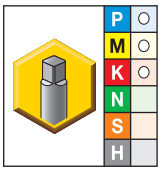






T820 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric



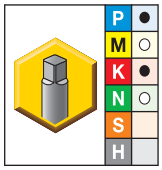


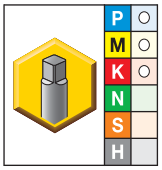
● first choice
○ alternate choice

KSP32	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T820M020X040R6H-D1	T820M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
–	T820M020X040R6G-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
–	T820M025X045R6H-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
–	T820M025X045R6G-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
T820M030X050R6H-D1	T820M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
–	T820M030X050R6G-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
–	T820M035X060R6H-D1	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
–	T820MF040X050R6H-D4	M4 X 0,5	63	10	21	2,8	2	DIN 374	6H
T820M040X070R6H-D1	T820M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	2	DIN 371	6H
–	T820M040X070R6G-D1	M4 X 0,7	63	11	21	4,5	2	DIN 371	6G
–	T820MF050X050R6H-D4	M5 X 0,5	70	12	25	3,5	2	DIN 374	6H
T820M050X080R6H-D1	T820M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	2	DIN 371	6H
–	T820M050X080R6G-D1	M5 X 0,8	70	12	25	6,0	2	DIN 371	6G
–	T820MF060X050R6H-D4	M6 X 0,5	80	12	30	4,5	3	DIN 374	6H
–	T820MF060X075R6H-D4	M6 X 0,75	80	12	30	4,5	3	DIN 374	6H
–	T820M060X100R6H-D6	M6 X 1	80	12	30	4,5	3	DIN 376	6H
T820M060X100R6H-D1	T820M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
–	T820M060X100R6G-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6G
T820M070X100R6H-D1	T820M070X100R6H-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6H
–	T820M070X100R6G-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6G
–	T820MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
–	T820M080X125R6H-D6	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
T820M080X125R6H-D1	T820M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
–	T820M080X125R6G-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
–	T820MF100X100R6H-D4	M10 X 1	90	15	35	7,0	3	DIN 374	6H
–	T820MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
–	T820M100X150R6H-D6	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
T820M100X150R6H-D1	T820M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H

(continued)

(T820 • DIN 371, 374, and 376 • Form B Plug Chamfer • Metric — continued)





● first choice
○ alternate choice

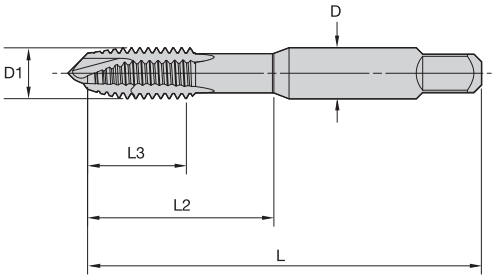
KSP32	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
–	**T820M100X150R6G-D1**	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
–	**T820MF120X100R6H-D4**	M12 X 1	100	21	39	9,0	3	DIN 374	6H
–	**T820MF120X125R6H-D4**	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
–	**T820MF120X150R6H-D4**	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
T820M120X175R6H-D6	**T820M120X175R6H-D6**	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
–	**T820M120X175R6G-D6**	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G
–	**T820MF140X100R6H-D4**	M14 X 1	100	21	47	11,0	3	DIN 374	6H
–	**T820MF140X125R6H-D4**	M14 X 1,25	100	21	47	11,0	3	DIN 374	6H
–	**T820MF140X150R6H-D4**	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T820M140X200R6H-D6	**T820M140X200R6H-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6H
–	**T820M140X200R6G-D6**	M14 X 2	110	24	52	11,0	3	DIN 376	6G
–	**T820MF160X100R6H-D4**	M16 X 1	100	21	46	12,0	3	DIN 374	6H
–	**T820MF160X150R6H-D4**	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
T820M160X200R6H-D6	**T820M160X200R6H-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6H
–	**T820M160X200R6G-D6**	M16 X 2	110	24	51	12,0	3	DIN 376	6G
–	**T820MF180X150R6H-D4**	M18 X 1,5	110	21	50	14,0	3	DIN 374	6H
–	**T820MF180X200R6H-D4**	M18 X 2	125	30	58	14,0	3	DIN 374	6H
T820M180X250R6H-D6	**T820M180X250R6H-D6**	M18 X 2,5	125	30	58	14,0	3	DIN 376	6H
–	**T820MF200X150R6H-D4**	M20 X 1,5	125	24	56	16,0	3	DIN 374	6H
–	**T820MF200X200R6H-D4**	M20 X 2	140	30	64	16,0	3	DIN 374	6H
T820M200X250R6H-D6	**T820M200X250R6H-D6**	M20 X 2,5	140	30	64	16,0	3	DIN 376	6H
–	**T820MF220X150R6H-D4**	M22 X 1,5	125	24	62	18,0	3	DIN 374	6H
–	**T820MF220X200R6H-D4**	M22 X 2	140	30	70	18,0	3	DIN 374	6H
–	**T820M220X250R6H-D6**	M22 X 2,5	140	30	70	18,0	3	DIN 376	6H
–	**T820MF240X150R6H-D4**	M24 X 1,5	140	28	67	18,0	3	DIN 374	6H
–	**T820M240X300R6H-D6**	M24 X 3	160	36	77	18,0	3	DIN 376	6H
–	**T820M270X300R6H-D6**	M27 X 3	160	36	82	20,0	4	DIN 376	6H
–	**T820M300X350R6H-D6**	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
–	**T820M330X350R6H-D6**	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
–	**T820M360X400R6H-D6**	M36 X 4	200	48	110	28,0	4	DIN 376	6H

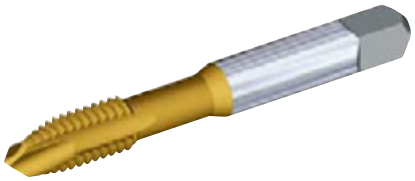
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

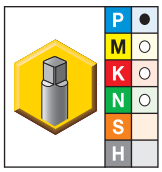
- KSU31 TiN
- KSU30 bright

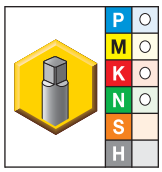






T820 • Form B Plug Chamfer • Metric • JIS





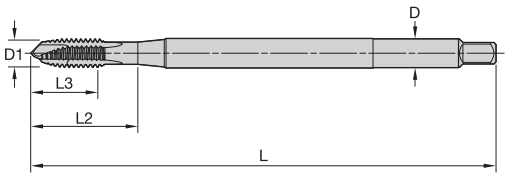
● first choice
○ alternate choice

KSU31	KSU30	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	tap class
T820M030X050R6H-J	**T820M030X050R6H-J**	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
T820M040X070R6H-J	**T820M040X070R6H-J**	M4 X 0,7	52	13	21	5,0	2	JIS	ISO 2
T820M050X080R6H-J	**T820M050X080R6H-J**	M5 X 0,8	60	16	24	5,5	2	JIS	ISO 2
T820M060X100R6H-J	**T820M060X100R6H-J**	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
T820M080X125R6H-J	**T820M080X125R6H-J**	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
T820M100X150R6H-J	**T820M100X150R6H-J**	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
–	**T820MF120X125R6H-J**	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
–	**T820MF120X150R6H-J**	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
–	**T820M120X175R6H-J**	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
–	**T820MF140X150R6H-J**	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
–	**T820M140X200R6H-J**	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
–	**T820MF160X150R6H-J**	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
–	**T820M160X200R6H-J**	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
–	**T820M180X250R6H-J**	M18 X 2,5	100	37	55	14,0	3	JIS	ISO 2
–	**T820M200X250R6H-J**	M20 X 2,5	105	37	60	15,0	3	JIS	ISO 2

Shank Tolerance

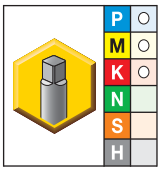
D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052







T820 • Form B Plug Chamfer • Machine Screw and Fractional • 4" Length • ANSI



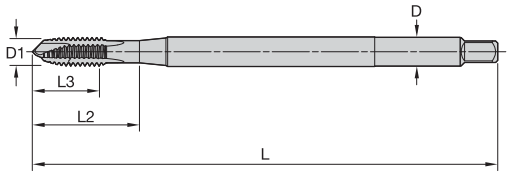
● first choice
○ alternate choice

KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
T820NC#04-40RH2-XL4	4 - 40	4.00	.56	.87	.141	2	H2
T820NC#06-32RH3-XL4	6 - 32	4.00	.38	.71	.141	2	H3
T820NC#08-32RH3-XL4	8 - 32	4.00	.38	.76	.168	2	H3
T820NC#10-24RH4-XL4	10 - 24	4.00	.50	.91	.194	2	H3
T820NF#10-32RH3-XL4	10 - 32	4.00	.50	.91	.194	2	H3
T820NC02500-20RH3-XL4	1/4 - 20	4.00	.63	1.01	.255	3	H3

Shank Tolerance

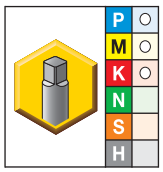
D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030







T820 • Form B Plug Chamfer • Machine Screw and Fractional • 6" Length • ANSI



● first choice
○ alternate choice

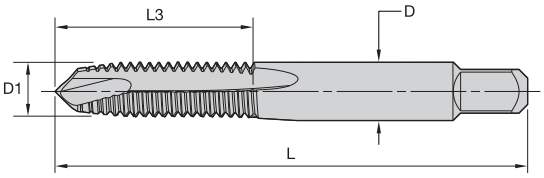
KSP39	D1 TPI	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T820NC#04-40RH2-XL6	4 - 40	6.00	.56	.87	.141	2	H2
T820NC#06-32RH3-XL6 *	6 - 32	6.00	.38	.71	.168	2	H3
T820NC#08-32RH3-XL6	8 - 32	6.00	.38	.76	.168	2	H3
T820NC#10-24RH3-XL6	10 - 24	6.00	.50	.91	.194	2	H3
T820NF#10-32RH3-XL6	10 - 32	6.00	.50	.91	.194	2	H3
T820NC02500-20RH3-XL6	1/4 - 20	6.00	.63	1.01	.255	3	H3
T820NF02500-28RH3-XL6	1/4 - 28	6.00	.63	1.01	.255	3	H3
T820NC03125-18RH3-XL6	5/16 - 18	6.00	.69	1.13	.318	3	H3
T820NF03125-24RH3-XL6	5/16 - 24	6.00	.69	1.13	.318	3	H3
T820NC03750-16RH3-XL6	3/8 - 16	6.00	.75	1.27	.381	3	H3
T820NF03750-24RH3-XL6 *	3/8 - 24	6.00	.75	1.27	.381	3	H3
T820NC04375-14RH3-XL6 *	7/16 - 14	6.00	.88	1.49	.323	3	H3
T820NF04375-20RH3-XL6 *	7/16 - 20	6.00	.88	1.49	.323	3	H3
T820NC05000-13RH3-XL6	1/2 - 13	6.00	.94	1.74	.367	3	H3
T820NF05000-20RH3-XL6	1/2 - 20	6.00	.94	1.74	.367	3	H3
T820NC06250-11RH3-XL6	5/8 - 11	6.00	1.09	1.89	.480	3	H3

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

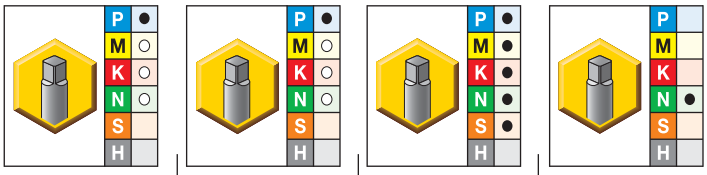
D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030







KHSST Spiral Point • Machine Screw and Fractional Sizes • Plug Chamfer Tap

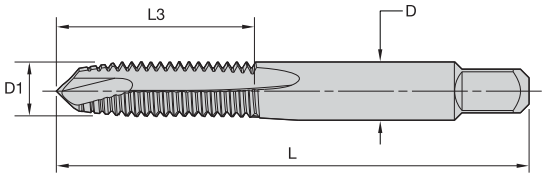


● first choice
○ alternate choice

TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28732	KHSST28733	–	KHSST28731	0 - 80	1.63	.31	.141	2	H2
–	–	–	KHSST28757	1 - 72	1.69	.38	.141	2	H2
–	KHSST09101	KHSST28252	KHSST08043	2 - 56	1.75	.44	.141	2	H2
–	–	–	KHSST08061	3 - 48	1.81	.50	.141	2	H2
KHSST28274	KHSST09103	KHSST28253	KHSST08090	4 - 40	1.88	.56	.141	2	H2
–	–	–	KHSST08104	4 - 48	1.88	.56	.141	2	H2
–	KHSST09104	–	KHSST08119	5 - 40	1.94	.63	.141	2	H2
–	KHSST09105	KHSST28254	KHSST08156	6 - 32	2.00	.69	.141	2	H2
KHSST28276	KHSST09106	KHSST28255	KHSST08157	6 - 32	2.00	.69	.141	2	H3
–	–	–	KHSST08175	6 - 40	2.00	.69	.141	2	H2
–	KHSST09108	KHSST28256	KHSST08203	8 - 32	2.13	.75	.168	2	H2
KHSST28277	KHSST09109	KHSST28257	KHSST08205	8 - 32	2.13	.75	.168	2	H3
–	–	–	KHSST28244 *	8 - 36	2.13	.75	.168	2	H2
–	–	–	KHSST08243	10 - 24	2.38	.88	.194	2	H2
KHSST09608	KHSST28113	KHSST28262	KHSST08245	10 - 24	2.38	.88	.194	2	H3
–	KHSST09111	KHSST28263	KHSST08280	10 - 32	2.38	.88	.194	2	H2
KHSST09609	KHSST09112	KHSST28264	KHSST08282	10 - 32	2.38	.88	.194	2	H3
–	–	–	KHSST28248	10 - 32	2.38	.88	.194	2	H7
–	KHSST09113	–	KHSST08296	12 - 24	2.38	.94	.220	2	H3
–	KHSST09114	–	KHSST08331	1/4 - 20	2.50	1.00	.255	2	H2
–	KHSST09115	KHSST28260	KHSST08332	1/4 - 20	2.50	1.00	.255	2	H3
KHSST09611	KHSST09116	–	KHSST08334	1/4 - 20	2.50	1.00	.255	3	H3
–	KHSST28111	–	KHSST08336	1/4 - 20	2.50	1.00	.255	2	H5
–	KHSST28112	KHSST28261	KHSST08364	1/4 - 28	2.50	1.00	.255	2	H3
–	KHSST09119	KHSST28267	KHSST08391	5/16 - 18	2.72	1.13	.318	2	H3
KHSST28275	–	–	KHSST08393	5/16 - 18	2.72	1.13	.318	3	H3
–	KHSST09120	KHSST28268	KHSST08419	5/16 - 24	2.72	1.13	.318	2	H3
KHSST09615	KHSST09121	KHSST28266	KHSST08443	3/8 - 16	2.94	1.25	.381	3	H3
–	–	–	KHSST08444	3/8 - 16	2.94	1.25	.381	3	H5
–	KHSST09122	–	KHSST08467	3/8 - 24	2.94	1.25	.381	3	H3
–	KHSST09123	KHSST28270	KHSST08484	7/16 - 14	3.16	1.44	.323	3	H3
–	KHSST09124	KHSST28271	KHSST08498	7/16 - 20	3.16	1.44	.323	3	H3
KHSST28272	KHSST09125	KHSST28258	KHSST08516	1/2 - 13	3.38	1.66	.367	3	H3
–	–	–	KHSST28245	1/2 - 13	3.38	1.66	.367	3	H5
–	KHSST09126	KHSST28259	KHSST08537	1/2 - 20	3.38	1.66	.367	3	H3
KHSST28273	KHSST09127	KHSST28269	KHSST08566	5/8 - 11	3.81	1.81	.480	3	H3
–	–	–	KHSST08578	5/8 - 18	3.81	1.81	.480	3	H3
–	KHSST09128	KHSST28265	KHSST08599	3/4 - 10	4.25	2.00	.590	3	H3
–	–	–	KHSST28249	3/4 - 10	4.25	2.00	.590	3	H5

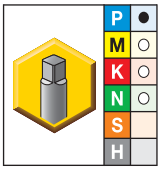
NOTE: Spiral-Point taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.







KHSST Oversized Spiral Point • Fractional Sizes • Plug Chamfer Taps

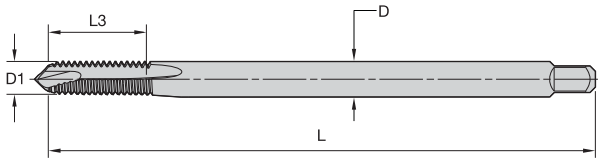


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28247	1/4 - 20	2.50	1.00	.255	2	H11
KHSST28251	5/16 - 18	2.72	1.13	.318	2	H11
KHSST28250	3/8 - 16	2.94	1.25	.381	3	H11
KHSST28246	1/2 - 13	3.38	1.66	.367	3	H11

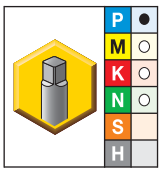
NOTE: Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.







KHSST Spiral Point 6" • Fractional Sizes • Plug Chamfer Taps

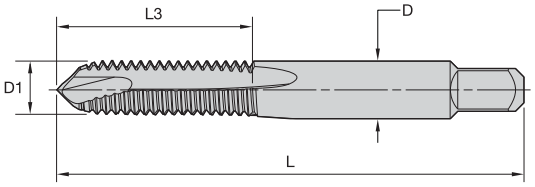


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28776	6 - 32	6.00	.69	.141	2	H3
KHSST28784	8 - 32	6.00	.75	.168	2	H3
KHSST28737	10 - 24	6.00	.88	.194	2	H3
KHSST28744	10 - 32	6.00	.88	.194	2	H3
KHSST28072	1/4 - 20	6.00	1.00	.255	2	H3
KHSST28080 *	1/4 - 28	6.00	1.00	.255	2	H3
KHSST28209	5/16 - 18	6.00	1.13	.318	2	H3
KHSST28220 *	5/16 - 24	6.00	1.13	.318	2	H3
KHSST28192	3/8 - 16	6.00	1.25	.381	3	H3
KHSST28204	3/8 - 24	6.00	1.25	.381	3	H3

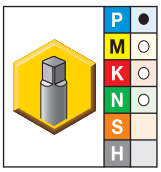
NOTE: Spiral-point taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.







KHSST Heavy-Duty Spiral Point • Machine Screw and Fractional • Plug Chamfer Taps

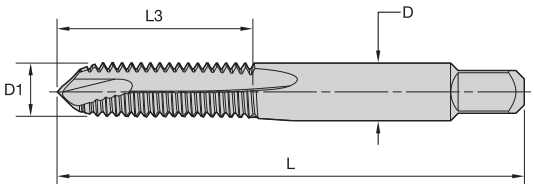


● first choice
○ alternate choice

oxide/nitride	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28526	6 - 32	2.00	.69	.141	3	H3
KHSST28527	8 - 32	2.13	.75	.168	3	H3
KHSST28531	10 - 24	2.38	.88	.194	3	H3
KHSST28532	10 - 32	2.38	.88	.194	3	H3
KHSST28529	1/4 - 20	2.50	1.00	.255	3	H3
KHSST28534	5/16 - 18	2.72	1.13	.318	3	H3
KHSST28528	1/2 - 13	3.38	1.66	.367	3	H3
KHSST28228 *	5/8 - 11	3.81	1.81	.480	3	H3
KHSST28162	3/4 - 10	4.25	2.00	.590	3	H3

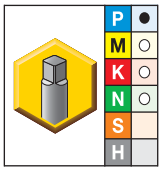
NOTE: Spiral-point taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.







KHSST Spiral Point • Machine Screw and Fractional • Bottoming-Chamfer Taps

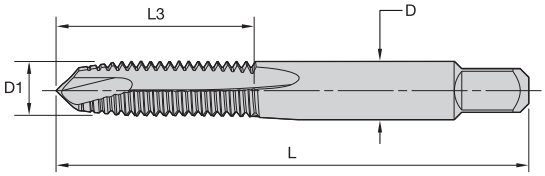


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28730	0 - 80	1.63	.31	.141	2	H2
KHSST08044	2 - 56	1.75	.44	.141	3	H2
KHSST08091	4 - 40	1.88	.56	.141	2	H2
KHSST08159	6 - 32	2.00	.69	.141	2	H2
KHSST08160	6 - 32	2.00	.69	.141	2	H3
KHSST08246	10 - 24	2.38	.88	.194	2	H3
KHSST28743	10 - 32	2.38	.88	.194	2	H2
KHSST08333	1/4 - 20	2.50	1.00	.255	2	H3
KHSST28219	5/16 - 24	2.72	1.13	.318	2	H3

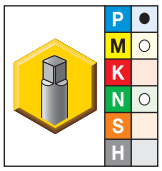
NOTE: Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

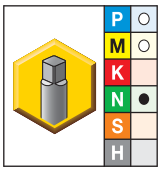






KHSST Spiral Point • Plug Chamfer Taps • Metric ANSI





● first choice
○ alternate choice

TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	**KHSST28681**	M1,6 X 0,35	1.63	.31	.1410	2	D3
–	**KHSST27711**	M2 X 0,4	1.75	.44	.1410	2	D3
–	**KHSST27719**	M2,5 X 0,45	1.81	.50	.1410	2	D3
KHSST09129	**KHSST27723**	M3 X 0,5	1.94	.63	.1410	2	D3
KHSST09130	**KHSST27731**	M4 X 0,7	2.13	.75	.1680	2	D4
KHSST09131	**KHSST27739**	M5 X 0,8	2.38	.88	.1940	2	D4
KHSST09132	**KHSST27743**	M6 X 1	2.50	1.00	.2550	2	D5
KHSST09133	**KHSST27751**	M8 X 1,25	2.72	1.13	.3180	2	D5
KHSST28152	**KHSST27759**	M10 X 1,5	2.94	1.25	.3810	3	D6
KHSST09135	**KHSST27767**	M12 X 1,75	3.38	1.66	.3670	3	D6
–	**KHSST28447**	M14 X 2	3.59	1.66	.4290	3	D7
–	**KHSST27787 ***	M16 X 2	3.81	1.81	.4800	3	D6
–	**KHSST28448**	M16 X 2	3.81	1.81	.4800	3	D7
–	**KHSST27798**	M20 X 2,5	4.47	2.00	.6520	3	D7

NOTE: Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page M203 for the recommended pitch diameter limit for 6H class of fit.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spiral-Flute Taps



High-Performance Taps for Blind-Hole Applications

- Steel and steel alloys.
- Stainless steel.
- Cast iron.
- Nickel- and cobalt-based alloys.
- Titanium and titanium alloys.
- Aluminum.
- Hard steel.

High-Performance Beyond™ Solid Carbide Taps

- Right-hand spiral flute with through coolant for efficient chip evacuation at high spindle speeds.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

High-Performance Beyond™ HSS-E-PM Taps

- Right-hand spiral flutes with the flute form and helix angle optimized for material-specific applications.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines with rigid or synchronous tap holders.

Multipurpose HSS-E GOtap™ Taps

- Advanced spiral-flute geometry designed for free cutting action and efficient chip evacuation in blind holes.
- Manufactured with high vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.

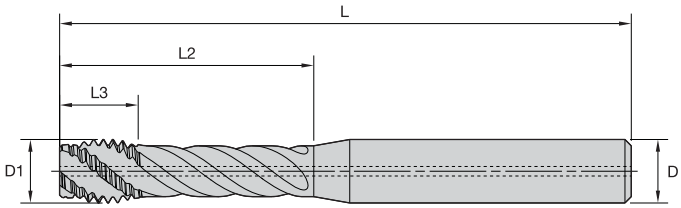


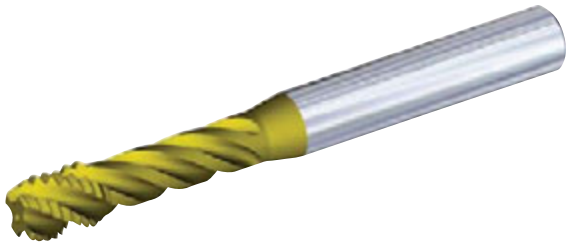
General-Purpose Taps

- HSS spiral-flute taps with a neck design for improved chip flow in blind holes.
- Wide range of sizes and pitch limits offered with PVD coatings and surface treatments.
- Heavy-duty spiral-flute taps ideal for blind-hole tapping in materials up to 30 Rc.

- KC7542 TiAlN + TiN for steel.

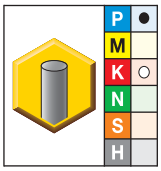






beyond™

T331 • Form C Semi-Bottoming Chamfer • Through Coolant • Inch • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T331NC2500-20R3BX	1/4 - 20	2.76	.39	.94	.250	3	3BX
T331NF2500-28R3BX	1/4 - 28	2.76	.39	.94	.250	3	3BX
T331NC3125-18R3BX	5/16 - 18	3.15	.47	1.26	.313	3	3BX
T331NC3750-16R3BX	3/8 - 16	3.54	.51	1.57	.375	4	3BX
T331NC4375-14R3BX	7/16 - 14	3.94	.59	1.73	.438	4	3BX
T331NC5000-13R3BX *	1/2 - 13	3.94	.63	1.89	.500	4	3BX

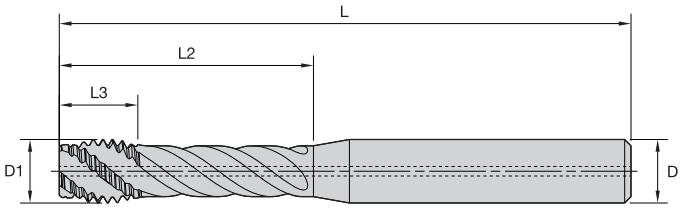
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

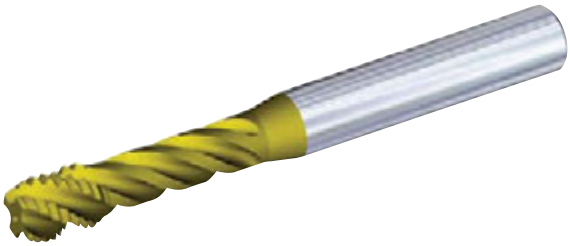
Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KC7542 TiAlN + TiN for steel.

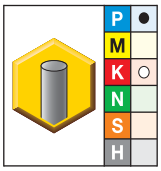






beyond

T331 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Steel



● first choice
○ alternate choice

KC7542	D1 size	L	L3	L2	D	number of flutes	class of fit
T331M060X100R6HX	M6 X 1	70	8	24	6,0	3	6HX
T331M080X125R6HX	M8 X 1,25	80	10	32	8,0	3	6HX
T331M100X150R6HX	M10 X 1,5	90	12	40	10,0	4	6HX
T331MF120X150R6HX	M12 X 1,5	100	14	48	12,0	4	6HX
T331M120X175R6HX	M12 X 1,75	100	14	48	12,0	4	6HX
T331MF140X150R6HX	M14 X 1,5	110	16	56	12,0	4	6HX
T331M140X200R6HX	M14 X 2	110	16	56	12,0	4	6HX
T331M160X200R6HX	M16 X 2	110	16	64	14,0	4	6HX

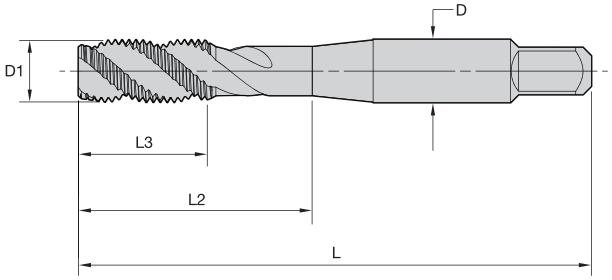
NOTE: Proprietary technology.

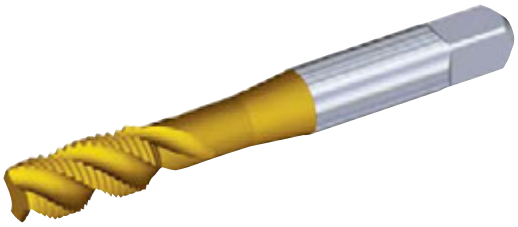
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

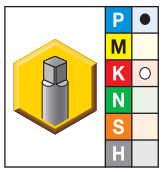
- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.

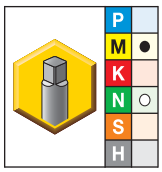






T630 • Form C Semi-Bottoming Chamfer • Metric ANSI • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630NC#02-56R3BX-A *	T630NC#02-56R3BX-A	2 - 56	1.75	.44	.49	.141	2	ANSI	3BX
T630NC#04-40R3BX-A *	T630NC#04-40R3BX-A *	4 - 40	1.88	.56	.68	.141	2	ANSI	3BX
T630NC#04-40R2BX-A	T630NC#04-40R2BX-A *	4 - 40	1.88	.56	.68	.141	2	ANSI	2BX
T630NC#06-32R3BX-A	T630NC#06-32R3BX-A	6 - 32	1.99	.36	.71	.141	3	ANSI	3BX
T630NC#06-32R2BX-A *	T630NC#06-32R2BX-A	6 - 32	1.99	.36	.71	.141	3	ANSI	2BX
T630NC#08-32R3BX-A	T630NC#08-32R3BX-A	8 - 32	2.12	.31	.76	.168	3	ANSI	3BX
T630NF#10-32R2BX-A	T630NF#10-32R2BX-A	10 - 32	2.37	.47	.91	.194	3	ANSI	2BX
T630NF#10-32R3BX-A	T630NF#10-32R3BX-A	10 - 32	2.37	.47	.91	.194	3	ANSI	3BX
T630NC#10-24R3BX-A	T630NC#10-24R3BX-A	10 - 24	2.37	.47	.91	.194	3	ANSI	3BX
T630NF02500-28R2BX-A	T630NF02500-28R2BX-A *	1/4 - 28	2.50	.44	1.00	.255	3	ANSI	2BX
T630NF02500-28R3BX-A	T630NF02500-28R3BX-A	1/4 - 28	2.50	.44	1.00	.255	3	ANSI	3BX
T630NC02500-20R2BX-A	T630NC02500-20R2BX-A	1/4 - 20	2.50	.44	1.01	.255	3	ANSI	2BX
T630NC02500-20R3BX-A	T630NC02500-20R3BX-A	1/4 - 20	2.50	.44	1.01	.255	3	ANSI	3BX
T630NF03125-24R2BX-A	T630NF03125-24R2BX-A	5/16 - 24	2.72	.49	1.13	.318	3	ANSI	2BX
T630NF03125-24R3BX-A	T630NF03125-24R3BX-A	5/16 - 24	2.72	.49	1.13	.318	3	ANSI	3BX
T630NC03125-18R2BX-A	T630NC03125-18R2BX-A	5/16 - 18	2.72	.49	1.13	.318	3	ANSI	2BX
T630NC03125-18R3BX-A	T630NC03125-18R3BX-A	5/16 - 18	2.72	.49	1.13	.318	3	ANSI	3BX
T630NF03750-24R3BX-A	T630NF03750-24R3BX-A	3/8 - 24	2.93	.59	1.26	.381	3	ANSI	3BX
T630NC03750-16R2BX-A	T630NC03750-16R2BX-A	3/8 - 16	2.94	.60	1.27	.381	3	ANSI	2BX
T630NC03750-16R3BX-A	T630NC03750-16R3BX-A	3/8 - 16	2.94	.60	1.27	.381	3	ANSI	3BX
T630NC04375-14R3BX-A	T630NC04375-14R3BX-A *	7/16 - 14	3.16	.71	1.49	.323	5	ANSI	3BX
T630NF04375-20R3BX-A	T630NF04375-20R3BX-A *	7/16 - 20	3.16	.71	1.49	.323	5	ANSI	3BX
T630NC05000-13R3BX-A	T630NC05000-13R3BX-A	1/2 - 13	3.38	.77	1.74	.367	5	ANSI	3BX
T630NC05000-13R2BX-A	T630NC05000-13R2BX-A	1/2 - 13	3.38	.77	1.74	.367	4	ANSI	2BX
T630NF05000-20R3BX-A	T630NF05000-20R3BX-A	1/2 - 20	3.38	.77	1.74	.367	4	ANSI	3BX
T630NC06250-11R3BX-A	T630NC06250-11R3BX-A	5/8 - 11	3.81	.91	1.89	.480	5	ANSI	3BX
T630NC06250-11R2BX-A	T630NC06250-11R2BX-A	5/8 - 11	3.81	.91	1.89	.480	4	ANSI	2BX
—	T630NC07500-10R3BX-A *	3/4 - 10	4.25	1.00	2.08	.590	4	ANSI	3BX
T630NC07500-10R3BX-A	—	3/4 - 10	4.25	1.00	2.08	.590	5	ANSI	3BX
T630NC07500-10R2BX-A	T630NC07500-10R2BX-A	3/4 - 10	4.25	1.00	2.08	.590	4	ANSI	2BX
T630NC10000-08R3BX-A	T630NC10000-08R3BX-A *	1 - 8	5.13	1.25	2.58	.800	5	ANSI	3BX

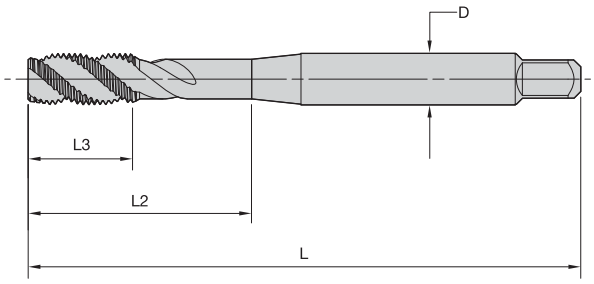
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

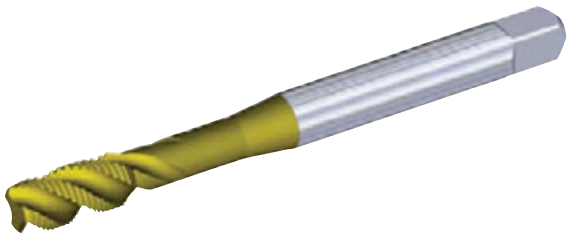
NOTE: Suggested for use in rigid and synchronous holders.

Shank Tolerance	
D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

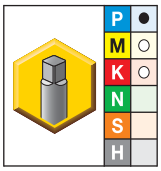
- KP6525 TiCN + TiN for steel.







T630 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	3	DIN 371	2BX
T630NF#06-40R2BX-D1	6 - 40	56	9	20	4,0	3	DIN 371	2BX
T630NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	3	DIN 371	2BX
T630NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T630NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T630NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T630NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T630NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T630NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T630NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T630NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T630NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T630NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T630NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T630NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

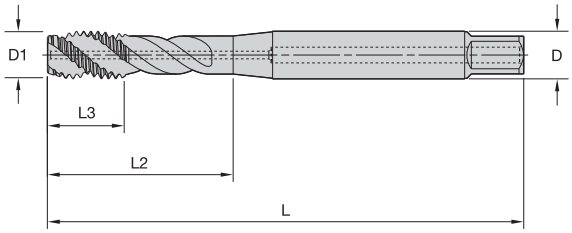
NOTE: Suggested for use in rigid and synchronous holders.

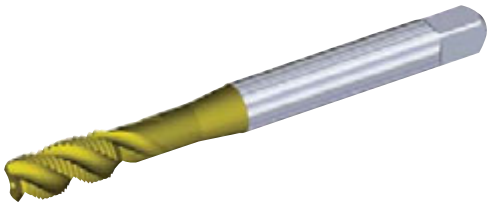
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

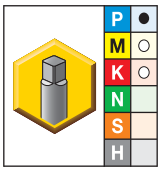
• KP6525 TiCN + TiN for steel.







T631 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	3	DIN 371	3BX
T631NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	3	DIN 371	3BX
T631NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	3	DIN 371	3BX
T631NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	3	DIN 371	3BX
T631NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	3	DIN 371	3BX
T631NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	3	DIN 371	3BX
T631NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T631NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T631NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T631NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

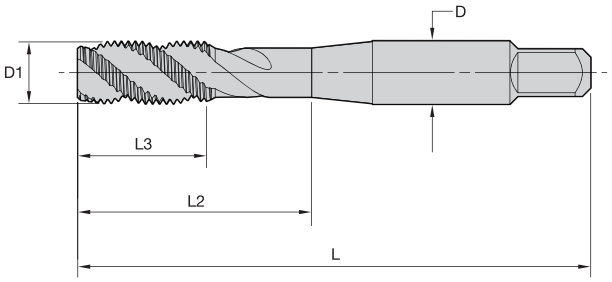
NOTE: Suggested for use in rigid and synchronous holders.

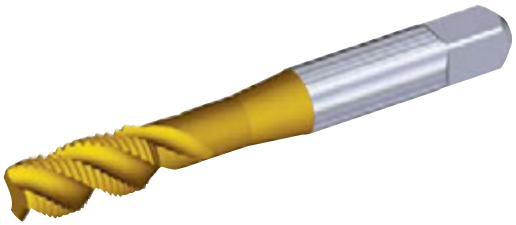
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

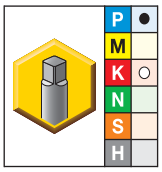
- KM6515 TiN + CrC/C for tapping stainless steel.
- KP6525 TiCN + TiN for tapping steel.

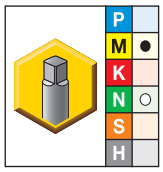






T630 • Form C Semi-Bottoming Chamfer • Metric ANSI • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	class of fit
T630M030X050R6HX-A	T630M030X050R6HX-A *	M3 X 0,5	1.94	.63	.75	.141	2	6HX
T630M040X070R6HX-A	T630M040X070R6HX-A	M4 X 0,7	2.12	.32	.76	.168	3	6HX
T630M050X080R6HX-A	T630M050X080R6HX-A *	M5 X 0,8	2.37	.47	.91	.194	3	6HX
T630M060X100R6HX-A	T630M060X100R6HX-A	M6 X 1	2.50	.46	1.01	.255	3	6HX
T630M080X125R6HX-A	T630M080X125R6HX-A	M8 X 1,25	2.71	.48	1.12	.318	3	6HX
T630M100X150R6HX-A	T630M100X150R6HX-A	M10 X 1,5	2.92	.53	1.26	.381	3	6HX
T630M120X175R6HX-A	T630M120X175R6HX-A	M12 X 1,75	3.38	.77	1.74	.367	5	6HX
T630M140X200R6HX-A	T630M140X200R6HX-A	M14 X 2	3.59	.83	1.74	.429	5	6HX
T630M160X200R6HX-A	T630M160X200R6HX-A	M16 X 2	3.81	.91	1.89	.480	5	6HX

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

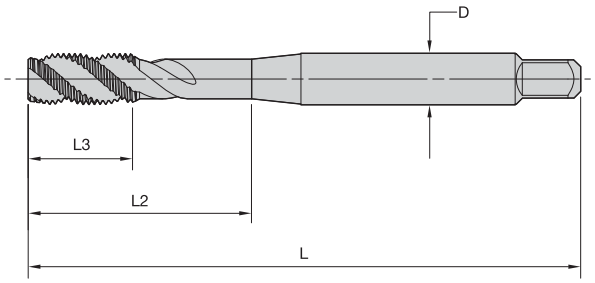
NOTE: Suggested for use in rigid and synchronous holders.

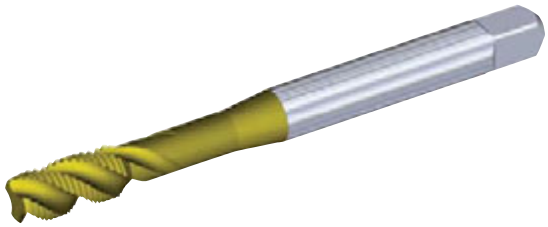
Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

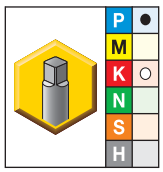
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

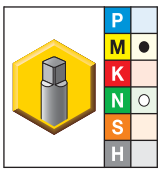






T630 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630M030X050R6HX-D1	T630M030X050R6HX-D1	M3 X 0,5	56	8	18	3,5	3	DIN 371	6HX
T630M040X070R6HX-D1	T630M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T630M050X080R6HX-D1	T630M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T630M060X100R6HX-D1	T630M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T630MF080X100R6HX-D4	T630MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T630M080X125R6HX-D1	T630M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T630MF100X100R6HX-D4	T630MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T630MF100X125R6HX-D4	T630MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T630M100X150R6HX-D1	T630M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T630MF120X150R6HX-D4	T630MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T630M120X175R6HX-D6	T630M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T630MF140X150R6HX-D4	T630MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T630M140X200R6HX-D6	T630M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T630MF160X150R6HX-D4	T630MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T630M160X200R6HX-D6	T630M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T630MF180X150R6HX-D4	T630MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T630M180X250R6HX-D6	T630M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

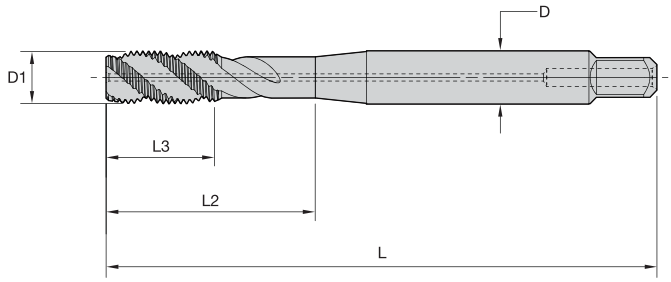
NOTE: Suggested for use in rigid and synchronous holders.

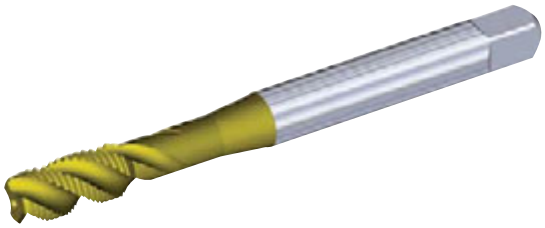
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

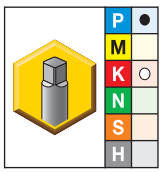
- KM6515 TiN + CrC/C for stainless steel.
- KP6525 TiCN + TiN for steel.

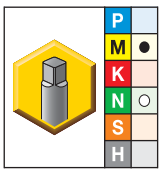






T631 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • For Steel and Stainless Steel • Rigid and Synchronous Holders





● first choice
○ alternate choice

KP6525	KM6515	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631M050X080R6HX-D1	T631M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T631M060X100R6HX-D1	T631M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T631MF080X100R6HX-D4	T631MF080X100R6HX-D4	M8 X 1	90	13	35	6,0	3	DIN 374	6HX
T631M080X125R6HX-D1	T631M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T631MF100X100R6HX-D4	T631MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	3	DIN 374	6HX
T631MF100X125R6HX-D4	T631MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	3	DIN 374	6HX
T631M100X150R6HX-D1	T631M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T631MF120X125R6HX-D4	T631MF120X125R6HX-D4	M12 X 1,25	100	15	39	9,0	4	DIN 374	6HX
T631MF120X150R6HX-D4	T631MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T631M120X175R6HX-D6	T631M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T631MF140X125R6HX-D4	T631MF140X125R6HX-D4	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T631MF140X150R6HX-D4	T631MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T631M140X200R6HX-D6	T631M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T631MF160X150R6HX-D4	T631MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX
T631M160X200R6HX-D6	T631M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T631MF180X150R6HX-D4	T631MF180X150R6HX-D4	M18 X 1,5	110	15	50	14,0	4	DIN 374	6HX
T631M180X250R6HX-D6	T631M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX

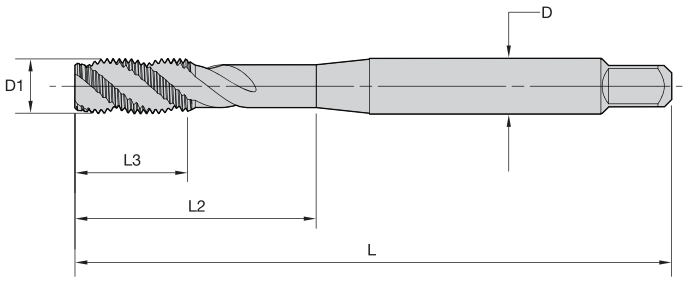
NOTE: Suggested for use in rigid and synchronous holders.

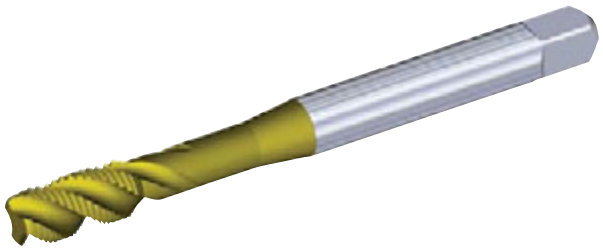
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

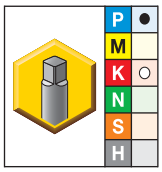
- KP6525 TiCN + TiN for tapping steel.







T632 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T632M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T632M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T632M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T632M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T632MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T632M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T632MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T632M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T632MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

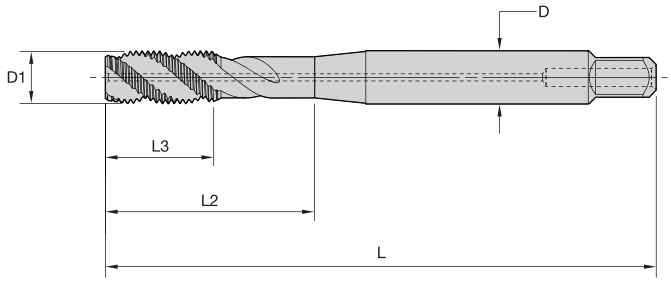
NOTE: Suggested for use in rigid and synchronous holders.

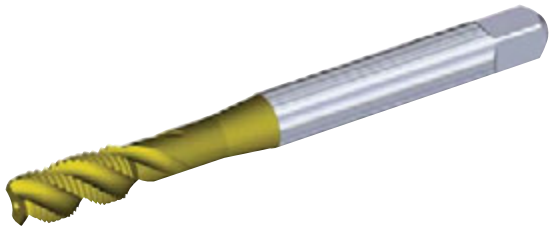
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

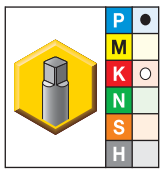
- KP6525 TiCN + TiN for tapping steel.







T633 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • For Steel • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T633M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T633M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T633M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	3	DIN 371	6HX
T633M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX
T633MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T633M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T633MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T633M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T633MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

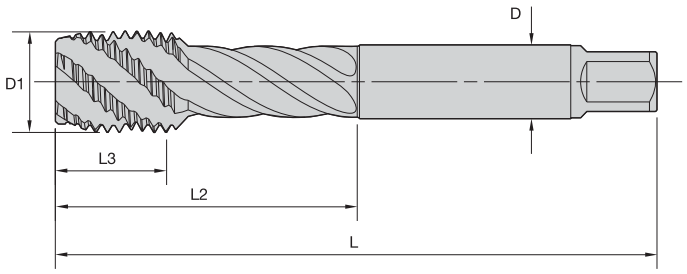
NOTE: Suggested for use in rigid and synchronous holders.

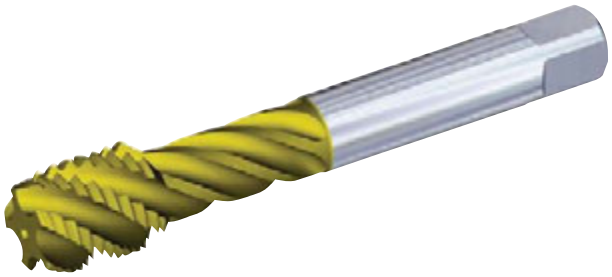
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

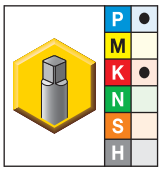
- KP6525 TiCN + TiN for tapping steel and cast iron.







T630 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T630M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T630M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T630M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T630M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T630M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

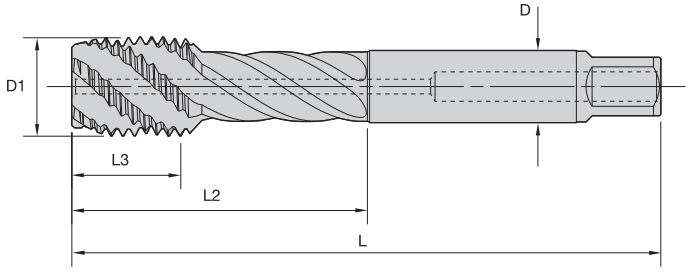
NOTE: Suggested for use in rigid and synchronous holders.

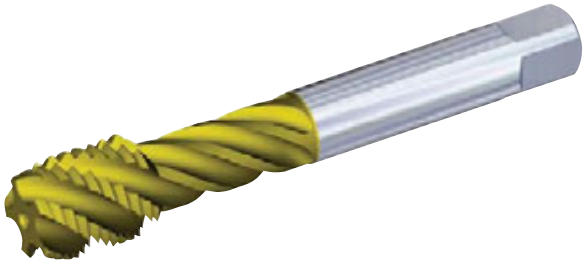
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

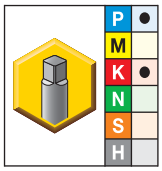
- KP6525 TiCN + TiN for tapping steel and cast iron.







T631 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T631M240X300R6HX-D6	M24 X 3	160	30	77	18,0	5	DIN 376	6HX
T631M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T631M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T631M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T631M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	5	DIN 376	6HX

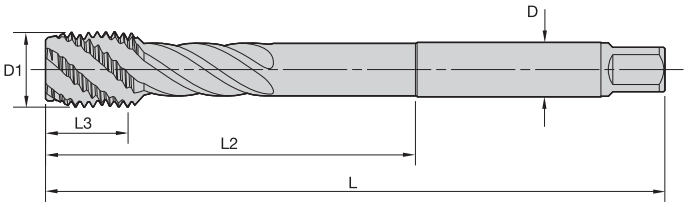
NOTE: Suggested for use in rigid and synchronous holders.

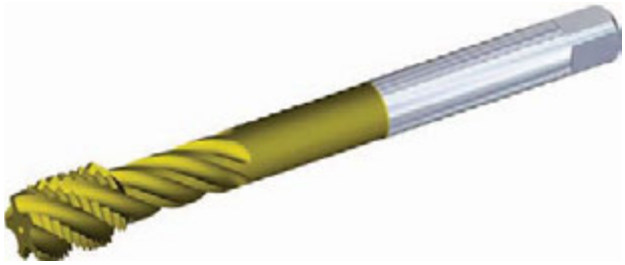
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

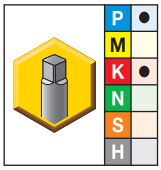
- KP6525 TiCN + TiN for tapping steel and cast iron.







T630 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T630M240X300R6HX-XL	M24 X 3	200	30	120	18,0	5	6HX
T630M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T630M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T630M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T630M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	5	6HX

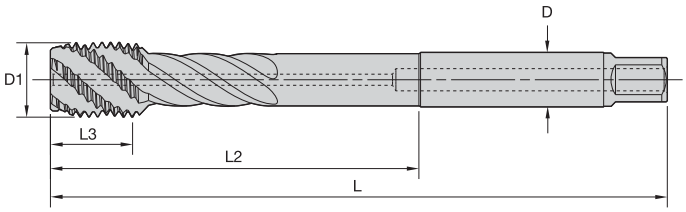
NOTE: Suggested for use in rigid and synchronous holders.

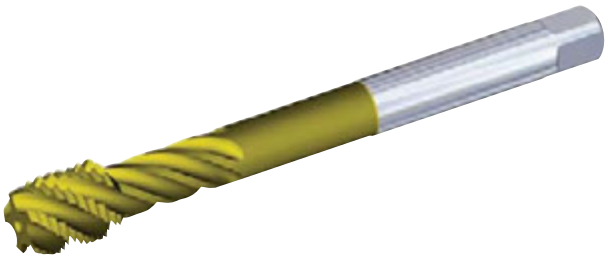
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

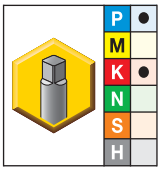
- KP6525 TiCN + TiN for tapping steel and cast iron.







T631 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron • Rigid and Synchronous Holders



● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T631M240X300R6HX-XL	M24 X 3	200	30	120	18,0	5	6HX
T631M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T631M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T631M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T631M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	5	6HX

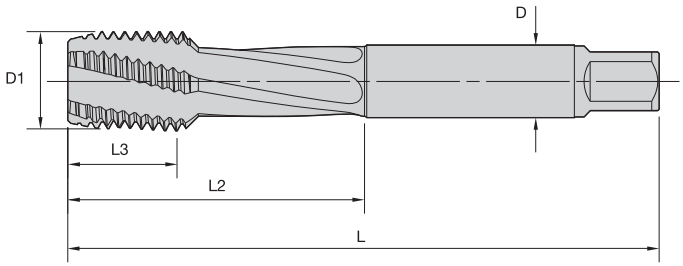
NOTE: Suggested for use in rigid and synchronous holders.

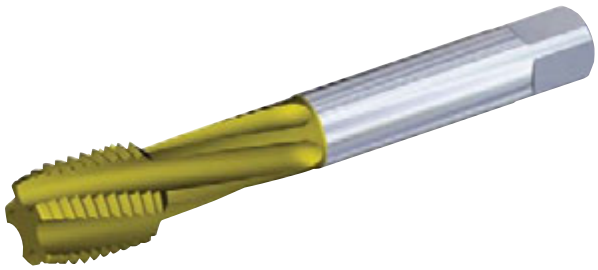
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

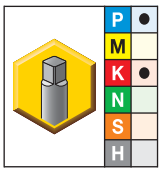
- KP6525 TiCN + TiN for tapping steel and cast iron.







T650 • DIN 376 • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

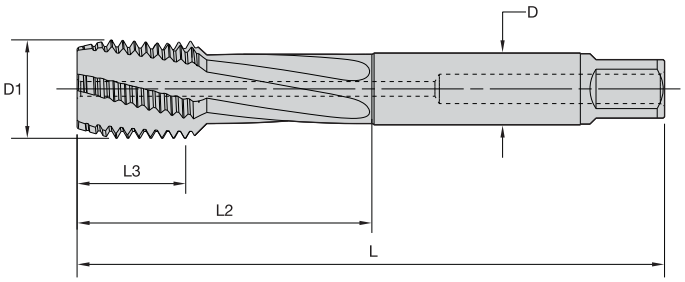
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T650M240X300R6HX-D6	M24 X 3	160	30	77	18,0	4	DIN 376	6HX
T650M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T650M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T650M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T650M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

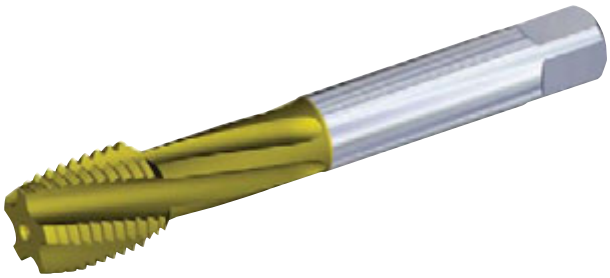
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

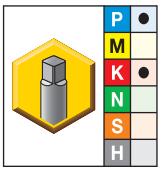
- KP6525 TiCN + TiN for tapping steel and cast iron.







T651 • DIN 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

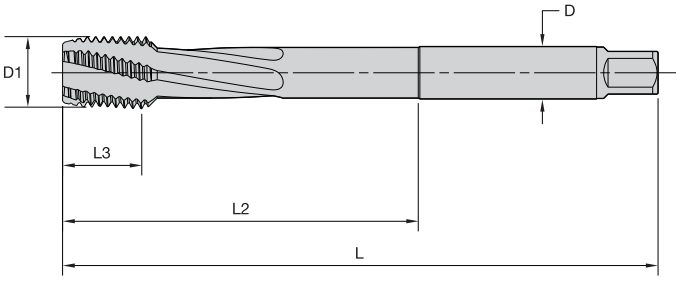
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T651M240X300R6HX-D6	M24 X 3	160	30	77	18,0	4	DIN 376	6HX
T651M300X350R6HX-D6	M30 X 3,5	180	35	91	22,0	5	DIN 376	6HX
T651M330X350R6HX-D6	M33 X 3,5	180	35	100	25,0	5	DIN 376	6HX
T651M360X400R6HX-D6	M36 X 4	200	40	110	28,0	5	DIN 376	6HX
T651M420X450R6HX-D6	M42 X 4,5	200	45	120	32,0	6	DIN 376	6HX

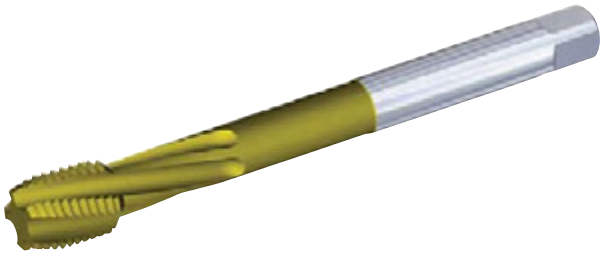
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

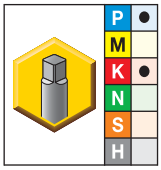
- KP6525 TiCN + TiN for tapping steel and cast iron.







T650 • Extra Long • Form C Semi-Bottoming Chamfer • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

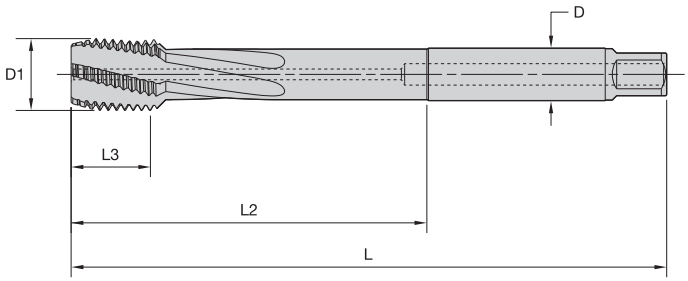
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T650M240X300R6HX-XL	M24 X 3	200	30	120	18,0	4	6HX
T650M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T650M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T650M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T650M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	6	6HX

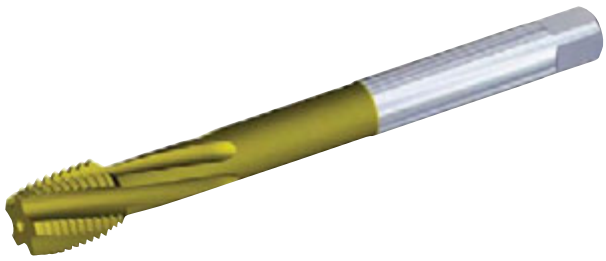
Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

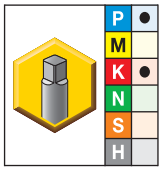
- KP6525 TiCN + TiN for tapping steel and cast iron.







T651 • Extra Long • Form C Semi-Bottoming Chamfer • Through Coolant • Larger Sizes • Metric • For Steel and Cast Iron



● first choice
○ alternate choice

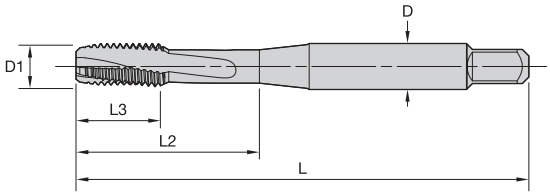
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T651M240X300R6HX-XL	M24 X 3	200	30	120	18,0	4	6HX
T651M300X350R6HX-XL	M30 X 3,5	250	35	150	22,0	5	6HX
T651M330X350R6HX-XL	M33 X 3,5	250	35	150	25,0	5	6HX
T651M360X400R6HX-XL	M36 X 4	250	40	150	28,0	5	6HX
T651M420X450R6HX-XL	M42 X 4,5	300	45	180	32,0	6	6HX

Shank Tolerance

D	tolerance h6
12–18	+0, -0,011
20–30	+0, -0,013
32–36	+0, -0,016

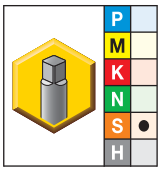
- KSS29 oxide/nitride for nickel- and cobalt-based alloys.
- KSP27 AlCrTiN for nickel- and cobalt-based alloys.

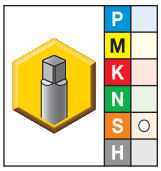






T692 • Machine Screw and Fractional • 3–4 Pitches Chamfer • ANSI • For Nickel- and Cobalt-Based Alloys



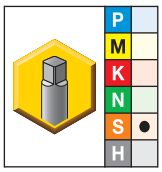


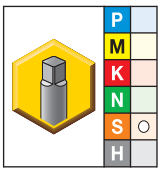
● first choice
○ alternate choice

KSP27	KSS29	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T692NC#02-56RH2-A *	T692NC#02-56RH2-A	2 - 56	1.75	.44	.50	.141	3	H2
—	T692NC#03-48RH2-A	3 - 48	1.81	.50	.56	.141	3	H2
T692NC#04-40RH2-A	T692NC#04-40RH2-A	4 - 40	1.88	.56	.69	.141	3	H2
T692NC#04-40RH3-A	T692NC#04-40RH3-A	4 - 40	1.88	.56	.69	.141	3	H3
—	T692NF#04-40RH5-A	4 - 40	1.88	.56	.69	.141	3	H5
—	T692NC#05-40RH2-A	5 - 40	1.95	.63	.76	.141	3	H2
—	T692NC#06-32RH2-A	6 - 32	1.99	.36	.71	.141	3	H2
T692NC#06-32RH3-A	T692NC#06-32RH3-A	6 - 32	1.99	.36	.71	.141	3	H3
—	T692NC#06-32RH5-A	6 - 32	2.03	.36	.71	.141	3	H5
T692NC#06-32RH7-A	T692NC#06-32RH7-A	6 - 32	2.03	.36	.71	.141	3	H7
—	T692NF#06-40RH2-A	6 - 40	2.03	.36	.71	.141	3	H2
—	T692NC#08-32RH2-A	8 - 32	2.16	.31	.76	.168	3	H2
T692NC#08-32RH3-A	T692NC#08-32RH3-A	8 - 32	2.12	.31	.76	.168	3	H3
T692NC#08-32RH4-A	T692NC#08-32RH4-A	8 - 32	2.16	.31	.76	.168	3	H4
T692NC#08-32RH5-A *	T692NC#08-32RH5-A	8 - 32	2.16	.31	.76	.168	3	H5
—	T692NC#08-32RH6-A	8 - 32	2.16	.31	.76	.168	3	H6
—	T692NC#10-24RH3-A	10 - 24	2.37	.47	.91	.194	3	H3
T692NC#10-24RH5-A	T692NC#10-24RH5-A	10 - 24	2.42	.47	.91	.194	3	H5
T692NF#10-32RH2-A	T692NF#10-32RH2-A	10 - 32	2.37	.47	.91	.194	3	H2
T692NF#10-32RH3-A	T692NF#10-32RH3-A	10 - 32	2.37	.47	.91	.194	3	H3
—	T692NF#10-32RH5-A	10 - 32	2.42	.47	.91	.194	3	H5
—	T692NF#10-32RH7-A	10 - 32	2.42	.47	.91	.194	3	H7
T692NC02500-20RH3-A	T692NC02500-20RH3-A	1/4 - 20	2.50	.44	1.00	.255	3	H3
—	T692NC02500-20RH5-A	1/4 - 20	2.50	.44	1.00	.255	3	H5
T692NF02500-28RH3-A	T692NF02500-28RH3-A	1/4 - 28	2.50	.44	1.00	.255	3	H3
—	T692NF02500-28RH5-A	1/4 - 28	2.50	.44	1.00	.255	3	H5
—	T692NF02500-28RH6-A	1/4 - 28	2.50	.44	1.00	.255	3	H6
—	T692NF02500-28RH7-A	1/4 - 28	2.50	.44	1.00	.255	3	H7
T692NC03125-18RH3-A	T692NC03125-18RH3-A	5/16 - 18	2.72	.49	1.13	.318	3	H3
T692NC03125-18RH5-A	T692NC03125-18RH5-A	5/16 - 18	2.72	.49	1.13	.318	3	H5
—	T692NC03125-18RH7-A	5/16 - 18	2.72	.49	1.13	.318	3	H7
T692NF03125-24RH3-A	T692NF03125-24RH3-A	5/16 - 24	2.72	.49	1.13	.318	3	H3

(continued)

(T692 • Machine Screw and Fractional • 3–4 Pitches Chamfer • ANSI • For Nickel- and Cobalt-Based Alloys — continued)





● first choice
○ alternate choice

KSP27	KSS29	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	T692NF03125-24RH4-A	5/16 - 24	2.72	.49	1.13	.318	3	H4
—	T692NF03125-24RH5-A	5/16 - 24	2.72	.49	1.13	.318	3	H5
—	T692NF03125-24RH6-A	5/16 - 24	2.72	.49	1.13	.318	3	H6
—	T692NF03125-24RH7-A	5/16 - 24	2.72	.49	1.13	.318	3	H7
T692NC03750-16RH3-A	T692NC03750-16RH3-A	3/8 - 16	2.94	.60	1.27	.381	3	H3
T692NC03750-16RH5-A *	T692NC03750-16RH5-A	3/8 - 16	2.94	.60	1.27	.381	3	H5
T692NF03750-24RH3-A	T692NF03750-24RH3-A	3/8 - 24	2.94	.60	1.27	.381	3	H3
T692NF03750-24RH4-A	T692NF03750-24RH4-A	3/8 - 24	2.94	.60	1.27	.381	3	H4
T692NF03750-24RH5-A	T692NF03750-24RH5-A	3/8 - 24	2.94	.60	1.27	.381	3	H5
—	T692NF03750-24RH6-A	3/8 - 24	2.94	.60	1.27	.381	3	H6
—	T692NC04375-14RH3-A	7/16 - 14	3.16	.71	1.49	.323	3	H3
—	T692NC04375-14RH5-A	7/16 - 14	3.16	.71	1.49	.323	3	H5
T692NF04375-20RH3-A	T692NF04375-20RH3-A	7/16 - 20	3.16	.71	1.49	.323	3	H3
—	T692NF04375-20RH5-A	7/16 - 20	3.16	.71	1.49	.323	3	H5
T692NC05000-13RH3-A	T692NC05000-13RH3-A	1/2 - 13	3.38	.77	1.74	.367	3	H3
T692NC05000-13RH5-A	T692NC05000-13RH5-A	1/2 - 13	3.38	.77	1.74	.367	3	H5
T692NF05000-20RH3-A	T692NF05000-20RH3-A	1/2 - 20	3.38	.77	1.74	.367	3	H3
T692NF05000-20RH5-A	T692NF05000-20RH5-A	1/2 - 20	3.38	.77	1.74	.367	3	H5
—	T692NF05000-20RH7-A	1/2 - 20	3.38	.77	1.74	.367	3	H7
T692NC06250-11RH3-A	T692NC06250-11RH3-A	5/8 - 11	3.81	.91	1.89	.480	3	H3
—	T692NC06250-11RH5-A	5/8 - 11	3.81	1.31	1.89	.480	3	H5
—	T692NC06250-11RH7-A	5/8 - 11	3.81	.91	1.89	.480	3	H7
—	T692NF06250-18RH3-A	5/8 - 18	3.81	1.31	1.89	.480	3	H3
—	T692NC07500-10RH3-A	3/4 - 10	4.25	1.59	2.08	.590	3	H3
—	T692NC07500-10RH5-A	3/4 - 10	4.25	1.00	2.08	.590	3	H5
—	T692NF07500-16RH3-A	3/4 - 16	4.25	1.00	2.08	.590	3	H3
—	T692NF07500-16RH5-A	3/4 - 16	4.25	1.00	2.08	.590	3	H5

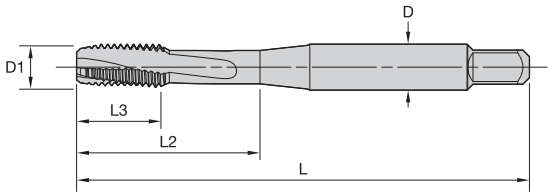
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

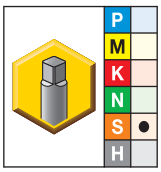
- KSS29 oxide/nitride for nickel- and cobalt-based alloys.
- KSP27 AlCrTiN for nickel- and cobalt-based alloys.

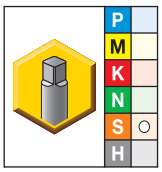






T692 • 3–4 Pitches Chamfer • Metric ANSI • For Nickel- and Cobalt-Based Alloys





● first choice
○ alternate choice

KSP27	KSS29	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T692M025X045RD3-A	**T692M025X045RD3-A**	M2,5 X 0,45	1.81	.50	.56	.141	3	D3
T692M030X050RD3-A	**T692M030X050RD3-A** *	M3 X 0,5	1.94	.63	.75	.141	3	D3
T692M040X070RD4-A *	**T692M040X070RD4-A**	M4 X 0,7	2.12	.32	.76	.168	3	D4
T692M050X080RD4-A	**T692M050X080RD4-A**	M5 X 0,8	2.37	.47	.91	.194	3	D4
T692M060X100RD5-A	**T692M060X100RD5-A**	M6 X 1	2.50	.46	1.00	.255	3	D5
T692MF080X100RD5-A	**T692MF080X100RD5-A**	M8 X 1	2.70	.48	1.12	.318	3	D5
T692M080X125RD5-A	**T692M080X125RD5-A**	M8 X 1,25	2.70	.48	1.12	.318	3	D5
T692MF100X125RD5-A	**T692MF100X125RD5-A**	M10 X 1,25	2.92	.53	1.26	.381	3	D5
T692M100X150RD6-A	**T692M100X150RD6-A**	M10 X 1,5	2.92	.53	1.26	.381	3	D6
T692M120X175RD6-A *	**T692M120X175RD6-A**	M12 X 1,75	3.38	.77	1.74	.367	3	D6

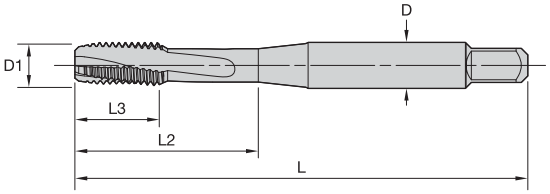
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

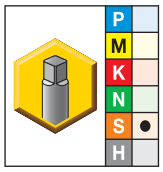
- KSS29 oxide/nitride for nickel- and cobalt-based alloys.
- KSP27 AlCrTiN for nickel- and cobalt-based alloys.

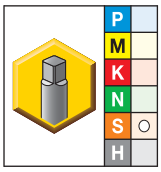






T694 • Machine Screw and Fractional • Form E Bottoming Chamfer • ANSI • For Nickel- and Cobalt-Based Alloys





● first choice
○ alternate choice

KSP27	KSS29	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T694NC#04-40RH2-A	T694NC#04-40RH2-A	4 - 40	1.88	.56	.70	.141	3	H2
—	T694NC#04-40RH3-A	4 - 40	1.88	.56	.69	.141	3	H3
—	T694NC#05-40RH2-A	5 - 40	1.95	.63	.76	.141	3	H2
T694NC#06-32RH3-A	T694NC#06-32RH3-A	6 - 32	1.99	.36	.71	.141	3	H3
—	T694NC#06-32RH5-A	6 - 32	2.03	.36	.71	.141	3	H5
—	T694NF#06-40RH2-A	6 - 40	2.03	.36	.71	.141	3	H2
T694NC#08-32RH3-A	T694NC#08-32RH3-A	8 - 32	2.12	.31	.76	.168	3	H3
T694NC#10-24RH3-A	T694NC#10-24RH3-A	10 - 24	2.42	.47	.91	.194	3	H3
T694NF#10-32RH3-A	T694NF#10-32RH3-A	10 - 32	2.37	.47	.91	.194	3	H3
T694NC02500-20RH3-A *	T694NC02500-20RH3-A	1/4 - 20	2.50	.44	1.00	.255	3	H3
—	T694NC02500-20RH5-A *	1/4 - 20	2.50	.44	1.00	.255	3	H5
T694NF02500-28RH3-A	T694NF02500-28RH3-A	1/4 - 28	2.50	.44	1.00	.255	3	H3
—	T694NF02500-28RH4-A	1/4 - 28	2.50	.44	1.00	.255	3	H4
T694NC03125-18RH3-A *	T694NC03125-18RH3-A	5/16 - 18	2.72	.49	1.13	.318	3	H3
T694NF03125-24RH3-A *	T694NF03125-24RH3-A	5/16 - 24	2.72	.49	1.13	.318	3	H3
—	T694NF03125-24RH4-A	5/16 - 24	2.72	.49	1.13	.318	3	H4
T694NC03750-16RH3-A	T694NC03750-16RH3-A	3/8 - 16	2.94	.60	1.27	.381	3	H3
—	T694NC03750-16RH5-A	3/8 - 16	2.94	.60	1.27	.381	3	H5
T694NF03750-24RH3-A	T694NF03750-24RH3-A	3/8 - 24	2.94	.60	1.27	.381	3	H3
—	T694NF03750-24RH4-A	3/8 - 24	2.94	.60	1.27	.381	3	H4
—	T694NC04375-14RH5-A	7/16 - 14	3.16	.71	1.49	.323	3	H5
T694NF04375-20RH3-A	T694NF04375-20RH3-A	7/16 - 20	3.16	.71	1.49	.323	3	H3
—	T694NF04375-20RH5-A	7/16 - 20	3.16	.71	1.49	.323	3	H5
—	T694NC05000-13RH5-A	1/2 - 13	3.38	.77	1.74	.367	3	H5
—	T694NF05000-20RH5-A	1/2 - 20	3.38	.77	1.74	.367	3	H5
T694NC06250-11RH3-A	T694NC06250-11RH3-A	5/8 - 11	3.81	.91	1.89	.480	3	H3
T694NF06250-18RH3-A	T694NF06250-18RH3-A	5/8 - 18	3.81	.91	1.89	.480	3	H3

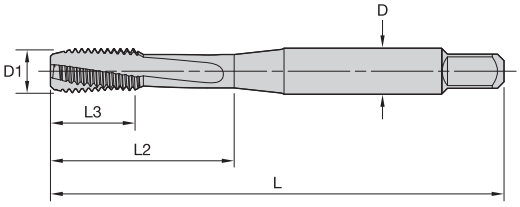
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

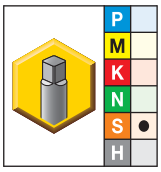
- KSS20 nitride for titanium and titanium alloys.
- KSSM24 TiN + CrC/C for titanium and titanium alloys.

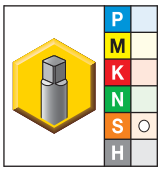






T662 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • ANSI • For Titanium and Titanium Alloys



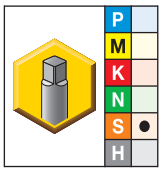


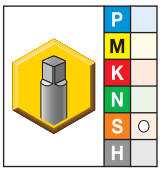
● first choice
○ alternate choice

KSSM24	KSS20	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T662NC#02-56RH2-A	T662NC#02-56RH2-A *	2 - 56	1.75	.44	.50	.141	3	H2
T662NC#04-40RH2-A	T662NC#04-40RH2-A	4 - 40	1.88	.56	.69	.142	3	H2
T662NC#06-32RH2-A *	T662NC#06-32RH2-A *	6 - 32	1.99	.36	.71	.141	3	H2
T662NC#06-32RH3-A *	T662NC#06-32RH3-A	6 - 32	1.99	.36	.71	.141	3	H3
T662NF#06-40RH2-A	T662NF#06-40RH2-A	6 - 40	1.99	.36	.71	.141	3	H2
T662NC#08-32RH2-A	T662NC#08-32RH2-A	8 - 32	2.12	.31	.77	.168	3	H2
T662NC#08-32RH3-A	T662NC#08-32RH3-A	8 - 32	2.12	.31	.77	.168	3	H3
T662NF#08-36RH2-A *	T662NF#08-36RH2-A	8 - 36	2.12	.31	.77	.168	3	H2
T662NC#10-24RH3-A	T662NC#10-24RH3-A	10 - 24	2.37	.47	.92	.194	3	H3
T662NF#10-32RH2-A *	T662NF#10-32RH2-A	10 - 32	2.37	.47	.91	.194	3	H2
T662NF#10-32RH3-A *	T662NF#10-32RH3-A	10 - 32	2.37	.47	.91	.194	3	H3
T662NC02500-20RH3-A	T662NC02500-20RH3-A	1/4 - 20	2.50	.44	1.01	.255	3	H3
T662NC02500-20RH5-A	T662NC02500-20RH5-A	1/4 - 20	2.50	.44	1.00	.255	3	H5
T662NF02500-28RH3-A	T662NF02500-28RH3-A	1/4 - 28	2.50	.44	1.01	.255	3	H3
T662NF02500-28RH4-A *	T662NF02500-28RH4-A	1/4 - 28	2.50	.44	1.01	.255	3	H4
T662NF02500-28RH5-A	T662NF02500-28RH5-A	1/4 - 28	2.50	.44	1.01	.255	3	H5
T662NC03125-18RH3-A	T662NC03125-18RH3-A	5/16 - 18	2.72	.49	1.13	.318	3	H3
T662NC03125-18RH5-A	T662NC03125-18RH5-A *	5/16 - 18	2.72	.49	1.13	.318	3	H5
T662NF03125-24RH3-A	T662NF03125-24RH3-A *	5/16 - 24	2.72	.49	1.13	.318	3	H3
T662NF03125-24RH4-A	T662NF03125-24RH4-A	5/16 - 24	2.72	.49	1.13	.318	3	H4
T662NC03750-16RH3-A	T662NC03750-16RH3-A	3/8 - 16	2.93	.59	1.26	.381	3	H3
T662NC03750-16RH5-A *	T662NC03750-16RH5-A	3/8 - 16	2.93	.59	1.26	.381	3	H5
T662NF03750-24RH3-A *	T662NF03750-24RH3-A *	3/8 - 24	2.93	.59	1.26	.381	3	H3
T662NF03750-24RH4-A	T662NF03750-24RH4-A	3/8 - 24	2.93	.59	1.26	.381	3	H4
T662NC04375-14RH3-A	T662NC04375-14RH3-A	7/16 - 14	3.16	.71	1.49	.323	3	H3
T662NC04375-14RH5-A	T662NC04375-14RH5-A	7/16 - 14	3.16	.71	1.49	.323	3	H5
T662NF04375-20RH3-A	T662NF04375-20RH3-A *	7/16 - 20	3.16	.71	1.49	.323	3	H3
T662NF04375-20RH5-A	T662NF04375-20RH5-A	7/16 - 20	3.16	.71	1.49	.323	3	H5

(continued)

(T662 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • ANSI • For Titanium and Titanium Alloys — continued)





● first choice
○ alternate choice

KSSM24	KSS20	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T662NC05000-13RH3-A	T662NC05000-13RH3-A *	1/2 - 13	3.38	.77	1.74	.367	3	H3
T662NC05000-13RH5-A	T662NC05000-13RH5-A	1/2 - 13	3.38	.77	1.74	.367	3	H5
T662NF05000-20RH3-A	T662NF05000-20RH3-A	1/2 - 20	3.38	.77	1.74	.367	3	H3
T662NF05000-20RH5-A	T662NF05000-20RH5-A	1/2 - 20	3.38	.77	1.74	.367	3	H5
T662NF05625-18RH3-A	—	9/16 - 18	3.59	.83	1.74	.429	4	H3
T662NF05625-18RH5-A	—	9/16 - 18	3.59	.83	1.74	.429	4	H5
T662NC06250-11RH3-A	—	5/8 - 11	3.81	.91	1.89	.480	4	H3
T662NF06250-18RH3-A	—	5/8 - 18	3.81	.91	1.89	.480	4	H3
T662NF06250-18RH5-A	—	5/8 - 18	3.81	.91	1.89	.480	4	H5
T662NC07500-10RH5-A	—	3/4 - 10	4.25	1.00	2.08	.590	4	H5
T662NF07500-16RH3-A	—	3/4 - 16	4.25	1.00	2.08	.590	4	H3
T662NF07500-16RH5-A	—	3/4 - 16	4.25	1.00	2.08	.590	4	H5
T662NC10000-08RH5-A	—	1 - 8	5.12	1.25	2.58	.800	4	H5

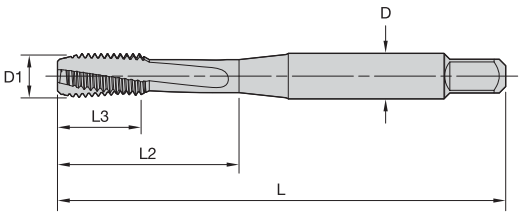
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

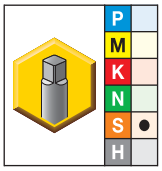
- KSS20 nitride for titanium and titanium alloys.
- KSSM24 TiN + CrC/C for titanium and titanium alloys.

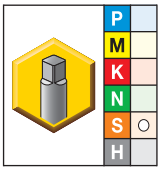






T662 • Form C Semi-Bottoming Chamfer • Metric ANSI • For Titanium and Titanium Alloys





● first choice
○ alternate choice

KSSM24	KSS20	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T662M025X045RD3-A	**T662M025X045RD3-A ***	M2,5 X 0,45	1.81	.50	.56	.141	3	D3
T662M030X050RD3-A	**T662M030X050RD3-A**	M3 X 0,5	1.94	.63	.75	.141	3	D3
T662M040X070RD4-A	**T662M040X070RD4-A**	M4 X 0,7	2.12	.32	.76	.168	3	D4
T662M050X080RD4-A	**T662M050X080RD4-A**	M5 X 0,8	2.37	.46	.91	.194	3	D4
T662M060X100RD5-A	**T662M060X100RD5-A**	M6 X 1	2.50	.46	1.00	.255	3	D5
T662M070X100RD5-A	**T662M070X100RD5-A**	M7 X 1	2.72	.52	1.15	.318	3	D5
T662M080X125RD5-A	**T662M080X125RD5-A ***	M8 X 1,25	2.70	.48	1.12	.318	3	D5
T662MF100X125RD5-A *	**T662MF100X125RD5-A ***	M10 X 1,25	2.93	.53	1.26	.381	3	D5
T662M100X150RD6-A *	**T662M100X150RD6-A**	M10 X 1,5	2.93	.53	1.26	.381	3	D6
T662M120X175RD6-A	**T662M120X175RD6-A**	M12 X 1,75	3.38	.77	1.74	.367	3	D6

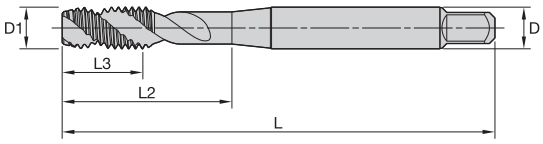
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

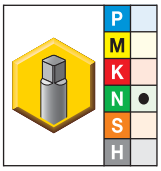
• KSMN34 TiN + CrC/C for aluminum.







T682 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • DIN Length ANSI Shank • For Wrought Aluminum



● first choice
○ alternate choice

KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T682NC#02-56R2B-DA	2 - 56	1.77	.31	.71	.141	2	2B
T682NC#04-40R3B-DA	4 - 40	2.20	.31	.71	.141	2	3B
T682NC#05-40R3B-DA	5 - 40	2.20	.31	.71	.141	2	3B
T682NC#06-32R2B-DA	6 - 32	2.20	.35	.79	.141	2	2B
T682NC#08-32R2B-DA	8 - 32	2.48	.43	.83	.168	2	2B
T682NC#10-24R2B-DA	10 - 24	2.76	.47	.98	.194	2	2B
T682NF#10-32R2B-DA	10 - 32	2.76	.47	.98	.194	2	2B
T682NC02500-20R2B-DA	1/4 - 20	3.15	.59	1.18	.255	2	2B
T682NC02500-20R3B-DA	1/4 - 20	3.15	.59	1.18	.255	2	3B
T682NF02500-28R2B-DA	1/4 - 28	3.15	.59	1.18	.255	2	2B
T682NF02500-28R3B-DA	1/4 - 28	3.15	.59	1.18	.255	2	3B
T682NC03125-18R2B-DA	5/16 - 18	3.54	.59	1.38	.318	2	2B
T682NC03125-18R3B-DA	5/16 - 18	3.54	.59	1.38	.318	2	3B
T682NF03125-24R2B-DA	5/16 - 24	3.54	.59	1.38	.318	2	2B
T682NF03125-24R3B-DA	5/16 - 24	3.54	.59	1.38	.318	2	3B
T682NC03750-16R2B-DA	3/8 - 16	3.94	.75	1.54	.381	2	2B
T682NC03750-16R3B-DA	3/8 - 16	3.94	.75	1.54	.381	2	3B
T682NF03750-24R2B-DA *	3/8 - 24	3.94	.75	1.54	.381	2	2B
T682NF03750-24R3B-DA	3/8 - 24	3.94	.75	1.54	.381	2	3B
T682NC04375-14R2B-DA	7/16 - 14	3.94	.71	1.61	.323	3	2B
T682NC04375-14R3B-DA	7/16 - 14	3.94	.71	1.61	.323	3	3B
T682NF04375-20R2B-DA	7/16 - 20	3.94	.71	1.61	.323	3	2B
T682NF04375-20R3B-DA	7/16 - 20	3.94	.71	1.61	.323	3	3B
T682NC05000-13R2B-DA	1/2 - 13	4.33	.91	1.85	.367	3	2B
T682NC05000-13R3B-DA	1/2 - 13	4.33	.91	1.85	.367	3	3B
T682NF05000-20R2B-DA	1/2 - 20	4.33	.91	1.85	.367	3	2B
T682NF05000-20R3B-DA	1/2 - 20	4.33	.91	1.85	.367	3	3B

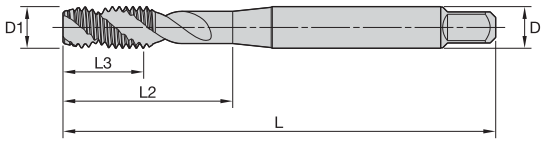
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

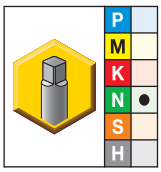
- KSMN34 TiN + CrC/C for aluminum.







T682 • Form C Semi-Bottoming • Metric • DIN Length ANSI Shank • For Wrought Aluminum



● first choice
○ alternate choice

KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T682M030X050R6H-DA	M3 X 0,5	2.20	.31	.71	.141	2	6H
T682M035X060R6H-DA	M3,5 X 0,6	2.20	.35	.79	.141	2	6H
T682M040X070R6H-DA	M4 X 0,7	2.48	.43	.83	.168	2	6H
T682M050X080R6H-DA	M5 X 0,8	2.76	.47	.98	.194	2	6H
T682M060X100R6H-DA	M6 X 1	3.15	.47	1.18	.255	2	6H
T682M070X100R6H-DA *	M7 X 1	3.54	.59	1.38	.318	2	6H
T682MF080X100R6H-DA	M8 X 1	3.54	.59	1.38	.318	2	6H
T682M080X125R6H-DA	M8 X 1,25	3.54	.59	1.38	.318	2	6H
T682MF100X125R6H-DA	M10 X 1,25	3.94	.71	1.54	.381	2	6H
T682M100X150R6H-DA	M10 X 1,5	3.94	.71	1.54	.381	2	6H
T682MF120X125R6H-DA	M12 X 1,25	4.33	.83	1.73	.367	3	6H
T682MF120X150R6H-DA	M12 X 1,5	4.33	.83	1.73	.367	3	6H
T682M120X175R6H-DA	M12 X 1,75	4.33	.83	1.73	.367	3	6H

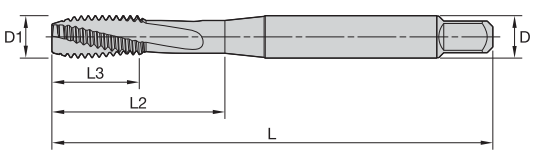
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

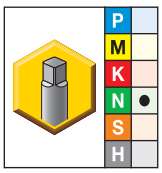
• KSMN34 TiN + CrC/C for aluminum.







T686 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • DIN Length ANSI Shank • For Cast Aluminum



● first choice
○ alternate choice

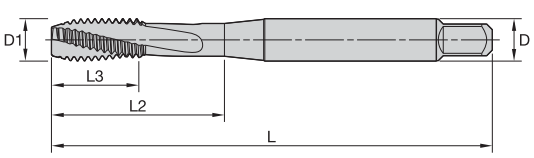
KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T686NC#02-56R2B-DA	2 - 56	1.77	.31	.71	.141	3	2B
T686NC#04-40R3B-DA	4 - 40	2.20	.31	.71	.141	3	3B
T686NC#06-32R2B-DA	6 - 32	2.20	.35	.79	.141	3	2B
T686NC#08-32R2B-DA	8 - 32	2.48	.43	.83	.168	3	2B
T686NC#10-24R2B-DA	10 - 24	2.76	.47	.98	.194	3	2B
T686NF#10-32R2B-DA	10 - 32	2.76	.47	.98	.194	3	2B
T686NC02500-20R3B-DA	1/4 - 20	3.15	.59	1.18	.255	3	3B
T686NF02500-28R3B-DA	1/4 - 28	3.15	.59	1.18	.255	3	3B
T686NC03125-18R3B-DA	5/16 - 18	3.54	.59	1.38	.318	3	3B
T686NF03125-24R3B-DA	5/16 - 24	3.54	.59	1.38	.318	3	3B
T686NC03750-16R3B-DA	3/8 - 16	3.94	.75	1.54	.381	3	3B
T686NF03750-24R3B-DA	3/8 - 24	3.94	.75	1.54	.381	3	3B
T686NC04375-14R3B-DA	7/16 - 14	3.94	.71	1.61	.323	3	3B
T686NF04375-20R3B-DA	7/16 - 20	3.94	.71	1.61	.323	3	3B
T686NC05000-13R3B-DA	1/2 - 13	4.33	.91	1.85	.367	3	3B
T686NF05000-20R3B-DA	1/2 - 20	4.33	.91	1.85	.367	3	3B

Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

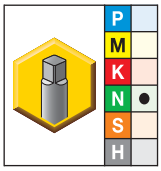
• KSMN34 TiN + CrC/C for aluminum.







T686 • Form C Semi-Bottoming Chamfer • Metric • DIN Length ANSI Shank • For Cast Aluminum



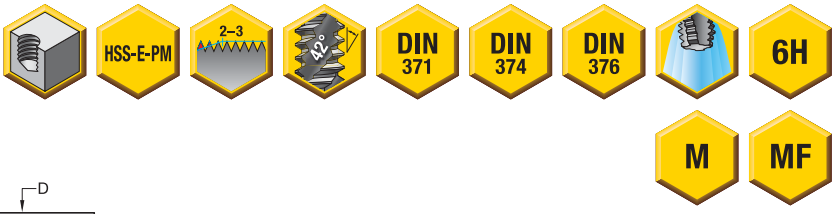
● first choice
○ alternate choice

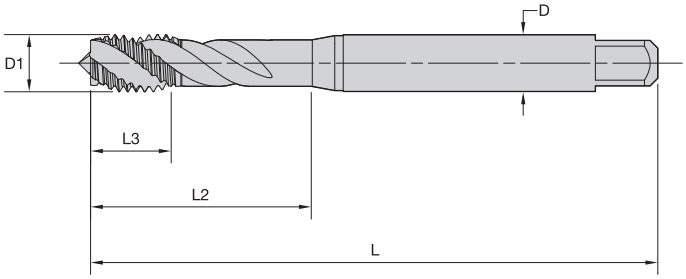
KSMN34	D1 size	L	L3	L2	D	number of flutes	class of fit
T686M030X050R6H-DA	M3 X 0,5	2.20	.31	.71	.141	3	6H
T686M040X070R6H-DA	M4 X 0,7	2.48	.43	.83	.168	3	6H
T686M050X080R6H-DA	M5 X 0,8	2.76	.47	.98	.194	3	6H
T686M060X100R6H-DA	M6 X 1	3.15	.47	1.18	.255	3	6H
T686M080X125R6H-DA	M8 X 1,25	3.54	.59	1.38	.318	3	6H
T686M100X150R6H-DA	M10 X 1,5	3.94	.71	1.54	.381	3	6H
T686MF120X150R6H-DA	M12 X 1,5	4.33	.83	1.73	.367	3	6H

Shank Tolerance

D inch	tolerance h9
.141–.635	+0, -.0015
<.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

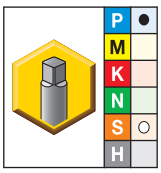
- KSH26 TiAlN/MoS_2 for tapping steel 32–44 HRC (3 x D).







T604 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • For Hard Steel



● first choice
○ alternate choice

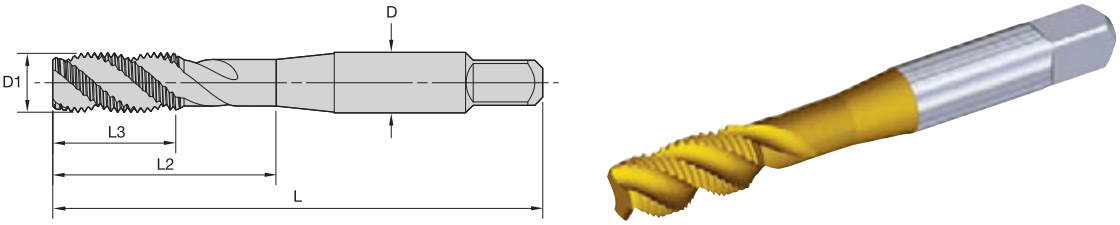
KSH26	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T604M030X050R6H-D1	M3 X 0,5	56	6	18	3,5	3	DIN 371	6H
T604M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T604M050X080R6H-D1	M5 X 0,8	70	8	25	6,0	3	DIN 371	6H
T604M060X100R6H-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T604MF080X100R6H-D4	M8 X 1	90	10	–	6,0	3	DIN 374	6H
T604M080X125R6H-D1	M8 X 1,25	90	14	35	8,0	3	DIN 371	6H
T604MF100X100R6H-D4	M10 X 1	90	10	–	7,0	3	DIN 374	6H
T604MF100X125R6H-D4	M10 X 1,25	100	16	–	7,0	3	DIN 374	6H
T604M100X150R6H-D1	M10 X 1,5	100	16	39	10,0	3	DIN 371	6H
T604MF120X125R6H-D4	M12 X 1,25	100	15	–	9,0	4	DIN 374	6H
T604MF120X150R6H-D4	M12 X 1,5	100	15	–	9,0	4	DIN 374	6H
T604M120X175R6H-D6	M12 X 1,75	110	18	–	9,0	4	DIN 376	6H
T604MF140X150R6H-D4	M14 X 1,5	100	15	–	11,0	4	DIN 374	6H
T604M140X200R6H-D6	M14 X 2	110	20	–	11,0	4	DIN 376	6H
T604MF160X150R6H-D4 *	M16 X 1,5	100	15	–	12,0	4	DIN 374	6H
T604M160X200R6H-D6	M16 X 2	110	22	–	12,0	4	DIN 376	6H
T604M180X250R6H-D6	M18 X 2,5	125	25	–	14,0	4	DIN 376	6H
T604M200X250R6H-D6	M20 X 2,5	140	25	–	16,0	4	DIN 376	6H

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

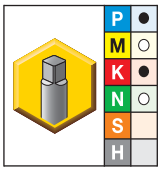
Shank Tolerance

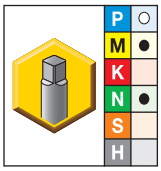
D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

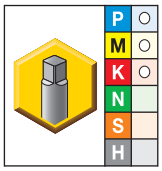
- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide



T830 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders





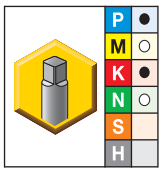


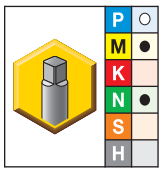
● first choice
○ alternate choice

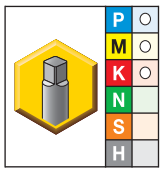
KSP32	KSMN34	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	T830NC#02-56RH2-A	2 - 56	1.76	.40	.50	.141	2	H2
–	–	T830NC#03-48RH2-A	3 - 48	1.82	.46	.57	.141	2	H2
T830NC#04-40RH2-A	T830NC#04-40RH2-A	T830NC#04-40RH2-A	4 - 40	1.88	.52	.70	.141	2	H2
–	–	T830NC#04-40RH3-A	4 - 40	1.88	.52	.70	.141	2	H3
–	–	T830NC#04-40RH4-A	4 - 40	1.88	.52	.70	.141	2	H4
–	–	T830NC#04-40RH5-A	4 - 40	1.88	.52	.70	.141	2	H5
–	–	T830NF#04-48RH2-A	4 - 48	1.88	.53	.70	.141	2	H2
–	–	T830NC#05-40RH2-A	5 - 40	1.95	.59	.76	.141	2	H2
–	–	T834NC#05-40RH2-A *	5 - 40	1.95	.58	.76	.141	3	H2
–	–	T830NC#06-32RH2-A	6 - 32	2.00	.39	.72	.141	2	H2
T830NC#06-32RH3-A	T830NC#06-32RH3-A	T830NC#06-32RH3-A	6 - 32	2.00	.39	.72	.141	2	H3
–	–	T830NC#06-32RH4-A *	6 - 32	2.00	.39	.72	.141	2	H4
–	–	T830NC#06-32RH5-A	6 - 32	2.00	.39	.72	.141	2	H5
–	–	T830NC#06-32RH7-A	6 - 32	2.00	.39	.72	.141	2	H7
–	–	T834NC#06-32RH2-A	6 - 32	2.00	.38	.72	.141	3	H2
T834NC#06-32RH3-A	T834NC#06-32RH3-A	T834NC#06-32RH3-A	6 - 32	2.00	.38	.72	.141	3	H3
–	–	T834NC#06-32RH4-A	6 - 32	2.00	.38	.72	.141	3	H4
–	–	T834NC#06-32RH5-A	6 - 32	2.00	.38	.72	.141	3	H5
–	–	T834NC#06-32RH7-A	6 - 32	2.00	.38	.72	.141	3	H7
–	–	T830NF#06-40RH2-A	6 - 40	2.00	.39	.72	.140	2	H2
–	–	T830NF#06-40RH3-A	6 - 40	2.00	.39	.72	.141	2	H3
–	–	T834NF#06-40RH2-A	6 - 40	2.00	.38	.72	.141	3	H2
–	–	T834NF#06-40RH3-A	6 - 40	2.00	.38	.72	.141	3	H3
–	–	T830NC#08-32RH2-A	8 - 32	2.13	.38	.77	.168	3	H2
T830NC#08-32RH3-A	T830NC#08-32RH3-A	T830NC#08-32RH3-A	8 - 32	2.13	.38	.77	.168	3	H3
–	–	T830NC#08-32RH4-A	8 - 32	2.13	.38	.77	.168	3	H4
–	–	T830NC#08-32RH5-A	8 - 32	2.13	.38	.77	.168	3	H5
–	–	T830NC#08-32RH6-A	8 - 32	2.13	.38	.77	.168	3	H6
–	–	T830NC#08-32RH7-A	8 - 32	2.13	.38	.77	.168	3	H7
–	–	T830NC#10-24RH2-A	10 - 24	2.38	.50	.92	.194	3	H2
T830NC#10-24RH3-A	T830NC#10-24RH3-A	T830NC#10-24RH3-A	10 - 24	2.38	.50	.92	.194	3	H3
–	–	T830NC#10-24RH4-A *	10 - 24	2.38	.50	.92	.194	3	H4

(continued)

(T830 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)





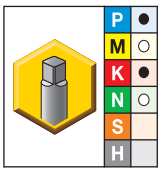


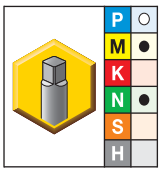
● first choice
○ alternate choice

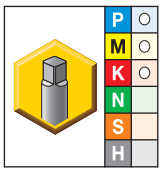
KSP32	KSMN34	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	–	T830NC#10-24RH5-A	10 - 24	2.38	.50	.92	.194	3	H5
–	–	T830NC#10-24RH7-A	10 - 24	2.38	.50	.92	.194	3	H7
–	–	T830NF#10-32RH2-A	10 - 32	2.38	.50	.92	.194	3	H2
T830NF#10-32RH3-A	T830NF#10-32RH3-A	T830NF#10-32RH3-A	10 - 32	2.38	.50	.92	.194	3	H3
–	–	T830NF#10-32RH4-A	10 - 32	2.38	.50	.92	.194	3	H4
–	–	T830NF#10-32RH5-A	10 - 32	2.37	.50	.91	.194	3	H5
–	–	T830NF#10-32RH6-A	10 - 32	2.38	.50	.92	.194	3	H6
–	–	T830NF#10-32RH7-A	10 - 32	2.38	.50	.92	.193	3	H7
–	–	T830NC#12-24RH3-A	12 - 24	2.43	.50	.96	.219	3	H3
–	–	T830NF#12-28RH3-A	12 - 28	2.43	.50	.96	.219	3	H3
–	–	T830NC02500-20RH2-A	1/4 - 20	2.50	.63	1.00	.255	3	H2
T830NC02500-20RH3-A	T830NC02500-20RH3-A	T830NC02500-20RH3-A	1/4 - 20	2.50	.63	1.00	.255	3	H3
–	–	T830NC02500-20RH5-A	1/4 - 20	2.50	.63	1.00	.255	3	H5
–	–	T830NC02500-20RH7-A	1/4 - 20	2.50	.63	1.00	.255	3	H7
–	–	T830NF02500-28RH2-A	1/4 - 28	2.50	.63	1.00	.255	3	H2
T830NF02500-28RH3-A	T830NF02500-28RH3-A	T830NF02500-28RH3-A	1/4 - 28	2.49	.62	1.00	.255	3	H3
–	–	T830NF02500-28RH4-A	1/4 - 28	2.49	.62	1.00	.255	3	H4
–	–	T830NF02500-28RH5-A	1/4 - 28	2.49	.62	1.00	.255	3	H5
–	–	T830NF02500-28RH6-A *	1/4 - 28	2.49	.62	1.00	.255	3	H6
–	–	T830NF02500-28RH7-A	1/4 - 28	2.49	.62	1.00	.255	3	H7
T830NC03125-18RH3-A	T830NC03125-18RH3-A	T830NC03125-18RH3-A	5/16 - 18	2.72	.69	1.13	.318	3	H3
–	–	T830NC03125-18RH5-A	5/16 - 18	2.72	.69	1.13	.318	3	H5
–	–	T830NC03125-18RH7-A	5/16 - 18	2.72	.69	1.13	.318	3	H7
T830NF03125-24RH3-A	T830NF03125-24RH3-A	T830NF03125-24RH3-A	5/16 - 24	2.71	.68	1.13	.318	3	H3
–	–	T830NF03125-24RH5-A	5/16 - 24	2.71	.68	1.12	.318	3	H5
–	–	T830NF03125-24RH7-A	5/16 - 24	2.71	.68	1.12	.318	3	H7
T830NC03750-16RH3-A	T830NC03750-16RH3-A	T830NC03750-16RH3-A	3/8 - 16	2.94	.75	1.27	.381	3	H3
–	–	T830NC03750-16RH5-A	3/8 - 16	2.94	.75	1.27	.381	3	H5
–	–	T830NC03750-16RH7-A	3/8 - 16	2.94	.75	1.27	.381	3	H7
T830NF03750-24RH3-A	T830NF03750-24RH3-A	T830NF03750-24RH3-A	3/8 - 24	2.92	.74	1.25	.381	3	H3
–	–	T830NF03750-24RH4-A	3/8 - 24	2.92	.74	1.25	.381	3	H4
–	–	T830NF03750-24RH5-A	3/8 - 24	2.92	.74	1.25	.381	3	H5
–	–	T830NF03750-24RH6-A	3/8 - 24	2.92	.74	1.25	.381	3	H6
T830NC04375-14RH3-A	T830NC04375-14RH3-A	T830NC04375-14RH3-A	7/16 - 14	3.16	.88	1.49	.323	3	H3
–	–	T830NC04375-14RH5-A	7/16 - 14	3.16	.88	1.49	.323	3	H5
–	–	T830NC04375-14RH7-A	7/16 - 14	3.16	.88	1.49	.323	3	H7
T830NF04375-20RH3-A	T830NF04375-20RH3-A	T830NF04375-20RH3-A	7/16 - 20	3.16	.88	1.49	.323	3	H3
–	–	T830NF04375-20RH5-A *	7/16 - 20	3.16	.88	1.49	.323	3	H5
–	–	T830NF04375-20RH6-A *	7/16 - 20	3.16	.88	1.49	.323	3	H6
–	–	T830NF04375-20RH7-A	7/16 - 20	3.16	.88	1.49	.323	3	H7
T830NC05000-13RH3-A	T830NC05000-13RH3-A	T830NC05000-13RH3-A	1/2 - 13	3.38	.94	1.74	.367	3	H3
–	–	T830NC05000-13RH5-A	1/2 - 13	3.38	.94	1.74	.367	3	H5
–	–	T830NC05000-13RH7-A	1/2 - 13	3.38	.94	1.74	.367	3	H7
T830NF05000-20RH3-A	T830NF05000-20RH3-A	T830NF05000-20RH3-A	1/2 - 20	3.38	.94	1.74	.367	3	H3
–	–	T830NF05000-20RH5-A	1/2 - 20	3.38	.94	1.74	.367	3	H5
–	–	T830NF05000-20RH6-A	1/2 - 20	3.38	.94	1.74	.367	3	H6
–	–	T830NF05000-20RH7-A	1/2 - 20	3.38	.94	1.74	.367	3	H7
T830NC05625-12RH3-A	T830NC05625-12RH3-A	T830NC05625-12RH3-A	9/16 - 12	3.59	1.00	1.74	.429	3	H3

(continued)

(T830 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)







● first choice
○ alternate choice

KSP32	KSMN34	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	—	T830NC05625-12RH5-A *	9/16 - 12	3.59	1.00	1.74	.429	3	H5
—	T830NF05625-18RH3-A	T830NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
—	—	T830NF05625-18RH5-A	9/16 - 18	3.59	1.00	1.74	.429	3	H5
T830NC06250-11RH3-A	T830NC06250-11RH3-A	T830NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
—	—	T830NC06250-11RH5-A	5/8 - 11	3.81	1.09	1.89	.480	3	H5
—	—	T830NC06250-11RH7-A	5/8 - 11	3.81	1.09	1.89	.480	3	H7
T830NF06250-18RH3-A	T830NF06250-18RH3-A	T830NF06250-18RH3-A	5/8 - 18	3.81	1.09	1.89	.480	3	H3
—	—	T830NF06250-18RH5-A *	5/8 - 18	3.81	1.09	1.89	.480	3	H5
—	—	T830NF06250-18RH6-A	5/8 - 18	3.81	1.09	1.89	.480	3	H6
—	—	T830NF06250-18RH7-A	5/8 - 18	3.81	1.09	1.89	.480	3	H7
T830NC07500-10RH3-A	T830NC07500-10RH3-A	T830NC07500-10RH3-A	3/4 - 10	4.25	1.22	2.08	.590	4	H3
—	—	T830NC07500-10RH5-A	3/4 - 10	4.25	1.22	2.08	.590	4	H5
T830NF07500-16RH3-A	T830NF07500-16RH3-A	T830NF07500-16RH3-A	3/4 - 16	4.25	1.22	2.08	.590	4	H3
—	—	T830NF07500-16RH5-A	3/4 - 16	4.25	1.22	2.08	.590	4	H5
—	T830NC08750-9RH4-A	T830NC08750-9RH4-A	7/8 - 9	4.69	1.34	2.30	.697	4	H4
—	T830NF08750-14RH4-A	T830NF08750-14RH4-A	7/8 - 14	4.69	1.34	2.30	.697	4	H4
—	T830NC10000-8RH4-A	—	1 - 8	5.13	1.50	2.58	.800	4	H4
T830NC10000-8RH5-A	—	T830NC10000-8RH5-A	1 - 8	5.13	1.50	2.58	.800	4	H5
—	—	T830NF1000-12RH4-A	1 - 12	5.13	1.50	2.58	.800	4	H4
—	—	T830NC11250-7RH6-A	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

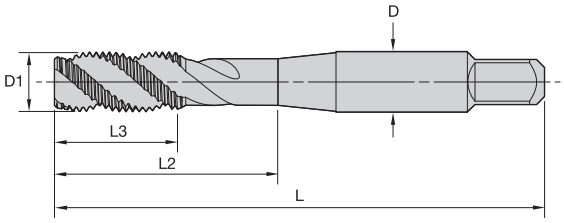
NOTE: Suggested for use in rigid and synchronous holders.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

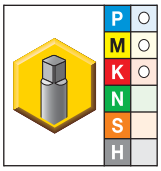
• KSP39 oxide







T832 • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders

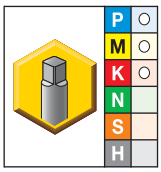


● first choice
○ alternate choice

KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T832NC#04-40RH2-A	4 - 40	1.88	.51	.69	.141	2	H2
T832NC#04-40RH3-A	4 - 40	1.88	.51	.69	.141	2	H3
T832NC#04-40RH5-A	4 - 40	1.88	.51	.69	.141	2	H5
T832NC#05-40RH2-A	5 - 40	1.94	.58	.75	.141	2	H2
T832NC#06-32RH2-A	6 - 32	1.99	.38	.71	.141	2	H2
T832NC#06-32RH3-A	6 - 32	1.99	.38	.71	.141	2	H3
T832NC#06-32RH5-A	6 - 32	1.99	.38	.71	.141	2	H5
T832NF#06-40RH2-A	6 - 40	1.99	.37	.71	.141	2	H2
T832NF#06-40RH3-A	6 - 40	1.99	.37	.71	.141	2	H3
T832NC#08-32RH2-A	8 - 32	2.12	.38	.76	.168	3	H2
T832NC#08-32RH3-A	8 - 32	2.12	.38	.76	.168	3	H3
T832NC#08-32RH5-A	8 - 32	2.12	.38	.76	.168	3	H5
T832NC#10-24RH3-A	10 - 24	2.37	.50	.91	.194	3	H3
T832NC#10-24RH5-A	10 - 24	2.37	.50	.91	.194	3	H5
T832NF#10-32RH3-A	10 - 32	2.36	.49	.91	.194	3	H3
T832NF#10-32RH5-A	10 - 32	2.36	.49	.91	.194	3	H5
T832NC02500-20RH3-A	1/4 - 20	2.50	.63	1.00	.255	3	H3
T832NC02500-20RH5-A	1/4 - 20	2.50	.63	1.00	.255	3	H5
T832NF02500-28RH3-A	1/4 - 28	2.49	.62	1.00	.255	3	H3
T832NF02500-28RH5-A	1/4 - 28	2.49	.62	1.00	.255	3	H5
T832NC03125-18RH3-A	5/16 - 18	2.72	.69	1.13	.318	3	H3
T832NC03125-18RH5-A	5/16 - 18	2.72	.69	1.13	.318	3	H5
T832NF03125-24RH3-A	5/16 - 24	2.71	.68	1.13	.318	3	H3
T832NF03125-24RH5-A	5/16 - 24	2.71	.68	1.13	.318	3	H5
T832NC03750-16RH3-A	3/8 - 16	2.94	.75	1.27	.381	3	H3
T832NC03750-16RH5-A	3/8 - 16	2.94	.75	1.27	.381	3	H5
T832NF03750-24RH3-A	3/8 - 24	2.92	.74	1.25	.381	3	H3
T832NF03750-24RH4-A	3/8 - 24	2.92	.74	1.25	.381	3	H4

(continued)

(T832 • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Rigid and Synchronous Holders — continued)



● first choice
○ alternate choice

KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T832NF03750-24RH5-A	3/8 - 24	2.92	.74	1.25	.381	3	H5
T832NC04375-14RH3-A	7/16 - 14	3.16	.88	1.49	.323	3	H3
T832NC04375-14RH5-A	7/16 - 14	3.16	.88	1.49	.323	3	H5
T832NF04375-20RH3-A	7/16 - 20	3.16	.88	1.49	.323	3	H3
T832NF04375-20RH5-A	7/16 - 20	3.16	.88	1.49	.323	3	H5
T832NC05000-13RH3-A	1/2 - 13	3.38	.94	1.74	.367	3	H3
T832NC05000-13RH5-A	1/2 - 13	3.38	.94	1.74	.367	3	H5
T832NF05000-20RH3-A	1/2 - 20	3.38	.94	1.74	.367	3	H3
T832NC05625-12RH3-A	9/16 - 12	3.59	1.00	1.74	.429	3	H3
T832NC05625-12RH5-A	9/16 - 12	3.59	1.00	1.74	.429	3	H5
T832NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
T832NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
T832NC06250-11RH5-A	5/8 - 11	3.81	1.09	1.89	.480	3	H5
T832NF06250-18RH3-A	5/8 - 18	3.81	1.09	1.89	.480	3	H3
T832NF06250-18RH5-A	5/8 - 18	3.81	1.09	1.89	.480	3	H5
T832NC07500-10RH3-A	3/4 - 10	4.25	1.22	2.08	.590	4	H3
T832NF07500-16RH3-A	3/4 - 16	4.25	1.22	2.08	.590	4	H3

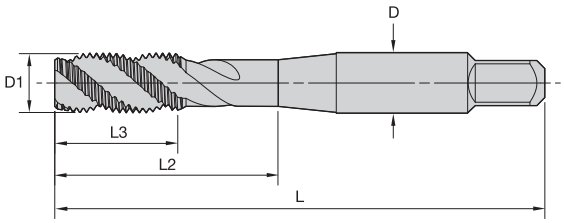
NOTE: Suggested for use in rigid and synchronous holders.

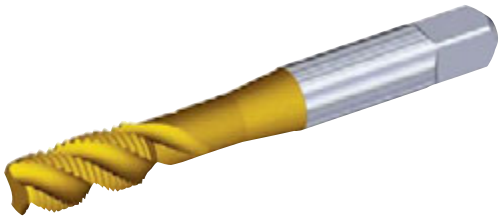
Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

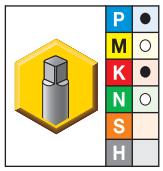
- KSP32 TiCN/TiN
- KSP39 oxide

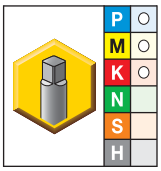






T838 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders



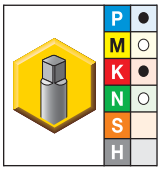


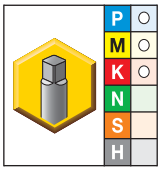
● first choice
○ alternate choice

KSP32	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
–	T838NC#02-56RH2-A	2 - 56	1.76	.39	.50	.141	2	H2
–	T838NC#03-48RH2-A	3 - 48	1.82	.46	.57	.141	2	H2
T838NC#04-40RH2-A	T838NC#04-40RH2-A	4 - 40	1.88	.52	.70	.141	2	H2
–	T838NC#04-40RH3-A	4 - 40	1.88	.52	.70	.141	2	H3
–	T838NC#04-40RH4-A	4 - 40	1.88	.52	.70	.141	2	H4
–	T838NC#04-40RH5-A	4 - 40	1.88	.52	.70	.141	2	H5
–	T838NF#04-48RH2-A	4 - 48	1.88	.53	.70	.141	2	H2
–	T838NC#05-40RH2-A	5 - 40	1.95	.59	.76	.141	2	H2
–	T838NC#06-32RH2-A	6 - 32	2.00	.39	.72	.141	2	H2
T838NC#06-32RH3-A	T838NC#06-32RH3-A	6 - 32	2.00	.39	.72	.141	2	H3
–	T838NC#06-32RH4-A	6 - 32	2.00	.39	.72	.141	2	H4
–	T838NC#06-32RH5-A	6 - 32	2.00	.39	.72	.141	2	H5
–	T838NC#06-32RH7-A	6 - 32	2.00	.39	.72	.141	2	H7
–	T838NF#06-40RH2-A	6 - 40	2.00	.39	.72	.141	2	H2
–	T838NF#06-40RH3-A	6 - 40	2.00	.39	.72	.141	2	H3
–	T838NC#08-32RH2-A	8 - 32	2.13	.38	.77	.168	3	H2
T838NC#08-32RH3-A	T838NC#08-32RH3-A	8 - 32	2.13	.38	.77	.168	3	H3
–	T838NC#08-32RH4-A	8 - 32	2.13	.38	.77	.168	3	H4
–	T838NC#08-32RH5-A	8 - 32	2.13	.38	.77	.168	3	H5
–	T838NC#08-32RH6-A	8 - 32	2.13	.38	.77	.168	3	H6
–	T838NC#08-32RH7-A	8 - 32	2.13	.38	.77	.168	3	H7
–	T838NC#10-24RH2-A	10 - 24	2.38	.50	.92	.194	3	H2
T838NC#10-24RH3-A	T838NC#10-24RH3-A	10 - 24	2.38	.50	.92	.194	3	H3
–	T838NC#10-24RH4-A	10 - 24	2.38	.50	.92	.194	3	H4
–	T838NC#10-24RH5-A	10 - 24	2.38	.50	.92	.194	3	H5
–	T838NC#10-24RH7-A	10 - 24	2.38	.50	.92	.194	3	H7
–	T838NF#10-32RH2-A	10 - 32	2.38	.50	.92	.194	3	H2
T838NF#10-32RH3-A	T838NF#10-32RH3-A	10 - 32	2.38	.50	.92	.194	3	H3

(continued)

(T838 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



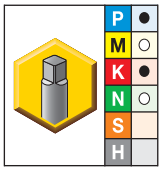


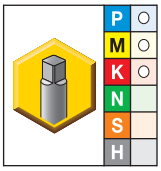
● first choice
○ alternate choice

KSP32	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	T838NF#10-32RH4-A	10 - 32	2.38	.50	.92	.194	3	H4
—	T838NF#10-32RH5-A	10 - 32	2.38	.50	.91	.194	3	H5
—	T838NF#10-32RH6-A	10 - 32	2.38	.50	.92	.194	3	H6
—	T838NF#10-32RH7-A	10 - 32	2.38	.50	.92	.194	3	H7
—	T838NC#12-24RH3-A	12 - 24	2.43	.50	.96	.220	3	H3
—	T838NF#12-28RH3-A	12 - 28	2.43	.50	.96	.220	3	H3
—	T838NC02500-20RH2-A	1/4 - 20	2.50	.63	1.00	.255	3	H2
T838NC02500-20RH3-A	T838NC02500-20RH3-A	1/4 - 20	2.50	.63	1.00	.255	3	H3
—	T838NC02500-20RH5-A	1/4 - 20	2.50	.63	1.00	.255	3	H5
—	T838NC02500-20RH7-A	1/4 - 20	2.50	.63	1.00	.255	3	H7
—	T838NF02500-28RH2-A	1/4 - 28	2.50	.63	1.00	.255	3	H2
T838NF02500-28RH3-A	T838NF02500-28RH3-A	1/4 - 28	2.50	.63	1.00	.255	3	H3
—	T838NF02500-28RH4-A	1/4 - 28	2.50	.63	1.00	.255	3	H4
—	T838NF02500-28RH5-A	1/4 - 28	2.50	.63	1.00	.255	3	H5
—	T838NF02500-28RH6-A	1/4 - 28	2.50	.63	1.00	.255	3	H6
—	T838NF02500-28RH7-A	1/4 - 28	2.50	.63	1.00	.255	3	H7
T838NC03125-18RH3-A	T838NC03125-18RH3-A	5/16 - 18	2.72	.69	1.13	.318	3	H3
—	T838NC03125-18RH5-A	5/16 - 18	2.72	.69	1.13	.318	3	H5
—	T838NC03125-18RH7-A	5/16 - 18	2.72	.69	1.13	.318	3	H7
T838NF03125-24RH3-A	T838NF03125-24RH3-A	5/16 - 24	2.72	.69	1.13	.318	3	H3
—	T838NF03125-24RH5-A	5/16 - 24	2.72	.69	1.12	.318	3	H5
—	T838NF03125-24RH7-A	5/16 - 24	2.72	.69	1.12	.318	3	H7
T838NC03750-16RH3-A	T838NC03750-16RH3-A	3/8 - 16	2.94	.75	1.27	.381	3	H3
—	T838NC03750-16RH5-A	3/8 - 16	2.94	.75	1.27	.381	3	H5
—	T838NC03750-16RH7-A	3/8 - 16	2.94	.75	1.27	.381	3	H7
T838NF03750-24RH3-A	T838NF03750-24RH3-A	3/8 - 24	2.94	.75	1.27	.381	3	H3
—	T838NF03750-24RH4-A	3/8 - 24	2.94	.75	1.27	.381	3	H4
—	T838NF03750-24RH5-A	3/8 - 24	2.94	.75	1.27	.381	3	H5
—	T838NF03750-24RH6-A	3/8 - 24	2.94	.75	1.27	.381	3	H6
T838NC04375-14RH3-A	T838NC04375-14RH3-A	7/16 - 14	3.16	.88	1.49	.323	3	H3
—	T838NC04375-14RH5-A	7/16 - 14	3.16	.88	1.49	.323	3	H5
—	T838NC04375-14RH7-A	7/16 - 14	3.16	.88	1.49	.323	3	H7
T838NF04375-20RH3-A	T838NF04375-20RH3-A	7/16 - 20	3.16	.88	1.49	.323	3	H3
—	T838NF04375-20RH5-A	7/16 - 20	3.16	.88	1.49	.323	3	H5
—	T838NF04375-20RH6-A	7/16 - 20	3.16	.88	1.49	.323	3	H6
—	T838NF04375-20RH7-A	7/16 - 20	3.16	.88	1.49	.323	3	H7
T838NC05000-13RH3-A	T838NC05000-13RH3-A	1/2 - 13	3.38	.94	1.74	.367	3	H3
—	T838NC05000-13RH5-A	1/2 - 13	3.38	.94	1.74	.367	3	H5
—	T838NC05000-13RH7-A	1/2 - 13	3.38	.94	1.74	.367	3	H7
T838NF05000-20RH3-A	T838NF05000-20RH3-A	1/2 - 20	3.38	.94	1.74	.367	3	H3
—	T838NF05000-20RH5-A	1/2 - 20	3.38	.94	1.74	.367	3	H5
—	T838NF05000-20RH6-A	1/2 - 20	3.38	.94	1.74	.367	3	H6
—	T838NF05000-20RH7-A	1/2 - 20	3.38	.94	1.74	.367	3	H7
T838NC05625-12RH3-A	T838NC05625-12RH3-A	9/16 - 12	3.59	1.00	1.74	.429	3	H3
—	T838NC05625-12RH5-A	9/16 - 12	3.59	1.00	1.74	.429	3	H5
—	T838NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
—	T838NF05625-18RH5-A	9/16 - 18	3.59	1.00	1.74	.429	3	H5
T838NC06250-11RH3-A	T838NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
—	T838NC06250-11RH5-A	5/8 - 11	3.81	1.09	1.89	.480	3	H5
—	T838NC06250-11RH7-A	5/8 - 11	3.81	1.09	1.89	.480	3	H7
T838NF06250-18RH3-A	T838NF06250-18RH3-A	5/8 - 18	3.81	1.09	1.89	.480	3	H3
—	T838NF06250-18RH5-A	5/8 - 18	3.81	1.09	1.89	.480	3	H5

(continued)

(T838 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)





● first choice
○ alternate choice

KSP32	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
—	**T838NF06250-18RH6-A**	5/8 - 18	3.81	1.09	1.89	.480	3	H6
—	**T838NF06250-18RH7-A**	5/8 - 18	3.81	1.09	1.89	.480	3	H7
T838NC07500-10RH3-A	**T838NC07500-10RH3-A**	3/4 - 10	4.25	1.22	2.08	.590	4	H3
—	**T838NC07500-10RH5-A**	3/4 - 10	4.25	1.22	2.08	.590	4	H5
T838NF07500-16RH3-A	**T838NF07500-16RH3-A**	3/4 - 16	4.25	1.22	2.08	.590	4	H3
—	**T838NF07500-16RH5-A**	3/4 - 16	4.25	1.22	2.08	.590	4	H5
—	**T838NC08750-9RH4-A**	7/8 - 9	4.69	1.34	2.30	.697	4	H4
—	**T838NF08750-14RH4-A**	7/8 - 14	4.69	1.34	2.30	.697	4	H4
T838NC10000-8RH5-A	**T838NC10000-8RH5-A**	1 - 8	5.13	1.50	2.58	.800	4	H5
—	**T838NF1000-12RH4-A**	1 - 12	5.12	1.50	2.58	.800	4	H4
—	**T838NC11250-7RH6-A**	1 1/8 - 7	5.44	1.71	2.56	.896	4	H6

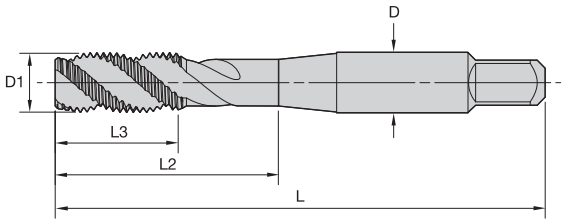
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

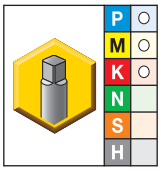
- KSP39 oxide







T839 • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders

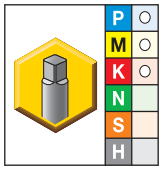


● first choice
○ alternate choice

KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T839NC#04-40RH2-A	4 - 40	1.88	.51	.69	.141	2	H2
T839NC#04-40RH3-A	4 - 40	1.88	.51	.69	.141	2	H3
T839NC#04-40RH5-A	4 - 40	1.88	.51	.69	.141	2	H5
T839NC#05-40RH2-A	5 - 40	1.94	.58	.75	.141	2	H2
T839NC#06-32RH2-A	6 - 32	1.99	.38	.71	.141	2	H2
T839NC#06-32RH3-A	6 - 32	1.99	.38	.71	.141	2	H3
T839NC#06-32RH5-A	6 - 32	1.99	.38	.71	.141	2	H5
T839NF#06-40RH2-A	6 - 40	1.99	.37	.71	.141	2	H2
T839NF#06-40RH3-A	6 - 40	1.99	.37	.71	.141	2	H3
T839NC#08-32RH2-A	8 - 32	2.12	.38	.76	.168	3	H2
T839NC#08-32RH3-A	8 - 32	2.12	.38	.76	.168	3	H3
T839NC#08-32RH5-A	8 - 32	2.12	.38	.76	.168	3	H5
T839NC#10-24RH3-A	10 - 24	2.37	.50	.91	.194	3	H3
T839NC#10-24RH5-A	10 - 24	2.37	.50	.91	.194	3	H5
T839NF#10-32RH3-A	10 - 32	2.36	.49	.91	.194	3	H3
T839NF#10-32RH5-A	10 - 32	2.36	.49	.91	.194	3	H5
T839NC02500-20RH3-A	1/4 - 20	2.50	.63	1.00	.255	3	H3
T839NC02500-20RH5-A	1/4 - 20	2.50	.63	1.00	.255	3	H5
T839NF02500-28RH3-A	1/4 - 28	2.49	.62	1.00	.255	3	H3
T839NF02500-28RH5-A	1/4 - 28	2.49	.62	1.00	.255	3	H5
T839NC03125-18RH3-A	5/16 - 18	2.72	.69	1.13	.318	3	H3
T839NC03125-18RH5-A	5/16 - 18	2.72	.69	1.13	.318	3	H5
T839NF03125-24RH3-A	5/16 - 24	2.71	.68	1.13	.318	3	H3
T839NF03125-24RH5-A	5/16 - 24	2.71	.68	1.12	.318	3	H5
T839NC03750-16RH3-A	3/8 - 16	2.94	.75	1.27	.381	3	H3
T839NC03750-16RH5-A	3/8 - 16	2.94	.75	1.27	.381	3	H5
T839NF03750-24RH3-A	3/8 - 24	2.94	.75	1.27	.381	3	H3
T839NF03750-24RH4-A	3/8 - 24	2.94	.75	1.27	.381	3	H4

(continued)

(T839 • Form E Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



● first choice
○ alternate choice

KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T839NF03750-24RH5-A	3/8 - 24	2.94	.75	1.27	.381	3	H5
T839NC04375-14RH3-A	7/16 - 14	3.16	.88	1.49	.323	3	H3
T839NC04375-14RH5-A	7/16 - 14	3.16	.88	1.49	.323	3	H5
T839NF04375-20RH3-A	7/16 - 20	3.16	.88	1.49	.323	3	H3
T839NF04375-20RH5-A	7/16 - 20	3.16	.88	1.49	.323	3	H5
T839NC05000-13RH3-A	1/2 - 13	3.38	.94	1.74	.367	3	H3
T839NC05000-13RH5-A	1/2 - 13	3.38	.94	1.74	.367	3	H5
T839NF05000-20RH3-A	1/2 - 20	3.38	.94	1.74	.367	3	H3
T839NC05625-12RH3-A	9/16 - 12	3.59	1.00	1.74	.429	3	H3
T839NC05625-12RH5-A	9/16 - 12	3.59	1.00	1.74	.429	3	H5
T839NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
T839NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
T839NC06250-11RH5-A	5/8 - 11	3.81	1.09	1.89	.480	3	H5
T839NF06250-18RH3-A	5/8 - 18	3.81	1.09	1.89	.480	3	H3
T839NF06250-18RH5-A	5/8 - 18	3.81	1.09	1.89	.480	3	H5
T839NC07500-10RH3-A	3/4 - 10	4.25	1.22	2.08	.590	4	H3
T839NF07500-16RH3-A	3/4 - 16	4.25	1.22	2.08	.590	4	H3

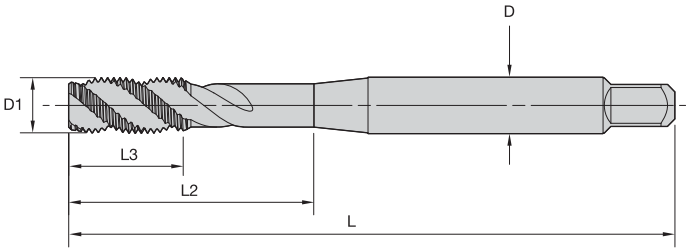
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

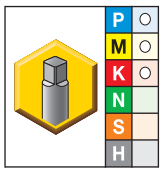
• KSP39 oxide







T830 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Rigid and Synchronous Holders



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T830NC#04-40R2B-D1	4 - 40	56	8	18	3,5	2	DIN 371	2B
T830NC#05-40R2B-D1	5 - 40	56	9	20	4,0	2	DIN 371	2B
T830NC#06-32R2B-D1	6 - 32	56	9	20	4,0	2	DIN 371	2B
T830NF#06-40R2B-D1	6 - 40	56	9	20	4,0	2	DIN 371	2B
T830NC#08-32R2B-D1	8 - 32	63	11	21	4,5	3	DIN 371	2B
T830NC#10-24R2B-D1	10 - 24	70	12	25	6,0	3	DIN 371	2B
T830NF#10-32R2B-D1	10 - 32	70	12	25	6,0	3	DIN 371	2B
T830NC02500-20R2B-D1	1/4 - 20	80	15	30	7,0	3	DIN 371	2B
T830NF02500-28R2B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	2B
T830NC03125-18R2B-D1	5/16 - 18	90	15	35	8,0	3	DIN 371	2B
T830NF03125-24R2B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	2B
T830NC03750-16R2B-D1	3/8 - 16	100	19	39	10,0	3	DIN 371	2B
T830NF03750-24R2B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	2B
T830NC04375-14R2B-D6	7/16 - 14	100	18	41	8,0	3	DIN 376	2B
T830NF04375-20R2B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	2B
T830NC05000-13R2B-D6	1/2 - 13	110	23	47	9,0	3	DIN 376	2B
T830NF05000-20R2B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	2B
T830NC05625-12R2B-D6	9/16 - 12	110	25	53	11,0	3	DIN 376	2B
T830NF05625-18R2B-D6	9/16 - 18	110	25	53	11,0	3	DIN 376	2B
T830NC06250-11R2B-D6	5/8 - 11	110	24	51	12,0	3	DIN 376	2B
T830NF06250-18R2B-D6	5/8 - 18	110	24	51	12,0	3	DIN 376	2B
T830NC07500-10R2B-D6	3/4 - 10	140	30	64	16,0	4	DIN 376	2B
T830NF07500-16R2B-D6	3/4 - 16	140	30	64	16,0	4	DIN 376	2B
T830NF08750-9R2B-D6	7/8 - 9	140	34	71	18,0	4	DIN 376	2B
T830NF08750-14R2B-D6	7/8 - 14	140	34	71	18,0	4	DIN 376	2B
T830NC10000-8R2B-D6	1 - 8	160	38	81	18,0	4	DIN 376	2B
T830NF10000-12R2B-D6	1 - 12	160	38	81	18,0	4	DIN 376	2B

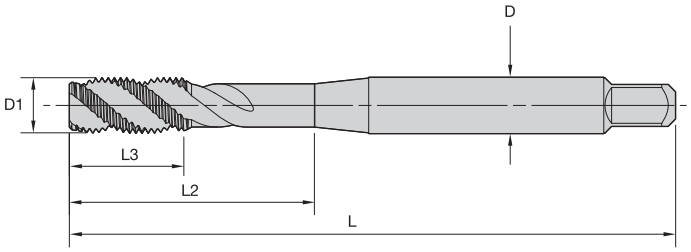
NOTE: Suggested for use in rigid and synchronous holders.

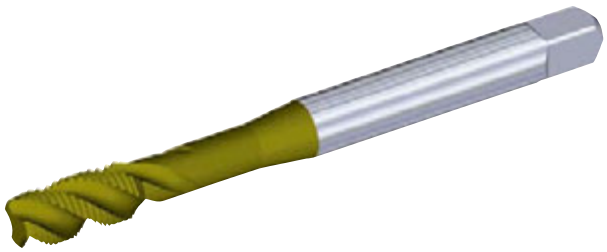
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

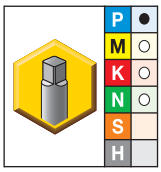
- KSU31 TiN
- KSP39 oxide

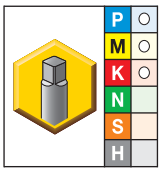






T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Tension/Compression Holders



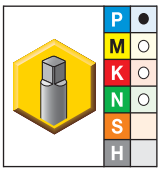


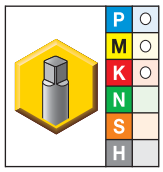
● first choice
○ alternate choice

KSU31	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838NC#06-32R2B-D1	**T838NC#06-32R2B-D1**	6 - 32	56	7	21	4,0	3	DIN 371	2B
T838NF#06-40R2B-D1	**T838NF#06-40R2B-D1**	6 - 40	56	7	21	4,0	3	DIN 371	2B
T838NC#08-32R2B-D1	**T838NC#08-32R2B-D1**	8 - 32	63	7	21	4,5	3	DIN 371	2B
T838NF#08-36R2B-D1	**T838NF#08-36R2B-D1**	8 - 36	63	7	21	4,5	3	DIN 371	2B
T838NC#10-24R2B-D1	**T838NC#10-24R2B-D1**	10 - 24	70	8	25	6,0	3	DIN 371	2B
T838NF#10-32R2B-D1	**T838NF#10-32R2B-D1**	10 - 32	70	8	25	6,0	3	DIN 371	2B
T838NC#12-24R2B-D1	**T838NC#12-24R2B-D1**	12 - 24	80	10	30	6,0	3	DIN 371	2B
T838NF#12-28R2B-D1	**T838NF#12-28R2B-D1**	12 - 28	80	10	30	6,0	3	DIN 371	2B
T838NC02500-20R2B-D1	**T838NC02500-20R2B-D1**	1/4 - 20	80	10	29	7,0	3	DIN 371	2B
T838NC02500-20R2B-D6	**T838NC02500-20R2B-D6**	1/4 - 20	80	10	36	4,5	3	DIN 376	2B
T838NF02500-28R2B-D1	**T838NF02500-28R2B-D1**	1/4 - 28	80	10	29	7,0	3	DIN 371	2B
T838NF02500-28R2B-D4	**T838NF02500-28R2B-D4**	1/4 - 28	80	10	36	4,5	3	DIN 374	2B
T838NC03125-18R2B-D1	**T838NC03125-18R2B-D1**	5/16 - 18	90	13	37	8,0	3	DIN 371	2B
T838NC03125-18R2B-D6	**T838NC03125-18R2B-D6**	5/16 - 18	90	13	37	6,0	3	DIN 376	2B
T838NF03125-24R2B-D4	**T838NF03125-24R2B-D4**	5/16 - 24	90	13	37	6,0	3	DIN 374	2B
T838NC03750-16R2B-D1	**T838NC03750-16R2B-D1**	3/8 - 16	100	15	42	10,0	3	DIN 371	2B
T838NC03750-16R2B-D6	**T838NC03750-16R2B-D6**	3/8 - 16	100	15	45	7,0	3	DIN 376	2B
T838NF03750-24R2B-D4	**T838NF03750-24R2B-D4**	3/8 - 24	90	15	40	7,0	3	DIN 374	2B
T838NC04375-14R2B-D6	**T838NC04375-14R2B-D6**	7/16 - 14	100	15	47	8,0	3	DIN 376	2B
T838NF04375-20R2B-D4	**T838NF04375-20R2B-D4**	7/16 - 20	100	15	47	8,0	3	DIN 374	2B
T838NC05000-13R2B-D6	**T838NC05000-13R2B-D6**	1/2 - 13	110	18	50	9,0	3	DIN 376	2B
T838NF05000-20R2B-D4	**T838NF05000-20R2B-D4**	1/2 - 20	100	13	44	9,0	3	DIN 374	2B
T838NC05625-12R2B-D6	**T838NC05625-12R2B-D6**	9/16 - 12	110	20	55	11,0	4	DIN 376	2B
T838NF05625-18R2B-D4	**T838NF05625-18R2B-D4**	9/16 - 18	100	15	44	11,0	4	DIN 374	2B
T838NC06250-11R2B-D6	**T838NC06250-11R2B-D6**	5/8 - 11	110	20	55	12,0	4	DIN 376	2B
T838NF06250-18R2B-D4	**T838NF06250-18R2B-D4**	5/8 - 18	100	15	45	12,0	4	DIN 374	2B
T838NC07500-10R2B-D6	**T838NC07500-10R2B-D6**	3/4 - 10	125	25	65	14,0	4	DIN 376	2B
T838NF07500-16R2B-D4	**T838NF07500-16R2B-D4**	3/4 - 16	110	17	55	14,0	4	DIN 374	2B

(continued)

(T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • UNC/UNF • Tension/Compression Holders — continued)





● first choice
○ alternate choice

KSU31	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838NC08750-9R2B-D6	**T838NC08750-9R2B-D6**	7/8 - 9	140	25	68	18,0	4	DIN 376	2B
T838NF08750-14R2B-D4	**T838NF08750-14R2B-D4**	7/8 - 14	125	18	57	18,0	4	DIN 374	2B
T838NC10000-8R2B-D6	**T838NC10000-8R2B-D6**	1 - 8	160	30	89	18,0	4	DIN 376	2B
T838NF10000-12R2B-D4	**T838NF10000-12R2B-D4**	1 - 12	140	22	63	18,0	4	DIN 374	2B
T838NC11250-7R2B-D6	**T838NC11250-7R2B-D6**	1 1/8 - 7	180	35	90	22,0	4	DIN 376	2B
T838NF11250-12R2B-D4	**T838NF11250-12R2B-D4**	1 1/8 - 12	150	22	70	22,0	4	DIN 374	2B
T838NC12500-7R2B-D6	**T838NC12500-7R2B-D6**	1 1/4 - 7	180	35	95	22,0	4	DIN 376	2B
T838NF12500-12R2B-D4	**T838NF12500-12R2B-D4**	1 1/4 - 12	150	22	67	22,0	5	DIN 374	2B
T838NC13750-6R2B-D6	**T838NC13750-6R2B-D6**	1 3/8 - 6	200	40	100	28,0	4	DIN 376	2B
T838NF13750-12R2B-D4	**T838NF13750-12R2B-D4**	1 3/8 - 12	170	24	80	28,0	5	DIN 374	2B
T838NC15000-6R2B-D6	**T838NC15000-6R2B-D6**	1 1/2 - 6	200	40	100	28,0	4	DIN 376	2B
T838NF15000-12R2B-D4	**T838NF15000-12R2B-D4**	1 1/2 - 12	170	24	72	28,0	6	DIN 374	2B
T838NC17500-5R2B-D6	**T838NC17500-5R2B-D6**	1 3/4 - 5	220	50	108	36,0	5	DIN 376	2B
T838NC20000-4,5R2B-D6	**T838NC20000-4,5R2B-D6**	2 - 4 1/2	250	55	140	40,0	5	DIN 376	2B

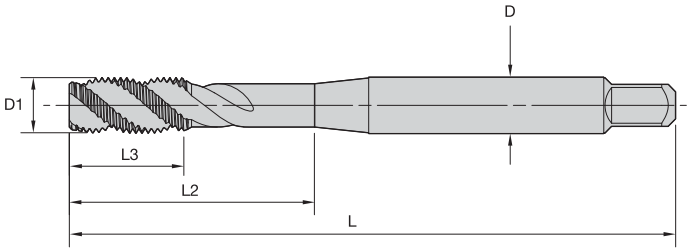
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

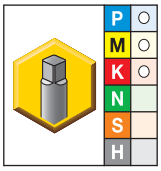
• KSP39 oxide







T830 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • UNJC/UNJF • Rigid and Synchronous Holders



● first choice
○ alternate choice

KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T830NC#04-40R3B-D1	4 - 40	56	8	18	3,5	2	DIN 371	3B
T830NC#06-32R3B-D1	6 - 32	56	9	20	4,0	2	DIN 371	3B
T830NC#08-32R3B-D1	8 - 32	63	11	21	4,5	3	DIN 371	3B
T830NF#10-32R3B-D1	10 - 32	70	12	25	6,0	3	DIN 371	3B
T830NF02500-28R3B-D1	1/4 - 28	80	15	30	7,0	3	DIN 371	3B
T830NF03125-24R3B-D1	5/16 - 24	90	15	35	8,0	3	DIN 371	3B
T830NF03750-24R3B-D1	3/8 - 24	100	19	39	10,0	3	DIN 371	3B
T830NF04375-20R3B-D6	7/16 - 20	100	18	41	8,0	3	DIN 376	3B
T830NF05000-20R3B-D6	1/2 - 20	110	23	47	9,0	3	DIN 376	3B

NOTE: Internal UNJC/UNJF threads may be produced with ground thread UNC/UNF taps.

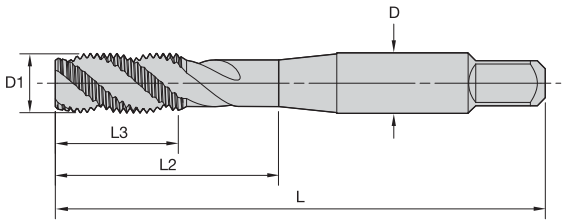
NOTE: Suggested for use in rigid and synchronous holders.

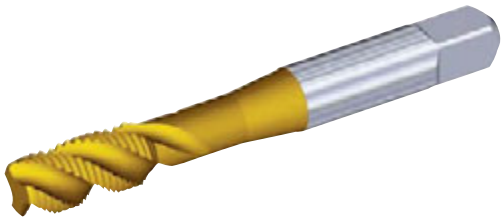
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

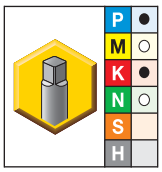
- KSP32 TiCN/TiN
- KSMN34 TiN + CrC/C
- KSP39 oxide

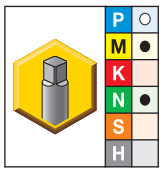


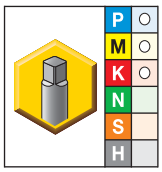




T830 • Form C Semi-Bottoming Chamfer • Metric • ANSI • Rigid and Synchronous Holders







● first choice
○ alternate choice

KSP32	KSMN34	KSP39	D1 size	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T830M030X050RD3-A	–	T830M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
T834M030X050RD3-A	–	T834M030X050RD3-A	M3 X 0.5	1.94	.58	.76	.141	3	D3
–	–	T830M035X060RD4-A	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
–	–	T834M035X060RD4-A	M3.5 X 0.6	2.00	.38	.72	.141	3	D4
T830M040X070RD4-A	–	T830M040X070RD4-A	M4 X 0,7	2.12	.38	.76	.168	3	D4
T830M050X080RD4-A	T830M050X080RD4-A	T830M050X080RD4-A	M5 X 0,8	2.37	.50	.91	.194	3	D4
T830M060X100RD5-A	T830M060X100RD5-A	T830M060X100RD5-A	M6 X 1	2.50	.63	1.00	.255	3	D5
–	–	T830M070X100RD5-A	M7 X 1	2.72	.69	1.15	.318	3	D5
–	–	T830MF080X100RD5-A	M8 X 1	2.70	.69	1.12	.318	3	D5
T830M080X125RD5-A	T830M080X125RD5-A	T830M080X125RD5-A	M8 X 1,25	2.70	.69	1.12	.318	3	D5
–	–	T830MF100X125RD5-A	M10 X 1,25	2.92	.74	1.25	.381	3	D5
T830M100X150RD6-A	T830M100X150RD6-A	T830M100X150RD6-A	M10 X 1,5	2.93	.75	1.26	.381	3	D6
–	–	T830MF120X125RD5-A	M12 X 1,25	3.38	.94	1.74	.367	3	D5
–	–	T830MF120X150RD5-A	M12 X 1,5	3.38	.94	1.74	.367	3	D5
T830M120X175RD6-A	T830M120X175RD6-A	T830M120X175RD6-A	M12 X 1,75	3.38	.94	1.74	.367	3	D6
–	–	T830MF140X150RD6-A	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
–	–	T830M140X200RD7-A	M14 X 2	3.59	1.00	1.74	.429	3	D7
–	–	T830MF160X150RD6-A	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
–	–	T830M160X200RD7-A	M16 X 2	3.81	1.09	1.89	.480	3	D7
–	–	T830MF180X150RD6-A	M18 X 1,5	4.03	1.09	1.89	.542	4	D6
–	–	T830M180X250RD7-A	M18 X 2,5	4.03	1.09	1.89	.542	4	D7

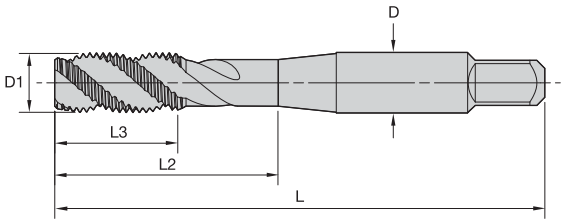
NOTE: Suggested for use in rigid and synchronous holders.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

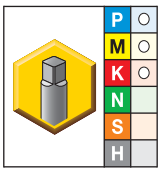
• KSP39 oxide







T832 • Form E Bottoming Chamfer • Metric • ANSI • Rigid and Synchronous Holders



● first choice
○ alternate choice

KSP39	D1 size	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T832M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
T832M035X060RD4-A	M3,5 X 0,6	2.00	.38	.71	.141	2	D4
T832M040X070RD4-A	M4 X 0,7	2.13	.38	.76	.168	3	D4
T832M050X080RD4-A	M5 X 0,8	2.38	.50	.91	.194	3	D4
T832M060X100RD5-A	M6 X 1	2.50	.63	1.00	.255	3	D5
T832M070X100RD5-A	M7 X 1	2.72	.69	1.15	.318	3	D5
T832MF080X100RD5-A	M8 X 1	2.72	.69	1.12	.318	3	D5
T832M080X125RD5-A	M8 X 1,25	2.72	.69	1.12	.318	3	D5
T832MF100X125RD5-A	M10 X 1,25	2.94	.75	1.26	.381	3	D5
T832M100X150RD6-A	M10 X 1,5	2.94	.75	1.26	.381	3	D6
T832MF120X125RD5-A	M12 X 1,25	3.38	.94	1.74	.367	3	D5
T832MF120X150RD5-A *	M12 X 1,5	3.38	.94	1.74	.367	3	D5
T832M120X175RD6-A	M12 X 1,75	3.38	.94	1.74	.367	3	D6
T832MF140X150RD6-A	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
T832M140X200RD7-A	M14 X 2	3.59	1.00	1.74	.429	3	D7
T832MF160X150RD6-A	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
T832M160X200RD7-A	M16 X 2	3.81	1.09	1.89	.480	3	D7
T832MF180X150RD6-A	M18 X 1,5	4.03	1.09	1.89	.542	4	D6

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

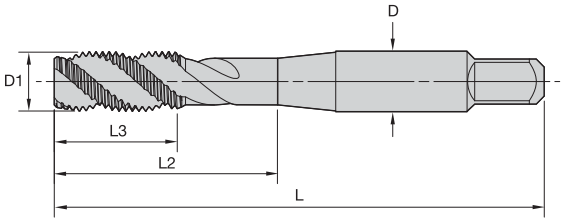
NOTE: Suggested for use in rigid and synchronous holders.

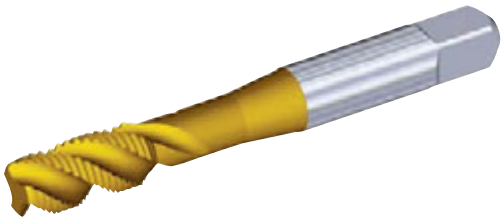
Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

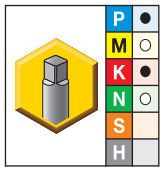
- KSP32 TiCN/TiN
- KSP39 oxide

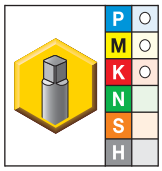






T838 • Form C Semi-Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders





● first choice
○ alternate choice

KSP32	KSP39	inch dimensions D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T838M030X050RD3-A	T838M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
–	T838M035X060RD4-A	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
T838M040X070RD4-A	T838M040X070RD4-A	M4 X 0,7	2.12	.38	.76	.168	3	D4
T838M050X080RD4-A	T838M050X080RD4-A	M5 X 0,8	2.37	.50	.91	.194	3	D4
T838M060X100RD5-A	T838M060X100RD5-A	M6 X 1	2.50	.63	1.01	.255	3	D5
–	T838M070X100RD5-A	M7 X 1	2.73	.69	1.15	.318	3	D5
–	T838MF080X100RD5-A	M8 X 1	2.71	.69	1.12	.318	3	D5
T838M080X125RD5-A	T838M080X125RD5-A	M8 X 1,25	2.71	.69	1.12	.318	3	D5
–	T838MF100X125RD5-A	M10 X 1,25	2.92	.74	1.25	.381	3	D5
T838M100X150RD6-A	T838M100X150RD6-A	M10 X 1,5	2.92	.75	1.26	.381	3	D6
–	T838MF120X125RD5-A	M12 X 1,25	3.38	.94	1.74	.367	3	D5
–	T838MF120X150RD5-A	M12 X 1,5	3.38	.94	1.74	.367	3	D5
T838M120X175RD6-A	T838M120X175RD6-A	M12 X 1,75	3.38	.94	1.74	.367	3	D6
–	T838MF140X150RD6-A	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
–	T838M140X200RD7-A	M14 X 2	3.59	1.00	1.74	.429	3	D7
–	T838MF160X150RD6-A	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
–	T838M160X200RD7-A	M16 X 2	3.81	1.09	1.89	.480	3	D7
–	T838MF180X150RD6-A	M18 X 1,5	4.03	1.09	1.89	.542	4	D6
–	T838M180X250RD7-A	M18 X 2,5	4.03	1.09	1.89	.542	4	D7

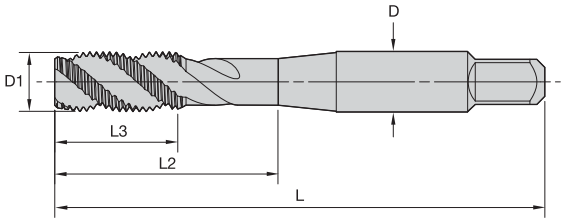
NOTE: Suitable for tension/compression holders.

Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

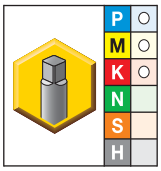
• KSP39 oxide







T839 • Form E Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

KSP39	D1 size	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T839M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
T839M035X060RD4-A	M3,5 X 0,6	2.00	.38	.71	.141	2	D4
T839M040X070RD4-A	M4 X 0,7	2.13	.38	.76	.168	3	D4
T839M050X080RD4-A	M5 X 0,8	2.38	.50	.91	.194	3	D4
T839M060X100RD5-A	M6 X 1	2.50	.63	1.00	.255	3	D5
T839M070X100RD5-A	M7 X 1	2.72	.69	1.15	.318	3	D5
T839MF080X100RD5-A	M8 X 1	2.72	.69	1.12	.318	3	D5
T839M080X125RD5-A	M8 X 1,25	2.72	.69	1.12	.318	3	D5
T839MF100X125RD5-A	M10 X 1,25	2.94	.75	1.26	.381	3	D5
T839M100X150RD6-A	M10 X 1,5	2.94	.75	1.26	.381	3	D6
T839MF120X125RD5-A	M12 X 1,25	3.38	.94	1.74	.367	3	D5
T839MF120X150RD5-A	M12 X 1,5	3.38	.94	1.74	.367	3	D5
T839M120X175RD6-A	M12 X 1,75	3.38	.94	1.74	.367	3	D6
T839MF140X150RD6-A	M14 X 1,5	3.59	1.00	1.74	.429	3	D6
T839M140X200RD7-A	M14 X 2	3.59	1.00	1.74	.429	3	D7
T839MF160X150RD6-A	M16 X 1,5	3.81	1.09	1.89	.480	3	D6
T839M160X200RD7-A	M16 X 2	3.81	1.09	1.89	.480	3	D7
T839MF180X150RD6-A	M18 X 1,5	4.03	1.09	1.89	.542	4	D6

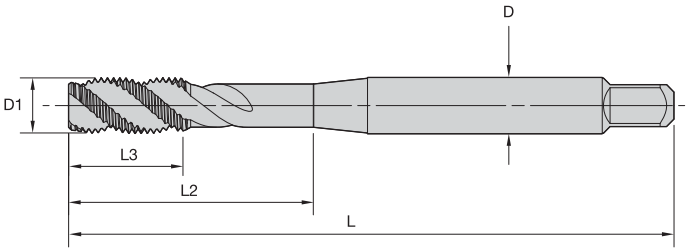
NOTE: Suitable for tension/compression holders.

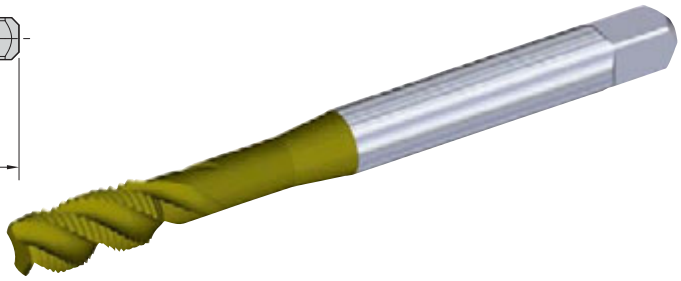
Shank Tolerance

D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

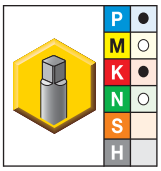
- KSP32 TiCN/TiN
- KSP39 oxide

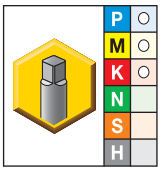






T830 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Rigid and Synchronous Holders



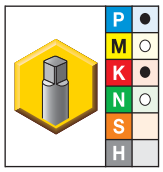


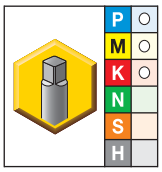
● first choice
○ alternate choice

KSP32	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
–	T830M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6H
–	T830M020X040R6G-D1	M2 X 0,4	45	7	13	2,8	2	DIN 371	6G
–	T830M025X045R6H-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6H
–	T830M025X045R6G-D1	M2,5 X 0,45	50	7	15	2,8	2	DIN 371	6G
T830M030X050R6H-D1	T830M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
–	T830M030X050R6G-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6G
–	T830M035X060R6H-D1	M3,5 X 0,6	56	9	20	4,0	2	DIN 371	6H
T830M040X070R6H-D1	T830M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
–	T830M040X070R6G-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6G
T830M050X080R6H-D1	T830M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
–	T830M050X080R6G-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6G
–	T830M060X100R6H-D6	M6 X 1	80	12	30	4,5	3	DIN 376	6H
T830M060X100R6H-D1	T830M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
–	T830M060X100R6G-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6G
–	T830M070X100R6H-D1	M7 X 1	80	12	30	7,0	3	DIN 371	6H
T830MF080X100R6H-D4	T830MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
–	T830M080X125R6H-D6	M8 X 1,25	90	15	35	6,0	3	DIN 376	6H
T830M080X125R6H-D1	T830M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
–	T830M080X125R6G-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6G
T830MF100X125R6H-D4	T830MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
–	T830M100X150R6H-D6	M10 X 1,5	100	18	39	7,0	3	DIN 376	6H
T830M100X150R6H-D1	–	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G
–	T830M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
–	T830M100X150R6G-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6G

(continued)

(T830 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Rigid and Synchronous Holders — continued)





● first choice
○ alternate choice

KSP32	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
–	T830MF120X125R6H-D4	M12 X 1,25	100	21	39	9,0	3	DIN 374	6H
T830MF120X150R6H-D4	T830MF120X150R6H-D4	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
T830M120X175R6H-D6	T830M120X175R6H-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
–	T830M120X175R6G-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6G
T830MF140X150R6H-D4	T830MF140X150R6H-D4	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T830M140X200R6H-D6	T830M140X200R6H-D6	M14 X 2	110	24	52	11,0	3	DIN 376	6H
–	T830M140X200R6G-D6	M14 X 2	110	24	52	11,0	3	DIN 376	6G
–	T830MF160X150R6H-D4	M16 X 1,5	100	21	46	12,0	3	DIN 374	6H
–	T830M160X200R6H-D6	M16 X 2	110	24	51	12,0	3	DIN 376	6H
–	T830M160X200R6G-D6	M16 X 2	110	24	51	12,0	3	DIN 376	6G
–	T830MF180X150R6H-D4	M18 X 1,5	110	21	50	14,0	4	DIN 374	6H
–	T830M180X250R6H-D6	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
–	T830M200X250R6H-D6	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H
–	T830M220X250R6H-D6	M22 X 2,5	140	30	70	18,0	4	DIN 376	6H
–	T830M240X300R6H-D6	M24 X 3	160	36	77	18,0	4	DIN 376	6H
–	T830M270X300R6H-D6	M27 X 3	160	36	82	20,0	4	DIN 376	6H
–	T830M300X350R6H-D6	M30 X 3,5	180	42	91	22,0	4	DIN 376	6H
–	T830M330X350R6H-D6	M33 X 3,5	180	42	100	25,0	4	DIN 376	6H
–	T830M360X400R6H-D6	M36 X 4	200	48	110	28,0	5	DIN 376	6H

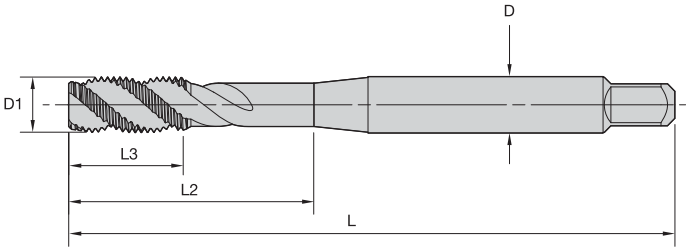
NOTE: Suggested for use in rigid and synchronous holders.

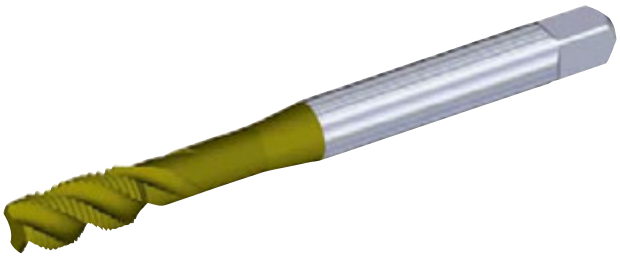
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

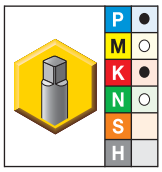
- KSP32 TiCN/TiN
- KSP39 oxide

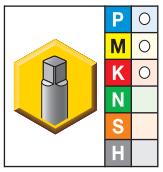






T832 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • Rigid and Synchronous Holders





● first choice
○ alternate choice

KSP32	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T832M030X050R6H-D1	T832M030X050R6H-D1	M3 X 0,5	56	8	18	3,5	2	DIN 371	6H
T832M040X070R6H-D1	T832M040X070R6H-D1	M4 X 0,7	63	11	21	4,5	3	DIN 371	6H
T832M050X080R6H-D1	T832M050X080R6H-D1	M5 X 0,8	70	12	25	6,0	3	DIN 371	6H
T832M060X100R6H-D1	T832M060X100R6H-D1	M6 X 1	80	12	30	6,0	3	DIN 371	6H
T832MF080X100R6H-D4	T832MF080X100R6H-D4	M8 X 1	90	15	35	6,0	3	DIN 374	6H
T832M080X125R6H-D1	T832M080X125R6H-D1	M8 X 1,25	90	15	35	8,0	3	DIN 371	6H
T832MF100X125R6H-D4	T832MF100X125R6H-D4	M10 X 1,25	100	18	39	7,0	3	DIN 374	6H
T832M100X150R6H-D1	T832M100X150R6H-D1	M10 X 1,5	100	18	39	10,0	3	DIN 371	6H
T832MF120X150R6H-D4	T832MF120X150R6H-D4	M12 X 1,5	100	21	39	9,0	3	DIN 374	6H
T832M120X175R6H-D6	T832M120X175R6H-D6	M12 X 1,75	110	21	44	9,0	3	DIN 376	6H
T832MF140X150R6H-D4	T832MF140X150R6H-D4	M14 X 1,5	100	21	47	11,0	3	DIN 374	6H
T832M140X200R6H-D6	T832M140X200R6H-D6	M14 X 2	110	24	52	11,0	3	DIN 376	6H
—	T832M160X200R6H-D6	M16 X 2	110	24	51	12,0	3	DIN 376	6H
T832M180X250R6H-D6	T832M180X250R6H-D6	M18 X 2,5	125	30	58	14,0	4	DIN 376	6H
T832M200X250R6H-D6	T832M200X250R6H-D6	M20 X 2,5	140	30	64	16,0	4	DIN 376	6H

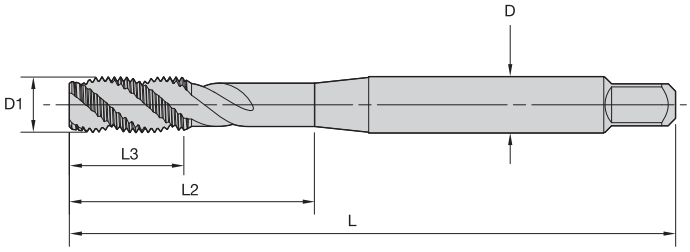
NOTE: Suggested for use in rigid and synchronous holders.

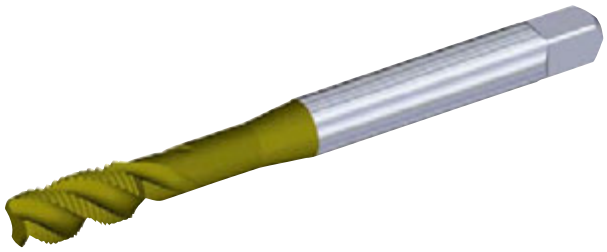
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

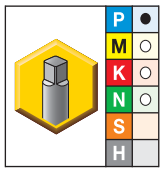
- KSU31 TiN
- KSP39 oxide

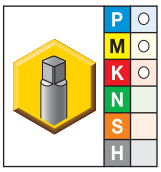






T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Tension/Compression Holders



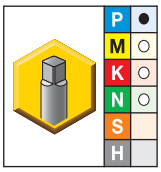


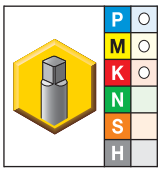
● first choice
○ alternate choice

KSU31	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838M020X040R6H-D1	T838M020X040R6H-D1	M2 X 0,4	45	7	13	2,8	3	DIN 371	6H
T838M030X050R6H-D1	T838M030X050R6H-D1	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
T838M040X070R6H-D1	T838M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T838M050X080R6H-D1	T838M050X080R6H-D1	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
T838M050X080R6H-D6	T838M050X080R6H-D6	M5 X 0,8	70	8	27	3,5	3	DIN 376	6H
T838MF060X075R6H-D4	T838MF060X075R6H-D4	M6 X 0,75	80	10	34	4,5	3	DIN 374	6H
T838M060X100R6H-D1	T838M060X100R6H-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T838M060X100R6H-D6	T838M060X100R6H-D6	M6 X 1	80	10	34	4,5	3	DIN 376	6H
T838MF080X075R6H-D4	T838MF080X075R6H-D4	M8 X 0,75	90	13	37	6,0	3	DIN 374	6H
T838MF080X100R6H-D4	T838MF080X100R6H-D4	M8 X 1	90	13	37	6,0	3	DIN 374	6H
T838M080X125R6H-D1	T838M080X125R6H-D1	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
T838M080X125R6H-D6	T838M080X125R6H-D6	M8 X 1,25	90	13	37	6,0	3	DIN 376	6H
T838MF100X075R6H-D4	T838MF100X075R6H-D4	M10 X 0,75	90	15	40	7,0	3	DIN 374	6H
T838MF100X100R6H-D4	T838MF100X100R6H-D4	M10 X 1	90	15	40	7,0	3	DIN 374	6H
T838MF100X125R6H-D4	T838MF100X125R6H-D4	M10 X 1,25	100	15	44	7,0	3	DIN 374	6H
T838M100X150R6H-D1	T838M100X150R6H-D1	M10 X 1,5	100	15	41	10,0	3	DIN 371	6H
T838M100X150R6H-D6	T838M100X150R6H-D6	M10 X 1,5	100	15	44	7,0	3	DIN 376	6H
T838MF120X100R6H-D4	T838MF120X100R6H-D4	M12 X 1	100	13	50	9,0	3	DIN 374	6H
T838MF120X125R6H-D4	T838MF120X125R6H-D4	M12 X 1,25	100	13	50	9,0	3	DIN 374	6H
T838MF120X150R6H-D4	T838MF120X150R6H-D4	M12 X 1,5	100	13	50	9,0	3	DIN 374	6H
T838M120X175R6H-D6	T838M120X175R6H-D6	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
T838MF140X100R6H-D4	T838MF140X100R6H-D4	M14 X 1	100	15	41	11,0	4	DIN 374	6H
T838MF140X125R6H-D4	T838MF140X125R6H-D4	M14 X 1,25	100	15	41	11,0	4	DIN 374	6H
T838MF140X150R6H-D4	T838MF140X150R6H-D4	M14 X 1,5	100	15	41	11,0	4	DIN 374	6H
T838M140X200R6H-D6	T838M140X200R6H-D6	M14 X 2	110	20	50	11,0	3	DIN 376	6H
T838MF160X150R6H-D4	T838MF160X150R6H-D4	M16 X 1,5	100	15	45	12,0	4	DIN 374	6H
T838M160X200R6H-D6	T838M160X200R6H-D6	M16 X 2	110	20	55	12,0	4	DIN 376	6H
T838MF180X150R6H-D4	T838MF180X150R6H-D4	M18 X 1,5	110	17	55	14,0	4	DIN 374	6H

(continued)

(T838 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Tension/Compression Holders — continued)





● first choice
○ alternate choice

KSU31	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T838MF180X200R6H-D4	T838MF180X200R6H-D4	M18 X 2	125	25	61	14,0	4	DIN 374	6H
T838M180X250R6H-D6	T838M180X250R6H-D6	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
T838MF200X150R6H-D4	T838MF200X150R6H-D4	M20 X 1,5	125	17	56	16,0	4	DIN 374	6H
T838MF200X200R6H-D4	T838MF200X200R6H-D4	M20 X 2	140	25	65	16,0	4	DIN 374	6H
T838M200X250R6H-D6	T838M200X250R6H-D6	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H
T838MF220X150R6H-D4	T838MF220X150R6H-D4	M22 X 1,5	125	18	61	18,0	4	DIN 374	6H
T838MF220X200R6H-D4	T838MF220X200R6H-D4	M22 X 2	140	25	66	18,0	4	DIN 374	6H
T838M220X250R6H-D6	T838M220X250R6H-D6	M22 X 2,5	140	25	66	18,0	4	DIN 376	6H
T838MF240X150R6H-D4	T838MF240X150R6H-D4	M24 X 1,5	140	20	67	18,0	4	DIN 374	6H
T838MF240X200R6H-D4	T838MF240X200R6H-D4	M24 X 2	140	20	67	18,0	4	DIN 374	6H
T838M240X300R6H-D6	T838M240X300R6H-D6	M24 X 3	160	30	77	18,0	4	DIN 376	6H
T838MF270X150R6H-D4	T838MF270X150R6H-D4	M27 X 1,5	140	20	65	20,0	4	DIN 374	6H
T838M270X300R6H-D6	T838M270X300R6H-D6	M27 X 3	160	33	85	20,0	4	DIN 376	6H
T838MF300X150R6H-D4	T838MF300X150R6H-D4	M30 X 1,5	150	22	68	20,0	4	DIN 374	6H
T838MF300X200R6H-D4	T838MF300X200R6H-D4	M30 X 2	150	22	68	22,0	4	DIN 374	6H
T838M300X350R6H-D6	T838M300X350R6H-D6	M30 X 3,5	180	35	87	22,0	4	DIN 376	6H
T838M330X350R6H-D6	T838M330X350R6H-D6	M33 X 3,5	180	35	92	25,0	4	DIN 376	6H
T838M360X400R6H-D6	T838M360X400R6H-D6	M36 X 4	200	40	110	28,0	4	DIN 376	6H
T838M390X400R6H-D6	T838M390X400R6H-D6	M39 X 4	200	40	105	32,0	4	DIN 376	6H
T838M420X450R6H-D6	T838M420X450R6H-D6	M42 X 4,5	200	40	105	32,0	5	DIN 376	6H
T838M450X450R6H-D6	T838M450X450R6H-D6	M45 X 5	220	50	110	36,0	5	DIN 376	6H
T838M480X500R6H-D6	T838M480X500R6H-D6	M48 X 5	250	50	145	36,0	5	DIN 376	6H
T838M520X500R6H-D6	T838M520X500R6H-D6	M52 X 5	250	50	135	40,0	5	DIN 376	6H

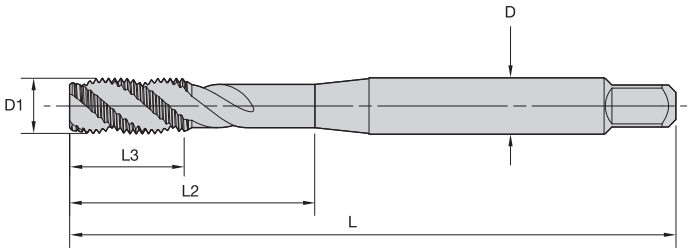
NOTE: Suitable for tension/compression holders.

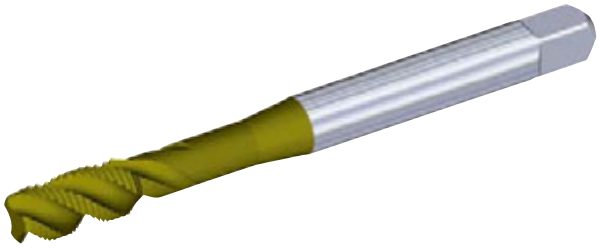
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

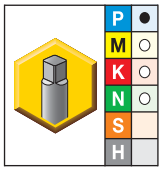
- KSU31 TiN
- KSP39 oxide

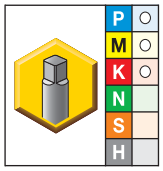






T839 • DIN 371 and 376 • Form E Bottoming Chamfer • Metric • Tension/Compression Holders





● first choice
○ alternate choice

KSU31	KSP39	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T839M030X050R6H-D1	T839M030X050R6H-D1	M3 X 0,5	56	5	19	3,5	3	DIN 371	6H
T839M040X070R6H-D1	T839M040X070R6H-D1	M4 X 0,7	63	7	21	4,5	3	DIN 371	6H
T839M050X080R6H-D1	T839M050X080R6H-D1	M5 X 0,8	70	8	26	6,0	3	DIN 371	6H
T839M060X100R6H-D1	T839M060X100R6H-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6H
T839M080X125R6H-D1	T839M080X125R6H-D1	M8 X 1,25	90	13	37	8,0	3	DIN 371	6H
T839M100X150R6H-D1	T839M100X150R6H-D1	M10 X 1,5	100	15	42	10,0	3	DIN 371	6H
T839M120X175R6H-D6	T839M120X175R6H-D6	M12 X 1,75	110	18	55	9,0	3	DIN 376	6H
T839M140X200R6H-D6	T839M140X200R6H-D6	M14 X 2	110	20	50	11,0	3	DIN 376	6H
T839M160X200R6H-D6	T839M160X200R6H-D6	M16 X 2	110	20	55	12,0	4	DIN 376	6H
T839M180X250R6H-D6	T839M180X250R6H-D6	M18 X 2,5	125	25	61	14,0	4	DIN 376	6H
T839M200X250R6H-D6	T839M200X250R6H-D6	M20 X 2,5	140	25	65	16,0	4	DIN 376	6H

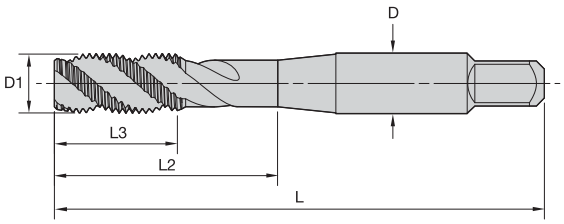
NOTE: Suitable for tension/compression holders.

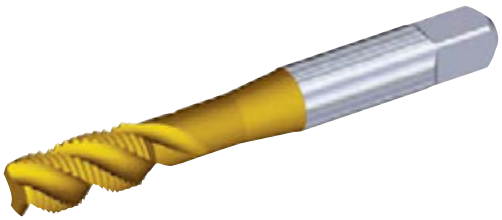
Shank Tolerance

D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052

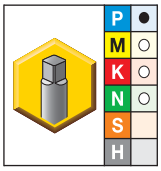
- KSU31 TiN
- KSU30 bright

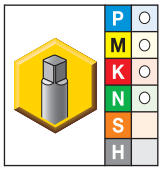






T830 • Form C Semi-Bottoming Chamfer • Metric • JIS • Rigid and Synchronous Holders





● first choice
○ alternate choice

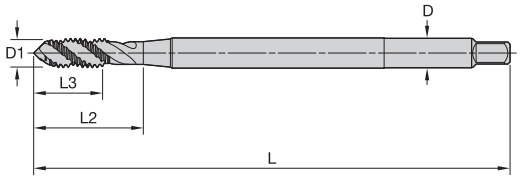
KSU31	KSU30	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	tap class
T830M030X050R6H-J	**T830M030X050R6H-J**	M3 X 0,5	46	11	19	4,0	2	JIS	ISO 2
T830M040X070R6H-J	**T830M040X070R6H-J**	M4 X 0,7	52	13	21	5,0	3	JIS	ISO 2
T830M050X080R6H-J	**T830M050X080R6H-J**	M5 X 0,8	60	16	24	5,5	3	JIS	ISO 2
T830M060X100R6H-J	**T830M060X100R6H-J**	M6 X 1	62	19	29	6,0	3	JIS	ISO 2
T830M080X125R6H-J	**T830M080X125R6H-J**	M8 X 1,25	70	22	37	6,2	3	JIS	ISO 2
T830M100X150R6H-J	**T830M100X150R6H-J**	M10 X 1,5	75	24	41	7,0	3	JIS	ISO 2
–	**T830MF120X125R6H-J**	M12 X 1,25	82	29	48	8,5	3	JIS	ISO 2
–	**T830MF120X150R6H-J**	M12 X 1,5	82	29	48	8,5	3	JIS	ISO 2
–	**T830M120X175R6H-J**	M12 X 1,75	82	29	48	8,5	3	JIS	ISO 2
–	**T830MF140X150R6H-J**	M14 X 1,5	88	30	48	10,5	3	JIS	ISO 2
–	**T830M140X200R6H-J**	M14 X 2	88	30	48	10,5	3	JIS	ISO 2
–	**T830MF160X150R6H-J**	M16 X 1,5	95	32	52	12,5	3	JIS	ISO 2
–	**T830M160X200R6H-J**	M16 X 2	95	32	52	12,5	3	JIS	ISO 2
–	**T830M180X250R6H-J**	M18 X 2,5	100	37	55	14,0	4	JIS	ISO 2
–	**T830M200X250R6H-J**	M20 X 2,5	105	37	60	15,0	4	JIS	ISO 2

NOTE: Suggested for use in rigid and synchronous holders.

Shank Tolerance

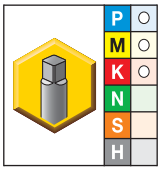
D mm	tolerance h9
1–3	+0, -0,025
>3–6	+0, -0,030
>6–10	+0, -0,036
>10–18	+0, -0,043
>18–30	+0, -0,052







T830 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • 4" Length • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

KSP39	D1 TPI	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T830NC#04-40RH2-XL4	4 - 40	4.00	.56	.87	.141	2	H2
T830NC#06-32RH3-XL4 *	6 - 32	4.00	.38	.71	.141	2	H3
T830NC#08-32RH3-XL4	8 - 32	4.00	.38	.76	.168	3	H3
T830NF#10-32RH3-XL4	10 - 32	4.00	.50	.91	.194	3	H3
T830NC02500-20RH3-XL4	1/4 20	4.00	.63	1.00	.255	3	H3

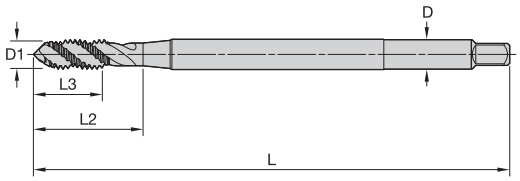
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

NOTE: Suitable for tension/compression holders.

Shank Tolerance

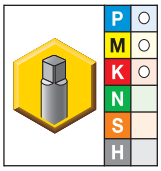
D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030







T830 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • 6" Length • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

KSP39	inch dimensions D1 TPI	L	L3	L2	D	number of flutes	pitch diameter limit
T830NC#04-40RH2-XL6 *	4 - 40	6.00	.56	.87	.141	2	H2
T830NC#06-32RH3-XL6	6 - 32	6.00	.38	.71	.141	2	H3
T830NC#08-32RH3-XL6	8 - 32	6.00	.38	.76	.168	3	H3
T830NC#10-24RH3-XL6 *	10 - 24	6.00	.50	.91	.194	3	H3
T830NF#10-32RH3-XL6	10 - 32	6.00	.50	.91	.194	3	H3
T830NC02500-20RH3-XL6	1/4 20	6.00	.63	1.00	.255	3	H3
T860NF02500-28RH3-XL6	1/4 - 28	6.00	.63	1.01	.255	3	H3
T830NC03125-18RH3-XL6	5/16 - 18	6.00	.69	1.13	.318	3	H3
T830NF03125-24RH3-XL6	5/16 - 24	6.00	.69	1.13	.318	3	H3
T830NC03750-16RH3-XL6	3/8 - 16	6.00	.75	1.27	.381	3	H3
T830NF03750-24RH3-XL6 *	3/8 - 24	6.00	.75	1.26	.381	3	H3
T830NC04375-14RH3-XL6 *	7/16 - 14	6.00	.88	1.49	.323	3	H3
T830NF04375-20RH3-XL6	7/16 - 20	6.00	.88	1.49	.323	3	H3
T830NC05000-13RH3-XL6	1/2 - 13	6.00	.94	1.74	.367	3	H3
T830NF05000-20RH3-XL6	1/2 - 20	6.00	.94	1.74	.367	3	H3
T830NC06250-11RH3-XL6	5/8 - 11	6.00	1.09	1.89	.480	3	H3

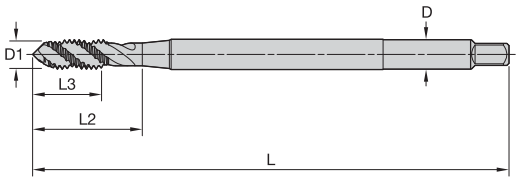
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

NOTE: Suitable for tension/compression holders.

Shank Tolerance

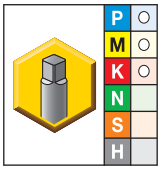
D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030







T832 • Form E Bottoming Chamfer • Machine Screw and Fractional • 6" Length • ANSI • Tension/Compression Holders



● first choice
○ alternate choice

KSP39	D1 TPI	inch dimensions L	L3	L2	D	number of flutes	pitch diameter limit
T832NC#04-40RH2-XL6	4 - 40	6.00	.56	.87	.141	2	H2
T832NC#06-32RH3-XL6	6 - 32	6.00	.38	.71	.141	2	H3
T832NC#08-32RH3-XL6	8 - 32	6.00	.38	.76	.168	3	H3
T832NF#10-32RH3-XL6 *	10 - 32	6.00	.50	.91	.194	3	H3
T832NC02500-20RH3-XL6	1/4 20	6.00	.63	1.00	.255	3	H3
T832NF02500-28RH3-XL6	1/4 - 28	6.00	.63	1.01	.255	3	H3
T832NC03125-18RH3-XL6	5/16 - 18	6.00	.69	1.13	.318	3	H3
T832NC03750-16RH3-XL6	3/8 - 16	6.00	.75	1.27	.381	3	H3
T832NF03750-24RH3-XL6	3/8 - 24	6.00	.75	1.26	.381	3	H3
T832NC04375-14RH3-XL6	7/16 - 14	6.00	.88	1.49	.323	3	H3

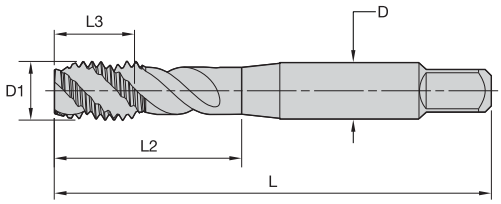
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

NOTE: Suitable for tension/compression holders.

Shank Tolerance

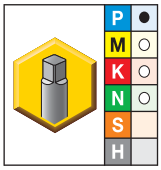
D inch	tolerance
.141–.635	+0, -.0015
>.635–1.51	+0, -.0020
>1.51–2.01	+0, -.0030

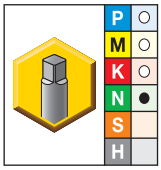






KHSST Spiral Flute • Machine Screw and Fractional • Bottoming Chamfer Tap



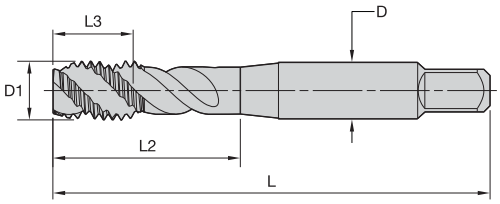


● first choice
○ alternate choice

TiN	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
KHSST28761	**KHSST28762**	4 - 40	1.88	.56	—	.141	2	H2
KHSST28779	**KHSST28774**	6 - 32	2.00	.38	.69	.141	2	H3
KHSST28785	**KHSST28787**	8 - 32	2.13	.38	.75	.168	3	H3
KHSST28738	**KHSST28740**	10 - 24	2.38	.50	.88	.194	3	H3
KHSST28745	**KHSST28747**	10 - 32	2.38	.50	.88	.194	3	H3
KHSST28137	**KHSST28074**	1/4 - 20	2.50	.63	1.00	.255	3	H3
KHSST28081	**KHSST28083**	1/4 - 28	2.50	.63	1.00	.255	3	H3
KHSST28211	**KHSST28213**	5/16 - 18	2.72	.69	1.12	.318	3	H3
KHSST28221	**KHSST28223**	5/16 - 24	2.72	.69	1.12	.318	3	H3
KHSST28187	**KHSST28189**	3/8 - 16	2.94	.75	1.25	.381	3	H3
KHSST28201	—	3/8 - 24	2.94	.75	1.25	.381	3	H3
KHSST28670	**KHSST28672**	7/16 - 14	3.16	.88	—	.323	3	H3
—	**KHSST28674**	7/16 - 20	3.16	.88	—	.323	3	H3
KHSST28047	**KHSST28049**	1/2 - 13	3.38	.94	—	.367	3	H3
—	**KHSST28062**	1/2 - 20	3.38	.94	—	.367	3	H3
—	**KHSST28231**	5/8 - 11	3.81	1.09	—	.480	4	H3
—	**KHSST28165**	3/4 - 10	4.25	1.22	—	.590	4	H3

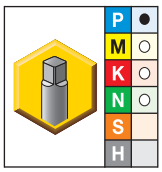
NOTE: Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

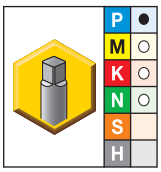


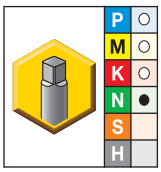




KHSST Spiral Flute • Bottoming Chamfer Tap • Metric ANSI





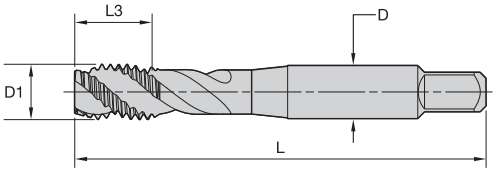


● first choice
○ alternate choice

TiCN	TiN	uncoated	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
KHSST28478	**KHSST28700**	**KHSST28692**	M3 X 0,5	1.94	.31	—	.141	2	D3
KHSST28709	**—**	**KHSST28707**	M4 X 0,7	2.13	.38	.75	.168	3	D4
—	**—**	**KHSST28716**	M5 X 0,8	2.38	.50	.88	.194	3	D4
KHSST28723	**—**	**KHSST28721**	M6 X 1	2.50	.38	.75	.255	3	D5
—	**—**	**KHSST28726**	M8 X 1,25	2.72	.69	1.12	.318	3	D5
KHSST28476	**—**	**KHSST28683**	M10 X 1,5	2.94	.75	1.25	.381	3	D6

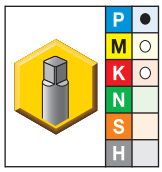
NOTE: Metric D limits are suitable for ISO 6H tolerance class.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page M203 for the recommended pitch diameter limit for 6H class of fit.







KHSST Heavy-Duty Spiral Flute • Machine Screw and Fractional • Bottoming Chamfer Taps



● first choice
○ alternate choice

oxide	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28780	6 - 32	2.00	.38	.141	3	H3
KHSST28786	8 - 32	2.13	.38	.168	3	H3
KHSST28739	10 - 24	2.38	.50	.194	3	H3
KHSST28746	10 - 32	2.38	.50	.194	3	H3
KHSST28073	1/4 - 20	2.50	.63	.255	3	H3
KHSST28082	1/4 - 28	2.50	.63	.255	3	H3
KHSST28212	5/16 - 18	2.72	.69	.318	3	H3
KHSST28188	3/8 - 16	2.94	.75	.381	3	H3
KHSST28671 *	7/16 - 14	3.16	.88	.323	3	H3
KHSST28048	1/2 - 13	3.38	.94	.367	3	H3
KHSST28163	3/4 - 10	4.25	1.22	.590	4	H3

NOTE: KHSST taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**

Straight-Flute Taps



High-Performance Taps for Through-Hole and Blind-Hole Applications

- Steel and steel alloys.
- Stainless steel.
- Cast iron.
- Cast aluminum.

High-Performance Beyond™ Solid Carbide Taps

- Straight-flute design for through- and blind-hole tapping in cast iron, cast aluminum, and hard steels.
- Runs up to 4x faster and 4x longer than conventional high-speed steel (HSS) taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

High-Performance Beyond HSS-E-PM Taps

- Straight-flute design for through- and blind-hole tapping in cast iron and cast aluminum.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines with rigid or synchronous tap holders.

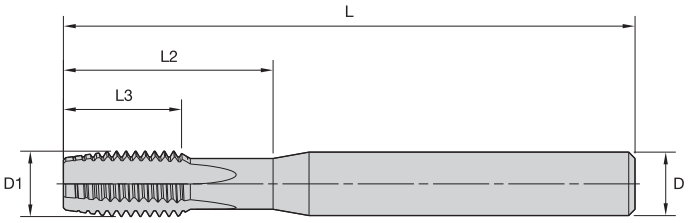
General-Purpose Taps

- HSS straight-flute hand taps for use by hand or tapping under power.
- Plug and bottoming chamfers for through- and blind-hole tapping.
- Wide range of sizes and pitch limits offered with PVD coatings and surface treatments.



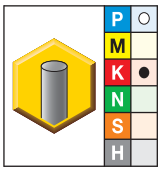
- KCK17 AlCrTiN for cast iron.







T340 • Form D Plug • Inch • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T340NC#6-32R3BX	6 - 32	2.36	.28	.55	.2500	3	3BX
T340NC#8-32R3BX *	8 - 32	2.36	.28	.63	.2500	3	3BX
T340NC#10-24R3BX	10 - 24	2.36	.35	.79	.2500	3	3BX
T340NF#10-32R3BX	10 - 32	2.36	.35	.79	.2500	3	3BX
T340NC02500-20R3BX	1/4 - 20	2.76	.59	.94	.2500	4	3BX
T340NC03125-18R3BX	5/16 - 18	3.15	.67	1.26	.3125	4	3BX
T340NC03750-16R3BX	3/8 - 16	3.54	.75	1.57	.3750	4	3BX
T340NF03750-24R3BX	3/8 - 24	3.54	.75	1.57	.3750	4	3BX
T340NC05000-13R3BX	1/2 - 13	3.94	.94	1.89	.5000	4	3BX
T340NF05000-20R3BX	1/2 - 20	3.94	.94	1.89	.5000	4	3BX
T340NF05625-18R3BX	9/16 - 18	4.33	1.02	2.21	.5000	4	3BX

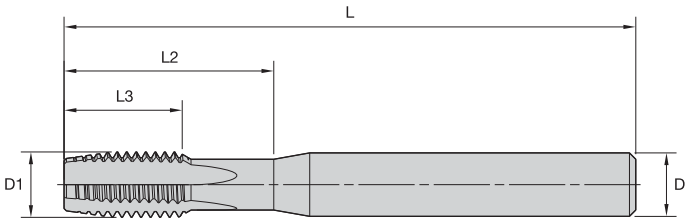
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

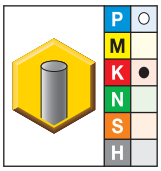
- KCK17 AlCrTiN for cast iron.







T340 • Form D Plug • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

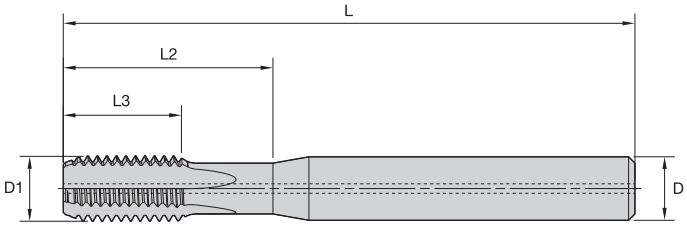
KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T340M040X070R6HX	M4 X 0,7	60	6	16	6,0	3	6HX
T340M050X080R6HX	M5 X 0,8	60	7	20	6,0	3	6HX
T340M060X100R6HX	M6 X 1	70	12	24	6,0	4	6HX
T340M080X125R6HX	M8 X 1,25	80	15	32	8,0	4	6HX
T340MF100X100R6HX	M10 X 1	90	18	40	10,0	4	6HX
T340M100X150R6HX	M10 X 1,5	90	18	40	10,0	4	6HX
T340MF120X150R6HX	M12 X 1,5	100	21	48	12,0	4	6HX
T340M120X175R6HX	M12 X 1,75	100	21	48	12,0	4	6HX
T340MF140X150R6HX	M14 X 1,5	110	24	56	12,0	4	6HX
T340M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX
T340M160X200R6HX	M16 X 2	110	24	64	14,0	4	6HX
T340M200X250R6HX	M20 X 2,5	140	30	80	18,0	5	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

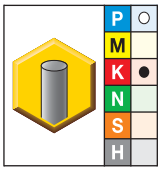
• KCK17 AlCrTiN for cast iron.







T351 • Form E Bottoming Chamfer • Through Coolant 1/4" and Larger • Inch • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T351NC#6-32R3BX *	6 - 32	2.36	.28	.55	.2500	3	3BX
T351NC#8-32R3BX	8 - 32	2.36	.28	.63	.2500	3	3BX
T351NF#10-32R3BX *	10 - 32	2.36	.35	.79	.2500	3	3BX
T351NC02500-20R3BX	1/4 - 20	2.76	.59	.95	.2500	4	3BX
T351NC03125-18R3BX	5/16 - 18	3.15	.67	1.26	.3125	4	3BX
T351NC03750-16R3BX	3/8 - 16	3.54	.75	1.57	.3750	4	3BX
T351NC04375-14R3BX	7/16 - 14	3.94	.87	1.73	.4375	4	3BX
T351NC05000-13R3BX	1/2 - 13	3.94	.94	1.89	.5000	4	3BX
T351NC06250-11R3BX	5/8 - 11	4.33	1.10	2.52	.5625	5	3BX
T351NC07500-10R3BX	3/4 - 10	4.92	1.22	3.01	.6250	5	3BX

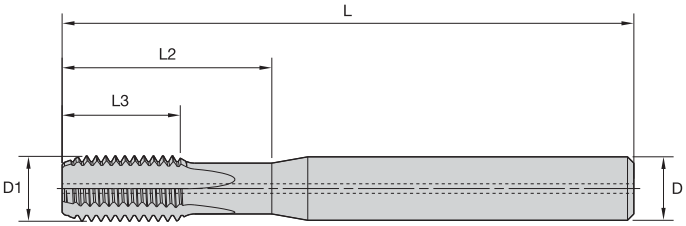
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

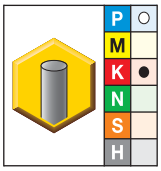
- KCK17 AlCrTiN for cast iron.







T351 • Form E Bottoming Chamfer • Through Coolant M6 and Larger • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

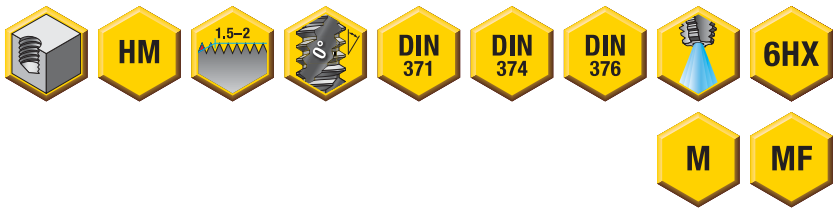
KCK17	D1 size	L	L3	L2	D	number of flutes	class of fit
T351M040X070R6HX *	M4 X 0,7	60	6	16	6,0	3	6HX
T351M050X080R6HX	M5 X 0,8	60	7	20	6,0	3	6HX
T351M060X100R6HX	M6 X 1	70	12	24	6,0	4	6HX
T351M080X125R6HX	M8 X 1,25	80	15	32	8,0	4	6HX
T351MF100X100R6HX	M10 X 1	90	18	40	10,0	4	6HX
T351M100X150R6HX	M10 X 1,5	90	18	40	10,0	4	6HX
T351MF120X150R6HX	M12 X 1,5	100	21	48	12,0	4	6HX
T351M120X175R6HX	M12 X 1,75	100	21	48	12,0	4	6HX
T351MF140X150R6HX	M14 X 1,5	110	24	56	12,0	4	6HX
T351M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX
T351M160X200R6HX	M16 X 2	110	24	64	14,0	4	6HX

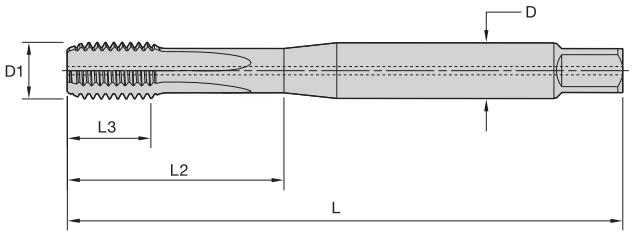
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

- KCK17 AlCrTiN for cast iron.

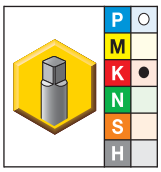






beyond

T351 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

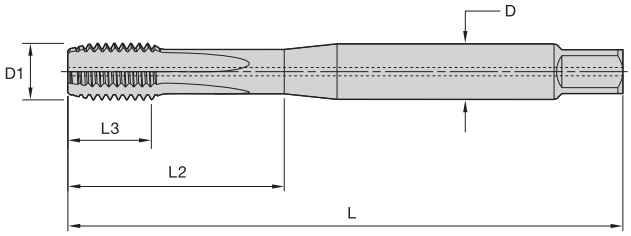
KCK17	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T351M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T351M070X100R6HX-D1	M7 X 1	80	10	30	7,0	4	DIN 371	6HX
T351M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T351M090X125R6HX-D1	M9 X 1,25	90	13	35	9,0	4	DIN 371	6HX
T351MF100X100R6HX-D4	M10 X 1	90	10	35	7,0	4	DIN 374	6HX
T351MF100X125R6HX-D4	M10 X 1,25	100	15	39	7,0	4	DIN 374	6HX
T351M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T351MF120X125R6HX-D4	M12 X 1,25	100	15	39	9,0	4	DIN 374	6HX
T351MF120X150R6HX-D4	M12 X 1,50	100	15	39	9,0	4	DIN 374	6HX
T351M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T351MF140X125R6HX-D4	M14 X 1,25	100	15	47	11,0	4	DIN 374	6HX
T351MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T351M140X2006RHX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX

Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

• KCK17 AlCrTiN for cast iron.

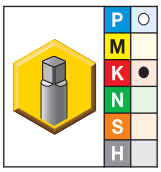






beyond

T353 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant M6 and Larger • Metric • Solid Carbide • For Cast Iron



● first choice
○ alternate choice

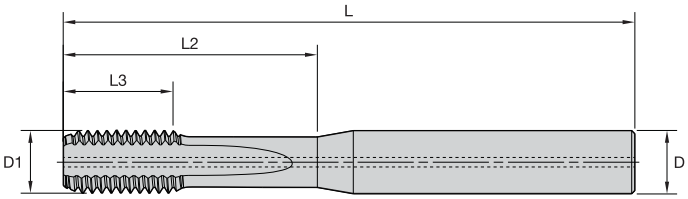
KCK17	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T353M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T353M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T353M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T353M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T353M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T353M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T353M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX

Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

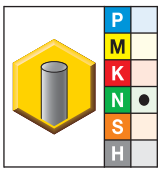
• KCN14 TiN + CrC/C for aluminum.







T471 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminum



● first choice
○ alternate choice

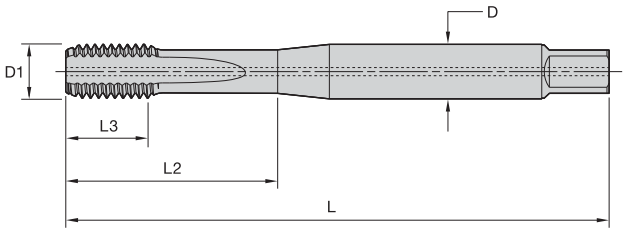
KCN14	D1 size	L	L3	L2	D	number of flutes	class of fit
T471M060X100R6HX	M6 X 1	70	12	24	6,0	3	6HX
T471M080X125R6HX	M8 X 1,25	80	15	32	8,0	3	6HX
T471M100X150R6HX	M10 X 1,5	90	18	40	10,0	3	6HX
T471M120X175R6HX	M12 X 1,75	100	21	48	12,0	3	6HX
T471M140X200R6HX	M14 X 2	110	24	56	12,0	4	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KCN14 TiN + CrC/C for aluminum.

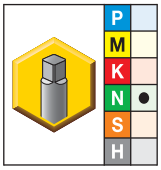






beyond

T471 • DIN 371 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminum



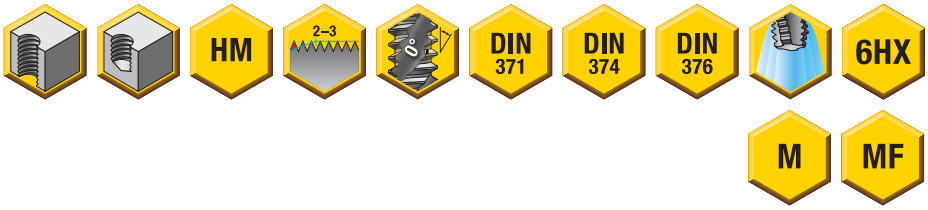
● first choice
○ alternate choice

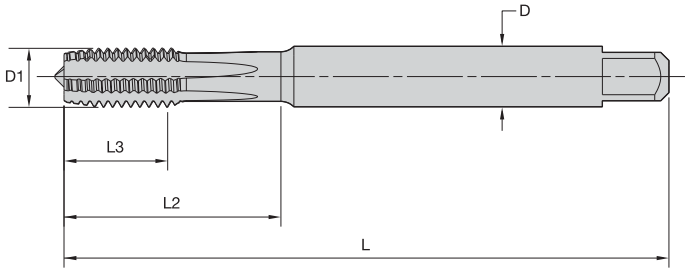
KCN14	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T471M060X100R6HX-D1	M6 X 1	80	10	30	6,0	3	DIN 371	6HX
T471M080X125R6HX-D1	M8 X 1,25	90	10	35	8,0	3	DIN 371	6HX
T471M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	3	DIN 371	6HX

Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

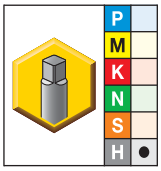
- KCU36 TiAlN/MoS_2 for tapping steel 55–63 HRC.







T410 • DIN 371, 374, and 376 • Form C Semi-Bottoming Chamfer • Metric • Solid Carbide • For Hard Steel



● first choice
○ alternate choice

KCU36	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T410M030X050R6HX-D1	M3 X 0,5	63	6	18	4,5	4	DIN 371	6HX
T410M040X070R6HX-D1	M4 X 0,7	63	8	20	4,5	4	DIN 371	6HX
T410M050X080R6HX-D1	M5 X 0,8	70	10	26	6,0	4	DIN 371	6HX
T410M060X100R6HX-D1	M6 X 1	80	12	28	6,0	4	DIN 371	6HX
T410MF080X100R6HX-D4 *	M8 X 1	90	15	35	8,0	5	DIN 374	6HX
T410M080X125R6HX-D1	M8 X 1,25	90	15	35	8,0	5	DIN 371	6HX
T410MF100X100R6HX-D4 *	M10 X 1	100	18	38	10,0	5	DIN 374	6HX
T410M100X150R6HX-D1	M10 X 1,5	100	18	38	10,0	5	DIN 371	6HX
T410MF120X150R6HX-D4	M12 X 1,5	110	21	41	12,0	5	DIN 374	6HX
T410M120X175R6HX-D6	M12 X 1,75	110	21	41	12,0	5	DIN 376	6HX
T410MF140X150R6HX-D4	M14 X 1,5	110	24	44	14,0	5	DIN 374	6HX
T410M140X200R6HX-D6	M14 X 2	110	24	44	14,0	6	DIN 376	6HX
T410MF160X150R6HX-D4	M16 X 1,5	110	24	44	16,0	5	DIN 374	6HX

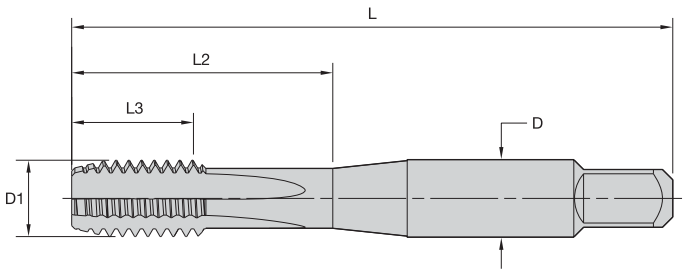
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

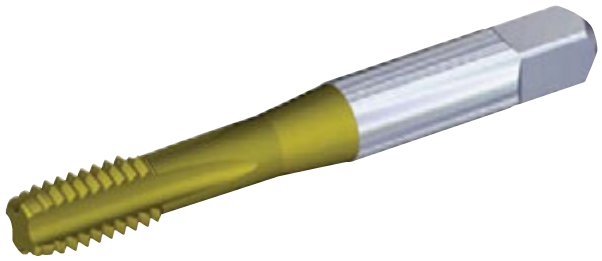
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

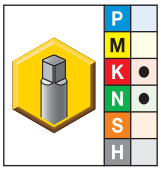
- KP6525 TiCN + TiN for cast iron and cast aluminum.







T640 • Machine Screw and Fractional • Form C Semi-Bottoming Chamfer • ANSI • For Cast Iron and Cast Aluminum



● first choice
○ alternate choice

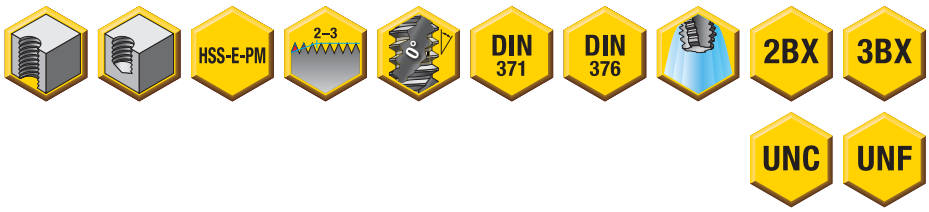
KP6525	D1 size	L	L3	L2	D	number of flutes	class of fit
T640NC#10-24R3BX-A *	10 - 24	2.37	.47	.91	.194	3	3BX
T640NF#10-32R3BX-A	10 - 32	2.36	.47	.91	.194	3	3BX
T640NC02500-20R2BX-A	1/4 - 20	2.50	.44	1.01	.255	4	2BX
T640NC02500-20R3BX-A *	1/4 - 20	2.50	.44	1.01	.255	4	3BX
T640NF02500-28R2BX-A	1/4 - 28	2.49	.43	1.00	.255	4	2BX
T640NF02500-28R3BX-A	1/4 - 28	2.49	.43	1.00	.255	4	3BX
T640NC03125-18R2BX-A	5/16 - 18	2.72	.49	1.13	.318	4	2BX
T640NC03125-18R3BX-A *	5/16 - 18	2.72	.49	1.13	.318	4	3BX
T640NF03125-24R3BX-A *	5/16 - 24	2.71	.48	1.13	.318	4	3BX
T640NC03750-16R2BX-A	3/8 - 16	2.94	.60	1.27	.381	4	2BX
T640NC03750-16R3BX-A	3/8 - 16	2.94	.60	1.27	.381	4	3BX
T640NF03750-24R3BX-A	3/8 - 24	2.92	.58	1.25	.381	4	3BX
T640NC04375-14R3BX-A	7/16 - 14	3.16	.71	1.49	.323	4	3BX
T640NF04375-20R3BX-A	7/16 - 20	3.16	.71	1.49	.323	4	3BX
T640NC05000-13R3BX-A	1/2 - 13	3.38	.77	1.74	.367	4	3BX
T640NF05000-20R3BX-A	1/2 - 20	3.38	.77	1.74	.367	4	3BX
T640NC06250-11R3BX-A	5/8 - 11	3.81	.91	1.89	.480	4	3BX
T640NC07500-10R3BX-A	3/4 - 10	4.25	1.00	2.08	.590	4	3BX

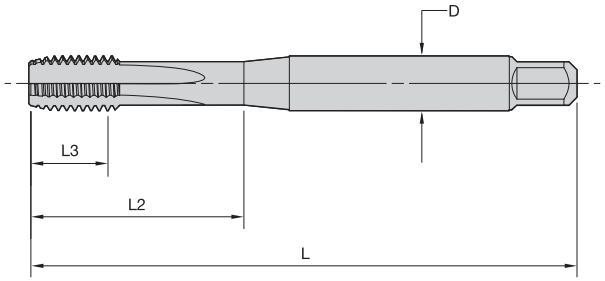
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D fractional	D inch
.250–.375	+0, -.0004
.438–.625	+0, -.0004

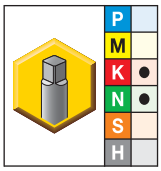
- KP6525 TiCN + TiN for cast iron and cast aluminum.







T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • For Cast Iron and Cast Aluminum



● first choice
○ alternate choice

KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T640NC#06-32R2BX-D1	6 - 32	56	9	20	4,0	3	DIN 371	2BX
T640NF#06-40R2BX-D1 *	6 - 40	56	9	20	4,0	3	DIN 371	2BX
T640NC#08-32R2BX-D1	8 - 32	63	10	21	4,5	3	DIN 371	2BX
T640NC#10-24R2BX-D1	10 - 24	70	10	25	6,0	3	DIN 371	2BX
T640NF#10-32R2BX-D1	10 - 32	70	10	25	6,0	3	DIN 371	2BX
T640NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	4	DIN 371	3BX
T640NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	4	DIN 371	3BX
T640NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	4	DIN 371	3BX
T640NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	4	DIN 371	3BX
T640NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	4	DIN 371	3BX
T640NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	4	DIN 371	3BX
T640NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T640NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T640NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T640NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

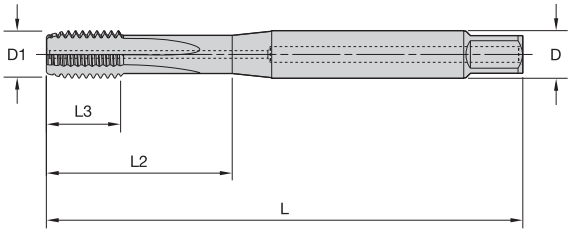
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

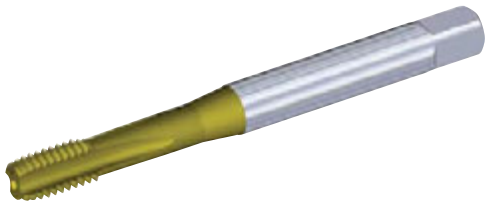
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

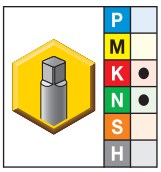
- KP6525 TiCN + TiN for cast iron and cast aluminum.







T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Fractional • For Cast Iron and Cast Aluminum



● first choice
○ alternate choice

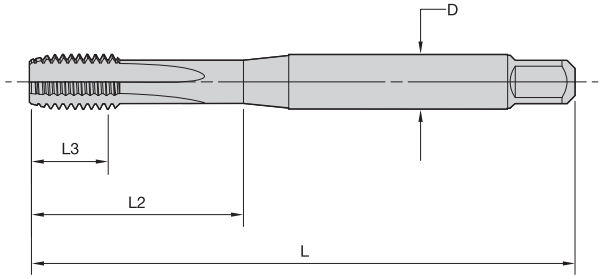
KP6525	metric dimensions D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T641NC02500-20R3BX-D1	1/4 - 20	80	13	30	7,0	4	DIN 371	3BX
T641NF02500-28R3BX-D1	1/4 - 28	80	13	30	7,0	4	DIN 371	3BX
T641NC03125-18R3BX-D1	5/16 - 18	90	13	35	8,0	4	DIN 371	3BX
T641NF03125-24R3BX-D1	5/16 - 24	90	13	35	8,0	4	DIN 371	3BX
T641NC03750-16R3BX-D1	3/8 - 16	100	16	39	10,0	4	DIN 371	3BX
T641NF03750-24R3BX-D1	3/8 - 24	100	16	39	10,0	4	DIN 371	3BX
T641NC04375-14R3BX-D6	7/16 - 14	100	15	41	8,0	4	DIN 376	3BX
T641NF04375-20R3BX-D6	7/16 - 20	100	15	41	8,0	4	DIN 376	3BX
T641NC05000-13R3BX-D6	1/2 - 13	110	20	47	9,0	4	DIN 376	3BX
T641NF05000-20R3BX-D6	1/2 - 20	110	20	47	9,0	4	DIN 376	3BX

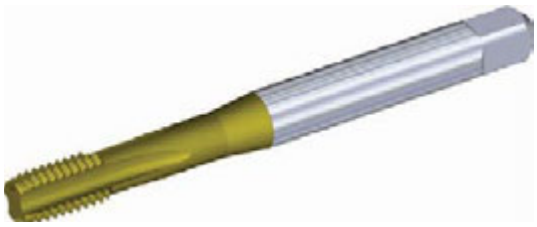
Shank Tolerance

D fractional	tolerance h6
>3–6	+0, -0,008
>6–10	+0, -0,009
<10–18	+0, -0,011

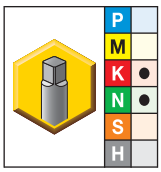
- KP6525 TiCN + TiN for cast iron and cast aluminum.







T640 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Metric • For Cast Iron and Cast Aluminum



● first choice
○ alternate choice

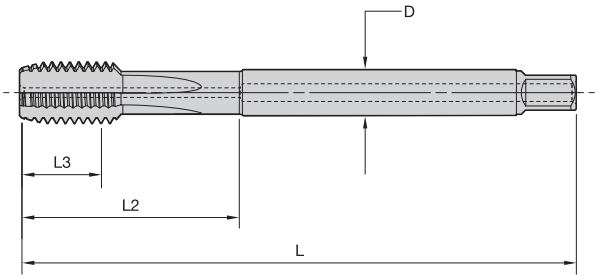
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T640M040X070R6HX-D1	M4 X 0,7	63	10	21	4,5	3	DIN 371	6HX
T640M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T640M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T640M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T640M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T640M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T640M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T640M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T640M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
T640M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX
T640M220X250R6HX-D6	M22 X 2,5	140	25	70	18,0	4	DIN 376	6HX

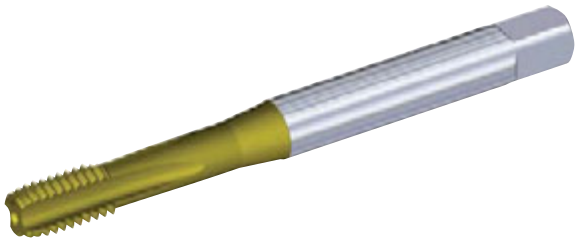
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

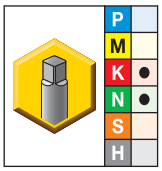
- KP6525 TiCN + TiN for cast iron and cast aluminum.







T641 • DIN 371 and 376 • Form C Semi-Bottoming Chamfer • Through Coolant • Metric • For Cast Iron and Cast Aluminum



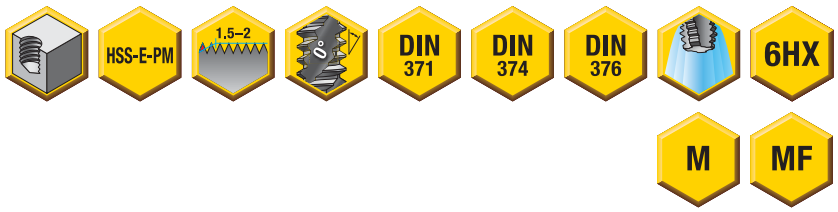
● first choice
○ alternate choice

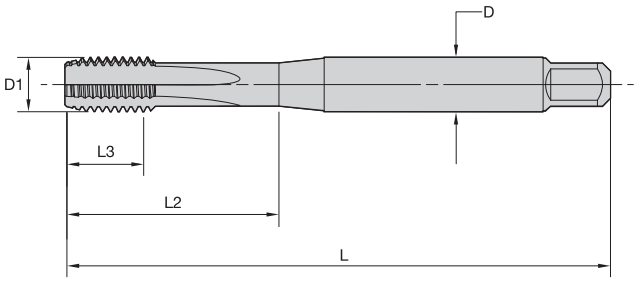
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T641M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T641M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T641M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T641M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T641M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T641M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T641M160X200R6HX-D6	M16 X 2	110	20	51	12,0	4	DIN 376	6HX
T641M180X250R6HX-D6	M18 X 2,5	125	25	58	14,0	4	DIN 376	6HX
T641M200X250R6HX-D6	M20 X 2,5	140	25	64	16,0	4	DIN 376	6HX

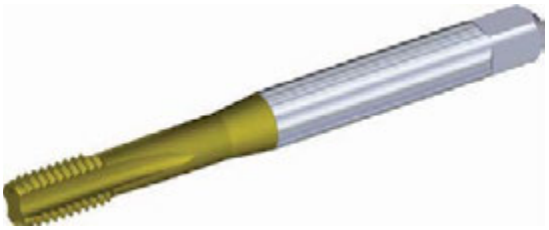
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

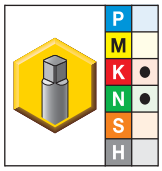
- KP6525 TiCN + TiN for cast iron and cast silicon aluminum.







T642 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Metric • For Cast Iron and Cast Silicon Aluminum



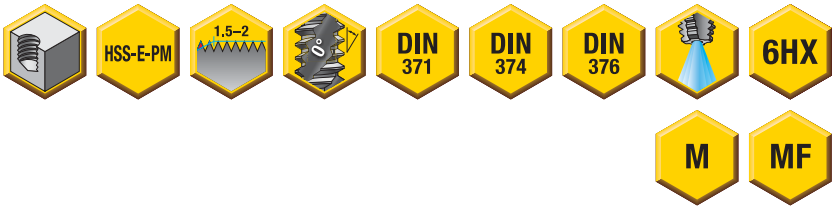
● first choice
○ alternate choice

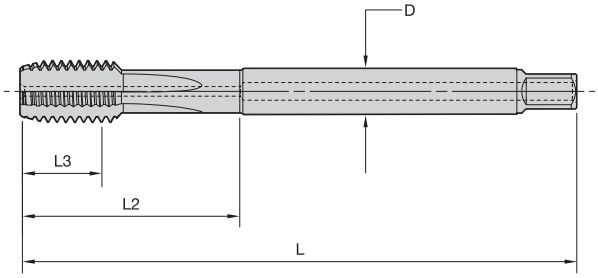
KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T642M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T642M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T642M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T642M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T642MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T642M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T642MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T642M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T642MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

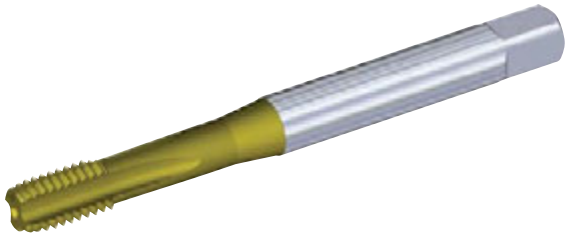
Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

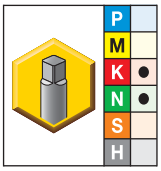
- KP6525 TiCN + TiN for tapping cast iron and cast silicon aluminum.







T643 • DIN 371, 374, and 376 • Form E Bottoming Chamfer • Through Coolant • Metric • For Cast Iron and Cast Silicon Aluminum



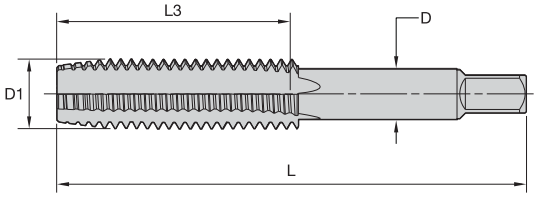
● first choice
○ alternate choice

KP6525	D1 size	L	L3	L2	D	number of flutes	dimension standard	class of fit
T643M050X080R6HX-D1	M5 X 0,8	70	10	25	6,0	3	DIN 371	6HX
T643M060X100R6HX-D1	M6 X 1	80	10	30	6,0	4	DIN 371	6HX
T643M080X125R6HX-D1	M8 X 1,25	90	13	35	8,0	4	DIN 371	6HX
T643M100X150R6HX-D1	M10 X 1,5	100	15	39	10,0	4	DIN 371	6HX
T643MF120X150R6HX-D4	M12 X 1,5	100	15	39	9,0	4	DIN 374	6HX
T643M120X175R6HX-D6	M12 X 1,75	110	18	44	9,0	4	DIN 376	6HX
T643MF140X150R6HX-D4	M14 X 1,5	100	15	47	11,0	4	DIN 374	6HX
T643M140X200R6HX-D6	M14 X 2	110	20	52	11,0	4	DIN 376	6HX
T643MF160X150R6HX-D4	M16 X 1,5	100	15	46	12,0	4	DIN 374	6HX

Shank Tolerance

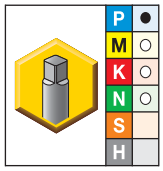
D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

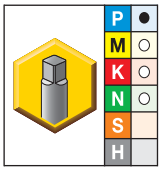


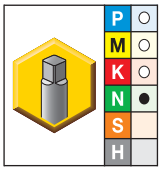




KHSST Hand • Machine Screw Sizes • Plug Chamfer Tap





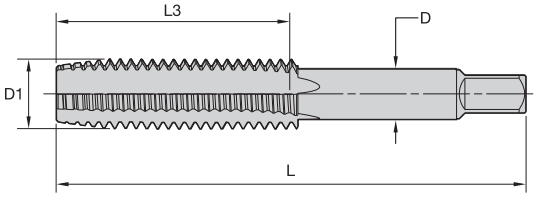


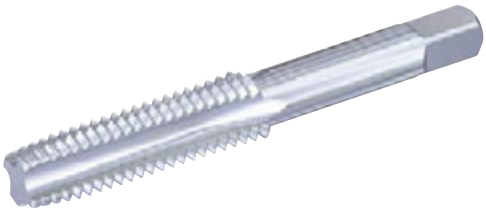
● first choice
○ alternate choice

TiCN	TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	KHSST28372	0 - 80	1.63	.31	.141	2	H1
–	KHSST09000	KHSST08003	0 - 80	1.63	.31	.141	2	H2
–	–	KHSST08015	1 - 64	1.69	.38	.141	2	H2
–	KHSST28129	KHSST28376	2 - 56	1.75	.44	.141	2	H2
–	KHSST28426	KHSST08039	2 - 56	1.75	.44	.141	3	H2
–	KHSST28134	–	3 - 48	1.81	.50	.141	2	H2
–	–	KHSST28380	3 - 48	1.81	.50	.141	3	H2
–	–	KHSST08067	3 - 56	1.81	.50	.141	3	H2
–	KHSST28427	KHSST08082	4 - 40	1.88	.56	.141	2	H2
KHSST28433	KHSST09004	KHSST08087	4 - 40	1.88	.56	.141	3	H2
–	–	KHSST08101	4 - 48	1.88	.56	.141	3	H2
–	–	KHSST08112	5 - 40	1.94	.63	.141	2	H2
–	–	KHSST08116	5 - 40	1.94	.63	.141	3	H2
–	–	KHSST08140	6 - 32	2.00	.69	.141	2	H2
–	KHSST28428	KHSST28389	6 - 32	2.00	.69	.141	2	H3
–	KHSST09008	KHSST08148	6 - 32	2.00	.69	.141	3	H2
KHSST28440	–	KHSST08151	6 - 32	2.00	.69	.141	3	H3
–	–	KHSST08172	6 - 40	2.00	.69	.141	3	H2
–	–	KHSST28396	8 - 32	2.13	.75	.168	2	H2
–	–	KHSST28400	8 - 32	2.13	.75	.168	2	H3
–	KHSST28136	KHSST28401	8 - 32	2.13	.75	.168	3	H3
–	KHSST09010	KHSST28397	8 - 32	2.13	.75	.168	4	H2
–	–	KHSST08192	8 - 32	2.13	.75	.168	4	H3
–	–	KHSST08218	8 - 36	2.13	.75	.168	4	H2
–	–	KHSST08238	10 - 24	2.38	.88	.194	2	H3
–	–	KHSST28410	10 - 32	2.38	.88	.194	2	H2
–	KHSST28425	KHSST08272	10 - 32	2.38	.88	.194	2	H3
–	–	KHSST28407	10 - 24	2.38	.88	.194	3	H3
–	–	KHSST28413	10 - 32	2.38	.88	.194	3	H3
–	KHSST09012	KHSST08234	10 - 24	2.38	.88	.194	4	H3
–	–	KHSST08261	10 - 32	2.38	.88	.194	4	H2
–	KHSST09014	KHSST08268	10 - 32	2.38	.88	.194	4	H3
–	KHSST28132	KHSST08294	12 - 24	2.38	.94	.220	4	H3
–	–	KHSST28417	12 - 28	2.38	.94	.220	4	H3

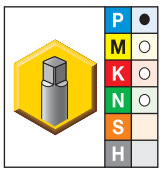
NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

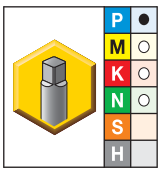


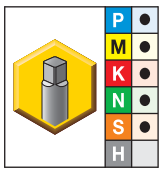


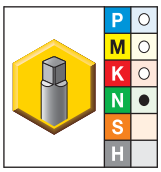


KHSST Hand • Fractional Sizes • Plug Chamfer Tap







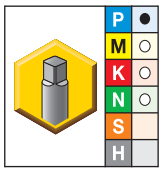


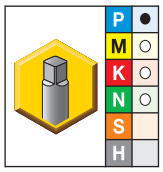
● first choice
○ alternate choice

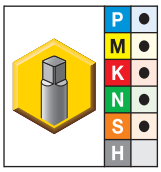
TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	KHSST08316	1/4 - 20	2.50	1.00	.255	4	H2
–	KHSST28358	–	KHSST08324	1/4 - 20	2.50	1.00	.255	2	H3
–	–	–	KHSST28296	1/4 - 20	2.50	1.00	.255	3	H3
KHSST28364	KHSST09018	KHSST28343	KHSST08320	1/4 - 20	2.50	1.00	.255	4	H3
–	–	–	KHSST28298	1/4 - 20	2.50	1.00	.255	4	H5
–	–	–	KHSST08355	1/4 - 28	2.50	1.00	.255	3	H3
–	–	–	KHSST08353	1/4 - 28	2.50	1.00	.255	4	H3
–	–	–	KHSST28293	1/4 - 20	3.38	1.66	.367	4	H5
–	KHSST28356	–	KHSST28318	5/16 - 18	2.72	1.13	.318	2	H3
–	KHSST28127	–	KHSST28314	5/16 - 18	2.72	1.13	.318	3	H3
–	KHSST09022	–	KHSST08380	5/16 - 18	2.72	1.13	.318	4	H3
–	–	–	KHSST08411 *	5/16 - 24	2.72	1.13	.318	3	H3
–	–	KHSST28349	KHSST08409	5/16 - 24	2.72	1.13	.318	4	H3
–	KHSST28359	–	KHSST28309	3/8 - 16	2.94	1.25	.381	3	H3
–	KHSST09026	KHSST28348	KHSST08434	3/8 - 16	2.94	1.25	.381	4	H3
–	–	–	KHSST08461	3/8 - 24	2.94	1.25	.381	3	H3
–	KHSST09028	–	KHSST08459	3/8 - 24	2.94	1.25	.381	4	H3
–	KHSST09030	–	KHSST08477	7/16 - 14	3.16	1.44	.323	4	H3
–	KHSST28123	–	KHSST08493	7/16 - 20	3.16	1.44	.323	4	H3
–	–	–	KHSST08510	1/2 - 13	3.38	1.66	.367	3	H3
KHSST28361	KHSST28116	KHSST28341	KHSST08508	1/2 - 13	3.38	1.66	.367	4	H3
–	–	–	KHSST28291	1/2 - 20	3.38	1.66	.367	3	H3
–	–	–	KHSST08530	1/2 - 20	3.38	1.66	.367	4	H3
–	–	–	KHSST08545	9/16 - 12	3.59	1.66	.429	4	H3
–	–	–	KHSST08553	9/16 - 18	3.59	1.66	.429	4	H3
KHSST28366	KHSST28120	KHSST28351	KHSST08561	5/8 - 11	3.81	1.81	.480	4	H3
–	–	–	KHSST28323	5/8 - 11	3.81	1.81	.480	4	H5
–	KHSST28121	–	KHSST08574	5/8 - 18	3.81	1.81	.480	4	H3

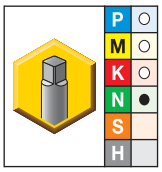
(continued)

(KHSST Hand • Fractional Sizes • Plug Chamfer Tap — continued)







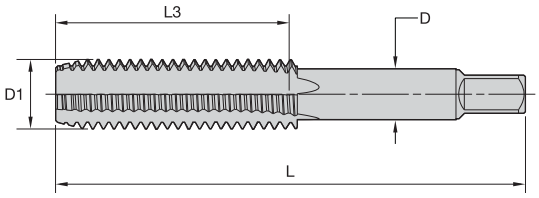


● first choice
○ alternate choice

TiCN	TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	–	**KHSST28242**	5/8 - 18	3.81	1.81	.480	4	H5
KHSST28365	**KHSST09042**	**KHSST28345**	**KHSST08595**	3/4 - 10	4.25	2.00	.590	4	H3
–	–	–	**KHSST28302**	3/4 - 10	4.25	2.00	.590	4	H5
–	**KHSST28118**	**KHSST28346**	**KHSST08608**	3/4 - 16	4.25	2.00	.590	4	H3
–	–	–	**KHSST28305**	3/4 - 16	4.25	2.00	.590	4	H5
–	**KHSST28125**	**KHSST28352**	**KHSST08616**	7/8 - 9	4.69	2.22	.697	4	H4
–	**KHSST09048**	–	**KHSST28330**	7/8 - 14	4.69	2.22	.697	4	H4
–	**KHSST28115**	**KHSST28339**	**KHSST08630**	1 - 8	5.13	2.50	.800	4	H4
–	–	–	**KHSST28286**	1 - 8	5.13	2.50	.800	4	H6
–	–	–	**KHSST28279**	1 - 12	5.13	2.50	.800	4	H4
–	–	–	**KHSST28281**	1 - 14	5.13	2.50	.800	4	H2
–	–	–	**KHSST28283**	1 - 14	5.13	2.50	.800	4	H4
–	–	–	**KHSST28033**	1 1/8 - 7	5.44	2.56	.896	4	H4
–	–	–	**KHSST28029**	1 1/8 - 12	5.44	2.56	.896	4	H4
–	–	–	**KHSST28021**	1 1/4 - 7	5.75	2.56	1.021	4	H4
–	–	–	**KHSST28016**	1 1/4 - 12	5.75	2.56	1.021	6	H4
–	–	–	**KHSST28043**	1 3/8 - 6	6.06	3.00	1.108	4	H4
–	–	–	**KHSST28040**	1 3/8 - 12	6.06	3.00	1.108	6	H4
–	–	–	**KHSST28009**	1 1/2 - 6	6.38	3.00	1.233	4	H4
–	–	–	**KHSST28004**	1 1/2 - 12	6.38	3.00	1.233	6	H4

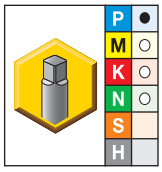
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

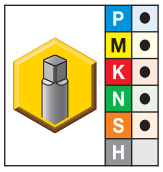


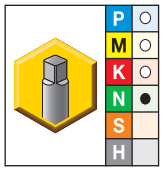




KHSST Hand • Machine Screw Sizes • Bottoming Chamfer Tap





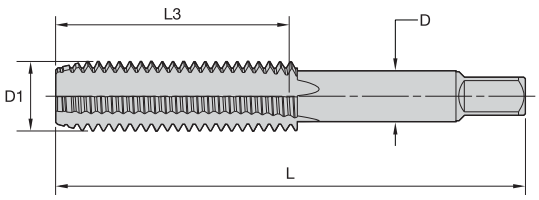


● first choice
○ alternate choice

TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	KHSST28368	0 - 80	1.63	.31	.141	2	H1
KHSST28128	–	KHSST28371	0 - 80	1.63	.31	.141	2	H2
–	–	KHSST28373	1 - 72	1.69	.38	.141	2	H1
–	–	KHSST28374	2 - 56	1.75	.44	.141	2	H2
KHSST09003	–	KHSST28375	2 - 56	1.75	.44	.141	3	H2
–	–	KHSST28379	3 - 48	1.81	.50	.141	3	H2
–	–	KHSST08083	4 - 40	1.88	.56	.141	2	H2
KHSST28130	KHSST28420	KHSST08088	4 - 40	1.88	.56	.141	3	H2
–	–	KHSST28384	4 - 48	1.88	.56	.141	3	H2
–	–	KHSST08117	5 - 40	1.94	.63	.141	3	H2
KHSST09009	–	KHSST08149	6 - 32	2.00	.69	.141	3	H2
KHSST28135	–	KHSST28388	6 - 32	2.00	.69	.141	2	H3
–	–	KHSST08152	6 - 32	2.00	.69	.141	3	H3
–	–	KHSST08173	6 - 40	2.00	.69	.141	3	H2
–	–	KHSST28394	8 - 32	2.13	.75	.168	2	H2
KHSST09011	–	KHSST28395	8 - 32	2.13	.75	.168	4	H2
–	–	KHSST08197	8 - 32	2.13	.75	.168	2	H3
KHSST28429	–	KHSST28399	8 - 32	2.13	.75	.168	3	H3
–	KHSST28423	KHSST08193	8 - 32	2.13	.75	.168	4	H3
–	–	KHSST28403	8 - 36	2.13	.75	.168	4	H2
–	–	KHSST08239	10 - 24	2.38	.88	.194	2	H3
–	–	KHSST28406	10 - 24	2.38	.88	.194	3	H3
KHSST09013	–	KHSST08235	10 - 24	2.38	.88	.194	4	H3
KHSST28133	–	–	10 - 32	2.38	.88	.194	3	H2
–	–	KHSST08262	10 - 32	2.38	.88	.194	4	H2
–	–	KHSST08273	10 - 32	2.38	.88	.194	2	H3
–	–	KHSST28412	10 - 32	2.38	.88	.194	3	H3
KHSST09015	KHSST28419	KHSST08269	10 - 32	2.38	.88	.194	4	H3
KHSST28131	–	KHSST08295	12 - 24	2.38	.94	.220	4	H3
–	–	KHSST28416	12 - 28	2.38	.94	.220	4	H3

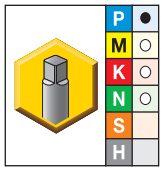
NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

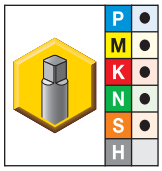


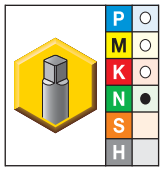




KHSST Hand • Fractional Sizes • Bottoming Chamfer Tap





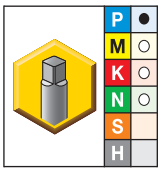


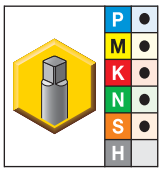
● first choice
○ alternate choice

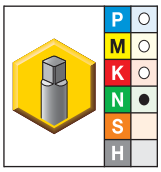
TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	–	KHSST08317	1/4 - 20	2.50	1.00	.255	4	H2
KHSST28353	–	KHSST28294	1/4 - 20	2.50	1.00	.255	2	H3
–	–	KHSST28295	1/4 - 20	2.50	1.00	.255	3	H3
KHSST09019	KHSST28342	KHSST08321	1/4 - 20	2.50	1.00	.255	4	H3
–	–	KHSST08327	1/4 - 20	2.50	1.00	.255	4	H5
–	–	KHSST08356	1/4 - 28	2.50	1.00	.255	3	H3
KHSST09021	–	KHSST08354	1/4 - 28	2.50	1.00	.255	4	H3
–	–	KHSST08392	5/16 - 18	2.72	1.13	.318	2	H3
–	–	KHSST28313	5/16 - 18	2.72	1.13	.318	3	H3
KHSST28119	–	KHSST08381	5/16 - 18	2.72	1.13	.318	4	H3
–	–	KHSST28317	5/16 - 18	2.72	1.13	.318	4	H5
KHSST09025	–	KHSST28319	5/16 - 24	2.72	1.13	.318	4	H3
–	–	KHSST28308	3/8 - 16	2.94	1.25	.381	3	H3
KHSST09027	KHSST28347	KHSST08435	3/8 - 16	2.94	1.25	.381	4	H3
–	–	KHSST28311	3/8 - 16	2.94	1.25	.381	4	H5
KHSST09029	–	KHSST08460	3/8 - 24	2.94	1.25	.381	4	H3
–	–	KHSST08478	7/16 - 14	3.16	1.44	.323	4	H3
KHSST28122	–	KHSST08494	7/16 - 20	3.16	1.44	.323	4	H3
–	–	KHSST28290	1/2 - 13	3.38	1.66	.367	3	H3
KHSST09035	KHSST28340	KHSST28287	1/2 - 13	3.38	1.66	.367	4	H3
–	–	KHSST28289	1/2 - 13	3.38	1.66	.367	4	H5
–	–	KHSST08531	1/2 - 20	3.38	1.66	.367	4	H3
–	–	KHSST08546	9/16 - 12	3.59	1.66	.429	4	H3
–	–	KHSST08554	9/16 - 18	3.59	1.66	.429	4	H3
KHSST09039	KHSST28350	KHSST08562	5/8 - 11	3.81	1.81	.480	4	H3
–	–	KHSST28235	5/8 - 11	3.81	1.81	.480	4	H5
KHSST09041	–	KHSST08575	5/8 - 18	3.81	1.81	.480	4	H3
–	–	KHSST28102	11/16 - 16	4.03	1.06	.542	4	H3
KHSST09043	KHSST28344	KHSST08596	3/4 - 10	4.25	2.00	.590	4	H3
–	–	KHSST28301	3/4 - 10	4.25	2.00	.590	4	H5
KHSST28117	–	KHSST08609	3/4 - 16	4.25	2.00	.590	4	H3
–	–	KHSST28304	3/4 - 16	4.25	2.00	.590	4	H5

(continued)

(KHSST Hand • Fractional Sizes • Bottoming Chamfer Tap — continued)





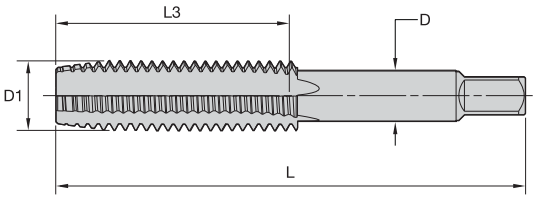


● first choice
○ alternate choice

TiN	oxide	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST09047	–	**KHSST08617**	7/8 - 9	4.69	2.22	.697	4	H4
KHSST28124	–	**KHSST28329**	7/8 - 14	4.69	2.22	.697	4	H4
KHSST28114	**KHSST28338**	**KHSST08631**	1 - 8	5.13	2.50	.800	4	H4
–	–	**KHSST28278**	1 - 12	5.13	2.50	.800	4	H4
–	–	**KHSST28282**	1 - 14	5.13	2.50	.800	4	H4
–	–	**KHSST28032**	1 1/8 - 7	5.44	2.56	.896	4	H4
–	–	**KHSST28028**	1 1/8 - 12	5.44	2.56	.896	4	H4
–	–	**KHSST28020**	1 1/4 - 7	5.75	2.56	1.021	4	H4
–	–	**KHSST28015**	1 1/4 - 12	5.75	2.56	1.021	6	H4
–	–	**KHSST28008**	1 1/2 - 6	6.38	3.00	1.233	4	H4
–	–	**KHSST28003**	1 1/2 - 12	6.38	3.00	1.233	6	H4

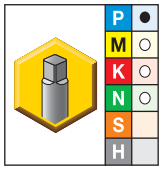
NOTE: Hand taps for 3B class of fit are suitable for UNJ aerospace internal threading applications.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

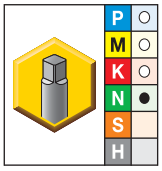






KHSST Hand • Plug Chamfer Tap • Metric ANSI



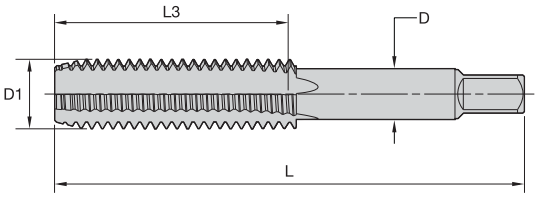


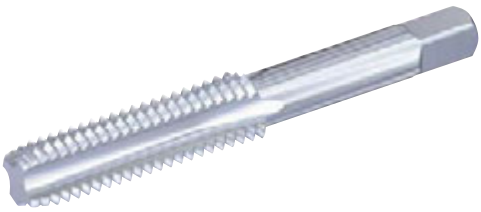
● first choice
○ alternate choice

TiN	uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
–	**KHSST28682 ***	M1,6 X 0,35	1.63	.31	.141	2	D3
–	**KHSST27709**	M2 X 0,4	1.75	.44	.141	3	D3
–	**KHSST27721**	M3 X 0,5	1.94	.63	.141	3	D3
–	**KHSST27729**	M4 X 0,7	2.13	.75	.168	4	D4
–	**KHSST27737**	M5 X 0,8	2.38	.88	.194	4	D4
KHSST09054	**KHSST27741**	M6 X 1	2.50	1.00	.255	4	D5
–	**KHSST27749**	M8 X 1,25	2.72	1.13	.318	4	D5
–	**KHSST27757**	M10 X 1,5	2.94	1.25	.381	4	D6
–	**KHSST27765**	M12 X 1,75	3.38	1.66	.367	4	D6
–	**KHSST27773**	M14 X 2	3.59	1.66	.429	4	D7
–	**KHSST27781**	M16 X 2	3.81	1.81	.480	4	D7
–	**KHSST27793**	M18 X 2,5	4.03	1.06	.542	4	D7
–	**KHSST27800**	M20 X 1,5	4.47	2.00	.652	4	D6
–	**KHSST27796**	M20 X 2,5	4.47	2.00	.652	4	D7
–	**KHSST27809**	M24 X 3	4.91	2.22	.760	4	D8
–	**KHSST28695**	M30 X 3,5	5.44	2.56	1.021	4	D9
–	**KHSST28698**	M36 X 4	6.06	3.00	1.233	4	D9

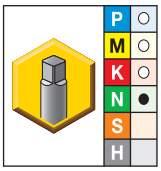
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page M203 for the recommended pitch diameter limit for 6H class of fit.







KHSST Hand • Bottoming Chamfer Tap • Metric ANSI

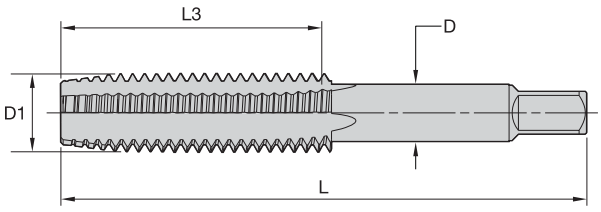


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST27710	M2 X 0,4	1.75	.44	.141	3	D3
KHSST27722	M3 X 0,5	1.94	.63	.141	3	D3
KHSST27730	M4 X 0,7	2.13	.75	.168	4	D4
KHSST27738	M5 X 0,8	2.38	.88	.194	4	D4
KHSST27742	M6 X 1	2.50	1.00	.255	4	D5
KHSST27750	M8 X 1,25	2.72	1.13	.318	4	D5
KHSST27758	M10 X 1,5	2.94	1.25	.381	4	D6
KHSST27766	M12 X 1,75	3.38	1.66	.367	4	D6
KHSST28455	M14 X 2	3.59	1.66	.429	4	D7
KHSST28458	M16 X 2	3.81	1.81	.480	4	D7
KHSST28462	M20 X 2,5	4.47	2.00	.652	4	D7
KHSST28465	M24 X 3	4.91	2.22	.760	4	D8

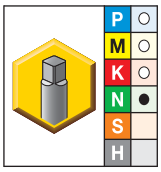
NOTE: Metric taps for 6H class of fit are suitable for MJ aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.
Refer to table on page M203 for the recommended pitch diameter limit for 6H class of fit.







KHSST Left Hand • Fractional Sizes • Plug Chamfer Taps

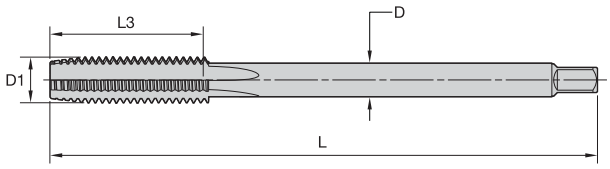


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28086	1/4 - 28	2.50	1.00	.255	4	H3
KHSST28207	3/8 - 24	2.94	1.25	.381	4	H3
KHSST28675	7/16 - 20	3.16	1.44	.323	4	H3
KHSST28053	1/2 - 13	3.38	1.66	.367	4	H3
KHSST28064	1/2 - 20	3.38	1.66	.367	4	H3
KHSST28233	5/8 - 11	3.81	1.81	.480	4	H3
KHSST28239	5/8 - 18	3.81	1.81	.480	4	H3
KHSST28167	3/4 - 10	4.25	2.00	.590	4	H3
KHSST28184	3/4 - 16	4.25	2.00	.590	4	H3

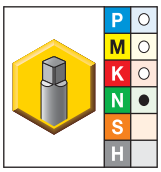
NOTE: Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.







KHSST Extended-Length Hand Taps • Machine Screw and Fractional • Plug Chamfer Tap

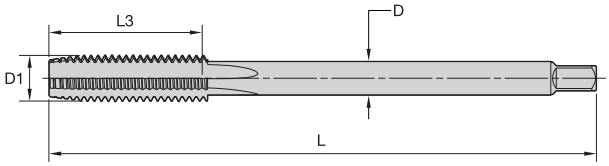


● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28781	6 - 32	6.00	.69	.141	3	H3
KHSST28791	8 - 32	6.00	.75	.168	4	H3
KHSST28742	10 - 24	6.00	.88	.194	4	H3
KHSST28752	10 - 32	6.00	.88	.194	4	H3
KHSST28078	1/4 - 20	6.00	1.00	.255	4	H3
KHSST28085	1/4 - 28	6.00	1.00	.255	4	H3
KHSST28218	5/16 - 18	6.00	.67	.318	4	H3
KHSST28195	3/8 - 16	6.00	1.25	.381	4	H3

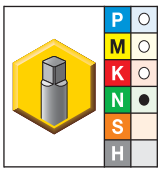
NOTE: Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.







KHSST Extended-Length Hand Taps • Machine Screw and Fractional • Bottoming Chamfer Tap



● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	pitch diameter limit
KHSST28751 *	10 - 32	6.00	.88	.194	4	H3
KHSST28077	1/4 - 20	6.00	1.00	.255	4	H3
KHSST28217	5/16 - 18	6.00	.67	.318	4	H3
KHSST28226	5/16 - 24	6.00	.59	.318	4	H3
KHSST28194	3/8 - 16	6.00	1.25	.381	4	H3

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.
Refer to table on pages M202–M203 for the recommended pitch diameter limit for 2B or 3B class of fit.

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Forming Taps



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- Stainless steel.
- Aluminum.

High-Performance Beyond™ Solid Carbide Taps

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- Runs up to 4x faster and 4x longer than conventional HSS taps.
- Ideal for long production runs where fewer tool changes result in greater productivity.
- For use on CNC machines with synchronous or rigid controls and precision toolholders.

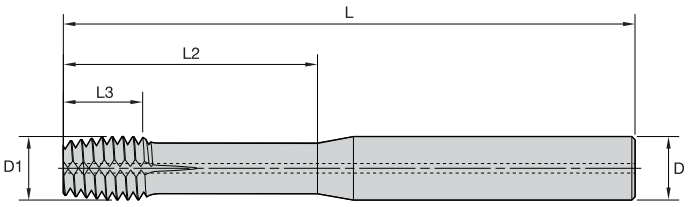
High-Performance Beyond HSS-E-PM Taps

- High-performance forming taps for through- and blind-hole applications in steel, stainless steel, and aluminum.
- Higher strength and wider range of applications versus solid carbide taps.
- Higher tapping speed capability and longer tool life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.



• KCN14 TiN + CrC/C for aluminum.

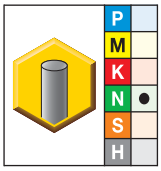






beyond

T491 • Form E Bottoming Entry Taper • Through Coolant M6 and Larger • Metric • Solid Carbide • For Aluminum



● first choice
○ alternate choice

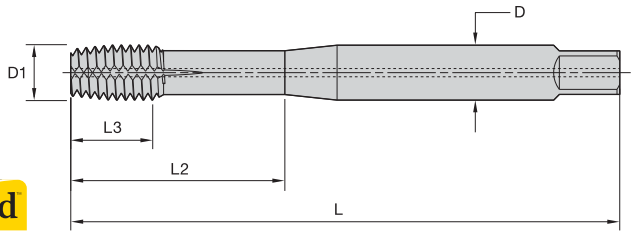
KCN14	D1 size	L	L3	L2	D	number of lube grooves	class of fit
T491M050X080R6HX	M5 X 0,8	60	7	20	6,0	2	6HX
T491M060X100R6HX	M6 X 1	70	8	24	6,0	2	6HX
T491M080X125R6HX	M8 X 1,25	80	10	32	8,0	2	6HX
T491M100X150R6HX	M10 X 1,5	90	12	40	10,0	3	6HX
T491M120X175R6HX	M12 X 1,75	100	14	48	12,0	3	6HX

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–16	+0, -0,011

• KCN14 TiN + CrC/C for aluminum.

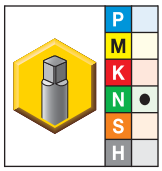






beyond

T491 • DIN 2174 • Form E Bottoming Chamfer • Through Coolant • Metric • Solid Carbide • For Aluminum



● first choice
○ alternate choice

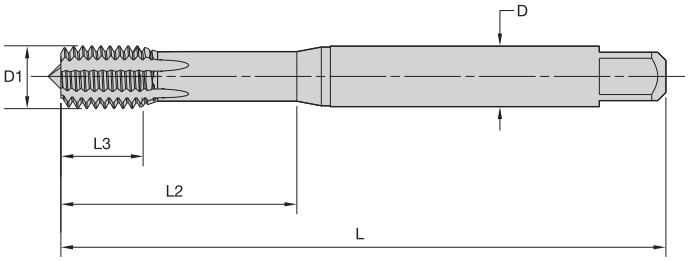
KCN14	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T491M060X100R6HX-D74	M6 X 1	80	10	30	6,0	2	DIN 2174	6HX
T491M080X125R6HX-D74	M8 X 1,25	90	13	35	8,0	2	DIN 2174	6HX
T491M100X150R6HX-D74	M10 X 1,5	100	15	39	10,0	3	DIN 2174	6HX

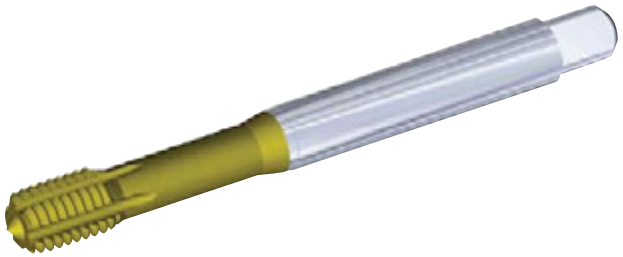
Shank Tolerance

D	tolerance h6
3–6	+0, -0,008
>6–10	+0, -0,009
>10–18	+0, -0,011
>18–30	+0, -0,013
>30–50	+0, -0,016

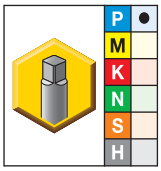
- KSP21 TiN for tapping steel.
- KSN28 DLC for tapping aluminum.

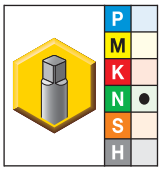






T622 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Metric • For Steel and Aluminum





● first choice
○ alternate choice

KSP21	KSN28	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T622M030X050R6HX-D74	**T622M030X050R6HX-D74**	M3 X 0,5	56	6	18	3,5	4	DIN 2174	6HX
T622M040X070R6HX-D74	**T622M040X070R6HX-D74**	M4 X 0,7	63	7	21	4,5	4	DIN 2174	6HX
T622M050X080R6HX-D74	**T622M050X080R6HX-D74**	M5 X 0,8	70	8	25	6,0	4	DIN 2174	6HX
T622M060X100R6HX-D74	**T622M060X100R6HX-D74**	M6 X 1	80	10	30	6,0	5	DIN 2174	6HX
T622MF080X100R6HX-D74	**T622MF080X100R6HX-D74**	M8 X 1	90	10	35	8,0	5	DIN 2174	6HX
T622M080X125R6HX-D74	**T622M080X125R6HX-D74**	M8 X 1,25	90	14	35	8,0	5	DIN 2174	6HX
T622MF100X100R6HX-D74	**T622MF100X100R6HX-D74** *	M10 X 1	90	10	35	10,0	5	DIN 2174	6HX
T622MF100X125R6HX-D74	**T622MF100X125R6HX-D74**	M10 X 1,25	100	16	39	10,0	5	DIN 2174	6HX
T622M100X150R6HX-D74	**T622M100X150R6HX-D74**	M10 X 1,5	100	16	39	10,0	5	DIN 2174	6HX
T622MF120X125R6HX-D74	**T622MF120X125R6HX-D74**	M12 X 1,25	100	15	39	9,0	6	DIN 2174	6HX
T622MF120X150R6HX-D74	**T622MF120X150R6HX-D74**	M12 X 1,5	100	15	39	9,0	6	DIN 2174	6HX
T622M120X175R6HX-D74	**T622M120X175R6HX-D74**	M12 X 1,75	110	18	44	9,0	6	DIN 2174	6HX
T622MF140X150R6HX-D74	**T622MF140X150R6HX-D74**	M14 X 1,5	100	15	47	11,0	6	DIN 2174	6HX
T622MF160X150R6HX-D74	**T622MF160X150R6HX-D74**	M16 X 1,5	100	15	46	12,0	6	DIN 2174	6HX
T622M160X200R6HX-D74	**T622M160X200R6HX-D74**	M16 X 2	110	22	51	12,0	6	DIN 2174	6HX

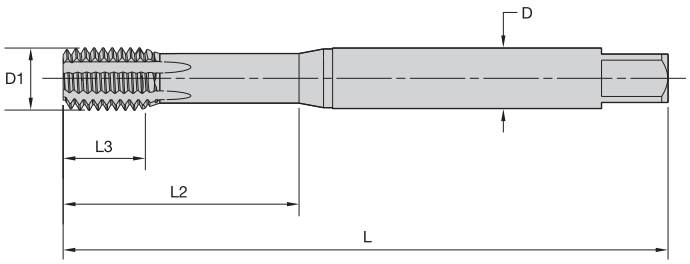
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

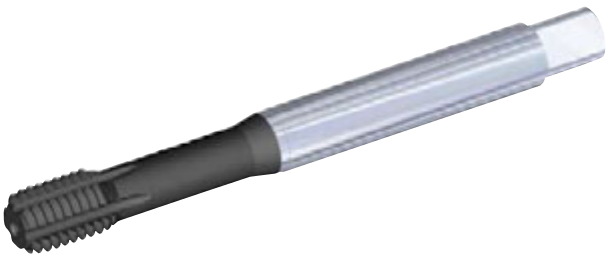
Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

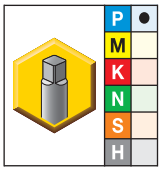
- KSP21 TiN for tapping steel.
- KSN28 DLC for tapping aluminum.

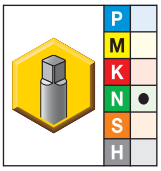






T623 • DIN 2174 • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric • For Steel and Aluminum





● first choice
○ alternate choice

KSP21	KSN28	D1 size	L	L3	L2	D	number of lube grooves	dimension standard	class of fit
T623M050X080R6HX-D74	**T623M050X080R6HX-D74**	M5 X 0,8	70	8	25	6,0	4	DIN 2174	6HX
T623M060X100R6HX-D74	**T623M060X100R6HX-D74**	M6 X 1	80	10	30	6,0	5	DIN 2174	6HX
T623MF080X100R6HX-D74	**T623MF080X100R6HX-D74** *	M8 X 1	90	10	35	8,0	5	DIN 2174	6HX
T623M080X125R6HX-D74	**T623M080X125R6HX-D74**	M8 X 1,25	90	14	35	8,0	5	DIN 2174	6HX
T623MF100X100R6HX-D74	**T623MF100X100R6HX-D74**	M10 X 1	90	10	35	10,0	5	DIN 2174	6HX
T623M100X150R6HX-D74	**T623M100X150R6HX-D74**	M10 X 1,5	100	16	39	10,0	5	DIN 2174	6HX
T623MF120X150R6HX-D74	**T623MF120X150R6HX-D74**	M12 X 1,5	100	15	27	9,0	6	DIN 2174	6HX
T623M120X175R6HX-D74	**T623M120X175R6HX-D74**	M12 X 1,75	110	18	30	9,0	6	DIN 2174	6HX
T623MF140X150R6HX-D74	**T623MF140X150R6HX-D74**	M14 X 1,5	100	15	29	11,0	6	DIN 2174	6HX
T623MF160X150R6HX-D74	**T623MF160X150R6HX-D74**	M16 X 1,5	100	15	31	12,0	6	DIN 2174	6HX
T623M160X200R6HX-D74	**T623M160X200R6HX-D74**	M16 X 2	110	22	38	12,0	6	DIN 2174	6HX

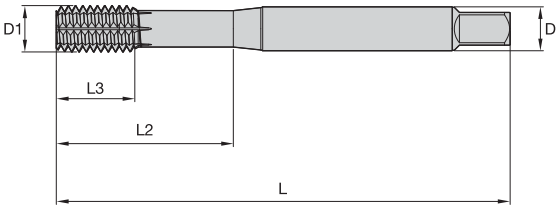
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D	tolerance h9
1–3	+0, -0,025
3,5–6	+0, -0,030
7–10	+0, -0,036
11–18	+0, -0,043

• KSP27 AlCrTiN for steel and stainless steel.

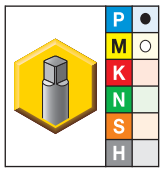






beyond

T624 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Machine Screw and Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

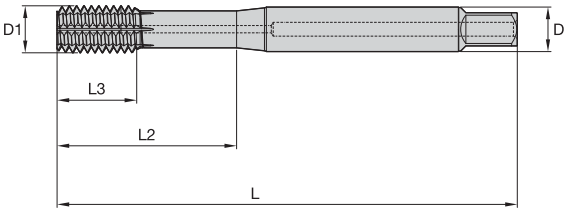
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T624NC#06-32RH3-DA	6 - 32	2.22	.41	.81	.141	2	H3
T624NC#06-32RH5-DA	6 - 32	2.22	.41	.81	.141	2	H5
T624NC#08-32RH3-DA	8 - 32	2.48	.39	.83	.168	4	H3
T624NC#08-32RH5-DA	8 - 32	2.48	.39	.83	.168	4	H5
T624NC#10-24RH4-DA	10 - 24	2.78	.39	1.01	.194	4	H4
T624NC#10-24RH6-DA	10 - 24	2.78	.39	1.01	.194	4	H6
T624NF#10-32RH4-DA	10 - 32	2.77	.39	1.00	.194	4	H4
T624NF#10-32RH6-DA	10 - 32	2.77	.39	1.00	.194	4	H6
T624NC02500-20RH4-DA	1/4 - 20	3.18	.51	1.22	.255	4	H4
T624NC02500-20RH6-DA	1/4 - 20	3.18	.51	1.21	.255	4	H6
T624NF02500-28RH4-DA	1/4 - 28	3.16	.51	1.20	.255	4	H4
T624NF02500-28RH6-DA	1/4 - 28	3.16	.51	1.20	.255	4	H6
T624NC03125-18RH5-DA	5/16 - 18	3.58	.55	1.42	.318	6	H5
T624NC03125-18RH7-DA	5/16 - 18	3.58	.55	1.42	.318	6	H7
T624NF03125-24RH5-DA	5/16 - 24	3.56	.55	1.40	.318	6	H5
T624NF03125-24RH7-DA	5/16 - 24	3.56	.55	1.38	.318	6	H7
T624NC03750-16RH5-DA	3/8 - 16	3.98	.63	1.54	.381	6	H5
T624NC03750-16RH7-DA	3/8 - 16	3.98	.63	1.54	.381	6	H7
T624NF03750-24RH5-DA	3/8 - 24	3.95	.63	1.54	.381	6	H5
T624NF03750-24RH7-DA	3/8 - 24	3.94	.63	1.54	.381	6	H7
T624NC05000-13RH5-DA	1/2 - 13	4.33	.79	1.85	.367	6	H5
T624NC05000-13RH7-DA	1/2 - 13	4.33	.79	1.85	.367	6	H7
T624NF05000-20RH5-DA	1/2 - 20	4.33	.79	1.85	.367	6	H5
T624NF05000-20RH7-DA	1/2 - 20	4.33	.79	1.85	.367	6	H7
T624NC06250-11RH10-DA	5/8 - 11	4.33	.91	2.01	.480	6	H10
T624NC06250-11RH7-DA	5/8 - 11	4.33	.91	2.01	.480	6	H7
T624NF06250-18RH10-DA	5/8 - 18	4.33	.91	2.01	.480	6	H10
T624NF06250-18RH7-DA	5/8 - 18	4.33	.91	2.01	.480	6	H7
T624NC07500-10RH10-DA	3/4 - 10	4.92	.98	2.52	.590	6	H10
T624NC07500-10RH7-DA	3/4 - 10	4.92	.98	2.52	.590	6	H7
T624NF07500-16RH10-DA	3/4 - 16	4.92	.98	2.52	.590	6	H10
T624NF07500-16RH7-DA	3/4 - 16	4.92	.98	2.52	.590	6	H7

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KSP27 AlCrTiN for steel and stainless steel.

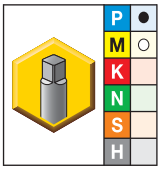






beyond

T625 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

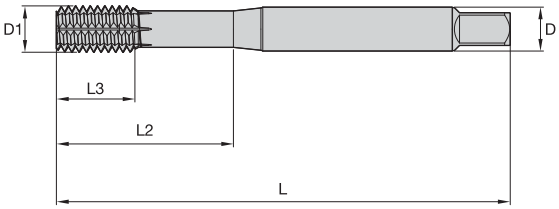
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T625NC02500-20RH4-DA	1/4 - 20	3.15	.51	1.18	.255	4	H4
T625NC02500-20RH6-DA	1/4 - 20	3.15	.51	1.18	.255	4	H6
T625NF02500-28RH4-DA	1/4 - 28	3.15	.51	1.18	.255	4	H4
T625NF02500-28RH6-DA	1/4 - 28	3.15	.51	1.18	.255	4	H6
T625NC03125-18RH5-DA	5/16 - 18	3.54	.55	1.38	.318	6	H5
T625NC03125-18RH7-DA	5/16 - 18	3.54	.55	1.38	.318	6	H7
T625NF03125-24RH5-DA	5/16 - 24	3.54	.55	1.38	.318	6	H5
T625NF03125-24RH7-DA	5/16 - 24	3.54	.55	1.38	.318	6	H7
T625NC03750-16RH5-DA	3/8 - 16	3.94	.63	1.54	.381	6	H5
T625NC03750-16RH7-DA	3/8 - 16	3.94	.63	1.54	.381	6	H7
T625NF03750-24RH5-DA	3/8 - 24	3.94	.63	1.54	.381	6	H5
T625NF03750-24RH7-DA	3/8 - 24	3.94	.63	1.54	.381	6	H7
T625NC05000-13RH5-DA	1/2 - 13	4.33	.79	1.85	.367	6	H5
T625NC05000-13RH7-DA	1/2 - 13	4.33	.79	1.85	.367	6	H7
T625NF05000-20RH5-DA	1/2 - 20	4.33	.79	1.85	.367	6	H5
T625NF05000-20RH7-DA	1/2 - 20	4.33	.79	1.85	.367	6	H7
T625NC06250-11RH10-DA	5/8 - 11	4.33	.79	2.01	.480	6	H10
T625NC06250-11RH7-DA	5/8 - 11	4.33	.79	2.01	.480	6	H7
T625NF06250-18RH10-DA	5/8 - 18	4.33	.79	2.01	.480	6	H10
T625NF06250-18RH7-DA	5/8 - 18	4.33	.79	2.01	.480	6	H7
T625NC07500-10RH10-DA	3/4 - 10	4.92	.98	2.52	.590	6	H10
T625NC07500-10RH7-DA	3/4 - 10	4.92	.98	2.52	.590	6	H7
T625NF07500-16RH10-DA	3/4 - 16	4.92	.98	2.52	.590	6	H10
T625NF07500-16RH7-DA	3/4 - 16	4.92	.98	2.52	.590	6	H7

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KSP27 AlCrTiN for steel and stainless steel.

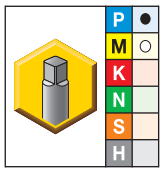






beyond

T626 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Machine Screw and Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T626NC#02-56RH3-DA	2 - 56	1.75	.44	.50	.141	0	H3
T626NC#03-48RH3-DA	3 - 48	1.97	.39	.71	.141	0	H3
T626NC#04-40RH3-DA	4 - 40	2.20	.39	.71	.141	0	H3
T626NC#04-40RH5-DA	4 - 40	2.20	.39	.71	.141	0	H5
T626NC#06-32RH3-DA	6 - 32	2.21	.39	.79	.141	2	H3
T626NC#06-32RH5-DA	6 - 32	2.21	.39	.79	.141	2	H5
T626NC#08-32RH3-DA	8 - 32	2.48	.39	.83	.168	4	H3
T626NC#08-32RH5-DA	8 - 32	2.48	.39	.83	.168	4	H5
T626NC#10-24RH4-DA	10 - 24	2.76	.39	.98	.194	4	H4
T626NC#10-24RH6-DA	10 - 24	2.76	.39	.98	.194	4	H6
T626NF#10-32RH4-DA	10 - 32	2.76	.39	.98	.194	4	H4
T626NF#10-32RH6-DA	10 - 32	2.76	.39	.98	.194	4	H6
T626NC02500-20RH4-DA	1/4 - 20	3.15	.51	1.18	.255	4	H4
T626NC02500-20RH6-DA	1/4 - 20	3.15	.51	1.18	.255	4	H6
T626NF02500-28RH4-DA	1/4 - 28	3.15	.51	1.18	.255	4	H4
T626NF02500-28RH6-DA *	1/4 - 28	3.15	.51	1.18	.255	4	H6
T626NC03125-18RH5-DA	5/16 - 18	3.54	.55	1.38	.318	6	H5
T626NC03125-18RH7-DA	5/16 - 18	3.54	.55	1.38	.318	6	H7
T626NF03125-24RH5-DA	5/16 - 24	3.54	.55	1.38	.318	6	H5
T626NF03125-24RH7-DA	5/16 - 24	3.54	.55	1.38	.318	6	H7
T626NC03750-16RH5-DA	3/8 - 16	3.94	.63	1.54	.381	6	H5
T626NC03750-16RH7-DA	3/8 - 16	3.94	.63	1.54	.381	6	H7
T626NF03750-24RH5-DA	3/8 - 24	3.94	.63	1.54	.381	6	H5
T626NF03750-24RH7-DA	3/8 - 24	3.94	.63	1.54	.381	6	H7
T626NC05000-13RH5-DA	1/2 - 13	4.33	.79	1.85	.367	6	H5
T626NC05000-13RH7-DA	1/2 - 13	4.33	.79	1.85	.367	6	H7
T626NF05000-20RH5-DA	1/2 - 20	4.33	.79	1.85	.367	6	H5
T626NF05000-20RH7-DA	1/2 - 20	4.33	.79	1.85	.367	6	H7
T626NC06250-11RH10-DA	5/8 - 11	4.33	.79	2.01	.480	6	H10
T626NC06250-11RH7-DA	5/8 - 11	4.33	.79	2.01	.480	6	H7
T626NF06250-18RH10-DA	5/8 - 18	4.33	.79	2.01	.480	6	H10
T626NF06250-18RH7-DA	5/8 - 18	4.33	.79	2.01	.480	6	H7
T626NC07500-10RH10-DA	3/4 - 10	4.92	.98	2.52	.590	6	H10
T626NC07500-10RH7-DA	3/4 - 10	4.92	.98	2.52	.590	6	H7
T626NF07500-16RH10-DA	3/4 - 16	4.92	.98	2.52	.590	6	H10
T626NF07500-16RH7-DA	3/4 - 16	4.92	.98	2.52	.590	6	H7

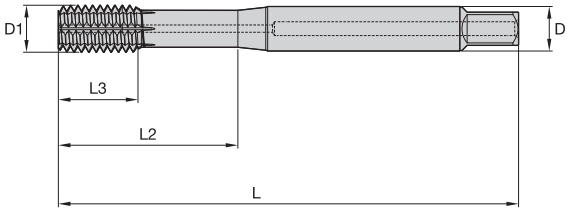
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

- KSP27 AlCrTiN for steel and stainless steel.

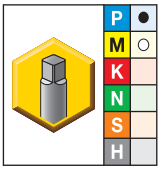






beyond

T627 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Through Coolant • Fractional • For Steel and Stainless Steel



● first choice
○ alternate choice

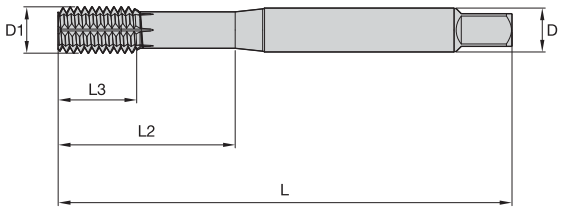
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T627NC02500-20RH4-DA	1/4 - 20	3.15	.51	1.18	.255	4	H4
T627NC02500-20RH6-DA	1/4 - 20	3.15	.51	1.18	.255	4	H6
T627NF02500-28RH4-DA	1/4 - 28	3.15	.51	1.18	.255	4	H4
T627NF02500-28RH6-DA	1/4 - 28	3.15	.51	1.18	.255	4	H6
T627NC03125-18RH5-DA	5/16 - 18	3.54	.55	1.38	.318	6	H5
T627NC03125-18RH7-DA	5/16 - 18	3.54	.55	1.38	.318	6	H7
T627NF03125-24RH5-DA	5/16 - 24	3.54	.55	1.38	.318	6	H5
T627NF03125-24RH7-DA	5/16 - 24	3.54	.55	1.38	.318	6	H7
T627NC03750-16RH5-DA	3/8 - 16	3.94	.63	1.54	.381	6	H5
T627NC03750-16RH7-DA	3/8 - 16	3.94	.63	1.54	.381	6	H7
T627NF03750-24RH5-DA	3/8 - 24	3.94	.63	1.54	.381	6	H5
T627NF03750-24RH7-DA	3/8 - 24	3.94	.63	1.54	.381	6	H7
T627NC05000-13RH5-DA	1/2 - 13	4.33	.79	1.85	.367	6	H5
T627NC05000-13RH7-DA	1/2 - 13	4.33	.79	1.85	.367	6	H7
T627NF05000-20RH5-DA	1/2 - 20	4.33	.79	1.85	.367	6	H5
T627NF05000-20RH7-DA	1/2 - 20	4.33	.79	1.85	.367	6	H7
T627NC06250-11RH10-DA	5/8 - 11	4.33	.79	2.01	.480	6	H10
T627NC06250-11RH7-DA	5/8 - 11	4.33	.79	2.01	.480	6	H7
T627NF06250-18RH10-DA	5/8 - 18	4.33	.79	2.01	.480	6	H10
T627NF06250-18RH7-DA	5/8 - 18	4.33	.79	2.01	.480	6	H7
T627NC07500-10RH10-DA	3/4 - 10	4.92	.98	2.52	.590	6	H10
T627NC07500-10RH7-DA	3/4 - 10	4.92	.98	2.52	.590	6	H7
T627NF07500-16RH10-DA	3/4 - 16	4.92	.98	2.52	.590	6	H10
T627NF07500-16RH7-DA	3/4 - 16	4.92	.98	2.52	.590	6	H7

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

- KSP27 AlCrTiN for steel and stainless steel.

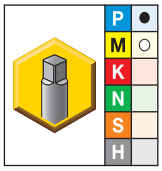






beyond

T624 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Metric • For Steel and Stainless Steel



● first choice
○ alternate choice

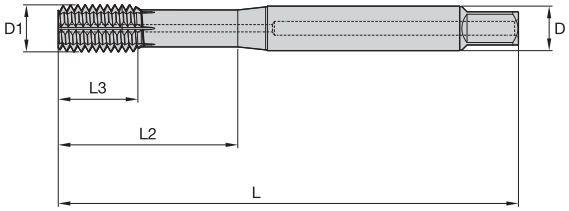
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T624M030X050RD5-DA	M3 X 0,5	2.20	.39	.79	.141	2	D5
T624M040X070RD6-DA	M4 X 0,7	2.48	.39	.83	.168	4	D6
T624M060X100RD8-DA	M6 X 1	3.15	.51	1.18	.255	4	D8
T624M080X125RD9-DA	M8 X 1,25	3.54	.55	1.38	.318	6	D9
T624MF100X125RD9-DA	M10 X 1,25	3.94	.63	1.53	.381	6	D9
T624M100X150RD10-DA	M10 X 1,5	3.94	.63	1.54	.381	6	D10
T624MF120X125RD9-DA	M12 X 1,25	4.33	.71	1.73	.367	6	D9
T624MF120X150RD9-DA	M12 X 1,5	4.33	.71	1.73	.367	6	D9
T624M120X175RD11-DA	M12 X 1,75	4.33	.71	1.73	.367	6	D11
T624MF140X150RD11-DA	M14 X 1,5	4.33	.79	2.05	.429	6	D11
T624M140X200RD12-DA	M14 X 2	4.33	.79	2.05	.429	6	D12
T624MF160X150RD11-DA	M16 X 1,5	4.33	.79	2.01	.480	6	D11
T624M160X200RD12-DA	M16 X 2	4.33	.79	2.01	.480	6	D12

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KSP27 AlCrTiN for steel and stainless steel.







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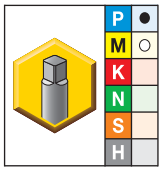
T625 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric • For Steel and Stainless Steel



● first choice
○ alternate choice

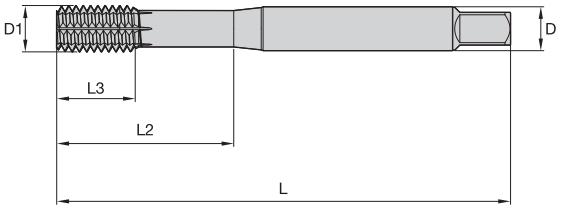
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T625M060X100RD8-DA	M6 X 1	3.15	.51	1.18	.255	4	D8
T625M080X125RD9-DA	M8 X 1,25	3.54	.55	1.38	.318	6	D9
T625MF100X125RD9-DA	M10 X 1,25	3.94	.63	1.54	.381	6	D9
T625M100X150RD10-DA	M10 X 1,5	3.94	.63	1.54	.381	6	D10
T625MF120X125RD9-DA	M12 X 1,25	4.33	.71	1.73	.367	6	D9
T625MF120X150RD9-DA	M12 X 1,5	4.33	.71	1.73	.367	6	D9
T625M120X175RD11-DA	M12 X 1,75	4.33	.71	1.73	.367	6	D11
T625MF140X150RD11-DA	M14 X 1,5	4.33	.79	2.05	.429	6	D11
T625M140X200RD12-DA	M14 X 2	4.33	.79	2.05	.429	6	D12
T625MF160X150RD11-DA	M16 X 1,5	4.33	.79	2.01	.480	6	D11
T625M160X200RD12-DA	M16 X 2	4.33	.79	2.01	.480	6	D12

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

• KSP27 AlCrTiN for steel and stainless steel.

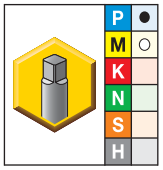






beyond

T626 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Metric • For Steel and Stainless Steel



● first choice
○ alternate choice

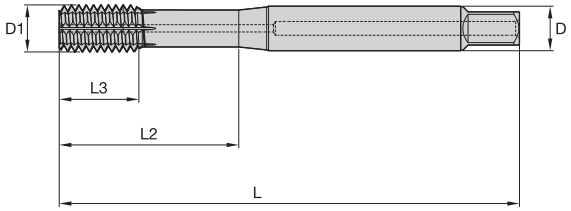
KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T626M030X050RD5-DA	M3 X 0,5	2.20	.39	.79	.141	2	D5
T626M035X060RD6-DA	M3,5 X 0,6	2.20	.39	.79	.141	2	D6
T626M040X070RD6-DA	M4 X 0,7	2.48	.39	.83	.168	4	D6
T626M050X080RD7-DA	M5 X 0,8	2.76	.39	.98	.194	4	D7
T626M060X100RD8-DA	M6 X 1	3.15	.51	1.18	.255	4	D8
T626M080X125RD9-DA	M8 X 1,25	3.54	.55	1.38	.318	6	D9
T626MF100X125RD9-DA	M10 X 1,25	3.94	.63	1.53	.381	6	D9
T626M100X150RD10-DA	M10 X 1,5	3.94	.63	1.54	.381	6	D10
T626MF120X125RD9-DA	M12 X 1,25	4.33	.71	1.73	.367	6	D9
T626MF120X150RD9-DA	M12 X 1,5	4.33	.71	1.73	.367	6	D9
T626M120X175RD11-DA	M12 X 1,75	4.33	.71	1.73	.367	6	D11
T626MF140X150RD11-DA	M14 X 1,5	4.33	.79	2.05	.429	6	D11
T626M140X200RD12-DA	M14 X 2	4.33	.79	2.05	.429	6	D12
T626MF160X150RD11-DA	M16 X 1,5	4.33	.79	2.01	.480	6	D11
T626M160X200RD12-DA	M16 X 2	4.33	.79	2.01	.480	6	D12

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

- KSP27 AlCrTiN for steel and stainless steel.

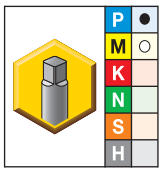






beyond

T627 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Through Coolant • Metric • For Steel and Stainless Steel



● first choice
○ alternate choice

KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
T627M060X100RD8-DA	M6 X 1	3.15	.51	1.18	.255	4	D8
T627M080X125RD9-DA	M8 X 1,25	3.54	.55	1.38	.318	6	D9
T627MF100X125RD9-DA	M10 X 1,25	3.94	.63	1.54	.381	6	D9
T627M100X150RD10-DA	M10 X 1,5	3.94	.63	1.54	.381	6	D10
T627MF120X125RD9-DA	M12 X 1,25	4.33	.71	1.73	.367	6	D9
T627MF120X150RD9-DA	M12 X 1,5	4.33	.71	1.73	.367	6	D9
T627M120X175RD11-DA	M12 X 1,75	4.33	.71	1.73	.367	6	D11
T627MF140X150RD11-DA	M14 X 1,5	4.33	.79	2.05	.429	6	D11
T627M140X200RD12-DA	M14 X 2	4.33	.79	2.05	.429	6	D12
T627MF160X150RD11-DA	M16 X 1,5	4.33	.79	2.01	.480	6	D11
T627M160X200RD12-DA	M16 X 2	4.33	.79	2.01	.480	6	D12

Shank Tolerance

D fractional	tolerance h6
.250–.375	+0, -.0004
.438–.625	+0, -.0004

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Pipe Taps



High-Performance Pipe Taps for Through-Hole and Blind-Hole Applications

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- Stainless steel.
- Aluminum.

Multipurpose HSS-E GOtap™ Taps

- NPT and NPTF taper pipe taps with standard projections and standard chamfers for ductile materials and mold steels.
- DIN EN ISO 228 G straight pipe taps with Whitworth thread form for ductile materials.
- Manufactured with high-vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Advanced PVD coatings to reduce tapping torque, resulting in high-quality thread finish and longer tool life.
- For use in both synchronous and non-synchronous machines, including rigid, synchronous, and tension/compression tap holders.

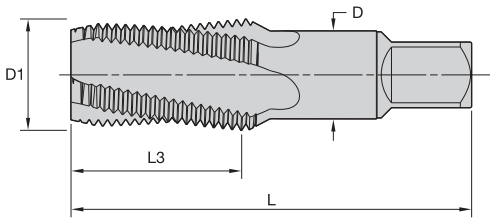
General-Purpose Taps

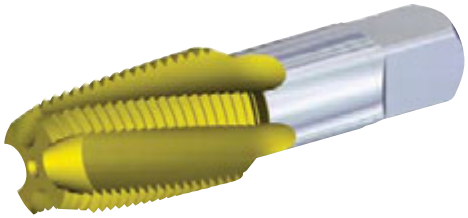
- Manufactured with select high-speed steel (HSS).
- Ground thread pipe taps are standard in American Standard Taper pipe threads (NPT), Dryseal American Standard Taper pipe threads (NPTF), American Standard Straight pipe threads (NPS), and American Standard Dryseal Fuel Straight pipe threads (NPSF).



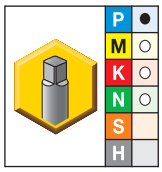
- KSU31 TiN
- KSP39 oxide

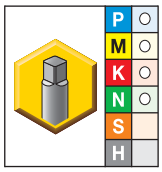






T854 • Standard Chamfer • Standard Projection



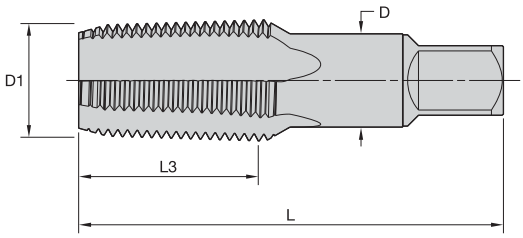


● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	D	number of flutes	thread type
T854NPT00625-27R-A	T854NPT00625-27R-A	1/16 - 27	2.13	.69	.313	4	NPT
–	T854NPTF00625-27R-A	1/16 - 27	2.13	.69	.313	4	NPTF
T854NPT01250-27R-AS	T854NPT01250-27R-AS	1/8 - 27	2.13	.75	.313	4	NPT
T854NPTF01250-27R-AS	T854NPTF01250-27R-AS	1/8 - 27	2.13	.75	.313	4	NPTF
T854NPT01250-27R-A	T854NPT01250-27R-A	1/8 - 27	2.13	.75	.438	4	NPT
T854NPTF01250-27R-A	T854NPTF01250-27R-A	1/8 - 27	2.13	.75	.438	4	NPTF
T854NPT02500-18R-A	T854NPT02500-18R-A	1/4 - 18	2.44	1.03	.563	4	NPT
T854NPTF02500-18R-A	T854NPTF02500-18R-A	1/4 - 18	2.44	1.03	.563	4	NPTF
T854NPT03750-18R-A	T854NPT03750-18R-A	3/8 - 18	2.56	1.03	.700	4	NPT
T854NPTF03750-18R-A	T854NPTF03750-18R-A	3/8 - 18	2.56	1.03	.700	4	NPTF
T854NPT05000-14R-A	T854NPT05000-14R-A	1/2 - 14	3.13	1.38	.688	4	NPT
T854NPTF05000-14R-A	T854NPTF05000-14R-A	1/2 - 14	3.13	1.38	.688	4	NPTF
T854NPT07500-14R-A	T854NPT07500-14R-A	3/4 - 14	3.25	1.38	.906	4	NPT
–	T854NPTF07500-14R-A	3/4 - 14	3.25	1.38	.906	4	NPTF
T854NPT10000-11.5R-A	T854NPT10000-11.5R-A	1 - 11 1/2	3.75	1.75	1.125	4	NPT
–	T854NPTF10000-11.5R-A	1 - 11 1/2	3.75	1.75	1.125	4	NPTF

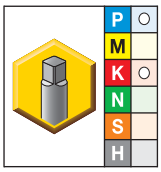
- KSU30 bright







T846 • NPT • Standard Chamfer • Standard Projection

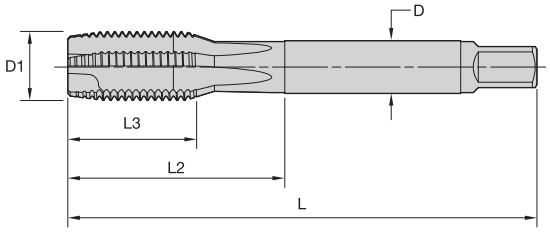


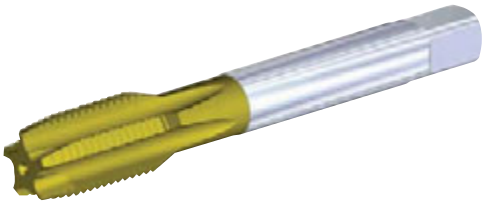
● first choice
○ alternate choice

KSU30	D1 size	L	L3	D	number of flutes	thread type
T846NPT01250-27R-AS	1/8 - 27	2.13	.75	.313	4	NPT
T846NPT02500-18R-A	1/4 - 18	2.44	1.03	.563	4	NPT
T846NPT03750-18R-A	3/8 - 18	2.56	1.03	.700	4	NPT
T846NPT05000-14R-A	1/2 - 14	3.13	1.38	.688	4	NPT
T846NPT07500-14R-A	3/4 - 14	3.25	1.38	.906	5	NPT

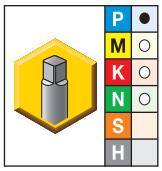
- KSU31 TiN
- KSP39 oxide

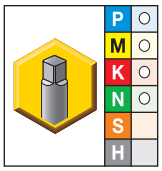






T877 • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form B



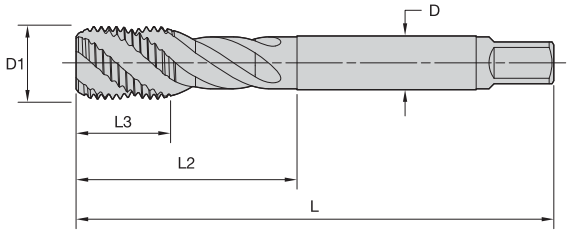


● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	thread type
T877G01250-28R-D56	**T877G01250-28R-D56**	1/8 - 28	90	15	35	7	3	G
T877G02500-19R-D56	**T877G02500-19R-D56**	1/4 - 19	100	22	44	11	3	G
T877G03750-19R-D56	**T877G03750-19R-D56**	3/8 - 19	100	22	47	12	4	G
T877G05000-14R-D56	**T877G05000-14R-D56**	1/2 - 14	125	25	55	16	4	G
T877G06250-14R-D56	**T877G06250-14R-D56**	5/8 - 14	125	25	61	18	4	G
T877G07500-14R-D56	**T877G07500-14R-D56**	3/4 - 14	140	25	60	20	4	G
T877G08750-14R-D56	**T877G08750-14R-D56**	7/8 - 14	150	28	68	22	4	G
T877G10000-11R-D56	**T877G10000-11R-D56**	1 - 11	160	30	68	25	5	G

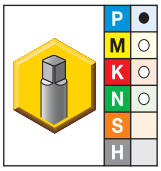
- KSU31 TiN
- KSP39 oxide

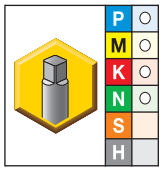






T857 • (G) Whitworth Pipe Thread • DIN EN ISO 228 • Form C • Tension/Compression Holders





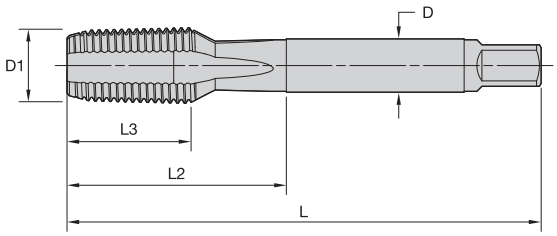
● first choice
○ alternate choice

KSU31	KSP39	D1 size	L	L3	L2	D	number of flutes	thread type
T857G01250-28R-D56	T857G01250-28R-D56	1/8 - 28	90	15	37	7	3	G
T857G02500-19R-D56	T857G02500-19R-D56	1/4 - 19	100	15	44	11	3	G
T857G03750-19R-D56	T857G03750-19R-D56	3/8 - 19	100	15	47	12	4	G
T857G05000-14R-D56	T857G05000-14R-D56	1/2 - 14	125	18	55	16	4	G
T857G06250-14R-D56	T857G06250-14R-D56	5/8 - 14	125	18	61	18	4	G
T857G07500-14R-D56	T857G07500-14R-D56	3/4 - 14	140	20	65	20	4	G
T857G08750-14R-D56	T857G08750-14R-D56	7/8 - 14	150	22	68	22	4	G
T857G10000-11R-D56	T857G10000-11R-D56	1 - 11	160	24	74	25	5	G

NOTE: Suitable for tension/compression holders.

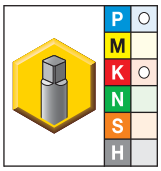
• KSU30 bright







T848 • NPT and NPTF • Standard Projection • Form C

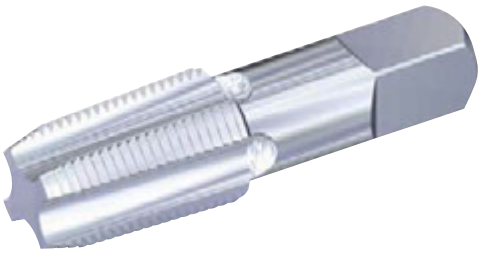


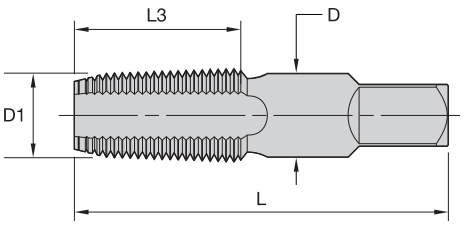
● first choice
○ alternate choice

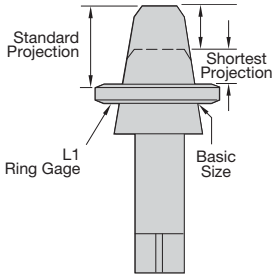
KSU30	D1 size	L	L3	L2	D	number of flutes	thread type
T848NPT00625-27R-D56	1/16 - 27	90	13	35	6	3	NPT
T848NPTF00625-27R-D56	1/16 - 27	90	13	35	6	3	NPTF
T848NPT01250-27R-D56	1/8 - 27	90	13	36	7	4	NPT
T848NPTF01250-27R-D56	1/8 - 27	90	13	36	7	4	NPTF
T848NPT02500-18R-D56	1/4 - 18	100	20	39	11	4	NPT
T848NPTF02500-18R-D56	1/4 - 18	100	20	39	11	4	NPTF
T848NPT03750-18R-D56	3/8 - 18	110	20	39	12	4	NPT
T848NPTF03750-18R-D56	3/8 - 18	110	20	39	12	4	NPTF
T848NPT05000-14R-D56	1/2 - 14	125	26	56	16	4	NPT
T848NPTF05000-14R-D56	1/2 - 14	125	26	56	16	4	NPTF
T848NPT07500-14R-D56	3/4 - 14	140	26	55	20	4	NPT
T848NPTF07500-14R-D56	3/4 - 14	140	26	55	20	4	NPTF
T848NPT10000-11,5R-D56	1 - 11 1/2	160	32	71	25	5	NPT
T848NPTF10000-11,5R-D56	1 - 11 1/2	160	32	71	25	5	NPTF

- Manufactured from select high-speed steel.
- Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread Form (NPTF).
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap; thread taper is 3/4" per foot.
- Alternate tap coatings are available as stock modifications.

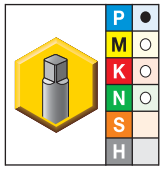


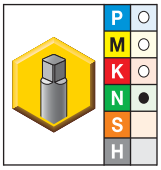






KHSST Taper Pipe Tap • Chamfer 2-1/2–3-1/2 Pitches





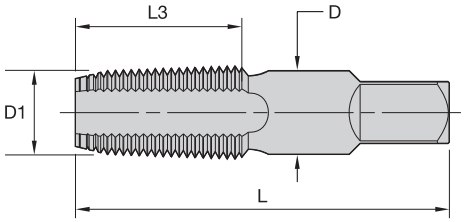
● first choice
○ alternate choice

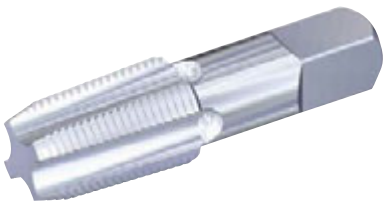
TiN	uncoated	D1 size	L	L3	D	number of flutes	thread type
KHSST09137	**KHSST28443**	1/16 - 27	2.13	.69	.313	4	NPT/ANPT
KHSST09140	**KHSST08703**	1/8 - 27	2.13	.75	.313	4	NPT/ANPT
KHSST28141	**KHSST08705**	1/8 - 27	2.13	.75	.313	4	NPTF
KHSST28139	**KHSST08704**	1/8 - 27	2.13	.75	.438	4	NPT/ANPT
KHSST28140	**–**	1/8 - 27	2.13	.75	.438	4	NPTF
KHSST09143	**KHSST08709**	1/4 - 18	2.44	1.06	.563	4	NPT/ANPT
–	**KHSST28445**	1/4 - 18	2.44	1.06	.563	4	NPTF
KHSST28142	**KHSST28446**	3/8 - 18	2.56	1.06	.700	4	NPT/ANPT
–	**KHSST08712**	3/8 - 18	2.56	1.06	.700	4	NPTF
KHSST09147	**KHSST08715**	1/2 - 14	3.13	1.66	.687	4	NPT/ANPT
KHSST28060	**KHSST28444**	1/2 - 14	3.13	1.66	.687	4	NPTF
KHSST28178	**KHSST28177**	3/4 - 14	3.25	1.38	.906	5	NPT/ANPT
–	**KHSST28181**	3/4 - 14	3.25	1.38	.906	5	NPTF
–	**KHSST28107**	1 - 11 1/2	3.75	1.75	1.125	5	NPTF
KHSST09151	**KHSST28106**	1 - 11 1/2	3.75	1.75	1.125	5	NPT/ANPT
–	**KHSST08724**	1 1/4 - 11 1/2	4.00	1.75	1.313	5	NPT/ANPT
–	**KHSST28002**	1 1/2 - 11 1/2	4.25	3.00	1.500	7	NPT/ANPT
–	**KHSST28109**	2 - 11 1/2	4.25	1.75	1.875	7	NPT/ANPT

* Pipe tap projection is the distance the small end of the tap projects through an American National Standard Pipe Tap Thread Ring Gage.
NOTE: ANPT Taps marked NPT may be used for NPT and ANPT applications.

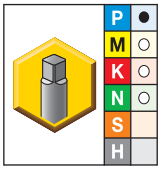
- Manufactured from select tap high-speed steel.
- Ground thread pipe taps are standard in American National Standard Straight Pipe (NPS) thread form and American National Standard Dryseal Straight Pipe (NPSF) thread form.
- NPS threads are suitable for tapping holes or couplings for low-pressure work when used with a sealer; also suitable for NPSC and NPSM work.
- NPSF dryseal taps are intended for low-pressure work, such as fuel and oil lines, where a sealer is not used.
- Dryseal threads give a low-pressure, pressure-tight joint without the use of sealer.







KHSST Straight Pipe • Chamfer 2-1/2–3-1/2 Pitches



● first choice
○ alternate choice

uncoated	D1 size	L	L3	D	number of flutes	thread series
KHSST28091	1/8 - 27	2.13	.75	.313	4	NPS
KHSST28093 *	1/8 - 27	2.13	.75	.313	4	NPSF
KHSST28092 *	1/8 - 27	2.13	.75	.438	4	NPS
KHSST28094	1/8 - 27	2.13	.75	.438	4	NPSF
KHSST28067	1/4 - 18	2.44	1.06	.563	4	NPS
KHSST28068	1/4 - 18	2.44	1.06	.563	4	NPSF
KHSST28196	3/8 - 18	2.56	1.06	.700	4	NPS
KHSST28197	3/8 - 18	2.56	1.06	.700	4	NPSF
KHSST28057	1/2 - 14	3.13	1.66	.688	4	NPS
KHSST28058	1/2 - 14	3.13	1.66	.688	4	NPSF
KHSST28172	3/4 - 14	3.25	1.38	.906	5	NPS
KHSST28173 *	3/4 - 14	3.25	1.38	.906	5	NPSF
KHSST28104	1 - 11 1/2	3.75	1.75	1.125	5	NPS

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



High-Performance Solid Carbide Thread Mills

Our solid carbide thread mills are designed to deliver high-quality internal threading on 3-axis CNC machines. Because these mills are made of carbide, they are capable of easily cutting most difficult materials up to 63 HRC. Thread mills make interrupted cuts and short chips.

The combination of these design elements offers a range of benefits to improve overall thread quality and tool production. Short, easily evacuated chips generate less heat and friction, so there is a lower risk of damage to threading. Also, the superior carbide grades make threading easier and machining times shorter.

Features and Benefits

System Requirements

- 3-axis CNC machine.
- Good clamping for tool and workpiece.
- Internal coolant supply.

Advantages

- Versatile.
- Better surface quality.
- No chip problems.
- No need to reverse the spindle.
- More production safety.

Features

- Interrupted cut.
- Short chips.
- Optimized carbide grades.
- Drill, thread, chamfer.

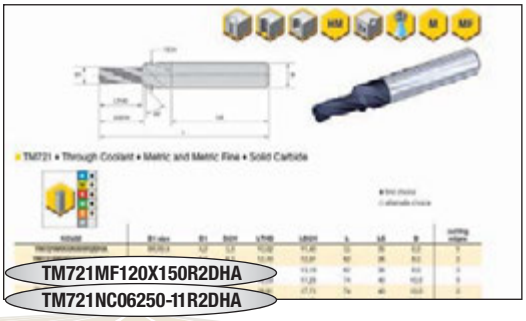




Through and Blind Holes (2 x D)

					
		Thread Mill	Thread Mill and Chamfer	Drill, Thread Mill, and Chamfer	Mill, Thread Mill, and Chamfer
P	<35 HRC	TM711	TM721	—	TM741_RHSF
P	35–43 HRC	—	TM721	—	TM741_RHSF
M		TM711	TM721	—	TM741_RHSF
K		TM711	TM721	TM731	TM741_RHSF
N	Wrought	TM711	TM721	—	TM731
N	Cast	TM711	TM721	TM731	TM741_RHSF
S		TM711	TM721	—	TM741_LHSF
H	44–63 HRC	—	—	—	TM741_RHSF TM741_LHSF

Solid Thread Mills Identification System

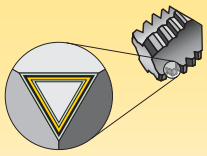


Metric	**TM721**	**MF**	**120**	**X**	**150**	**R**	**2D**	**HA**
Inch	**TM721**	**NC**	**06250**	**-**	**11**	**R**	**2D**	**HA**
	Thread Mill Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Depth of Cut	Shank
			mm or inch (depending on type)		mm or TPI (depending on type)			

M = Metric coarse-pitch thread (ISO form)
MF = Metric fine-pitch thread (ISO form)
NC = Unified coarse series thread
NF = Unified fine series thread

DIN 6535
HA = Plain Shank
HB = Weldon® Shank
HE = Whistle Notch Shank

Style
TM711 = Solid Thread Mill; Through Coolant
TM721 = Solid Thread Mill and Chamfer; Through Coolant
TM731 = Solid Thread Mill, Chamfer, and Drill; Through Coolant
TM741 = Solid Thread Mill, Chamfer, and Mill; Through Coolant

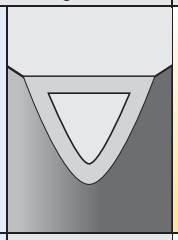
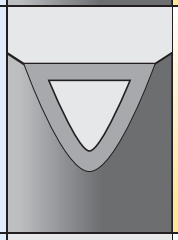
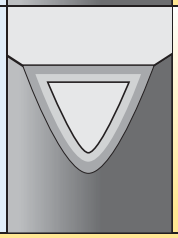


Coatings are designed for optimized tapping performance in specific materials.

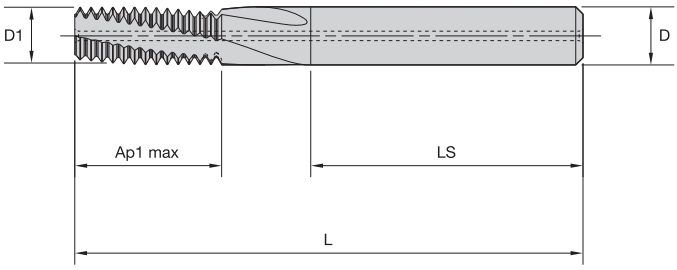
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ **toughness**

Grade

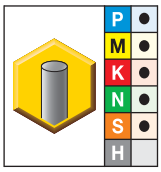
Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCU32 	Coated carbide. PVD — Fine-grain carbide substrate with high hardness TiCN coating. Universal grade for thread milling most materials.	P		■	■	■					
		M		■	■	■					
		K		■	■	■					
		N			■	■	■				
		S		■	■	■					
KCU33 	Coated carbide. PVD — Carbide substrate with heat-resistant TiAlN coating. Universal grade for thread milling most materials.	P			■	■	■	■			
		M			■	■	■	■			
		K		■	■	■	■				
		N				■	■	■	■		
		S			■	■	■	■			
KCU36 	Coated carbide. PVD — two-layer coating with heat-resistant TiAlN base layer and low-friction MoS_2 top layer over carbide substrate. Use for thread milling most materials including high hardness materials.	P				■	■	■	■		
		M				■	■	■	■		
		K			■	■	■	■			
		N			■	■	■	■			
		S				■	■	■	■		
		H					■	■	■	■	







TM711 • Through Coolant • Metric and Metric Fine • Solid Carbide • Solid Carbide



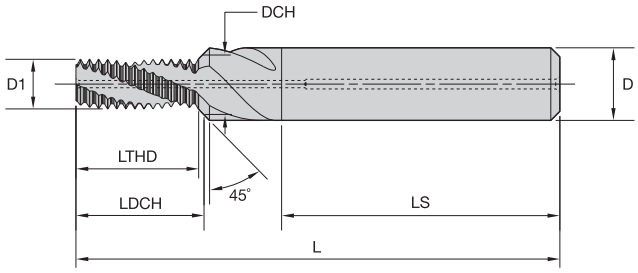
● first choice
○ alternate choice

KCU33	D1 size	D1	Ap1 max	L	LS	D	cutting edges
TM711M030X050R2DHA	M3 X 0.5	2,4	–	42	28	4,0	3
TM711MF040X050R2DHA	M4 X 0.5	3,4	8,2	55	36	6,0	3
TM711M040X070R2DHA	M4 X 0.7	3,2	–	55	36	6,0	3
TM711MF050X050R2DHA	M5 X 0.5	4,3	10,2	55	36	6,0	3
TM711M050X080R2DHA	M5 X 0.8	4,0	–	55	36	6,0	3
TM711MF060X075R2DHA	M6 X 0.75	5,0	12,0	55	36	6,0	3
TM711M060X100R2DHA	M6 X 1	4,8	12,0	55	36	6,0	3
TM711MF080X075R2DHA	M8 X 0.75	6,0	16,8	63	36	6,0	3
TM711MF080X100R2DHA	M8 X 1.0	6,0	16,4	63	36	6,0	3
TM711M080X125R2DHA	M8 X 1.25	5,9	16,0	63	36	6,0	3
TM711MF100X100R2DHA	M10 X 1.0	8,0	20,5	70	36	8,0	3
TM711M100X150R2DHA	M10 X 1.5	8,0	20,2	70	36	8,0	3
TM711MF120X100R2DHA	M12 X 1.0	10,0	24,5	80	40	10,0	4
TM711MF120X150R2DHA	M12 X 1.5	10,0	24,7	80	40	10,0	4
TM711M120X175R2DHA	M12 X 1.75	10,0	25,3	80	40	10,0	4
TM711MF140X150R2DHA	M14 X 1.5	10,0	29,2	80	40	10,0	4
TM711M140X200R2DHA	M14 X 2.0	11,6	28,0	90	45	12,0	4
TM711MF160X150R2DHA	M16 X 1.5	12,0	32,2	90	45	12,0	4
TM711M160X200R2DHA	M16 X 2.0	12,0	32,9	90	45	12,0	4
TM711MF180X150R2DHA	M18 X 1.5	14,0	36,7	90	45	14,0	4
TM711M180X250R2DHA	M18 X 2.5	14,0	38,7	90	45	14,0	4
TM711MF200X150R2DHA	M20 X 1.5	14,0	41,2	90	45	14,0	4
TM711M200X250R2DHA	M20 X 2.5	14,0	41,2	90	45	14,0	4

Shank Tolerance

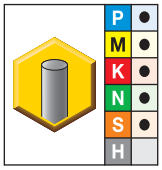
D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







TM721 • UNC • Through Coolant • Inch • Solid Carbide • Solid Carbide



● first choice
○ alternate choice

KCU32	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM721NC2500-20R2DHA	1/4-20	4,7	6,7	13,36	14,23	62	36	8,0	3
TM721NC3125-18R2DHA	5/16-18	6,2	8,3	16,26	17,19	74	40	10,0	3
TM721NC3750-16R2DHA	3/8-16	7,7	9,8	19,89	20,85	80	45	12,0	3
TM721NC4375-14R2DHA	7/16-14	9,0	11,4	22,72	23,79	80	45	12,0	3
TM721NC0500-13R2DHA	1/2-13	10,4	13,0	26,43	27,60	90	45	14,0	4
TM721NC5625-12R2DHA	9/16-12	11,8	14,6	30,75	31,99	100	48	16,0	4
TM721NC0625-11R2DHA	5/8-11	13,1	16,2	33,54	34,89	102	48	18,0	4

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013



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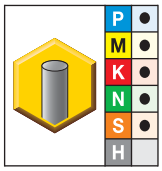
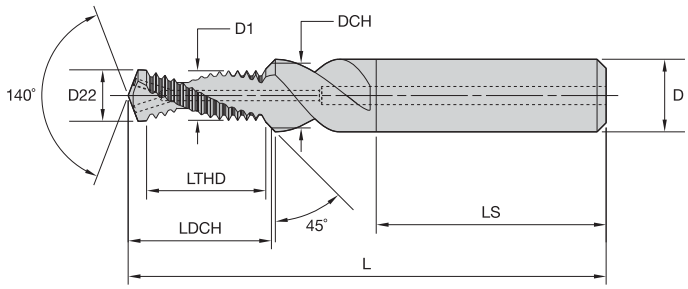


● first choice
○ alternate choice

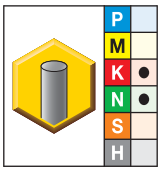
KCU32	D1 size	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM721M060X100R2DHA	M6X1	4,8	6,3	12,52	13,19	62	36	8,0	3
TM721MF080X100R2DHA	M8X1	6,7	8,3	16,53	17,23	74	40	10,0	3
TM721M080X125R2DHA	M8X1.25	6,5	8,3	16,91	17,71	74	40	10,0	3
TM721M100X150R2DHA	M10X1.5	8,2	10,3	20,29	21,22	80	45	12,0	3
TM721MF120X125R2DHA	M12X1.25	10,4	12,3	24,43	25,24	90	45	14,0	4
TM721M120X175R2DHA	M12X1.75	9,9	12,3	25,42	26,48	90	45	14,0	4
TM721MF140X150R2DHA	M14X1.5	12,1	14,3	29,31	30,25	100	48	16,0	4
TM721M140X200R2DHA	M14X2	11,6	14,3	29,05	30,24	100	48	16,0	4
TM721M160X200R2DHA	M16X2	13,6	16,3	33,05	34,24	102	48	18,0	4







TM731 • Through Coolant • Metric and Metric Fine • Solid Carbide • Solid Carbide



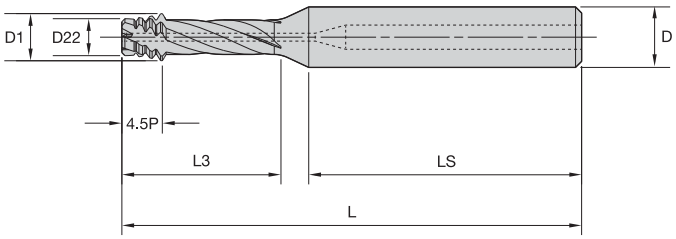
● first choice
○ alternate choice

KCU32	D1 size	D22	D1	DCH	LTHD	LDCH	L	LS	D	cutting edges
TM731M040X070R2DHA	M4X0.7	3,3	3,2	4,3	7,74	9,59	49	36	6,0	2
TM731M050X080R2DHA	M5X0.8	4,2	4,0	5,3	9,65	11,82	55	36	6,0	2
TM731M060X100R2DHA	M6X1	5,0	4,8	6,3	12,06	14,69	62	36	8,0	2
TM731MF080X100R2DHA	M8X1	7,0	6,8	8,3	16,09	19,10	74	40	10,0	2
TM731M080X125R2DHA	M8X1.25	6,8	6,5	8,3	15,08	18,42	74	40	10,0	2
TM731M100X150R2DHA	M10X1.5	8,5	8,2	10,3	19,59	23,65	79	45	12,0	2
TM731M120X175R2DHA	M12X1.75	10,3	9,9	12,3	22,86	27,63	89	45	14,0	2
TM731M160X200R2DHA	M16X2	14,0	13,6	16,3	32,13	38,00	102	48	18,0	2

Shank Tolerance

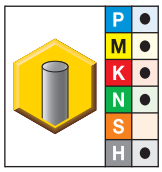
D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







TM741 • UNC and UNF • Through Coolant • Right Hand • Inch • Solid Carbide



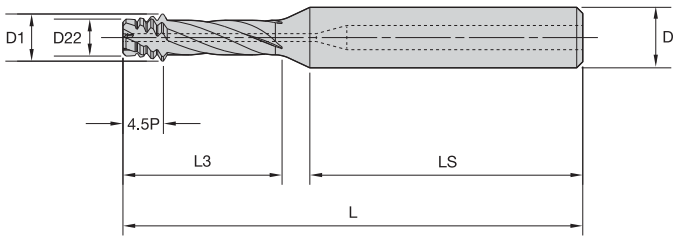
● first choice
○ alternate choice

KCU36	D1 size	D1	D22	L3	L	LS	D	cutting edges
TM741NC2500-20R2DHA	1/4-20	4,64	3,34	17,0	60	36	8,0	3
TM741NF2500-28R2DHA	1/4-28	4,66	3,62	17,0	60	36	8,0	3
TM741NC3125-18R2DHA	5/16-18	5,64	4,12	21,9	76	40	10,0	4
TM741NF3125-24R2DHA	5/16-24	5,64	4,48	21,9	76	40	10,0	4
TM741NC3750-16R2DHA	3/8-16	7,16	5,42	26,3	76	40	10,0	4
TM741NF3750-24R2DHA	3/8-24	7,14	6,00	26,3	76	40	10,0	4
TM741NC0500-13R2DHA	1/2-13	10,08	7,95	33,4	86	45	12,0	4
TM741NF0500-20R2DHA	1/2-20	8,45	7,06	33,0	86	45	12,0	4
TM741NF0625-18R2DHA	5/8-18	12,38	10,83	42,0	98	48	16,0	4
TM741NC0750-10R2DHA	3/4-10	15,50	12,77	51,3	111	50	20,0	5
TM741NC0750-16R2DHA	3/4-16	15,38	13,65	51,3	111	50	20,0	5

Shank Tolerance

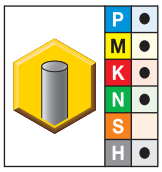
D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013







TM741 • Through Coolant • Right Hand • Metric and Metric Fine • Solid Carbide



● first choice
○ alternate choice

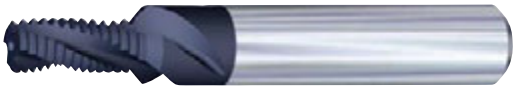
KCU36	D1 size	D1	D22	L3	L	LS	D	cutting edges
TM741M060X100R2DHA	M6X1	4,51	3,41	16,5	60	36	8,0	3
TM741MF080X100R2DHA	M8X1	6,23	5,13	21,9	71	40	10,0	4
TM741M080X125R2DHA	M8X1.25	6,23	4,91	21,9	71	40	10,0	4
TM741MF100X100R2DHA	M10X1	6,23	5,13	21,9	71	40	10,0	4
TM741MF100X125R2DHA	M10X1.25	6,23	4,91	21,9	71	40	10,0	4
TM741M100X150R2DHA	M10X1.5	7,75	6,11	26,3	76	40	10,0	4
TM741MF120X150R2DHA	M12X1.5	7,75	6,11	26,3	76	40	10,0	4
TM741M120X175R2DHA	M12X1.75	9,16	7,21	32,4	86	45	12,0	4
TM741M140X200R2DHA	M14X2	11,08	8,91	41,0	98	48	16,0	4
TM741M160X200R2DHA	M16X2	11,08	8,91	41,0	98	48	16,0	4
TM741M180X250R2DHA	M18X2.5	14,38	11,71	51,3	111	50	20,0	5
TM741M200X250R2DHA	M20X2.5	14,38	11,71	51,3	111	50	20,0	5

Shank Tolerance

D	tolerance h6
6	+0, -0,008
8–10	+0, -0,009
12–18	+0, -0,011
20–30	+0, -0,013



Thread Mill TM711



Thread Mill and Chamfer TM721

Material Group		Cutting Speed – vc Range – m/min			Feed/Tooth by Diameter			Cutting Speed – vc Range – m/min			Feed/Tooth by Diameter		
		min	Starting Value	max		<10mm	>10mm	min	Starting Value	max		<10mm	>10mm
P	1	90	**115**	150	mm/r	0,05	0,08	140	**185**	240	mm/r	0,06	0,10
	2	90	**115**	150	mm/r	0,05	0,08	140	**185**	240	mm/r	0,06	0,10
	3	40	**50**	70	mm/r	0,02	0,03	70	**90**	120	mm/r	0,03	0,04
	4	–	**–**	–	–	–	–	70	**90**	120	mm/r	0,03	0,04
	5	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	6	–	**–**	–	–	–	–	–	**–**	–	–	–	–
M	1	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	2	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	3	–	**–**	–	–	–	–	–	**–**	–	–	–	–
K	1	120	**150**	200	mm/r	0,06	0,10	130	**170**	220	mm/r	0,06	0,11
	2	120	**150**	200	mm/r	0,06	0,10	130	**170**	220	mm/r	0,06	0,11
	3	90	**115**	150	mm/r	0,05	0,07	110	**140**	180	mm/r	0,05	0,07
N	1	250	**275**	300	mm/r	0,07	0,09	270	**300**	330	mm/r	0,08	0,16
	2	200	**225**	250	mm/r	0,05	0,06	270	**300**	330	mm/r	0,08	0,16
	3	170	**190**	210	mm/r	0,04	0,05	160	**175**	190	mm/r	0,08	0,16
	4	250	**275**	300	mm/r	0,07	0,09	270	**300**	330	mm/r	0,08	0,16
	5	270	**300**	330	mm/r	0,12	0,13	250	**275**	300	mm/r	0,11	0,20
	6	170	**190**	210	mm/r	0,05	0,06	90	**100**	110	mm/r	0,11	0,20
S	1	60	**80**	100	mm/r	0,04	0,06	70	**90**	120	mm/r	0,05	0,08
	2	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05
	3	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05
	4	50	**65**	80	mm/r	0,03	0,04	50	**60**	80	mm/r	0,03	0,05

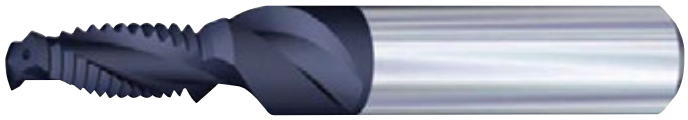


Thread Mill TM711



Thread Mill and Chamfer TM721

Material Group		Cutting Speed – vc Range – SFM			Feed/Tooth by Diameter			Cutting Speed – vc Range – SFM			Feed/Tooth by Diameter		
		min	Starting Value	max		<0.375"	>0.375"	min	Starting Value	max		<0.375"	>0.375"
P	1	300	**380**	490	IPR	0.002	0.003	460	**610**	790	IPR	0.002	0.004
	2	300	**380**	490	IPR	0.002	0.003	460	**610**	790	IPR	0.002	0.004
	3	130	**160**	230	IPR	0.001	0.001	230	**300**	390	IPR	0.001	0.001
	4	–	**–**	–	–	–	–	230	**300**	390	IPR	0.001	0.001
	5	200	**260**	330	IPR	0.002	0.002	230	**300**	390	IPR	0.002	0.003
	6	–	**–**	–	–	–	–	–	**–**	–	–	–	–
M	1	200	**260**	330	IPR	0.002	0.002	230	**300**	390	IPR	0.002	0.003
	2	200	**260**	330	IPR	0.002	0.002	230	**300**	390	IPR	0.002	0.003
	3	–	**–**	–	–	–	–	–	**–**	–	–	–	–
K	1	390	**490**	660	IPR	0.002	0.004	430	**560**	720	IPR	0.002	0.004
	2	390	**490**	660	IPR	0.002	0.004	430	**560**	720	IPR	0.002	0.004
	3	300	**380**	490	IPR	0.002	0.003	360	**460**	590	IPR	0.002	0.003
N	1	820	**900**	980	IPR	0.003	0.004	890	**980**	1080	IPR	0.003	0.006
	2	660	**740**	820	IPR	0.002	0.002	890	**980**	1080	IPR	0.003	0.006
	3	560	**620**	690	IPR	0.002	0.002	520	**570**	620	IPR	0.003	0.006
	4	820	**900**	980	IPR	0.003	0.004	890	**980**	1080	IPR	0.003	0.006
	5	890	**980**	1080	IPR	0.005	0.005	820	**900**	980	IPR	0.004	0.008
	6	560	**620**	690	IPR	0.002	0.002	300	**330**	360	IPR	0.004	0.008
S	1	200	**260**	330	IPR	0.002	0.002	230	**300**	390	IPR	0.002	0.003
	2	160	**210**	260	IPR	0.001	0.002	160	**200**	260	IPR	0.001	0.002
	3	160	**210**	260	IPR	0.001	0.002	160	**200**	260	IPR	0.001	0.002
	4	160	**210**	260	IPR	0.001	0.002	160	**200**	260	IPR	0.001	0.002



Drill, Chamfer, and Thread Mill TM731

Material Group		Cutting Speed — vc Range — m/min			Drilling Recommended Feed by Diameter				Milling Feed/Tooth by Diameter			
		min	Starting Value	max		<6mm	6–10mm	10–16mm		<6mm	6–10mm	10–16mm
K	1	130	**175**	230	mm/r	0,10	0,16	0,30	mm/r	0,05	0,07	0,10
N	2	270	**300**	330	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	3	140	**150**	170	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	4	270	**300**	330	mm/r	0,15	0,25	0,34	mm/r	0,06	0,08	0,12
	5	110	**120**	130	mm/r	0,12	0,20	0,32	mm/r	0,06	0,08	0,12



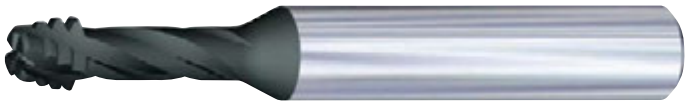
Drill, Chamfer, and Thread Mill TM731

Material Group		Cutting Speed — vc Range — SFM			Drilling Recommended Feed by Diameter				Milling Feed/Tooth by Diameter			
		min	Starting Value	max		<0.250"	0.250–0.375"	0.375–0.625"		<0.250"	0.250–0.375"	0.375–0.625"
K	1	430	**570**	750	IPR	0.004	0.006	0.012	IPR	0.002	0.003	0.004
N	2	890	**980**	1080	IPR	0.006	0.010	0.013	IPR	0.002	0.003	0.005
	3	460	**490**	560	IPR	0.006	0.010	0.013	IPR	0.002	0.003	0.005
	4	890	**980**	1080	IPR	0.006	0.010	0.013	IPR	0.002	0.003	0.005
	5	360	**390**	430	IPR	0.005	0.008	0.013	IPR	0.002	0.003	0.005



Mill, Chamfer, and Thread Mill TM741

Material Group		TM Style	Grade	Cutting Speed — vc Range — m/min			Feed/Tooth by Diameter		
				min	Starting Value	max		<10mm	>10mm
P	1	TM741 R	KCU36	170	225	290	mm/r	0,05	0,08
	2	TM741 R	KCU36	170	225	290	mm/r	0,05	0,08
	3	TM741 R	KCU36	120	150	200	mm/r	0,03	0,05
	4	TM741 R	KCU36	100	125	160	mm/r	0,03	0,05
	5	TM741 R	KCU36	120	150	200	mm/r	0,03	0,04
	6	TM741 R	KCU36	60	80	100	mm/r	0,03	0,04
M	1	TM741 R	KCU36	120	150	200	mm/r	0,03	0,04
	2	TM741 R	KCU36	120	150	200	mm/r	0,03	0,04
	3	TM741 R	KCU36	120	150	200	mm/r	0,03	0,04
K	1	TM741 R	KCU36	190	250	330	mm/r	0,06	0,10
	2	TM741 R	KCU36	190	250	330	mm/r	0,06	0,10
	3	TM741 R	KCU36	140	185	240	mm/r	0,04	0,07
N	1	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–
	3	TM741 R	KCU36	180	230	300	mm/r	0,06	0,07
	4	TM741 R	KCU36	210	275	360	mm/r	0,06	0,07
	5	–	–	–	–	–	–	–	–
	6	TM741 R	KCU36	210	275	360	mm/r	0,06	0,07
S	1	TM741 L	KCU36	120	150	200	mm/r	0,025	0,045
	2	TM741 L	KCU36	50	60	80	mm/r	0,015	0,025
	3	TM741 L	KCU36	50	60	80	mm/r	0,015	0,025
	4	TM741 L	KCU36	70	90	120	mm/r	0,025	0,035
H	1	TM741	KCU36	80	100	130	mm/r	0,030	0,050
	2	TM741	KCU36	80	100	130	mm/r	0,030	0,050
	3	TM741	KCU36	50	65	80	mm/r	0,020	0,030
	4	TM741	KCU36	50	65	80	mm/r	0,020	0,030



Mill, Chamfer, and Thread Mill TM741

Material Group		TM Style	Grade	Cutting Speed — vc Range — SFM			Feed/Tooth By Diameter		
				min	Starting Value	max		<0.375"	>0.375"
P	1	TM741 R	KCU36	560	740	950	IPR	0.002	0.003
	2	TM741 R	KCU36	560	740	950	IPR	0.002	0.003
	3	TM741 R	KCU36	390	490	660	IPR	0.001	0.002
	4	TM741 R	KCU36	330	410	520	IPR	0.001	0.002
	5	TM741 R	KCU36	390	490	660	IPR	0.001	0.002
	6	TM741 R	KCU36	200	260	330	IPR	0.001	0.002
M	1	TM741 R	KCU36	390	490	660	IPR	0.001	0.002
	2	TM741 R	KCU36	390	490	660	IPR	0.001	0.002
	3	TM741 R	KCU36	390	490	660	IPR	0.001	0.002
K	1	TM741 R	KCU36	620	820	1080	IPR	0.002	0.004
	2	TM741 R	KCU36	620	820	1080	IPR	0.002	0.004
	3	TM741 R	KCU36	460	610	790	IPR	0.002	0.003
N	1	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–
	3	TM741 R	KCU36	590	750	980	IPR	0.002	0.003
	4	TM741 R	KCU36	690	900	1180	IPR	0.002	0.003
	5	–	–	–	–	–	–	–	–
	6	TM741 R	KCU36	690	900	1180	IPR	0.002	0.003
S	1	TM741 L	KCU36	390	490	660	IPR	0.001	0.002
	2	TM741 L	KCU36	160	200	260	IPR	0.001	0.001
	3	TM741 L	KCU36	160	200	260	IPR	0.001	0.001
	4	TM741 L	KCU36	230	300	390	IPR	0.001	0.001
H	1	TM741	KCU36	260	330	430	IPR	0.001	0.002
	2	TM741	KCU36	260	330	430	IPR	0.001	0.002
	3	TM741	KCU36	160	210	260	IPR	0.001	0.001
	4	TM741	KCU36	160	210	260	IPR	0.001	0.001

NOTE: For thread depths over 2 x D up to 3 x D, reduce speed and feed by 25%.

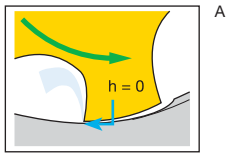
Milling Methods

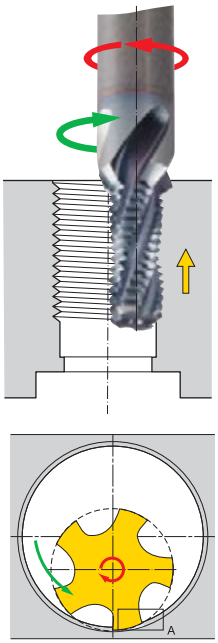
Climb Milling

Properties:

- Tool rotation direction clockwise
- Tool moves counter-clockwise
- Pitch “upwards”
- Right-hand thread

Climb milling is always when the cutting edge goes out of the material with a chip thickness h = 0



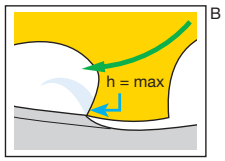


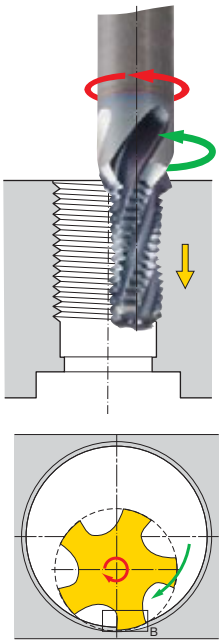
Conventional Milling

Properties:

- Tool rotation direction clockwise
- Tool moves clockwise
- Pitch “downwards”
- Right-hand thread

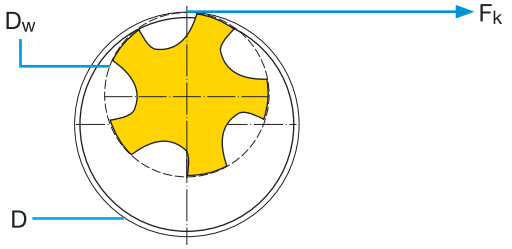
Conventional milling is always when the cutting edge goes out of the material with a chip thickness h = max





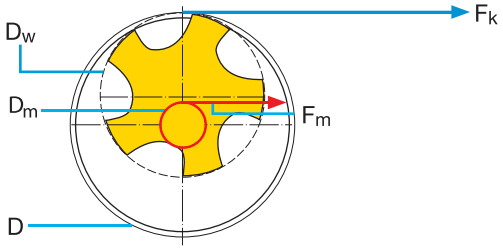
Counter Feed F_k

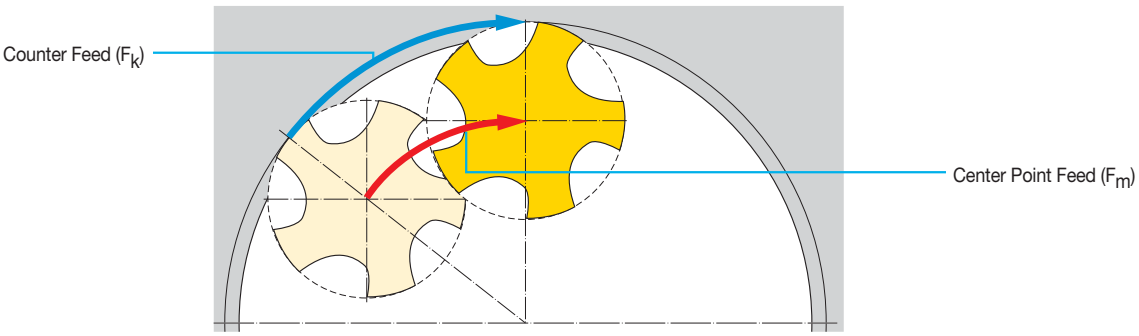
$$F_k = n \bullet f_z \bullet Z \text{ [mm/min]}$$



Center Point Feed F_m

$$F_m = \frac{F_k \bullet (D-Dw)}{D} \text{ [mm/min]}$$



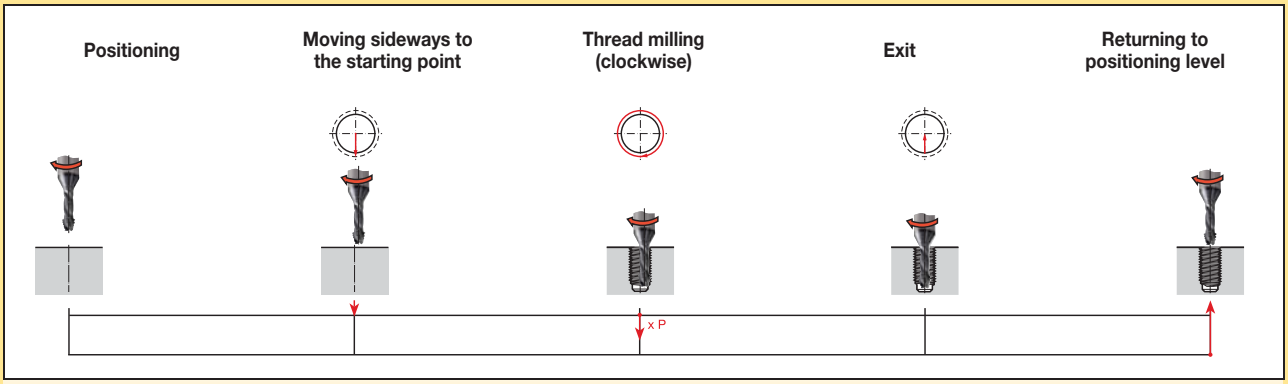


D_W = Tool diameter [mm]
n = RPM [min^{-1}]
f_Z = Feed per tooth [mm]
Z = Number of teeth on tool (radial)
D = Nominal diameter of thread = Diameter of external contour [mm]
D_m = Diameter of the center point (D-D_W) [mm]

Drill Thread Mill TM741 • Right Hand

Preparation	None
Process Principle	Milling thread and core hole, countersinking (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — Hard steel, 50 HRC
Grade — KCU36

Tool — TM741 Right Hand
Catalog number TM741M100X150R2DHA
Number of teeth Z 4
Tool diameter d_1 ..... 7,75mm*
Tool radius compensation k[1] 0,08mm**
Tool radius to be programmed[2] 3,795mm***
Thread depth b[3] 20mm
Cutting speed v_c ..... 100 m/min
Feed (milling) f_z ..... 0,04 mm/tooth
Number of turns [5] 17

$N = \frac{v_c \bullet 1000}{d_1 \bullet \pi}$ **S = 4109**

$v_f = f_z \bullet Z \bullet n$ **F = 657 (contour)**

$N = \frac{v_f \text{ contour} \bullet (D-d_1)}{D}$ **F = 148 (center point)**

*(measured on the cutting part) **(0.01 x D; adjust to application) ***(1/2 d_1 - k)

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10	G 54	G 90	G 00	X…	Y…	Z 1.500	S 4109	T01 [2]	M03
Incremental programming	N 20	G 91								
Moving sideways to the starting point	N 30	G 42	G 01	X 0	Y-5	F 657 (contour)		[F 148] [4] (center point)		
Thread milling	N 40	G 02		X 0	Y 0	Z-1.500	I 0	J 5.000		
Repeat thread milling	… [5]									
Exit	N 50	G 40	G 01	X 0	Y 5					
Retracting tool to positioning level	N 70	G 90	G 00	Z 2						

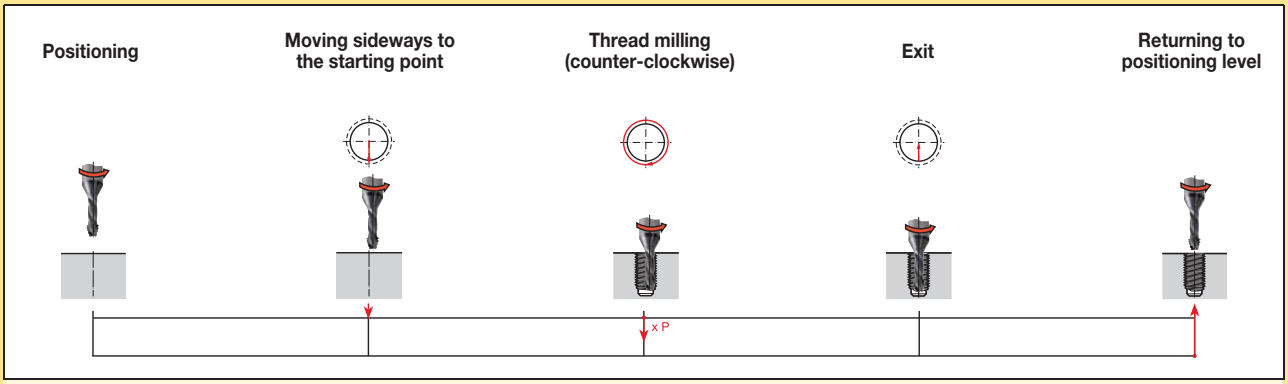
Cutting time t_h	51.6 seconds

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

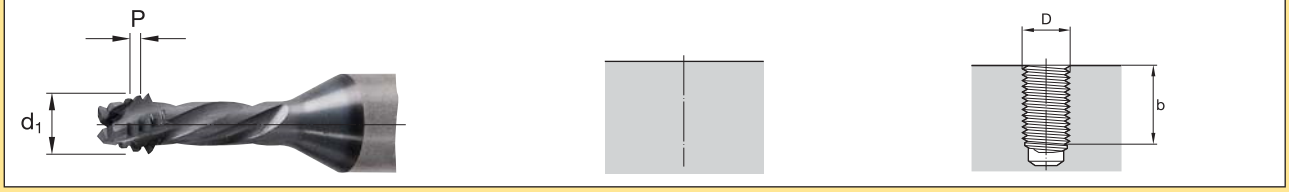
Drill Thread Mill TM741 • Left Hand

Preparation	None
Process Principle	Milling thread and core hole, countersinking (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — TiAl6V4 titanium
Grade — KCU36

Tool — TM741 Left Hand
Catalog number TM741M100X150L2DHA
Number of teeth Z 4
Tool diameter d_1 ..... 7,75mm*
Tool radius compensation k[1] 0,08mm**
Tool radius to be programmed[2] 3,795mm***
Thread depth b[3] 20mm
Cutting speed v_c ..... 100 m/min
Feed (milling) f_z ..... 0,03 mm/tooth
Number of turns [5] 17

$N = \frac{V_c \bullet 1000}{d_1 \bullet \pi}$ **S = 4109**

$v_f = f_z \bullet Z \bullet n$ **F = 493 (contour)**

$v_f = \frac{v_f \text{ contour} \bullet (D - d_1)}{D}$ **F = 111 (center point)**

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X… Y… Z 1.500 S 4109 T01 [2] M04
Incremental programming	N 20 G 91
Moving sideways to the starting point	N 30 G 42 G 01 X 0 Y-5 F 493 (contour) [F 111] [4] (center point)
Thread milling	N 40 G 02 X 0 Y 0 Z-1.500 I 0 J 5.000
Repeat thread milling	… [5]
Exit	N 50 G 40 G 01 X 0 Y 5
Retracting tool to positioning level	N 70 G 90 G 00 Z 2

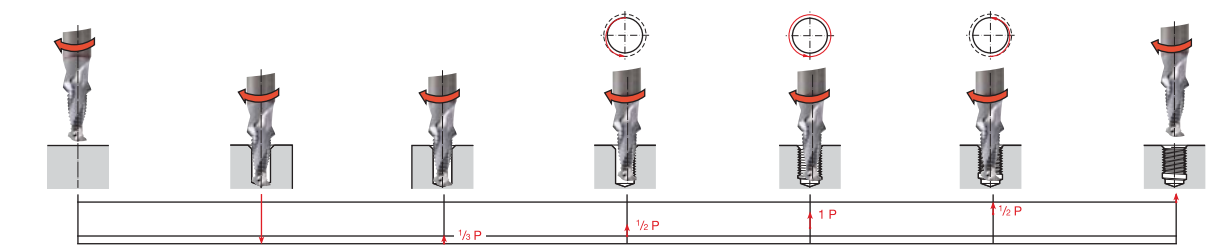
Cutting time t_h	**68.8 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The thread depth b must be divisible by the thread pitch P.
[4] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.
[5] **Set N40 must be repeated with the number of threads.** Repetitions N = thread depth b/pitch P (rounded up to the nearest integer).

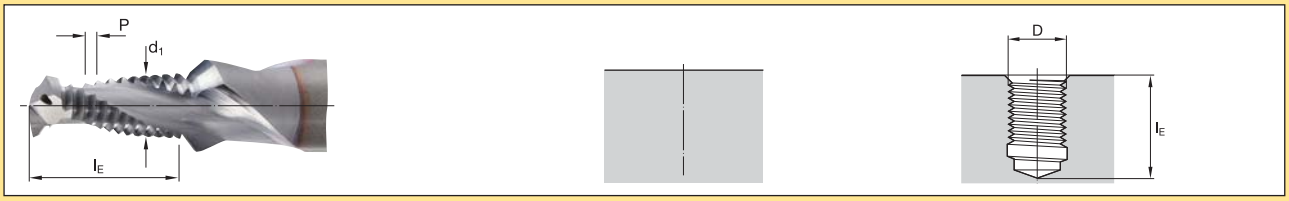
Drill Thread Mill TM731

Preparation	None
Process Principle	Drilling, countersinking, thread milling (climb milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — Gray cast iron
Grade — KCU32

Tool — TM731
Catalog number TM731M100X150R2DHA
Number of teeth Z 2
Tool diameter d_1 ..... 8,2mm*
Tool radius compensation k[1] 0,1mm**
Tool radius to be programmed[2] 4mm***
Dilling/Countersink depth l_E 19,11mm
Cutting speed v_c ..... 250 m/min
Feed (drilling, countersinking) f_b ..... 0,25 mm/U
Feed (milling) f_z ..... 0,1 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$N = \frac{v_c \bullet 1000}{d_1 \bullet \pi}$ **S = 9709**

$v_b = f_b \bullet n$ **F = 2427 (drilling, countersinking)**

$v_f = f_z \bullet Z \bullet n$ **F = 1942 (contour)**

$v_f = \frac{v_f \text{ contour} \bullet (D - d_1)}{D}$ **F = 350 (center point)**

Program to DIN 66025 (climb milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X… Y… Z 2 S 9709 T01 [2] M03
Drilling and countersinking	N 20 G 91 G 01 Z-21.110 F 2427 (drill, countersink)
Raise	N 30 G 01 Z 0.500
Moving sideways to the starting point	N 40 G 41 Y-4.250 F 971 (milling, 1/2 contour) [F 175] [3] (1/2 center point)
Run-in loop in arc	N 50 G 03 X 0 Y 9.250 Z 0.750 I 0 J 4.625
Thread milling	N 60 G 03 X 0 Y 0 Z 1.500 I 0 J -5.000
Run-out loop in arc	N 70 G 03 X 0 Y-9.250 Z 0.750 I 0 J- 4.625 F1942 [F 350] [3] (center point)
Exit	N 80 G 00 G 40 X 0 Y 4.250
Retracting tool to positioning level	N 90 G 90 Z 2

Cutting time t_h

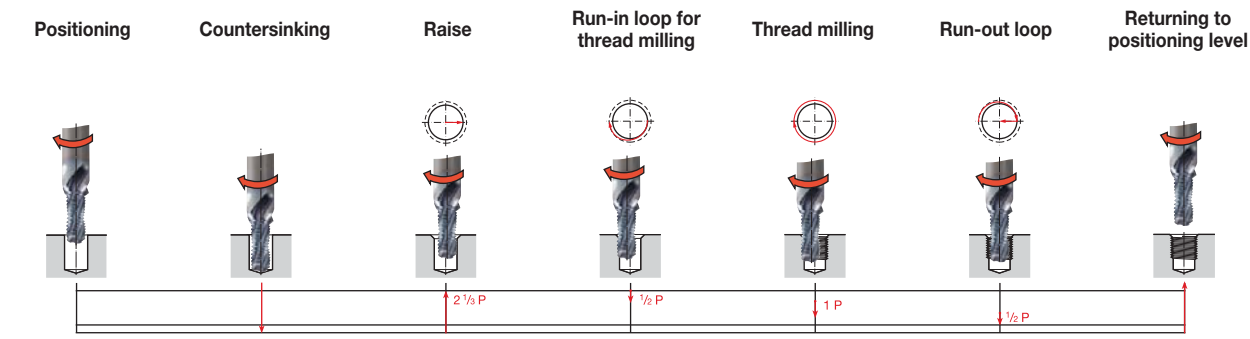
2.3 seconds

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

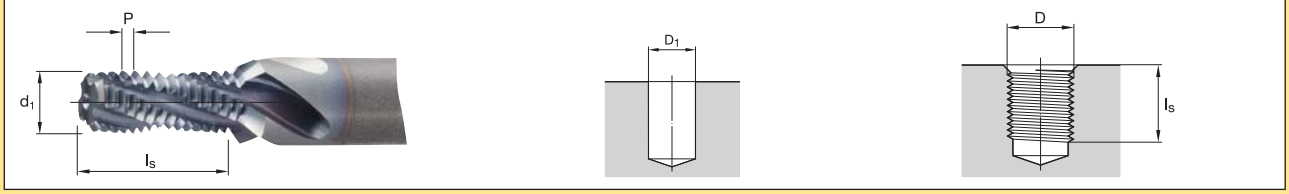
Thread Mill TM721

Preparation	Drilling of thread hole
Process Principle	Countersinking, thread milling (conventional milling)

Cycle



Required Specification Values



Example

Size — M10-6H
Thread diameter D 10mm
Pitch P 1,5mm
Core hole diameter D_1 ..... 8,5mm

Material — Cast aluminum
Grade — KCU32

Tool — TM721
Catalog number TM721M100X150R2DHA
Number of teeth Z 3
Tool diameter d_1 ..... 8,2mm*
Tool radius compensation k[1] 0,1mm**
Tool radius to be programmed[2] 4mm***
Countersink depth l_s 21,2mm
Cutting speed v_c ..... 250 m/min
Feed (countersinking) f_s ..... 0,3 mm/U
Feed (milling) f_z ..... 0,09 mm/tooth

*(measured on the cutting part) **(0.01 x D) ***(1/2 d_1 - k)

$$N = \frac{V_c \bullet 1000}{d_1 \bullet \pi} \quad S = 9709$$

$$v_s = f_s \bullet n \quad F = 2913 \text{ (countersinking)}$$

$$v_f = f_z \bullet Z \bullet n \quad F = 2622 \text{ (contour)}$$

$$v_f = \frac{v_f \text{ contour} \bullet (D-d_1)}{D} \quad F = 472 \text{ (center point)}$$

Program to DIN 66025 (conventional milling, on the contour, incremental)

Positioning the tool	N 10 G 54 G 90 G 00 X… Y… Z 2 S 9709 T01 [2] M03
Advancing tool to full thread depth	N 20 G 91 Z-21.200
Countersinking	N 30 G 01 Z-2 F 2913 (countersink)
Raise	N 40 G 00 Z 3.450
Moving sideways to the starting point	N 50 G 42 G01 X 4.250 F 1311 (milling, 1/2 contour) [F 236] [3] (milling,1/2 center point)
Run-in loop in arc	N 60 G 02 X-9.25 Y 0.000 Z-0.750 I-4.625 J 0
Thread milling	N 70 G 02 X 0 Y 0 Z-1.500 I 5 J 0.000 F2622 [F 472] [3] (center point)
Run-out loop in arc	N 80 G 02 X 9.25 Y 0.000 Z-0.750 I 4.625 J 0
Exit	N 90 G 40 G 01 X-4.25
Retracting tool to positioning level	N 100 G 90 G 00 Z 2

Cutting time t_h	**1.4 seconds**

NOTES:
[1] The cutter radius measured over the tooth crests of the threaded part must be reduced by the amount of the cutter radius compensation. This is necessary to achieve a depth of cut to the middle of the 6H/ISO2 nut tolerance. Please note, however, that this also depends on the radial deflection of the tool (tensile strength of the material, projecting length of the tool).
[2] The cutter radius to be programmed is normally included in the tool memory.
[3] The feed values in brackets must be used for controllers, which do not calculate the center point feed themselves.

High-Performance Taps • Carbide • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T320, T321	KC7542	60	**100**	130	T331	KC7542	50	**70**	90
	2	T320, T321	KC7542	60	**90**	120	T331	KC7542	40	**60**	80
	3	T320, T321	KC7542	50	**80**	100	T331	KC7542	40	**60**	80
K	1	T340, T353	KC7542, KCK17	70	**105**	140	T351, T353	KC7542, KCK17	50	**70**	90
	2	T340, T353	KC7542, KCK17	60	**100**	130	T351, T353	KC7542, KCK17	50	**70**	90
	3	T340, T353	KC7542, KCK17	60	**90**	120	T351, T353	KC7542, KCK17	40	**60**	80
N	2	–	–	–	**–**	–	T471, T491	KCN14	60	**80**	100
	3	–	–	–	**–**	–	T471, T491	KCN14	50	**70**	90
	4	–	–	–	**–**	–	T471, T491	KCN14	40	**60**	80
H	1	T410	KCU36	1,2	**1,5**	2,0	T410	KCU36	0,8	**1,1**	1,4
	2	T410	KCU36	0,6	**0,8**	1,0	T410	KCU36	0,4	**0,5**	0,7

NOTE: Increase speed of T321 coolant taps by up to 25% of speeds listed for non-coolant T320 taps.

High-Performance Taps • Carbide • Inch

Material Group		Through Holes					Blind Holes				
				Range — SFM					Range — SFM		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T320, T321	KC7542	200	**330**	430	T331	KC7542	160	**230**	300
	2	T320, T321	KC7542	200	**300**	390	T331	KC7542	130	**200**	260
	3	T320, T321	KC7542	160	**260**	330	T331	KC7542	130	**200**	260
K	1	T340, T353	KC7542, KCK17	230	**340**	460	T351, T353	KC7542, KCK17	160	**230**	300
	2	T340, T353	KC7542, KCK17	200	**330**	430	T351, T353	KC7542, KCK17	160	**230**	300
	3	T340, T353	KC7542, KCK17	200	**300**	390	T351, T353	KC7542, KCK17	130	**200**	260
N	2	–	–	–	**–**	–	T471, T491	KCN14	200	**260**	330
	3	–	–	–	**–**	–	T471, T491	KCN14	160	**230**	300
	4	–	–	–	**–**	–	T471, T491	KCN14	130	**200**	260
H	1	T410	KCU36	4	**5**	6	T410	KCU36	3	**3**	4
	2	T410	KCU36	2	**2**	3	T410	KCU36	1	**2**	2

NOTE: Increase speed of T321 coolant taps by up to 25% of speeds listed for non-coolant T320 taps.

High-Performance Taps • HSS-E-PM • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T620	KP6525	20	**30**	45	T630, T632, T650	KP6525	14	**21**	32
		T622	KSP21	18	**30**	50	T622	KSP21	13	**21**	35
	2	T620	KP6525	17	**25**	38	T630, T632, T650	KP6525	12	**18**	26
		T622	KSP21	15	**25**	42	T622	KSP21	10	**18**	29
	3	T620	KP6525	12	**15**	20	T630, T632, T650	KP6525	8	**11**	14
	4	T600	KSP21	5	**6**	8	T604	KSH26	3	**4**	5
	5	T620	KP6525	12	**15**	20	T630, T632, T650	KP6525	8	**11**	14
	6	T600	KSP21	6	**8**	10	T604	KSH26	4	**6**	7
M	1	T620	KM6515	12	**15**	20	T630, T632, T650	KM6515	8	**11**	14
	2	T620	KM6515	9	**12**	16	T630, T632, T650	KM6515	6	**8**	11
	3	T620	KM6515	8	**10**	13	T630, T632, T650	KM6515	5	**7**	9
K	1	T640	KP6525	27	**35**	46	T640, T642	KP6525	19	**25**	32
	2	T640	KP6525	23	**30**	39	T640, T642	KP6525	16	**21**	27
	3	T640	KP6525	19	**25**	33	T640, T642	KP6525	13	**18**	23
N	1	T670	KSN38	42	**55**	72	T680	KSN38	30	**39**	50
		T622	KSN28	37	**55**	72	T622	KSN28	26	**39**	50
	2	T640	KP6525	30	**45**	59	T640, T642	KP6525	21	**32**	41
		T622	KSN28	33	**50**	65	T622	KSN28	23	**35**	46
	4	T640	KP6525	7	**10**	15	T640, T642	KP6525	5	**7**	11
S	1	T620	KP6525	8	**12**	18	T630, T632	KP6525	6	**8**	13

NOTE: Increase speed by up to 25% when using coolant taps (T621, T623, T625, T627, T631, T633, T641, T643, T651).

High-Performance Taps • HSS-E-PM • Inch

Material Group		Through Holes					Blind Holes				
				Range — SFM					Range — SFM		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T620	KP6525	70	**100**	150	T630, T632, T650	KP6525	50	**70**	100
		T622	KSP21	60	**100**	160	T622	KSP21	40	**70**	120
		T624	KSP27	70	**100**	150	T624, T626	KSP27	50	**70**	100
	2	T620	KP6525	50	**80**	120	T630, T632, T650	KP6525	40	**60**	90
		T622	KSP21	50	**80**	140	T622	KSP21	30	**60**	100
		T624	KSP27	50	**80**	120	T624, T626	KSP27	40	**60**	90
	3	T620	KP6525	40	**50**	60	T630, T632, T650	KP6525	30	**30**	40
	4	T600	KSP21	15	**20**	26	T604	KSP21	11	**14**	18
	5	T620	KP6525	40	**50**	60	T630, T632, T650	KP6525	30	**30**	40
	6	T600	KSP21	20	**30**	30	T604	KSP21	10	**20**	20
M	1	T620	KM6515	40	**50**	60	T630, T632, T650	KM6515	30	**30**	40
	1	T624	KSP27	20	**30**	30	T624, T626	KSP27	10	**20**	20
	2	T620	KM6515	30	**40**	50	T630, T632, T650	KM6515	20	**30**	40
	3	T620	KM6515	30	**30**	40	T630, T632, T650	KM6515	20	**20**	30
K	1	T640	KP6525	90	**110**	150	T640, T642	KP6525	60	**80**	100
	2	T640	KP6525	80	**100**	130	T640, T642	KP6525	50	**70**	90
	3	T640	KP6525	60	**80**	110	T640, T642	KP6525	40	**60**	70
N	1	T672	KSMN34	110	**160**	210	T682, T686	KSMN34	80	**110**	150
		T622	KSN28	120	**180**	230	T622	KSN28	80	**130**	160
	2	T640	KP6525	100	**150**	190	T640, T642	KP6525	70	**100**	130
		T672	KSMN34	100	**150**	190	T682, T686	KSMN34	70	**100**	130
		T622	KSN28	110	**160**	210	T622	KSN28	80	**110**	150
	4	T640	KP6525	22	**30**	49	T640, T642	KP6525	15	**23**	34
S	1	T620	KP6525	30	**40**	60	T630, T632	KP6525	18	**28**	41
	2	T690	KSP27	11	**16**	25	T692, T694	KSP27	8	**11**	17
	3	T690	KSS29	5	**8**	12	T692, T694	KSS29	4	**6**	9
	4	T660	KSSM24	9	**13**	20	T662	KSSM24	6	**9**	14
		T660	KSS20	4	**7**	10	T662	KSS20	3	**5**	7

NOTE: Increase speed by up to 25% when using coolant taps (T621, T623, T625, T627, T631, T633, T641, T643, T651).

GOtap™ • Metric

Material Group		Through Holes					Blind Holes				
				Range — m/min					Range — m/min		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T820	KSU31, KSP32	23	**30**	38	T830, T832, T838, T839	KSU31, KSP32	15	**21**	30
		T820	KSP39, KSU30	11	**15**	19	T830, T832, T838, T839	KSP39, KSU30	7	**11**	15
		T854	KSU31	6	**8**	10	T854	KSU31	6	**8**	10
		T854	KSP39	5	**6**	8	T854	KSP39	5	**6**	8
		T877	KSU31	17	**22**	28	T857	KSU31	11	**15**	22
		T877	KSP39	8	**10**	13	T857	KSP39	5	**7**	10
		T848	KSU30	5	**6**	8	T848	KSU30	3	**4**	6
	2	T820	KSU31, KSP32	18	**24**	30	T830, T832, T838, T839	KSU31, KSP32	12	**17**	24
		T820	KSP39, KSU30	11	**14**	18	T830, T832, T838, T839	KSP39, KSU30	7	**10**	14
	3	T820	KSU31, KSP32	17	**22**	28	T830, T832, T838, T839	KSU31, KSP32	11	**15**	22
		T820	KSP39, KSU30	9	**12**	15	T830, T832, T838, T839	KSP39, KSU30	6	**8**	12
		T846	KSU31	6	**8**	10	T846	KSU31	6	**8**	10
		T846	KSU30	4	**5**	6	T846	KSU30	4	**5**	6
M	1	T820	KSMN34, KSP32	14	**18**	23	T830, T832, T838, T839	KSMN34, KSP32	9	**13**	18
		T820	KSP39, KSU30	8	**10**	13	T830, T832, T838, T839	KSP39, KSU30	5	**7**	10
		T854	KSU31	6	**8**	10	T854	KSU31	6	**8**	10
		T854	KSP39	4	**5**	6	T854	KSP39	4	**5**	6
		T877	KSU31	9	**12**	15	T857	KSU31	6	**8**	11
		T877	KSP39	5	**7**	9	T857	KSP39	4	**5**	7
		T848	KSU30	4	**5**	6	T848	KSU30	3	**4**	6
	3	T820	KSMN34, KSP32	11	**15**	19	T830, T832, T838, T839	KSMN34, KSP32	7	**11**	15
		T820	KSP39, KSU30	7	**9**	11	T830, T832, T838, T839	KSP39, KSU30	4	**6**	9
K	1	T846	KSU31	11	**15**	19	T846	KSU31	11	**15**	19
		T846	KSU30	6	**8**	10	T846	KSU30	6	**8**	10
	2	T820	KSU31, KSP32	16	**21**	26	T830, T832, T838, T839	KSU31, KSP32	10	**15**	21
		T820	KSP39, KSU30	9	**12**	15	T830, T832, T838, T839	KSP39, KSU30	6	**8**	12
		T877	KSU31	14	**18**	23	T857	KSU31	9	**13**	18
		T877	KSP39	7	**9**	11	T857	KSP39	4	**6**	9
		T848	KSU30	4	**5**	6	T848	KSU30	2	**4**	5
N	1	T820	KSMN34, KSP32	37	**49**	61	T830, T832, T838, T839	KSMN34, KSP32	24	**34**	49
		T820	KSU30	20	**27**	34	T830, T832	KSU30	13	**19**	27
	2	T820	KSMN34, KSP32	30	**40**	50	T830, T832, T838, T839	KSMN34, KSP32	20	**28**	40
		T820	KSU30	16	**21**	26	T830, T832	KSU30	10	**15**	21
		T877	KSU31	17	**22**	27	T857	KSU31	11	**15**	22
		T877	KSP39	8	**10**	12	T857	KSP39	5	**7**	10
		T848	KSU30	10	**13**	16	T848	KSU30	6	**9**	13
	4	T820	KSMN34, KSP32	37	**49**	61	T830, T832, T838, T839	KSMN34, KSP32	24	**34**	49
		T820	KSU30	20	**27**	33	T830, T832	KSU30	13	**19**	27

KSU30 = Bright
KSP39 = Oxide
KSU31 = TiN
KSP32 = TiCN/TiN
KSMN34 = TiN + CrC/C

GOtap™ • Inch

Material Group		Through Holes					Blind Holes				
				Range — SFM					Range — SFM		
		Tap Style	Grade	min	Starting Value	max	Tap Style	Grade	min	Starting Value	max
P	1	T820	KSU31, KSP32	75	**100**	125	T830, T832, T838, T839	KSU31, KSP32	50	**70**	100
		T820	KSP39, KSU30	35	**50**	60	T830, T832, T838, T839	KSP39, KSU30	25	**35**	50
		T854	KSU31	20	**25**	35	T854	KSU31	20	**25**	35
		T854	KSP39	15	**20**	25	T854	KSP39	15	**20**	25
		T877	KSU31	55	**70**	90	T857	KSU31	35	**50**	70
		T877	KSP39	25	**35**	40	T857	KSP39	15	**25**	35
		T848	KSU30	15	**20**	25	T848	KSU30	10	**15**	20
	2	T820	KSU31, KSP32	60	**80**	100	T830, T832, T838, T839	KSU31, KSP32	40	**55**	80
		T820	KSP39, KSU30	35	**45**	55	T830, T832, T838, T839	KSP39, KSU30	25	**30**	45
	3	T820	KSU31, KSP32	55	**70**	90	T830, T832, T838, T839	KSU31, KSP32	35	**50**	70
		T820	KSP39, KSU30	30	**40**	50	T830, T832, T838, T839	KSP39, KSU30	20	**30**	40
		T846	KSU31	20	**25**	35	T846	KSU31	20	**25**	35
		T846	KSU30	10	**15**	20	T846	KSU30	10	**15**	20
M	1	T820	KSMN34, KSP32	45	**60**	75	T830, T832, T838, T839	KSMN34, KSP32	30	**40**	60
		T820	KSP39, KSU30	25	**35**	40	T830, T832, T838, T839	KSP39, KSU30	15	**25**	35
		T854	KSU31	20	**25**	35	T854	KSU31	20	**25**	35
		T854	KSP39	10	**15**	20	T854	KSP39	10	**15**	20
		T877	KSU31	30	**40**	50	T857	KSU31	20	**25**	40
		T877	KSP39	15	**25**	30	T857	KSP39	10	**15**	25
		T848	KSU30	10	**15**	20	T848	KSU30	10	**15**	20
	3	T820	KSMN34, KSP32	35	**50**	60	T830, T832, T838, T839	KSMN34, KSP32	25	**35**	50
		T820	KSP39, KSU30	20	**30**	35	T830, T832, T838, T839	KSP39, KSU30	15	**20**	30
K	1	T846	KSU31	35	**50**	60	T846	KSU31	35	**50**	60
		T846	KSU30	20	**25**	35	T846	KSU30	20	**25**	35
	2	T820	KSU31, KSP32	50	**70**	85	T830, T832, T838, T839	KSU31, KSP32	35	**50**	70
		T820	KSP39, KSU30	30	**40**	50	T830, T832, T838, T839	KSP39, KSU30	20	**30**	40
		T877	KSU31	45	**60**	75	T857	KSU31	30	**40**	60
		T877	KSP39	20	**30**	35	T857	KSP39	15	**20**	30
		T848	KSU30	10	**15**	20	T848	KSU30	10	**10**	15
N	1	T820	KSMN34, KSP32	120	**160**	200	T830, T832, T838, T839	KSMN34, KSP32	80	**115**	160
		T820	KSU30	65	**90**	110	T830, T832	KSU30	45	**60**	90
	2	T820	KSMN34, KSP32	100	**130**	165	T830, T832, T838, T839	KSMN34, KSP32	65	**90**	130
		T820	KSU30	50	**70**	85	T830, T832	KSU30	35	**50**	70
		T877	KSU31	55	**70**	90	T857	KSU31	35	**50**	70
		T877	KSP39	25	**35**	40	T857	KSP39	15	**25**	35
		T848	KSU30	30	**45**	55	T848	KSU30	20	**30**	45
	4	T820	KSMN34, KSP32	55	**70**	90	T830, T832, T838, T839	KSMN34, KSP32	35	**50**	70
		T820	KSU30	25	**35**	40	T830, T832	KSU30	15	**25**	35

KSU30 = Bright
KSP39 = Oxide
KSU31 = TiN
KSP32 = TiCN/TiN
KSMN34 = TiN + CrC/C

General Purpose HSS • Metric

Material Group		Through Holes				Blind Holes			
			Range — m/min				Range — m/min		
		Tap Style	min	Starting Value	max	Tap Style	min	Starting Value	max
P	1	KHSST Spiral Point	13	**17**	21	KHSST Spiral Flute	7	**8**	10
	2	KHSST Spiral Point	10	**12**	15	KHSST Spiral Flute	5	**6**	8
	3	KHSST Spiral Point	6	**8**	10	KHSST Spiral Flute	3	**4**	5
	5	KHSST Spiral Point	5	**6**	8	KHSST Spiral Flute	2	**3**	4
M	1	KHSST Spiral Point	6	**8**	10	KHSST Spiral Flute	3	**4**	5
	2	KHSST Spiral Point	5	**6**	8	KHSST Spiral Flute	2	**3**	4
	3	KHSST Spiral Point	4	**5**	6	KHSST Spiral Flute	2	**2**	3
K	1	KHSST Hand	22	**27**	34	KHSST Hand	11	**14**	17
	2	KHSST Hand	18	**23**	29	KHSST Hand	9	**11**	14
N	1	KHSST Spiral Point	29	**37**	46	KHSST Spiral Flute	15	**18**	23
	2	KHSST Spiral Point	24	**30**	38	KHSST Spiral Flute	12	**15**	19

NOTE: Increase speed by up to 50% when using coated taps (TiN, TiCN).

General Purpose HSS • Inch

Material Group		Through Holes				Blind Holes			
			Range — SFM				Range — SFM		
		Tap Style	min	Starting Value	max	Tap Style	min	Starting Value	max
P	1	KHSST Spiral Point	44	**55**	69	KHSST Spiral Flute	22	**28**	34
	2	KHSST Spiral Point	32	**40**	50	KHSST Spiral Flute	16	**20**	25
	3	KHSST Spiral Point	20	**25**	31	KHSST Spiral Flute	10	**13**	16
	5	KHSST Spiral Point	16	**20**	25	KHSST Spiral Flute	8	**10**	13
M	1	KHSST Spiral Point	20	**25**	31	KHSST Spiral Flute	10	**13**	16
	2	KHSST Spiral Point	16	**20**	25	KHSST Spiral Flute	8	**10**	13
	3	KHSST Spiral Point	12	**15**	19	KHSST Spiral Flute	6	**8**	9
K	1	KHSST Hand	72	**90**	113	KHSST Hand	36	**45**	56
	2	KHSST Hand	60	**75**	94	KHSST Hand	30	**38**	47
N	1	KHSST Spiral Point	96	**120**	150	KHSST Spiral Flute	48	**60**	75
	2	KHSST Spiral Point	80	**100**	125	KHSST Spiral Flute	40	**50**	63

NOTE: Increase speed by up to 50% when using coated taps (TiN, TiCN).

Taps and Thread Milling Technical Information

Use the technical information offered here to assist with tapping and thread milling operations. This tech data includes information about tap dimensions and recommendations, as well as how to solve basic tapping and thread milling problems.

Included in This Section:

- Illustrations of tap terms.
- Explanations of tap chamfers.
- Dimensional information for various tap styles and lengths.
- Tap limitation data.
- Chip handling methods for different tap styles.
- Tap recommendations.
- Descriptions of screw thread tolerance and tolerance information.
- Information regarding surface treatments and coatings.
- Guidelines and tables for determining tapping speeds.
- Troubleshooting charts.
- Hardness conversion table.
- Taps custom order worksheet.
- Thread milling application sheet.
- Tap drill size charts.

This section will help you learn more about tapping and thread milling applications to maximize the performance of your tools.



How to Apply This Technical Information

Below is an example of how the technical information in this catalog can be useful:

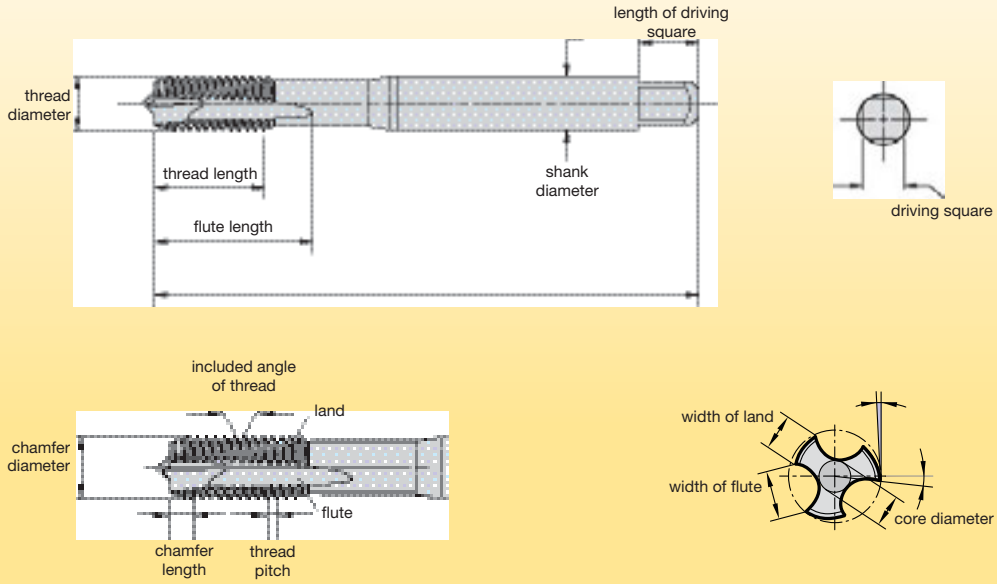
Problem

- Thread holes are oversized and taps are experiencing decreased tool life when used in stainless steel materials.

Solution

- Consult the troubleshooting portion of the technical information section to discover ways to correct the issue.

Definitions and Angles, Centers, and Flute Forms



Flute Forms



Straight-flute, form C plug chamfer **without spiral point**



Right-hand spiral flute

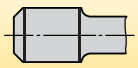
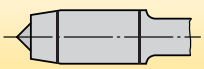
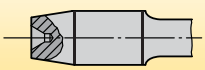


Straight-flute, form B plug chamfer **with spiral point**



Left-hand spiral flute

Types of Centers (Standard to DIN 2197/DIN 2175)

center on thread section			
tap diameter range			
≤M10, 3/8 bottom or semi-bottom chamfer	≤M10, 3/8 plug chamfer	>M10, 3/8 all chamfers	
			
external center removed	full external center	partial external center	internal center

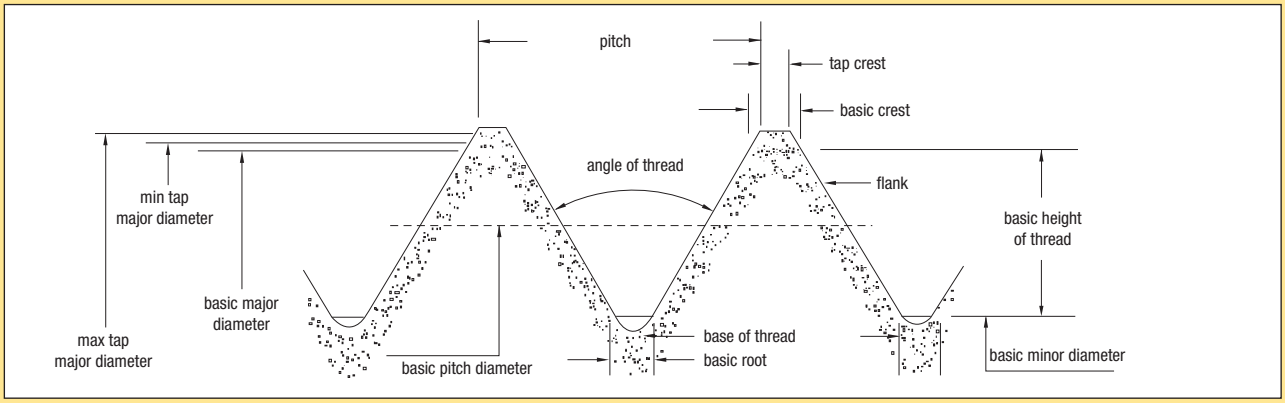
Coolant Hole Types

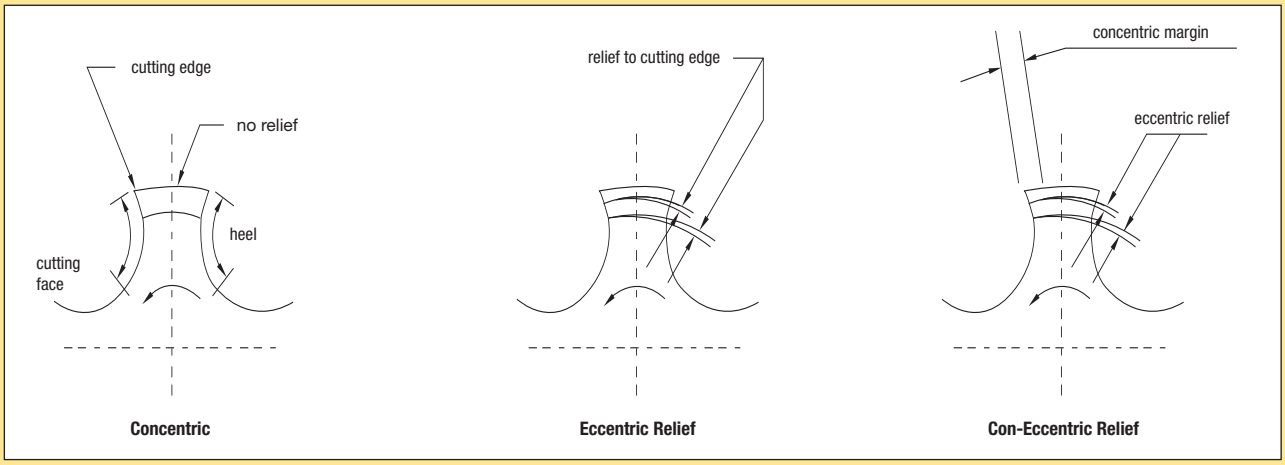


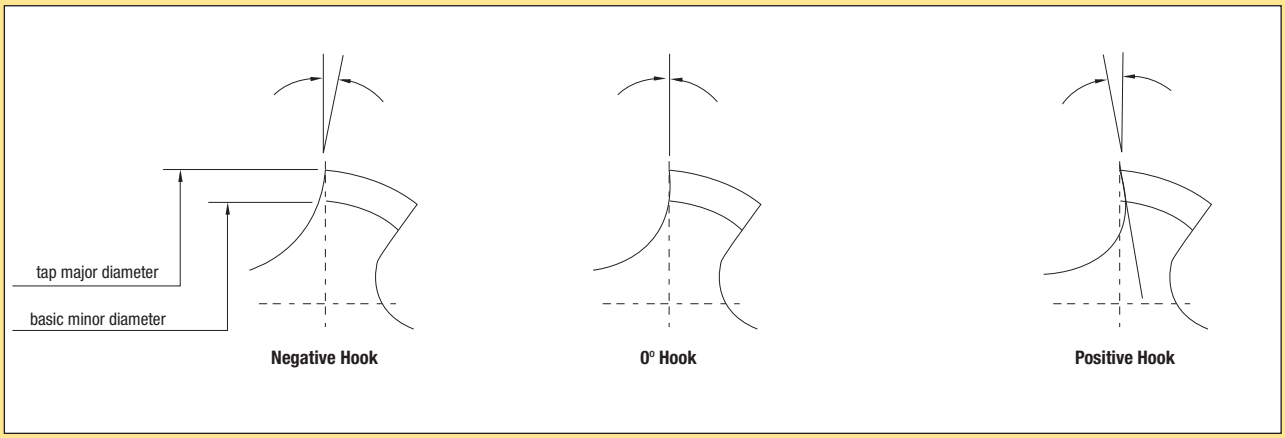
Axial coolant delivery with axial coolant exit hole

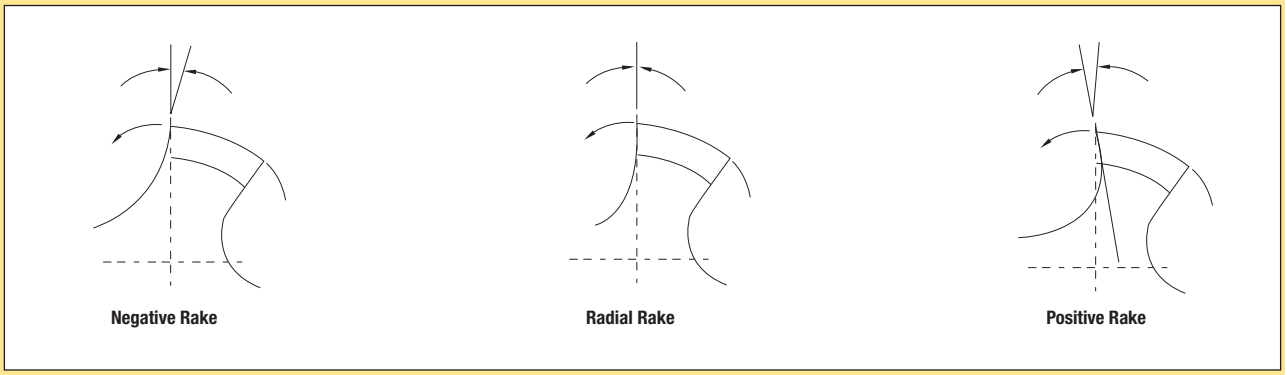


Axial coolant delivery with radial coolant hole exiting in the flutes









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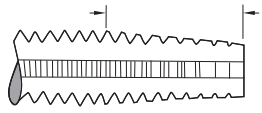
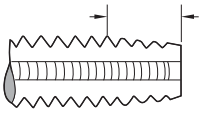
Tap Chamfers • ANSI Taps

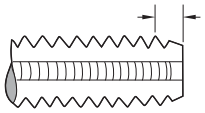
Taper Chamfer
7–10 Pitches



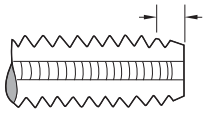
Plug Chamfer
3–5 Pitches



Modified Bottoming Chamfer
2–2.5 Pitches



Full Bottoming Chamfer
1–2 Pitches



Tap Chamfers

Taper (7–10 pitches)

The taper chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

Plug (3–5 pitches)

The most common chamfer for use by hand or machine in through or blind holes. This chamfer is more efficient than a bottoming or modified bottoming chamfer.

Semi-Bottom (2–2.5 pitches)

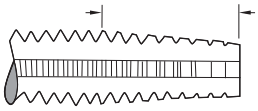
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a bottoming chamfer.

Bottoming (1–2 pitches)

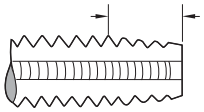
For threading close to the bottom of blind holes, the bottoming chamfer is the least efficient chamfer available.

Tap Chamfers • DIN Taps

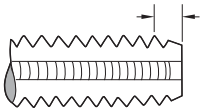
Taper Chamfer
7–10 Pitches



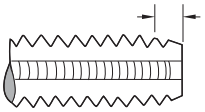
Plug Chamfer
3–5 Pitches



Modified Bottoming Chamfer
2–2.5 Pitches



Full Bottoming Chamfer
1–2 Pitches



Hand Tap Chamfers

Form A (6–8 pitches)

The Form A chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

Form B/D (3.5–5 pitches)

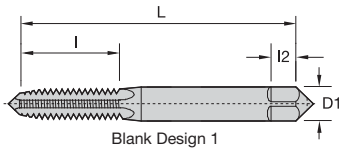
The most common chamfers for use by hand or machine in through or blind holes. Form B applies to spiral-point taps and Form D applies to straight-flute and spiral-flute taps. This chamfer is more efficient than Form E or Form C chamfers.

Form C (2–2.5 pitches)

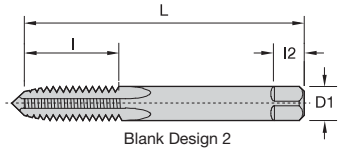
This short chamfer enables threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a Form E chamfer.

Form E (1.5–2 pitches)

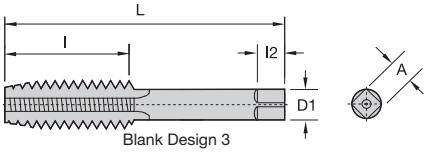
For threading close to the bottom of blind holes, the Form E chamfer is the least efficient chamfer available.



Blank Design 1



Blank Design 2



Blank Design 3

nominal diameter range (in)	machine screw size number	(in)	nominal fractional diameter	(in)	nominal metric diameter mm	(in)	blank design number	overall length L	thread length l	square length l2	shank diameter D1	square size A
.052–.065	0	(.0600)	–		M1.6	(.0630)	1	1.63	.31	.19	.1410	.110
.065–.078	1	(.0730)	–		M1.8	(.0709)	1	1.69	.38	.19	.1410	.110
.078–.091	2	(.0860)	–		M2 (0787),	M2.2 (.0866)	1	1.75	.44	.19	.1410	.110
.091–.104	3	(.0990)	–		M2.5	(.0984)	1	1.81	.50	.19	.1410	.110
.104–.117	4	(.1120)	–		–	–	1	1.88	.56	.19	.1410	.110
.117–.130	5	(.1250)	–		M3	(.1181)	1	1.94	.63	.19	.1410	.110
.130–.145	6	(.1380)	–		M3.5	(.1378)	1	2.00	.69	.19	.1410	.110
.145–.171	8	(.1640)	–		M4	(.1575)	1	2.13	.75	.25	.1680	.131
.171–.197	10	(.1900)	–		M4.5 (.1772),	M5 (.1969)	1	2.38	.88	.25	.1940	.152
.197–.223	12	(.2160)	–		–	–	1	2.38	.94	.28	.2200	.165
.223–.260	–		1/4	(.2500)	M6	(.2362)	2	2.50	1.00	.31	.2550	.191
.260–.323	–		5/16	(.3125)	M7 (.2756),	M8 (.3150)	2	2.72	1.13	.38	.3180	.238
.323–.395	–		3/8	(.3750)	M10	(.3937)	2	2.94	1.25	.44	.3810	.286
.395–.448	–		7/16	(.4375)	–	–	3	3.16	1.44	.41	.3230	.242
.448–.510	–		1/2	(.5000)	M12	(.4724)	3	3.38	1.66	.44	.3670	.275
.510–.573	–		9/16	(.5625)	M14	(.5512)	3	3.59	1.66	.50	.4290	.322
.573–.635	–		5/8	(.6250)	M16	(.6299)	3	3.81	1.81	.56	.4800	.360
.635–.709	–		11/16	(.6875)	M18	(.7087)	3	4.03	1.81	.63	.5420	.406
.709–.760	–		3/4	(.7500)	–	–	3	4.25	2.00	.69	.5900	.442
.760–.823	–		13/16	(.8125)	M20	(.7874)	3	4.47	2.00	.69	.6520	.489
.823–.885	–		7/8	(.8750)	M22	(.8661)	3	4.69	2.22	.75	.6970	.523
.885–.948	–		15/16	(.9375)	M24	(.9449)	3	4.91	2.22	.75	.7600	.570
.948–1.010	–		1	(1.0000)	M25	(.9843)	3	5.13	2.50	.81	.8000	.600
1.010–1.073	–		1-1/16	(1.0625)	M27	(1.0630)	3	5.13	2.50	.88	.8960	.672
1.073–1.135	–		1-1/8	(1.1250)	–	–	3	5.44	2.56	.88	.8960	.672
1.135–1.198	–		1-3/16	(1.1875)	M30	(1.1811)	3	5.44	2.56	1.00	1.0210	.766
1.198–1.260	–		1-1/4	(1.2500)	–	–	3	5.75	2.56	1.00	1.0210	.766
1.260–1.323	–		1-5/16	(1.3125)	M33	(1.2992)	3	5.75	2.56	1.06	1.1080	.831
1.323–1.385	–		1-3/8	(1.3750)	–	–	3	6.06	3.00	1.06	1.1080	.831
1.358–1.448	–		1-7/16	(1.4375)	M36	(1.4173)	3	6.06	3.00	1.13	1.2330	.925
1.448–1.510	–		1-1/2	(1.5000)	–	–	3	6.38	3.00	1.13	1.2330	.925
1.510–1.635	–		1-5/8	(1.6250)	M39	(1.5354)	3	6.69	3.19	1.13	1.3050	.979
1.635–1.760	–		1-3/4	(1.7500)	M42	(1.6535)	3	7.00	3.19	1.25	1.4300	1.072
1.760–1.885	–		1-7/8	(1.8750)	–	–	3	7.31	3.56	1.25	1.5190	1.139
1.885–2.010	–		2	(2.0000)	M48	(1.8898)	3	7.63	3.56	1.38	1.6440	1.233
2.010–2.135	–		2-1/8	(2.1250)	–	–	3	8.00	3.56	1.38	1.7690	1.327
2.135–2.260	–		2-1/4	(2.2500)	M56	(2.2047)	3	8.25	3.56	1.44	1.8940	1.420
2.260–2.385	–		2-3/8	(2.3750)	–	–	3	8.50	4.00	1.44	2.0190	1.514
2.385–2.510	–		2-1/2	(2.5000)	–	–	3	8.75	4.00	1.50	2.1000	1.575
2.510–2.635	–		2-5/8	(2.6250)	M64	(2.5197)	3	8.75	4.00	1.50	2.2250	1.669
2.635–2.760	–		2-3/4	(2.7500)	–	–	3	9.25	4.00	1.56	2.3500	1.762
2.760–2.885	–		2-7/8	(2.8750)	M72	(2.8346)	3	9.25	4.00	1.56	2.4750	1.856
2.885–3.010	–		3	(3.0000)	–	–	3	9.75	4.56	1.63	2.5430	1.907
3.010–3.135	–		3-1/8	(3.1250)	–	–	3	9.75	4.56	1.63	2.6680	2.001
3.135–3.260	–		3-1/4	(3.2500)	M80	(3.1496)	3	10.00	4.56	1.75	2.7930	2.095
3.260–3.385	–		3-3/8	(3.3750)	–	–	3	10.00	4.56	1.75	2.8830	2.162
3.385–3.510	–		3-1/2	(3.5000)	–	–	3	10.25	4.94	2.00	3.0080	2.256
3.510–3.635	–		3-5/8	(3.6250)	M90	(3.5433)	3	10.25	4.94	2.00	3.1330	2.350
3.635–3.760	–		3-3/4	(3.7500)	–	–	3	10.50	5.31	2.13	3.2170	2.413
3.760–3.885	–		3-7/8	(3.8750)	–	–	3	10.50	5.31	2.13	3.3420	2.506
3.885–4.010	–		4	(4.0000)	M100	(3.9370)	3	10.75	5.31	2.25	3.4670	2.600

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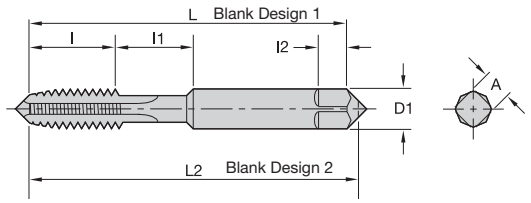

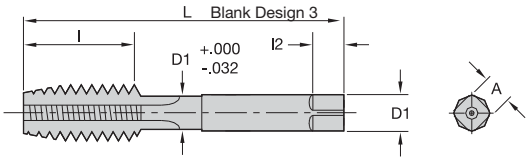

General Dimensions

Tap Dimensions — Inches

nominal diameter range (in)		machine screw size number (in)		nominal fractional diameter (in)		nominal metric diameter mm (in)		blank design number	overall length L	thread length l	neck length l1	square length l2	shank diameter D1	square size A
.104	.117	4	(.1120)	—		—	—	1	1.88	.31	.25	.19	.1410	.110
.117	.130	5	(.1250)			M3	(.1181)	1	1.94	.31	.31	.19	.1410	.110
.130	.145	6	(.1380)	—		M3.5	(.1378)	1	2.00	.38	.31	.19	.1410	.110
.145	.171	8	(.1640)			M4	(.1575)	1	2.13	.38	.38	.25	.1680	.131
.171	.197	10	(.1900)	—		M4.5	(.1772)	1	2.38	.50	.38	.25	.1940	.152
—	—	—	—			M5	(.1969)	—	—	—	—	—	—	—
.197	.223	12	(.2160)	—	—	—	—	1	2.38	.50	.44	.28	.2200	.165
.223	.260	—	—	1/4	(.2500)	M6	(.2362)	2	2.50	.63	.38	.31	.2550	.191
.260	.323	—		5/16	(.3125)	M7, M8	(.2756), (.3150)	2	2.72	.69	.44	.38	.3180	.238
.323	.395			3/8	(.3750)	M10	(.3937)	2	2.94	.75	.50	.44	.3810	.286
.395	.448	—		7/16	(.4375)	—	—	3	3.16	.88	–	.41	.3230	.242
.448	.510			1/2	(.5000)	M12	(.4724)	3	3.38	.94	–	.44	.3670	.275
.510	.573	—		9/16	(.5625)	M14	(.5541)	3	3.59	1.00	–	.50	.4290	.322
.573	.635			5/8	(.6250)	M16	(.6299)	3	3.81	1.09	–	.56	.4800	.360
.635	.709	—		11/16	(.6875)	M18	(.7087)	3	4.03	1.09	–	.63	.5420	.406
.709	.760			3/4	(.7500)	—	—	3	4.25	1.22	–	.69	.5900	.442
.760	.823	—		13/16	(.8125)	M20	(.7874)	3	4.47	1.22	–	.69	.6520	.489
.823	.885			7/8	(.8750)	M22	(.8661)	3	4.69	1.34	–	.75	.3670	.523
.885	.948	—		15/16	(.9375)	M24	(.9449)	3	4.91	1.34	–	.75	.7600	.570
.948	1.010			1	(1.0000)	M25	(.9843)	3	5.13	1.50	–	.81	.8000	.600

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NOTE: Thread length l is based on a length of 12 pitches of the UNC thread series. Thread length "l" is a minimum value and has no tolerance. When thread length "l" is added to neck length "l1", the total shall be no less than the minimum USCTI Table 302 thread length "l". Unless otherwise specified, all tolerances are in accordance with USCTI Table 302. For eccentricity tolerances, see USCTI Table 317. Table 302 is provided for reference only. The Kennametal tap dimensions may differ.

Tolerances

element	nominal diameter range (in)	direction	tolerance (in)
length overall — L	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
length of thread — l	.0520–.2230	plus or minus	.047
	.2230–.5100	plus or minus	.063
	.5100–1.5100	plus or minus	.094
	1.5100–4.0100	plus or minus	.125
length of square — l2	.0520–1.0100	plus or minus	.031
	1.0100–4.0100	plus or minus	.063
diameter of shank — d1	.0520–.2230	minus	.0015
	.2230–.6350	minus	.0015
	.6350–1.0100	minus	.0020
	1.0100–1.5100	minus	.0020
	1.5100–2.0100	minus	.0030
	2.0100–4.0100	minus	.0030
size of square — a	.0520–.5100	minus	.004
	.5100–1.0100	minus	.006
	1.0100–2.0100	minus	.008
	2.0100–4.0100	minus	.010

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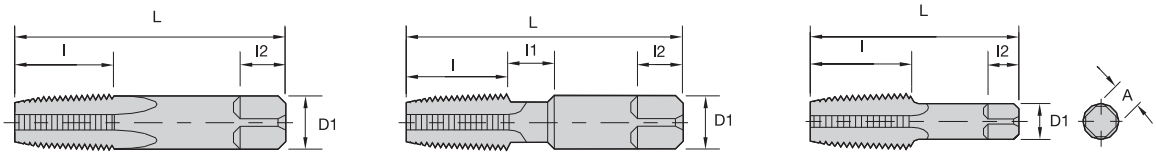
Special Taps

Unless otherwise specified: Special taps over 1.010–1.510" diameter inclusive, having 14 or more threads per inch or 1,75mm pitch and finer, and sizes over 1.510" diameter with 10 or more threads per inch or 2,5mm pitch and finer, are made to general dimensions shown in USCTI Table 303. Special tap thread limits are determined using the formulas shown in USCTI Table 331 for Unified Inch Screw Threads and USCTI Table 341 for metric m-profile screw threads.

NOTE: Tap sizes .395" and smaller have an external center on the thread end (may be removed on bottoming taps). Sizes .125" and smaller have an external center on the shank end. Sizes .224–.395" have truncated partial cone centers on the shank end (length of cone approximately 1/4 of diameter of shank). Sizes over .395" have internal centers on both the thread and shank ends.

For standard thread limits and tolerances for Unified Inch Screw Threads, see USCTI Table 327, and for metric threads, see USCTI Table 337.

For eccentricity tolerances of tap elements, see USCTI Table 317.



General Dimensions

dimensions (in)

nominal size (in)	overall length L	thread length l	square length l2	shank diameter D1	square size A	optional neck length l1
1/16	2.13	.69	.38	.3125	.234	.375
1/8	2.13	.75	.38	.3125	.234	–
1/8	2.13	.75	.38	.4375	.328	.375
1/4	2.44	1.06	.44	.5625	.421	.375
3/8	2.56	1.06	.50	.7000	.531	.375
1/2	3.13	1.38	.63	.6875	.515	–
3/4	3.25	1.38	.69	.9063	.679	–
1	3.75	1.75	.81	1.1250	.843	–
1-1/4	4.00	1.75	.94	1.3125	.984	–
1-1/2	4.25	1.75	1.00	1.5000	1.125	–
2	4.25	1.75	1.13	1.8750	1.406	–
2-1/2	5.50	2.56	1.25	2.2500	1.687	–
3	6.00	2.63	1.38	2.6250	1.968	–
3-1/2	6.50	2.69	1.50	2.8125	2.108	–
4	6.75	2.75	1.56	3.0000	2.250	–

Tolerances

element	range	direction	tolerance
length overall — L	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
length of thread — l	1/16–3/4 inc.	plus/minus	.063
	1–1-1/4 inc.	plus/minus	.094
	1-1/2–4	plus/minus	.125
length of square — l2	1/16–3/4 inc.	plus/minus	.031
	1–4 inc.	plus/minus	.063
diameter of shank — d1	1/16–1/8	minus	.0015
	1/4–1 inc.	minus	.0020
	1-1/4–4 inc.	minus	.0030
size of square — a	1/16–1/8	minus	.004
	1/4–3/4 inc.	minus	.006
	1–4 inc.	minus	.008

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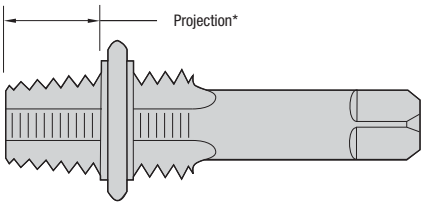
American National Standard Taper Pipe Thread Form (NPT)
Aeronautical National Taper Pipe Thread Form (ANPT)
Dryseal American National Standard Taper Pipe Thread Form (NPTF)



				taper per foot limits			
nominal size (in)	threads per inch	projection* (in)	projection tolerance + / –	min	max	length L1	tap drill size** NPT, ANPT, NFTF
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/4	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11-1/2	.678	.094	.719	.781	.400	1-9/64
1-1/4	11-1/2	.686	.094	.719	.781	.420	1-31/64
1-1/2	11-1/2	.699	.094	.719	.781	.420	1-23/32
2	11-1/2	.667	.094	.719	.781	.436	2-3/16
2-1/2	8	.925	.094	.734	.781	.682	2-39/64
3	8	.925	.094	.734	.781	.766	3-15/64
3-1/2	8	.938	.125	.734	.781	.821	—
4	8	.950	.125	.734	.781	.844	—

*Distance from small end of tap projects through L1 taper thread ring gage.
**Recommended size given permits direct tapping without reaming the hole, but only gives a full thread for approximately the L1 length.
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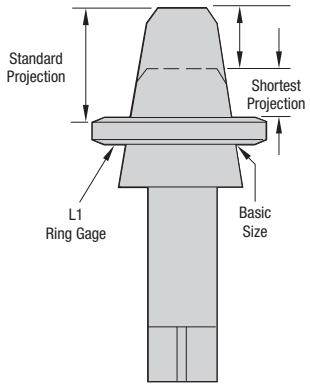
Pipe Taps

General-purpose pipe taps are appropriate for threading a wide variety of materials, both ferrous and non-ferrous.

Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPFT). NPT threads require the use of a sealer, like Teflon® tape or pipe compound. Dryseal taps are used to tap fittings, which will give a pressure-tight joint without the use of a sealer.

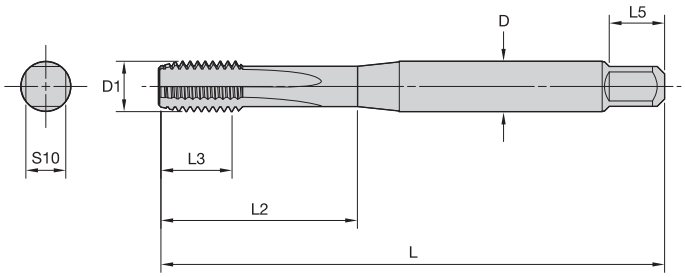
The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap. The thread tapers 3/4" per foot. All pipe taps are furnished with 2-1/2–3-1/2 thread chamfer.



Short projection pipe taps are made with a projection shorter than standard for taper pipe tapping where the depth of tapping is limited.

Special short projection taper pipe taps can be furnished with American National Standard Taper Pipe thread (ANPT) or Dryseal American National Standard Taper Pipe thread (NPTF, PTF-SAE Short, or PTF-SPL Extra Short).

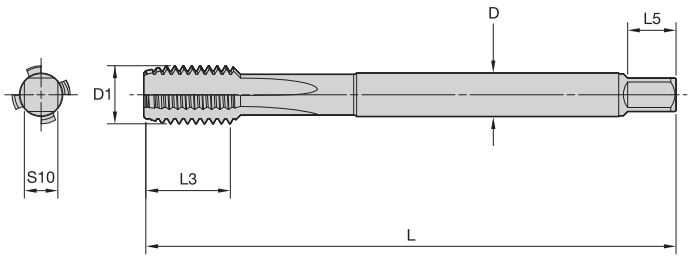
For information on short projection pipe taps and hole preparation for NPT, NPTF, and ANPT internal pipe threads, consult Kennametal Technical Bulletins.



DIN 371

D1	pitch	D	L	L3*	L2	L5	S10
M3	0.5	3.5	56	11	18	6	2.7
M3.5	0.6	4	56	12	20	6	3
M4	0.7	4.5	63	13	21	6	3.4
M4.5	0.75	6	70	16	25	8	4.9
M5	0.8	6	70	16	25	8	4.9
M6	1	6	80	19	30	8	4.9
M7	1	7	80	19	30	8	5.5
M8	0.75	8	80	18	30	9	6.2
M8	1.25	8	90	22	35	9	6.2
M9	0.75	9	80	18	30	10	7
M9	1.25	9	90	22	35	10	7
M10	1	10	90	20	35	11	8
M10	1.5	10	100	24	39	11	8

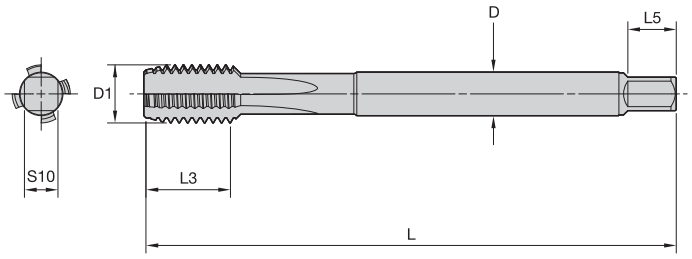
*Maximum



DIN 376

D1	pitch	D	L	L3*	L5	S10
M8	1.25	6	90	22	8	4.9
M9	1.25	7	90	22	8	5.5
M10	1.5	7	100	24	8	5.5
M11	1.5	8	100	24	9	6.2
M12	1.75	9	110	28	10	7
M14	2	11	110	30	12	9
M16	2	12	110	32	12	9
M18	2.5	14	125	34	14	11
M20	2.5	16	140	34	15	12
M22	2.5	18	140	34	17	14.5
M24	3	18	160	38	17	14.5
M27	3	20	160	38	19	16
M30	3.5	22	180	45	21	18
M33	3.5	25	180	50	23	20
M36	4	28	200	56	25	22
M39	4	32	200	60	27	24
M42	4.5	32	200	60	27	24
M45	4.5	36	220	65	32	29

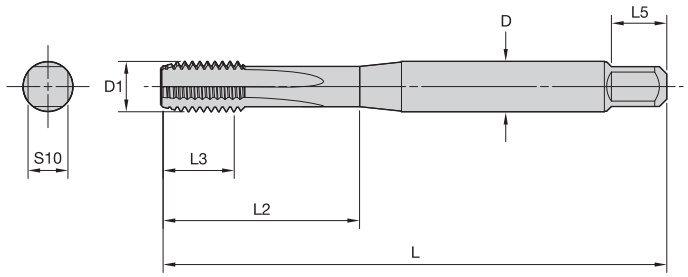
*Maximum



DIN 374

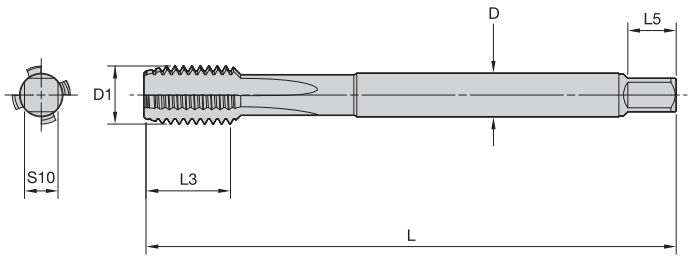
	pitch						
D1	**minimum**	**maximum**	**D**	**L**	**L3***	**L5**	**S10**
M8	0.2	0.75	6	80	18	8	4.9
M8	–	1	6	90	22	8	4.9
M9	0.2	0.75	7	80	18	8	5.5
M9	–	1	7	90	22	8	5.5
M10	0.2	1	7	90	20	8	5.5
M10	–	1.25	7	100	24	8	5.5
M11	0.35	1	8	90	20	9	6.2
M12	0.35	1.5	9	100	22	10	7
M14	0.35	1.5	11	100	22	12	9
M16	0.35	1.5	12	100	22	12	9
M16	–	2	12	110	32	12	9
M18	0.35	1.5	14	110	25	14	11
M18	–	2	14	125	34	14	11
M20	0.35	1.5	16	125	25	15	12
M20	–	2	16	140	34	15	12
M22	0.35	1.5	18	125	25	17	14.5
M22	–	2	18	140	34	17	14.5
M24	0.35	2	18	140	28	17	14.5
M27	0.35	2	20	140	28	19	16
M30	0.35	2	22	150	28	21	18
M30	–	3	22	180	45	21	18

*Maximum



JIS Type 2 Metric Coarse

		metric dimensions					
D1	**pitch**	**D**	**L**	**L3**	**L2**	**L5**	**S10**
M3	0.5	4	46	11	19	6	3.2
M3.5	0.6	4	48	13	20	6	3.2
M4	0.7	5	52	13	21	7	4
M4.5	0.75	5	55	13	21	7	4
M5	0.8	5.5	60	16	24	7	4.5
M6	1	6	62	19	29	7	4.5



JIS Type 3 Metric Coarse

		metric dimensions				
D1	**pitch**	**D**	**L**	**L3**	**L5**	**S10**
M8	1.25	6.2	70	22	8	5
M9	1.25	7	72	22	8	5.5
M10	1.5	7	75	24	8	5.5
M11	1.5	8	80	25	9	6
M12	1.75	8.5	82	29	9	6.5
M14	2	10.5	88	30	11	8
M16	2	12.5	95	32	13	10
M18	2.5	14	100	37	14	11
M20	2.5	15	105	37	15	12
M22	2.5	17	115	38	16	13
M24	3	19	120	45	18	15

Thread Cutting • UNC, UNF, and 8-pitch

tap size	Threads per Inch			65% thread						70% thread						75% thread					
				Metric			Inch			Metric			Inch			Metric			Inch		
	UNC	UNF	8-pitch	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
#0	–	80	–	1.20	**1.26**	1.30	0.0472	**0.0494**	0.0512	1.20	**1.24**	1.30	0.0472	**0.0486**	0.0512	1.20	**1.21**	1.30	0.0472	**0.0478**	0.0512
#1	64	–	–	1.50	**1.52**	1.60	0.0591	**0.0598**	0.0630	1.40	**1.49**	1.50	0.0551	**0.0588**	0.0591	1.40	**1.47**	1.50	0.0551	**0.0578**	0.0591
	–	72	–	1.50	**1.56**	1.60	0.0591	**0.0613**	0.0630	1.50	**1.53**	1.60	0.0591	**0.0604**	0.0630	1.50	**1.51**	1.60	0.0591	**0.0595**	0.0630
#2	56	–	–	1.80	**1.80**	1.80	0.0709	**0.0709**	0.0709	1.70	**1.77**	1.80	0.0669	**0.0698**	0.0709	1.70	**1.74**	1.80	0.0669	**0.0686**	0.0709
	–	64	–	1.80	**1.85**	1.90	0.0709	**0.0728**	0.0748	1.80	**1.82**	1.90	0.0709	**0.0718**	0.0748	1.80	**1.80**	1.80	0.0669	**0.0708**	0.0709
#3	48	–	–	2.00	**2.07**	2.10	0.0787	**0.0814**	0.0827	2.00	**2.03**	2.10	0.0787	**0.0801**	0.0827	2.00	**2.00**	2.00	0.0787	**0.0787**	0.0787
	–	56	–	2.10	**2.13**	2.20	0.0827	**0.0839**	0.0866	2.10	**2.10**	2.10	0.0827	**0.0828**	0.0866	2.00	**2.07**	2.10	0.0787	**0.0816**	0.0827
#4	40	–	–	2.30	**2.31**	2.38	0.0906	**0.0909**	0.0938	2.20	**2.27**	2.30	0.0866	**0.0893**	0.0906	2.20	**2.23**	2.30	0.0866	**0.0876**	0.0906
	–	48	–	2.40	**2.40**	2.40	0.0938	**0.0944**	0.0945	2.30	**2.36**	2.38	0.0906	**0.0931**	0.0938	2.30	**2.33**	2.38	0.0906	**0.0917**	0.0938
#5	40	–	–	2.64	**2.64**	2.64	0.1024	**0.1039**	0.1040	2.60	**2.60**	2.60	0.1015	**0.1023**	0.1024	2.50	**2.56**	2.58	0.0984	**0.1006**	0.1015
	–	44	–	2.64	**2.69**	2.70	0.1040	**0.1058**	0.1063	2.64	**2.65**	2.70	0.1040	**0.1043**	0.1063	2.60	**2.61**	2.64	0.1024	**0.1029**	0.1040
#6	32	–	–	2.82	**2.83**	2.87	0.1100	**0.1116**	0.1130	2.78	**2.78**	2.78	0.1094	**0.1096**	0.1102	2.71	**2.73**	2.78	0.1065	**0.1076**	0.1094
	–	40	–	2.95	**2.97**	3.00	0.1160	**0.1169**	0.1181	2.90	**2.93**	2.95	0.1142	**0.1153**	0.1160	2.87	**2.89**	2.90	0.1130	**0.1136**	0.1142
#8	32	–	–	3.50	**3.50**	3.50	0.1360	**0.1376**	0.1378	3.40	**3.44**	3.46	0.1339	**0.1356**	0.1360	3.30	**3.39**	3.40	0.1299	**0.1336**	0.1339
	–	36	–	3.57	**3.57**	3.57	0.1378	**0.1405**	0.1406	3.50	**3.52**	3.57	0.1378	**0.1387**	0.1406	3.46	**3.48**	3.50	0.1360	**0.1369**	0.1378
#10	24	–	–	3.90	**3.93**	3.97	0.1535	**0.1548**	0.1563	3.80	**3.86**	3.90	0.1496	**0.1521**	0.1535	3.73	**3.79**	3.80	0.1470	**0.1494**	0.1496
	–	32	–	4.10	**4.16**	4.20	0.1614	**0.1636**	0.1654	4.10	**4.10**	4.10	0.1614	**0.1616**	0.1654	4.04	**4.05**	4.09	0.1590	**0.1596**	0.1610
#12	24	–	–	4.50	**4.59**	4.60	0.1772	**0.1808**	0.1811	4.50	**4.52**	4.60	0.1772	**0.1781**	0.1811	4.40	**4.46**	4.50	0.1732	**0.1754**	0.1772
	–	28	–	4.70	**4.72**	4.76	0.1850	**0.1858**	0.1875	4.62	**4.66**	4.70	0.1820	**0.1835**	0.1850	4.60	**4.60**	4.60	0.1811	**0.1812**	0.1820
1/4	20	–	–	5.20	**5.28**	5.30	0.2047	**0.2078**	0.2087	5.20	**5.20**	5.20	0.2031	**0.2045**	0.2047	5.11	**5.11**	5.11	0.2010	**0.2013**	0.2031
	–	28	–	5.56	**5.58**	5.60	0.2188	**0.2198**	0.2205	5.50	**5.53**	5.56	0.2165	**0.2175**	0.2188	5.41	**5.47**	5.50	0.2130	**0.2152**	0.2165
5/16	18	–	–	6.75	**6.75**	6.75	0.2656	**0.2656**	0.2656	6.63	**6.65**	6.70	0.2610	**0.2620**	0.2638	6.53	**6.56**	6.60	0.2570	**0.2584**	0.2598
	–	24	–	7.00	**7.04**	7.10	0.2756	**0.2773**	0.2795	6.90	**6.98**	7.00	0.2717	**0.2746**	0.2756	6.90	**6.91**	7.00	0.2717	**0.2719**	0.2756
3/8	16	–	–	8.10	**8.18**	8.20	0.3189	**0.3222**	0.3228	8.00	**8.08**	8.10	0.3150	**0.3182**	0.3189	7.94	**7.98**	8.00	0.3125	**0.3141**	0.3150
	–	24	–	8.60	**8.63**	8.70	0.3386	**0.3398**	0.3425	8.50	**8.56**	8.60	0.3346	**0.3371**	0.3386	8.43	**8.49**	8.50	0.3320	**0.3344**	0.3346
7/16	14	–	–	9.53	**9.58**	9.60	0.3750	**0.3772**	0.3780	9.40	**9.46**	9.50	0.3701	**0.3726**	0.3740	9.30	**9.34**	9.35	0.3661	**0.3679**	0.3680
	–	20	–	10.00	**10.04**	10.10	0.3937	**0.3953**	0.3976	9.92	**9.96**	10.00	0.3906	**0.3920**	0.3937	9.80	**9.88**	9.90	0.3858	**0.3888**	0.3898
1/2	13	–	–	11.00	**11.05**	11.10	0.4331	**0.4351**	0.4370	10.90	**10.92**	11.00	0.4291	**0.4301**	0.4331	10.80	**10.80**	10.80	0.4219	**0.4251**	0.4252
	–	20	–	11.60	**11.63**	11.70	0.4528	**0.4578**	0.4606	11.51	**11.55**	11.60	0.4528	**0.4545**	0.4606	11.40	**11.46**	11.50	0.4488	**0.4513**	0.4528
9/16	12	–	–	12.50	**12.50**	12.50	0.4921	**0.4921**	0.4921	12.30	**12.36**	12.40	0.4844	**0.4867**	0.4882	12.20	**12.23**	12.30	0.4803	**0.4813**	0.4843
	–	18	–	13.10	**13.10**	13.10	0.5118	**0.5156**	0.5157	13.00	**13.00**	13.00	0.5118	**0.5120**	0.5157	12.80	**12.91**	13.00	0.5039	**0.5084**	0.5118
5/8	11	–	–	13.80	**13.93**	14.00	0.5433	**0.5482**	0.5512	13.50	**13.78**	13.80	0.5315	**0.5423**	0.5433	13.50	**13.63**	13.80	0.5315	**0.5364**	0.5433
	–	18	–	14.50	**14.68**	15.00	0.5709	**0.5781**	0.5906	14.50	**14.59**	15.00	0.5709	**0.5745**	0.5906	14.50	**14.50**	14.50	0.5709	**0.5709**	0.5709
3/4	10	–	–	16.50	**16.91**	17.00	0.6496	**0.6656**	0.6693	16.50	**16.74**	17.00	0.6496	**0.6591**	0.6693	16.50	**16.58**	17.00	0.6496	**0.6526**	0.6560
	–	16	–	17.50	**17.71**	18.00	0.6890	**0.6972**	0.7087	17.50	**17.61**	18.00	0.6890	**0.6932**	0.7087	17.50	**17.50**	17.50	0.6890	**0.6891**	0.6969
7/8	9	–	–	19.50	**19.84**	20.00	0.7677	**0.7812**	0.7874	19.50	**19.66**	20.00	0.7677	**0.7740**	0.7874	19.00	**19.48**	19.50	0.7660	**0.7668**	0.7677
	–	14	–	20.50	**20.69**	21.00	0.8071	**0.8147**	0.8268	20.50	**20.58**	21.00	0.8071	**0.8101**	0.8268	20.00	**20.46**	20.50	0.8012	**0.8054**	0.8071
1	8	–	–	22.50	**22.72**	22.77	0.8858	**0.8945**	0.8965	22.50	**22.51**	22.77	0.8858	**0.8863**	0.8965	22.23	**22.31**	22.44	0.8750	**0.8782**	0.8840
	–	12	–	23.50	**23.61**	23.81	0.9252	**0.9296**	0.9375	23.42	**23.48**	23.50	0.9220	**0.9242**	0.9252	23.30	**23.34**	23.42	0.9173	**0.9188**	0.9220
1-1/8	7	–	–	25.50	**25.51**	25.60	1.0039	**1.0044**	1.0080	25.07	**25.28**	25.40	0.9870	**0.9951**	1.0000	25.00	**25.04**	25.07	0.9843	**0.9858**	0.9870
	–	12	–	26.70	**26.79**	27.00	1.0512	**1.0546**	1.0610	26.59	**26.65**	26.70	1.0470	**1.0492**	1.0512	26.50	**26.51**	26.59	1.0433	**1.0438**	1.0470
	–	–	8	25.81	**25.89**	26.00	1.0160	**1.0195**	1.0236	25.67	**25.69**	25.81	1.0110	**1.0113**	1.0160	25.40	**25.48**	25.50	1.0000	**1.0032**	1.0039
1-1/4	7	–	–	28.58	**28.69**	29.00	1.1250	**1.1294**	1.1417	28.18	**28.45**	28.50	1.1090	**1.1201**	1.1220	28.18	**28.21**	28.50	1.1090	**1.1108**	1.1220
	–	12	–	29.77	**29.96**	30.00	1.1720	**1.1796**	1.1811	29.77	**29.83**	30.00	1.1720	**1.1742**	1.1811	29.50	**29.69**	29.73	1.1614	**1.1688**	1.1720
	–	–	8	29.00	**29.07**	29.50	1.1417	**1.1445**	1.1560	28.58	**28.86**	29.00	1.1250	**1.1363**	1.1417	28.58	**28.66**	29.00	1.1250	**1.1282**	1.1417

(continued)

(Thread Cutting • UNC, UNF, and 8-pitch — continued)

tap size	Threads per Inch			65% thread						70% thread						75% thread					
				Metric			Inch			Metric			Inch			Metric			Inch		
	UNC	UNF	8-pitch	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
	6	–	–	31.00	**31.35**	31.50	1.2200	**1.2343**	1.2402	31.00	**31.08**	31.50	1.2200	**1.2235**	1.2402	30.56	**30.80**	30.96	1.2030	**1.2126**	1.2190
1-3/8	–	12	–	33.00	**33.14**	33.34	1.2992	**1.3046**	1.3130	33.00	**33.00**	33.00	1.2992	**1.2992**	1.2992	32.54	**32.86**	32.94	1.2810	**1.2938**	1.2970
	–	–	8	32.00	**32.24**	32.50	1.2598	**1.2695**	1.2795	32.00	**32.04**	32.50	1.2598	**1.2613**	1.2795	31.75	**31.83**	32.00	1.2500	**1.2532**	1.2598
	6	–	–	34.50	**34.53**	34.93	1.3583	**1.3593**	1.3750	34.13	**34.25**	34.50	1.3440	**1.3485**	1.3583	33.73	**33.98**	34.00	1.3280	**1.3376**	1.3386
1-1/2	–	12	–	36.12	**36.31**	36.50	1.4220	**1.4296**	1.4375	36.12	**36.18**	36.50	1.4220	**1.4242**	1.4375	36.00	**36.04**	36.12	1.4173	**1.4188**	1.4220
	–	–	8	35.00	**35.42**	35.50	1.3780	**1.3945**	1.3976	35.00	**35.21**	35.50	1.3780	**1.3863**	1.3976	35.00	**35.01**	35.50	1.3780	**1.3782**	1.3976
1-5/8	–	–	8	38.50	**38.59**	39.00	1.5157	**1.5195**	1.5354	38.10	**38.39**	38.46	1.5000	**1.5113**	1.5140	38.10	**38.18**	38.46	1.5000	**1.5032**	1.5140
1-3/4	5	–	–	40.00	**40.16**	41.00	1.5750	**1.5811**	1.6140	39.50	**39.83**	40.00	1.5551	**1.5681**	1.5748	39.50	**39.50**	39.50	1.5551	**1.5552**	1.5748
	–	–	8	41.00	**41.77**	42.00	1.6140	**1.6445**	1.6540	41.00	**41.56**	42.00	1.6140	**1.6363**	1.6540	41.00	**41.36**	42.00	1.6140	**1.6282**	1.6540
1-7/8	–	–	8	44.00	**44.94**	45.00	1.7320	**1.7695**	1.7720	44.00	**44.74**	45.00	1.7320	**1.7613**	1.7720	44.00	**44.53**	45.00	1.7320	**1.7532**	1.7720
2	4 1/2	–	–	46.00	**46.03**	47.00	1.8110	**1.8124**	1.8500	45.00	**45.67**	46.00	1.7720	**1.7979**	1.8110	45.00	**45.30**	46.00	1.7720	**1.7835**	1.8110
	–	–	8	48.00	**48.12**	49.00	1.8900	**1.8945**	1.9290	47.00	**47.91**	48.00	1.8500	**1.8863**	1.8900	47.00	**47.71**	48.00	1.8500	**1.8782**	1.8900
2-1/4	4 1/2	–	–	52.00	**52.38**	53.00	2.0470	**2.0624**	2.0870	52.00	**52.02**	53.00	2.0470	**2.0479**	2.0870	51.00	**51.65**	52.00	2.0080	**2.0335**	2.0470
	–	–	8	54.00	**54.47**	55.00	2.1260	**2.1445**	2.1650	54.00	**54.26**	55.00	2.1260	**2.1363**	2.1650	54.00	**54.06**	55.00	2.1260	**2.1282**	2.1650
2-1/2	4	–	–	58.00	**58.14**	59.00	2.2840	**2.2889**	2.3230	57.00	**57.73**	58.00	2.2440	**2.2727**	2.2840	57.00	**57.31**	58.00	2.2440	**2.2564**	2.2840
	–	–	8	60.00	**60.82**	61.00	2.3620	**2.3945**	2.4020	60.00	**60.61**	61.00	2.3620	**2.3863**	2.4020	60.00	**60.41**	61.00	2.3620	**2.3782**	2.4020

Thread Cutting • M and MF

tap size	pitch		65% thread						70% thread						75% thread					
			Metric			Inch			Metric			Inch			Metric			Inch		
	M	MF	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill	smallest drill	theoretical	largest drill
M1.6	0.35	–	1.20	**1.30**	1.30	0.0512	**0.0512**	0.0512	1.20	**1.28**	1.30	0.0472	**0.0504**	0.0512	1.20	**1.26**	1.30	0.0472	**0.0496**	0.0512
M1.7	0.35	–	1.40	**1.40**	1.40	0.0551	**0.0551**	0.0551	1.32	**1.38**	1.40	0.0520	**0.0543**	0.0550	1.32	**1.36**	1.40	0.0520	**0.0535**	0.0550
M1.8	0.35	–	1.50	**1.50**	1.50	0.0591	**0.0591**	0.0591	1.40	**1.48**	1.50	0.0551	**0.0583**	0.0591	1.40	**1.46**	1.50	0.0551	**0.0575**	0.0591
M2	0.4	–	1.60	**1.66**	1.70	0.0630	**0.0654**	0.0669	1.60	**1.64**	1.70	0.0630	**0.0646**	0.0669	1.60	**1.61**	1.70	0.0630	**0.0634**	0.0669
M2.2	0.45	–	1.80	**1.82**	1.90	0.0709	**0.0717**	0.0748	1.70	**1.79**	1.80	0.0669	**0.0705**	0.0709	1.70	**1.76**	1.80	0.0669	**0.0693**	0.0709
M2.5	0.45	–	2.10	**2.12**	2.20	0.0827	**0.0835**	0.0866	2.00	**2.09**	2.10	0.0787	**0.0823**	0.0827	2.00	**2.06**	2.10	0.0787	**0.0811**	0.0827
M2.6	0.45	–	2.20	**2.22**	2.30	0.0866	**0.0874**	0.0906	2.10	**2.19**	2.20	0.0827	**0.0862**	0.0866	2.10	**2.16**	2.20	0.0827	**0.0850**	0.0866
M3	0.5	–	2.58	**2.58**	2.58	0.1015	**0.1016**	0.1024	2.50	**2.55**	2.58	0.0984	**0.1004**	0.1015	2.50	**2.51**	2.58	0.0984	**0.0988**	0.1015
	–	0.35	2.70	**2.70**	2.70	0.1063	**0.1063**	0.1063	2.64	**2.68**	2.70	0.1040	**0.1055**	0.1063	2.64	**2.66**	2.70	0.1040	**0.1047**	0.1063
M3.5	0.6	–	2.95	**2.99**	3.00	0.1160	**0.1177**	0.1181	2.95	**2.95**	3.00	0.1160	**0.1161**	0.1181	2.90	**2.92**	2.95	0.1142	**0.1150**	0.1160
M4	0.7	–	3.40	**3.41**	3.46	0.1339	**0.1343**	0.1360	3.30	**3.36**	3.40	0.1299	**0.1323**	0.1339	3.30	**3.32**	3.40	0.1299	**0.1307**	0.1339
	–	0.5	3.57	**3.58**	3.60	0.1406	**0.1409**	0.1417	3.50	**3.54**	3.57	0.1378	**0.1394**	0.1406	3.50	**3.51**	3.57	0.1378	**0.1382**	0.1406
M4.5	0.75	–	3.80	**3.87**	3.90	0.1496	**0.1524**	0.1535	3.80	**3.82**	3.90	0.1496	**0.1504**	0.1535	3.73	**3.77**	3.80	0.1470	**0.1484**	0.1496
M5	0.8	–	4.30	**4.32**	4.37	0.1693	**0.1701**	0.1719	4.22	**4.27**	4.30	0.1660	**0.1681**	0.1693	4.22	**4.22**	4.30	0.1660	**0.1661**	0.1693
	–	0.5	4.50	**4.58**	4.60	0.1772	**0.1803**	0.1811	4.50	**4.54**	4.60	0.1772	**0.1787**	0.1811	4.50	**4.51**	4.60	0.1772	**0.1776**	0.1811
M6	1	–	5.16	**5.16**	5.16	0.2031	**0.2031**	0.2031	5.00	**5.09**	5.10	0.1969	**0.2004**	0.2008	5.00	**5.03**	5.10	0.1969	**0.1980**	0.2008
	–	0.75	5.30	**5.37**	5.40	0.2087	**0.2114**	0.2126	5.30	**5.32**	5.40	0.2087	**0.2094**	0.2126	5.20	**5.27**	5.30	0.2047	**0.2075**	0.2087
M7	1	–	6.10	**6.16**	6.20	0.2402	**0.2425**	0.2441	6.00	**6.09**	6.10	0.2362	**0.2398**	0.2402	6.00	**6.03**	6.10	0.2362	**0.2374**	0.2402

(continued)

(Thread Cutting • M and MF — continued)

tap size	pitch M	pitch MF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
	1.25	–	6.90	**6.94**	7.00	0.2717	**0.2732**	0.2756	6.80	**6.86**	6.90	0.2677	**0.2701**	0.2717	6.75	**6.78**	6.80	0.2656	**0.2669**	0.2677
M8	–	1	7.15	**7.16**	7.20	0.2813	**0.2819**	0.2835	7.00	**7.09**	7.10	0.2756	**0.2791**	0.2795	7.00	**7.03**	7.10	0.2756	**0.2768**	0.2795
	–	0.75	7.30	**7.37**	7.40	0.2874	**0.2902**	0.2913	7.30	**7.32**	7.40	0.2874	**0.2882**	0.2913	7.20	**7.27**	7.30	0.2835	**0.2862**	0.2874
	1.5	–	8.70	**8.73**	8.73	0.3425	**0.3437**	0.3438	8.60	**8.64**	8.70	0.3386	**0.3402**	0.3425	8.50	**8.54**	8.60	0.3346	**0.3362**	0.3386
M10	–	1.25	8.90	**8.94**	9.00	0.3504	**0.3520**	0.3543	8.80	**8.86**	8.90	0.3465	**0.3488**	0.3504	8.73	**8.78**	8.80	0.3438	**0.3457**	0.3465
	–	1	9.13	**9.16**	9.20	0.3594	**0.3606**	0.3622	9.00	**9.09**	9.10	0.3543	**0.3579**	0.3583	9.00	**9.03**	9.10	0.3543	**0.3555**	0.3583
	–	0.75	9.35	**9.37**	9.40	0.3680	**0.3689**	0.3701	9.30	**9.32**	9.35	0.3661	**0.3669**	0.3680	9.20	**9.27**	9.30	0.3622	**0.3650**	0.3661
	1.75	–	10.50	**10.52**	10.60	0.4134	**0.4142**	0.4173	10.40	**10.41**	10.50	0.4094	**0.4098**	0.4134	10.30	**10.30**	10.30	0.4055	**0.4055**	0.4055
M12	–	1.5	10.72	**10.73**	10.80	0.4219	**0.4224**	0.4252	10.60	**10.64**	10.70	0.4173	**0.4189**	0.4213	10.50	**10.54**	10.60	0.4134	**0.4150**	0.4173
	–	1.25	10.90	**10.94**	11.00	0.4291	**0.4307**	0.4331	10.80	**10.86**	10.90	0.4252	**0.4276**	0.4291	10.72	**10.78**	10.80	0.4219	**0.4244**	0.4252
	–	1	11.15	**11.16**	11.20	0.4375	**0.4394**	0.4409	11.00	**11.09**	11.10	0.4331	**0.4366**	0.4370	11.00	**11.03**	11.10	0.4331	**0.4343**	0.4370
M14	2	–	12.30	**12.31**	12.40	0.4844	**0.4846**	0.4882	12.10	**12.18**	12.20	0.4764	**0.4795**	0.4803	12.00	**12.05**	12.10	0.4724	**0.4744**	0.4764
	–	1.5	12.70	**12.73**	12.80	0.5000	**0.5012**	0.5039	12.60	**12.64**	12.70	0.4961	**0.4976**	0.5000	12.50	**12.54**	12.60	0.4921	**0.4937**	0.4961
M16	2	–	14.20	**14.31**	14.50	0.5591	**0.5634**	0.5709	14.00	**14.18**	14.20	0.5512	**0.5583**	0.5591	14.00	**14.05**	14.20	0.5512	**0.5531**	0.5591
	–	1.5	14.50	**14.73**	15.00	0.5709	**0.5799**	0.5906	14.50	**14.64**	15.00	0.5709	**0.5764**	0.5906	14.50	**14.54**	15.00	0.5709	**0.5724**	0.5906
M18	2.5	–	15.80	**15.89**	16.00	0.6220	**0.6256**	0.6299	15.50	**15.73**	15.80	0.6102	**0.6193**	0.6220	15.50	**15.56**	15.80	0.6102	**0.6126**	0.6220
	–	1.5	16.50	**16.73**	17.00	0.6496	**0.6587**	0.6693	16.50	**16.64**	17.00	0.6496	**0.6551**	0.6693	16.50	**16.54**	17.00	0.6496	**0.6512**	0.6693
	2.5	–	17.50	**17.89**	18.00	0.6890	**0.7043**	0.7087	17.50	**17.73**	18.00	0.6890	**0.6980**	0.7087	17.50	**17.56**	18.00	0.6890	**0.6913**	0.7087
M20	–	1.5	18.50	**18.73**	19.00	0.7283	**0.7374**	0.7480	18.50	**18.64**	19.00	0.7283	**0.7339**	0.7480	18.50	**18.54**	19.00	0.7283	**0.7299**	0.7480
	–	1	19.00	**19.16**	19.50	0.7480	**0.7543**	0.7677	19.00	**19.09**	19.50	0.7480	**0.7516**	0.7677	19.00	**19.03**	19.50	0.7480	**0.7492**	0.7677
	2.5	–	19.50	**19.89**	20.00	0.7677	**0.7831**	0.7874	19.50	**19.73**	20.00	0.7677	**0.7768**	0.7874	19.50	**19.56**	20.00	0.7677	**0.7701**	0.7874
M22	–	2	20.00	**20.31**	20.50	0.7874	**0.7996**	0.8071	20.00	**20.18**	20.50	0.7874	**0.7945**	0.8071	20.00	**20.05**	20.50	0.7874	**0.7894**	0.8071
	–	1.5	20.50	**20.73**	21.00	0.8071	**0.8161**	0.8268	20.50	**20.64**	21.00	0.8071	**0.8126**	0.8268	20.50	**20.54**	21.00	0.8071	**0.8087**	0.8268
	3	–	21.43	**21.47**	21.50	0.8440	**0.8453**	0.8460	21.15	**21.27**	21.33	0.8327	**0.8374**	0.8398	21.00	**21.08**	21.15	0.8268	**0.8299**	0.8327
M24	–	2	22.23	**22.31**	22.44	0.8750	**0.8783**	0.8840	22.00	**22.18**	22.23	0.8661	**0.8732**	0.8750	22.00	**22.05**	22.23	0.8661	**0.8681**	0.8750
	–	1.5	22.50	**22.73**	22.77	0.8858	**0.8949**	0.8965	22.50	**22.64**	22.77	0.8858	**0.8913**	0.8965	22.50	**22.54**	22.77	0.8858	**0.8874**	0.8965
	3	–	24.30	**24.47**	24.50	0.9567	**0.9634**	0.9646	24.00	**24.27**	24.30	0.9449	**0.9555**	0.9567	24.00	**24.08**	24.30	0.9449	**0.9480**	0.9567
M27	–	2	25.07	**25.31**	25.40	0.9870	**0.9965**	1.0000	25.07	**25.18**	25.40	0.9870	**0.9913**	1.0000	25.00	**25.05**	25.07	0.9843	**0.9862**	0.9870
	–	1.5	25.67	**25.73**	25.81	1.0110	**1.0130**	1.0160	25.61	**25.64**	25.65	1.0080	**1.0094**	1.0098	25.50	**25.54**	25.60	1.0039	**1.0055**	1.0080
	3.5	–	27.00	**27.04**	27.50	1.0630	**1.0646**	1.0827	26.70	**26.82**	27.00	1.0512	**1.0559**	1.0610	26.59	**26.59**	26.59	1.0433	**1.0469**	1.0470
M30	–	2	28.18	**28.31**	28.50	1.1090	**1.1146**	1.1220	28.18	**28.18**	28.18	1.1090	**1.1094**	1.1220	28.00	**28.05**	28.10	1.1024	**1.1043**	1.1063
	–	1.5	28.58	**28.73**	29.00	1.1250	**1.1311**	1.1417	28.58	**28.64**	29.00	1.1250	**1.1276**	1.1417	28.50	**28.54**	28.58	1.1220	**1.1236**	1.1250
M33	3.5	–	30.00	**30.04**	30.16	1.1811	**1.1827**	1.1875	29.77	**29.82**	30.00	1.1720	**1.1740**	1.1811	29.50	**29.59**	29.73	1.1614	**1.1650**	1.1720
	–	2	31.00	**31.31**	31.50	1.2200	**1.2327**	1.2402	31.00	**31.18**	31.50	1.2200	**1.2276**	1.2402	31.00	**31.05**	31.50	1.2200	**1.2224**	1.2402
	4	–	32.54	**32.62**	32.94	1.2810	**1.2843**	1.2970	32.00	**32.36**	32.50	1.2598	**1.2740**	1.2795	32.00	**32.10**	32.50	1.2598	**1.2638**	1.2795
M36	–	3	33.40	**33.47**	33.50	1.3130	**1.3177**	1.3189	33.00	**33.27**	33.34	1.2992	**1.3098**	1.3130	33.00	**33.08**	33.34	1.2992	**1.3024**	1.3130
	–	2	34.13	**34.31**	34.50	1.3440	**1.3508**	1.3583	34.13	**34.18**	34.50	1.3440	**1.3457**	1.3583	34.00	**34.05**	34.13	1.3386	**1.3406**	1.3440
M39	4	–	35.50	**35.62**	35.72	1.3976	**1.4024**	1.4060	35.00	**35.36**	35.50	1.3780	**1.3921**	1.3976	35.00	**35.10**	35.50	1.3780	**1.3819**	1.3976
	–	2	37.31	**37.31**	37.31	1.4567	**1.4689**	1.4690	37.00	**37.18**	37.31	1.4567	**1.4638**	1.4690	37.00	**37.05**	37.31	1.4567	**1.4587**	1.4690
	4.5	–	38.10	**38.20**	38.46	1.5000	**1.5039**	1.5140	37.50	**37.91**	38.00	1.4764	**1.4925**	1.4961	37.50	**37.62**	38.00	1.4764	**1.4811**	1.4961
M42	–	3	39.00	**39.47**	39.50	1.5354	**1.5539**	1.5551	39.00	**39.27**	39.50	1.5354	**1.5461**	1.5551	39.00	**39.08**	39.50	1.5354	**1.5386**	1.5551
	–	2	40.00	**40.31**	41.00	1.5750	**1.5870**	1.6140	40.00	**40.18**	41.00	1.5750	**1.5819**	1.6140	40.00	**40.05**	41.00	1.5750	**1.5768**	1.6140

Thread Forming • UNC and UNF

tap size	pitch UNC	pitch UNF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
#0	–	80	1.32	**1.38**	1.40	0.0520	**0.0545**	0.0550	1.32	**1.38**	1.40	0.0520	**0.0540**	0.0550	1.32	**1.36**	1.40	0.0520	**0.0536**	0.0550
#1	64	–	1.60	**1.68**	1.70	0.0630	**0.0661**	0.0669	1.60	**1.67**	1.70	0.0630	**0.0655**	0.0669	1.60	**1.65**	1.70	0.0630	**0.0650**	0.0669
	–	72	1.70	**1.70**	1.70	0.0669	**0.0669**	0.0669	1.60	**1.69**	1.70	0.0630	**0.0663**	0.0669	1.60	**1.67**	1.70	0.0630	**0.0659**	0.0669
#2	56	–	1.98	**1.98**	1.98	0.0781	**0.0781**	0.0781	1.90	**1.97**	1.98	0.0748	**0.0774**	0.0781	1.90	**1.95**	1.98	0.0748	**0.0769**	0.0781
	–	64	2.00	**2.01**	2.10	0.0787	**0.0791**	0.0827	2.00	**2.00**	2.00	0.0781	**0.0785**	0.0787	1.98	**1.98**	1.98	0.0748	**0.0780**	0.0781
#3	48	–	2.20	**2.28**	2.30	0.0866	**0.0898**	0.0906	2.20	**2.27**	2.30	0.0866	**0.0890**	0.0906	2.20	**2.25**	2.30	0.0866	**0.0884**	0.0906
	–	56	2.30	**2.31**	2.38	0.0906	**0.0911**	0.0938	2.30	**2.31**	2.38	0.0866	**0.0904**	0.0906	2.20	**2.28**	2.30	0.0866	**0.0899**	0.0906
#4	40	–	2.50	**2.57**	2.58	0.0984	**0.1010**	0.1015	2.50	**2.55**	2.58	0.0984	**0.1000**	0.1015	2.50	**2.52**	2.58	0.0984	**0.0993**	0.1015
	–	48	2.60	**2.61**	2.64	0.1024	**0.1028**	0.1040	2.60	**2.60**	2.60	0.1015	**0.1020**	0.1024	2.58	**2.58**	2.58	0.0984	**0.1014**	0.1015
#5	40	–	2.90	**2.90**	2.90	0.1130	**0.1140**	0.1142	2.87	**2.88**	2.90	0.1130	**0.1130**	0.1130	2.82	**2.85**	2.87	0.1110	**0.1123**	0.1130
	–	44	2.90	**2.92**	2.95	0.1142	**0.1150**	0.1160	2.90	**2.91**	2.95	0.1130	**0.1141**	0.1142	2.87	**2.88**	2.90	0.1130	**0.1134**	0.1142
#6	32	–	3.10	**3.16**	3.18	0.1220	**0.1243**	0.1250	3.10	**3.14**	3.18	0.1220	**0.1230**	0.1250	3.10	**3.10**	3.10	0.1220	**0.1221**	0.1250
	–	40	3.20	**3.23**	3.26	0.1260	**0.1270**	0.1285	3.20	**3.21**	3.26	0.1260	**0.1260**	0.1260	3.18	**3.18**	3.18	0.1250	**0.1253**	0.1260
#8	32	–	3.80	**3.82**	3.90	0.1496	**0.1503**	0.1535	3.80	**3.80**	3.80	0.1470	**0.1490**	0.1496	3.73	**3.76**	3.80	0.1470	**0.1481**	0.1496
	–	36	3.80	**3.86**	3.90	0.1496	**0.1518**	0.1535	3.80	**3.84**	3.90	0.1496	**0.1507**	0.1535	3.80	**3.80**	3.80	0.1496	**0.1498**	0.1535
#10	24	–	4.30	**4.36**	4.37	0.1693	**0.1716**	0.1719	4.30	**4.34**	4.37	0.1693	**0.1700**	0.1719	4.22	**4.29**	4.30	0.1660	**0.1688**	0.1693
	–	32	4.40	**4.48**	4.50	0.1732	**0.1762**	0.1772	4.40	**4.46**	4.50	0.1732	**0.1750**	0.1772	4.40	**4.42**	4.50	0.1732	**0.1741**	0.1772
#12	24	–	5.00	**5.02**	5.10	0.1969	**0.1976**	0.2008	5.00	**5.00**	5.00	0.1929	**0.1960**	0.1969	4.90	**4.95**	5.00	0.1929	**0.1948**	0.1969
	–	28	5.00	**5.09**	5.10	0.1969	**0.2002**	0.2008	5.00	**5.07**	5.10	0.1969	**0.1990**	0.2008	5.00	**5.02**	5.10	0.1969	**0.1978**	0.2008
1/4	20	–	5.70	**5.79**	5.80	0.2244	**0.2279**	0.2283	5.70	**5.76**	5.80	0.2244	**0.2260**	0.2283	5.70	**5.70**	5.70	0.2244	**0.2245**	0.2283
	–	28	5.95	**5.95**	5.95	0.2323	**0.2342**	0.2344	5.90	**5.94**	5.95	0.2323	**0.2329**	0.2344	5.80	**5.89**	5.90	0.2283	**0.2318**	0.2323
5/16	18	–	7.30	**7.31**	7.40	0.2874	**0.2879**	0.2913	7.30	**7.30**	7.30	0.2835	**0.2861**	0.2874	7.20	**7.22**	7.30	0.2835	**0.2842**	0.2874
	–	24	7.40	**7.47**	7.50	0.2913	**0.2941**	0.2953	7.40	**7.46**	7.50	0.2913	**0.2927**	0.2953	7.40	**7.40**	7.40	0.2874	**0.2912**	0.2913
3/8	16	–	8.80	**8.82**	8.90	0.3465	**0.3474**	0.3504	8.80	**8.80**	8.80	0.3438	**0.3452**	0.3465	8.70	**8.71**	8.73	0.3425	**0.3431**	0.3438
	–	24	9.00	**9.06**	9.10	0.3543	**0.3566**	0.3583	9.00	**9.06**	9.10	0.3543	**0.3552**	0.3583	8.90	**8.98**	9.00	0.3504	**0.3537**	0.3543
7/16	14	–	10.30	**10.31**	10.32	0.4055	**0.4059**	0.4063	10.20	**10.29**	10.30	0.4016	**0.4035**	0.4055	10.10	**10.19**	10.20	0.3976	**0.4011**	0.4016
	–	20	10.50	**10.55**	10.60	0.4134	**0.4154**	0.4173	10.50	**10.55**	10.60	0.4134	**0.4137**	0.4173	10.40	**10.46**	10.50	0.4094	**0.4120**	0.4134
1/2	13	–	11.80	**11.84**	11.90	0.4646	**0.4660**	0.4685	11.80	**11.82**	11.90	0.4606	**0.4634**	0.4646	11.70	**11.70**	11.70	0.4606	**0.4608**	0.4646
	–	20	12.10	**12.14**	12.20	0.4764	**0.4779**	0.4803	12.10	**12.14**	12.20	0.4724	**0.4762**	0.4764	12.00	**12.05**	12.10	0.4724	**0.4745**	0.4764
9/16	12	–	13.10	**13.35**	13.50	0.5157	**0.5257**	0.5315	13.10	**13.33**	13.50	0.5157	**0.5229**	0.5315	13.10	**13.21**	13.50	0.5157	**0.5200**	0.5315
	–	18	13.50	**13.66**	13.80	0.5315	**0.5379**	0.5433	13.50	**13.67**	13.80	0.5315	**0.5361**	0.5433	13.50	**13.57**	13.80	0.5315	**0.5342**	0.5433
5/8	11	–	14.50	**14.85**	15.00	0.5709	**0.5848**	0.5906	14.50	**14.83**	15.00	0.5709	**0.5817**	0.5906	14.50	**14.70**	15.00	0.5709	**0.5787**	0.5906
	–	18	15.10	**15.25**	15.50	0.5945	**0.6004**	0.6102	15.10	**15.26**	15.50	0.5945	**0.5986**	0.6102	15.10	**15.16**	15.50	0.5945	**0.5967**	0.6102
3/4	10	–	17.50	**17.93**	18.00	0.6890	**0.7058**	0.7087	17.50	**17.91**	18.00	0.6890	**0.7024**	0.7087	17.50	**17.75**	18.00	0.6890	**0.6990**	0.7087
	–	16	18.00	**18.35**	18.50	0.7087	**0.7224**	0.7283	18.00	**18.37**	18.50	0.7087	**0.7202**	0.7283	18.00	**18.24**	18.50	0.7087	**0.7181**	0.7283
7/8	9	–	20.50	**20.98**	21.00	0.8071	**0.8259**	0.8268	20.50	**20.96**	21.00	0.8071	**0.8221**	0.8268	20.50	**20.78**	21.00	0.8071	**0.8183**	0.8268
	–	14	21.33	**21.42**	21.43	0.8398	**0.8434**	0.8440	21.43	**21.45**	21.50	0.8398	**0.8410**	0.8440	21.15	**21.30**	21.33	0.8327	**0.8386**	0.8398
1	8	–	24.00	**24.00**	24.00	0.9380	**0.9448**	0.9449	23.81	**23.98**	24.00	0.9380	**0.9405**	0.9449	23.50	**23.78**	23.81	0.9252	**0.9363**	0.9375
	–	12	24.30	**24.47**	24.50	0.9567	**0.9632**	0.9646	24.30	**24.49**	24.50	0.9567	**0.9603**	0.9646	24.30	**24.32**	24.50	0.9567	**0.9575**	0.9646

Thread Forming • M and MF

tap size	pitch M	pitch MF	65% thread Metric smallest drill	65% thread Metric theoretical	65% thread Metric largest drill	65% thread Inch smallest drill	65% thread Inch theoretical	65% thread Inch largest drill	70% thread Metric smallest drill	70% thread Metric theoretical	70% thread Metric largest drill	70% thread Inch smallest drill	70% thread Inch theoretical	70% thread Inch largest drill	75% thread Metric smallest drill	75% thread Metric theoretical	75% thread Metric largest drill	75% thread Inch smallest drill	75% thread Inch theoretical	75% thread Inch largest drill
M1.6	0.35	–	1.40	**1.45**	1.50	0.0551	**0.0571**	0.0591	1.40	**1.43**	1.50	0.0551	**0.0563**	0.0591	1.40	**1.42**	1.50	0.0551	**0.0559**	0.0591
M1.7	0.35	–	1.50	**1.58**	1.60	0.0591	**0.0623**	0.0630	1.50	**1.57**	1.60	0.0591	**0.0620**	0.0630	1.50	**1.56**	1.60	0.0591	**0.0617**	0.0630
M1.8	0.35	–	1.60	**1.65**	1.70	0.0630	**0.0650**	0.0669	1.60	**1.63**	1.70	0.0630	**0.0642**	0.0669	1.60	**1.62**	1.70	0.0630	**0.0638**	0.0669
M2	0.4	–	1.80	**1.82**	1.90	0.0709	**0.0717**	0.0748	1.80	**1.81**	1.90	0.0709	**0.0713**	0.0748	1.80	**1.80**	1.80	0.0709	**0.0709**	0.0709
M2.2	0.45	–	2.00	**2.00**	2.00	0.0787	**0.0787**	0.0787	1.98	**1.99**	2.00	0.0781	**0.0783**	0.0787	1.90	**1.97**	1.98	0.0748	**0.0776**	0.0781
M2.5	0.45	–	2.30	**2.30**	2.30	0.0906	**0.0906**	0.0906	2.20	**2.29**	2.30	0.0866	**0.0902**	0.0906	2.20	**2.27**	2.30	0.0866	**0.0894**	0.0906
M2.6	0.45	–	2.40	**2.43**	2.44	0.0945	**0.0957**	0.0960	2.40	**2.42**	2.44	0.0945	**0.0953**	0.0960	2.40	**2.41**	2.44	0.0945	**0.0949**	0.0960
M3	0.5	–	2.78	**2.78**	2.80	0.1094	**0.1094**	0.1094	2.71	**2.76**	2.78	0.1065	**0.1087**	0.1094	2.71	**2.75**	2.78	0.1065	**0.1083**	0.1094
	–	0.35	2.87	**2.88**	2.90	0.1130	**0.1134**	0.1142	2.87	**2.87**	2.87	0.1130	**0.1130**	0.1130	2.82	**2.86**	2.87	0.1110	**0.1126**	0.1130
M3.5	0.6	–	3.20	**3.23**	3.26	0.1260	**0.1272**	0.1285	3.20	**3.21**	3.26	0.1260	**0.1264**	0.1285	3.18	**3.19**	3.20	0.1250	**0.1256**	0.1260
M4	0.7	–	3.66	**3.69**	3.70	0.1440	**0.1453**	0.1457	3.66	**3.67**	3.70	0.1440	**0.1445**	0.1457	3.60	**3.64**	3.66	0.1417	**0.1433**	0.1440
	–	0.5	3.73	**3.78**	3.80	0.1470	**0.1488**	0.1496	3.73	**3.76**	3.80	0.1470	**0.1480**	0.1496	3.73	**3.75**	3.80	0.1470	**0.1476**	0.1496
M4.5	0.75	–	4.10	**4.17**	4.20	0.1614	**0.1642**	0.1654	4.10	**4.14**	4.20	0.1614	**0.1630**	0.1654	4.10	**4.12**	4.20	0.1614	**0.1622**	0.1654
M5	0.8	–	4.62	**4.65**	4.70	0.1820	**0.1831**	0.1850	4.60	**4.62**	4.62	0.1811	**0.1819**	0.1820	4.50	**4.59**	4.60	0.1772	**0.1807**	0.1811
	–	0.5	4.76	**4.78**	4.80	0.1875	**0.1882**	0.1890	4.70	**4.76**	4.76	0.1850	**0.1874**	0.1875	4.70	**4.75**	4.76	0.1850	**0.1870**	0.1875
M6	1	–	5.56	**5.56**	5.60	0.2188	**0.2189**	0.2205	5.50	**5.52**	5.56	0.2165	**0.2173**	0.2188	5.41	**5.49**	5.50	0.2130	**0.2161**	0.2165
	–	0.75	5.62	**5.67**	5.70	0.2211	**0.2232**	0.2244	5.62	**5.64**	5.70	0.2211	**0.2220**	0.2244	5.62	**5.62**	5.70	0.2211	**0.2213**	0.2244
M7	1	–	6.53	**6.56**	6.60	0.2570	**0.2583**	0.2598	6.50	**6.52**	6.53	0.2559	**0.2567**	0.2570	6.40	**6.49**	6.50	0.2520	**0.2555**	0.2559
M8	1.25	–	7.40	**7.45**	7.50	0.2913	**0.2933**	0.2953	7.40	**7.41**	7.50	0.2913	**0.2917**	0.2953	7.30	**7.36**	7.40	0.2874	**0.2898**	0.2913
	–	1	7.54	**7.56**	7.60	0.2969	**0.2976**	0.2992	7.50	**7.52**	7.54	0.2953	**0.2961**	0.2969	7.40	**7.49**	7.50	0.2913	**0.2949**	0.2953
	–	0.75	7.60	**7.67**	7.70	0.2992	**0.3020**	0.3031	7.60	**7.64**	7.70	0.2992	**0.3008**	0.3031	7.60	**7.62**	7.70	0.2992	**0.3000**	0.3031
M10	1.5	–	9.30	**9.34**	9.35	0.3661	**0.3677**	0.3680	9.20	**9.29**	9.30	0.3622	**0.3657**	0.3661	9.20	**9.24**	9.30	0.3622	**0.3638**	0.3661
	–	1.25	9.40	**9.45**	9.50	0.3701	**0.3720**	0.3740	9.40	**9.41**	9.50	0.3701	**0.3705**	0.3740	9.35	**9.36**	9.40	0.3680	**0.3685**	0.3701
	–	1	9.53	**9.56**	9.60	0.3750	**0.3764**	0.3780	9.50	**9.52**	9.53	0.3740	**0.3748**	0.3750	9.40	**9.49**	9.50	0.3701	**0.3736**	0.3740
	–	0.75	9.60	**9.67**	9.70	0.3780	**0.3807**	0.3819	9.60	**9.64**	9.70	0.3780	**0.3795**	0.3819	9.60	**9.62**	9.70	0.3780	**0.3787**	0.3819
M12	1.75	–	11.20	**11.23**	11.30	0.4409	**0.4421**	0.4449	11.15	**11.17**	11.20	0.4375	**0.4398**	0.4409	11.10	**11.11**	11.15	0.4370	**0.4374**	0.4375
	–	1.5	11.30	**11.34**	11.40	0.4449	**0.4465**	0.4488	11.20	**11.29**	11.30	0.4449	**0.4484**	0.4488	11.20	**11.24**	11.30	0.4409	**0.4425**	0.4449
	–	1.25	11.40	**11.45**	11.50	0.4488	**0.4508**	0.4528	11.40	**11.41**	11.50	0.4488	**0.4492**	0.4528	11.30	**11.36**	11.40	0.4449	**0.4472**	0.4488
	–	1	11.51	**11.56**	11.60	0.4531	**0.4551**	0.4567	11.51	**11.52**	11.60	0.4531	**0.4535**	0.4567	11.40	**11.49**	11.50	0.4488	**0.4524**	0.4528
M14	2	–	13.10	**13.12**	13.50	0.5157	**0.5165**	0.5315	13.00	**13.05**	13.10	0.5118	**0.5138**	0.5157	12.80	**12.98**	13.00	0.5039	**0.5110**	0.5118
	–	1.5	13.10	**13.34**	13.50	0.5157	**0.5252**	0.5315	13.10	**13.29**	13.50	0.5157	**0.5232**	0.5315	13.10	**13.24**	13.50	0.5157	**0.5213**	0.5315
M16	2	–	15.10	**15.12**	15.50	0.5945	**0.5953**	0.6102	15.00	**15.05**	15.10	0.5906	**0.5925**	0.5945	14.50	**14.98**	15.00	0.5709	**0.5898**	0.5906
	–	1.5	15.10	**15.34**	15.50	0.5945	**0.6039**	0.6102	15.10	**15.29**	15.50	0.5945	**0.6020**	0.6102	15.10	**15.24**	15.50	0.5945	**0.6000**	0.6102
M18	2.5	–	16.50	**16.90**	17.00	0.6496	**0.6654**	0.6693	16.50	**16.81**	17.00	0.6496	**0.6618**	0.6693	16.50	**16.73**	17.00	0.6496	**0.6587**	0.6693
	–	1.5	17.00	**17.34**	17.50	0.6693	**0.6827**	0.6890	17.00	**17.29**	17.50	0.6693	**0.6807**	0.6890	17.00	**17.24**	17.50	0.6693	**0.6787**	0.6890
M20	2.5	–	18.50	**18.90**	19.00	0.7283	**0.7441**	0.7480	18.50	**18.81**	19.00	0.7283	**0.7406**	0.7480	18.50	**18.73**	19.00	0.7283	**0.7374**	0.7480
	–	1.5	19.00	**19.34**	19.50	0.7480	**0.7614**	0.7677	19.00	**19.29**	19.50	0.7480	**0.7594**	0.7677	19.00	**19.24**	19.50	0.7480	**0.7575**	0.7677
	–	1	19.50	**19.56**	20.00	0.7677	**0.7701**	0.7874	19.50	**19.52**	20.00	0.7677	**0.7685**	0.7874	19.00	**19.49**	19.50	0.7480	**0.7673**	0.7677
M22	2.5	–	20.50	**20.90**	21.00	0.8071	**0.8228**	0.8268	20.50	**20.81**	21.00	0.8071	**0.8193**	0.8268	20.50	**20.73**	21.00	0.8071	**0.8161**	0.8268
	–	2	21.00	**21.12**	21.15	0.8268	**0.8315**	0.8327	21.00	**21.05**	21.15	0.8268	**0.8287**	0.8327	20.50	**20.98**	21.00	0.8071	**0.8260**	0.8268
	–	1.5	21.33	**21.34**	21.43	0.8398	**0.8402**	0.8440	21.15	**21.29**	21.33	0.8327	**0.8382**	0.8398	21.15	**21.24**	21.33	0.8327	**0.8362**	0.8398
M24	3	–	22.50	**22.67**	22.77	0.8858	**0.8925**	0.8965	22.50	**22.57**	22.77	0.8858	**0.8886**	0.8965	22.44	**22.47**	22.50	0.8840	**0.8846**	0.8858
	–	2	23.10	**23.12**	23.30	0.9094	**0.9102**	0.9173	23.00	**23.05**	23.10	0.9055	**0.9075**	0.9094	22.77	**22.98**	23.00	0.8965	**0.9047**	0.9055
	–	1.5	23.30	**23.34**	23.42	0.9173	**0.9189**	0.9220	23.10	**23.29**	23.30	0.9094	**0.9169**	0.9173	23.10	**23.24**	23.30	0.9094	**0.9150**	0.9173

Pipe Taps

pipe tap size	NPT and NPTF		NPSM	NPSC	NPSF
	without reamer	with reamer			
1/16-27	0.2420	0.2344	–	0.2500	0.2460
1/8-27	0.3320	0.3281	0.3580	0.3320	0.3390
1/4-18	0.4375	0.4219	0.4688	0.4375	0.4375
3/8-18	0.5625	0.5625	0.6030	0.5781	0.5781
1/2-14	0.7031	0.6875	0.7480	0.7087	0.7087
3/4-14	0.9063	0.8906	0.9531	0.9219	0.9219
1-11 1/2	1.1406	1.1250	1.2031	1.1563	1.1563
1 1/4-11 1/2	1.4844	1.4688	1.5460	1.5000	–
1 1/2-11 1/2	1.7188	1.7031	1.7813	1.7344	–
2-11 1/2	2.1875	2.1719	2.2500	2.2031	–

Through Holes Push Chips



Spiral Point



LHSF



- Spiral point or LHSF (Left-Hand Spiral Flute).
- Ideal for materials with long chips.

Blind Holes Pull Chips



RHSF



- RHSF (Right-Hand Spiral Flute).
- Ideal for materials with long chips.

Blind or Through Holes Store Chips



STFL



- STFL (Straight Flute).
- Ideal for materials with short chips.

Blind or Through Holes No Chips



Forming Tap



- Forming.
- Ideal for ductile materials <32 HRC.

Unified Inch Screw Threads

thread size/pitch	recommended tap limits[1] class 2B	recommended tap limits[1] class 3B	internal thread pitch diameter limits min all classes (Basic)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
0 - 80	H2	H2	0.0519	0.0542	0.0536
1 - 64	H2	H2	0.0629	0.0655	0.0648
1 - 72	H2	H2	0.0640	0.0665	0.0659
2 - 56	H2	H2	0.0744	0.0772	0.0765
2 - 64	H2	H2	0.0759	0.0786	0.0779
3 - 48	H3	H2	0.0855	0.0885	0.0877
3 - 56	H2	H2	0.0874	0.0902	0.0895
4 - 40	H3	H2	0.0958	0.0991	0.0982
4 - 48	H3	H2	0.0985	0.1016	0.1008
5 - 40	H3	H2	0.1088	0.1121	0.1113
5 - 44	H3	H2	0.1102	0.1134	0.1126
6 - 32	H3	H2	0.1177	0.1214	0.1204
6 - 40	H3	H2	0.1218	0.1252	0.1243
8 - 32	H3	H3	0.1437	0.1475	0.1465
8 - 36	H3	H3	0.1460	0.1496	0.1487
10 - 24	H3	H3	0.1629	0.1672	0.1661
10 - 32	H3	H3	0.1697	0.1736	0.1726
12 - 24	H3	H3	0.1889	0.1933	0.1922
12 - 28	H3	H3	0.1928	0.1970	0.1959
1/4 - 20	H5	H3	0.2175	0.2224	0.2211
1/4 - 28	H4	H3	0.2268	0.2311	0.2300
5/16 - 18	H5	H3	0.2764	0.2817	0.2803
5/16 - 24	H4	H3	0.2854	0.2902	0.2890
3/8 - 16	H5	H3	0.3344	0.3401	0.3387
3/8 - 24	H4	H3	0.3479	0.3528	0.3516
7/16 - 14	H5	H3	0.3911	0.3972	0.3957
7/16 - 20	H5	H3	0.4050	0.4104	0.4091
1/2 - 13	H5	H4	0.4500	0.4565	0.4548
1/2 - 20	H5	H3	0.4675	0.4731	0.4717
9/16 - 12	H5	H4	0.5084	0.5152	0.5135
9/16 - 18	H5	H3	0.5264	0.5323	0.5308
5/8 - 11	H5	H4	0.5660	0.5732	0.5714
5/8 - 18	H5	H3	0.5889	0.5949	0.5934
3/4 - 10	H5	H4	0.6850	0.6927	0.6907

[1]Tap H limit selected for 3B will also produce thread to 2B.

(continued)

NOTE: The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the specified tap does not provide a satisfactory gage fit, choose an alternate tap limit.

Unified Inch Screw Threads *(continued)*

thread size/pitch	recommended tap limits[1] class 2B	recommended tap limits[1] class 3B	internal thread pitch diameter limits min all classes (Basic)	internal thread pitch diameter limits max class 2B	internal thread pitch diameter limits max class 3B
3/4 - 16	H5	H4	0.7094	0.7159	0.7143
7/8 - 9	H6	H4	0.8028	0.8110	0.8089
7/8 - 14	H6	H4	0.8286	0.8356	0.8339
1" - 8	H6	H5	0.9188	0.9276	0.9254
1" - 12	H6	H4	0.9459	0.9535	0.9516
1-1/8 - 7	H8	H6	1.0322	1.0416	1.0393
1-1/8 - 8	H8	H6	1.0438	1.0528	1.0505
1-1/8 - 12	H6	H5	1.0709	1.0787	1.0768
1-1/4 - 7	H8	H6	1.1572	1.1668	1.1644
1-1/4 - 8	H8	H6	1.1688	1.1780	1.1757
1-1/4 - 12	H6	H5	1.1959	1.2039	1.2019
1-3/8 - 6	H8	H6	1.2667	1.2771	1.2745
1-3/8 - 8	H8	H6	1.2938	1.3031	1.3008
1-3/8 - 12	H6	H5	1.3209	1.3291	1.3270
1-1/2 - 6	H8	H6	1.3917	1.4022	1.3996
1-1/2 - 8	H8	H6	1.4188	1.4283	1.4259
1-1/2 - 12	H6	H5	1.4459	1.4542	1.4522
1-3/4 - 5	H8	H7	1.6201	1.6317	1.6288
2 - 4 1/2	H8	H7	1.8557	1.8681	1.8650

[1]Tap H limit selected for 3B will also produce thread to 2B.

Tap Recommendations for Class 6H Metric Screw Threads

thread size nominal diameter (mm)	thread size pitch (mm)	recommended tap limit number	internal thread product limits — class 6H pitch diameter (mm) min	pitch diameter (mm) max	pitch diameter (in) min	pitch diameter (in) max
1,6	0,35	D3	1,373	1,458	.05406	.05740
2	0,4	D3	1,740	1,830	.06850	.07205
2,5	0,45	D3	2,208	2,303	.08693	.09067
3	0,5	D3	2,675	2,775	.10531	.10925
3,5	0,6	D4	3,110	3,222	.12244	.12685
4	0,7	D4	3,545	3,663	.13957	.14421
4,5	0,75	D4	4,013	4,131	.15789	.16264
5	0,8	D4	4,480	4,605	.17638	.18130
6	1	D5	5,350	5,500	.21063	.21654
7	1	D5	6,350	6,500	.25000	.25591
8	1,25	D5	7,188	7,348	.28299	.28929
10	1,5	D6	9,026	9,206	.35535	.36244
12	1,75	D6	10,863	11,063	.42768	.43555
14	2	D7	12,701	12,913	.50004	.50839
16	2	D7	14,701	14,913	.57878	.58713
20	2,5	D7	18,376	18,600	.72346	.73228
24	3	D8	22,051	22,316	.86815	.87858
30	3,5	D9	27,727	28,007	1.09161	1.10264
36	4	D9	33,402	33,702	1.31504	1.32685

In addition to the nominal size and pitch of a tap, there is another important dimensional factor to be considered when selecting a ground thread tap for a given job. This factor is the pitch diameter tap limit, "H" and "L". "H" represents (high) above basic pitch diameter; "L" (low) is below basic pitch diameter. Tap limits have been established to provide a choice in the selection of the tap size best suited to produce the class of thread desired.

Figure 1 Illustrates the numbering system and the .0005" diameter increment separation between successive limits. Because the starting point is basic pitch diameter, dividing the limit number by two establishes, in thousandths of an inch, the amount the maximum tap pitch diameter is above basic in the "H" series and the amount the minimum tap pitch diameter is under basic in the "L" series.

Figure 2 Illustrates the positioning of the tap limits in relation to the various classes of threads for a 1/4–20 size.

Figure 1

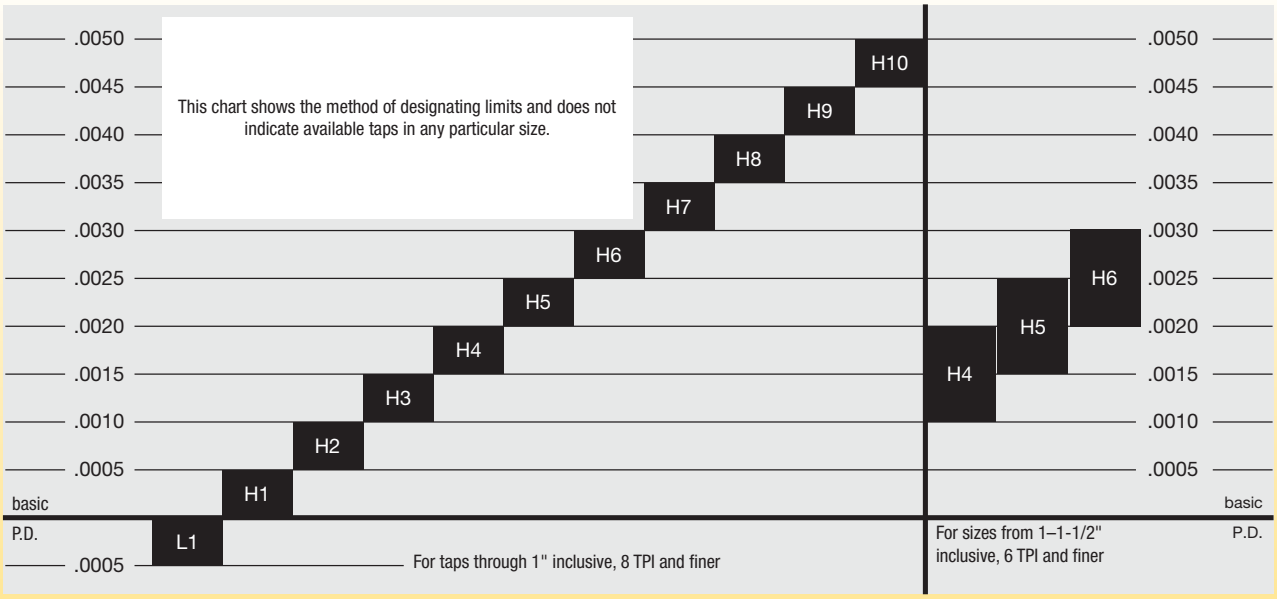
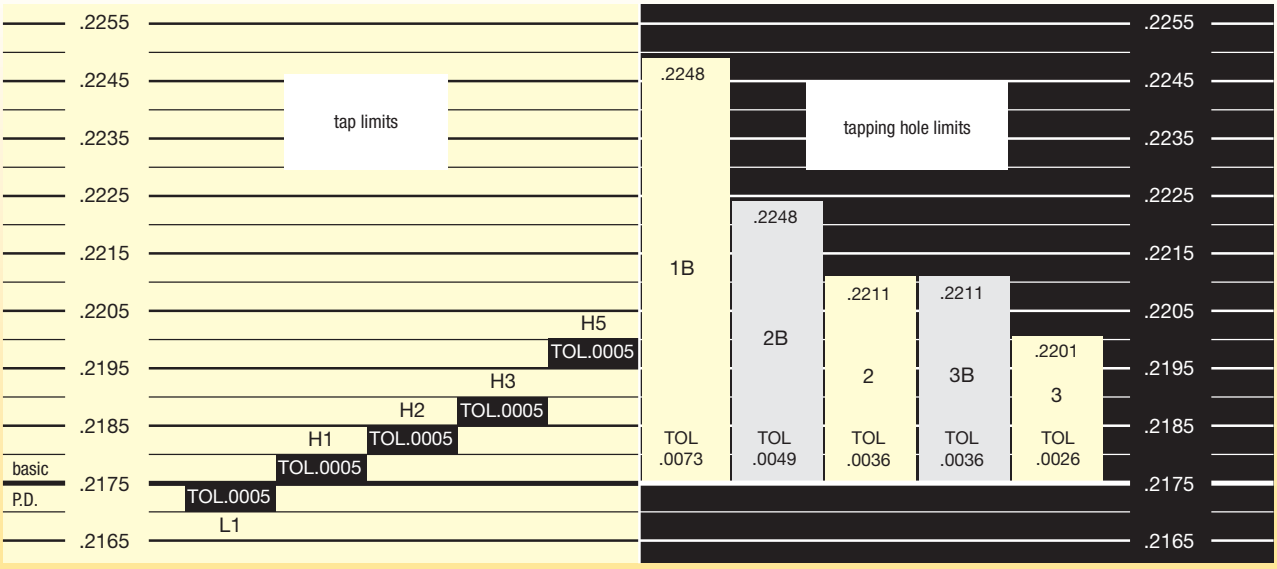
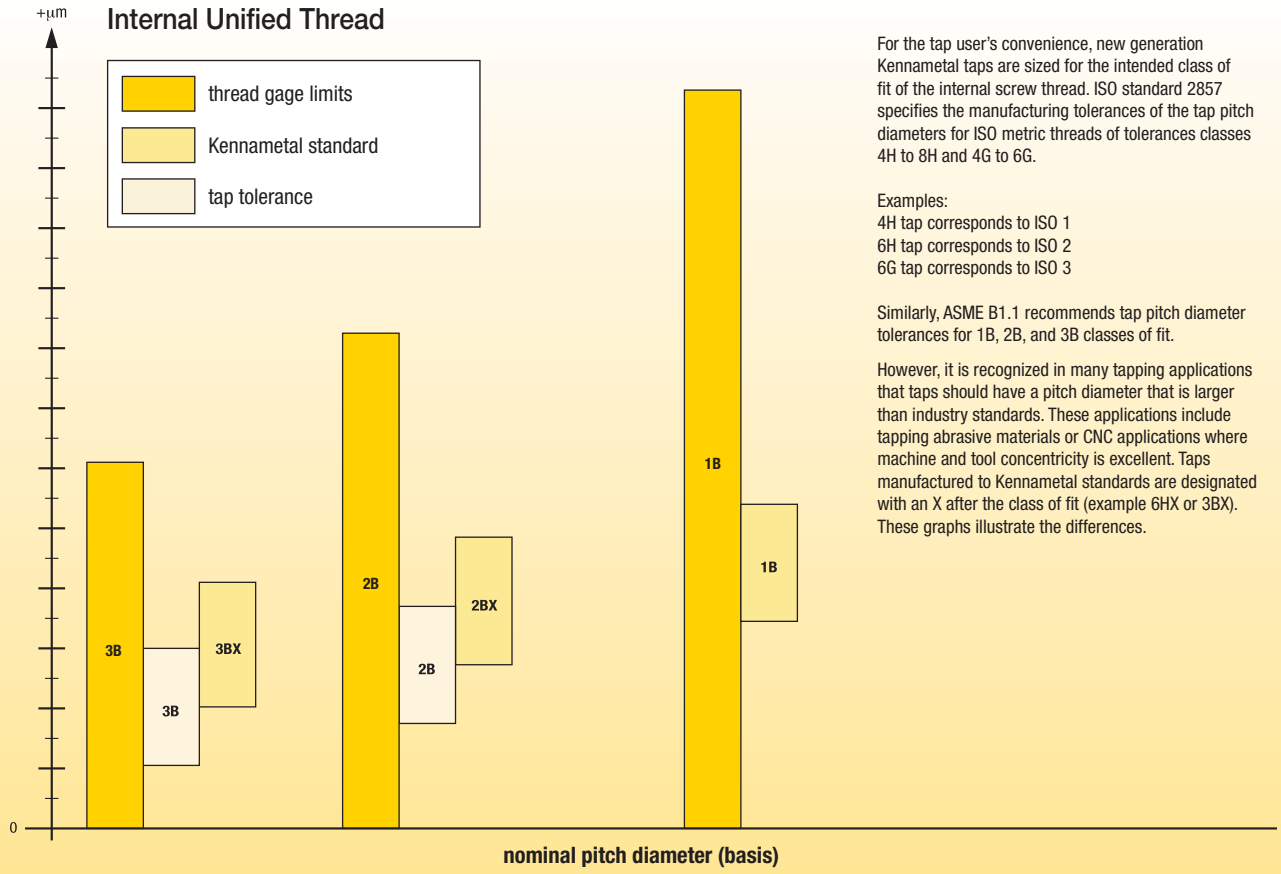


Figure 2

Class of Thread – 1/4–20 UNC and NC



Internal Unified Thread



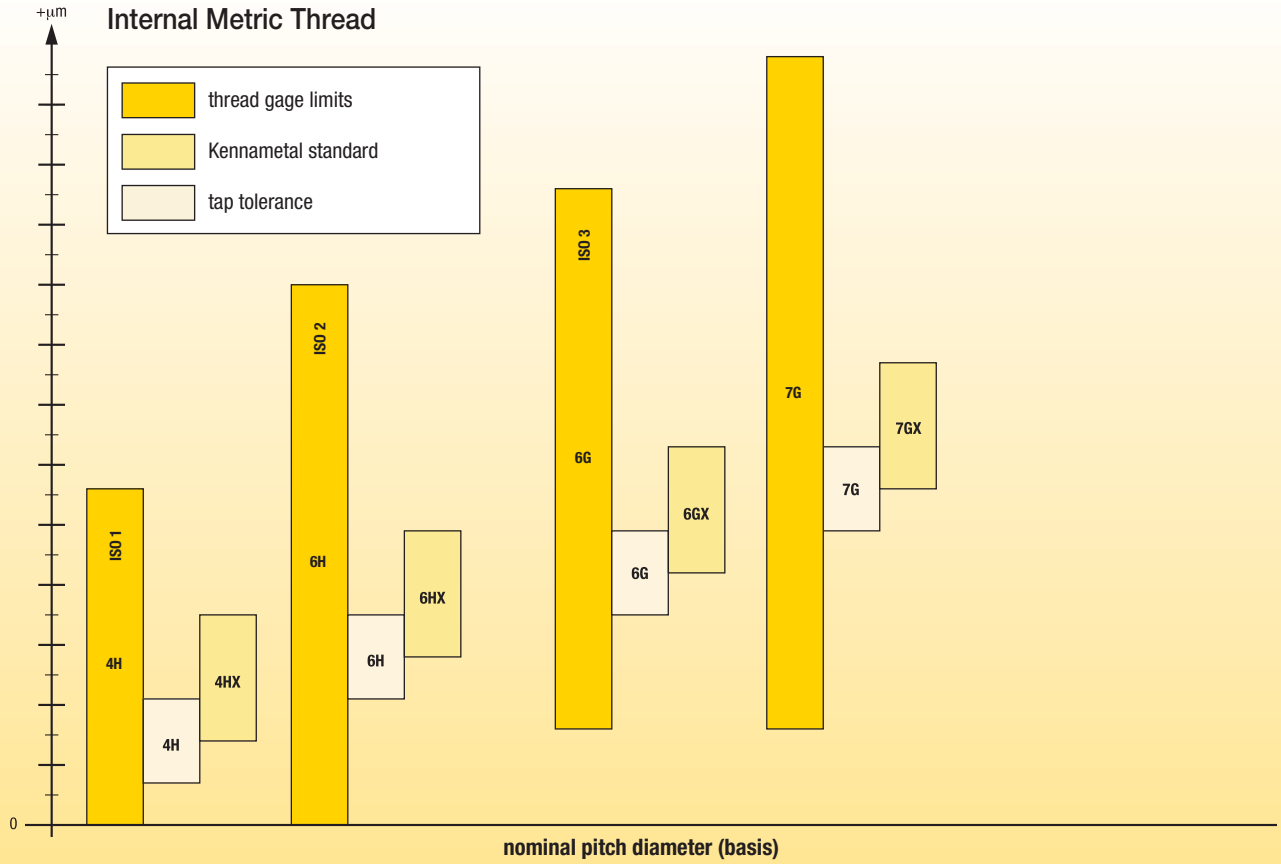
For the tap user's convenience, new generation Kennametal taps are sized for the intended class of fit of the internal screw thread. ISO standard 2857 specifies the manufacturing tolerances of the tap pitch diameters for ISO metric threads of tolerances classes 4H to 8H and 4G to 6G.

Examples:
4H tap corresponds to ISO 1
6H tap corresponds to ISO 2
6G tap corresponds to ISO 3

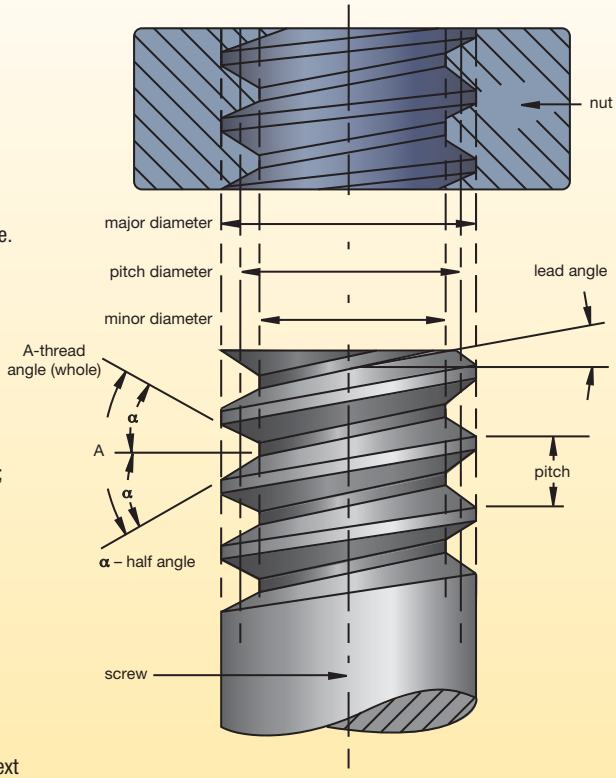
Similarly, ASME B1.1 recommends tap pitch diameter tolerances for 1B, 2B, and 3B classes of fit.

However, it is recognized in many tapping applications that taps should have a pitch diameter that is larger than industry standards. These applications include tapping abrasive materials or CNC applications where machine and tool concentricity is excellent. Taps manufactured to Kennametal standards are designated with an X after the class of fit (example 6HX or 3BX). These graphs illustrate the differences.

Internal Metric Thread



It is generally recognized that, in mass production, it is impossible to reproduce in exact detail the theoretically perfect product as laid out on the drawing board. The allowed slight variation between the theoretically perfect product drawing and each unit of the actual product is called the tolerance.



Allowance

An intentional difference in correlated dimensions of mating parts. It is the minimum clearance or maximum interference between such parts.

Angle of Thread

The angle included between the flanks of the thread measured in an axial plane.

Half Angle of Thread

The angle included between a flank of the thread and the normal (90°) to the axis, measured in an axial plane.

Lead of Thread

The distance a screw thread advances axially in one turn. On a single-thread screw, the lead and pitch are identical. On a double thread, the lead is 2x pitch; on a triple thread, the lead is 3x pitch, etc.

Major Diameter

The largest diameter of a straight-screw thread.

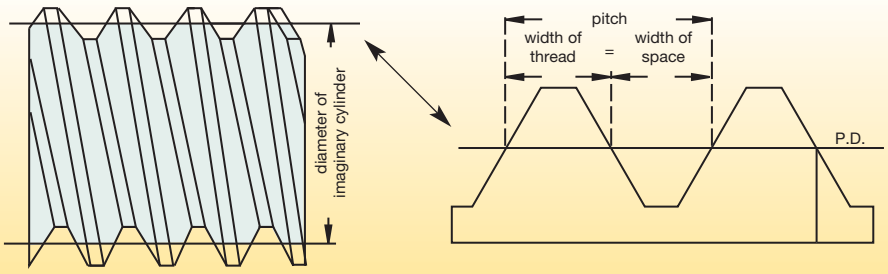
Minor Diameter

The smallest diameter of a straight-screw thread.

Pitch

The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the axis.

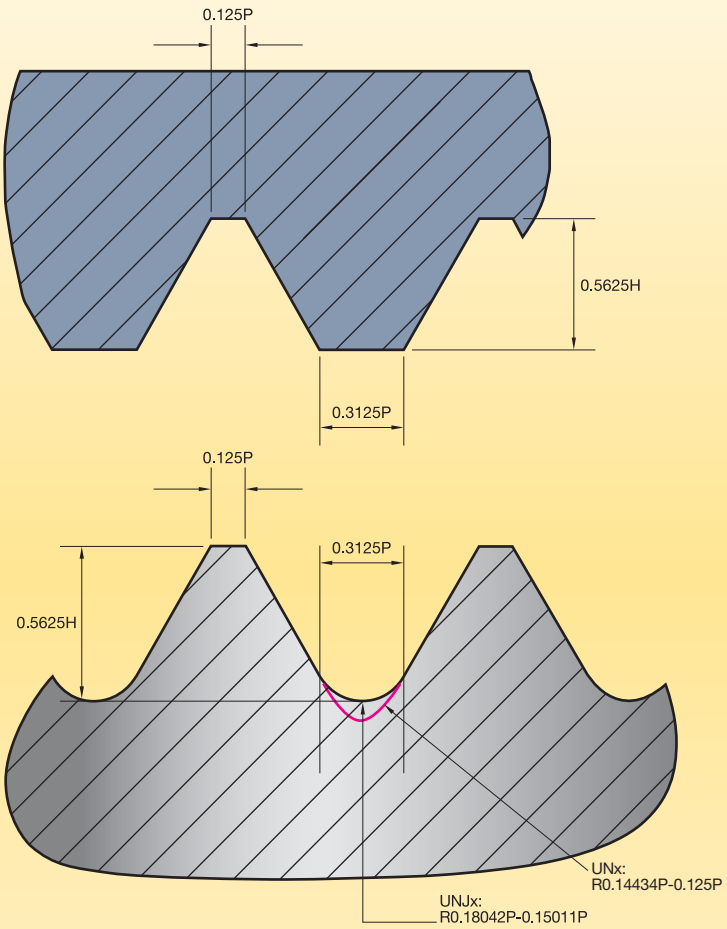
The pitch in inches = $\frac{1}{\text{number of threads per inch}}$



Pitch Diameter

On a straight-screw thread, the diameter of an imaginary cylinder that would pass through the threads at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.

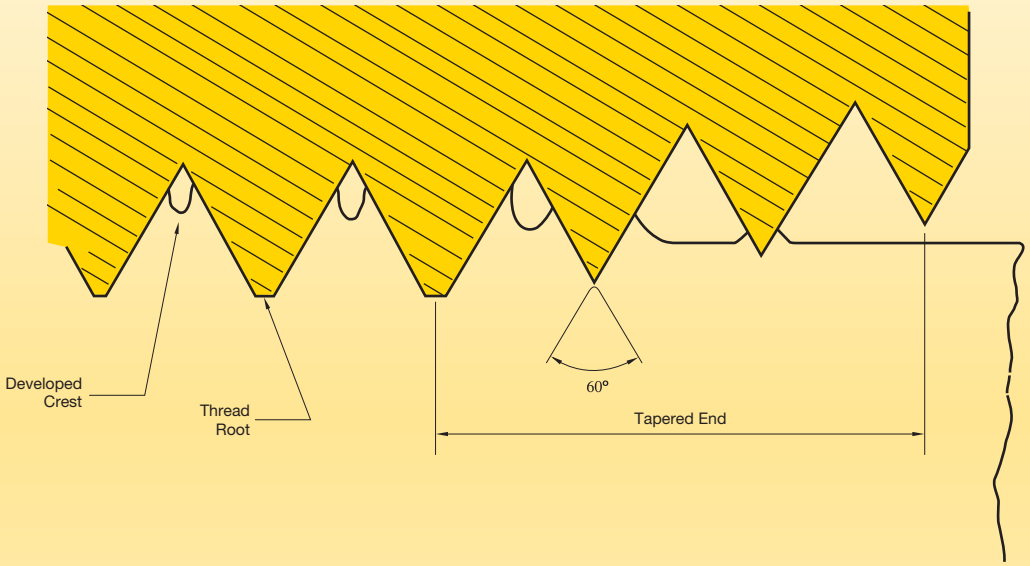
A thread system is available for aerospace and other applications where high fatigue strength is required. The UNJ thread form is defined by ASME B1.15 and is similar to Military Specification MIL-S-8879. Screw thread assemblies consist of external and internal threads. In order to minimize the stress on the external UNJ thread, a controlled root radius is required that is equal to 0.15011P to 0.18042P, where P is the thread pitch. Internal UNJ threads are not required to have a radius at either the major or minor diameters.



Because external UNJ threads must be produced with a defined root radius, standard UN tooling may not be used. However, internal UNF threads may be produced with ground thread UN taps sized to produce the proper class of fit. The tap does not need to be marked with a letter J. Attention must be paid to the tap drill since the minor diameter has to be specified so as to provide clearance with the root radius on the external thread.

For UNJ thread specifications, the reader is referred to ASME B1.15. Please note this standard includes Class 3 and Class 2 UNJ screw threads. However, only Class 3 UNJ threads meet the requirements of Military Specification MIL-S-8879. For Unified Inch (UN) thread specifications, refer to ASME B1.1.

Unlike cutting taps, which remove material, forming taps generate an internal screw thread by displacing material and forming it into the V-shaped thread. A common misconception is that a thread rolling action occurs. Instead, the threads are formed over the tapered entry section of the tap as the tap rotates into the hole. A succession of deeper penetrating lobes over the entry plastically displaces material radially between the tap's thread flanks until the entry length is reached. At this point, the thread is fully formed at the correct thread height.



Forming taps have numerous advantages over cutting taps. The most obvious advantage is that forming taps do not create chips. There are no chip removal problems. Bird nesting is a situation that occurs when chips wrap around the shank of spiral-fluted taps when tapping blind holes in long chipping materials. Forming taps help this to be avoided. Since forming taps avoid this problem, they are stronger and more resistant to breakage. Another misconception is that forming taps produce stronger threads. Although the forming process strain hardens the thread flanks, it has very little effect on the major diameter, the location where internal threads strip.

Forming taps can only be used in ductile materials. Due to increased friction relative to cutting, forming taps require higher torque than cutting taps. In some situations, oil-based lubrications are required, and this might not be convenient on CNC machining centers that use water soluble coolant. In this situation, the lubricant concentration should be increased.

Since forming taps displace material, larger diameter pre-tap holes are required. This is especially important when converting from cutting taps to forming taps. If a cutting tap hole size is used, the displaced material will over-fill the tap's threads and breakage will result. Please consult hole size charts for forming taps.

coating	properties and application	precautions
Titanium Nitride (TiN)	Proprietary TiN coating (hardness 2300 Vickers) offers significantly improved wear life and thread finish, often at higher tapping speeds, in a broad range of materials, especially steels, irons, and plastics. Golden color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall.
Titanium Carbonitride (TiCN)	Proprietary TiCN coating (hardness 3000 Vickers) is harder, tougher, and more wear resistant than TiN under conditions of moderate cutting temperatures. Like TiN, TiCN may be used at higher cutting speeds in a broad range of materials, especially steels and irons. Blue-gray color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall. TiAlN is a better choice when used at extreme temperatures.
Titanium Nitride + Chromium Carbide Carbon (TiN + CrC/C)	Proprietary coating (hardness 2300 Vickers) that combines the wear resistance of smooth TiN coating with a lubricous top layer of chromium carbide carbon. Effective in stainless steel and non-ferrous materials including aluminum and titanium. Ideal choice for 300 series stainless steels, wrought, and die cast aluminums. Black/gray color.	Effective in both ferrous and non-ferrous materials.
Titanium Aluminum Nitride (TiAlN)	Nanolayer TiAlN coating (hardness 3300 Vickers) offers improved wear life and thread finish, especially in conditions where high temperatures can be generated. Use for PH stainless steels and nickel-based alloys like INCONEL®. Violet/gray color.	Use with caution in non-ferrous materials because of tendency to gall.
Chromium Nitride (CrN)	CrN is medium hard (hardness 1800 Vickers) and has a lower wear resistance than TiN, TiCN, and TiAlN. However, unlike these coatings, CrN does not gall when used in some non-ferrous work materials. Use for brass, bronze, zinc alloys, and magnesium alloys. Silver color.	Ineffective in ferrous materials.
Nitride	Hardened case extends wear life in abrasive materials. Use for aluminum and other non-ferrous materials.	Avoid on taper pipe, fast spiral, and small diameter (<#6) or fine pitch taps due to tendency for thread chipping.
Oxide	Helps prevent galling in ferrous (iron-based) materials. For free machining steel. Use for steels, stainless steels, and irons.	Has a tendency to cause galling in non-ferrous materials such as aluminum.
Nitride and Oxide	Combines the benefits of nitride and oxide surface treatments. For steels, stainless steels, and nickel alloys.	See precautions for nitride and oxide surface treatments.

Factors when trying to determine the best tapping speeds:

- Material to be tapped
- Length of chamfer on tap
- Percentage of full thread to be cut
- Length of hole (depth of thread)
- Pitch of thread
- Cutting fluids
- Machine equipment
- Horizontal or vertical tapping

The best and most efficient operating speeds for taps cannot be calculated with the same certainty, as for many other metalcutting tools.

With other tools, the feed per revolution can be set at any desired point and can be varied as conditions demand. Taps, on the other hand, must always be advanced at a rate equal to one pitch for every revolution. The style of tap may vary the conditions.

For example, with a bottoming tap, the first thread on each land cuts the full height of thread, while, with a taper or starting tap, a number of threads do their share of the cutting before the full height of thread is reached.

The depth of thread also varies, depending on the pitch. The coarser the thread, the greater the advance of the tap per revolution and the greater the amount of material removed.

The method of feeding the tap, and the type of equipment for driving, also influences the permissible speeds. If taps are mechanically fed at the proper rate of advance, they can be operated at higher speeds than if they are required to feed themselves and pull some part of the machine along with them.

Speeds may be modified to take into account any or all of these factors:

- Speeds must be lowered as length of thread increases because, in deep thread holes, the accumulated chips increase friction and interfere with lubrication.
- Bottoming taps must be run slower than plug taps.
- Tapping full height of thread calls for slower speed than if the commercial 75% height only is required.
- Coarse-thread taps in the larger diameters should be run more slowly than fine-thread taps of the same diameters.
- The quantity and quality of cutting fluid may affect the permissible speeds as much as 100%.
- Taper threaded taps, such as pipe taps, should be operated from 1/2–3/4 the speed of a straight thread tap of comparable major diameter.

RPM Formulas

SFM = Surface Feet per Minute
RPM = Revolutions per Minute
IPM = Inches per Minute
TPI = Threads per Inch

S m/min = Surface Meters per Minute
$\pi = 3.1416$
mm/min = millimeters per minute
P = Pitch (1/number of threads per inch)

Inch Sizes

SFM	=	$\frac{\text{RPM x tool diameter}}{3.82}$	or	0.26 x RPM x tool diameter
RPM	=	$\frac{3.82 \text{ x SFM}}{\text{tool diameter}}$		
IPM	=	$\frac{\text{RPM}}{\text{TPI*}}$	or	*P x RPM

Metric Sizes

S m/min	=	$\frac{\pi \text{ x tool diameter x RPM}}{1000}$
RPM	=	$\frac{\text{mm/min x 1000}}{\pi \text{ x tool diameter}}$
mm/min	=	mm P x RPM

UNC/UNF and NPT/NPTF

tap size	taper pipe taps	surface feet per minute (SFM) 5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		revolutions per minute (RPM)																	
0	–	318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
1	–	273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	1849
2	–	212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3	–	191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
4	–	174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5115
5	–	147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6	–	136	273	409	553	691	829	1106	1382	1859	1935	2212	2488	2766	3042	3318	3595	3871	4148
8	–	119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
10	–	101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
12	–	87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	–	76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	–	62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	–	50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	1/8	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	–	38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	1/4	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8	–	32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	3/8	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4	–	25	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	1/2	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	–	19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1-1/8	3/4	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1-1/4	–	15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1-3/8	1	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1-1/2	–	13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
1-5/8	–	12	23	35	47	59	71	94	118	141	165	188	212	235	259	282	306	329	353
1-3/4	–	11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1-7/8	–	10	20	30	41	51	61	81	102	122	143	163	183	204	224	244	265	285	306
2	–	9	19	29	38	48	57	76	96	115	134	153	172	191	210	229	248	267	287

Metric

metric taps	vc = meters per minute (m/min) 1,5	3	4,5	6	7,5	10	12	15	18	21	24	27	30	33	36	39	42	45
	revolutions per minute (RPM)																	
M1	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M2	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M3	162	324	486	347	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	1491	2768	3045	3322	3599	3875	4152
M4	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M5	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2905
M6	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M7	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M8	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M10	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M12	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M14	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M16	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M18	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M20	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M22	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M24	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M27	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M30	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

Partial List of Solutions to Tapping Problems

application	symptom	common cause	remedy
general	gage out of limits	tap size and gage mismatch	select tap size for gage
	oversize thread	alignment, spindle feed	correct
	oversize at top	runout or alignment	correct
	go gage binds part way	worn tool, tap cuts off lead	replace tap, synchronous holder
	thread shaving	feed error, high axial force	program, synchronous holder
	chipping	high cutting force, worn tap	tap geometry, replace tap
	breakage	chip jamming flutes	tap geometry, tapping depth
	–	worn tool, high torque	replace tap with new tool
	short life, low speed	excessive wear	SC or HSS-E-PM HP taps
steel	birdnest blind hole	long, ductile chips	T630 KP6505 (oxide), peck feed
	chipping	high material hardness	T600, T602 KSP21 (TiN)
	breakage in blind holes	hole depth >2D, chip jamming	T604 KHS26 (TiN/MoS_2)
stainless steel	oversize thread, low life	galling	T620, T630 KM6515 (TiN-CrC/C)
	short life	work hardened core hole	replace drill
cast iron	excessive wear	abrasion	T640 KP6525 (TiCN)
aluminum, cast	excessive wear	high silicon	T640 KP6525 (TiCN)
aluminum, wrought	oversize thread	galling	T672, T682, T686 KSMN34 (TiN-CrC/C)
nickel, cobalt alloys	short life	high cutting temperature	T690, T692, T694 KSP27 (AlCrTiN)
titanium	short life	high cutting temperature	T660, T662 KSSM24 (TiN-CrC/C)

Thread Mills

	vibration marks	major crest wear	edge chipping	cone-shaped thread	entry marks
cutting speed	check	reduce	–	–	–
feed per tooth	check	increase	reduce	–	–
workpiece clamping	improve	improve	improve	–	improve
machine tool stability	improve	improve	improve	–	improve
cantilever arm	shorten	shorten	–	–	shorten
helix angle	increase	reduce	–	–	–
radial runout	check	check	–	–	–
coating	–	improve	improve	–	–
milling operation	–	climb mill	climb mill	climb mill	–
line feed/entry ramp	check	check	–	–	improve
coolant pressure	–	check (>20 bar, 290 psi)	check (>20 bar, 290 psi)	–	–

drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)	drill size	decimal (in)
0,30mm	.0118	54	.0550	3,10mm	.1220	5,50mm	.2165	8,50mm	.3346	9/16	.5625
0,32mm	.0126	1,40mm	.0551	1/18	.1250	7/32	.2188	8,60mm	.3386	14,50mm	.5709
80	.0135	1,45mm	.0571	3,20mm	.1260	5,60mm	.2205	R	.3390	37/64	.5781
0,35mm	.0138	1,50mm	.0591	30	.1285	2	.2210	8,70mm	.3425	14,75mm	.5807
79	.0145	53	.0595	3,30mm	.1299	5,70mm	.2244	11/32	.3438	15,00mm	.5906
0,38mm	.0150	1,55mm	.0610	3,40mm	.1339	1	.2280	8,80mm	.3465	19/32	.5938
1/64	.0156	1/16	.0625	29	.1360	5,80mm	.2283	S	.3480	15,25mm	.6004
0,40mm	.0157	1,60mm	.0630	3,50mm	.1378	5,90mm	.2323	8,90mm	.3504	39/64	.6094
78	.0160	52	.0635	28	.1405	A	.2340	9,00mm	.3543	15,50mm	.6102
0,42mm	.0165	1,65mm	.0650	9/64	.1406	15/64	.2344	T	.3580	15,75mm	.6201
0,45mm	.0177	1,70mm	.0669	3,60mm	.1417	6,00mm	.2362	9,10mm	.3583	5/8	.6250
77	.0180	51	.0670	27	.1440	B	.2380	23/64	.3594	16,00mm	.6299
0,48mm	.0189	1,75mm	.0689	3,70mm	.1457	6,10mm	.2402	9,20mm	.3622	16,25mm	.6398
0,50mm	.0197	50	.0700	26	.1470	C	.2420	9,30mm	.3661	41/64	.6406
76	.0200	1,80mm	.0709	25	.1495	6,20mm	.2441	U	.3680	16,50mm	.6496
75	.0210	1,85mm	.0728	3,80mm	.1496	D	.2460	9,40mm	.3701	21/32	.6562
0,55mm	.0217	49	.0730	24	.1520	6,30mm	.2480	9,50mm	.3740	16,75mm	.6594
74	.0225	1,90mm	.0748	3,90mm	.1535	1/4, E	.2500	3/8	.3750	17,00mm	.6693
0,60mm	.0236	48	.0760	23	.1540	6,40mm	.2520	V	.3770	43/64	.6719
73	.0240	1,95mm	.0768	5/32	.1562	6,50mm	.2559	9,60mm	.3780	17,25mm	.6791
0,62mm	.0244	5/64	.0781	22	.1570	F	.2570	9,70mm	.3819	11/16	.6875
72	.0250	47	.0785	4,00mm	.1575	6,60mm	.2598	9,80mm	.3858	17,50mm	.6890
0,65mm	.0256	2,00mm	.0787	21	.1590	G	.2610	W	.3860	45/64	.7031
71	.0260	2,05mm	.0807	20	.1610	6,70mm	.2638	9,90mm	.3898	18,00mm	.7087
0,70mm	.0276	46	.0810	4,10mm	.1614	17/64	.2656	25/64	.3906	23/32	.7188
70	.0280	45	.0820	4,20mm	.1654	H	.2660	10,00mm	.3937	18,50mm	.7283
69	.0292	2,10mm	.0827	19	.1660	6,80mm	.2677	X	.3970	47/64	.7344
0,75mm	.0295	2,15mm	.0846	4,30mm	.1693	6,90mm	.2717	10,20mm	.4016	19,00mm	.7480
68	.0310	44	.0860	18	.1695	I	.2720	Y	.4040	3/4	.7500
1/32	.0312	2,20mm	.0866	11/64	.1719	7,00mm	.2756	13/32	.4062	49/64	.7656
0,80mm	.0315	2,25mm	.0886	17	.1730	J	.2770	Z	.4130	19,50mm	.7677
67	.0320	43	.0890	4,40mm	.1732	7,10mm	.2795	10,50mm	.4134	25/32	.7812
66	.0330	2,30mm	.0906	16	.1770	K	.2810	27/64	.4219	20,00mm	.7874
0,85mm	.0335	2,35mm	.0925	4,50mm	.1772	9/32	.2812	10,80mm	.4252	51/64	.7969
65	.0350	42	.0935	15	.1800	7,20mm	.2835	11,00mm	.4331	20,50mm	.8071
0,90mm	.0354	3/32	.0938	4,60mm	.1811	7,30mm	.2874	7/16	.4375	13/16	.8125
64	.0360	2,40mm	.0945	14	.1820	L	.2900	11,20mm	.4409	21,00mm	.8268
63	.0370	41	.0960	4,70mm, 13	.1850	7,40mm	.2913	11,50mm	.4528	53/64	.8281
0,95mm	.0374	2,45mm	.0965	3/16	.1875	M	.2950	29/64	.4531	27/32	.8438
62	.0380	40	.0980	4,80mm, 12	.1890	7,50mm	.2953	11,80mm	.4646	21,50mm	.8465
61	.0390	2,50mm	.0984	11	.1910	19/64	.2969	15/32	.4688	55/64	.8594
1,00mm	.0394	39	.0995	4,90mm	.1929	7,60mm	.2992	12,00mm	.4724	22,00mm	.8661
60	.0400	38	.1015	10	.1935	N	.3020	12,20mm	.4803	7/8	.8750
59	.0410	2,60mm	.1024	9	.1960	7,70mm	.3031	31/64	.4844	22,50mm	.8858
1,05mm	.0413	37	.1040	5,00mm	.1969	7,80mm	.3071	12,50mm	.4921	57/64	.8906
58	.0420	2,70mm	.1063	8	.1990	7,90mm	.3110	1/2	.5000	23,00mm	.9055
57	.0430	36	.1065	5,10mm	.2008	5/16	.3125	12,80mm	.5039	29/32	.9062
1,10mm	.0433	7/64	.1094	7	.2010	8,00mm	.3150	13,00mm	.5118	59/64	.9219
1,15mm	.0453	35	.1100	13/64	.2031	O	.3160	33/64	.5156	23,50mm	.9252
56	.0465	2,80mm	.1102	6	.2040	8,10mm	.3189	13,20mm	.5197	15/16	.9375
3/64	.0469	34	.1110	5,20mm	.2047	8,20mm	.3228	17/32	.5312	24,00mm	.9449
1,20mm	.0472	33	.1130	5	.2055	P	.3230	13,50mm	.5315	61/64	.9531
1,25mm	.0492	2,90mm	.1142	5,30mm	.2087	8,30mm	.3268	13,80mm	.5433	24,50mm	.9646
1,30mm	.0512	32	.1160	4	.2090	21/64	.3281	35/64	.5469	31/32	.9688
55	.0520	3,00mm	.1181	5,40mm	.2126	8,40mm	.3307	14,00mm	.5512	25,00mm	.9843
1,35mm	.0531	31	.1200	3	.2130	Q	.3320	14,25mm	.5610	63/64	.9844
–	–	–	–	–	–	–	–	–	–	1"	1.0000

Metric Fractional Wire gage Letter size

Tap Custom-Order Worksheet

Use this Custom-Order Worksheet to modify an existing product to meet your specifications. If your custom requirements do not fall into these categories, simply contact your Kennametal Distributor.

Trust our experienced distributors and Kennametal engineering team to design the best solution for you.

1. Start with the standard product most similar to your specifications:

catalog number _____ **grade/coating** _____

2. Type of tap needed:

❑ solid carbide ❑ high-performance HSS ❑ general purpose ❑ spiral point

❑ hand ❑ forming ❑ spiral flute

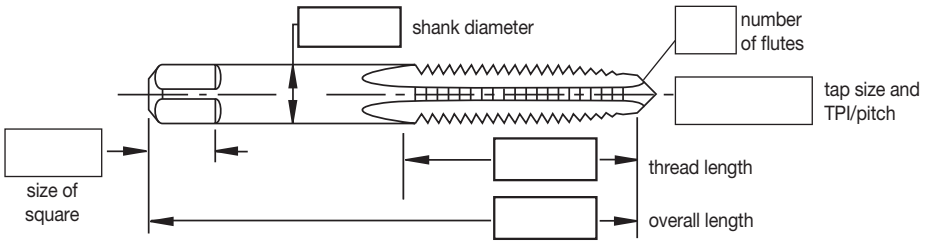
_____ pipe (and style) _____ other

3. Direction of cut (circle one)**:** left hand right hand

4. Material overview:

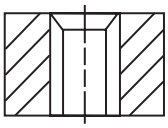
❑ ANSI ❑ DIN ❑ JIS ❑ other

5. Desired dimension:

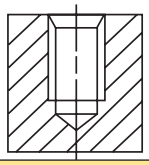


6. Choose one:

through hole:
hole diameter _____
hole depth _____



blind hole:
hole diameter _____
hole depth _____



7. Chamfer:

❑ taper: 7–10 pitch ❑ plug: 3–5 pitch ❑ semi-bottom: 2–3 pitch ❑ bottom: 1–2 pitch



8. Class of fit: **H limit** _____ **metric D limit** _____ **diameter pitch limit** _____

9. Workpiece material: _____

10. Hardness: _____

11. Number of taps required: _____

12. Price

Contact your Authorized Kennametal Distributor partners.

13. Other comments or special characteristics:

customer company name	**date**
address	**phone number**
city, state, zip	**fax number**
customer contact	**customer email address**
sales representative	

Application Sheet for Thread Milling

Test form thread data:			**Date:**		
Customer Data					
Company:			**Department:**		
Street:			**Position:**		
Postal code:			**Telephone:**		
City:			**Fax:**		
Country:			**E-mail:**		
Tool Data					
Engaged Kennametal tool:			**Tool life:**		
Competitive tool:					
Workpiece Data					
Thread size:			**Name of workpiece:**		
Class of fit:			**Picture, sketch...**		
Thread depth:		mm			
Thread type:	❑ Through hole	❑ Blind hole			
Drill hole ø:		mm			
Depth of drill hole:		mm			
Type of drilled hole:	❑ Drilled	❑ No hole			
Material:					
Hardness:					
Machine Data					
Manufacturer:			**Description:**		
CNC-machine type:	❑ Turning machine	❑ Milling machine	**Working direction:**	❑ Horizontal	❑ Vertical
Control type:	❑ DIN	❑ Heidenhain	**Coolant:**	❑ Emulsion	❑ MQL
				❑ Compressed air	❑ Dry
Coolant supply type:	❑ Internal	❑ External	**Coolant pressure:**		Bar
Revolutions max:		❑ 1/min	**Spindle power:**		kW
Clamping device:	❑ Weldon®	❑ Collet			
	❑ Shrinking	❑ Hydraulic expansion			
Cutting Conditions					
Cutting speed vc:		m/min	**Revolutions:**		1/min
Feed fz:		mm/tooth	**Programmed feed:**		mm/min
Milling direction:	❑ Climb milling	❑ Down milling	**Type of feed:**	❑ Feed on contour	❑ Feed on center
Allocated cut over depth of thread:	❑ Yes	❑ No	**Allocated cut over profile:**	❑ By depth of profile	❑ By thread depth
Number of cuts:			**Number of cuts:**		

Knowing the hardness of the work material to be tapped is essential in selecting the best tap for the job.

10 mm/min ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.	10 mm/min ball 3000 kg	120° cone 150 kg	1/16" ball 100 kg	model C	1000 lb per sq. in.
Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength	Brinell	Rockwell C	Rockwell B	Shore Scleroscope	tensile strength
800	72	–	100	–	276	30	105	42	136
780	71	–	99	–	269	29	104	41	132
760	70	–	98	–	261	28	103	40	129
745	68	–	97	367	258	27	102	39	127
725	67	–	96	357	255	26	102	39	125
712	66	–	95	350	249	25	101	38	123
682	65	–	93	337	245	24	100	37	119
668	64	–	91	326	240	23	99	36	117
652	63	–	89	318	237	23	99	35	115
626	62	–	87	306	229	22	98	34	113
614	61	–	85	299	224	21	97	33	110
601	60	–	83	292	217	20	96	33	107
590	59	–	81	290	211	19	95	32	104
576	57	–	79	281	206	18	94	32	102
552	56	–	76	270	203	17	94	31	100
545	55	–	75	268	200	16	93	31	98
529	54	–	74	259	196	15	92	30	96
514	53	120	72	254	191	14	92	30	94
502	52	119	70	247	187	13	91	29	92
495	51	119	69	244	185	12	91	29	91
477	49	118	67	233	183	11	90	28	90
461	48	117	66	227	180	10	89	28	89
451	47	117	65	223	175	9	88	27	86
444	46	116	64	219	170	7	87	27	84
427	46	115	62	209	167	6	87	27	82
415	44	115	60	204	165	5	86	26	81
401	43	114	58	196	163	4	85	26	80
388	42	114	57	191	160	3	84	25	78
375	41	113	55	184	156	2	83	25	76
370	40	112	54	182	154	1	82	25	75
362	39	111	53	179	152	–	82	24	74
351	38	111	51	173	150	–	81	24	74
346	37	110	50	170	147	–	80	24	72
341	37	110	49	168	145	–	79	23	71
331	36	109	47	163	143	–	79	23	70
323	35	109	46	158	141	–	78	23	69
311	34	108	46	153	140	–	77	22	69
301	33	107	45	148	135	–	75	22	67
293	32	106	44	144	130	–	72	22	65
285	31	105	43	140	–	–	–	–	–

High-Performance Multipurpose HSS-E GOtap™



GOtap is the solution for high-performance multipurpose tapping. GOtap includes optimized flute geometries and PVD coatings capable of tapping a broad assortment of ductile materials, such as stainless steels, carbon and alloy steels, cast aluminum, and ductile iron. The unmatched versatility of GOtap means lower inventory costs with no loss of productivity, consistent tool life, and high-quality thread finish.

ADVANCED TECHNOLOGY

- Manufactured with high-vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Optimized geometries for efficient chip evacuation in both through and blind holes.
- Advanced PVD coatings to reduce tapping torque resulting in high-quality thread finish and longer tool life.

Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com



Solid End Milling

Solid End Milling Introduction N2–N3

Duo-Lock Modular Milling O1–O57

High-Performance Solid Carbide End Mills P1–P171

General Purpose Solid Carbide End Mills Q1–Q47



Solid End Milling Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorized Kennametal Distributor, or visit **kennametal.com**.

MODULAR END MILLS

See Section O for more details.

HARVI™ I
HARVI II
HARVI III
MaxiMet™
High-Performance Rougher
High-Performance Finisher
Corner Tooling

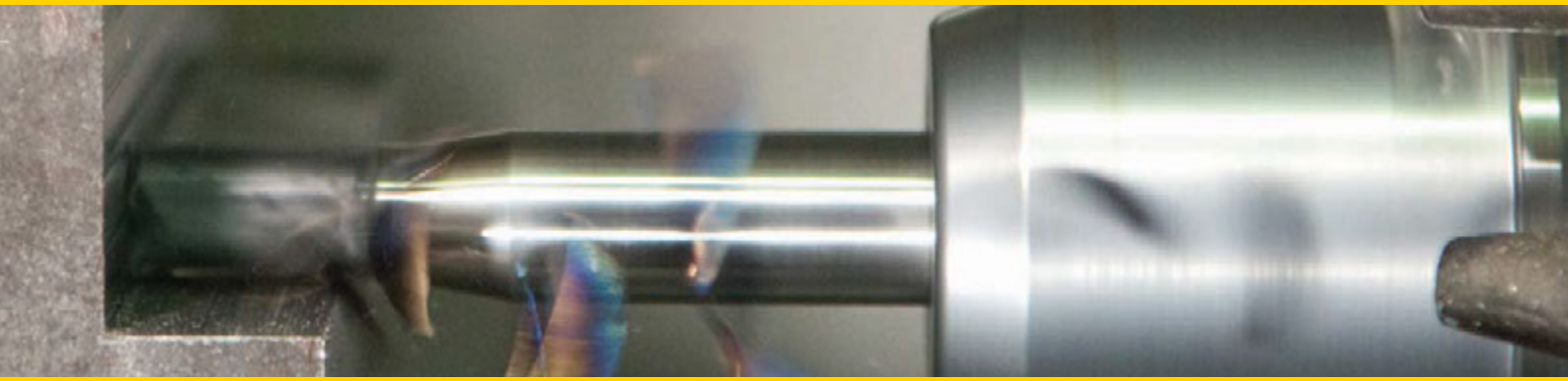


HIGH CAPABILITY END MILLS

See Section P for more details.

HARVI I
HARVI II
HARVI II Long
HARVI III
CXE/CXER





MATERIAL SPECIFIC END MILLS

See Section P for more details.

Aluminum Machining
CFRP Machining
Hard Materials Machining



APPLICATION SPECIFIC END MILLS

See Section P for more details.

High-Performance Roughing End Mills
High-Performance Finishing End Mills
RSM II
KenFeed™
GOmill™

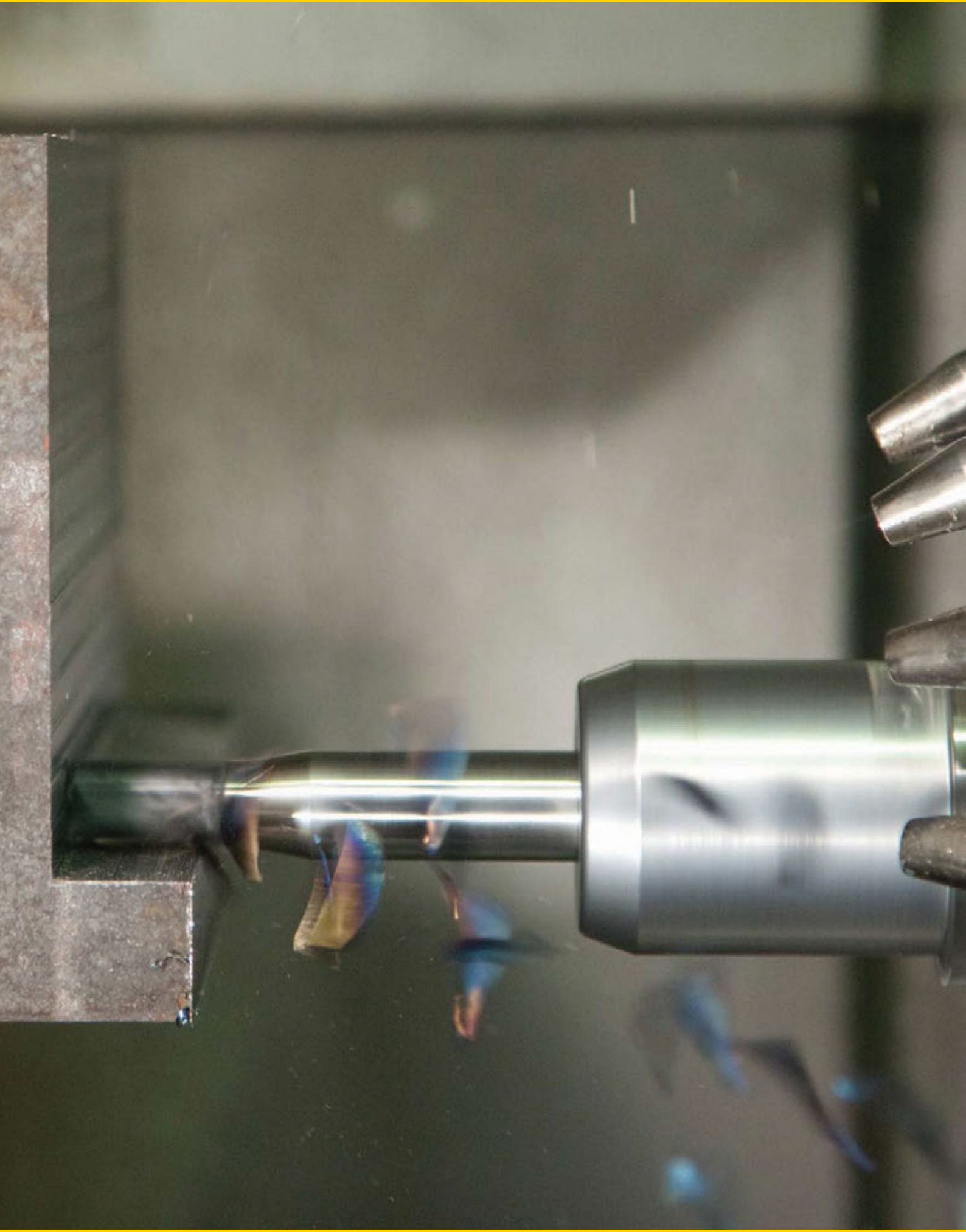


GENERAL PURPOSE END MILLS

See Section Q for more details.

GOmill GP 2FL
GOmill GP 3FL
GOmill GP 4FL





Solid End Milling • Duo-Lock Modular Milling

Duo-Lock Tool Selector and Grades O2–O4

HARVI Modular End Mills O6–O24

MaxiMet Modular End Mills O26–O30

Modular Roughing End Mills O32–O39

Modular Finishing End Mills O40–O45

Modular Corner Rounding and Chamfering End Mills O46–O51

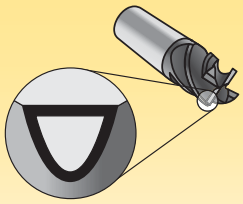
Adapters O52–O56

Assembly Information O57

product line		series	D1 diameter (inch)	length of cut	flute Z	helix	internal coolant	
HARVI™ I		UKDV	3/8–1 1/4	1.5 x D	ZU=4	37.5°		
HARVI I		ULDV	3/8–1 1/4	1.5 x D	ZU=4	37.5°		
HARVI II		UCDV	3/8–1 1/4	1.5 x D	ZU=5	37.5°		
HARVI II		UDDV	3/8–1 1/4	1.5 x D	ZU=5	37.5°		
HARVI III		UJDV	3/8–1 1/4	1.5 x D	ZU=6	37.5°		
HARVI Ball Nose		UKBV	3/8–1	1.5 x D	ZU=4	37.5°		
HARVI III Ball Nose		UJBV	3/8–1	1.5 x D	ZU=6	37.5°		
MaxiMet™		ABDF	3/8–3/4	1.5 x D	ZU=2	45°		
MaxiMet		ABDE	3/8–1	1.5 x D	ZU=3	38°		
KenFeed™		KMDA	3/8–3/4	0.75 x D	ZU=6	20°		
HP Rougher		RQDB	3/8–1	1.5 x D	ZU=X	20°		
HP Rougher		RKDF	3/8–1	1.5 x D	ZU=X	45°		
HP Rougher		RQBB	3/8–1	1.5 x D	ZU=4	30°		
HP Finisher		FMDF	3/8–1	1.5 x D	ZU=6	45°		
HP Finisher		FSDE	3/8–1	1.5 x D	ZU=X	36°		
Corner Tooling		XADA	3/8–5/8	.359–.605	ZU=X	0°		
Corner Tooling		XRDA	3/8–5/8	.359–.730	ZU=X	0°		

							shank	center cutting	neck	P	M	K	N	S	H							product page(s)	cutting data page(s)
			✓	✓				✓	✓	●	●			○		✓	✓	✓	✓			O8	O10
					✓			✓	✓	●	●	○		●	○	✓	✓	✓	✓			O9	O11
			✓	✓					✓	●	●	●		○	○	✓	✓	✓				O12	O14
					✓				✓	●				●	○	✓	✓	✓				O13	O15
					✓			✓	✓	○	●			●	○	✓		✓				O16	O17
						✓		✓	✓	●	●	●		○	○	✓	✓			✓		O18	O20
						✓		✓	✓	○	●	○		●	○	✓				✓		O19	O21–O22
		✓						✓	✓				●			✓	✓	✓	✓			O28	O30
					✓			✓	✓				●			✓	✓	✓	✓			O29	O30
	✓								✓	○					●			✓		✓		contact us	contact us
				✓				✓	✓	●	●	●		○	○	✓	✓	✓				O34	O37
				✓				✓	✓	○	●	○		●	○	✓	✓	✓				O35	O38
						✓		✓	✓	●	●	●		○	○	✓	✓			✓		O36	O39
					✓			✓	✓	●	●	●		○	○	✓						O42	O44
					✓				✓	○	●			●	○	✓						O43	O45
									✓	●	●	●	●	○	○							O48	O50
									✓	●	●	●	●	○	○							O49	O51

● first choice
○ alternate choice



Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grades

Coating	Grade Description	wear resistance ⟷ toughness: 05	10	15	20	25	30	35	40	45
K600	Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.									
KCPM15	Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.									
KC643M	Coated fine-grain grade with PVD multilayer (AlTiN). KC643M™ is a very thin and hard PVD coating particularly suited for cutting steel, cast iron, stainless steel (wet), and titanium (wet). This grade can be used for materials with hardness up to 52 HRC.									
KC639M	PVD- (AlTiN) coated carbide on a submicron carbide substrate. This hard coating provides outstanding performance in milling hardened materials (58–65 HRC).									
KCSM15	Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.									

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Whether your operation is turning, milling, or holemaking, Kennametal brands are the high-performance tooling you need. We offer standard and custom solutions for a wide range of applications.

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Kennametal offers world-class products and services globally. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of Kennametal to work for you — in your industry, in your region, and for your business.

DUO-λOCK® HARVI™

Primary Application

HARVI geometries for Duo-Lock™ target applications where solid carbide end mills are currently used. The Duo-Lock™ system combines the highest runout accuracy and length repeatability with maximum coupling stability. This enables the Duo-Lock™ system to use the full potential of Kennametal cutting geometries and grades with the flexibility of a modular system. Significant metal removal rates can be achieved. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock.

- Cutting data and tool life comparable to high-performance solid carbide.
- Proprietary HARVI geometries enable roughing and finishing with one tool.
- 1.5 x D standard cutting edge length enables fewer passes.
- Up to 1 x D full slotting increases metal removal rates, increasing productivity significantly.
- Extensive offering of straight and conical shank tools, and integral adapters that include DV, BT, and HSK.

Features and Benefits

Advanced Technology

- New asymmetrical HARVI 4-flute geometry for higher feed-per-tooth rates.
- Variable helix design for chatter-free machining at high feed rates.
- Less pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core for highest tool stability when roughing and finishing.

Tailored Grades

- KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.
- KCPM15™ Beyond grade for outstanding wear protection in stainless steel to mitigate cratering, depth-of-cut notching, and flank wear.
- Universal KC643M™ grade for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customization

- Intermediate diameters are available between 3/8–1 1/4".
- Chip divider geometry helps reduce power usage and improve chip formation in difficult-to-cut materials.
- Engineered solutions including shank and non-standard length versions available.
- Custom solutions within standard blank dimension are available.

Extensive Standard Offering

- Diameter ranges 3/8–1 1/4".
- Necked, corner radii, chamfer, and square-end tips available.
- Integral adapters to reduce interface for maximum accuracy.
- Steel extensions with Safe-Lock™ by HAIMER shanks to prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

High-performance modular solid carbide end mills.





Intelligent Thread
Ensures that stress levels remain below critical values.

High-Performance Geometries
Highest metal removal rates with up to 1 x D full slotting and up to 1.5 x D side milling at 50% ae capability.

3rd Contact Surface
Delivers high stiffness and highest accuracy below .0002" runout.

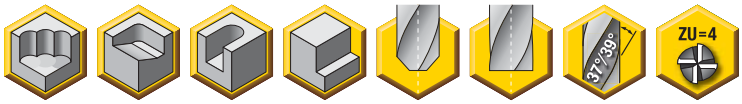
DUO-LOCK®
by HAIMER® and Kennametal

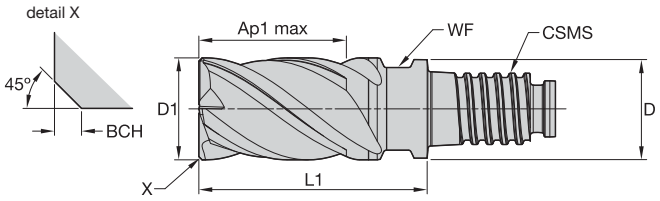
Unequal Flute Spacing
Reduces vibrations. Improves surface finish.

Double Cone
Eliminates expensive presetting processes by providing an axial .0004" repeatability.

37°/ 39° Variable Helix Technology
Minimizes chatter and harmonics for smoother machining.

- Asymmetrical flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



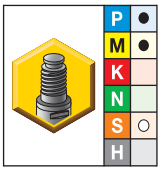




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
> 1-3/16"	-0,00197"/-0,00350"

UKDV • 4 Flute • Inch

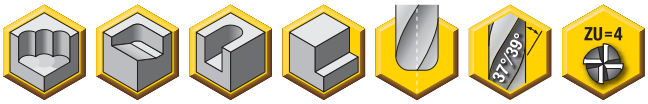


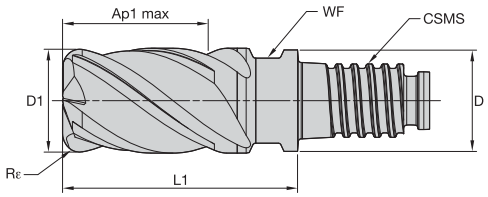
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
UKDV0375Y4CU	3/8	.359	9/16	.843	DL10	.315	—
UKDV0375Y4CV	3/8	.359	9/16	.843	DL10	.315	.020
UKDV0500Y4CU	1/2	.480	3/4	1.126	DL12	.374	—
UKDV0500Y4CV	1/2	.480	3/4	1.126	DL12	.374	.020
UKDV0625Y4CU	5/8	.605	15/16	1.406	DL16	.512	—
UKDV0625Y4CV	5/8	.605	15/16	1.406	DL16	.512	.020
UKDV0750Y4CU	3/4	.730	1 1/8	1.689	DL20	.630	—
UKDV0750Y4CV	3/4	.730	1 1/8	1.689	DL20	.630	.020
UKDV1000Y4CU	1	.961	1 1/2	2.252	DL25	.827	—
UKDV1000Y4CV	1	.961	1 1/2	2.264	DL25	.827	.020
UKDV1250Y4CU	1 1/4	1.211	1 7/8	2.803	DL32	1.102	—
UKDV1250Y4CV	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.020

NOTE: For application data, please see page O10.

- Asymmetrical flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



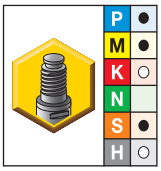




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
> 1-3/16"	-0,00197"/-0,00350"

ULDV • 4 Flute • Inch



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
ULDV0375Y4CQA	3/8	.359	9/16	.843	DL10	.315	.015
ULDV0375Y4CQB	3/8	.359	9/16	.843	DL10	.315	.030
ULDV0375Y4CQC	3/8	.359	9/16	.843	DL10	.315	.060
ULDV0375Y4CQD	3/8	.359	9/16	.843	DL10	.315	.090
ULDV0500Y4CQA	1/2	.480	3/4	1.126	DL12	.374	.015
ULDV0500Y4CQB	1/2	.480	3/4	1.126	DL12	.374	.030
ULDV0500Y4CQC	1/2	.480	3/4	1.126	DL12	.374	.060
ULDV0500Y4CQD	1/2	.480	3/4	1.126	DL12	.374	.090
ULDV0500Y4CQE	1/2	.480	3/4	1.126	DL12	.374	.120
ULDV0625Y4CQA	5/8	.605	15/16	1.406	DL16	.512	.015
ULDV0625Y4CQB	5/8	.605	15/16	1.406	DL16	.512	.030
ULDV0625Y4CQD	5/8	.605	15/16	1.406	DL16	.512	.120
ULDV0625Y4CQE	5/8	.605	15/16	1.406	DL16	.512	.120
ULDV0625Y4CQC	5/8	.605	15/16	1.406	DL16	.512	.060
ULDV0750Y4CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030
ULDV0750Y4CQC	3/4	.730	1 1/8	1.689	DL20	.630	.060
ULDV0750Y4CQD	3/4	.730	1 1/8	1.689	DL20	.630	.090
ULDV0750Y4CQE	3/4	.730	1 1/8	1.689	DL20	.630	.120
ULDV1000Y4CQB	1	.961	1 1/2	2.252	DL25	.827	.030
ULDV1000Y4CQC	1	.961	1 1/2	2.252	DL25	.827	.060
ULDV1000Y4CQD	1	.961	1 1/2	2.252	DL25	.827	.090
ULDV1000Y4CQE	1	.961	1 1/2	2.252	DL25	.827	.120
ULDV1000Y4CQF	1	.961	1 1/2	2.252	DL25	.827	.250
ULDV1250Y4CQD	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.090
ULDV1250Y4CQF	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.250

NOTE: For application data, please see page O11.

HARVI • UKDV • Asymmetrical Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	adapter reach									D1 — Diameter						
					KCPM15			KCPM15			KCPM15									
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.0000	1.2500
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	4	1.5 x D	0.4 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	5	1.5 x D	0.4 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	6	1.5 x D	0.4 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024	.0024
M	1	1.5 x D	0.4 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.4 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	3	1.5 x D	0.4 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024	.0024
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	1.5 x D	0.4 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI • ULDV • Asymmetrical Flute Spacing

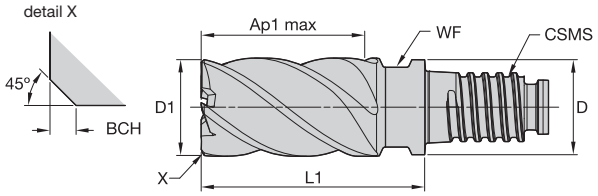


Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	adapter reach									D1 — Diameter						
					KCSM15			KCSM15			KCSM15									
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	4	1.5 x D	0.4 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	5	1.5 x D	0.4 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	6	1.5 x D	0.4 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024	.0024
M	1	1.5 x D	0.4 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.4 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	3	1.5 x D	0.4 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024	.0024
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0033	.0033
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	1.5 x D	0.4 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030
H	1	1.5 x D	0.4 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024	.0024

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Unequal flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Non-center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



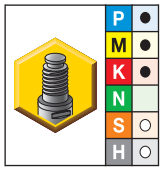




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
> 1–3/16"	-0,00197"/-0,00350"

UCDV • 5 Flute • Inch

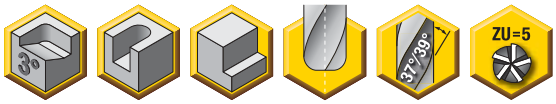


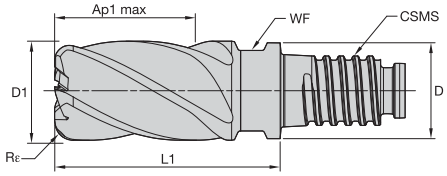
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
UCDV0375Y5CU	3/8	.359	9/16	.843	DL10	.315	—
UCDV0375Y5CV	3/8	.359	9/16	.843	DL10	.315	.020
UCDV0500Y5CU	1/2	.480	3/4	1.126	DL12	.374	—
UCDV0500Y5CV	1/2	.480	3/4	1.126	DL12	.374	.020
UCDV0625Y5CU	5/8	.605	15/16	1.406	DL16	.512	—
UCDV0625Y5CV	5/8	.605	15/16	1.406	DL16	.512	.020
UCDV0750Y5CU	3/4	.730	1 1/8	1.689	DL20	.630	—
UCDV0750Y5CV	3/4	.730	1 1/8	1.689	DL20	.630	.020
UCDV1000Y5CU	1	.961	1 1/2	2.252	DL25	.827	—
UCDV1000Y5CV	1	.961	1 1/2	2.252	DL25	.827	.020
UCDV1250Y5CU	1 1/4	1.211	1 7/8	2.803	DL32	1.102	—
UCDV1250Y5CV	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.020

NOTE: For application data, please see page O14.

- Unequal flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Non-center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



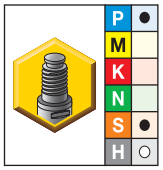




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
> 1–3/16"	-0,00197"/-0,00350"

UDDV • 5 Flute • Inch



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
UDDV0375Y5CQA	3/8	.359	9/16	.843	DL10	.315	.015
UDDV0375Y5CQB	3/8	.359	9/16	.843	DL10	.315	.030
UDDV0375Y5CQC	3/8	.359	9/16	.843	DL10	.315	.060
UDDV0375Y5CQD	3/8	.359	9/16	.843	DL10	.315	.090
UDDV0500Y5CQA	1/2	.480	3/4	1.126	DL12	.374	.015
UDDV0500Y5CQB	1/2	.480	3/4	1.126	DL12	.374	.030
UDDV0500Y5CQC	1/2	.480	3/4	1.126	DL12	.374	.060
UDDV0500Y5CQD	1/2	.480	3/4	1.126	DL12	.374	.090
UDDV0500Y5CQE	1/2	.480	3/4	1.126	DL12	.374	.120
UDDV0625Y5CQA	5/8	.605	15/16	1.406	DL16	.512	.015
UDDV0625Y5CQB	5/8	.605	15/16	1.406	DL16	.512	.030
UDDV0625Y5CQC	5/8	.605	15/16	1.406	DL16	.512	.060
UDDV0625Y5CQD	5/8	.605	15/16	1.406	DL16	.512	.090
UDDV0625Y5CQE	5/8	.605	15/16	1.406	DL16	.512	.120
UDDV0750Y5CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030
UDDV0750Y5CQC	3/4	.730	1 1/8	1.689	DL20	.630	.060
UDDV0750Y5CQD	3/4	.730	1 1/8	1.689	DL20	.630	.090
UDDV0750Y5CQE	3/4	.730	1 1/8	1.689	DL20	.630	.120
UDDV1000Y5CQB	1	.961	1 1/2	2.252	DL25	.827	.030
UDDV1000Y5CQC	1	.961	1 1/2	2.252	DL25	.827	.060
UDDV1000Y5CQD	1	.961	1 1/2	2.252	DL25	.827	.090
UDDV1000Y5CQE	1	.961	1 1/2	2.252	DL25	.827	.120
UDDV1000Y5CQF	1	.961	1 1/2	2.252	DL25	.827	.250
UDDV1250Y5CQD	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.090
UDDV1250Y5CQF	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.250

NOTE: For application data, please see page O15.

HARVI II • UCDV • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	adapter reach									D1 — Diameter						
					KCPM15			KCPM15			KCPM15									
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	4	1.5 x D	0.4 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	5	1.5 x D	0.4 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	6	1.5 x D	0.4 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024	.0024
M	1	1.5 x D	0.4 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.4 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	3	1.5 x D	0.4 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024	.0024
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0033	.0033
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	1.5 x D	0.4 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030
H	1	1.5 x D	0.4 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce Fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI II • UDDV • Unequal Flute Spacing

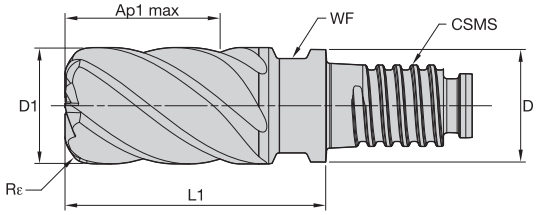


Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	adapter reach									D1 — Diameter						
					KC643M			KC643M			KC643M									
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	5	1.5 x D	0.4 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	6	1.5 x D	0.4 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024	.0024
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	1.5 x D	0.4 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030
H	1	1.5 x D	0.4 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce Fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Unequal flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Center cutting.
- Optimized geometry for titanium machining.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



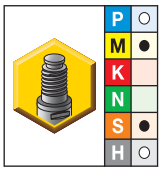




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"
>1–3/16"	-0,00197"/-0,00350"

UJDV • 6 Flute with Eccentric Relief Grind • Inch



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
UJDV0375Y6CQA	3/8	.359	9/16	.843	DL10	.315	.015
UJDV0375Y6CQB	3/8	.359	9/16	.843	DL10	.315	.030
UJDV0375Y6CQC	3/8	.359	9/16	.843	DL10	.315	.060
UJDV0375Y6CQD	3/8	.359	9/16	.843	DL10	.315	.090
UJDV0500Y6CQA	1/2	.480	3/4	1.126	DL12	.374	.015
UJDV0500Y6CQB	1/2	.480	3/4	1.126	DL12	.374	.030
UJDV0500Y6CQC	1/2	.480	3/4	1.126	DL12	.374	.060
UJDV0500Y6CQD	1/2	.480	3/4	1.126	DL12	.374	.090
UJDV0500Y6CQE	1/2	.480	3/4	1.126	DL12	.374	.120
UJDV0625Y6CQA	5/8	.605	15/16	1.406	DL16	.512	.015
UJDV0625Y6CQB	5/8	.605	15/16	1.406	DL16	.512	.030
UJDV0625Y6CQC	5/8	.605	15/16	1.406	DL16	.512	.060
UJDV0625Y6CQD	5/8	.605	15/16	1.406	DL16	.512	.090
UJDV0625Y6CQE	5/8	.605	15/16	1.406	DL16	.512	.120
UJDV0750Y6CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030
UJDV0750Y6CQC	3/4	.730	1 1/8	1.689	DL20	.630	.060
UJDV0750Y6CQD	3/4	.730	1 1/8	1.689	DL20	.630	.090
UJDV0750Y6CQE	3/4	.730	1 1/8	1.689	DL20	.630	.120
UJDV1000Y6CQB	1	.961	1 1/2	2.252	DL25	.827	.030
UJDV1000Y6CQC	1	.961	1 1/2	2.252	DL25	.827	.090
UJDV1000Y6CQD	1	.961	1 1/2	2.252	DL25	.827	.090
UJDV1000Y6CQE	1	.961	1 1/2	2.252	DL25	.827	.120
UJDV1000Y6CQF	1	.961	1 1/2	2.252	DL25	.827	.030
UJDV1250Y6CQD	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.090
UJDV1250Y6CQF	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.250

NOTE: For application data, please see page O17.

HARVI III • UJDV • Unequal Flute Spacing • Roughing





Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		adapter reach									D1 — Diameter						
				KCSM15			KCSM15			KCSM15									
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	4	Ap max	0.4 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	5	Ap max	0.4 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
M	1	Ap max	0.4 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	Ap max	0.4 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	3	Ap max	0.4 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024	.0024
S	1	Ap max	0.4 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	Ap max	0.4 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	Ap max	0.4 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	Ap max	0.4 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030
H	1	Ap max	0.4 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	2	Ap max	0.4 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI III • UJDV • Unequal Flute Spacing • Finishing

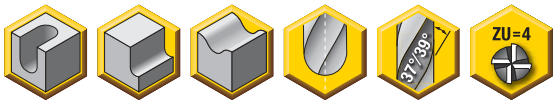


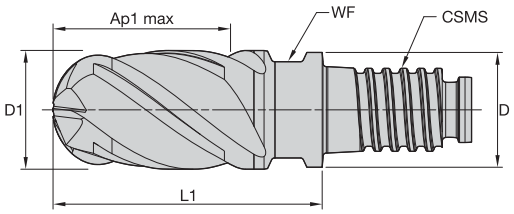


Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		adapter reach									D1 — Diameter						
				KCSM15			KCSM15			KCSM15									
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	4	Ap max	0.06 x D	560	–	940	504	–	846	504	–	846	IPT	.0021	.0026	.0031	.0034	.0041	.0041
	5	Ap max	0.06 x D	370	–	620	314.5	–	527	296	–	496	IPT	.0019	.0024	.0028	.0031	.0040	.0040
M	1	Ap max	0.06 x D	560	–	720	448	–	576	392	–	504	IPT	.0023	.0029	.0035	.0039	.0049	.0049
	2	Ap max	0.06 x D	370	–	500	296	–	400	259	–	350	IPT	.0019	.0024	.0028	.0031	.0040	.0040
	3	Ap max	0.06 x D	370	–	440	296	–	352	259	–	308	IPT	.0016	.0020	.0023	.0025	.0029	.0029
S	1	Ap max	0.06 x D	310	–	560	248	–	448	186	–	336	IPT	.0023	.0029	.0035	.0039	.0049	.0049
	2	Ap max	0.06 x D	160	–	250	128	–	200	96	–	150	IPT	.0012	.0016	.0019	.0021	.0027	.0027
	3	Ap max	0.06 x D	160	–	250	128	–	200	96	–	150	IPT	.0012	.0016	.0019	.0021	.0027	.0027
	4	Ap max	0.06 x D	310	–	370	248	–	296	186	–	222	IPT	.0017	.0022	.0026	.0029	.0036	.0036
H	1	Ap max	0.06 x D	500	–	870	400	–	696	300	–	522	IPT	.0021	.0026	.0031	.0034	.0041	.0041
	2	Ap max	0.06 x D	440	–	750	352	–	600	264	–	450	IPT	.0016	.0020	.0023	.0025	.0029	.0029

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

- Asymmetrical flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



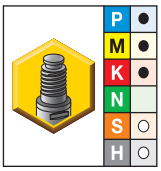




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

UKBV • 4 Flute Ball Nose • Inch



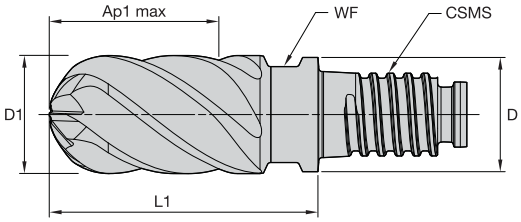
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF
UKBV0375Y4CN	3/8	.359	9/16	.843	DL10	.315
UKBV0500Y4CN	1/2	.480	3/4	1.126	DL12	.374
UKBV0625Y4CN	5/8	.605	15/16	1.406	DL16	.512
UKBV0750Y4CN	3/4	.730	1 1/8	1.689	DL20	.630
UKBV1000Y4CN	1	.961	1 1/2	2.252	DL25	.827

NOTE: For application data, please see page O20.

- Unequal flute spacing and variable helix configuration minimize chatter and harmonics for smoother machining.
- Center cutting.
- Optimized geometry for titanium machining.
- Single tool for both roughing and finishing, reducing setups.
- Standard items listed. Additional styles and coatings made-to-order.



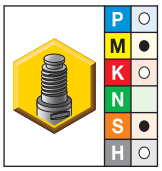




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

UJBV • 6 Flute Ball Nose with Eccentric Relief Grind • Inch

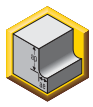


● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF
UJBV0375Y6CN	3/8	.359	9/16	.843	DL10	.315
UJBV0500Y6CN	1/2	.480	3/4	1.126	DL12	.374
UJBV0625Y6CN	5/8	.605	15/16	1.406	DL16	.512
UJBV0750Y6CN	3/4	.730	1 1/8	1.689	DL20	.630
UJBV1000Y6CN	1	.961	1 1/2	2.252	DL25	.827

NOTE: For application data, please see pages O21–O22.

HARVI Ball Nose • UKBV • Asymmetrical Flute Spacing • Roughing • Finishing





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	adapter reach									D1 — Diameter						
					KCPM15			KCPM15			KCPM15									
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500	1.2500
P	0	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	1	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.25 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	3	1.25 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	4	1.25 x D	0.4 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	5	1.25 x D	0.4 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	6	1.25 x D	0.4 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024	.0024
M	1	1.25 x D	0.4 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1.25 x D	0.4 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033	.0033
	3	1.25 x D	0.4 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024	.0024
K	1	1.25 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0042	.0042
	2	1.25 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	3	1.25 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0033	.0033
S	1	1 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041	.0041
	2	1 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	3	1.25 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022	.0022
	4	1.25 x D	0.4 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030	.0030
H	1	1.25 x D	0.4 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034	.0034
	2	1.25 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

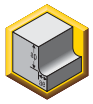
HARVI III Ball Nose • UJBV • Unequal Flute Spacing • Roughing



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		adapter reach									D1 — Diameter					
				KCSM15			KCSM15			KCSM15								
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500
P	0	Ap max	0.4 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042
	1	Ap max	0.4 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042
	2	Ap max	0.4 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042
	3	Ap max	0.4 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0041
	4	Ap max	0.4 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0034
	5	Ap max	0.4 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0033
	6	Ap max	0.4 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024
M	1	Ap max	0.4 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0041
	2	Ap max	0.4 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0033
	3	Ap max	0.4 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024
K	1	Ap max	0.4 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0042
	2	Ap max	0.4 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0041
	3	Ap max	0.4 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0033
S	1	Ap max	0.4 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0041
	2	Ap max	0.4 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022
	3	Ap max	0.4 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0022
	4	Ap max	0.4 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0030
H	1	Ap max	0.4 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0034
	2	Ap max	0.4 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI III Ball Nose • UJBV • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		adapter reach									D1 — Diameter					
				KCSM15			KCSM15			KCSM15								
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500
P	0	Ap max	0.06 x D	940	–	1250	846	–	1125	846	–	1125	IPT	.0028	.0035	.0040	.0045	.0050
	1	Ap max	0.06 x D	940	–	1250	846	–	1125	846	–	1125	IPT	.0028	.0035	.0040	.0045	.0050
	2	Ap max	0.06 x D	870	–	1180	783	–	1062	783	–	1062	IPT	.0028	.0035	.0040	.0045	.0050
	3	Ap max	0.06 x D	750	–	1000	675	–	900	675	–	900	IPT	.0023	.0029	.0035	.0039	.0049
	4	Ap max	0.06 x D	560	–	940	504	–	846	504	–	846	IPT	.0021	.0026	.0031	.0034	.0041
	5	Ap max	0.06 x D	370	–	620	314.5	–	527	296	–	496	IPT	.0019	.0024	.0028	.0031	.0040
	6	Ap max	0.06 x D	310	–	470	263.5	–	399.5	248	–	376	IPT	.0016	.0020	.0023	.0025	.0029
M	1	Ap max	0.06 x D	560	–	720	448	–	576	392	–	504	IPT	.0023	.0029	.0035	.0039	.0049
	2	Ap max	0.06 x D	370	–	500	296	–	400	259	–	350	IPT	.0019	.0024	.0028	.0031	.0040
	3	Ap max	0.06 x D	370	–	440	296	–	352	259	–	308	IPT	.0016	.0020	.0023	.0025	.0029
K	1	Ap max	0.06 x D	750	–	940	675	–	846	675	–	846	IPT	.0028	.0035	.0040	.0045	.0050
	2	Ap max	0.06 x D	690	–	870	621	–	783	621	–	783	IPT	.0023	.0029	.0035	.0039	.0049
	3	Ap max	0.06 x D	690	–	810	621	–	729	621	–	729	IPT	.0019	.0024	.0028	.0031	.0040
S	1	Ap max	0.06 x D	310	–	560	248	–	448	186	–	336	IPT	.0023	.0029	.0035	.0039	.0049
	2	Ap max	0.06 x D	160	–	250	128	–	200	96	–	150	IPT	.0012	.0016	.0019	.0021	.0027
	3	Ap max	0.06 x D	160	–	250	128	–	200	96	–	150	IPT	.0012	.0016	.0019	.0021	.0027
	4	Ap max	0.06 x D	310	–	370	248	–	296	186	–	222	IPT	.0017	.0022	.0026	.0029	.0036
H	1	Ap max	0.06 x D	500	–	870	400	–	696	300	–	522	IPT	.0021	.0026	.0031	.0034	.0041
	2	Ap max	0.06 x D	440	–	750	352	–	600	264	–	450	IPT	.0016	.0020	.0023	.0025	.0029

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with ap larger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.



Duo-Lock™ HARVI™ III

CHALLENGE

- Facing steel (1215) material.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock Ø 5/8".
- HARVI III UJDV.
- Corner radius R = .015".

CUTTING DATA

- v_c 699 SFM
- f_z .0020 IPT
- a_p .050"
- a_e .472"

RESULT

- 40% higher feed per tooth.
- 15% increase in cutting speed.
- Good surface finish and minimum wear on edges.

BENEFIT

- Reduced machining time.
- Increased productivity.
- Reduced tooling cost.



Duo-Lock™ HARVI

CHALLENGE

- Roughing of sensor mounting slot in cast iron.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock Ø .630" — cylindrical shank.
- HARVI UKDV.
- Corner radius R = .020".

CUTTING DATA

- v_c 190 SFM
- f_z .0026
- a_p .863"
- a_e .314"

RESULT

- Less wear.
- More stable process.

BENEFIT

- No unpredictable breakage like with competitive solid carbide tool.
- Stable machining process.



Duo-Lock™ HARVI™ III

CHALLENGE

- Finishing contour milling with lightly interrupted cut.
- Blade machining of X20Cr and X22Cr (M3).
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock Ø .630" — cylindrical shank.
- HydroForce™ with reducer sleeve.
- HARVI III UJDV geometry in KCSM15™.
- Corner radius R = .157".

CUTTING DATA

- v_c 1148 SFM
- f_z .0047 IPT
- a_p .020"
- a_e .157"

RESULT

- Tool life increased from 34 to 103 parts.
- Machining time per part reduced by 50%.

BENEFIT

- Increase of productivity.
- Cost reduction through almost triple tool life.
- Improved surface finish.



Duo-Lock™ HARVI III

CHALLENGE

- Hard machining — side milling.
- Hardened steel (17–4 PH) — 35 HRC.
- External emulsion.
- Current solution solid carbide.

SOLUTION

- Duo-Lock Ø 5/8".
- HARVI III UJDV.
- Corner radius R = .015".

CUTTING DATA

- v_c 736 SFM
- f_z .0044 IPT
- a_p .600"
- a_e .030"

RESULT

- 15% increase in cutting speed.
- Good surface finish and minimum wear on edges.

BENEFIT

- Reduced machining time.
- Increased productivity.
- Reduced tooling cost.

CFRP Machining Tooling

KCN05™

Engineered for machining difficult CFRP (Carbon-Fiber Reinforced Polymer) and non-ferrous components. KCN05 solid carbide tooling provides excellent tool life and produces smooth finishes with improved edge quality.

- Excellent tool life due to KCN05 diamond-film coating.
- Proprietary substrate improves coating adhesion to extend tool life.
- Design minimizes delamination and bur formation.
- Compression-style end mills for trimming operations.
- Left-hand down cut and ball nose cutters for machining cavities.
- Bur-style router for highest Metal Removal Rates (MRR).



Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

DUO-λOCK® MaxiMet™

High-Performance Modular Solid Carbide End Mills

Primary Application

The MaxiMet system provides extraordinary metal removal rates by combining roughing and finishing operations with any aluminum plunging, slotting, and profiling application. Its proprietary flute geometry is designed for high stiffness and improved chip evacuation to generate exceptional wall-to-floor perpendicularity, even in thin-wall applications. To ensure a superior floor surface finish, the MaxiMet front geometry is equipped with a wiper facet grind.

- Only one tool needed for roughing and finishing operations.
- Slotting depths up to 1 x D and side milling up to 0.5 x D radial and 1.5 x D axial engagement.
- Unequal flute spacing for chatter-free performance with 3-flute series.
- Multiple corner radii and extended neck configurations available as standard.

Features and Benefits

Advanced Technology

- Increase output with fewer tool changes and higher metal removal rates.
- No specific tools necessary for roughing and finishing.
- Fewer passes due to 1 x D slotting capability.
- Perfect for MQL (minimum quantity lubrication) methods.

Tailored Grades

- K600 uncoated grade for longest tool life in aluminum and other non-ferrous materials.

Customization

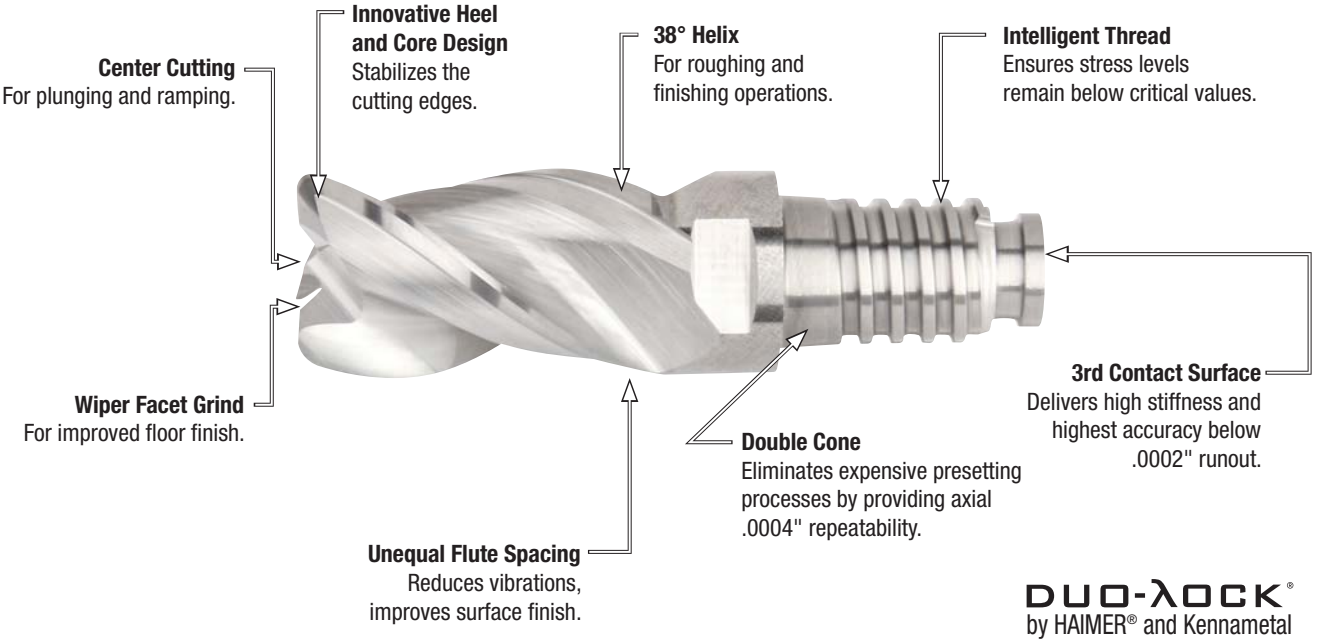
- Intermediate diameters are available between 3/8–1 1/4".

Extensive Standard Offering

- Diameter ranges 3/8–1".
- Necked, corner radii, and square-end tips available.
- Integral adapters reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

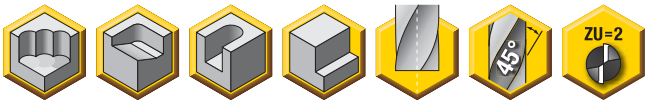
For high metal removal rates and superior surface finishes.

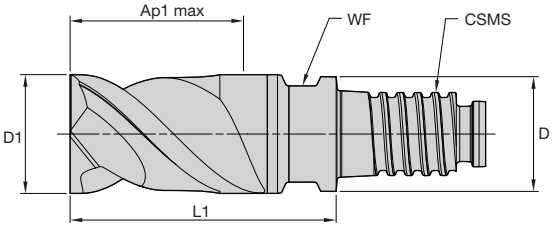




DUO-LOCK®
by HAIMER® and Kennametal

- Center cutting.
- Optimized for thin-wall applications.
- Wiper facet, special end gash, and flute geometry enable improved surface finishes.
- Standard items listed. Additional styles and coatings made-to-order.



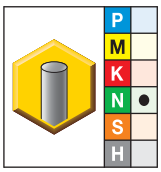




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

ABDF • 2 Flute • Inch

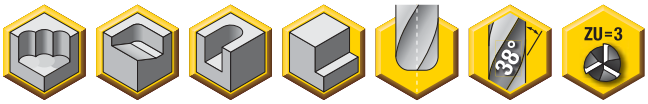


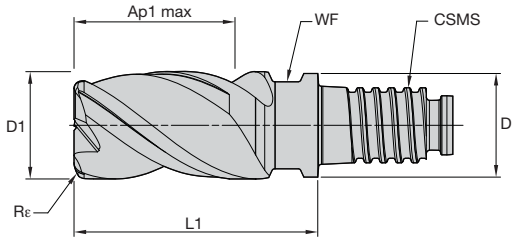
● first choice
○ alternate choice

K600	D1	D	Ap1 max	L1	CSMS system size	WF
ABDF0375Y2CU	3/8	.359	9/16	.843	DL10	.315
ABDF0500Y2CU	1/2	.480	3/4	1.126	DL12	.374
ABDF0625Y2CU	5/8	.605	15/16	1.406	DL16	.512
ABDF0750Y2CU	3/4	.730	1 1/8	1.689	DL20	.630

NOTE: For application data, please see page O30.

- Center cutting.
- Optimized for thin-wall applications.
- Wiper facet, special end gash, and flute geometry enable improved surface finishes.
- Standard items listed. Additional styles and coatings made-to-order.



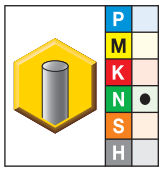




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

ABDE • 3 Flute • Inch



● first choice
○ alternate choice

K600	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
ABDE0375Y3CQA	3/8	.359	9/16	.843	DL10	.315	.015
ABDE0375Y3CQB	3/8	.359	9/16	.843	DL10	.315	.030
ABDE0375Y3CQC	3/8	.359	9/16	.843	DL10	.315	.060
ABDE0375Y3CQD	3/8	.359	9/16	.843	DL10	.315	.090
ABDE0500Y3CQA	1/2	.480	3/4	1.126	DL12	.374	.015
ABDE0500Y3CQB	1/2	.480	3/4	1.126	DL12	.374	.030
ABDE0500Y3CQC	1/2	.480	3/4	1.126	DL12	.374	.060
ABDE0500Y3CQD	1/2	.480	3/4	1.126	DL12	.374	.090
ABDE0500Y3CQE	1/2	.480	3/4	1.126	DL12	.374	.120
ABDE0625Y3CQA	5/8	.605	15/16	1.406	DL16	.512	.015
ABDE0625Y3CQB	5/8	.605	15/16	1.406	DL16	.512	.030
ABDE0625Y3CQC	5/8	.605	15/16	1.406	DL16	.512	.060
ABDE0625Y3CQD	5/8	.605	15/16	1.406	DL16	.512	.090
ABDE0625Y3CQE	5/8	.605	15/16	1.406	DL16	.512	.120
ABDE0750Y3CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030
ABDE0750Y3CQC	3/4	.730	1 1/8	1.689	DL20	.630	.060
ABDE0750Y3CQD	3/4	.730	1 1/8	1.689	DL20	.630	.090
ABDE0750Y3CQE	3/4	.730	1 1/8	1.689	DL20	.630	.120
ABDE1000Y3CQB	1	.961	1 1/2	2.252	DL25	.827	.030
ABDE1000Y3CQC	1	.961	1 1/2	2.252	DL25	.827	.060
ABDE1000Y3CQD	1	.961	1 1/2	2.252	DL25	.827	.090
ABDE1000Y3CQE	1	.961	1 1/2	2.252	DL25	.827	.120
ABDE1000Y3CQF	1	.961	1 1/2	2.252	DL25	.827	.250

NOTE: For application data, please see page O30.

MaxiMet • ABDF • Wiper Facet



Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.				
		A		B	adapter reach									D1 — Diameter				
					K600			K600			K600							
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500
N	1	1.5 x D	0.3 x D	1.0 x D	1640	–	6560	1312	–	3936	984	–	3936	IPT	.0029	.0038	.0048	.0057
	2	1.5 x D	0.3 x D	1.0 x D	1640	–	4920	1312	–	2952	984	–	2952	IPT	.0023	.0031	.0038	.0046
	3	1.5 x D	0.3 x D	1.0 x D	1640	–	4920	1312	–	2952	984	–	2952	IPT	.0020	.0027	.0033	.0040
	4	1.5 x D	0.3 x D	1.0 x D	1310	–	2460	1048	–	1476	786	–	1476	IPT	.0020	.0027	.0033	.0040
	5	1.5 x D	0.3 x D	1.0 x D	820	–	3280	656	–	1968	492	–	1968	IPT	.0026	.0034	.0043	.0052

NOTE: Ap for spindle with ceramic bearings multiply by 0.5.
For better surface finish reduce feed per tooth.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce Fz by 20%!
Cylindrical shanks not recommended for full slotting.

MaxiMet • ABDE • Wiper Facet • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.				
		A		B	adapter reach									D1 — Diameter				
					K600			K600			K600							
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500
N	1	1.5 x D	0.3 x D	1.0 x D	1640	–	6560	1312	–	3936	984	–	3936	IPT	.0029	.0038	.0048	.0057
	2	1.5 x D	0.3 x D	1.0 x D	1640	–	4920	1312	–	2952	984	–	2952	IPT	.0023	.0031	.0038	.0046
	3	1.5 x D	0.3 x D	1.0 x D	1640	–	4920	1312	–	2952	984	–	2952	IPT	.0020	.0027	.0033	.0040
	4	1.5 x D	0.3 x D	1.0 x D	1310	–	2460	1048	–	1476	786	–	1476	IPT	.0020	.0027	.0033	.0040
	5	1.5 x D	0.3 x D	1.0 x D	820	–	3280	656	–	1968	492	–	1968	IPT	.0026	.0034	.0043	.0052

NOTE: Ap for spindle with ceramic bearings multiply by 0.5.
For better surface finish reduce feed per tooth.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce Fz by 20%!
Cylindrical shanks not recommended for full slotting.

HARVI™ II Long

- Long wall semi- and fine-finishing.
- Significant straight wall accuracy.
- Thin wall machining up to 5 x D.
- Eliminates feed rate reduction in corner machining.
- For machining titanium, steels, and stainless steels.



KC643M™

- Universal grade suitable for cutting steel, cast iron, stainless steel, and titanium.

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates, improving surface finish and tool life.
- Innovative core design increases stability for exceptionally straight walls.

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

DUO-λOCK®

High-Performance Modular Roughing Solid Carbide End Mills

Primary Application

Duo-Lock™ high-performance roughing tools provide superior metal removal rates while reducing machine power consumption. Applicable on a wide range of workpiece materials such as steels, stainless steels, and difficult-to-machine materials. Tailored to roughing profiles, provides excellent chip management, and reduces cutting forces to the necessary level. Combines roughing and semi-finishing for fewer tool changes.

- High-performance universal tools for almost all cutting materials.
- Lowering cutting forces and spindle power consumption.
- Center cutting for ramping, profiling, high-feed slotting, and side milling.

Features and Benefits

Advanced Technology

- Up to full length of cut for:
  - — Slotting
  - — Side milling
  - — Profiling
  - — Semi-finishing
- Various roughing profiles available to choose from for the right balance between cutting forces, feed rates, and surface quality.
- Fewer passes due to 1 x D slotting capability.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- KCSM15™ Beyond grade for exceptional tool life in titanium and stainless steels.

Customization

- Intermediate diameters are available between 3/8–1 1/4".

Extensive Standard Offering

- Diameter ranges 3/8–1".
- Necked, corner radii, and chamfered tips offered.
- Integral adapters reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

For high metal removal rates and low power consumption.





Various Roughing Profiles
Tailored cord and shallow-pitch profile for improved chip formation.

Center Cutting
For plunging and ramping.

Intelligent Thread
Ensures stress levels remain below critical values.

Various Helix Configurations
20° for roughing ISO P-M-K materials.
45° for roughing ISO S-M materials.

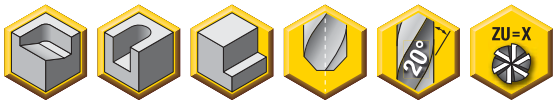
3rd Contact Surface
Delivers high stiffness and highest accuracy below .0002" runout.

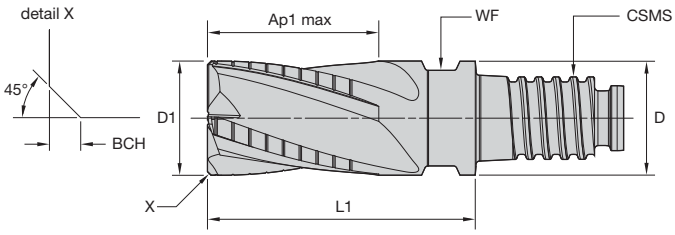
Double Cone
Eliminates expensive presetting processes by providing axial .0004" repeatability.

KCPM15™ and KCSM15™ Grades
Long tool life.
Enables higher cutting speeds.

DUO-LOCK®
by HAIMER® and Kennametal

- Center cutting.
- Cord profile reduces machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



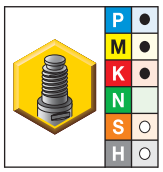




End Mill Tolerances

D1	tolerance d11
13/32–11/16"	-0.002/-0.0063"
23/32–1-3/16"	-0.026/ -0.0077"

RQDB • Inch

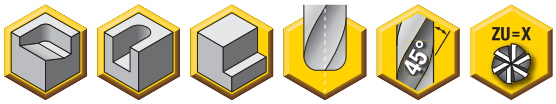


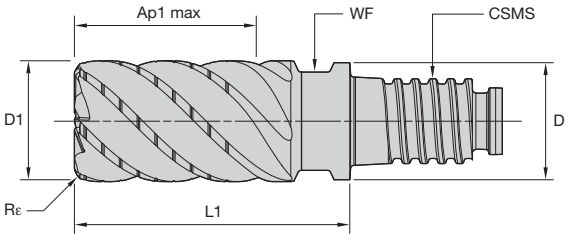
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH	Z U
RQDB0375Y4CV	3/8	.359	9/16	.843	DL10	.315	.020	4
RQDB0500Y4CV	1/2	.480	3/4	1.126	DL12	.374	.020	4
RQDB0625Y4CV	5/8	.605	15/16	1.406	DL16	.512	.020	4
RQDB0750Y4CV	3/4	.730	1 1/8	1.689	DL20	.630	.020	4
RQDB1000Y5CV	1	.961	1 1/2	2.252	DL25	.827	.020	5

NOTE: For application data, please see page O37.

- Center cutting.
- Shallow-pitch profile reduces machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



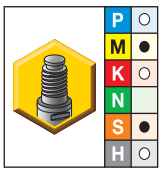




End Mill Tolerances

D1	tolerance d11
13/32–11/16"	-0.002/-0.0063"
23/32–1-3/16"	-0.026/ -0.0077"

RKDF • Inch

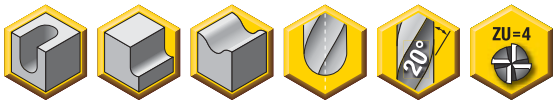


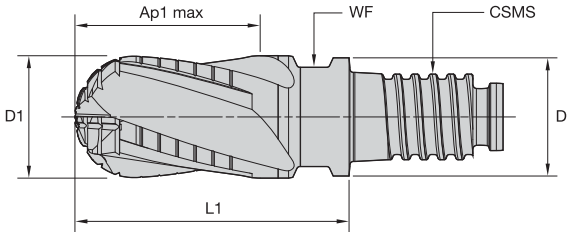
● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
RKDF0375Y4CQA	3/8	.359	9/16	.843	DL10	.315	.015	4
RKDF0500Y4CQB	1/2	.480	3/4	1.126	DL12	.374	.030	4
RKDF0625Y4CQB	5/8	.605	15/16	1.406	DL16	.512	.030	4
RKDF0750Y6CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030	6
RKDF1000Y6CQB	1	.961	1 1/2	2.252	DL25	.827	.030	6

NOTE: For application data, please see page O38.

- Center cutting.
- Cord profile reduces machine power consumption.
- Standard items listed. Additional styles and coatings made-to-order.



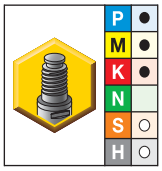




End Mill Tolerances

D1	tolerance d11
13/32–11/16"	-0.002/-0.0063"
23/32–1-3/16"	-0.026/ -0.0077"

RQBB • Inch



● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF
RQBB0375Y4CN	3/8	.359	9/16	.843	DL10	.315
RQBB0500Y4CN	1/2	.480	3/4	1.126	DL12	.374
RQBB0625Y4CN	5/8	.605	15/16	1.406	DL16	.512
RQBB0750Y4CN	3/4	.730	1 1/8	1.689	DL20	.630
RQBB1000Y4CN	1	.961	1 1/2	2.252	DL25	.827

NOTE: For application data, please see page O39.

RQDB • Inch



Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
		A		B	adapter reach									D1 — Diameter					
					KCPM15			KCPM15			KCPM15								
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.2500
P	0	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0020	.0025	.0029	.0032	.0036
	1	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0020	.0025	.0029	.0032	.0036
	2	1.5 x D	0.5 x D	1 x D	370	–	500	333	–	450	333	–	450	IPT	.0020	.0025	.0029	.0032	.0036
	3	1.5 x D	0.4 x D	0.75 x D	310	–	420	279	–	378	279	–	378	IPT	.0017	.0021	.0025	.0028	.0035
	4	1.5 x D	0.3 x D	0.3 x D	240	–	390	216	–	351	216	–	351	IPT	.0015	.0019	.0022	.0024	.0029
	5	1.5 x D	0.4 x D	0.75 x D	160	–	260	136	–	221	128	–	208	IPT	.0013	.0017	.0020	.0022	.0028
M	1	1.5 x D	0.4 x D	0.75 x D	240	–	300	192	–	240	168	–	210	IPT	.0017	.0021	.0025	.0028	.0035
	2	1.5 x D	0.4 x D	0.75 x D	160	–	210	128	–	168	112	–	147	IPT	.0013	.0017	.0020	.0022	.0028
	3	1.5 x D	0.4 x D	0.75 x D	160	–	180	128	–	144	112	–	126	IPT	.0011	.0014	.0016	.0018	.0021
K	1	1.5 x D	0.5 x D	1 x D	310	–	390	279	–	351	279	–	351	IPT	.0020	.0025	.0029	.0032	.0036
	2	1.5 x D	0.4 x D	1 x D	290	–	370	261	–	333	261	–	333	IPT	.0017	.0021	.0025	.0028	.0035
	3	1.5 x D	0.4 x D	1 x D	290	–	340	261	–	306	261	–	306	IPT	.0013	.0017	.0020	.0022	.0028
S	1	1.5 x D	0.4 x D	0.75 x D	130	–	240	104	–	192	78	–	144	IPT	.0017	.0021	.0025	.0028	.0035
	3	1.5 x D	0.4 x D	0.75 x D	70	–	100	56	–	80	42	–	60	IPT	.0009	.0011	.0013	.0015	.0019
H	1	1.5 x D	0.3 x D	0.3 x D	210	–	370	168	–	296	126	–	222	IPT	.0015	.0019	.0022	.0024	.0029

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

RKDF • Inch





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
		A		B	adapter reach KCSM15 Cutting Speed — vc SFM			adapter reach KCSM15 Cutting Speed — vc SFM			adapter reach KCSM15 Cutting Speed — vc SFM			D1 — Diameter					
		ap	ae	ap	min		max	min		max	min		max	frac.	3/8	1/2	5/8	3/4	1
														dec.	.3750	.5000	.6250	.7500	1.000
P	3	1.0 x D	0.5 x D	0.75 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0033
	4	1.0 x D	0.3 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0028
	5	1.0 x D	0.4 x D	0.75 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0026
	6	1.0 x D	0.3 x D	0.3 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0020
M	1	1.0 x D	0.4 x D	0.75 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0033
	2	1.0 x D	0.4 x D	0.75 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0026
	3	1.0 x D	0.4 x D	0.75 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0020
K	1	1.0 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0035
	2	1.0 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0033
	3	1.0 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0026
S	1	1.0 x D	0.3 x D	0.75 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0033
	2	1.0 x D	0.3 x D	0.75 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0018
	3	1.0 x D	0.3 x D	0.75 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0018
	4	1.0 x D	0.4 x D	0.75 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0024
H	1	1.0 x D	0.3 x D	0.3 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0028
	2	1.0 x D	0.2 x D	0.2 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0020
	3	1.0 x D	0.2 x D	0.2 x D	200	–	300	160	–	240	120	–	180	IPT	.0010	.0013	.0015	.0018	.0018

NOTE: Lower value of cuting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cuting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

RQBB • Inch





Material Group		Side Milling (A) and Slotting (B)			short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
		A		B	adapter reach									D1 — Diameter					
					KCPM15			KCPM15			KCPM15								
					Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min		max	min		max	min		max	dec.	.3750	.5000	.6250	.7500	1.000
P	0	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0023	.0029	.0034	.0037	.0042
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0023	.0029	.0034	.0037	.0042
	3	1.5 x D	0.4 x D	0.75 x D	390	–	520	351	–	468	351	–	468	IPT	.0019	.0025	.0029	.0033	.0038
	4	1.5 x D	0.3 x D	0.3 x D	300	–	490	270	–	441	270	–	441	IPT	.0017	.0022	.0026	.0029	.0033
	5	1.5 x D	0.4 x D	0.75 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0016	.0020	.0023	.0026	.0031
	6	1.5 x D	0.3 x D	0.3 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0013	.0016	.0019	.0021	.0024
M	1	1.5 x D	0.4 x D	0.75 x D	300	–	380	240	–	304	210	–	266	IPT	.0019	.0025	.0029	.0033	.0038
	2	1.5 x D	0.4 x D	0.75 x D	200	–	260	160	–	208	140	–	182	IPT	.0016	.0020	.0023	.0026	.0031
	3	1.5 x D	0.4 x D	0.75 x D	200	–	230	160	–	184	140	–	161	IPT	.0013	.0016	.0019	.0021	.0024
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0023	.0029	.0034	.0037	.0042
	2	1.5 x D	0.4 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0019	.0025	.0029	.0033	.0038
	3	1.5 x D	0.4 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0016	.0020	.0023	.0026	.0031
S	1	1.5 x D	0.4 x D	0.75 x D	160	–	300	128	–	240	96	–	180	IPT	.0019	.0025	.0029	.0033	.0038
	2	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0021
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0013	.0015	.0018	.0021
	4	1.5 x D	0.3 x D	0.75 x D	160	–	200	128	–	160	96	–	120	IPT	.0014	.0018	.0021	.0024	.0028
H	1	1.5 x D	0.3 x D	0.3 x D	260	–	460	208	–	368	156	–	276	IPT	.0017	.0022	.0026	.0029	.0033
	2	1.5 x D	0.2 x D	0.2 x D	230	–	390	184	–	312	138	–	234	IPT	.0013	.0016	.0019	.0021	.0024
	3	1.5 x D	0.2 x D	0.2 x D	200	–	300	160	–	240	120	–	180	IPT	.0010	.0013	.0015	.0018	.0021

NOTE: Lower value of cuting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cuting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-λOCK®

High-Performance Modular Finishing Solid Carbide End Mills

Primary Application

Duo-Lock™ high-performance finishing tools are designed for machining titanium, steels, and stainless steels with excellent surface finishes at maximum Metal Removal Rates (MRR) in two basic geometries. The FMDF geometry is perfectly suited for finishing steels and stainless steels. The Duo-Lock™ RSM II geometry is designed for high-speed peel milling with secure chip formation and evacuation in deep cavities with the maximum amount of edges at a given diameter.

- Specifically designed geometries for finishing in a wide range of materials.
- Higher number of flutes and higher helix angles for super finishing applications.
- High metal removal rates for fewer passes, longer tool life, and superior surface finishes.

Features and Benefits

Advanced Technology

- RSM II FSDE geometry:
  - — Maximum number of flutes increases feed rates and reduces vibration.
  - — Proprietary W-shaped flute form improves chip formation and reduces cutting forces.
  - — Unequal flute spacing increases tool life and surface quality.
- FMDF geometry:
  - — Excellent geometry for steels and stainless steel.
  - — Protection radii helps extend tool life.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in stainless steel to mitigate cratering, depth-of-cut notching, and flank wear.
- KC643M™ grade provides highest fine finishing and longest tool life.

Customization

- Intermediate diameters are available from 3/8–1".

Extensive Standard Offering

- Diameter ranges 3/8–1 1/4".
- Necked and corner radii tips available.
- Integral adapters reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.

For highest surface quality.





45° Helix Angle with FMDF
Specifically engineered for fine finishing steels and stainless steels.

KCPM15™ Grade
Longest tool life.
Enables higher cutting speeds.

36° Helix Angle with FSDE
Specifically engineered for fine finishing titanium and other ISO S-M materials.

Intelligent Thread
Ensures stress levels remain below critical values.

DUO-LOCK®
by HAIMER® and Kennametal



3rd Contact Surface
Delivers high stiffness and highest accuracy below .0002" runout.

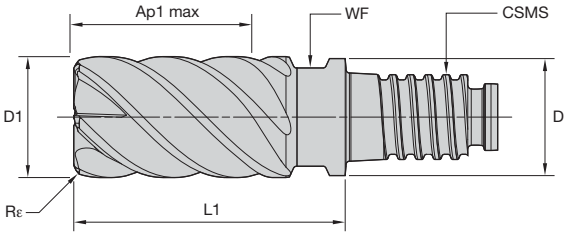
W-Shaped Flute Design with FSDE
Wider flute space for optimized chip evacuation.

KC643M™ Grade
Unmatched fine finishing and tool life.

Double Cone
Eliminates expensive presetting processes by providing axial .0004" repeatability.

- Center cutting.
- Standard items listed. Additional styles and coatings made-to-order.



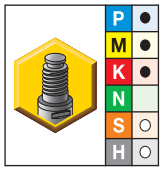




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

FMDF • Inch



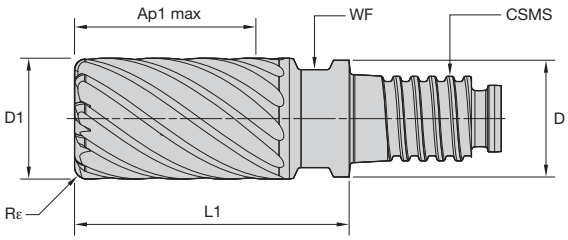
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε
FMDF0375Y6CQA	3/8	.359	9/16	.843	DL10	.315	.015
FMDF0500Y6CQB	1/2	.480	3/4	1.126	DL12	.374	.030
FMDF0625Y6CQB	5/8	.605	15/16	1.406	DL16	.512	.030
FMDF0750Y6CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030
FMDF1000Y6CQB	1	.961	1 1/2	2.252	DL25	.827	.030

NOTE: For application data, please see page O44.

- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Standard items listed. Additional styles and coatings made-to-order.



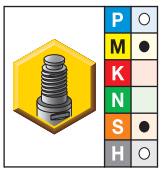




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

FSDE • Inch



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
FSDE0375Y9CQA	3/8	.359	9/16	.843	DL10	.315	.015	9
FSDE0375Y9CQB	3/8	.359	9/16	.843	DL10	.315	.030	9
FSDE0375Y9CQC	3/8	.359	9/16	.843	DL10	.315	.060	9
FSDE0375Y9CQD	3/8	.359	9/16	.843	DL10	.315	.090	9
FSDE0500Y9CQA	1/2	.480	3/4	1.126	DL12	.374	.015	9
FSDE0500Y9CQB	1/2	.480	3/4	1.126	DL12	.374	.030	9
FSDE0500Y9CQC	1/2	.480	3/4	1.126	DL12	.374	.060	9
FSDE0500Y9CQD	1/2	.480	3/4	1.126	DL12	.374	.090	9
FSDE0500Y9CQE	1/2	.480	3/4	1.126	DL12	.374	.120	9
FSDE0625Y11CQA	5/8	.605	15/16	1.406	DL16	.512	.015	11
FSDE0625Y11CQB	5/8	.605	15/16	1.406	DL16	.512	.030	11
FSDE0625Y11CQC	5/8	.605	15/16	1.406	DL16	.512	.060	11
FSDE0625Y11CQD	5/8	.605	15/16	1.406	DL16	.512	.090	11
FSDE0625Y11CQE	5/8	.605	15/16	1.406	DL16	.512	.120	11
FSDE0750Y15CQB	3/4	.730	1 1/8	1.689	DL20	.630	.030	15
FSDE0750Y15CQC	3/4	.730	1 1/8	1.689	DL20	.630	.060	15
FSDE0750Y15CQD	3/4	.730	1 1/8	1.689	DL20	.630	.090	15
FSDE0750Y15CQE	3/4	.730	1 1/8	1.689	DL20	.630	.120	15
FSDE1000Y19CQB	1	.961	1 1/2	2.252	DL25	.827	.030	19
FSDE1000Y19CQC	1	.961	1 1/2	2.252	DL25	.827	.060	19
FSDE1000Y19CQD	1	.961	1 1/2	2.252	DL25	.827	.090	19
FSDE1000Y19CQE	1	.961	1 1/2	2.252	DL25	.827	.120	19
FSDE1000Y19CQF	1	.961	1 1/2	2.252	DL25	.827	.250	19

NOTE: For application data, please see page O45.

FMDF • Inch



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		adapter reach									D1 — Diameter					
				KCPM15			KCPM15			KCPM15								
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	min		max	min		max	dec.	.375	.500	.625	.750	1.000
P	0	1.5 x D	0.1 x D	490	–	660	441	–	594	441	–	594	IPT	.0027	.0034	.0039	.0044	.0049
	1	1.5 x D	0.1 x D	490	–	660	441	–	594	441	–	594	IPT	.0027	.0034	.0039	.0044	.0049
	2	1.5 x D	0.1 x D	460	–	620	414	–	558	414	–	558	IPT	.0027	.0034	.0039	.0044	.0049
	3	1.5 x D	0.1 x D	390	–	520	351	–	468	351	–	468	IPT	.0023	.0029	.0034	.0039	.0045
	4	1.5 x D	0.1 x D	300	–	490	270	–	441	270	–	441	IPT	.0020	.0026	.0030	.0034	.0039
	5	1.5 x D	0.1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0018	.0023	.0027	.0031	.0036
	6	1.5 x D	0.1 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0015	.0019	.0022	.0025	.0028
M	1	1.5 x D	0.1 x D	300	–	380	240	–	304	210	–	266	IPT	.0023	.0029	.0034	.0039	.0045
	2	1.5 x D	0.1 x D	200	–	260	160	–	208	140	–	182	IPT	.0018	.0023	.0027	.0031	.0036
	3	1.5 x D	0.1 x D	200	–	230	160	–	184	140	–	161	IPT	.0015	.0019	.0022	.0025	.0028
K	1	1.5 x D	0.1 x D	390	–	490	351	–	441	351	–	441	IPT	.0027	.0034	.0039	.0044	.0049
	2	1.5 x D	0.1 x D	360	–	460	324	–	414	324	–	414	IPT	.0023	.0029	.0034	.0039	.0045
	3	1.5 x D	0.1 x D	360	–	430	324	–	387	324	–	387	IPT	.0018	.0023	.0027	.0031	.0036
S	1	1.5 x D	0.1 x D	160	–	300	128	–	240	96	–	180	IPT	.0023	.0029	.0034	.0039	.0045
	2	1.5 x D	0.1 x D	80	–	130	64	–	104	48	–	78	IPT	.0012	.0015	.0018	.0021	.0024
	3	1.5 x D	0.1 x D	80	–	130	64	–	104	48	–	78	IPT	.0012	.0015	.0018	.0021	.0024
	4	1.5 x D	0.15 x D	160	–	200	128	–	160	96	–	120	IPT	.0017	.0021	.0025	.0028	.0033
H	1	1.5 x D	0.1 x D	260	–	460	208	–	368	156	–	276	IPT	.0020	.0026	.0030	.0034	.0039
	2	1.5 x D	0.1 x D	230	–	390	184	–	312	138	–	234	IPT	.0015	.0019	.0022	.0025	.0028

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. Please adjust parameters according to system stability.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

FSDE • Inch



Material Group		Side Milling (A)		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		adapter reach									D1 — Diameter					
				KC643M			KC643M			KC643M								
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	min		max	min		max	dec.	.375	.500	.625	.750	1.000
P	4	Ap max	0.008–0.012"	445	–	1628	401	–	1465	401	–	1465	IPT	.0045	.0053	.0058	.0061	.0066
	5	Ap max	0.008–0.012"	295	–	1078	251	–	916	236	–	862	IPT	.0040	.0048	.0052	.0056	.0061
M	1	Ap max	0.008–0.012"	445	–	1243	356	–	994	312	–	870	IPT	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012"	295	–	869	236	–	695	207	–	608	IPT	.0040	.0048	.0052	.0056	.0061
	3	Ap max	0.008–0.012"	295	–	759	236	–	607	207	–	531	IPT	.0033	.0040	.0043	.0045	.0048
S	1	Ap max	0.008–0.012"	245	–	979	196	–	783	147	–	587	IPT	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012"	125	–	429	100	–	343	75	–	257	IPT	.0026	.0032	.0035	.0037	.0041
	3	Ap max	0.008–0.012"	125	–	429	100	–	343	75	–	257	IPT	.0026	.0032	.0035	.0037	.0041
	4	Ap max	0.008–0.012"	245	–	649	196	–	519	147	–	389	IPT	.0037	.0044	.0048	.0051	.0056
H	1	Ap max	0.008–0.012"	395	–	1518	316	–	1214	237	–	911	IPT	.0045	.0053	.0058	.0061	.0066
	2	Ap max	0.008–0.012"	345	–	1298	276	–	1038	207	–	779	IPT	.0033	.0040	.0043	.0045	.0048

NOTE: For better surface, finish reduce feed per tooth.
For side milling with Ap bigger than 1 x D, reduce fz by 20%!
Cylindrical shanks not recommended for full slotting.

DUO-λOCK®

Corner Rounding and Chamfering Solid Carbide Tips

Primary Application

Duo-Lock™ XRDA corner rounding and XADA chamfering tools perfectly complete the offering of high-performance end mills.

- Universal tools for almost all workpiece materials.
- Able to be reconditioned multiple times.

Features and Benefits

Advanced Technology

- Tailored amount of edges for each diameter.

Tailored Grades

- KCPM15™ Beyond™ grade for outstanding wear protection in various materials to mitigate crater, depth-of-cut notching, and flank wear.

Customization

- Intermediate diameters are available between 3/8–1 1/4".
- Various angles and inverse radii possible.

Extensive Standard Offering

- Diameter ranges 3/8–5/8".
- Integral adapters reduce the amount of interface for maximum accuracy. Steel extensions with Safe-Lock™ by HAIMER shanks prevent pullout.
- Cut-to-size extra-long extensions available upon request off the shelf.





Intelligent Thread
Ensures stress levels remain below critical values.

3rd Contact Surface
Delivers high stiffness and highest accuracy below .0002" runout.

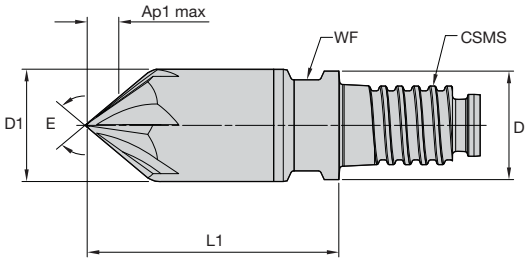
KCPM15™ Grade
Longest tool life.

Double Cone
Eliminates expensive presetting processes by providing axial .0004" repeatability.

DUO-LOCK®
by HAIMER® and Kennametal

- Non-center cutting.
- Standard items listed. Additional styles and coatings made-to-order.



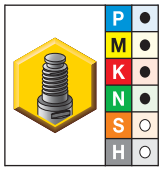




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

XADA • Inch



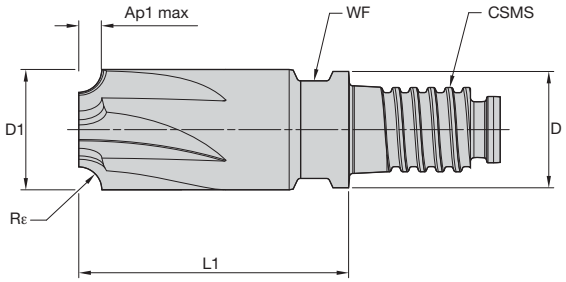
● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	E	Z U
XADA0375Y4CU60	3/8	.359	.075	.847	DL10	.315	60	4
XADA0375Y4CU45	3/8	.359	.178	.847	DL10	.315	90	4
XADA0500Y5CU60	1/2	.480	.100	1.126	DL12	.374	60	5
XADA0500Y5CU45	1/2	.480	.100	1.130	DL12	.374	90	5
XADA0625Y6CU45	5/8	.605	.125	1.402	DL16	.512	90	6
XADA0625Y6CU60	5/8	.605	.125	1.406	DL16	.512	60	6

NOTE: For application data, please see page O50.

- Non-center cutting.
- Standard items listed. Additional styles and coatings made-to-order.



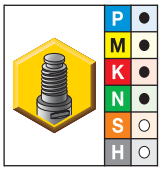




End Mill Tolerances

D1	tolerance e8
13/32–23/32"	-0,00126"/-0,00232"
23/32–1-3/16"	-0,00157"/-0,00287"

XRDA • Inch



● first choice
○ alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	Rε	Z U
XRDA0375Y4CUC	3/8	.359	.060	.843	DL10	.315	.060	4
XRDA0375Y4CUE	3/8	.359	.120	.852	DL10	.315	.120	4
XRDA0500Y5CUB	1/2	.480	.030	1.126	DL12	.374	.030	5
XRDA0500Y5CUC	1/2	.480	.060	1.131	DL12	.374	.060	5
XRDA0500Y5CUE	1/2	.480	.120	1.136	DL12	.374	.120	5
XRDA0625Y6CUC	5/8	.605	.060	1.406	DL16	.512	.060	6
XRDA0625Y6CUE	5/8	.605	.120	1.406	DL16	.512	.120	6

NOTE: For application data, please see page O51.

XADA • Inch





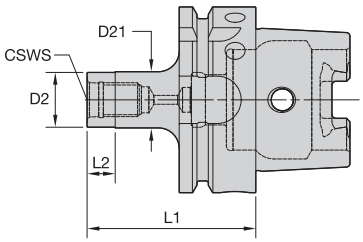
Material Group		Chamfering		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).			
		A		adapter reach									D1 — Diameter			
				KCPM15			KCPM15			KCPM15						
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8
		ap	ae	min		max	min		max	min		max	dec.	.375	.500	.625
P	0	0.35 x D	0.35 x D	490	–	660	441	–	594	441	–	594	IPT	.0022	.0027	.0032
	1	0.35 x D	0.35 x D	490	–	660	441	–	594	441	–	594	IPT	.0022	.0027	.0032
	2	0.35 x D	0.35 x D	460	–	620	414	–	558	414	–	558	IPT	.0022	.0027	.0032
	3	0.35 x D	0.35 x D	390	–	520	351	–	468	351	–	468	IPT	.0018	.0023	.0027
	4	0.35 x D	0.35 x D	300	–	490	270	–	441	270	–	441	IPT	.0016	.0021	.0024
	5	0.35 x D	0.35 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0015	.0018	.0022
	6	0.35 x D	0.35 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0012	.0015	.0018
M	1	0.35 x D	0.35 x D	300	–	380	240	–	304	210	–	266	IPT	.0018	.0023	.0027
	2	0.35 x D	0.35 x D	200	–	260	160	–	208	140	–	182	IPT	.0015	.0018	.0022
	3	0.35 x D	0.35 x D	200	–	230	160	–	184	140	–	161	IPT	.0012	.0015	.0018
K	1	0.35 x D	0.35 x D	390	–	490	351	–	441	351	–	441	IPT	.0022	.0027	.0032
	2	0.35 x D	0.35 x D	360	–	460	324	–	414	324	–	414	IPT	.0018	.0023	.0027
	3	0.35 x D	0.35 x D	360	–	430	324	–	387	324	–	387	IPT	.0015	.0018	.0022
N	1	0.35 x D	0.35 x D	1640	–	6560	1312	–	5248	984	–	3936	IPT	.0030	.0040	.0050
	2	0.35 x D	0.35 x D	1640	–	4920	1312	–	3936	984	–	2952	IPT	.0024	.0032	.0040
	3	0.35 x D	0.35 x D	1640	–	4920	1312	–	3936	984	–	2952	IPT	.0021	.0028	.0035
	4	0.35 x D	0.35 x D	1310	–	2460	1048	–	1968	786	–	1476	IPT	.0021	.0028	.0035
	5	0.35 x D	0.35 x D	820	–	3280	656	–	2624	492	–	1968	IPT	.0027	.0036	.0045
	6	0.35 x D	0.35 x D	330	–	2460	264	–	1968	198	–	1476	IPT	.0030	.0040	.0050
	7	0.35 x D	0.35 x D	330	–	2460	264	–	1968	198	–	1476	IPT	.0021	.0028	.0035
S	1	0.35 x D	0.35 x D	160	–	300	128	–	240	96	–	180	IPT	.0018	.0023	.0027
	2	0.35 x D	0.35 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0012	.0015
	3	0.35 x D	0.35 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0012	.0015
	4	0.35 x D	0.35 x D	160	–	200	128	–	160	96	–	120	IPT	.0013	.0017	.0020
H	1	0.35 x D	0.35 x D	260	–	460	208	–	368	156	–	276	IPT	.0016	.0021	.0024

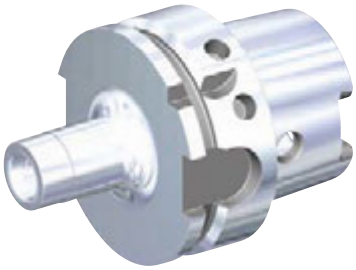
XRDA • Inch



Material Group		Corner Rounding		short			medium			long			Recommended feed per tooth (IPT = inch/th) for side milling (A).			
		A		adapter reach									D1 — Diameter			
				KCPM15			KCPM15			KCPM15						
				Cutting Speed — vc SFM			Cutting Speed — vc SFM			Cutting Speed — vc SFM			frac.	3/8	1/2	5/8
		ap	ae	min		max	min		max	min		max	dec.	.375	.500	.625
P	0	0.35 x D	0.35 x D	490	–	660	441	–	594	441	–	594	IPT	.0022	.0027	.0032
	1	0.35 x D	0.35 x D	490	–	660	441	–	594	441	–	594	IPT	.0022	.0027	.0032
	2	0.35 x D	0.35 x D	460	–	620	414	–	558	414	–	558	IPT	.0022	.0027	.0032
	3	0.35 x D	0.35 x D	390	–	520	351	–	468	351	–	468	IPT	.0018	.0023	.0027
	4	0.35 x D	0.35 x D	300	–	490	270	–	441	270	–	441	IPT	.0016	.0021	.0024
	5	0.35 x D	0.35 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0015	.0018	.0022
	6	0.35 x D	0.35 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0012	.0015	.0018
M	1	0.35 x D	0.35 x D	300	–	380	240	–	304	210	–	266	IPT	.0018	.0023	.0027
	2	0.35 x D	0.35 x D	200	–	260	160	–	208	140	–	182	IPT	.0015	.0018	.0022
	3	0.35 x D	0.35 x D	200	–	230	160	–	184	140	–	161	IPT	.0012	.0015	.0018
K	1	0.35 x D	0.35 x D	390	–	490	351	–	441	351	–	441	IPT	.0022	.0027	.0032
	2	0.35 x D	0.35 x D	360	–	460	324	–	414	324	–	414	IPT	.0018	.0023	.0027
	3	0.35 x D	0.35 x D	360	–	430	324	–	387	324	–	387	IPT	.0015	.0018	.0022
N	1	0.35 x D	0.35 x D	1640	–	6560	1312	–	5248	984	–	3936	IPT	.0030	.0040	.0050
	2	0.35 x D	0.35 x D	1640	–	4920	1312	–	3936	984	–	2952	IPT	.0024	.0032	.0040
	3	0.35 x D	0.35 x D	1640	–	4920	1312	–	3936	984	–	2952	IPT	.0021	.0028	.0035
	4	0.35 x D	0.35 x D	1310	–	2460	1048	–	1968	786	–	1476	IPT	.0021	.0028	.0035
	5	0.35 x D	0.35 x D	820	–	3280	656	–	2624	492	–	1968	IPT	.0027	.0036	.0045
	6	0.35 x D	0.35 x D	330	–	2460	264	–	1968	198	–	1476	IPT	.0030	.0040	.0050
	7	0.35 x D	0.35 x D	330	–	2460	264	–	1968	198	–	1476	IPT	.0021	.0028	.0035
S	1	0.35 x D	0.35 x D	160	–	300	128	–	240	96	–	180	IPT	.0018	.0023	.0027
	2	0.35 x D	0.35 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0012	.0015
	3	0.35 x D	0.35 x D	80	–	130	64	–	104	48	–	78	IPT	.0010	.0012	.0015
	4	0.35 x D	0.35 x D	160	–	200	128	–	160	96	–	120	IPT	.0013	.0017	.0020
H	1	0.35 x D	0.35 x D	260	–	460	208	–	368	156	–	276	IPT	.0016	.0021	.0024





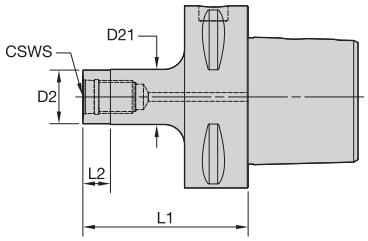


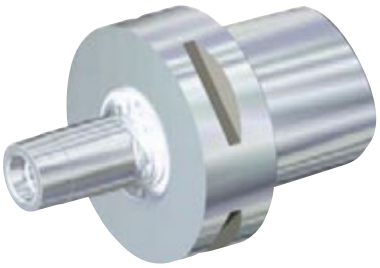
DL HSK Form A Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	ft. lbs.
6136895	**HSK63ADL10200**	DL10	.36	.38	2.00	.19	18.40
6136896	**HSK63ADL12225**	DL12	.48	.50	2.25	.25	21.10
6136897	**HSK63ADL16225**	DL16	.61	.63	2.25	.31	44.20
6136898	**HSK63ADL20225**	DL20	.73	.75	2.25	.37	59.00
6136899	**HSK63ADL25250**	DL25	.96	1.00	2.50	.49	73.80
6136900	**HSK63ADL32288**	DL32	1.21	1.25	2.88	.61	98.90

PSC63 Duo-Lock™ Integrated



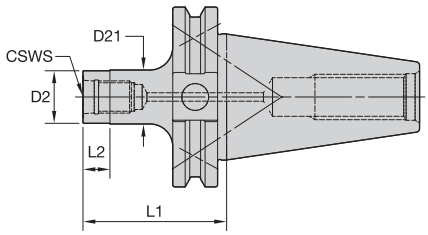




DL PSC63 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136931	**PSC63DL10200**	DL10	.36	.37	2.00	.19	1.69
6136932	**PSC63DL12200**	DL12	.48	.50	2.00	.25	1.70
6136933	**PSC63DL16225**	DL16	.61	.63	2.25	.31	1.73
6136934	**PSC63DL20225**	DL20	.73	.75	2.25	.37	1.75
6136935	**PSC63DL25238**	DL25	.96	1.00	2.38	.49	1.84
6136936	**PSC63DL32275**	DL32	1.21	1.25	2.75	.61	2.02





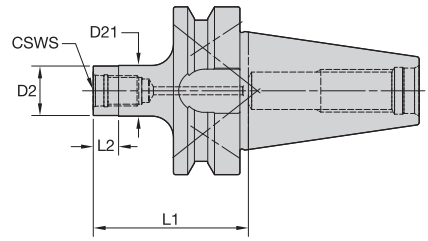


DL CV40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136937	CV40BDL10162	DL10	.36	.38	1.62	.19	1.77
6136938	CV40BDL12162	DL12	.48	.50	1.62	.25	1.78
6136939	CV40BDL16200	DL16	.61	.63	2.00	.31	1.82
6136940	CV40BDL20200	DL20	.73	.75	2.00	.37	1.84
6136941	CV40BDL25225	DL25	.96	1.00	2.25	.49	1.94
6136942	CV40BDL32250	DL32	1.21	1.25	2.50	.61	2.07

BT40 Duo-Lock™ Integrated





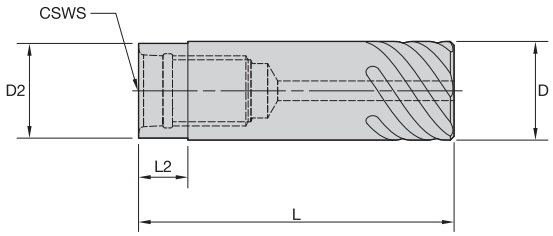


DL BT40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136943	BT40BDL10200	DL10	.36	.38	2.00	.19	2.14
6136944	BT40BDL12200	DL12	.48	.50	2.00	.25	2.15
6136945	BT40BDL16225	DL16	.61	.63	2.25	.31	2.19
6136946	BT40BDL20225	DL20	.73	.75	2.25	.37	2.19
6136947	BT40BDL25238	DL25	.96	1.00	2.38	.49	2.26
6136948	BT40BDL32275	DL32	1.21	1.25	2.75	.61	2.41







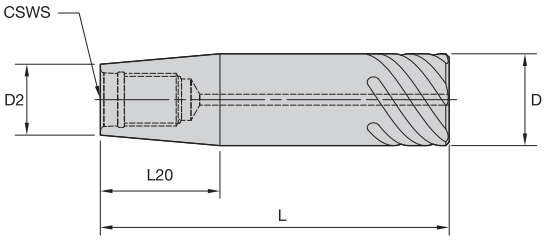


DL SS SL Cylindrical Inch

order number	catalog number	CSWS system size	D	D2	L	L2	ft. lbs.
6136800	SS038SLDL100225	DL10	.38	.36	2.25	.19	18.40
6136868	SS050SLDL120250	DL12	.50	.48	2.50	.25	22.10
6136874	SS062SLDL160275	DL16	.63	.61	2.75	.33	44.20
6136880	SS075SLDL200300	DL20	.75	.73	3.00	.39	59.00
6136884	SS100SLDL250350	DL25	1.00	.96	3.50	.52	73.80
6136888	SS125SLDL320400	DL32	1.25	1.21	4.00	.64	95.90

NOTE: Cylindrical shanks not recommended for full slotting.



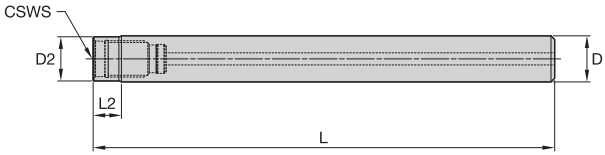




DL SS SL Conical Inch

order number	catalog number	CSWS system size	D	D2	L	L20	lbs
6136862	SS050SLDL100250	DL10	.50	.36	2.50	.80	.11
6136864	SS062SLDL100350	DL10	.63	.36	3.50	1.52	.24
6136866	SS075SLDL100450	DL10	.75	.36	4.50	2.23	.42
6136870	SS062SLDL120325	DL12	.63	.48	3.25	.82	.24
6136872	SS075SLDL120425	DL12	.75	.48	4.25	1.53	.45
6136876	SS075SLDL160325	DL16	.75	.61	3.25	.82	.34
6136878	SS100SLDL160450	DL16	1.00	.61	4.50	2.25	.78
6136882	SS100SLDL200375	DL20	1.00	.73	3.75	1.53	.67
6136886	SS125SLDL250425	DL25	1.25	.96	4.25	1.64	1.19
6136890	SS150SLDL320550	DL32	1.50	1.21	5.50	1.64	2.29
6136892	SS200SLDL320750	DL32	2.00	1.21	7.50	4.50	4.92





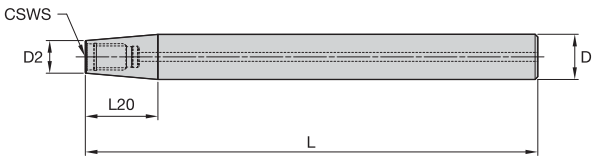


DL SS Cylindrical Cut Off to Modify Length Inch

order number	catalog number	CSWS system size	D	D2	L	L2	ft. lbs.
6136861	SS038DL100375	DL10	.38	.36	3.75	.19	18.40
6136869	SS050DL120500	DL12	.50	.48	5.00	.25	22.10
6136875	SS062DL160625	DL16	.63	.61	6.25	.31	44.20
6136881	SS075DL200750	DL20	.75	.73	7.50	.38	59.00
6136885	SS100DL251000	DL25	1.00	.96	10.00	.50	73.80
6136889	SS125DL321000	DL32	1.25	1.21	10.00	.63	95.90

NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.







DL SS Conical Cut Off to Modify Length Inch

order number	catalog number	CSWS system size	D	D2	L	L20	lbs
6136863	SS050DL100500	DL10	.50	.36	5.00	.80	.25
6136865	SS062DL100625	DL10	.63	.36	6.25	1.52	.47
6136867	SS075DL100750	DL10	.75	.36	7.50	2.23	.79
6136871	SS062DL120625	DL12	.63	.48	6.25	.82	.50
6136873	SS075DL120750	DL12	.75	.48	7.50	1.53	.85
6136877	SS075DL160750	DL16	.75	.61	7.50	.82	.86
6136879	SS100DL161000	DL16	1.00	.61	10.00	2.25	1.99
6136883	SS100DL201000	DL20	1.00	.73	10.00	1.53	2.04
6136887	SS125DL251000	DL25	1.25	.96	10.00	1.64	3.14
6136891	SS150DL321000	DL32	1.50	1.21	10.00	1.64	4.51
6136893	SS200DL321000	DL32	2.00	1.21	10.00	4.50	7.18

NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.



Torque Wrench

order number	catalog number	Description
6135413	TWDLTM	BASIC DUO LOCK WRENCH
6135414	TWTMINSERTDL10	TORQUE WRENCH INSERT DL10
6135415	TWTMINSERTDL12	TORQUE WRENCH INSERT DL12
6135416	TWTMINSERTDL16	TORQUE WRENCH INSERT DL16
6135417	TWTMINSERTDL20	TORQUE WRENCH INSERT DL20
6135418	TWTMINSERTDL25	TORQUE WRENCH INSERT DL25
6135419	TWTMINSERTDL32	TORQUE WRENCH INSERT DL32
6135420	TWTMINSERTDL10W	TORQUE WRENCH INSERT DL10 WEAR
6135421	TWTMINSERTDL12W	TORQUE WRENCH INSERT DL12 WEAR
6135422	TWTMEXT	TORQUE WRENCH EXTENSION HANDLE
6135423	TWTMBC	TORQUE WRENCH BOLT SET

NOTE: Combine basic Duo-Lock™ wrench with selected torque wrench inserts needed.

Wrench Kit

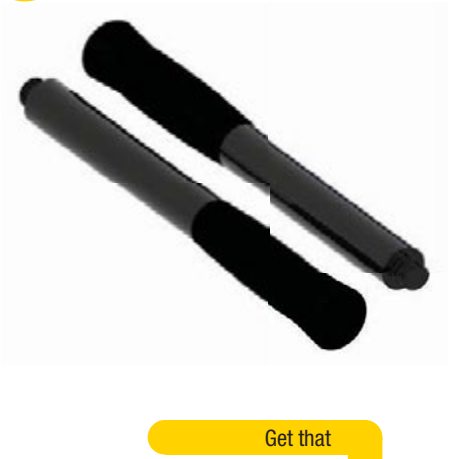
1 Basic Duo-Lock™ Wrench



2 Insert



3 Extension Handle



Order this

Get that

order number	catalog number	kit description	
6342967	TWDL10TM	D-L WRENCH WITH DL10 INSERT AND HANDLES	1+2+3
6342968	TWDL12TM	D-L WRENCH WITH DL12 INSERT AND HANDLES	
6342969	TWDL16TM	D-L WRENCH WITH DL16 INSERT AND HANDLES	
6342970	TWDL20TM	D-L WRENCH WITH DL20 INSERT AND HANDLES	
6343061	TWDL25TM	D-L WRENCH WITH DL25 INSERT AND HANDLES	
6343062	TWDL32TM	D-L WRENCH WITH DL32 INSERT AND HANDLES	

Assembly

Please wear sufficient personal safety equipment such as gloves and eye protection during assembly.

1 Clean the Duo-Lock™ cutting insert and shank coupling.





2 Mount the Duo-Lock™ adapter in a mounting block with a clamping chuck sufficient to enable torque transmission.

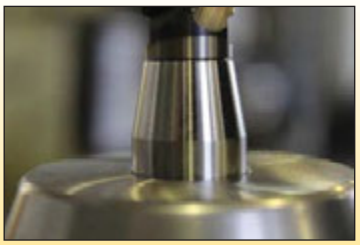


3 Screw the Duo-Lock™ cutting tip into adapter by hand.

Attention: Use of protective gloves is mandatory!



4 A gap of approx. 0.06–0.12" should be visible.



5 Apply the torque shown in the table. Use of a high quality common torque wrench is mandatory. The ERICKSON™ Torque Master wrench is recommended.



Duo-Lock™ Size	Torque Nm	Torque ft. lbs.
DL 10	20	15
DL 12	30	22
DL 16	60	44
DL 20	80	59
DL 25	100	74
DL 32	130	96



Solid End Milling •
High-Performance Solid Carbide End Mills

High-Performance Tool Selector and Grades P2–P11

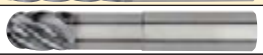
High-Performance Capability End Mills P12–P86

High-Performance Solid Carbide Roughing End Mills P88–P104

High-Performance Solid Carbide Finishing End Mills P106–P112

High-Performance Material Specific End Mills P114–P163

High-Performance Application Specific End Mills P164–P171

beyond	*Beyond™ grade		series	D1 diameter (inch)	length of cut	flute Z	helix	internal coolant
HARVI™ I*			HPHV	1/8–1 1/4	1.8–2 x D1	ZU=4	35°	
HARVI I*			UBDE/UADE	1/4–1	1.25 x D	ZU=4	35°	
HARVI I*			HPRSHV	1/2–1	1–1.2 x D1	ZU=4	35°	
HARVI I*			HPHVBN	1/8–1	1.5–4 x D1	ZU=4	35°	
HARVI I			HPHVT	1/2–1	1.25–1.8 x D1	ZU=4	35°	
CXE			CXE	1/8–1	2 x D	ZU=4	35°	
CXER			CXER	1/8–1	2 x D	ZU=4	35°	
HARVI II*			UCDE	3/16–1	1.75–3.3 x D1	ZU=5	35°	
HARVI II*			UCDE	1/4–1	1.75–2 x D1	ZU=5	35°	
HARVI II			UDDE	1/2–1	1.75–2.5 x D1	ZU=5	35°	
HARVI II Long			UGDE	1/4–1	3 x D	ZU=5	45°	
HARVI II Long			UGDE	1/4–1	5 x D	ZU=5	45°	
HARVI III			UJDE	3/8–1 1/4	1.75–2 x D	ZU=6	35°	
HARVI III			UJDE	3/8–1	1.75–2.25 x D	ZU=6	35°	
HARVI III Ball Nose			UJBE	3/8–1	1.5–2 x D	ZU=6	35°	
HARVI III Ball Nose			UJBE	3/8–1	1.5 x D1	ZU=6	35°	
HARVI™ III Aerospace Expansion			UJDE	1/2–1.5	1.3–5.3 x D	ZU=6	35°	
HARVI III Aerospace Expansion			UJBE	1/2–1.5	1.3–5.3 x D	ZU=6	35°	
HARVI III Taper Ball Nose			UJBE	1/8–7/16	5–6 x D	ZU=6	35°	
HP Rougher			HPRSS	1/4–3/4	2–3 x D1	ZU=3	35°	
HP Rougher			MDRHEC	1/4–1	1–2.5 x D1	ZU=X	40°	
HP Rougher			HPRST	1/4–1	1.5–2.5 x D1	ZU=X	45°	
RSM II Short			FSDE	3/8–1	2 x D	ZU=X	35°	
RSM II with neck			FSDE	1/4–1	2 x D1	ZU=X	35°	
HP Finisher			HPFSS	1/8–3/4	2–4 x D1	ZU=3	45°	
HP Finisher			HPFSS	1/8–3/8	2–3.25 x D1	ZU=5	45°	
HP Finisher			HPFT	1/8–3/4	2–4 x D1	ZU=6	45°	
Aluminum MaxiMet™			ABDF	3/16–1	2 x D1	ZU=2	45°	
Aluminum MaxiMet			ABDE	3/16–1	1.2–2 x D1	ZU=3	35°	
Aluminum MaxiMet			ABDF	1/4–1	1–4 x D1	ZU=2	45°	
Aluminum MaxiMet			ABDE	1/4–1	1.25–4 x D1	ZU=3	35°	
Aluminum			AADF	1/8–1	1–4 x D1	ZU=2	45°	
Aluminum			AADE	1/8–1	1.25–4 x D1	ZU=3	45°	
Aluminum			SFRHEC	1/4–1	2.25–3 x D1	ZU=3	37°	

							shank	center cutting	neck	P	M	K	N	C	S	H							product page(s)	cutting data page(s)
			✓	✓	✓		✓	✓		●	●	●			○	○	✓	✓	✓	✓		✓	P16–P20	P25
				✓	✓		✓	✓	✓	●	●	●			●	○	✓	✓	✓	✓		✓	P21	P25
			✓	✓			✓	✓		●	●	●					✓	✓	✓				P22	P26
						✓	✓	✓		●	●	●			○	○	✓	✓			✓		P23	P26
			✓	✓			✓	✓		●					●	○	✓	✓	✓	✓		✓	P24	P27
					✓		✓	✓	✓	○	●				○		✓	✓	✓	✓		✓	P84	P86
					✓		✓	✓	✓	○	●				○		✓	✓	✓	✓		✓	P85	P86
			✓		✓		✓			●	●	●			○	○	✓	✓	✓			✓	P30–P31	P34
			✓		✓		✓		✓	●	●	●			●	○	✓	✓	✓			✓	P32	P35
			✓		✓		✓			●					●		✓	✓	✓			✓	P33	P35
			✓		✓		✓			●	●	○			●	○	✓					✓	P38	P40
			✓		✓		✓			●	●	○			●	○	✓					✓	P39	P41
			✓		✓		✓	✓		○	●				●	○	✓		✓			✓	P44–P45	P47
					✓		✓	✓	✓	○	●				●	○	✓		✓			✓	P46	P48
						✓	✓	✓		○	●				●	○	✓				✓	✓	P52	P56
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✓							✓	✓		●	●				●	○	✓				✓	✓	P74	P80
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					✓		✓			○	●				●	○	✓						P100	P101
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			✓		✓		✓	✓					●				✓	✓	✓	✓			P126–P127	P132
			✓		✓		✓	✓					●				✓	✓	✓				P128–P130	P132
				✓			✓	✓					●				✓	✓	✓				P131	P132

● first choice
○ alternate choice

(continued)

(Solid Carbide End Mills — continued)

beyond *Beyond™ grade		series	D1 diameter (inch)	length of cut	flute Z	helix	internal coolant
CFRP		CCNC	1/4–1/2	3 x D1	ZU=X	45°	
CFRP		CDDC	1/4–1/2	3 x D1	ZU=6	35°	
CFRP		CBDB	1/4–1/2	3 x D1	ZU=12	15°	
KenFeed™		KMDA	1/4–3/4	0.5 x D1	ZU=6	25°	
KenFeed		KHDA	1/4–3/4	0.3 x D1	ZU=6	30°	
Hard Steels		HPFDM	1/4–1	1.5–3.5 x D1	ZU=X	50°	
Hard Steels		HPRDM	3/16–1/2	1 x D1	ZU=X	45°	
Hard Steels Ball Nose		HPBNDM	1/8–3/4	1 x D1	ZU=4	15°	
Ceramic Rougher		EADE	3/16–1/2	0,75 x D	ZU=4	40°	
Ceramic Rougher		EADE	3/16–1/2	0,75 x D	ZU=6	40°	
GOmill™		UEDE	5/64–1/2	1.25 x D1	ZU=3	38°	
GOmill		UEDE	5/32–1/2	1.25 x D1	ZU=4	38°	
GOmill		UEBD	5/64–1/2	1.25 x D1	ZU=2	30°	
GOmill		UEBD	5/64–1/2	1.25 x D1	ZU=3	38°	

							shank	center cutting	neck	P	M	K	N	C	S	H							product page(s)	cutting data page(s)
				✓										●			✓		✓					P136	P139
				✓										●			✓	✓	✓					P137	P139
				✓										●			✓	✓	✓					P138	P139
		✓							✓	●						○			✓		✓			P142	P144
		✓							✓							●			✓		✓			P143	P144
			✓					✓		●						●	✓	✓	✓					P148	P151
					✓			✓	✓	●	○	○			○	●	✓	✓	✓					P149	P151
						✓		✓	✓	●						●	✓	✓			✓			P150	P152
					✓									●			✓	✓	✓					P156	P158
					✓									●			✓	✓	✓					P157	P158
			✓					✓		●	●	●			○	○	✓	✓	✓					P166	P170
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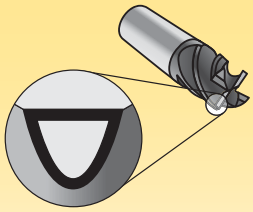
						✓		✓		●	○	●			○	○	✓	✓						P168	P171
						✓		✓		●	○	●			○	○	✓	✓						P169	P171

● first choice
○ alternate choice



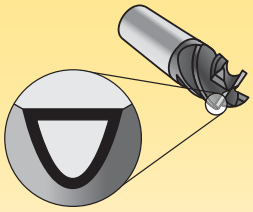
Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
K600	Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.	N			■	■	■	■			
KCPM15	Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P			■	■	■	■			
		M			■	■	■	■			
		K			■	■	■	■			
KC643M	Coated fine-grain grade with PVD multilayer (AlTiN). KC643M™ is a very thin and hard PVD coating particularly suited for cutting steel, cast iron, stainless steel (wet), and titanium (wet). This grade can be used for materials with hardness up to 52 HRC.	P			■	■	■	■			
		M			■	■	■	■			
		K			■	■	■	■			
		S			■	■	■	■			
KC637M	Coated, tough, wear-resistant carbide grade with hard PVD coating, particularly suitable for machining steels above 48 HRC.	S	■	■	■	■					
		H	■	■	■	■					
KC635M	Coated carbide grade with TiAlN coating. KC635M is a high-performance grade for higher speeds and is the first choice for stainless steels. KC635M grade is characterized by a high hardness and wear resistance. This grade is suitable for cutting hard materials (up to 65HRC).	P			■	■	■	■			
		M			■	■	■	■			
		K			■	■	■	■			
		S			■	■	■	■			

wear resistance ← → toughness



Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials
C	CFRP Materials

Grades

Coating	Grade Description		wear resistance ← → toughness									
			05	10	15	20	25	30	35	40	45
KC625M	Coated carbide grade with PVD (TiCN) coating. For universal use due to its high wear resistance and hardness. Only use wet or with MQL (minimum quantity lubrication).	P			■	■	■	■			
		K			■	■	■	■			
		S			■	■	■	■			
KC639M	PVD- (AlTiN) coated carbide on a submicron carbide substrate. This hard coating provides outstanding performance in milling hardened materials (58–65 HRC).	P			■	■	■	■			
		H	■	■	■						
KCSM15	Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	M		■	■	■	■				
		S	■	■	■	■	■				
		H	■	■	■	■	■				
KCN05	High-performance grade A pure, diamond-coated carbide for milling CFRP and graphite. It is a very tough and wear-resistant grade.	C	■	■							
KC633M	Coated carbide grade with PVD multilayer coating. KC633M™ is designed for dry milling most types of material, apart from the hardened variety. This grade is characterized by good hardness and wear resistance. It provides outstanding protection for solid carbide tools against cratering and abrasion.	P			■	■	■	■			
		M			■	■	■	■			
		S			■	■	■	■			

Beyond™ Solid Carbide End Milling

High-Performance milling in a new dimension

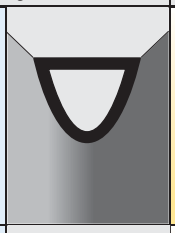
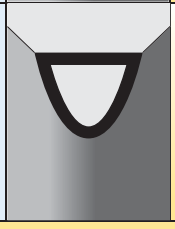
Kennametal is pleased to announce the KCPM15™ and KCSM15™ grades — the first Beyond grades for solid carbide end mills. KCPM15 and KCSM15 grades feature an improved high-performance carbide substrate with proprietary aluminum titanium nitride (AlTiN) PVD coating.

Features and Benefits

- Engineered to increase tool life and productivity by up to 30%.
- For use in milling steels and stainless steels.
- Improved resistance to cratering, flank wear, and depth-of-cut notching.

Workpiece Materials:

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

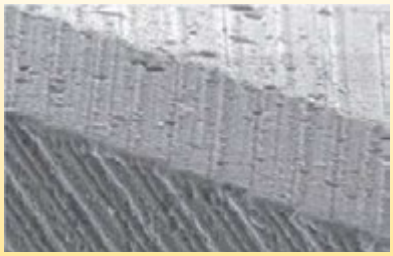
Coating		Grade Description	
KCPM15		Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P M K
KCSM15		Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	M S H

Conventional End Mill Cutting Edge

Conventional



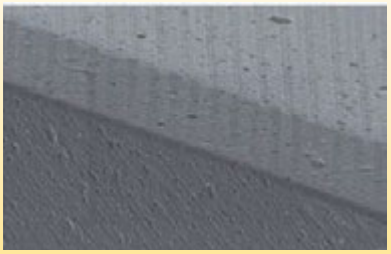


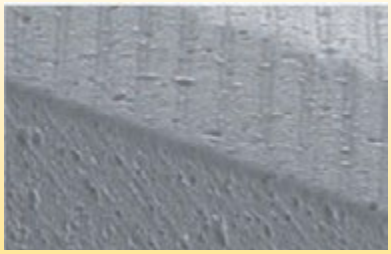


KCPM15™/KCSM15™ End Mill Cutting Edge

KCPM15/KCSM15 grade

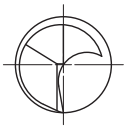
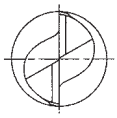
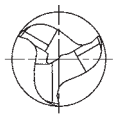
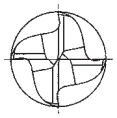
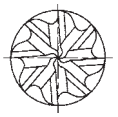
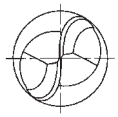
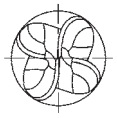
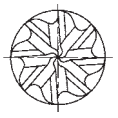






View: 1st and 2nd relief.

End Mill Type Recommendation

End Mills									
Z = number of teeth		Fine Finishing	Finishing	Roughing	Slot Milling	Plunging	Contour Milling	Peel Milling	Trochoidal Milling
end mill Z = 1		○	○	●	●	●	○	○	○
end mill Z = 2		○	○	◑	●	●	○	○	○
end mill Z = 3		○	◑	◑	●	◑	○	○	○
end mill Z = 4/5		◑	●	●	●	○	○	●	●
multi-flute cutter Z = 6–19		●	●	○	○	○	○	●	●
Ball Nose and Torus End Mills									
ball nose end mill Z = 2					●		●		
ball nose end mill Z = 4					◑		●		
ball nose end mill Z = 6							●		

● first choice

◑ suitable with limitations

○ not recommended

Always select a tool with the shortest possible flute length whenever possible. This will increase the stability of the tool and give the best results.

When selecting an end mill, the following machining factors will affect your selection of the correct end mill for your application:

1. Tool overhang.
2. Coolant flow.
3. Machine and setup stability.
4. Machine power and torque.
5. Material to be machined.
6. Machine adapter size (DV40, DV50, HSK63, etc.).
7. See Tool Reference Guides on pages P2–P5.

Recommended Adapters per End Mill Platform

SCEM Platform	Recommended Adapters	
	First Choice	Alternate Choice
HARVI™ I	HydroForce™	Shrink Fit
HARVI II	HydroForce	Shrink Fit
HARVI III	HydroForce	Shrink Fit
HARVI II Long	HydroForce	Shrink Fit
High-Performance Roughers	HydroForce	Weldon® Adapter
RSM II	Shrink Fit	Shrink Fit
High-Performance Finishers	HydroForce	Shrink Fit
MaxiMet™/Aluminum Tools	HydroForce	Shrink Fit
Hard Material End Mills/KenFeed™	HydroForce	Shrink Fit
GOmill™	Shrink Fit	Weldon Adapter

Select Adapter per Technical Data/Characteristics

Technical data/characteristics	Toolholders				
	HydroForce high torque	Shrink Fit	Milling chuck	ER collet chuck	Weldon adapter
torque transmission	★★★★★	★★★★	★★★★★	★★	★★★★★
radial runout (T.I.R.)[1]	★★★★★	★★★★★	★★★★	★★★	★
radial rigidity[2]	★★★★	★★★★★	★★★	★★★	★★★
tool length adjustment	★★★★★	★★★★	★	★★★★	★★
tool shank tolerance requirement	★★★★	★★	★★★	★★★★★	★★★
through coolant	★★★★★	★★★★★	★★★	★★★	★★
minimum quantity lubrication (MQL)	★★★★★	★★★★★	★	★	★
dampening capability	★★★★★	★	★★★	★★★	★★★
shank diameter range[3]	★★★★★	★	★★★★★	★★★★★	★
cost of toolholder	★★	★★★	★	★★★★	★★★★★
low requirement of external devices[4]	★★★★★	★	★★★★	★★★★	★★★★★
ease of handling	★★★★★	★★★	★★	★★★★	★★★★
dust resistance	★★★★★	★★★★★	★★★	★★★	★★★★
high-speed capability	★★★★★	★★★★★	★★★	★★★	★
balancing accuracy	★★★★★	★★★★★	★★★	★★★	★

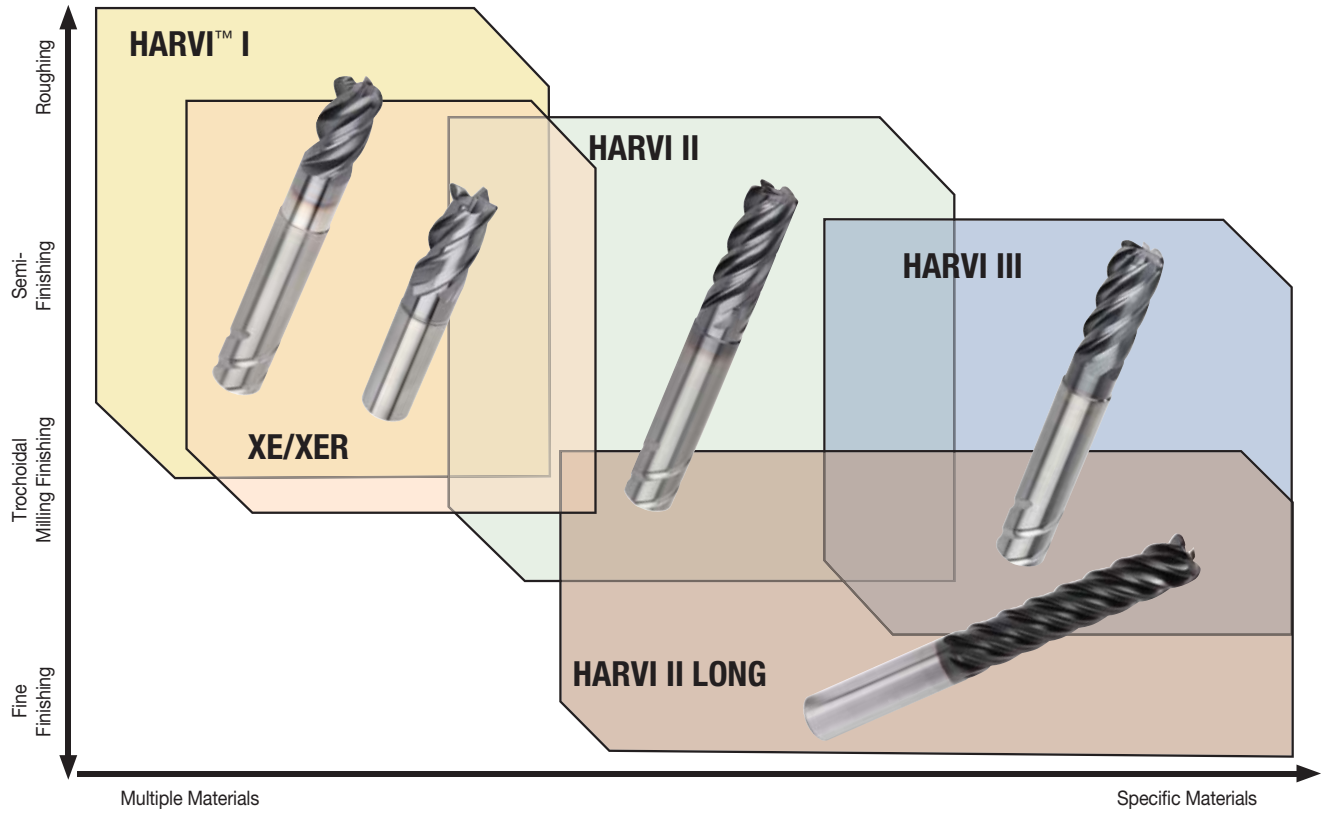
[1] Radial runout may affect tool life.
[2] Radial rigidity for Weldon holder is low at a direction perpendicular to the screw.
[3] Accepts different shank diameters through the use of reduction sleeves or due to collapse range.
[4] Collet chucks and milling chucks may require the use of a torque or special wrench; Shrink Fit adapter requires a shrinking unit.

High-Performance Capability End Mills

Primary Application

High-performance capability offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials from steel, stainless steel, cast iron, and high-temperature alloys to hard materials. These end mills are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions.

Several platforms with a wide range of diameters and corner configurations, such as chamfer, radii, sharp edges, and ball nose, are available from stock.



Designed for roughing and finishing with one tool in a wide range of applications and workpiece materials.



- Roughing, semi-finishing, and finishing with one tool.
- Outstanding metal removal rates increase productivity.
- Excellent surface quality and accuracy.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.
- Increased process safety with Safe-Lock™ by HAIMER® shanks.

HARVI™ I

High-Performance Solid Carbide End Mills

Primary Application

The HARVI I system offers plunging, slotting, and profiling at the highest possible feed rates for a wide range of materials. These end mills are designed to provide maximum Metal Removal Rates (MRR) and to achieve superior surface conditions. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock. To prevent pull out of end mills during heavy cuts, the HARVI I system is available equipped with Safe-Lock™ system by HAIMER®.

- Roughing and finishing with one tool.
- Outstanding metal removal rates increase productivity.
- KCPM15™ and KCSM15™ Beyond™ grades for long tool life.

Features and Benefits

Advanced Technology

- Four unequally spaced flutes for chatter-free machining at high feed rates.
- Center cutting design for plunging and improved ramping and helical interpolation capabilities.
- 1 x D full slotting capability in:
  — Steel
  — Stainless steel
  — Titanium

Tailored Grades

- KCPM15 Beyond grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- KCSM15 Beyond grade for exceptional tool life in titanium.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customization

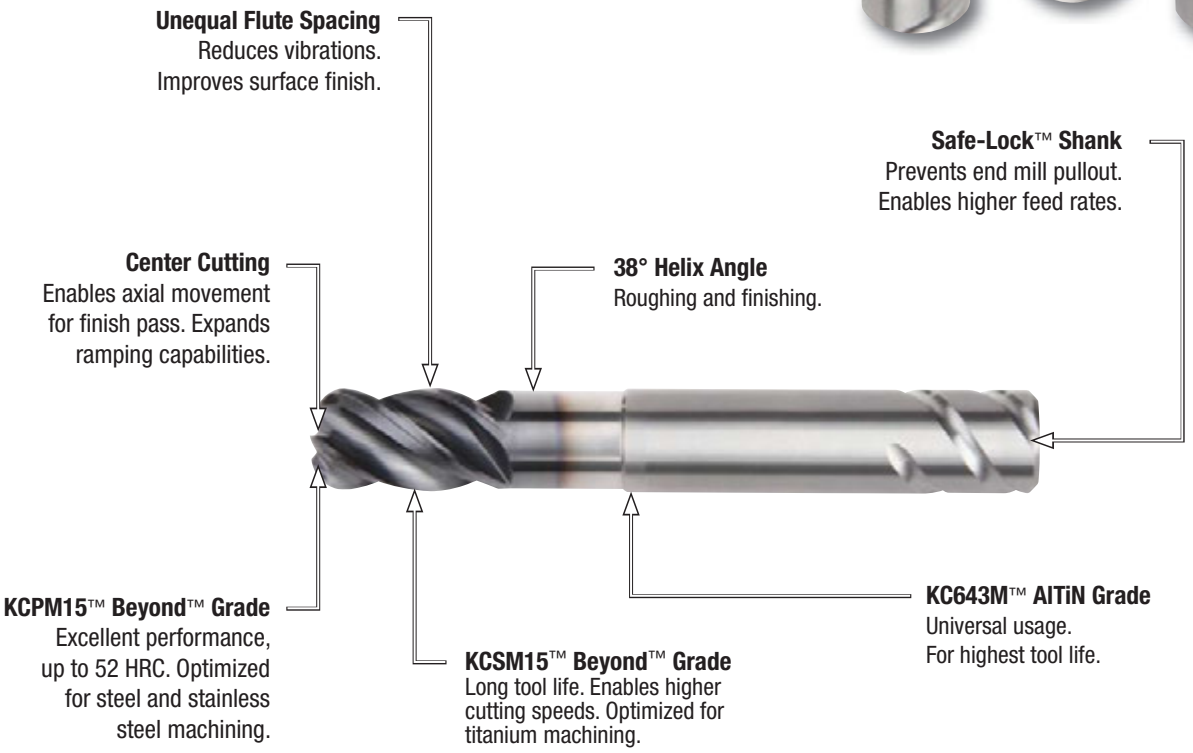
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Chip divider geometry reduces power consumption and improves chip formation in difficult-to-cut materials.
- Internal coolant axial and radial available.
- Various shanks and non-standard coatings available.
- Multiple steps possible.

Extensive Standard Offering

- Diameter range 1/8–1-1/4".
- Necked, corner radii, chamfer, and square-end offering.
- Extended-reach length.
- Ball nose with extended length of cut.

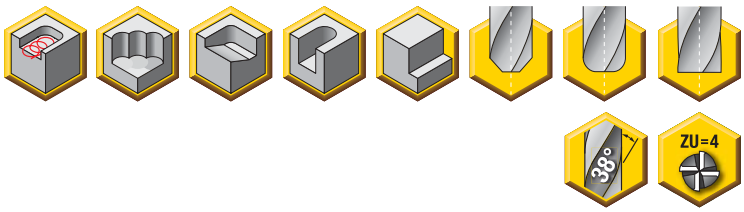
Designed for roughing and finishing with one tool in almost all materials.



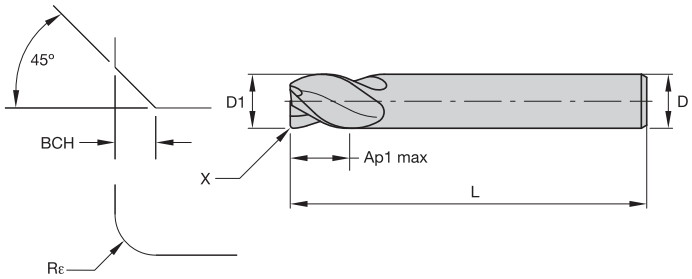


SAFE-λOCK®
by HAIMER®

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





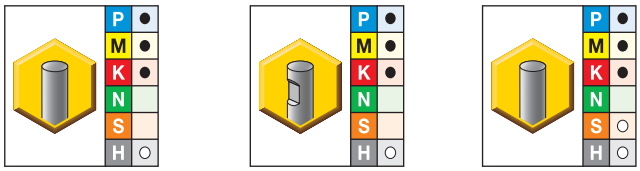


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

beyond

HPHV • UADE • 4 Flute • Inch

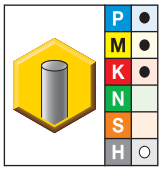


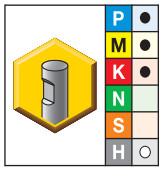
● first choice
○ alternate choice

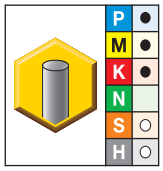
KCPM15	KCPM15	KC643M	D1	D	Ap1 max	L	Rε	BCH
HPHV125S4025CH	–	–	1/8	1/8	1/4	1 1/2	–	.015
HPHV125S4025	–	–	1/8	1/8	1/4	1 1/2	–	–
HPHV125S4025LR015	–	–	1/8	1/8	1/4	2 1/2	.015	–
HPHV125S4050R015	–	–	1/8	1/8	1/2	2	.015	–
HPHV125S4050CH	–	–	1/8	1/8	1/2	2	–	.015
HPHV125S4050	–	–	1/8	1/8	1/2	2	–	–
HPHV125S4050L	–	–	1/8	1/8	1/2	2 1/2	–	–
HPHV188S4031CH	–	–	3/16	3/16	5/16	1 1/2	–	.015
HPHV188S4031	–	–	3/16	3/16	5/16	1 1/2	–	–
HPHV188S4031LR015	–	–	3/16	3/16	5/16	2 1/2	.015	–
HPHV188S4031L	–	–	3/16	3/16	5/16	2 1/2	–	–
HPHV188S4063R015	–	–	3/16	3/16	5/8	2 1/4	.015	–
HPHV188S4063R030	–	–	3/16	3/16	5/8	2 1/4	.030	–
HPHV188S4063CH	–	–	3/16	3/16	5/8	2 1/4	–	.015
HPHV188S4063	–	–	3/16	3/16	5/8	2 1/4	–	–
HPHV188S4063LR015	–	–	3/16	3/16	5/8	2 1/2	.015	–
HPHV188S4063LR030	–	–	3/16	3/16	5/8	2 1/2	.030	–
HPHV188S4063L	–	–	3/16	3/16	5/8	2 1/2	–	–
HPHV250S4038R030	–	–	1/4	1/4	3/8	2	.030	–
HPHV250S4038CH	–	–	1/4	1/4	3/8	2	–	.015
HPHV250S4038	–	–	1/4	1/4	3/8	2	–	–
HPHV250S4038LR015	–	–	1/4	1/4	3/8	2 1/2	.015	–
HPHV250S4050R015	–	–	1/4	1/4	1/2	2 1/2	.015	–
HPHV250S4050R030	–	–	1/4	1/4	1/2	2 1/2	.030	–
HPHV250S4050R060	–	–	1/4	1/4	1/2	2 1/2	.060	–
HPHV250S4050	–	–	1/4	1/4	1/2	2 1/2	–	–
HPHV250S4075R015	–	UADE250J4ARA	1/4	1/4	3/4	2 1/2	.015	–
HPHV250S4075R030	–	–	1/4	1/4	3/4	2 1/2	.030	–

(continued)

(HPHV • UADE • 4 Flute • Inch — continued)





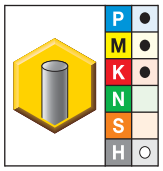


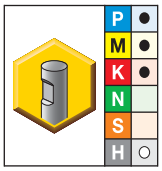
● first choice
○ alternate choice

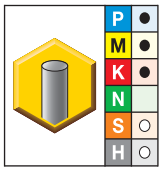
KCPM15	KCPM15	KC643M	D1	D	Ap1 max	L	Rε	BCH
HPHV250S4075R060	–	UADE250J4ARC	1/4	1/4	3/4	2 1/2	.060	–
HPHV250S4075CH	–	–	1/4	1/4	3/4	2 1/2	–	.015
HPHV250S4075	–	–	1/4	1/4	3/4	2 1/2	–	–
HPHV250S4100R015	–	–	1/4	1/4	1	3	.015	–
HPHV250S4100	–	–	1/4	1/4	1	3	–	–
HPHV250S4125R030	–	–	1/4	1/4	1 1/4	3 1/4	.030	–
HPHV250S4125CH	–	–	1/4	1/4	1 1/4	3 1/4	–	.015
HPHV250S4125	–	–	1/4	1/4	1 1/4	3 1/4	–	–
HPHV250S4175R015	–	–	1/4	1/4	1 3/4	4	.015	–
HPHV250S4175R030	–	–	1/4	1/4	1 3/4	4	.030	–
HPHV312S4050R030	–	–	5/16	5/16	1/2	2	.030	–
HPHV312S4050CH	–	–	5/16	5/16	1/2	2	–	.015
HPHV312S4050	–	–	5/16	5/16	1/2	2	–	–
HPHV312S4050LR015	–	–	5/16	5/16	1/2	2 1/2	.015	–
HPHV312S4050L	–	–	5/16	5/16	1/2	2 1/2	–	–
HPHV312S4075R015	–	–	5/16	5/16	3/4	2 1/2	.015	–
HPHV312S4075R030	–	–	5/16	5/16	3/4	2 1/2	.030	–
HPHV312S4075R060	–	–	5/16	5/16	3/4	2 1/2	.060	–
HPHV312S4075CH	–	–	5/16	5/16	3/4	2 1/2	–	.015
HPHV312S4075	–	–	5/16	5/16	3/4	2 1/2	–	–
HPHV312S4125R030	–	–	5/16	5/16	1 1/4	3 1/4	.030	–
HPHV375S4050R030	–	–	3/8	3/8	1/2	2	.030	–
HPHV375S4050CH	–	–	3/8	3/8	1/2	2	–	.020
HPHV375S4050	–	–	3/8	3/8	1/2	2	–	–
HPHV375S4050LR015	–	–	3/8	3/8	1/2	2 1/2	.015	–
HPHV375S4050LR030	–	–	3/8	3/8	1/2	2 1/2	.030	–
HPHV375S4050L	–	–	3/8	3/8	1/2	2 1/2	–	–
HPHV375S4088R015	–	–	3/8	3/8	7/8	2 1/2	.015	–
HPHV375S4088R030	–	–	3/8	3/8	7/8	2 1/2	.030	–
HPHV375S4088R060	–	–	3/8	3/8	7/8	2 1/2	.060	–
HPHV375S4088R090	–	–	3/8	3/8	7/8	2 1/2	.090	–
HPHV375S4088CH	–	–	3/8	3/8	7/8	2 1/2	–	.020
HPHV375S4088	–	–	3/8	3/8	7/8	2 1/2	–	–
HPHV375S4088LR015	–	–	3/8	3/8	7/8	3	.015	–
HPHV375S4088LR030	–	–	3/8	3/8	7/8	3	.030	–
HPHV375S4088LR090	–	–	3/8	3/8	7/8	3	.090	–
HPHV375S4088L	–	–	3/8	3/8	7/8	3	–	–
HPHV375S4100R015	–	–	3/8	3/8	1	3	.015	–
HPHV375S4100R030	–	–	3/8	3/8	1	3	.030	–
HPHV375S4100R060	–	–	3/8	3/8	1	3	.060	–
HPHV375S4100	–	–	3/8	3/8	1	3	–	–
HPHV375S4125R015	–	–	3/8	3/8	1 1/4	3	.015	–
HPHV375S4125R030	–	–	3/8	3/8	1 1/4	3	.030	–
HPHV375S4125R060	–	–	3/8	3/8	1 1/4	3	.060	–
HPHV375S4125	–	–	3/8	3/8	1 1/4	3	–	–
HPHV375S4150R030	–	–	3/8	3/8	1 1/2	4	.030	–
HPHV375S4150R060	–	–	3/8	3/8	1 1/2	4	.060	–
HPHV375S4150	–	–	3/8	3/8	1 1/2	4	–	–
HPHV375S4250R030	–	–	3/8	3/8	2 1/2	4	.030	–
HPHV375S4250R060	–	–	3/8	3/8	2 1/2	4	.060	–
–	–	UADE375J4ARA	3/8	3/8	1/2	2	.015	–
–	–	UADE375J4ARB	3/8	3/8	1/2	2	.030	–

(continued)

(HPHV • UADE • 4 Flute • Inch — continued)





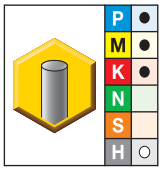


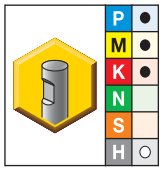
● first choice
○ alternate choice

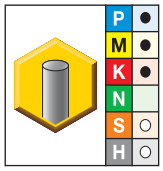
KCPM15	KCPM15	KC643M	D1	D	Ap1 max	L	Rε	BCH
–	–	UADE375J4ARC	3/8	3/8	1/2	2	.060	–
–	–	UADE375J4BRA	3/8	3/8	7/8	2 1/2	.015	–
–	–	UADE375J4BRB	3/8	3/8	7/8	2 1/2	.030	–
HPHV438S4063CH	–	–	7/16	7/16	5/8	2 1/2	–	.020
HPHV438S4088CH	–	–	7/16	7/16	7/8	2 1/2	–	.020
HPHV438S4113R015	–	–	7/16	7/16	1 1/8	3 1/2	.015	–
–	HPHV500S4063R030	–	1/2	1/2	5/8	2 1/2	.030	–
–	HPHV500S4063R060	–	1/2	1/2	5/8	2 1/2	.060	–
–	HPHV500S4063CH	–	1/2	1/2	5/8	2 1/2	–	.020
–	HPHV500S4063	–	1/2	1/2	5/8	2 1/2	–	–
–	HPHV500S4063LR015	–	1/2	1/2	5/8	3	.015	–
–	HPHV500S4063LR030	–	1/2	1/2	5/8	3	.030	–
–	HPHV500S4063LR060	–	1/2	1/2	5/8	3	.060	–
–	HPHV500S4063L	–	1/2	1/2	5/8	3	–	–
–	–	UADE500J4ARA	1/2	1/2	5/8	2 1/2	.015	–
–	–	UADE500J4ARB	1/2	1/2	5/8	2 1/2	.030	–
–	–	UADE500J4ARC	1/2	1/2	5/8	2 1/2	.060	–
–	–	UADE500J4ARE	1/2	1/2	5/8	2 1/2	.120	–
–	HPHV500S4100R030	–	1/2	1/2	1	3	.030	–
–	HPHV500S4100R060	–	1/2	1/2	1	3	.060	–
–	HPHV500S4100CH	–	1/2	1/2	1	3	–	.020
–	HPHV500S4100	–	1/2	1/2	1	3	–	–
–	HPHV500S4125R015	UADE500J4BRA	1/2	1/2	1 1/4	3	.015	–
–	HPHV500S4125R030	UADE500J4BRB	1/2	1/2	1 1/4	3	.030	–
–	HPHV500S4125R060	UADE500J4BRC	1/2	1/2	1 1/4	3	.060	–
–	HPHV500S4125R090	UADE500J4BRD	1/2	1/2	1 1/4	3	.090	–
–	HPHV500S4125R120	UADE500J4BRE	1/2	1/2	1 1/4	3	.120	–
–	HPHV500S4125CH	–	1/2	1/2	1 1/4	3	–	.020
–	HPHV500S4125	–	1/2	1/2	1 1/4	3	–	–
–	–	UADE500J4CRA	1/2	1/2	1 1/2	4	.015	–
–	HPHV500S4150R030	UADE500J4CRB	1/2	1/2	1 1/2	4	.030	–
–	HPHV500S4150R060	UADE500J4CRC	1/2	1/2	1 1/2	4	.060	–
–	–	UADE500J4CRD	1/2	1/2	1 1/2	4	.090	–
–	–	UADE500J4CRE	1/2	1/2	1 1/2	4	.120	–
–	HPHV500S4150CH	–	1/2	1/2	1 1/2	4	–	.020
–	HPHV500S4150	–	1/2	1/2	1 1/2	4	–	–
–	HPHV500S4163R030	–	1/2	1/2	1 5/8	4	.030	–
–	HPHV500S4163R060	–	1/2	1/2	1 5/8	4	.060	–
–	HPHV500S4163R120	–	1/2	1/2	1 5/8	4	.120	–
–	HPHV500S4163	–	1/2	1/2	1 5/8	4	–	–
–	HPHV500S4200R030	–	1/2	1/2	2	4	.030	–
–	HPHV500S4200CH	–	1/2	1/2	2	4	–	.020
–	HPHV500S4200	–	1/2	1/2	2	4	–	–
–	HPHV500S4250R030	–	1/2	1/2	2 1/2	4 1/2	.030	–
–	HPHV500S4300R030	–	1/2	1/2	3	5	.030	–
–	HPHV500S4300R060	–	1/2	1/2	3	5	.060	–
–	HPHV625S4075R060	–	5/8	5/8	3/4	3	.060	–
–	HPHV625S4075CH	–	5/8	5/8	3/4	3	–	.020
–	HPHV625S4075	–	5/8	5/8	3/4	3	–	–
–	HPHV625S4075LR015	–	5/8	5/8	3/4	3 1/2	.015	–
–	HPHV625S4075LR030	–	5/8	5/8	3/4	3 1/2	.030	–
–	HPHV625S4075LR060	–	5/8	5/8	3/4	3 1/2	.060	–

(continued)

(HPHV • UADE • 4 Flute • Inch — continued)





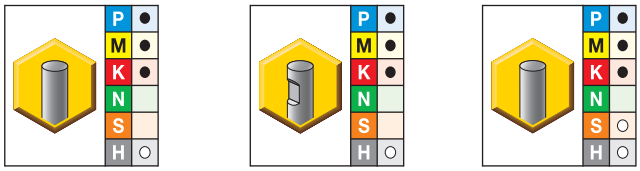


● first choice
○ alternate choice

KCPM15	KCPM15	KC643M	D1	D	Ap1 max	L	Rε	BCH
–	HPHV625S4075L	–	5/8	5/8	3/4	3 1/2	–	–
–	HPHV625S4125R030	–	5/8	5/8	1 1/4	3 1/2	.030	–
–	HPHV625S4125R060	–	5/8	5/8	1 1/4	3 1/2	.060	–
–	HPHV625S4125R090	–	5/8	5/8	1 1/4	3 1/2	.090	–
–	HPHV625S4125CH	–	5/8	5/8	1 1/4	3 1/2	–	.020
–	HPHV625S4125	–	5/8	5/8	1 1/4	3 1/2	–	–
–	HPHV625S4163R030	–	5/8	5/8	1 5/8	3 1/2	.030	–
–	HPHV625S4163R060	–	5/8	5/8	1 5/8	3 1/2	.060	–
–	HPHV625S4163R120	–	5/8	5/8	1 5/8	3 1/2	.120	–
–	HPHV625S4163	–	5/8	5/8	1 5/8	3 1/2	–	–
–	HPHV625S4213R030	–	5/8	5/8	2 1/8	4	.030	–
–	HPHV625S4213R120	–	5/8	5/8	2 1/8	4	.120	–
–	HPHV625S4213	–	5/8	5/8	2 1/8	4	–	–
–	HPHV625S4225R060	–	5/8	5/8	2 1/4	5	.060	–
–	–	UADE625J4ARB	5/8	5/8	3/4	3	.030	–
–	–	UADE625J4ARC	5/8	5/8	3/4	3	.060	–
–	HPHV750S4088CH	–	3/4	3/4	7/8	3 1/2	–	.020
–	HPHV750S4088	–	3/4	3/4	7/8	3 1/2	–	–
–	HPHV750S4088LR030	–	3/4	3/4	7/8	4	.030	–
–	HPHV750S4088L	–	3/4	3/4	7/8	4	–	–
–	–	UADE750J4ARB	3/4	3/4	7/8	3 1/2	.030	–
–	–	UADE750J4ARE	3/4	3/4	7/8	3 1/2	.120	–
–	HPHV750S4150R015	UADE750J4BRA	3/4	3/4	1 1/2	4	.015	–
–	HPHV750S4150R030	UADE750J4BRB	3/4	3/4	1 1/2	4	.030	–
–	HPHV750S4150R060	UADE750J4BRC	3/4	3/4	1 1/2	4	.060	–
–	HPHV750S4150R090	–	3/4	3/4	1 1/2	4	.090	–
–	HPHV750S4150R120	UADE750J4BRE	3/4	3/4	1 1/2	4	.120	–
–	HPHV750S4150CH	–	3/4	3/4	1 1/2	4	–	.020
–	HPHV750S4150	–	3/4	3/4	1 1/2	4	–	–
–	HPHV750S4163R030	–	3/4	3/4	1 5/8	4	.030	–
–	HPHV750S4163R060	–	3/4	3/4	1 5/8	4	.060	–
–	HPHV750S4163R120	–	3/4	3/4	1 5/8	4	.120	–
–	HPHV750S4163CH	–	3/4	3/4	1 5/8	4	–	.020
–	HPHV750S4225R030	–	3/4	3/4	2 1/4	5	.030	–
–	HPHV750S4225R060	–	3/4	3/4	2 1/4	5	.060	–
–	HPHV750S4225CH	–	3/4	3/4	2 1/4	5	–	.020
–	HPHV750S4225	–	3/4	3/4	2 1/4	5	–	–
–	HPHV750S4300CH	–	3/4	3/4	3	6	–	.020
–	HPHV750S4300	–	3/4	3/4	3	6	–	–
–	HPHV750S4400R030	–	3/4	3/4	4	6 1/4	.030	–
–	HPHV750S4400R060	–	3/4	3/4	4	6 1/4	.060	–
–	–	UADE1000J4ARA	1	1	1 1/2	4	.015	–
–	HPHV1000S4150R030	UADE1000J4ARB	1	1	1 1/2	4	.030	–
–	–	UADE1000J4ARC	1	1	1 1/2	4	.060	–
–	–	UADE1000J4ARD	1	1	1 1/2	4	.090	–
–	HPHV1000S4150R120	–	1	1	1 1/2	4	.120	–
–	HPHV1000S4150R250	UADE1000J4ARF	1	1	1 1/2	4	.250	–
–	HPHV1000S4150	–	1	1	1 1/2	4	–	–
–	HPHV1000S4150CH	–	1	1	1 1/2	4	–	.020
–	HPHV1000S4200R030	–	1	1	2	4	.030	–
–	HPHV1000S4200R060	–	1	1	2	4	.060	–
–	HPHV1000S4200R120	–	1	1	2	4	.120	–

(continued)

(HPHV • UADE • 4 Flute • Inch — continued)

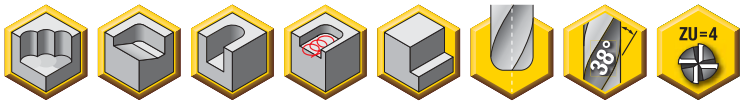


● first choice
○ alternate choice

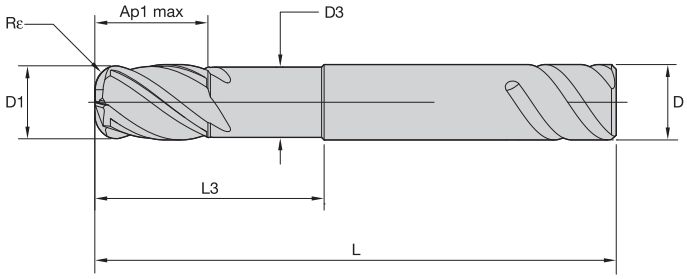
KCPM15	KCPM15	KC643M	D1	D	Ap1 max	L	Rε	BCH
–	**HPHV1000S4200**	–	1	1	2	4	–	–
–	**HPHV1000S4225R030**	–	1	1	2 1/4	5	.030	–
–	**HPHV1000S4225R060**	–	1	1	2 1/4	5	.060	–
–	**HPHV1000S4225CH**	–	1	1	2 1/4	5	–	.020
–	**HPHV1000S4225**	–	1	1	2 1/4	5	–	–
–	**HPHV1000S4263R030**	–	1	1	2 5/8	5	.030	–
–	**HPHV1000S4263CH**	–	1	1	2 5/8	5	–	.020
–	**HPHV1000S4263**	–	1	1	2 5/8	5	–	–
–	**HPHV1000S4300R030**	–	1	1	3	6	.030	–
–	**HPHV1000S4300R060**	–	1	1	3	6	.060	–
–	**HPHV1000S4300CH**	–	1	1	3	6	–	.020
–	**HPHV1000S4400R030**	–	1	1	4	7	.030	–
–	**HPHV1000S4400R060**	–	1	1	4	7	.060	–
–	**HPHV1000S4400CH**	–	1	1	4	7	–	.020
–	**HPHV1250S4225R030**	–	1 1/4	1 1/4	2 1/4	5	.030	–
–	**HPHV1250S4225CH**	–	1 1/4	1 1/4	2 1/4	5	–	.020

NOTE: For application data, see page P25.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





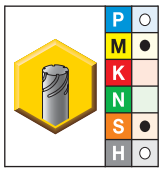


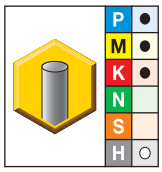
End Mill Tolerances

D1	tolerance	D	tolerance h6 +/-
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	+0/-.00051"

beyond

UADE • UBDE • 4 Flute with Neck • Inch





● first choice
○ alternate choice

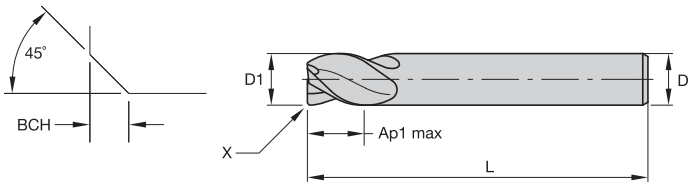
KCSM15	KCPM15	D1	D	D3	Ap1 max	L3	L	Rε
–	UADE0250J4AQA	1/4	1/4	.235	3/8	1 1/4	4	.015
–	UADE0250J4AQB	1/4	1/4	.235	3/8	1 1/4	4	.030
–	UADE0375J4AQA	3/8	3/8	.345	1/2	2	4	.015
–	UADE0375J4AQB	3/8	3/8	.345	1/2	2	4	.030
UBDE0500N4AQA *	–	1/2	3/4	.470	5/8	2 1/4	4	.015
–	UADE0500J4AQB	1/2	1/2	.470	5/8	2 1/4	4	.030
UBDE0500N4AQB *	–	1/2	3/4	.470	5/8	2 1/4	4	.030
UBDE0625N4AQB *	UADE0625J4AQB	5/8	5/8	.587	3/4	2 1/4	4	.030
UBDE0625N4AQC *	–	5/8	5/8	.587	3/4	2 1/4	4	.060
UBDE0750N4AQB *	UADE0750J4AQB	3/4	3/4	.700	1	2 1/4	4 1/2	.030
UBDE0750N4AQC *	–	3/4	3/4	.700	1	2 1/4	4 1/2	.060
UBDE0750N4AQD *	–	3/4	3/4	.700	1	2 1/4	4 1/2	.090
UBDE0750N4AQE *	–	3/4	3/4	.700	1	2 1/4	4 1/2	.120
UBDE0750N4BQB *	UADE0750J4BQB	3/4	3/4	.700	1	3 1/4	5 1/2	.030
UBDE0750N4BQC *	–	3/4	3/4	.700	1	3 1/4	5 1/2	.060
UBDE0750N4BQD *	–	3/4	3/4	.700	1	3 1/4	5 1/2	.090
UBDE0750N4BQE *	–	3/4	3/4	.700	1	3 1/4	5 1/2	.120
UBDE1000N4BQB *	UADE1000J4BQB *	1	1	.939	1 1/8	3 1/4	5 1/2	.030
UBDE1000N4BQC *	–	1	1	.939	1 1/8	3 1/4	5 1/2	.060
UBDE1000N4BQE *	–	1	1	.939	1 1/8	3 1/4	5 1/2	.120

NOTE: For application data, see page P25.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





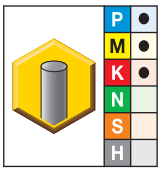


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	+0/-.00051"

beyond

HPRSHV • 4 Flute with Extended Reach • Inch



● first choice
○ alternate choice

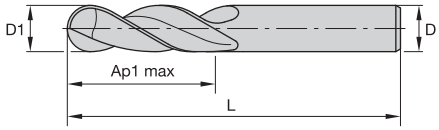
KCPM15	D1	D	Ap1 max	L	BCH
HPRSHV500S4600CH	1/2	1/2	5/8	6	.020
HPRSHV500S4600	1/2	1/2	5/8	6	—
HPRSHV625S4600CH	5/8	5/8	3/4	6	.020
HPRSHV625S4600	5/8	5/8	3/4	6	—
HPRSHV750S4500CH	3/4	3/4	1	5	.020
HPRSHV750S4600CH	3/4	3/4	1	6	.020
HPRSHV750S4600	3/4	3/4	1	6	—
HPRSHV1000S4700CH	1	1	1 1/8	7	.020

NOTE: For application data, see page P26.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





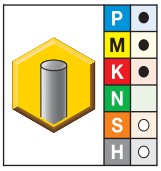


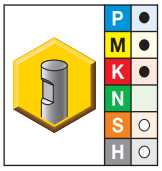
End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

beyond

HPHVBN • 4 Flute with Extended Length-of-Cut • Ball Nose • Inch



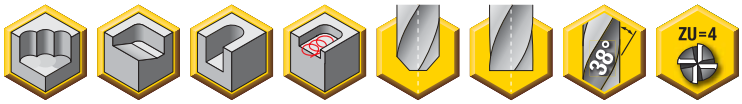


● first choice
○ alternate choice

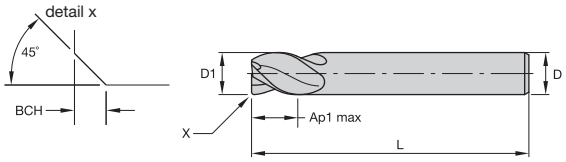
KCPM15	KCPM15	D1	D	Ap1 max	L
HPHVBN125S4050	–	1/8	1/8	1/2	2
HPHVBN188S4063	–	3/16	3/16	5/8	2 1/4
HPHVBN250S4075	–	1/4	1/4	3/4	2 1/2
HPHVBN312S4075	–	5/16	5/16	3/4	2 1/2
HPHVBN375S4088	–	3/8	3/8	7/8	2 1/2
HPHVBN438S4088	–	7/16	7/16	7/8	2 1/2
–	**HPHVBN500S4100**	1/2	1/2	1	3
–	**HPHVBN500S4125**	1/2	1/2	1 1/4	3
–	**HPHVBN625S4125**	5/8	5/8	1 1/4	3 1/2
–	**HPHVBN750S4150**	3/4	3/4	1 1/2	4
–	**HPHVBN1000S4150**	1	1	1 1/2	4

NOTE: For application data, see page P26.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Optimized geometry for titanium machining.



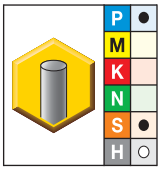




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HPHVT • 4 Flute • Inch

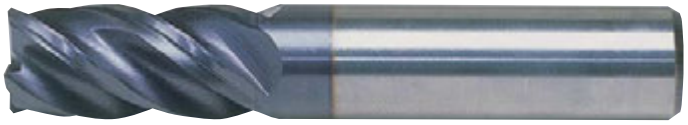


● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	BCH
HPHVT500S4063CH	1/2	1/2	5/8	2 1/2	.020
HPHVT500S4063	1/2	1/2	5/8	2 1/2	—
HPHVT500S4125CH	1/2	1/2	1 1/4	3	.020
HPHVT500S4125	1/2	1/2	1 1/4	3	—
HPHVT625S4075CH	5/8	5/8	3/4	3	.020
HPHVT625S4075	5/8	5/8	3/4	3	—
HPHVT625S4125CH	5/8	5/8	1 1/4	3 1/2	.020
HPHVT625S4125	5/8	5/8	1 1/4	3 1/2	—
HPHVT750S4088CH	3/4	3/4	7/8	3 1/2	.020
HPHVT750S4088	3/4	3/4	7/8	3 1/2	—
HPHVT750S4150CH	3/4	3/4	1 1/2	4	.020
HPHVT750S4150	3/4	3/4	1 1/2	4	—
HPHVT1000S4150CH *	1	1	1 1/2	4	.020
HPHVT1000S4150 *	1	1	1 1/2	4	—

NOTE: For application data, see page P27.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

HARVI I • HPHV • UADE • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B)			KC643M		KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.												
		A		B	Cutting Speed — vc SFM					D1 — Diameter											
									frac.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1 1/4
		ap	ae	ap	min	max	min	max	dec.	.125	.188	.250	.313	.375	.438	.500	.625	.750	1.000	1.250
P	0	Ap max	0.5 x D	1 x D	490	660	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049	.0049
	1	Ap max	0.5 x D	1 x D	490	660	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049	.0049
	2	Ap max	0.5 x D	1 x D	460	620	460	620	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049	.0049
	3	Ap max	0.5 x D	1 x D	390	520	390	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045	.0048
	4	Ap max	0.5 x D	0.75 x D	300	490	300	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039	.0040
	5	Ap max	0.5 x D	1 x D	200	330	200	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036	.0039
	6	Ap max	0.5 x D	0.75 x D	160	250	160	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028	.0029
M	1	Ap max	0.5 x D	1 x D	300	380	300	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045	.0048
	2	Ap max	0.5 x D	1 x D	200	260	200	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036	.0039
	3	Ap max	0.5 x D	1 x D	200	230	200	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028	.0029
K	1	Ap max	0.5 x D	1 x D	390	490	390	490	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049	.0049
	2	Ap max	0.5 x D	1 x D	360	460	360	460	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045	.0048
	3	Ap max	0.5 x D	1 x D	360	430	360	430	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036	.0039
S	1	Ap max	0.3 x D	0.3 x D	160	300	–	–	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045	.0048
	2	Ap max	0.3 x D	0.3 x D	80	130	–	–	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024	.0026
	3	Ap max	0.3 x D	0.3 x D	80	130	–	–	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024	.0026
	4	Ap max	0.5 x D	1 x D	160	200	–	–	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033	.0036
H	1	Ap max	0.5 x D	0.75 x D	260	460	260	460	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039	.0040

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
For tools 2 x D <LOC (Ap1 max) =<3 x D Ae = 0.25 x D, for tools with LOC (Ap1 max) longer than 3 x D, Ae = 0, Ae = 0.1 x D and no slot.

HARVI I • UADE • UBDE • Unequal Flute Spacing • With Neck



Material Group		Side Milling (A) and Slotting (B)			KCSM15		KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	Cutting Speed — vc SFM					D1 — Diameter					
									frac.	1/4	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	max	max	dec.	.2500	.3750	.5000	.6250	.7500	1.0000
P	0	0.75 x D	0.5 x D	0.75 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	1	0.75 x D	0.5 x D	0.75 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	0.75 x D	0.5 x D	0.75 x D	460	620	460	620	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	3	0.75 x D	0.5 x D	0.75 x D	390	520	390	520	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	4	0.75 x D	0.5 x D	0.5 x D	300	490	300	490	IPT	.0014	.0020	.0026	.0030	.0034	.0039
	5	0.75 x D	0.5 x D	0.75 x D	200	330	200	330	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	6	0.75 x D	0.5 x D	0.5 x D	160	250	160	250	IPT	.0010	.0015	.0019	.0022	.0025	.0028
M	1	0.75 x D	0.5 x D	0.75 x D	300	380	300	380	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	0.75 x D	0.5 x D	0.75 x D	200	260	200	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	3	0.75 x D	0.5 x D	0.75 x D	200	230	200	230	IPT	.0010	.0015	.0019	.0022	.0025	.0028
K	1	0.75 x D	0.5 x D	0.75 x D	–	–	390	490	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	0.75 x D	0.5 x D	0.75 x D	–	–	360	460	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	3	0.75 x D	0.5 x D	0.75 x D	–	–	360	430	IPT	.0012	.0018	.0023	.0027	.0031	.0036
S	1	0.75 x D	0.3 x D	0.3 x D	160	300	–	–	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	0.75 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	3	0.75 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	4	0.75 x D	0.5 x D	0.75 x D	160	200	–	–	IPT	.0011	.0017	.0021	.0025	.0028	.0033
H	1	0.75 x D	0.5 x D	0.5 x D	260	460	260	460	IPT	.0014	.0020	.0026	.0030	.0034	.0039

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — for longest reach (L3) tools, redulce ap by 30%.

HARVI I • HPRSHV • Unequal Flute Spacing • Extended Reach

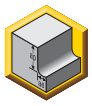


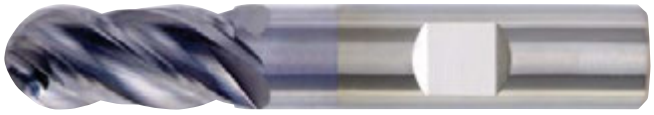


Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc SFM min	KCPM15 Cutting Speed — vc SFM max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/2	5/8	3/4	1
							dec.	.500	.625	.750	1.000
P	1	0.75 x D	0.5 x D	0.75 x D	500	650	IPT	.0035	.0039	.0043	.0050
	2	0.75 x D	0.5 x D	0.75 x D	450	625	IPT	.0035	.0039	.0043	.0050
	3	0.75 x D	0.5 x D	0.75 x D	400	525	IPT	.0029	.0034	.0038	.0046
	4	0.75 x D	0.5 x D	0.5 x D	300	475	IPT	.0026	.0030	.0033	.0039
	5	1.5 x D	0.5 x D	0.75 x D	200	325	IPT	.0023	.0027	.0030	.0036
	6	0.75 x D	0.5 x D	0.5 x D	150	225	IPT	.0019	.0022	.0024	.0028
M	1	0.75 x D	0.5 x D	0.75 x D	260	330	IPT	.0029	.0034	.0038	.0046
	2	0.75 x D	0.5 x D	0.75 x D	200	260	IPT	.0023	.0027	.0030	.0036
	3	0.75 x D	0.5 x D	0.75 x D	200	260	IPT	.0019	.0022	.0024	.0028
K	1	0.75 x D	0.5 x D	0.75 x D	390	520	IPT	.0035	.0039	.0043	.0050
	2	0.75 x D	0.5 x D	0.75 x D	360	460	IPT	.0029	.0034	.0038	.0046
	3	0.75 x D	0.5 x D	0.75 x D	330	430	IPT	.0023	.0027	.0030	.0036

NOTE: Those guidelines may require variations to achieve optimum results.
For tools with reach > 3 x D, reduce fz by 20%.
For tools with reach > 5 x D, reduce fz by 30%.
For tools with reach > 10 x D, reduce vc and fz by 30%.

HARVI I • HPHVBN • 4 Flute with Extended Length-of-Cut • Ball Nose





Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KCPM15 Cutting Speed — vc SFM min	KCPM15 Cutting Speed — vc SFM max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1
							dec.	.125	.188	.250	.313	.375	.438	.500	.625	.750	1.000
P	0	1.25 x D	0.5 x D	1 x D	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	1	1.25 x D	0.5 x D	1 x D	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	2	1.25 x D	0.5 x D	1 x D	460	620	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	3	1.25 x D	0.5 x D	1 x D	390	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	4	1.25 x D	0.5 x D	0.75 x D	300	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039
	5	1.25 x D	0.5 x D	1 x D	200	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	6	1.25 x D	0.5 x D	0.75 x D	160	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
M	1	1.25 x D	0.5 x D	1 x D	300	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1.25 x D	0.5 x D	1 x D	200	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	3	1.25 x D	0.5 x D	1 x D	200	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
K	1	1.25 x D	0.5 x D	1 x D	390	490	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	2	1.25 x D	0.5 x D	1 x D	360	460	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	3	1.25 x D	0.5 x D	1 x D	360	430	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
S	1	1 x D	0.3 x D	0.3 x D	160	300	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1 x D	0.3 x D	0.3 x D	80	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	3	1.25 x D	0.3 x D	0.3 x D	80	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	4	1.25 x D	0.5 x D	1 x D	160	200	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033
H	1	1.25 x D	0.5 x D	0.75 x D	260	460	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI I • HPHVT • Unequal Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.				
		A		B	Cutting Speed — vc SFM			D1 — Diameter			
							frac.	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.500	.625	.750	1.000
P	5	1.5 x D	0.5 x D	1 x D	200	330	IPT	.0023	.0027	.0031	.0036
	6	1.5 x D	0.5 x D	0.75 x D	160	250	IPT	.0019	.0022	.0025	.0028
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0029	.0034	.0039	.0045
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0015	.0018	.0021	.0024
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0015	.0018	.0021	.0024
	4	1.5 x D	0.5 x D	1 x D	160	200	IPT	.0021	.0025	.0028	.0033
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	IPT	.0026	.0030	.0034	.0039

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI™ II

High-Performance Solid Carbide End Mills

Primary Application

The HARVI II system is designed to provide maximum metal removal rates with five unequally spaced flutes for roughing and finishing operations in side milling, slotting, and profiling. A wide range of diameters and corner configurations, such as chamfer, radii, and sharp edges, are available from stock.

- 1 x D slotting in titanium and stainless steels with five unequally spaced flutes.
- Roughing and finishing with one tool.
- KCPM15™ Beyond™ grades for long tool life.

Features and Benefits

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates.
- Proprietary parabolic core design increases stability.
- Ramping up to 3°.
- 1 x D full slotting capability in:
  - — Titanium
  - — Stainless steel

Tailored Grades

- KCPM15 Beyond grade for outstanding wear protection in stainless steel to mitigate crater, depth-of-cut notching, and flank wear.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customization

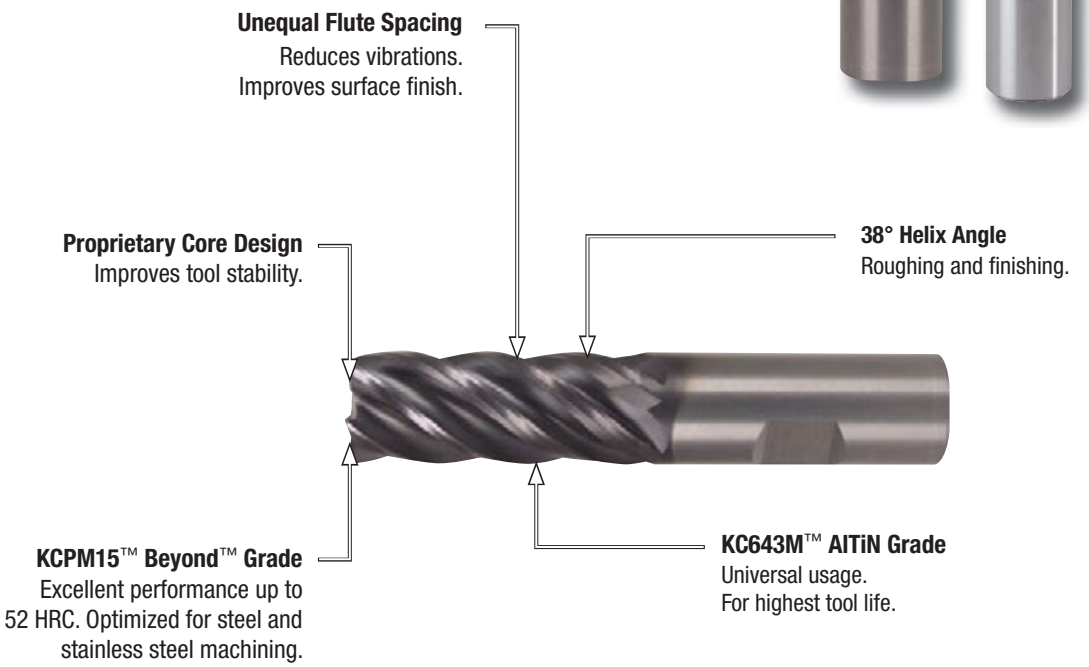
- Intermediate diameters available.
- Expanded length of tool and increased length of cut possible.
- Chip divider geometry reduces power consumption and improves chip formation in difficult-to-cut materials.
- Ball-nose version available.
- Internal coolant axial and radial available.
- Various shanks, including Safe-Lock™ by Haimer, and non-standard coatings available.
- Multiple steps possible.

Extensive Standard Offering

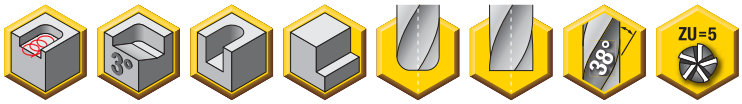
- Diameter range 3/16–1".
- Necked, corner radii, and square-end offering.

High-feed roughing and finishing with one tool at highest length of cut.

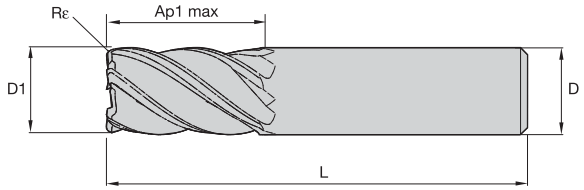




- Kennametal standard dimensions.
- Non-center cutting.
- Ramping up to 3°.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Five-flute geometry enables slotting up to 1 x D.





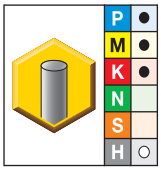


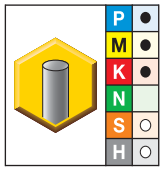
End Mill Tolerances

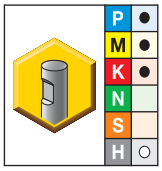
D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

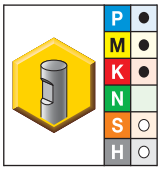
beyond

UCDE • 5 Flute • Inch







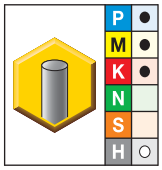


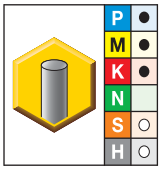
● first choice
○ alternate choice

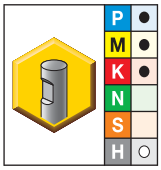
KCPM15	KC643M	KCPM15	KC643M	D1	D	Ap1 max	L	Rε
UCDE188J5BRA	UCDE188J5BRA	–	–	3/16	3/16	5/8	2 1/4	.015
UCDE188J5BRB	UCDE188J5BRB	–	–	3/16	3/16	5/8	2 1/4	.030
UCDE188J5BS	UCDE188J5BS	–	–	3/16	3/16	5/8	2 1/4	–
–	UCDE219J5BS	–	–	7/32	1/4	5/8	2 1/2	–
UCDE250J5BRA	UCDE250J5BRA	–	–	1/4	1/4	3/4	2 1/2	.015
UCDE250J5BRB	UCDE250J5BRB	–	–	1/4	1/4	3/4	2 1/2	.030
UCDE250J5BS	UCDE250J5BS	–	–	1/4	1/4	3/4	2 1/2	–
–	UCDE281J5BS	–	–	9/32	5/16	3/4	2 1/2	–
UCDE312J5BRA	UCDE312J5BRA	–	–	5/16	5/16	3/4	2 1/2	.015
UCDE312J5BRB	UCDE312J5BRB	–	–	5/16	5/16	3/4	2 1/2	.030
UCDE312J5BS	UCDE312J5BS	–	–	5/16	5/16	3/4	2 1/2	–
–	UCDE344J5BS	–	–	11/32	3/8	1	2 1/2	–
UCDE375J5BRA	UCDE375J5BRA	–	–	3/8	3/8	7/8	2 1/2	.015
UCDE375J5BRB	UCDE375J5BRB	–	–	3/8	3/8	7/8	2 1/2	.030
UCDE375J5BS	UCDE375J5BS	–	–	3/8	3/8	7/8	2 1/2	–
–	UCDE375J5CRA	–	–	3/8	3/8	1	3	.015
–	UCDE375J5CRB	–	–	3/8	3/8	1	3	.030
–	UCDE438J5BS	–	–	7/16	7/16	1	2 1/2	–
UCDE500J5BRA	UCDE500J5BRA	UCDE500K5BRA	UCDE500K5BRA	1/2	1/2	1 1/4	3	.015
UCDE500J5BRB	UCDE500J5BRB	UCDE500K5BRB	UCDE500K5BRB	1/2	1/2	1 1/4	3	.030
–	UCDE500J5BRD	–	–	1/2	1/2	1 1/4	3	.060
UCDE500J5BRF	UCDE500J5BRF	UCDE500K5BRF	UCDE500K5BRF	1/2	1/2	1 1/4	3	.120
UCDE500J5BS	UCDE500J5BS	UCDE500K5BS	UCDE500K5BS	1/2	1/2	1 1/4	3	–
–	UCDE562J5BRA	–	–	9/16	5/8	1 1/4	3 1/2	.015
–	UCDE562J5BRB	–	–	9/16	5/8	1 1/4	3 1/2	.030
–	UCDE562J5BS	–	–	9/16	5/8	1 1/4	3 1/2	–
–	UCDE625J5BRA	–	–	5/8	5/8	1 1/4	3 1/2	.015
UCDE625J5BRB	UCDE625J5BRB	UCDE625K5BRB	UCDE625K5BRB	5/8	5/8	1 1/4	3 1/2	.030
–	UCDE625J5BRD	–	–	5/8	5/8	1 1/4	3 1/2	.060
UCDE625J5BS	UCDE625J5BS	UCDE625K5BS	UCDE625K5BS	5/8	5/8	1 1/4	3 1/2	–
–	UCDE750J5BRA	–	–	3/4	3/4	1 1/2	4	.015
UCDE750J5BRB	UCDE750J5BRB	UCDE750K5BRB	UCDE750K5BRB	3/4	3/4	1 1/2	4	.030

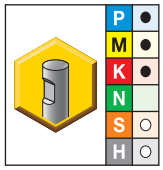
(continued)

(UCDE • 5 Flute • Inch — continued)







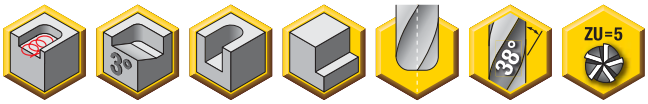


● first choice
○ alternate choice

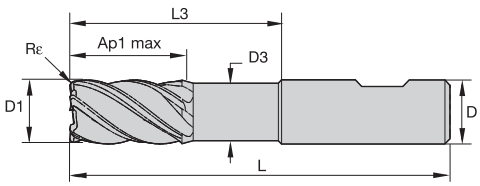
KCPM15	KC643M	KCPM15	KC643M	D1	D	Ap1 max	L	Rε
UCDE750J5BRD	UCDE750J5BRD	—	—	3/4	3/4	1 1/2	4	.060
UCDE750J5BRE	UCDE750J5BRE *	—	—	3/4	3/4	1 1/2	4	.090
UCDE750J5BRF	UCDE750J5BRF	—	UCDE750K5BRF	3/4	3/4	1 1/2	4	.120
UCDE750J5BS	UCDE750J5BS	UCDE750K5BS	UCDE750K5BS	3/4	3/4	1 1/2	4	—
—	UCDE750J5CRB	—	—	3/4	3/4	1 5/8	4	.030
—	UCDE750J5CRD	—	—	3/4	3/4	1 5/8	4	.060
—	UCDE750J5CRF	—	—	3/4	3/4	1 5/8	4	.120
—	UCDE750J5CS	—	—	3/4	3/4	1 5/8	4	—
—	UCDE1000J5BRA	—	—	1	1	1 3/4	4 1/2	.015
UCDE1000J5BRB	UCDE1000J5BRB	UCDE1000K5BRB	UCDE1000K5BRB	1	1	1 3/4	4 1/2	.030
UCDE1000J5BRD	UCDE1000J5BRD *	—	—	1	1	1 3/4	4 1/2	.060
UCDE1000J5BRE *	UCDE1000J5BRE *	—	—	1	1	1 3/4	4 1/2	.090
UCDE1000J5BRF	UCDE1000J5BRF	UCDE1000K5BRF *	UCDE1000K5BRF *	1	1	1 3/4	4 1/2	.120
UCDE1000J5BS	UCDE1000J5BS *	UCDE1000K5BS	UCDE1000K5BS	1	1	1 3/4	4 1/2	—

NOTE: For application data, see page P34.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Non-center cutting.
- Ramping up to 3°.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Five-flute geometry enables slotting up to 1 x D.





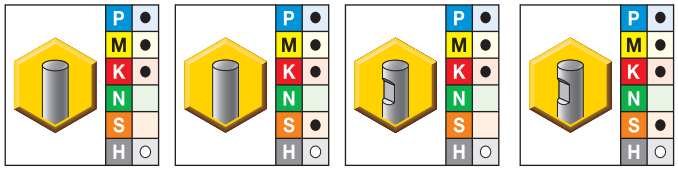


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

beyond

UCDE • 5 Flute with Neck • Inch

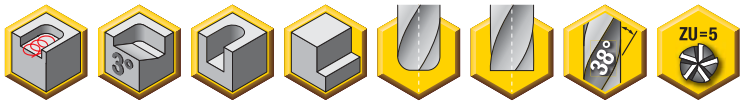


● first choice
○ alternate choice

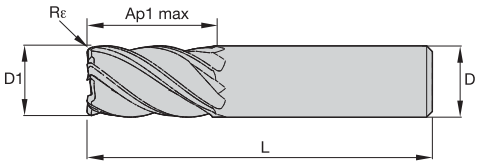
KCPM15	KC643M	KCPM15	KC643M	D1	D	D3	Ap1 max	L3	L	Rε
UCDE250J5ARA	**UCDE250J5ARA**	**–**	**–**	1/4	1/4	.235	1/2	1 1/4	4	.015
UCDE375J5ARA	**UCDE375J5ARA**	**–**	**–**	3/8	3/8	.353	7/8	1 7/8	4	.015
–	**–**	**UCDE500K5ARB**	**UCDE500K5ARB**	1/2	1/2	.472	1 1/4	2 1/4	4	.030
–	**–**	**UCDE625K5ARB**	**UCDE625K5ARB**	5/8	5/8	.590	1 1/4	2 1/4	4	.030
–	**–**	**UCDE750K5ARB**	**UCDE750K5ARB**	3/4	3/4	.704	1 1/2	3 1/4	5 1/2	.030
–	**–**	**UCDE1000K5ARB**	**UCDE1000K5ARB**	1	1	.940	1 3/4	3 1/4	5 1/2	.030

NOTE: For application data, see page P35.

- Kennametal standard dimensions.
- Non-center cutting.
- Ramping up to 3°.
- Unequal flute spacing minimzes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Optimized geometry for titanium machining.
- Five-flute geometry enables slotting up to 1 x D.



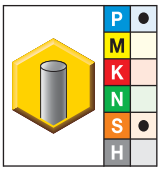


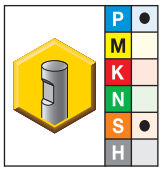


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

UDDE • 5 Flute • Inch





● first choice
○ alternate choice

KC643M	KC643M	D1	D	Ap1 max	L3	L	Rε
UDDE500J5BRA	–	1/2	1/2	1 1/4	1 1/4	3	.015
UDDE500J5BRB	–	1/2	1/2	1 1/4	1 1/4	3	.030
UDDE500J5BRF	–	1/2	1/2	1 1/4	1 1/4	3	.120
UDDE500J5BS	–	1/2	1/2	1 1/4	1 1/4	3	–
–	UDDE500K5BRA	1/2	1/2	1 1/4	1 1/2	3	.015
–	UDDE500K5BRB	1/2	1/2	1 1/4	1 1/2	3	.030
–	UDDE500K5BRF	1/2	1/2	1 1/4	1 1/2	3	.120
–	UDDE500K5BS	1/2	1/2	1 1/4	1 1/2	3	–
UDDE625J5BRB	–	5/8	5/8	1 1/4	1 1/4	3 1/2	.030
UDDE625J5BS	–	5/8	5/8	1 1/4	1 1/4	3 1/2	–
–	UDDE625K5BRB	5/8	5/8	1 1/4	1 1/2	3 1/2	.030
–	UDDE625K5BS	5/8	5/8	1 1/4	1 1/2	3 1/2	–
UDDE750J5BRB	–	3/4	3/4	1 1/2	1 1/4	4	.030
UDDE750J5BRF	–	3/4	3/4	1 1/2	1 1/4	4	.120
UDDE750J5BS	–	3/4	3/4	1 1/2	1 1/4	4	–
–	UDDE750K5BRB	3/4	3/4	1 1/2	1 3/4	4	.030
–	UDDE750K5BRF	3/4	3/4	1 1/2	1 3/4	4	.120
–	UDDE750K5BS	3/4	3/4	1 1/2	1 3/4	4	–
UDDE1000J5BRB	–	1	1	1 3/4	1 1/4	4 1/2	.030
UDDE1000J5BRF *	–	1	1	1 3/4	1 1/4	4 1/2	.120
UDDE1000J5BS	–	1	1	1 3/4	1 1/4	4 1/2	–
–	UDDE1000K5BRB	1	1	1 3/4	1 3/4	4 1/2	.030
–	UDDE1000K5BRF	1	1	1 3/4	1 3/4	4 1/2	.120
–	UDDE1000K5BS	1	1	1 3/4	1 3/4	4 1/2	–

NOTE: For application data, see page P35.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

HARVI II • UCDE • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B)			KC643M		KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	Cutting Speed — vc SFM					D1 — Diameter					
									frac.	1/4	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	min	max	dec.	.250	.375	.500	.625	.750	1.000
P	0	1.5 x D	0.5 x D	1 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	1	1.5 x D	0.5 x D	1 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	1.5 x D	0.5 x D	1 x D	460	620	460	620	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	3	1.5 x D	0.5 x D	1 x D	390	520	390	520	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	4	1.5 x D	0.5 x D	0.75 x D	300	490	300	490	IPT	.0014	.0020	.0026	.0030	.0034	.0039
	5	1.5 x D	0.5 x D	1 x D	200	330	200	330	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	6	1.5 x D	0.5 x D	0.75 x D	160	250	160	250	IPT	.0010	.0015	.0019	.0022	.0025	.0028
M	1	1.5 x D	0.5 x D	1 x D	300	380	300	380	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	1.5 x D	0.5 x D	1 x D	200	260	200	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	3	1.5 x D	0.5 x D	1 x D	200	230	200	230	IPT	.0010	.0015	.0019	.0022	.0025	.0028
K	1	1.5 x D	0.5 x D	1 x D	390	490	390	490	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	1.5 x D	0.5 x D	1 x D	360	460	360	460	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	3	1.5 x D	0.5 x D	1 x D	360	430	360	430	IPT	.0012	.0018	.0023	.0027	.0031	.0036
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	–	–	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	1.5 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	3	1.5 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	4	1.5 x D	0.5 x D	1 x D	160	200	–	–	IPT	.0011	.0017	.0021	.0025	.0028	.0033
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	260	460	IPT	.0014	.0020	.0026	.0030	.0034	.0039

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI II • UCDE • Unequal Flute Spacing • With Neck



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc SFM min	KC643M max	KCPM15 max	KCPM15 max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/4	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	max	max	dec.	.2500	.3750	.5000	.6250	.7500	1.0000
P	0	0.75 x D	0.5 x D	0.75 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	1	0.75 x D	0.5 x D	0.75 x D	490	660	490	660	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	0.75 x D	0.5 x D	0.75 x D	460	620	460	620	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	3	0.75 x D	0.5 x D	0.75 x D	390	520	390	520	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	4	0.75 x D	0.5 x D	0.5 x D	300	490	300	490	IPT	.0014	.0020	.0026	.0030	.0034	.0039
	5	0.75 x D	0.5 x D	0.75 x D	200	330	200	330	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	6	0.75 x D	0.5 x D	0.5 x D	160	250	160	250	IPT	.0010	.0015	.0019	.0022	.0025	.0028
M	1	0.75 x D	0.5 x D	0.75 x D	300	380	300	380	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	0.75 x D	0.5 x D	0.75 x D	200	260	200	260	IPT	.0012	.0018	.0023	.0027	.0031	.0036
	3	0.75 x D	0.5 x D	0.75 x D	200	230	200	230	IPT	.0010	.0015	.0019	.0022	.0025	.0028
K	1	0.75 x D	0.5 x D	0.75 x D	390	490	390	490	IPT	.0018	.0027	.0034	.0039	.0044	.0049
	2	0.75 x D	0.5 x D	0.75 x D	360	460	360	460	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	3	0.75 x D	0.5 x D	0.75 x D	360	430	360	430	IPT	.0012	.0018	.0023	.0027	.0031	.0036
S	1	0.75 x D	0.3 x D	0.3 x D	160	300	–	–	IPT	.0015	.0023	.0029	.0034	.0039	.0045
	2	0.75 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	3	0.75 x D	0.3 x D	0.3 x D	80	130	–	–	IPT	.0008	.0012	.0015	.0018	.0021	.0024
	4	0.75 x D	0.5 x D	0.75 x D	160	200	–	–	IPT	.0011	.0017	.0021	.0025	.0028	.0033
H	1	0.75 x D	0.5 x D	0.5 x D	260	460	260	460	IPT	.0014	.0020	.0026	.0030	.0034	.0039

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
Side milling applications — for longest reach (L3) tools, reduce ae by 30%.
Slot milling applications — for longest reach (L3) tools, redulce ap by 30%.

HARVI II • UDDE • Unequal Flute Spacing



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc SFM min	KC643M max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.500	.625	.750	1.000
P	5	1.25 x D	0.5 x D	1 x D	200	325	IPT	.0023	.0027	.0003	.0036
	6	1.25 x D	0.5 x D	0.75 x D	150	225	IPT	.0019	.0022	.0024	.0028
S	2	1.0 x D	0.3 x D	0.3 x D	70	130	IPT	.0016	.0018	.0020	.0025
	3	1.25 x D	0.5 x D	1 x D	160	260	IPT	.0023	.0027	.0030	.0036
	4	1.25 x D	0.5 x D	1 x D	150	210	IPT	.0022	.0025	.0028	.0033

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI™ II Long

High-Performance Solid Carbide End Mills

Primary Application

The HARVI II Long system is designed for machining titanium, steels, and stainless steels with excellent surface finishes at maximum Metal Removal Rates (MRR). The extended cutting length enables the HARVI II Long system to machine deep pockets with thin walls in semi-finishing and finishing operations. It also reduces the number of cuts when machining wing profiles for the aerospace industry.

- 5 x D side milling finishing operations in titanium and stainless steels.
- Exceptionally straight walls.
- Universal KC643M™ grade for long tool life.

Features and Benefits

Advanced Technology

- Five unequally spaced flutes for chatter-free machining at high feed rates, improving surface finish and tool life.
- 3 x D and 5 x D lengths for reduced number of cuts.
- Innovative core design increases stability for exceptionally straight walls.
- Improved feed rate in corner machining operations versus conventional cutters.

Tailored Grades

- Universal KC643M grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

Customization

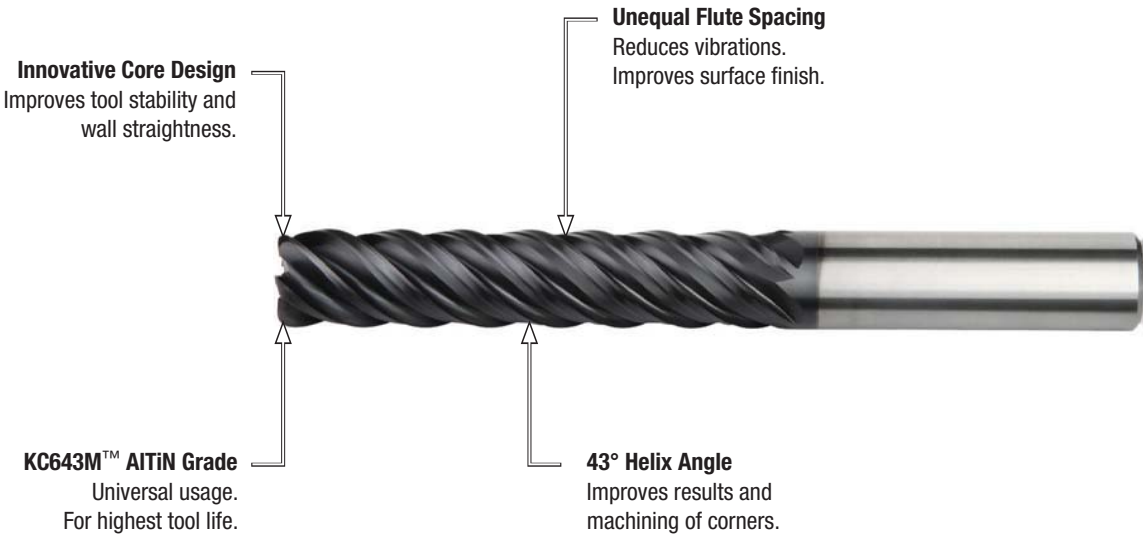
- Intermediate diameters available.
- Chip divider geometry available for reduced power consumption and improved chip formation in difficult-to-cut materials.
- Internal coolant axial, as well as radial, available.
- Various shank options, including Safe-Lock™ by Haimer, and non-standard coatings available.

Extensive Standard Offering

- Diameter range 1/4–1".
- Various corner radii in stock.

3 x D and 5 x D lengths of cut without reduced feed rates when machining corners.

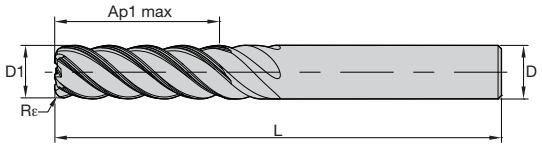




- Kennametal standard dimensions.
- Non-center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- For finishing and semi-finishing applications.
- Optimized geometry for machining corners at deep cavities.



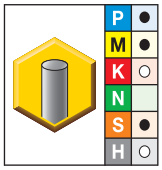




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HARVI II • UGDE • 3 x D Lengths of Cut



● first choice
○ alternate choice

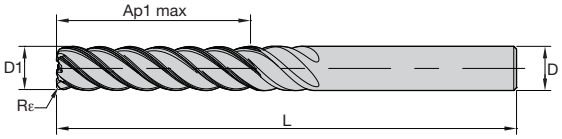
KC643M	D1	D	Ap1 max	L	Rε
UGDE0250J5ARA	1/4	1/4	3/4	2 1/2	.015
UGDE0250J5ARB	1/4	1/4	3/4	2 1/2	.030
UGDE0250J5AE	1/4	1/4	3/4	2 1/2	—
UGDE0312J5ARA	5/16	5/16	15/16	3	.015
UGDE0312J5ARB *	5/16	5/16	15/16	3	.030
UGDE0312J5AE	5/16	5/16	15/16	3	—
UGDE0375J5ARA	3/8	3/8	1 1/8	4	.015
UGDE0375J5ARB	3/8	3/8	1 1/8	4	.030
UGDE0375J5ARC	3/8	3/8	1 1/8	4	.060
UGDE0375J5AE	3/8	3/8	1 1/8	4	—
UGDE0500J5ARA	1/2	1/2	1 1/2	4	.015
UGDE0500J5ARB	1/2	1/2	1 1/2	4	.030
UGDE0500J5ARC	1/2	1/2	1 1/2	4	.060
UGDE0500J5AE	1/2	1/2	1 1/2	4	—
UGDE0625J5ARA	5/8	5/8	1 7/8	5	.015
UGDE0625J5ARB	5/8	5/8	1 7/8	5	.030
UGDE0625J5ARC	5/8	5/8	1 7/8	5	.060
UGDE0625J5ARD	5/8	5/8	1 7/8	5	.120
UGDE0625J5AE	5/8	5/8	1 7/8	5	—
UGDE0750J5ARA	3/4	3/4	2 1/4	5	.015
UGDE0750J5ARB	3/4	3/4	2 1/4	5	.030
UGDE0750J5ARC	3/4	3/4	2 1/4	5	.060
UGDE0750J5ARD	3/4	3/4	2 1/4	5	.120
UGDE0750J5AE	3/4	3/4	2 1/4	5	—
UGDE1000J5ARA	1	1	3	6	.015
UGDE1000J5ARB	1	1	3	6	.030
UGDE1000J5ARC	1	1	3	6	.060
UGDE1000J5ARD	1	1	3	6	.120
UGDE1000J5AE	1	1	3	6	—

NOTE: For application data, see page P40.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Non-center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- For finishing and semi-finishing applications.
- Optimized geometry for machining corners at deep cavities.



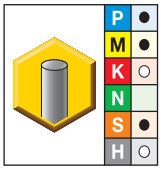




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HARVI II • UGDE • 5 x D Lengths of Cut



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	Rε
UGDE0250J5BRA	1/4	1/4	1 1/4	3	.015
UGDE0250J5BRB	1/4	1/4	1 1/4	3	.030
UGDE0250J5BE	1/4	1/4	1 1/4	3	—
UGDE0312J5BRA	5/16	5/16	1 1/4	3 1/2	.015
UGDE0312J5BRB	5/16	5/16	1 1/4	3 1/2	.030
UGDE0312J5BE	5/16	5/16	1 1/4	3 1/2	—
UGDE0375J5BRA	3/8	3/8	1 7/8	4	.015
UGDE0375J5BRB	3/8	3/8	1 7/8	4	.030
UGDE0375J5BRC	3/8	3/8	1 7/8	4	.060
UGDE0375J5BE	3/8	3/8	1 7/8	4	—
UGDE0500J5BRA	1/2	1/2	2 1/2	5	.015
UGDE0500J5BRB	1/2	1/2	2 1/2	5	.030
UGDE0500J5BRC	1/2	1/2	2 1/2	5	.060
UGDE0500J5BE	1/2	1/2	2 1/2	5	—
UGDE0625J5BRA	5/8	5/8	3 1/8	6	.015
UGDE0625J5BRB	5/8	5/8	3 1/8	6	.030
UGDE0625J5BRC	5/8	5/8	3 1/8	6	.060
UGDE0625J5BRD	5/8	5/8	3 1/8	6	.120
UGDE0625J5BE	5/8	5/8	3 1/8	6	—
UGDE0750J5BRA	3/4	3/4	3 3/4	7	.015
UGDE0750J5BRB	3/4	3/4	3 3/4	7	.030
UGDE0750J5BRC	3/4	3/4	3 3/4	7	.060
UGDE0750J5BRD	3/4	3/4	3 3/4	7	.120
UGDE0750J5BE	3/4	3/4	3 3/4	7	—
UGDE1000J5BRA	1	1	5	7 1/2	.015
UGDE1000J5BRB	1	1	5	7 1/2	.030
UGDE1000J5BRC	1	1	5	7 1/2	.060
UGDE1000J5BRD	1	1	5	7 1/2	.120
UGDE1000J5BE	1	1	5	7 1/2	—

NOTE: For application data, see page P41.

HARVI II • UGDE • Unequal Flute Spacing • 3 x D Lengths of Cut



Side Milling (A)



Material Group		A		KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A).						
				Cutting Speed — vc SFM			D1 — Diameter					
						frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min	max	dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	0.05 x D	980	1310	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	1	Ap max	0.05 x D	980	1310	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	2	Ap max	0.05 x D	920	1250	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	3	Ap max	0.05 x D	790	1050	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	4	Ap max	0.05 x D	590	980	IPT	.0017	.0021	.0025	.0031	.0036	.0040	.0046
	5	Ap max	0.05 x D	390	660	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
	6	Ap max	0.05 x D	330	490	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034
M	1	Ap max	0.05 x D	590	750	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.05 x D	390	520	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
	3	Ap max	0.05 x D	390	460	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034
K	1	Ap max	0.05 x D	790	980	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	2	Ap max	0.05 x D	720	920	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	3	Ap max	0.05 x D	720	850	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
S	1	Ap max	0.05 x D	330	590	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.05 x D	160	260	IPT	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	3	Ap max	0.05 x D	160	260	IPT	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	4	Ap max	0.05 x D	330	390	IPT	.0013	.0017	.0020	.0026	.0030	.0034	.0040
H	1	Ap max	0.05 x D	520	920	IPT	.0017	.0021	.0025	.0031	.0036	.0040	.0046
	2	Ap max	0.05 x D	460	790	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034

* For the above cutting data, do not exceed an overall ae of .031".

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI II • UGDE • Unequal Flute Spacing • 5 x D Lengths of Cut



Material Group		Side Milling (A)		KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A).							
		A		Cutting Speed — vc SFM			D1 — Diameter						
						frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min	max	dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	0.05 x D	980	1310	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	1	Ap max	0.05 x D	980	1310	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	2	Ap max	0.05 x D	920	1250	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	3	Ap max	0.05 x D	790	1050	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	4	Ap max	0.05 x D	590	980	IPT	.0017	.0021	.0025	.0031	.0036	.0040	.0046
	5	Ap max	0.05 x D	390	660	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
	6	Ap max	0.05 x D	330	490	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034
M	1	Ap max	0.05 x D	590	750	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.05 x D	390	520	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
	3	Ap max	0.05 x D	390	460	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034
K	1	Ap max	0.05 x D	790	980	IPT	.0022	.0028	.0033	.0041	.0047	.0053	.0059
	2	Ap max	0.05 x D	720	920	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	3	Ap max	0.05 x D	720	850	IPT	.0015	.0019	.0022	.0028	.0033	.0037	.0043
S	1	Ap max	0.05 x D	330	590	IPT	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.05 x D	160	260	IPT	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	3	Ap max	0.05 x D	160	260	IPT	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	4	Ap max	0.05 x D	330	390	IPT	.0013	.0017	.0020	.0026	.0030	.0034	.0040
H	1	Ap max	0.05 x D	520	920	IPT	.0017	.0021	.0025	.0031	.0036	.0040	.0046
	2	Ap max	0.05 x D	460	790	IPT	.0012	.0016	.0018	.0023	.0027	.0030	.0034

* For the above cutting data, do not exceed an overall ae of .031".

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machinining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI™ III

High-Performance Solid Carbide End Mills

Primary Application

The HARVI III system takes high-performance profiling, semi-finishing, and finishing to the next level. These end mills are designed to provide maximum metal removal rates in titanium and stainless steel while achieving supreme surface conditions. A wide range of diameters and corner radii are available from stock as well as the Safe-Lock™ system by HAIMER® shanks.

- Outstanding metal removal rates increase productivity.
- Longest tool life due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.
- Increased process safety with Safe-Lock™ shanks.

Features and Benefits

Advanced Technology

- Six unequally spaced flutes for chatter-free machining at high feed rates.
- Lower cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability in roughing and finishing operations.
- Center cutting design for higher flexibility as well as radial and axial finishing pass after roughing operation.

Tailored Grades

- KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.

Customization

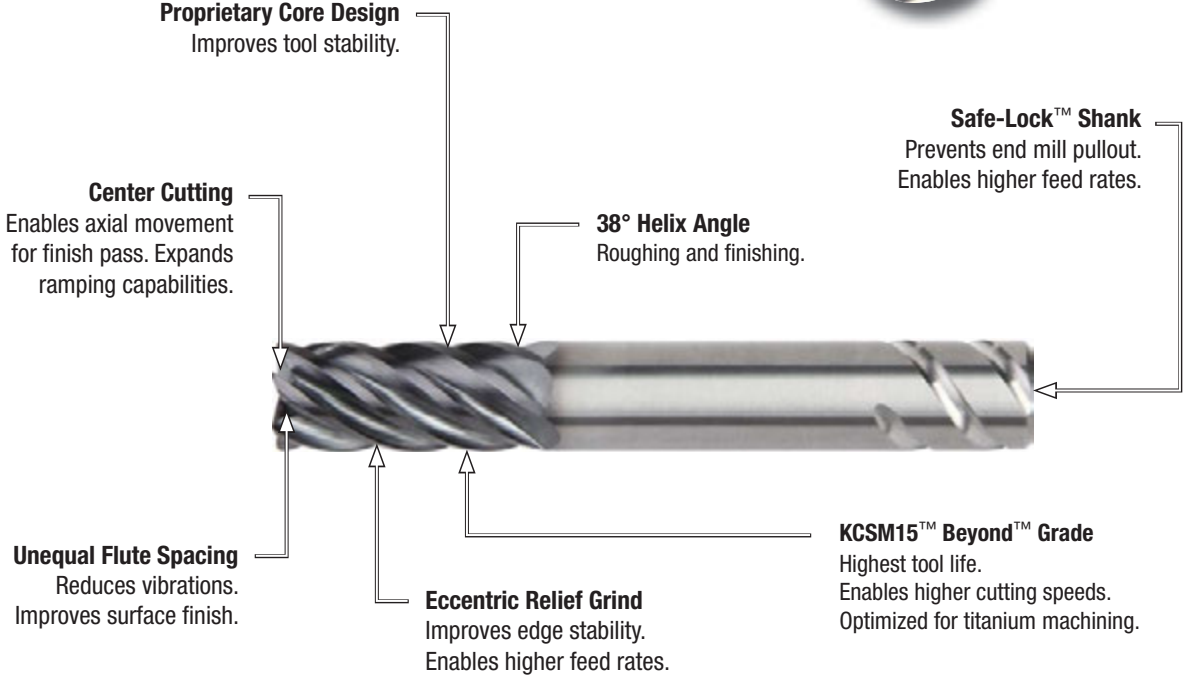
- Engineered solutions, including ball nose versions, are available upon request.

Extensive Standard Offering

- Diameter ranges 3/8–1-1/4".
- Necked, corner radii, and square-end offering.
- Round shank and Safe-Lock™ shank available.

Maximum metal removal rates in machining titanium and stainless steel with supreme surfaces.



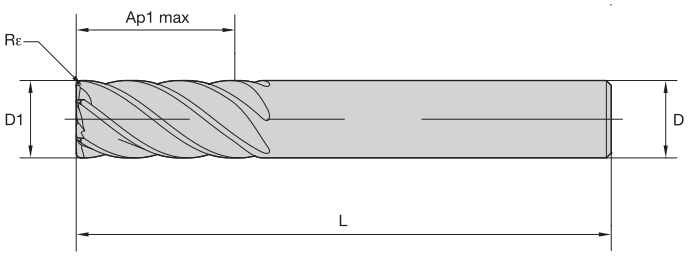


SAFE-LOCK®
by HAIMER®

- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





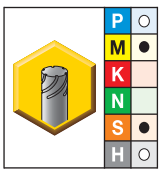


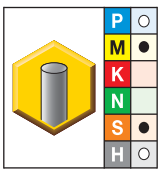
End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

beyond

UJDE • 6 Flute with Eccentric Relief Grind • Inch



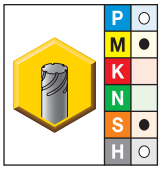


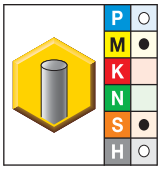
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
–	UJDE375J6CRA	3/8	3/8	1	3	.015
–	UJDE375J6CRB	3/8	3/8	1	3	.030
–	UJDE375J6CRC	3/8	3/8	1	3	.060
–	UJDE375J6CS	3/8	3/8	1	3	–
–	UJDE0500J6ARB	1/2	1/2	1	3	.030
–	UJDE0500J6ARC	1/2	1/2	1	3	.060
UJDE500N6BRA	UJDE500J6BRA	1/2	1/2	1 1/4	3	.015
UJDE500N6BRB	UJDE500J6BRB	1/2	1/2	1 1/4	3	.030
UJDE500N6BRC	UJDE500J6BRC	1/2	1/2	1 1/4	3	.060
UJDE500N6BRE	UJDE500J6BRE	1/2	1/2	1 1/4	3	.120
UJDE500N6BS	UJDE500J6BS	1/2	1/2	1 1/4	3	–
–	UJDE0500J6CRB	1/2	1/2	2	4	.030
–	UJDE0500J6CRE	1/2	1/2	2	4	.120
–	UJDE0625J6ARA	5/8	5/8	1	3 1/2	.015
UJDE625N6BRB	UJDE625J6BRB	5/8	5/8	1 1/4	3 1/2	.030
UJDE625N6BRC	UJDE625J6BRC	5/8	5/8	1 1/4	3 1/2	.060
UJDE625N6BS	UJDE625J6BS	5/8	5/8	1 1/4	3 1/2	–
–	UJDE0625J6CRB	5/8	5/8	1 5/8	3 1/2	.030
–	UJDE0625J6CRC	5/8	5/8	1 5/8	3 1/2	.060
–	UJDE0625J6CRD	5/8	5/8	1 5/8	3 1/2	.090
–	UJDE0625J6CRE	5/8	5/8	1 5/8	3 1/2	.120
–	UJDE0750J6ARB	3/4	3/4	1	3	.030
UJDE750N6BRB	UJDE750J6BRB	3/4	3/4	1 1/2	4	.030
UJDE750N6BRC	UJDE750J6BRC	3/4	3/4	1 1/2	4	.060
UJDE750N6BRD	UJDE750J6BRD	3/4	3/4	1 1/2	4	.090
UJDE750N6BRE	UJDE750J6BRE	3/4	3/4	1 1/2	4	.120
–	UJDE0750J6BRH	3/4	3/4	1 1/2	4	.190
UJDE750N6BS	UJDE750J6BS	3/4	3/4	1 1/2	4	–

(continued)

(UJDE • 6 Flute with Eccentric Relief Grind • Inch — continued)





● first choice
○ alternate choice

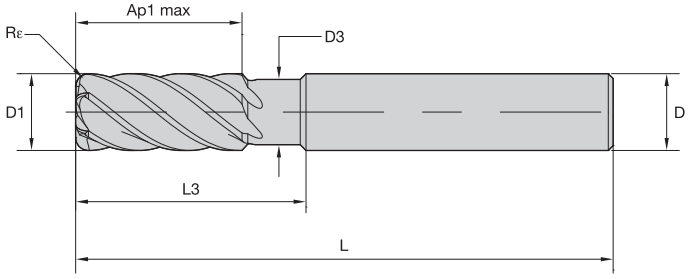
KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
UJDE750N6CRB	UJDE750J6CRB	3/4	3/4	1 5/8	4	.030
UJDE750N6CRC	UJDE750J6CRC	3/4	3/4	1 5/8	4	.060
UJDE750N6CRD	UJDE750J6CRD	3/4	3/4	1 5/8	4	.090
UJDE750N6CRE	UJDE750J6CRE	3/4	3/4	1 5/8	4	.120
UJDE750N6CS	UJDE750J6CS	3/4	3/4	1 5/8	4	—
—	UJDE1000J6ARB	1	1	1 1/2	4	.030
—	UJDE1000J6ARC	1	1	1 1/2	4	.060
—	UJDE1000J6ARE *	1	1	1 1/2	4	.120
—	UJDE1000J6AS	1	1	1 1/2	4	—
UJDE1000N6BRB	—	1	1	1 3/4	4 1/2	.030
UJDE1000N6BRC	UJDE1000J6BRC	1	1	1 3/4	4 1/2	.060
UJDE1000N6BRE	UJDE1000J6BRE	1	1	1 3/4	4 1/2	.120
UJDE1000N6BRF	UJDE1000J6BRF	1	1	1 3/4	4 1/2	.250
UJDE1000N6BS	UJDE1000J6BS	1	1	1 3/4	4 1/2	—
—	UJDE1000J6CRB	1	1	2	4 1/2	.030
—	UJDE1000J6CRC	1	1	2	4 1/2	.060
—	UJDE1000J6CRD	1	1	2	4 1/2	.090
—	UJDE1000J6CRE	1	1	2	4 1/2	.120
—	UJDE1000J6CRH	1	1	2	4 1/2	.190
—	UJDE1000J6CRF	1	1	2	4 1/2	.250
—	UJDE1000J6CS	1	1	2	4 1/2	—
—	UJDE1000J6DRB	1	1	2	5	.030
—	UJDE1000J6DS	1	1	2 1/4	5	—
UJDE1250N6BRB	UJDE1250J6BRB	1 1/4	1 1/4	2 1/4	5	.030
UJDE1250N6BRE	—	1 1/4	1 1/4	2 1/4	5	.120
UJDE1250N6BS	—	1 1/4	1 1/4	2 1/4	5	—

NOTE: For application data, see page P47.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





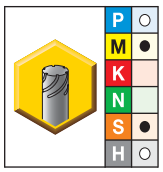


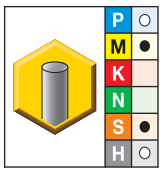
End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

beyond

UJDE • 6 Flute with Eccentric Relief Grind and Neck • Inch



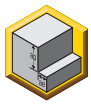


● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	D3	Ap1 max	L3	L	Rε
–	**UJDE0375J6BQE**	3/8	3/8	.353	7/8	1 1/4	3	.120
–	**UJDE375J6BQA**	3/8	3/8	.353	7/8	1 7/8	4	.015
–	**UJDE0500J6DQB**	1/2	1/2	.470	3/4	2 1/4	6	.030
UJDE500N6BQB	–	1/2	1/2	.470	1 1/4	2 1/4	4	.030
UJDE625N6BQB	–	5/8	5/8	.588	1 1/4	2 1/4	4	.030
–	**UJDE0625J6DQB**	5/8	5/8	.588	1 1/4	2 1/4	6	.030
UJDE750N6BQB	–	3/4	3/4	.705	1 1/2	3 1/4	5 1/2	.030
UJDE1000N6BQB	–	1	1	.940	1 3/4	3 1/4	5 1/2	.030

NOTE: For application data, see page P48.

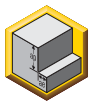
HARVI III • UJDE • Unequal Flute Spacing • Roughing





Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter					
						frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	min	max	dec.	.3750	.5000	.6250	.7500	1.0000	1.2500
P	4	Ap max	0.4 x D	300	490	IPT	.0020	.0026	.0030	.0034	.0039	.0040
	5	Ap max	0.4 x D	200	330	IPT	.0018	.0023	.0027	.0031	.0036	.0039
M	1	Ap max	0.4 x D	300	380	IPT	.0023	.0029	.0034	.0039	.0045	.0048
	2	Ap max	0.4 x D	200	260	IPT	.0018	.0023	.0027	.0031	.0036	.0039
	3	Ap max	0.4 x D	200	230	IPT	.0015	.0019	.0022	.0025	.0028	.0029
S	1	Ap max	0.4 x D	160	300	IPT	.0023	.0029	.0034	.0039	.0045	.0048
	2	Ap max	0.4 x D	80	130	IPT	.0012	.0015	.0018	.0021	.0024	.0026
	3	Ap max	0.4 x D	80	130	IPT	.0012	.0015	.0018	.0021	.0024	.0026
	4	Ap max	0.4 x D	160	200	IPT	.0017	.0021	.0025	.0028	.0033	.0036
H	1	Ap max	0.4 x D	260	460	IPT	.0020	.0026	.0030	.0034	.0039	.0040

HARVI III • UJDE • Unequal Flute Spacing • Finishing

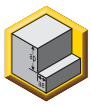




Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter					
						frac.	3/8	1/2	5/8	3/4	1	1 1/4
		ap	ae	min	max	dec.	.3750	.5000	.6250	.7500	1.0000	1.2500
P	4	Ap max	0.06 x D	560	940	IPT	.0025	.0031	.0036	.0040	.0046	.0048
	5	Ap max	0.06 x D	370	620	IPT	.0022	.0028	.0033	.0037	.0043	.0047
M	1	Ap max	0.06 x D	560	720	IPT	.0027	.0035	.0041	.0046	.0054	.0058
	2	Ap max	0.06 x D	370	500	IPT	.0022	.0028	.0033	.0037	.0043	.0047
	3	Ap max	0.06 x D	370	440	IPT	.0018	.0023	.0027	.0030	.0034	.0035
S	1	Ap max	0.06 x D	310	560	IPT	.0027	.0035	.0041	.0046	.0054	.0058
	2	Ap max	0.06 x D	160	250	IPT	.0015	.0018	.0022	.0025	.0029	.0032
	3	Ap max	0.06 x D	160	250	IPT	.0015	.0018	.0022	.0025	.0029	.0032
	4	Ap max	0.06 x D	310	370	IPT	.0020	.0026	.0030	.0034	.0040	.0043
H	1	Ap max	0.06 x D	500	870	IPT	.0025	.0031	.0036	.0040	.0046	.0048

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

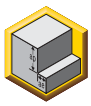
HARVI III • UJDE • Unequal Flute Spacing • Roughing • With Neck





Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		Cutting Speed — vc SFM			D1 — Diameter				
						frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min	max	dec.	.3750	.5000	.6250	.7500	1.0000
P	4	Ap1 max	0.4 x D	300	490	IPT	.0020	.0026	.0030	.0033	.0039
	5	Ap1 max	0.4 x D	200	330	IPT	.0018	.0023	.0027	.0030	.0036
M	1	Ap1 max	0.4 x D	300	380	IPT	.0023	.0029	.0034	.0038	.0046
	2	Ap1 max	0.4 x D	200	260	IPT	.0018	.0023	.0027	.0030	.0036
	3	Ap1 max	0.4 x D	200	230	IPT	.0015	.0019	.0022	.0024	.0028
S	1	Ap1 max	0.4 x D	160	300	IPT	.0023	.0029	.0034	.0038	.0046
	2	Ap1 max	0.4 x D	160	300	IPT	.0023	.0029	.0034	.0038	.0046
	3	Ap1 max	0.4 x D	80	130	IPT	.0012	.0016	.0018	.0020	.0025
	4	Ap1 max	0.4 x D	160	260	IPT	.0017	.0022	.0025	.0028	.0033
H	1	Ap1 max	0.4 x D	260	460	IPT	.0020	.0026	.0030	.0033	.0039

HARVI III • UJDE • Unequal Flute Spacing • Finishing • With Neck





Material Group		Side Milling (A)		KCSM15		Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		Cutting Speed — vc SFM			D1 — Diameter				
						frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min	max	dec.	.3750	.5000	.6250	.7500	1.0000
P	4	Ap1 max	0.06 x D	560	940	IPT	.0024	.0031	.0036	.0040	.0047
	5	Ap1 max	0.06 x D	370	620	IPT	.0022	.0028	.0033	.0036	.0044
M	1	Ap1 max	0.06 x D	560	720	IPT	.0027	.0035	.0041	.0045	.0055
	2	Ap1 max	0.06 x D	370	500	IPT	.0022	.0028	.0033	.0036	.0044
	3	Ap1 max	0.06 x D	370	440	IPT	.0018	.0023	.0027	.0029	.0034
S	1	Ap1 max	0.06 x D	310	560	IPT	.0027	.0035	.0041	.0045	.0055
	2	Ap1 max	0.06 x D	310	560	IPT	.0027	.0035	.0041	.0045	.0055
	3	Ap1 max	0.06 x D	160	250	IPT	.0014	.0019	.0022	.0024	.0029
	4	Ap1 max	0.06 x D	310	500	IPT	.0020	.0026	.0030	.0033	.0040
H	1	Ap1 max	0.06 x D	500	870	IPT	.0024	.0031	.0036	.0040	.0047

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

EADE Solid Ceramic End Mill



- Roughing nickel-based high-temperature alloys.
- Highest productivity and longest tool life.
- Outstanding reduction of machining time.
- Less tool changes due to higher tool life.
- Benefit from throw-away type of tooling.
- Minimum cutting speed of 1300 SFM (400 m/min).

Offering

- 4-flute necked tools for slotting.
- 6-flute version for face and side milling.

KYS40

- Cutting speeds up to 3300 SFM (1000 m/min) increases Metal Removal Rates (MRR).

beyond™

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KENNAMETAL®

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HARVI™ III Ball Nose

High-Performance Solid Carbide End Mills

Primary Application

HARVI III Ball Nose tooling takes high-performance profiling, semi-finishing, and finishing to the next level. Designed to provide maximum metal removal rates in titanium and stainless steel while achieving supreme surface conditions. A wide range of diameters and length variations are available from stock.

- Outstanding metal removal rates increase productivity.
- Highest tool life increases due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.

Features and Benefits

Advanced Technology

- Six unequally spaced flutes for chatter-free machining at high feed rates.
- Lower cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability at roughing and finishing operations.

Tailored Grade

- KCSM15 Beyond grade for exceptional tool life in titanium and stainless steels.

Extensive Standard Offering

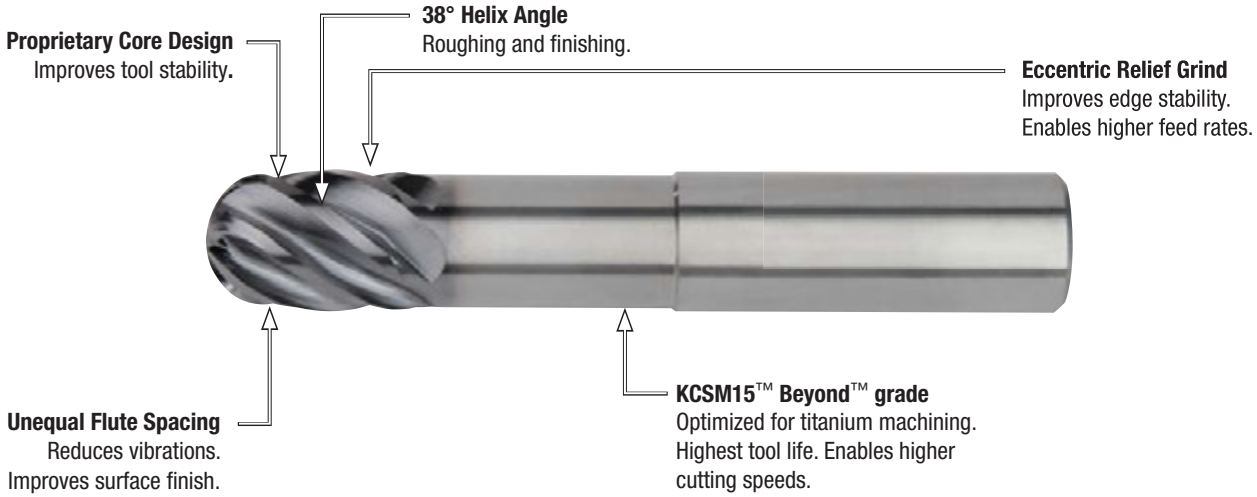
- Diameter ranges 3/8–1".
- Necked, round shank offering in two length variations.

Customization

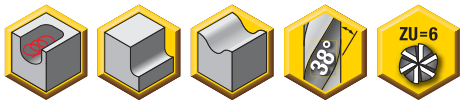
- Engineered solutions, including shank and non-standard length versions, are available upon request.

3D profiling at highest productivity in titanium and stainless steels.

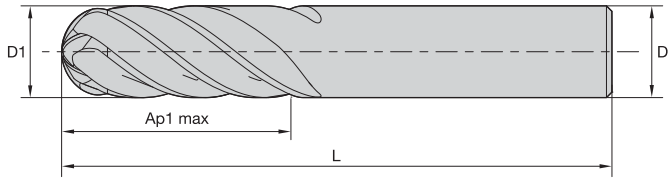




- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



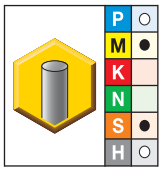




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

UJBE • 6-Flute Ball Nose with Eccentric Relief Grind • Inch

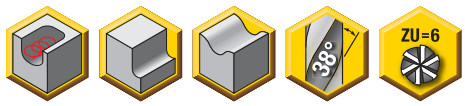


● first choice
○ alternate choice

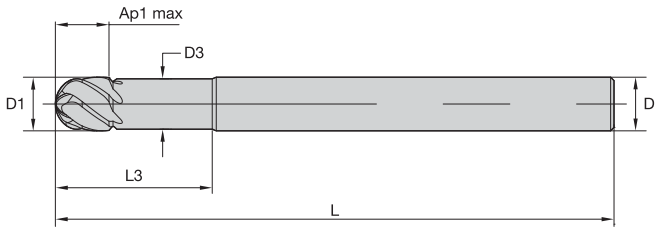
KCSM15	D1	D	Ap1 max	L
UJBE0375J6B	3/8	3/8	7/8	2 1/2
UJBE0500J6B	1/2	1/2	1	3
UJBE0500J6C	1/2	1/2	1 1/4	3
UJBE0625J6B	5/8	5/8	1 1/4	3 1/2
UJBE0750J6B	3/4	3/4	1 1/2	4
UJBE1000J6B	1	1	1 1/2	4

NOTE: For application data, see page P56.

- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.



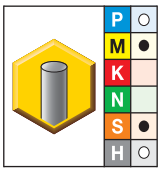




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

UJBE • 6-Flute Ball Nose with Eccentric Relief Grind and Neck • Inch



● first choice
○ alternate choice

KCSM15	D1	D	D3	Ap1 max	L3	L
UJBE0375J6AL	3/8	3/8	.35	1/2	2.00	6
UJBE0500J6AL	1/2	1/2	.47	5/8	2.25	6
UJBE0625J6AL	5/8	5/8	.59	3/4	2.25	6
UJBE0750J6AL	3/4	3/4	.71	1	2.25	6
UJBE1000J6AL	1	1	.94	1 1/4	3.25	6

NOTE: For application data, see page P56.



HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Finish profile machining of keel for weapon attachment.
- Vertical machining center.
- Titanium Alloy Beta (R56400).
- External emulsion.

SOLUTION

- HARVI III ball nose Ø .5" with eccentric relief in KCSM15™.
- Six effective teeth.

CUTTING DATA

- vc 300 SFM
- fz .0018 IPT
- ap 1.2"
- ae .025"

RESULT

- Significantly increased tool life.
- Reduced machining time from 210 minutes to 90 minutes.
- Surface finish 90 RMS.

BENEFIT

- Predictable wear at main lands instead of cutting edge flaking with competitive tooling.
- Extended tool life of HARVI III eliminated a mid-part tool change.
- Improved surface finish compared to previous four-flute ball nose tools.

HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Rough profile yoke contour milling of bogey pitch trimmer.
- Lathe with driven tooling.
- 4340 low-alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø .787" (20mm) with eccentric relief in KCSM15.
- Six effective teeth.

CUTTING DATA

- vc 400 SFM
- fz .003 IPT
- ap 1.7"
- ae .1"

RESULT

- Tool completed seven workpieces compared to five workpieces with existing tooling.
- Surface finish 120 RMS.

BENEFIT

- Reduced machining time from 88 minutes to 49 minutes.
- About 30% higher feed rate due to feed per tooth and six flutes rather than four flutes.

(continued)

(continued)



HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Hem stich profile neck to flanged blend.
- Lathe with driven tooling.
- 4340 low-alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø .5" with eccentric relief in KCSM15™.
- Six effective teeth.

CUTTING DATA

- vc 350 SFM
- fz .0025 IPT
- ap .05"
- ae .05"

RESULT

- Increase in cutting speed from 150 SFM to 350 SFM.
- Tool completed ten workpieces compared to six workpieces with existing tooling.

BENEFIT

- Reduced machining time to eight minutes compared to 29 minutes with competitive four-flute ball nose tool.
- 200% increase in Metal Removal Rate (MRR).

HARVI III Ball Nose with Eccentric Relief

CHALLENGE

- Finish interior walls and blend filet radius.
- Horizontal machining center.
- 4340 low-alloy steel.
- External emulsion.

SOLUTION

- HARVI III ball nose Ø .5" with eccentric relief in KCSM15.
- Six effective teeth.

CUTTING DATA

- vc 350 SFM
- fz .0025 IPT
- ap .553"
- ae .05"

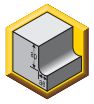
RESULT

- Tool completed six workpieces compared to two workpieces with existing solution.
- Surface finish 63 RMS.

BENEFIT

- Reduced machining time from 25 minutes to 10 minutes.
- Improved surface finish from 90 RMS to 63 RMS at accelerated feeds and speeds.
- Reduction in harmonics, noise level, and vibrations with HARVI III ball nose tooling.

HARVI III • UJBE • Ball Nose • Unequal Flute Spacing • Roughing

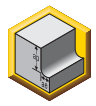




Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).				
		A		Cutting Speed — vc SFM				D1 — Diameter			
							frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	inch	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	0.4 x D	490	–	660	IPT	.0027	.0034	.0039	.0044	.0049
	1	Ap max	0.4 x D	490	–	660	IPT	.0027	.0034	.0039	.0044	.0049
	2	Ap max	0.4 x D	460	–	620	IPT	.0027	.0034	.0039	.0044	.0049
	3	Ap max	0.4 x D	390	–	520	IPT	.0023	.0029	.0034	.0039	.0045
	4	Ap max	0.4 x D	300	–	490	IPT	.0020	.0026	.0030	.0034	.0039
	5	Ap max	0.4 x D	200	–	330	IPT	.0018	.0023	.0027	.0031	.0036
	4	Ap max	0.4 x D	160	–	250	IPT	.0015	.0019	.0022	.0025	.0028
M	1	Ap max	0.4 x D	300	–	380	IPT	.0023	.0029	.0034	.0039	.0045
	2	Ap max	0.4 x D	200	–	260	IPT	.0018	.0023	.0027	.0031	.0036
	3	Ap max	0.4 x D	200	–	230	IPT	.0015	.0019	.0022	.0025	.0028
S	1	Ap max	0.4 x D	160	–	300	IPT	.0023	.0029	.0034	.0039	.0045
	2	Ap max	0.4 x D	80	–	130	IPT	.0012	.0015	.0018	.0021	.0024
	3	Ap max	0.4 x D	80	–	130	IPT	.0012	.0015	.0018	.0021	.0024
	4	Ap max	0.4 x D	160	–	200	IPT	.0017	.0021	.0025	.0028	.0033
H	1	Ap max	0.4 x D	260	–	460	IPT	.0020	.0026	.0030	.0034	.0039

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI III • UJBE • Ball Nose • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).				
		A		Cutting Speed — vc SFM				D1 — Diameter			
							frac.	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	in	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	0.06 x D	940	–	1250	IPT	.0033	.0041	.0047	.0053	.0059
	1	Ap max	0.06 x D	940	–	1250	IPT	.0033	.0041	.0047	.0053	.0059
	2	Ap max	0.06 x D	870	–	1180	IPT	.0033	.0041	.0047	.0053	.0059
	3	Ap max	0.06 x D	750	–	1000	IPT	.0027	.0035	.0041	.0046	.0054
	4	Ap max	0.06 x D	560	–	940	IPT	.0025	.0031	.0036	.0040	.0046
	5	Ap max	0.06 x D	370	–	620	IPT	.0022	.0028	.0033	.0037	.0043
	6	Ap max	0.06 x D	310	–	470	IPT	.0018	.0023	.0027	.0030	.0034
M	1	Ap max	0.06 x D	560	–	720	IPT	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.06 x D	370	–	500	IPT	.0022	.0028	.0033	.0037	.0043
	3	Ap max	0.06 x D	370	–	440	IPT	.0018	.0023	.0027	.0030	.0034
S	1	Ap max	0.06 x D	310	–	560	IPT	.0027	.0035	.0041	.0046	.0054
	2	Ap max	0.06 x D	160	–	250	IPT	.0015	.0018	.0022	.0025	.0029
	3	Ap max	0.06 x D	160	–	250	IPT	.0015	.0018	.0022	.0025	.0029
	4	Ap max	0.06 x D	310	–	370	IPT	.0020	.0026	.0030	.0034	.0040
H	1	Ap max	0.06 x D	500	–	870	IPT	.0025	.0031	.0036	.0040	.0046

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Superior Finishing

MaxiMet™

Designed to significantly reduce machining time in aluminum! The innovative geometry designs include a wiper facet for superior surface finish on aluminum parts. MaxiMet handles roughing and finishing cuts with one tool.

- Use only one tool for roughing and finishing operations.
- Slotting is effective up to full 1 x D axial depth; side milling is effective up to 0.5 x D radial, by 1.5 x D axial depth.
- Three-flute series uses unequal flute spacing for chatter-free performance.
- Effective in a full range of machine speeds.
- Multiple corner radii and extended neck configurations are available as standard.



Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

HARVI™ III

High-Performance Solid Carbide End Mills

Primary Application

This new HARVI III version is tailored to address traditional machining techniques, as well as high-velocity machining techniques with one tool design. This allows for the highest level of flexibility, fully utilizing the tool capabilities. This is designed specifically for high-performance profiling, semi-finishing, and finishing of titanium. The HARVI III provides maximum metal removal rates and achieves supreme surfaces. The standard offering comprises various length versions for each diameter to satisfy the need for maximum stability, as well as highest reach lengths in ball nose and square end designs.

- Outstanding metal removal rates increase productivity.
- Longest tool life due to eccentric relief grind and proprietary KCSM15™ Beyond™ grade.
- Increased process safety with Safe-Lock™ shanks.

Features and Benefits

Advanced Technology

- Six unequally-spaced flutes for chatter-free machining at high feed rates.
- Lower cutting forces and pressure on cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides the highest tool stability in roughing and finishing operations.
- Center cutting design for higher flexibility, as well as radial and axial finishing pass after roughing operation.
- Tailored rank angles allow for high performance in both traditional and high-velocity machining techniques.

Tailored Grades

- KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.

Customization

- Engineered solutions, including ball nose versions, are available upon request.

Extensive Standard Offering

- Off-the-shelf standard diameter range 1/2–1".
- 1 1/2" diameter items are made-to-order.
- Ball nose and corner radii tooling in various length.
- Round shank and Safe-Lock™ shank available.

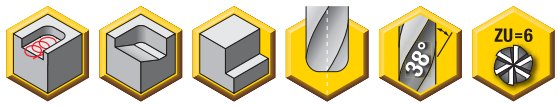
The new HARVI™ III by Kennametal.

"The HARVI III line boasts a portfolio of 300+ tools that have met the expectations set forth in the Industry Challenge — Increased tool life, High MRR, Reduced Tool Changes, and Decreasing overall tooling cost."

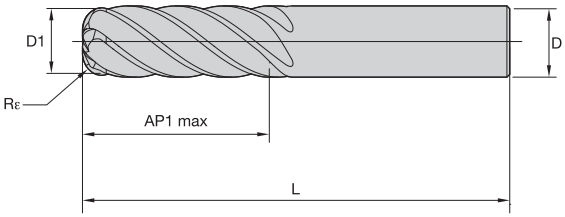




- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





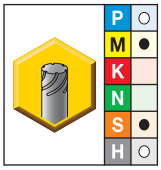


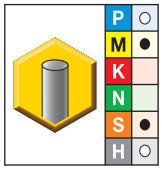
End Mill Tolerances

D1	tolerance	D	tolerance
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

beyond

HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind



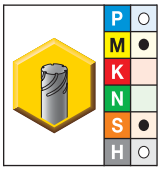


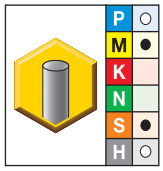
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
–	UJDE0500J6ABB	1/2	1/2	1	3	.030
–	UJDE0500J6ABC	1/2	1/2	1	3	.060
–	UJDE0500J6ABD	1/2	1/2	1	3	.090
–	UJDE0500J6ABE	1/2	1/2	1	3	.120
–	UJDE0500J6ABH	1/2	1/2	1	3	.190
–	UJDE0500J6ZBB	1/2	1/2	1 1/2	3 1/2	.030
–	UJDE0500J6ZBC	1/2	1/2	1 1/2	3 1/2	.060
–	UJDE0500J6ZBD	1/2	1/2	1 1/2	3 1/2	.090
–	UJDE0500J6ZBE	1/2	1/2	1 1/2	3 1/2	.120
–	UJDE0500J6ZBH	1/2	1/2	1 1/2	3 1/2	.190
–	UJDE0500J6CBB	1/2	1/2	2	4	.030
–	UJDE0500J6CBC	1/2	1/2	2	4	.060
–	UJDE0500J6CBD	1/2	1/2	2	4	.090
–	UJDE0500J6CBE	1/2	1/2	2	4	.120
–	UJDE0500J6CBH	1/2	1/2	2	4	.190
–	UJDE0500J6DBB	1/2	1/2	2 1/2	4 1/2	.030
–	UJDE0500J6DBC	1/2	1/2	2 1/2	4 1/2	.060
–	UJDE0500J6DBD	1/2	1/2	2 1/2	4 1/2	.090
–	UJDE0500J6DBE	1/2	1/2	2 1/2	4 1/2	.120
–	UJDE0500J6DBH	1/2	1/2	2 1/2	4 1/2	.190
–	UJDE0750J6ABB	3/4	3/4	1	3 1/2	.030
–	UJDE0750J6ABC	3/4	3/4	1	3 1/2	.060
–	UJDE0750J6ABD	3/4	3/4	1	3 1/2	.090
–	UJDE0750J6ABE	3/4	3/4	1	3 1/2	.120
–	UJDE0750J6ABH	3/4	3/4	1	3 1/2	.190
–	UJDE0750J6ABF	3/4	3/4	1	3 1/2	.250
–	UJDE0750J6ZBB	3/4	3/4	2	4 1/2	.030
–	UJDE0750J6ZBC	3/4	3/4	2	4 1/2	.060
–	UJDE0750J6ZBD	3/4	3/4	2	4 1/2	.090
–	UJDE0750J6ZBE	3/4	3/4	2	4 1/2	.120
–	UJDE0750J6ZBH	3/4	3/4	2	4 1/2	.190
–	UJDE0750J6ZBF	3/4	3/4	2	4 1/2	.250

(continued)

(HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)



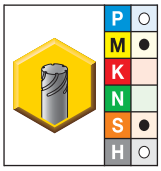


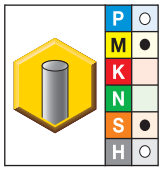
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
–	UJDE0750J6DBB	3/4	3/4	3	5 1/2	.030
–	UJDE0750J6DBC	3/4	3/4	3	5 1/2	.060
–	UJDE0750J6DBD	3/4	3/4	3	5 1/2	.090
–	UJDE0750J6DBE	3/4	3/4	3	5 1/2	.120
–	UJDE0750J6DBH	3/4	3/4	3	5 1/2	.190
–	UJDE0750J6DBF	3/4	3/4	3	5 1/2	.250
–	UJDE0750J6EBB	3/4	3/4	4	6 1/2	.030
–	UJDE0750J6EBC	3/4	3/4	4	6 1/2	.060
–	UJDE0750J6EBD	3/4	3/4	4	6 1/2	.090
–	UJDE0750J6EBE	3/4	3/4	4	6 1/2	.120
–	UJDE0750J6EBH	3/4	3/4	4	6 1/2	.190
–	UJDE0750J6EBF	3/4	3/4	4	6 1/2	.250
UJDE1000N6XBB	–	1	1	1	4	.030
UJDE1000N6XBC	–	1	1	1	4	.060
UJDE1000N6XBD	–	1	1	1	4	.090
UJDE1000N6XBE	–	1	1	1	4	.120
UJDE1000N6XBH	–	1	1	1	4	.190
UJDE1000N6XBF	–	1	1	1	4	.250
UJDE1000N6XBK	–	1	1	1	4	.375
UJDE1000N6ABB	–	1	1	1 1/2	4 1/2	.030
UJDE1000N6ABC	–	1	1	1 1/2	4 1/2	.060
UJDE1000N6ABD	–	1	1	1 1/2	4 1/2	.090
UJDE1000N6ABE	–	1	1	1 1/2	4 1/2	.120
UJDE1000N6ABH	–	1	1	1 1/2	4 1/2	.190
UJDE1000N6ABF	–	1	1	1 1/2	4 1/2	.250
UJDE1000N6ABK	–	1	1	1 1/2	4 1/2	.375
UJDE1000N6CBB	–	1	1	2	5	.030
UJDE1000N6CBC	–	1	1	2	5	.060
UJDE1000N6CBD	–	1	1	2	5	.090
UJDE1000N6CBE	–	1	1	2	5	.120
UJDE1000N6CBH	–	1	1	2	5	.190
UJDE1000N6CBF	–	1	1	2	5	.250
UJDE1000N6CBK	–	1	1	2	5	.375
UJDE1000N6ZBB	–	1	1	2 1/2	5 1/2	.030
UJDE1000N6ZBC	–	1	1	2 1/2	5 1/2	.060
UJDE1000N6ZBD	–	1	1	2 1/2	5 1/2	.090
UJDE1000N6ZBE	–	1	1	2 1/2	5 1/2	.120
UJDE1000N6ZBH	–	1	1	2 1/2	5 1/2	.190
UJDE1000N6ZBF	–	1	1	2 1/2	5 1/2	.250
UJDE1000N6ZBK	–	1	1	2 1/2	5 1/2	.375
UJDE1000N6FBB	–	1	1	3	6	.030
UJDE1000N6FBC	–	1	1	3	6	.060
UJDE1000N6FBD	–	1	1	3	6	.090
UJDE1000N6FBE	–	1	1	3	6	.120
UJDE1000N6FBH	–	1	1	3	6	.190
UJDE1000N6FBF	–	1	1	3	6	.250
UJDE1000N6FBK	–	1	1	3	6	.375
UJDE1000N6GBB	–	1	1	3 1/2	6 1/2	.030
UJDE1000N6GBC	–	1	1	3 1/2	6 1/2	.060
UJDE1000N6GBD	–	1	1	3 1/2	6 1/2	.090
UJDE1000N6GBE	–	1	1	3 1/2	6 1/2	.120
UJDE1000N6GBH	–	1	1	3 1/2	6 1/2	.190

(continued)

(HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)



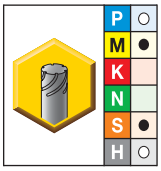


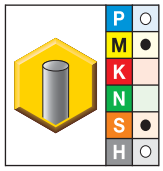
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
UJDE1000N6GBF	–	1	1	3 1/2	6 1/2	.250
UJDE1000N6GBK	–	1	1	3 1/2	6 1/2	.375
UJDE1000N6DBB	–	1	1	4	7	.030
UJDE1000N6DBC	–	1	1	4	7	.060
UJDE1000N6DBD	–	1	1	4	7	.090
UJDE1000N6DBE	–	1	1	4	7	.120
UJDE1000N6DBH	–	1	1	4	7	.190
UJDE1000N6DBF	–	1	1	4	7	.250
UJDE1000N6DBK	–	1	1	4	7	.375
UJDE1000N6HBB	–	1	1	4 1/2	7 1/2	.030
UJDE1000N6HBC	–	1	1	4 1/2	7 1/2	.060
UJDE1000N6HBD	–	1	1	4 1/2	7 1/2	.090
UJDE1000N6HBE	–	1	1	4 1/2	7 1/2	.120
UJDE1000N6HBH	–	1	1	4 1/2	7 1/2	.190
UJDE1000N6HBF	–	1	1	4 1/2	7 1/2	.250
UJDE1000N6HBK	–	1	1	4 1/2	7 1/2	.375
UJDE1000N6EBB	–	1	1	5	8	.030
UJDE1000N6EBC	–	1	1	5	8	.060
UJDE1000N6EBD	–	1	1	5	8	.090
UJDE1000N6EBE	–	1	1	5	8	.120
UJDE1000N6EBH	–	1	1	5	8	.190
UJDE1000N6EBF	–	1	1	5	8	.250
UJDE1000N6EBK	–	1	1	5	8	.375
UJDE1250N6ABB	–	1 1/4	1 1/4	2	5	.030
UJDE1250N6ABC	–	1 1/4	1 1/4	2	5	.060
UJDE1250N6ABD	–	1 1/4	1 1/4	2	5	.090
UJDE1250N6ABE	–	1 1/4	1 1/4	2	5	.120
UJDE1250N6ABH	–	1 1/4	1 1/4	2	5	.190
UJDE1250N6ABF	–	1 1/4	1 1/4	2	5	.250
UJDE1250N6ABJ	–	1 1/4	1 1/4	2	5	.375
UJDE1250N6ABK	–	1 1/4	1 1/4	2	5	.500
UJDE1250N6XBB	–	1 1/4	1 1/4	2 1/2	5 1/2	.030
UJDE1250N6XBC	–	1 1/4	1 1/4	2 1/2	5 1/2	.060
UJDE1250N6XBD	–	1 1/4	1 1/4	2 1/2	5 1/2	.090
UJDE1250N6XBE	–	1 1/4	1 1/4	2 1/2	5 1/2	.120
UJDE1250N6XBH	–	1 1/4	1 1/4	2 1/2	5 1/2	.190
UJDE1250N6XBF	–	1 1/4	1 1/4	2 1/2	5 1/2	.250
UJDE1250N6XBJ	–	1 1/4	1 1/4	2 1/2	5 1/2	.375
UJDE1250N6XBK	–	1 1/4	1 1/4	2 1/2	5 1/2	.500
UJDE1250N6ZBB	–	1 1/4	1 1/4	3	6	.030
UJDE1250N6ZBC	–	1 1/4	1 1/4	3	6	.060
UJDE1250N6ZBD	–	1 1/4	1 1/4	3	6	.090
UJDE1250N6ZBE	–	1 1/4	1 1/4	3	6	.120
UJDE1250N6ZBH	–	1 1/4	1 1/4	3	6	.190
UJDE1250N6ZBF	–	1 1/4	1 1/4	3	6	.250
UJDE1250N6ZBJ	–	1 1/4	1 1/4	3	6	.375
UJDE1250N6ZBK	–	1 1/4	1 1/4	3	6	.500
UJDE1250N6CBB	–	1 1/4	1 1/4	3 1/2	6 1/2	.030
UJDE1250N6CBC	–	1 1/4	1 1/4	3 1/2	6 1/2	.060
UJDE1250N6CBD	–	1 1/4	1 1/4	3 1/2	6 1/2	.090
UJDE1250N6CBE	–	1 1/4	1 1/4	3 1/2	6 1/2	.120
UJDE1250N6CBH	–	1 1/4	1 1/4	3 1/2	6 1/2	.190

(continued)

(HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)



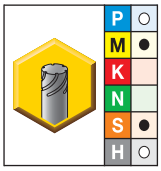


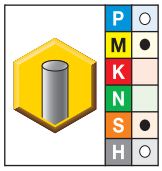
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
UJDE1250N6CBF	–	1 1/4	1 1/4	3 1/2	6 1/2	.250
UJDE1250N6CBJ	–	1 1/4	1 1/4	3 1/2	6 1/2	.375
UJDE1250N6CBK	–	1 1/4	1 1/4	3 1/2	6 1/2	.500
UJDE1250N6FBB	–	1 1/4	1 1/4	4	7	.030
UJDE1250N6FBC	–	1 1/4	1 1/4	4	7	.060
UJDE1250N6FBD	–	1 1/4	1 1/4	4	7	.090
UJDE1250N6FBE	–	1 1/4	1 1/4	4	7	.120
UJDE1250N6FBH	–	1 1/4	1 1/4	4	7	.190
UJDE1250N6FBF	–	1 1/4	1 1/4	4	7	.250
UJDE1250N6FBJ	–	1 1/4	1 1/4	4	7	.375
UJDE1250N6FBK	–	1 1/4	1 1/4	4	7	.500
UJDE1250N6GBB	–	1 1/4	1 1/4	4 1/2	7 1/2	.030
UJDE1250N6GBC	–	1 1/4	1 1/4	4 1/2	7 1/2	.060
UJDE1250N6GBD	–	1 1/4	1 1/4	4 1/2	7 1/2	.090
UJDE1250N6GBE	–	1 1/4	1 1/4	4 1/2	7 1/2	.120
UJDE1250N6GBH	–	1 1/4	1 1/4	4 1/2	7 1/2	.190
UJDE1250N6GBF	–	1 1/4	1 1/4	4 1/2	7 1/2	.250
UJDE1250N6GBJ	–	1 1/4	1 1/4	4 1/2	7 1/2	.375
UJDE1250N6GBK	–	1 1/4	1 1/4	4 1/2	7 1/2	.500
UJDE1250N6DBB	–	1 1/4	1 1/4	5	8	.030
UJDE1250N6DBC	–	1 1/4	1 1/4	5	8	.060
UJDE1250N6DBD	–	1 1/4	1 1/4	5	8	.090
UJDE1250N6DBE	–	1 1/4	1 1/4	5	8	.120
UJDE1250N6DBH	–	1 1/4	1 1/4	5	8	.190
UJDE1250N6DBF	–	1 1/4	1 1/4	5	8	.250
UJDE1250N6DBJ	–	1 1/4	1 1/4	5	8	.375
UJDE1250N6DBK	–	1 1/4	1 1/4	5	8	.500
UJDE1250N6HBB	–	1 1/4	1 1/4	5 1/2	8 1/2	.030
UJDE1250N6HBC	–	1 1/4	1 1/4	5 1/2	8 1/2	.060
UJDE1250N6HBD	–	1 1/4	1 1/4	5 1/2	8 1/2	.090
UJDE1250N6HBE	–	1 1/4	1 1/4	5 1/2	8 1/2	.120
UJDE1250N6HBH	–	1 1/4	1 1/4	5 1/2	8 1/2	.190
UJDE1250N6HBF	–	1 1/4	1 1/4	5 1/2	8 1/2	.250
UJDE1250N6HBJ	–	1 1/4	1 1/4	5 1/2	8 1/2	.375
UJDE1250N6HBK	–	1 1/4	1 1/4	5 1/2	8 1/2	.500
UJDE1250N6JBB	–	1 1/4	1 1/4	6	9	.030
UJDE1250N6JBC	–	1 1/4	1 1/4	6	9	.060
UJDE1250N6JBD	–	1 1/4	1 1/4	6	9	.090
UJDE1250N6JBE	–	1 1/4	1 1/4	6	9	.120
UJDE1250N6JBH	–	1 1/4	1 1/4	6	9	.190
UJDE1250N6JBF	–	1 1/4	1 1/4	6	9	.250
UJDE1250N6JBJ	–	1 1/4	1 1/4	6	9	.375
UJDE1250N6JBK	–	1 1/4	1 1/4	6	9	.500
UJDE1250N6EBB	–	1 1/4	1 1/4	6 1/2	9 1/2	.030
UJDE1250N6EBC	–	1 1/4	1 1/4	6 1/2	9 1/2	.060
UJDE1250N6EBD	–	1 1/4	1 1/4	6 1/2	9 1/2	.090
UJDE1250N6EBE	–	1 1/4	1 1/4	6 1/2	9 1/2	.120
UJDE1250N6EBH	–	1 1/4	1 1/4	6 1/2	9 1/2	.190
UJDE1250N6EBF	–	1 1/4	1 1/4	6 1/2	9 1/2	.250
UJDE1250N6EBJ	–	1 1/4	1 1/4	6 1/2	9 1/2	.375
UJDE1250N6EBK	–	1 1/4	1 1/4	6 1/2	9 1/2	.500
UJDE1500N6XBB *	–	1 1/2	1 1/2	2	6	.030

(continued)

(HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)



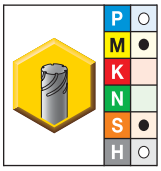


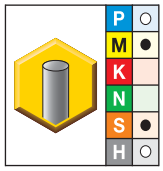
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
UJDE1500N6XBC *	–	1 1/2	1 1/2	2	6	.060
UJDE1500N6XBD *	–	1 1/2	1 1/2	2	6	.090
UJDE1500N6XBE *	–	1 1/2	1 1/2	2	6	.120
UJDE1500N6XBH *	–	1 1/2	1 1/2	2	6	.190
UJDE1500N6XBF *	–	1 1/2	1 1/2	2	6	.250
UJDE1500N6XBJ *	–	1 1/2	1 1/2	2	6	.375
UJDE1500N6XBK *	–	1 1/2	1 1/2	2	6	.500
UJDE1500N6XBL *	–	1 1/2	1 1/2	2	6	.625
UJDE1500N6ABB *	–	1 1/2	1 1/2	2 1/2	6 1/2	.030
UJDE1500N6ABC *	–	1 1/2	1 1/2	2 1/2	6 1/2	.060
UJDE1500N6ABD *	–	1 1/2	1 1/2	2 1/2	6 1/2	.090
UJDE1500N6ABE *	–	1 1/2	1 1/2	2 1/2	6 1/2	.120
UJDE1500N6ABH *	–	1 1/2	1 1/2	2 1/2	6 1/2	.190
UJDE1500N6ABF *	–	1 1/2	1 1/2	2 1/2	6 1/2	.250
UJDE1500N6ABJ *	–	1 1/2	1 1/2	2 1/2	6 1/2	.375
UJDE1500N6ABK *	–	1 1/2	1 1/2	2 1/2	6 1/2	.500
UJDE1500N6ABL *	–	1 1/2	1 1/2	2 1/2	6 1/2	.625
UJDE1500N6BBB *	–	1 1/2	1 1/2	3	7	.030
UJDE1500N6BBC *	–	1 1/2	1 1/2	3	7	.060
UJDE1500N6BBD *	–	1 1/2	1 1/2	3	7	.090
UJDE1500N6BBE *	–	1 1/2	1 1/2	3	7	.120
UJDE1500N6BBH *	–	1 1/2	1 1/2	3	7	.190
UJDE1500N6BBF *	–	1 1/2	1 1/2	3	7	.250
UJDE1500N6BBJ *	–	1 1/2	1 1/2	3	7	.375
UJDE1500N6BBK *	–	1 1/2	1 1/2	3	7	.500
UJDE1500N6BBL *	–	1 1/2	1 1/2	3	7	.625
UJDE1500N6ZBB *	–	1 1/2	1 1/2	3 1/2	7 1/2	.030
UJDE1500N6ZBC *	–	1 1/2	1 1/2	3 1/2	7 1/2	.060
UJDE1500N6ZBD *	–	1 1/2	1 1/2	3 1/2	7 1/2	.090
UJDE1500N6ZBE *	–	1 1/2	1 1/2	3 1/2	7 1/2	.120
UJDE1500N6ZBH *	–	1 1/2	1 1/2	3 1/2	7 1/2	.190
UJDE1500N6ZBF *	–	1 1/2	1 1/2	3 1/2	7 1/2	.250
UJDE1500N6ZBJ *	–	1 1/2	1 1/2	3 1/2	7 1/2	.375
UJDE1500N6ZBK *	–	1 1/2	1 1/2	3 1/2	7 1/2	.500
UJDE1500N6ZBL *	–	1 1/2	1 1/2	3 1/2	7 1/2	.625
UJDE1500N6CBB *	–	1 1/2	1 1/2	4	8	.030
UJDE1500N6CBC *	–	1 1/2	1 1/2	4	8	.060
UJDE1500N6CBD *	–	1 1/2	1 1/2	4	8	.090
UJDE1500N6CBE *	–	1 1/2	1 1/2	4	8	.120
UJDE1500N6CBH *	–	1 1/2	1 1/2	4	8	.190
UJDE1500N6CBF *	–	1 1/2	1 1/2	4	8	.250
UJDE1500N6CBJ *	–	1 1/2	1 1/2	4	8	.375
UJDE1500N6CBK *	–	1 1/2	1 1/2	4	8	.500
UJDE1500N6CBL *	–	1 1/2	1 1/2	4	8	.625
UJDE1500N6FBB *	–	1 1/2	1 1/2	4 1/2	8 1/2	.030
UJDE1500N6FBC *	–	1 1/2	1 1/2	4 1/2	8 1/2	.060
UJDE1500N6FBD *	–	1 1/2	1 1/2	4 1/2	8 1/2	.090
UJDE1500N6FBE *	–	1 1/2	1 1/2	4 1/2	8 1/2	.120
UJDE1500N6FBH *	–	1 1/2	1 1/2	4 1/2	8 1/2	.190
UJDE1500N6FBF *	–	1 1/2	1 1/2	4 1/2	8 1/2	.250
UJDE1500N6FBJ *	–	1 1/2	1 1/2	4 1/2	8 1/2	.375
UJDE1500N6FBK *	–	1 1/2	1 1/2	4 1/2	8 1/2	.500

(continued)

(HARVI III • UJDE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)





● first choice
○ alternate choice

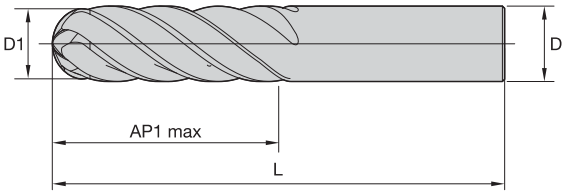
KCSM15	KCSM15	D1	D	Ap1 max	L	Rε
UJDE1500N6FBL *	–	1 1/2	1 1/2	4 1/2	8 1/2	.625
UJDE1500N6GBB *	–	1 1/2	1 1/2	5	9	.030
UJDE1500N6GBC *	–	1 1/2	1 1/2	5	9	.060
UJDE1500N6GBD *	–	1 1/2	1 1/2	5	9	.090
UJDE1500N6GBE *	–	1 1/2	1 1/2	5	9	.120
UJDE1500N6GBH *	–	1 1/2	1 1/2	5	9	.190
UJDE1500N6GBF *	–	1 1/2	1 1/2	5	9	.250
UJDE1500N6GBJ *	–	1 1/2	1 1/2	5	9	.375
UJDE1500N6GBK *	–	1 1/2	1 1/2	5	9	.500
UJDE1500N6GBL *	–	1 1/2	1 1/2	5	9	.625
UJDE1500N6DBB *	–	1 1/2	1 1/2	5 1/2	9 1/2	.030
UJDE1500N6DBC *	–	1 1/2	1 1/2	5 1/2	9 1/2	.060
UJDE1500N6DBD *	–	1 1/2	1 1/2	5 1/2	9 1/2	.090
UJDE1500N6DBE *	–	1 1/2	1 1/2	5 1/2	9 1/2	.120
UJDE1500N6DBH *	–	1 1/2	1 1/2	5 1/2	9 1/2	.190
UJDE1500N6DBF *	–	1 1/2	1 1/2	5 1/2	9 1/2	.250
UJDE1500N6DBJ *	–	1 1/2	1 1/2	5 1/2	9 1/2	.375
UJDE1500N6DBK *	–	1 1/2	1 1/2	5 1/2	9 1/2	.500
UJDE1500N6DBL *	–	1 1/2	1 1/2	5 1/2	9 1/2	.625
UJDE1500N6HBB *	–	1 1/2	1 1/2	6	10	.030
UJDE1500N6HBC *	–	1 1/2	1 1/2	6	10	.060
UJDE1500N6HBD *	–	1 1/2	1 1/2	6	10	.090
UJDE1500N6HBE *	–	1 1/2	1 1/2	6	10	.120
UJDE1500N6HBH *	–	1 1/2	1 1/2	6	10	.190
UJDE1500N6HBF *	–	1 1/2	1 1/2	6	10	.250
UJDE1500N6HBJ *	–	1 1/2	1 1/2	6	10	.375
UJDE1500N6HBK *	–	1 1/2	1 1/2	6	10	.500
UJDE1500N6HBL *	–	1 1/2	1 1/2	6	10	.625

NOTE: For application data, see page P70.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations requiring fewer setups.





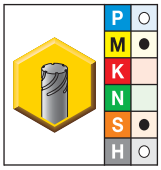


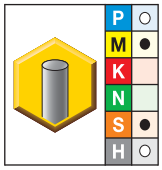
End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1-3/16"	0/.00051"

beyond

HARVI III Ball Nose • UJBE • Unequal Flute Spacing • With Eccentric Relief Grind



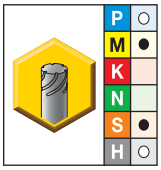


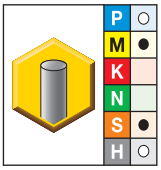
● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L
–	UJBE0500J6BB	1/2	1/2	1	3
–	UJBE0500J6ZB	1/2	1/2	1 1/2	3 1/2
–	UJBE0500J6CB	1/2	1/2	2	4
–	UJBE0500J6DB	1/2	1/2	2 1/2	4 1/2
–	UJBE0750J6AB	3/4	3/4	1	3 1/2
–	UJBE0750J6ZB	3/4	3/4	2	4 1/2
–	UJBE0750J6DB	3/4	3/4	3	5 1/2
–	UJBE0750J6EB	3/4	3/4	4	6 1/2
UJBE1000N6XB	–	1	1	1	4
UJBE1000N6AB	–	1	1	1 1/2	4 1/2
UJBE1000N6CB	–	1	1	2	5
UJBE1000N6ZB	–	1	1	2 1/2	5 1/2
UJBE1000N6FB	–	1	1	3	6
UJBE1000N6GB	–	1	1	3 1/2	6 1/2
UJBE1000N6DB	–	1	1	4	7
UJBE1000N6HB	–	1	1	4 1/2	7 1/2
UJBE1000N6EB	–	1	1	5	8
UJBE1250N6AB	–	1 1/4	1 1/4	2	5
UJBE1250N6XB	–	1 1/4	1 1/4	2 1/2	5 1/2
UJBE1250N6ZB	–	1 1/4	1 1/4	3	6
UJBE1250N6CB	–	1 1/4	1 1/4	3 1/2	6 1/2
UJBE1250N6FB	–	1 1/4	1 1/4	4	7
UJBE1250N6GB	–	1 1/4	1 1/4	4 1/2	7 1/2
UJBE1250N6DB	–	1 1/4	1 1/4	5	8
UJBE1250N6HB	–	1 1/4	1 1/4	5 1/2	8 1/2
UJBE1250N6JB	–	1 1/4	1 1/4	6	9
UJBE1250N6EB	–	1 1/4	1 1/4	6 1/2	9 1/2
UJBE1500N6XB *	–	1 1/2	1 1/2	2	6

(continued)

(HARVI III Ball Nose • UJBE • Unequal Flute Spacing • With Eccentric Relief Grind — continued)





● first choice
○ alternate choice

KCSM15	KCSM15	D1	D	Ap1 max	L
UJBE1500N6AB *	–	1 1/2	1 1/2	2 1/2	6 1/2
UJBE1500N6BB *	–	1 1/2	1 1/2	3	7
UJBE1500N6ZB *	–	1 1/2	1 1/2	3 1/2	7 1/2
UJBE1500N6CB *	–	1 1/2	1 1/2	4	8
UJBE1500N6FB *	–	1 1/2	1 1/2	4 1/2	8 1/2
UJBE1500N6GB *	–	1 1/2	1 1/2	5	9
UJBE1500N6DB *	–	1 1/2	1 1/2	5 1/2	9 1/2
UJBE1500N6HB *	–	1 1/2	1 1/2	6	10

NOTE: For application data, see page P71.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.



HARVI III Aerospace Expansion

CHALLENGE

- Industry challenge II.
- Traditional approach.
- Ti6AL4V.
- External emulsion.

SOLUTION

- HARVI III Ø 1.250" (31.75mm) — Safe-Lock™ shank.
- SK50 Type B coolant shrink fit.
- Corner Radius R = 0.090" (2.28mm).

CUTTING DATA

- V_c 250 SFM (76 m/min).
- F_z .0074" (0,187mm).
- A_p 2.000" (50.8mm).
- A_e .100" (2,54mm).

RESULT

- After one hour of cut time, less than .001" (0,025mm) wear.
- Surface finish of 23 µ in Ra (0,6 µm Ra).

BENEFIT

- Increased tool life.
- High MRR.
- Reduced tool changes.
- Decrease overall tooling cost.



HARVI III Aerospace Expansion

CHALLENGE

- Industry challenge II.
- High-Velocity Approach.
- Ti6AL4V.
- External emulsion.

SOLUTION

- HARVI III Ø 1.250" (31.75mm) — Safe-Lock™ shank.
- SK50 Type B coolant shrink fit.
- Corner Radius R = 0.090" (2.28mm).

CUTTING DATA

- V_c 500 SFM (152 m/min).
- F_z .0095" (0,24mm).
- A_p 2.000" (50.8mm).
- A_e .020" (0,508mm).

RESULT

- After one hour of cut time, less than .0014" (0,035mm) wear.
- Surface finish of 27.5 µ in Ra (0,7 µm Ra).

BENEFIT

- Increased tool life.
- High MRR.
- Reduced tool changes.
- Decrease overall tooling cost.



HARVI III Aerospace Expansion

CHALLENGE

- Seat track.
- Ti6AL4V.
- External emulsion.
- Test vs. regular HARVI III.

SOLUTION

- HARVI III Ø .750" (19.05mm) — cylindrical shank
- HydroForce™ with reducer sleeve
- Corner Radius R = 0.120" (3.05mm)

CUTTING DATA

- V_c 40 m/min (130 SFM).
- F_z Varies.
- A_p From .050" (1,27mm) to 1.500" (38.1mm).
- A_e From .050" (1,27mm) to full slot.

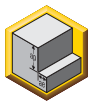
RESULT

- Tool life increased from 45min up to 5h.

BENEFIT

- Increased tool life.
- Reduced tool changes.
- Decrease overall tooling cost.

HARVI III™ • UJDE • Unequal Flute Spacing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
							frac.	1/2	5/8	3/4	1	1 1/4	1 1/2
		ap	ae	min		max	dec.	.5000	.6250	.7500	1.0000	1.2500	1.5000
P	4	Ap max	0.4 x D	300	–	490	IPT	.0026	.0030	.0033	.0039	.0043	.0046
	5	Ap max	0.4 x D	200	–	330	IPT	.0023	.0027	.0030	.0036	.0041	.0045
M	1	Ap max	0.4 x D	300	–	380	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	2	Ap max	0.4 x D	200	–	260	IPT	.0023	.0027	.0030	.0036	.0041	.0045
	3	Ap max	0.4 x D	200	–	230	IPT	.0019	.0022	.0024	.0028	.0031	.0033
S	1	Ap max	0.4 x D	160	–	300	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	2	Ap max	0.4 x D	160	–	300	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	3	Ap max	0.4 x D	80	–	130	IPT	.0016	.0018	.0020	.0025	.0028	.0031
	4	Ap max	0.4 x D	150	–	200	IPT	.0022	.0025	.0028	.0033	.0037	.0041
H	1	Ap max	0.4 x D	260	–	460	IPT	.0026	.0030	.0033	.0039	.0043	.0046

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly.

Adjustment factor table for feed and speed calculation

	Ae/D	0.50%	1.00%	1.60%	2.00%	4.00%	5.00%	8.00%	10.00%	20.00%	30.00%
Speed factor	Kv	2.9	2.85	2.8	2	1.5	1.45	1.4	1.35	1.25	1.2
Feed factor	KFz	2.8	2.6	2.5	2.4	2.3	2.2	2	1.7	1.25	1.02

To calculate application specific cutting data, please use above KV coefficient for adaptation of cutting speed and KFz for feed respectively.
Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:
Application: D = 1 inch; S4 material group; Ae 0,02 inch
Cutting data recommendation: 150 SFM; fz = 0.0033 IPT
Adjustment coefficients: Ae = 0,02 = inch equals 2,00%; Kv = 2; KFz = 2.4

Final cutting data recommendation:
Vc new = 150 SFM * 2 = 300 SFM
Fz new = .0033 IPT * 2.4 = .0079 IPT

HARVI™ III • UJBE • Ball Nose • Unequal Flute Spacing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
							frac.	1/2	5/8	3/4	1	1 1/4	1 1/2
		ap	ae	min		max	dec.	.5000	.6250	.7500	1.0000	1.2500	1.5000
P	4	Ap max	0.4 x D	300	–	490	IPT	.0026	.0030	.0033	.0039	.0043	.0046
	5	Ap max	0.4 x D	200	–	330	IPT	.0023	.0027	.0030	.0036	.0041	.0045
M	1	Ap max	0.4 x D	300	–	380	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	2	Ap max	0.4 x D	200	–	260	IPT	.0023	.0027	.0030	.0036	.0041	.0045
	3	Ap max	0.4 x D	200	–	230	IPT	.0019	.0022	.0024	.0028	.0031	.0033
S	1	Ap max	0.4 x D	160	–	300	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	2	Ap max	0.4 x D	160	–	300	IPT	.0029	.0034	.0038	.0046	.0051	.0056
	3	Ap max	0.4 x D	80	–	130	IPT	.0016	.0018	.0020	.0025	.0028	.0031
	4	Ap max	0.4 x D	150	–	200	IPT	.0022	.0025	.0028	.0033	.0037	.0041
H	1	Ap max	0.4 x D	260	–	460	IPT	.0026	.0030	.0033	.0039	.0043	.0046

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly.

Adjustment factor table for feed and speed calculation

	Ae/D	0.50%	1.00%	1.60%	2.00%	4.00%	5.00%	8.00%	10.00%	20.00%	30.00%
Speed factor	Kv	2.9	2.85	2.8	2	1.5	1.45	1.4	1.35	1.25	1.2
Feed factor	KFz	2.8	2.6	2.5	2.4	2.3	2.2	2	1.7	1.25	1.02

To calculate application specific cutting data, please use above KV coefficient for adaptation of cutting speed and KFz for feed respectively.
Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:
Application: D = 1 inch; S4 material group; Ae 0,02 inch
Cutting data recommendation: 150 SFM; fz = 0.0033 IPT
Adjustment coefficients: Ae = 0,02 = inch equals 2,00%; Kv = 2; KFz = 2.4

Final cutting data recommendation:
Vc new = 150 SFM * 2 = 300 SFM
Fz new = .0033 IPT * 2.4 = .0079 IPT

HARVI™ III Taper Ball Nose

High-Performance Solid Carbide End Mills

Primary Application

HARVI III taper ball nose addresses the demand from energy and aerospace turbine customers to increase output and solve capacity issues by significantly reducing of machining time in 5-axis machining.

- Up to 50% higher Metal Removal Rates (MRR) with same tool life or up to 50% higher tool life due to 6-flute geometry with unequal flute spacing.
- Different tapered front end for highest tool stability on a variety of long-reach applications.
- Proprietary KCSM15™ grade for high tool life.

Features and Benefits

Advanced Technology

- Six flutes in ball nose and taper section for highest metal removal rates.
- Unequally spaced flutes to minimize vibrations and provide high tool life and superior surface quality.

Tailored Grades

- KCSM15 Beyond™ grade for outstanding wear protection in stainless steels and high-temperature alloys.

Customization

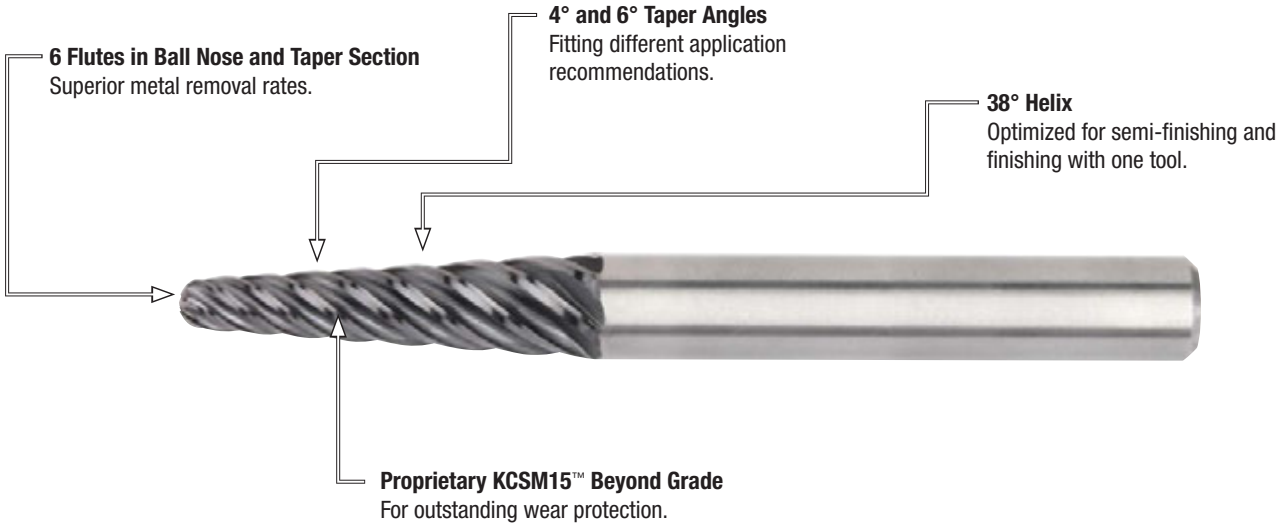
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.

Standard Offerings

- Diameter ranges 1/8–7/16".

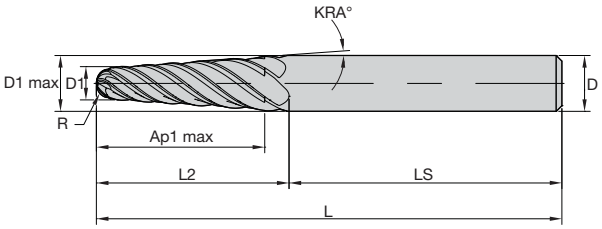
Designed for 5-axis machining in steel, stainless steel, nickel-based alloys, and titanium.





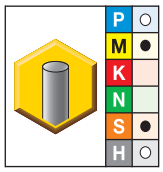
- Center cutting.
- 6 flutes for highest material removal rates.
- Unequal flute spacing minimizes chatter for smoother machining.
- 2 taper angle versions for optimized stability in long-reach operations.
- Single tool for both semi-finishing and finishing operations requiring fewer setups.
- Optimized geometry for stainless, nickel-based-alloys, and titanium machining.







UJBE • 6-Flute Taper Ball Nose • Unequal Flute Spacing



● first choice
○ alternate choice

KCSM15	D1	D	Ap1 max	L	L2	LS	R	KRA
UJBE0125J6CP	1/8	5/16	1.188	3	1.401	1.599	.063	4
UJBE0125J6BP	1/8	3/8	1.000	3 1/2	1.249	2.252	.063	6
UJBE0188J6BP	3/16	3/8	1.188	3 1/2	1.431	2.069	.094	4
UJBE0188J6CP	3/16	1/2	1.250	4	1.576	2.425	.094	6
UJBE0250J6CP	1/4	1/2	1.563	4	1.908	2.092	.125	4
UJBE0250J6BP	1/4	5/8	1.500	5	1.902	3.098	.125	6
UJBE0312J6BP	5/16	5/8	1.250	5	1.635	3.365	.156	6
UJBE0312J6CP	5/16	5/8	2.000	5	2.385	2.615	.156	4
UJBE0375J6BP	3/8	5/8	1.000	5	1.367	3.633	.188	6
UJBE0375J6CP	3/8	5/8	1.563	5	1.969	3.032	.188	4
UJBE0438J6BP	7/16	5/8	.750	5	1.099	3.901	.219	6
UJBE0438J6CP	7/16	5/8	1.188	5	1.552	3.448	.219	4

NOTE: For application data, see page P80.

The Economical Milling Cutter Line

GOmill™

The GOmill line is specifically engineered to work on short length-of-cut applications in multiple workpiece materials, like soft and hard steels up to 48 HRC, stainless steels, high-temperature alloys, and cast iron. With the very short overall length and soft cutting geometries, the line is made to conform to the growing market of mill-turn machines.

What does this mean for you?

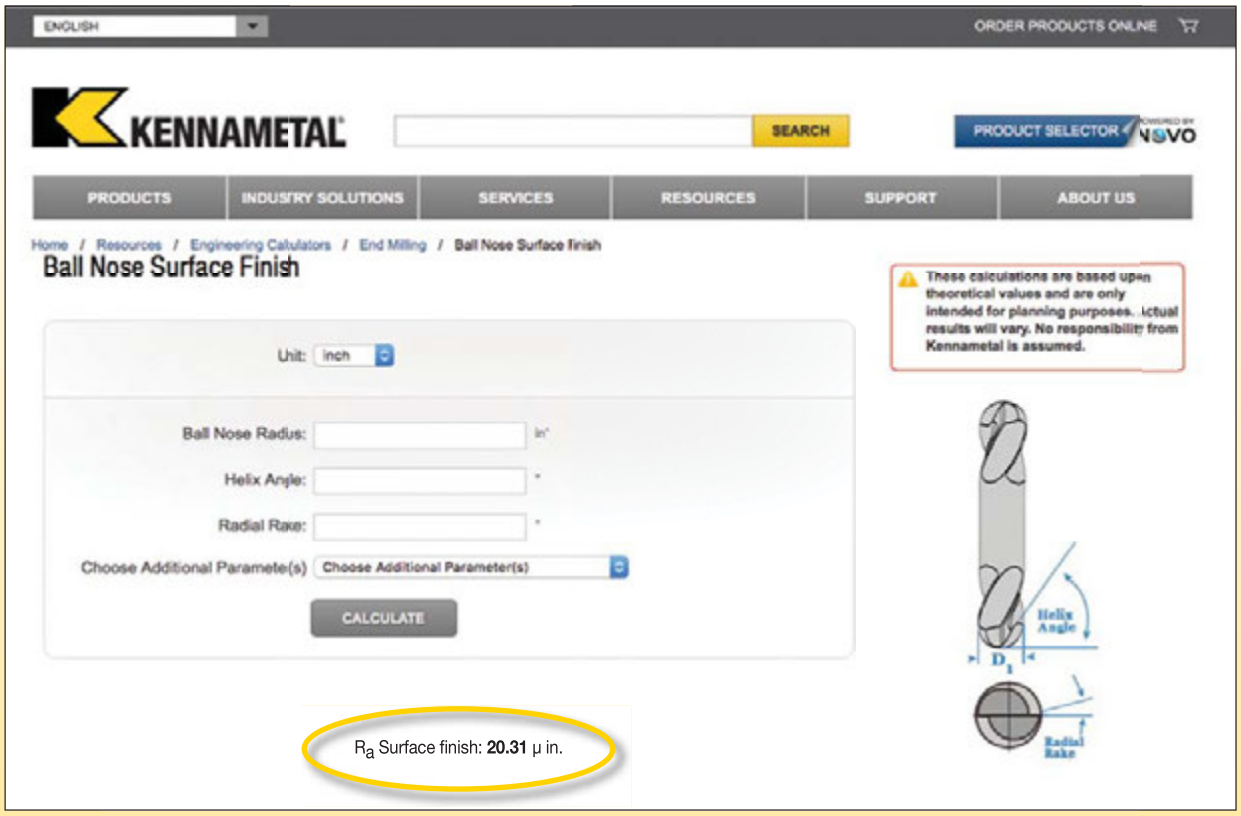
- Unequal flute spacing.
- AlTiN coating.
- Short overall tool length.
- Positive rake angle.
- Better surface finish and tool life.
- Universal usage on multiple workpiece materials.
- Higher cutting conditions, higher productivity, lower price due to less carbide.
- Lower power consumption.



Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

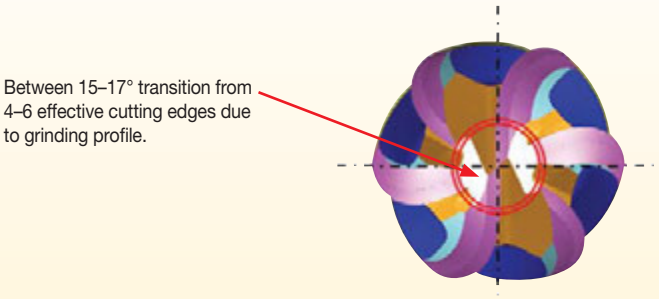
kennametal.com

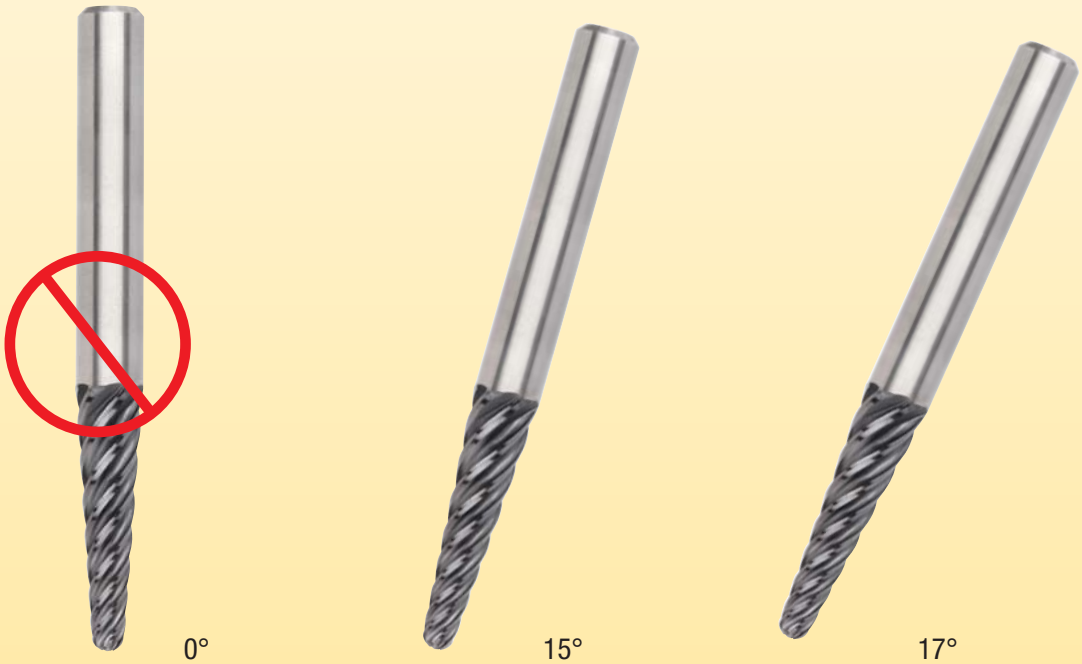


Use 5–10° for radial rake angle.

Make use of calculators such as:
kennametal.com/en/resources/calculators/
end-milling-calculators/ball-nose-surface-finish.html

Not all 6 cutting edges are reaching to the center of the HARVI III taper ball nose end mill.
Therefore, certain machining angles will result in different numbers of effective cutting edges.





0°
Avoid (center cutting speed = 0)

15°
<15° z = 2 effective cutting edges

17°
>17° z = 6 effective cutting edges



HARVI™ III Taper Ball Nose UJBE

CHALLENGE

- Finishing contour milling with lightly interrupted cut.
- Blade machining for energy customer.
- X22 CrMoV12.
- External emulsion.

SOLUTION

- HARVI III taper ball nose UJBE, 6° taper angle, and KCSM15™ with 6 effective cutting edges, Ø 0.315".

CUTTING DATA

- vc 328 SFM
- fz .0020 IPT
- ap .0787"
- ae .0236"

RESULT

- 73% increased productivity.

BENEFIT

- Reduced cost per component as the tool life increased.
- New 6-flute geometry has given better surface finish compared to 4 flutes.
- Regrindable tool.

HARVI III Taper Ball Nose UJBE

CHALLENGE

- Finishing intersection and hub on blade airfoil.
- Blade machining for energy customer.
- X22CrMoV12-1.
- External emulsion.

SOLUTION

- HARVI III taper ball nose UJBE, 6° taper angle, and KCSM15 with 6 effective cutting edges, Ø 0.394".

CUTTING DATA

- vc 853 SFM
- fz .0024 IPT
- ap .0236"
- ae .0118"

RESULT

- 50% increase in feed.
- 28% increase in tool life.
- Improved surface finish and minimum wear on edges.

BENEFIT

- Reduced tooling cost.
- Reduction in cost per component.
- Good surface finish.
- Regrindable tool.

(continued)

(continued)



HARVI™ III Taper Ball Nose UJBE

CHALLENGE

- Finishing intersection and hub on blade airfoil.
- X22CrMoV12-1.
- External emulsion.

SOLUTION

- HARVI III taper ball nose UJBE, 6° taper angle, and KCSM15™.
- Ø 0.157" with 8 effective cutting edges.

CUTTING DATA

- vc 459 SFM
- fz .0006 IPT
- ap .0197"
- ae .0138"

RESULT

- Substantial increase in Metal Removal Rates (MRR).

BENEFIT

- Improved surface quality.
- Regrindable tool to reduce tool cost.

HARVI III • UJBE • Ball Nose • Unequal Flute Spacing • Roughing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).								
		A		Cutting Speed — vc SFM				D1 — Diameter							
							frac.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	dec.	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	0.4 x D	490	–	660	IPT	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	Ap max	0.4 x D	490	–	660	IPT	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	Ap max	0.4 x D	460	–	620	IPT	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	Ap max	0.4 x D	390	–	520	IPT	.0008	.0011	.0015	.0019	.0023	.0029	.0034	.0039	.0045
	4	Ap max	0.4 x D	300	–	490	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	Ap max	0.4 x D	200	–	330	IPT	.0006	.0009	.0012	.0015	.0018	.0023	.0027	.0031	.0036
	6	Ap max	0.4 x D	160	–	250	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
M	1	Ap max	0.4 x D	300	–	380	IPT	.0008	.0011	.0015	.0019	.0023	.0029	.0034	.0039	.0045
	2	Ap max	0.4 x D	200	–	260	IPT	.0006	.0009	.0012	.0015	.0018	.0023	.0027	.0031	.0036
	3	Ap max	0.4 x D	200	–	230	IPT	.0005	.0008	.0010	.0013	.0015	.0019	.0022	.0025	.0028
S	1	Ap max	0.4 x D	160	–	300	IPT	.0008	.0011	.0015	.0019	.0023	.0029	.0034	.0039	.0045
	2	Ap max	0.4 x D	80	–	130	IPT	.0004	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	Ap max	0.4 x D	80	–	130	IPT	.0004	.0006	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	Ap max	0.4 x D	160	–	200	IPT	.0006	.0008	.0011	.0014	.0017	.0021	.0025	.0028	.0033
H	1	Ap max	0.4 x D	260	–	460	IPT	.0007	.0010	.0014	.0017	.0020	.0026	.0030	.0034	.0039

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HARVI™ III • UJBE • Ball Nose • Unequal Flute Spacing • Finishing





Material Group		Side Milling (A)		KCSM15			Recommended feed per tooth (IPT = inch/th) for side milling (A).								
		A		Cutting Speed — vc SFM				D1 — Diameter							
							frac.	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	dec.	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	Ap max	.06 x D	940	–	1250	IPT	.0011	.0016	.0022	.0027	.0033	.0041	.0047	.0053	.0059
	1	Ap max	.06 x D	940	–	1250	IPT	.0011	.0016	.0022	.0027	.0033	.0041	.0047	.0053	.0059
	2	Ap max	.06 x D	870	–	1180	IPT	.0011	.0016	.0022	.0027	.0033	.0041	.0047	.0053	.0059
	3	Ap max	.06 x D	750	–	1000	IPT	.0009	.0014	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	4	Ap max	.06 x D	560	–	940	IPT	.0008	.0012	.0016	.0020	.0025	.0031	.0036	.0040	.0046
	5	Ap max	.06 x D	370	–	620	IPT	.0007	.0011	.0015	.0018	.0022	.0028	.0033	.0037	.0043
	6	Ap max	.06 x D	310	–	470	IPT	.0006	.0009	.0012	.0015	.0018	.0023	.0027	.0030	.0034
M	1	Ap max	.06 x D	560	–	720	IPT	.0009	.0014	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	.06 x D	370	–	500	IPT	.0007	.0011	.0015	.0018	.0022	.0028	.0033	.0037	.0043
	3	Ap max	.06 x D	370	–	440	IPT	.0006	.0009	.0012	.0015	.0018	.0023	.0027	.0030	.0034
S	1	Ap max	.06 x D	310	–	560	IPT	.0009	.0014	.0018	.0023	.0027	.0035	.0041	.0046	.0054
	2	Ap max	.06 x D	160	–	250	IPT	.0005	.0007	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	3	Ap max	.06 x D	160	–	250	IPT	.0005	.0007	.0010	.0012	.0015	.0018	.0022	.0025	.0029
	4	Ap max	.06 x D	310	–	370	IPT	.0007	.0010	.0013	.0017	.0020	.0026	.0030	.0034	.0040
H	1	Ap max	.06 x D	500	–	870	IPT	.0008	.0012	.0016	.0020	.0025	.0031	.0036	.0040	.0046

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

End Mills for High-Feed Milling

KenFeed™

Specifically engineered to machine hardened steel up to 65 HRC at extreme speeds and feeds.

FEATURES AND BENEFITS

- Unique tool with new 6-flute style for high productivity.
- Necked shanks provide extended reach in deep cavities.
- High-feed rates up to .0230" per tooth on a 3/4" tool.
- Machine hardened materials at 2–3x the metal removal rate of competitive end mills.
- Wide range of cutting diameters: down to 1/4" for small and medium pocket work.
- Innovative new geometry maximizes metal removal rates.
- High metal removal rates lower manufacturing costs.



Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

CXE/CXER

High-Performance Solid Carbide End Mills

Primary Application

CXE and CXER radius end mills are specially developed and manufactured for stainless steel, titanium, and high-temperature alloys that are typically found in aerospace, defense, medical, oil, and gas industries.

- Roughing and finishing with one tool.
- Highest Metal Removal Rates (MRR) optimize productivity.
- Tough and wear-resistant substrate.
- Advanced nano-composite PVD coating.

Features and Benefits

Advanced Technology

- Four flutes with unequal helix for chatter-free machining at high feed rates.
- Center cutting for helical operations and pocketing.
- Front-end design and unequal helix for optimized chip control.

Tailored Grades

- SP4060 grade with tough and wear-resistant substrate, advanced nano-composite PVD coating for highest tool life.

Customization

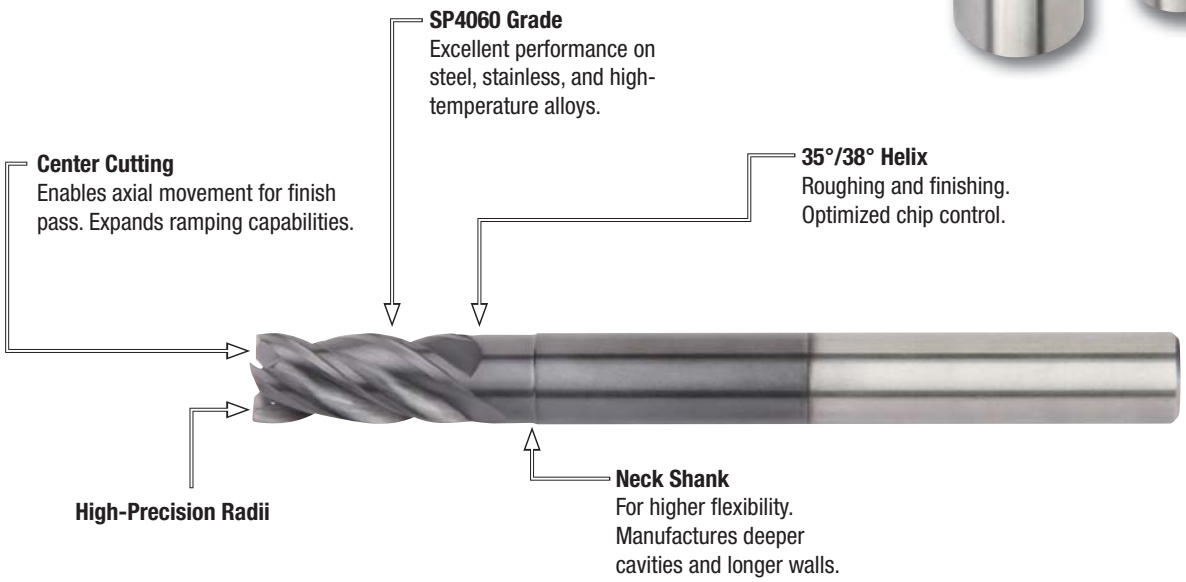
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.

Standard Offering

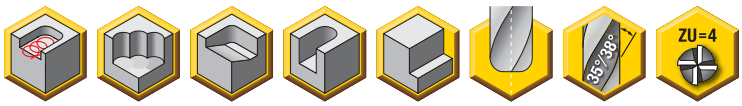
- Diameter range 1/8–1".

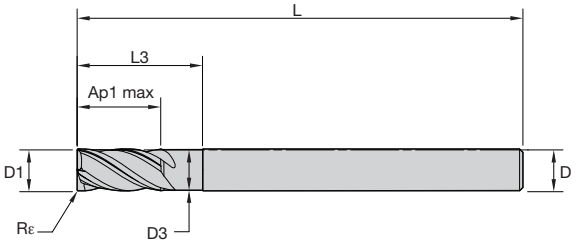
Designed for roughing and finishing with the highest Metal Removal Rates (MRR) in demanding materials.





- Asymmetrical flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



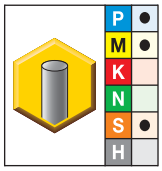




End Mill Tolerances

D1	tolerance
All	+.000/- .002"

CXE • 4 Flute • Inch

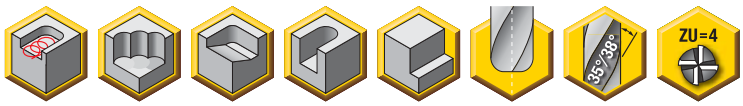


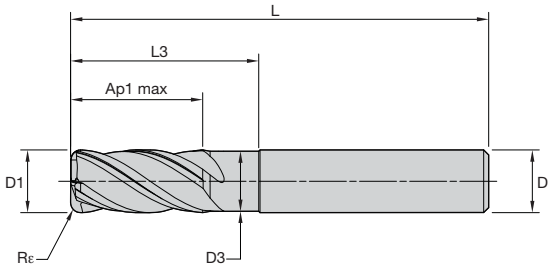
● first choice
○ alternate choice

SP4060	D1	D	D3	Ap1 max	L	L3	Rε
CXE0125MTN4-C	1/8	1/4	—	1/4	2 1/2	—	.010
CXE0187MTN4-C	3/16	1/4	—	3/8	3	—	.010
CXE0250MN4-C	1/4	1/4	.240	1/2	3	3/4	.010
CXE0375MN4-C	3/8	3/8	.365	3/4	4	1 1/8	.010
CXE0500MN4-C	1/2	1/2	.490	1	4	1 1/2	.010
CXE0750MN4-C	3/4	3/4	.740	1 1/2	5	2 1/4	.010

NOTE: For application data, see page P86.

- Asymmetrical flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



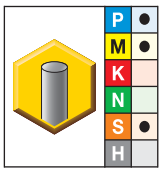




End Mill Tolerances

D1	tolerance
All	+.000/- .002"

CXER • 4 Flute • Inch



● first choice
○ alternate choice

SP4060	D1	D	Ap1 max	L	L3	Rε
CXER0125NTN4-C	1/8	.250	.275	2 1/2	—	.010
CXER0125NTN4-F *	1/8	.250	.290	2 1/2	—	.030
CXER0250NN4-C	1/4	.250	.540	2 1/2	.750	.010
CXER0250NN4-E	1/4	.250	.550	2 1/2	.750	.020
CXER0375NN4-C	3/8	.375	.825	2 1/2	1.125	.010
CXER0375NN4-E	3/8	.375	.825	2 1/2	1.125	.020
CXER0469NTN4-E *	15/32	.500	1.031	3	—	.020
CXER0500NN4-C	1/2	.500	1.100	3	1.500	.010
CXER0500NN4-F *	1/2	.500	1.100	3	1.500	.030
CXER0500NN4-J	1/2	.500	1.100	3	1.500	.060
CXER0500NN4-K	1/2	.500	1.100	3	1.500	.090
CXER0500NN4-L	1/2	.500	1.100	3	1.500	.120
CXER0625NN4-C	5/8	.625	1.375	3 1/2	1.875	.010
CXER0625NN4-J *	5/8	.625	1.375	3 1/2	1.875	.060
CXER0750NN4-C	3/4	.750	1.650	4	2.250	.010
CXER0750NN4-F	3/4	.750	1.650	4	2.250	.030
CXER0750NN4-K	3/4	.750	1.650	4	2.250	.090
CXER0750NN4-L	3/4	.750	1.650	4	2.250	.120
CXER1000NN4-C *	1	1.000	2.200	5	3.000	.010
CXER1000NN4-F	1	1.000	2.200	5	3.000	.030
CXER1000NN4-L *	1	1.000	2.200	5	3.000	.120

NOTE: For application data, see page P86.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

CXE/CXER • Asymmetrical Flute Spacing





Material Group		Side Milling (A) and Slotting (B)			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.												
		A		B	SP4060 Cutting Speed — vc SFM			D1 — Diameter									
								frac.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1
		ap	ae	ap	min		max	dec.	.125	.188	.250	.313	.375	.438	.500	.625	.750	1.000
P	3	1.5 x D	0.5 x D	1 x D	390	–	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039
	5	1.5 x D	0.5 x D	1 x D	200	–	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1.5 x D	0.5 x D	1 x D	200	–	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	3	1.5 x D	0.5 x D	1 x D	200	–	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
S	1	1.5 x D	0.5 x D	1 x D	160	–	300	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	3	1.5 x D	0.5 x D	1 x D	80	–	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	4	1.5 x D	0.5 x D	1 x D	160	–	200	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

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View product availability at global locations.

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High-Performance Solid Carbide Roughing End Mills

Primary Application

High-performance roughers can be applied in a wide range of workplace materials such as steels, stainless steels, cast irons, and in certain cases, hardened materials. Tailored roughing profiles reduce cutting forces to the necessary level or combine roughing and semi-finishing for fewer tool changes.

- High-performance universal tools for almost all cutting materials.
- Lower cutting forces and spindle power consumption.
- Center cutting for plunging, ramping, profiling, high-feed slotting, and side milling.

Features and Benefits

Advanced Technology

- Up to full length of cut for:
  - — Slotting
  - — Side milling
  - — Profiling
  - — Semi-finishing
- Various roughing profiles available for the right balance between cutting forces, feed rates, and surface quality.

Tailored Grades

- From proprietary KCPM15™ Beyond™ grade for outstanding wear to uncoated tools suitable for a variety of workpiece materials.
- Universal KC643M™ grade suitable for cutting steel, stainless, and titanium.

Customization

- Intermediate diameters available.
- Corner radii for near-shape roughing operations available.
- Various shank options, including the Safe-Lock™ system by HAIMER®, and non-standard coatings available.
- Internal coolant for improved chip evacuation and extended tool life.

Extensive Standard Offering

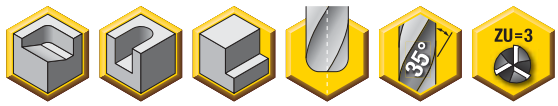
- Diameter range 1/4–1".
- Weldon® shank for maximum torque transmission.

Highest metal removal rates — even on unstable machines or workpiece clamping.

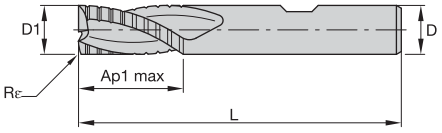




- Kennametal standard dimensions.
- Center cutting.
- Chipbreaker profile.





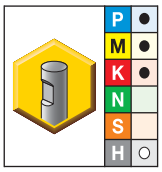


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-.0031"	<1/8"	+0/-.00024"
1/8–7/32"	-.0012/-.0041"	1/8–7/32"	+0/-.00031"
1/4–3/8"	-.0016/-.0051"	1/4–3/8"	+0/-.00035"
13/32–11/16"	-.002/-.0063"	13/32–11/16"	+0/-.00043"
23/32–1-3/16"	-.0026/-.0077"	23/32–1-3/16"	+0/-.00051"

beyond

HPRSS

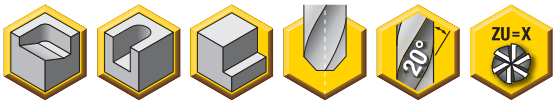


● first choice
○ alternate choice

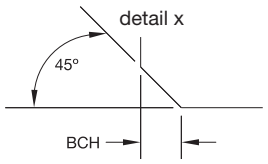
KCPM15	D1	D	Ap1 max	L	Rε
HPRSS250S3075	1/4	1/4	3/4	2 1/2	.020
HPRSS375S3100	3/8	3/8	1	2 1/2	.020
HPRSS500S3125	1/2	1/2	1 1/4	3	.030
HPRSS625S3163	5/8	5/8	1 5/8	3 1/2	.030
HPRSS750S3163	3/4	3/4	1 5/8	4	.030

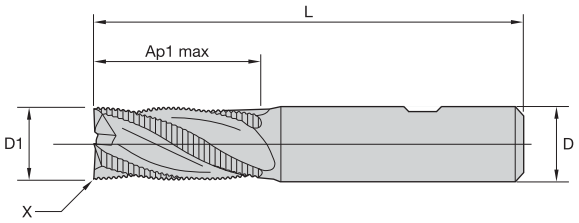
NOTE: For application data, see page P93.

- Kennametal standard dimensions.
- Center cutting.
- Cord profile.







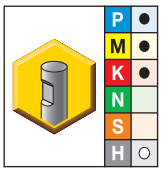


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-.0031"	<1/8"	+0/-.00024"
1/8–7/32"	-.0012/-.0041"	1/8–7/32"	+0/-.00031"
1/4–3/8"	-.0016/-.0051"	1/4–3/8"	+0/-.00035"
13/32–11/16"	-.002/-.0063"	13/32–11/16"	+0/-.00043"
23/32–1-3/16"	-.0026/-.0077"	23/32–1-3/16"	+0/-.00051"

beyond

MDRHEC • Rougher • Beyond™

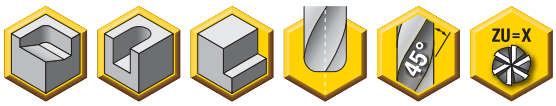


● first choice
○ alternate choice

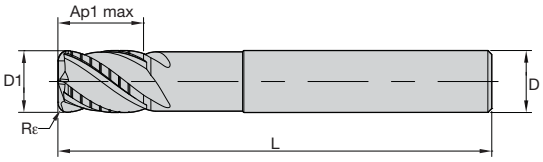
KCPM15	D1	D	Ap1 max	L	BCH	Z U
MDRHEC250S3025	1/4	1/4	3/8	2	.012	3
MDRHEC250S3075	1/4	1/4	3/4	2 1/2	.012	3
MDRHEC250S4025	1/4	1/4	3/8	2	.012	3
MDRHEC250S4075	1/4	1/4	3/4	2 1/2	.012	3
MDRHEC312S4081	5/16	5/16	13/16	2 1/2	.012	4
MDRHEC375S4038	3/8	3/8	1/2	2	.020	4
MDRHEC375S4088	3/8	3/8	7/8	2 1/2	.020	4
MDRHEC500S4050	1/2	1/2	5/8	2 1/2	.020	4
MDRHEC500S4100	1/2	1/2	1	3	.020	4
MDRHEC625S4063	5/8	5/8	3/4	3	.020	4
MDRHEC625S4125	5/8	5/8	1 1/4	3 1/2	.020	4
MDRHEC750S4075	3/4	3/4	7/8	3 1/2	.020	4
MDRHEC750S4150	3/4	3/4	1 1/2	4	.020	4
MDRHEC100S5150	1	1	1 1/2	4	.020	5

NOTE: For application data, see page P94.

- Kennametal standard dimensions.
- Center cutting.
- Shallow-pitch profile.



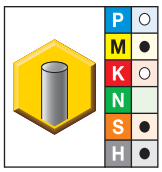


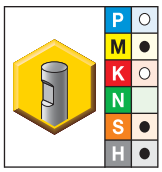


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-.0031"	<1/8"	+0/-.00024"
1/8–7/32"	-.0012/-.0041"	1/8–7/32"	+0/-.00031"
1/4–3/8"	-.001/-.0051"	1/4–3/8"	+0/-.00035"
13/32–11/16"	-.002/-.0063"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	-.0026/-.0077"	23/32–1 3/16"	+0/-.00051"

HPRST



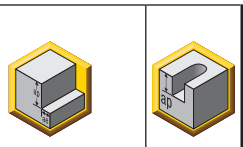


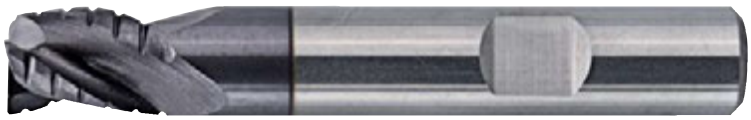
● first choice
○ alternate choice

KC643M	KC643M	D1	D	Ap1 max	L	Rε	Z U
HPRST250S4038	**–**	1/4	1/4	3/8	2	.030	3
HPRST250S4075	**–**	1/4	1/4	3/4	2 1/2	.030	4
HPRST375S4050	**–**	3/8	3/8	1/2	2	.030	4
HPRST375S4088	**–**	3/8	3/8	7/8	2 1/2	.030	4
–	**HPRST500S4063**	1/2	1/2	5/8	2 1/2	.040	4
–	**HPRST500S4125**	1/2	1/2	1 1/4	3	.040	4
–	**HPRST625S4075**	5/8	5/8	3/4	3	.040	4
–	**HPRST625S4125**	5/8	5/8	1 1/4	3 1/2	.040	4
–	**HPRST625S6125**	5/8	5/8	1 1/4	3 1/2	.040	6
–	**HPRST750S4088**	3/4	3/4	7/8	3 1/2	.050	4
–	**HPRST750S4150**	3/4	3/4	1 1/2	4	.050	4
–	**HPRST750S6150**	3/4	3/4	1 1/2	4	.050	6
–	**HPRST1000S4150**	1	1	1 1/2	4	.050	4
–	**HPRST1000S6150**	1	1	1 1/2	4	.050	6

NOTE: For application data, see page P95.

HPRSS





Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	Cutting Speed — vc SFM			D1 — Diameter					
							frac.	1/4	5/16	3/8	1/2	5/8	3/4
		ap	ae	ap	min	max	dec.	.250	.313	.375	.500	.625	.750
P	1	1 x D	0.5 x D	0.75 x D	500	650	fz	.0018	.0023	.0027	.0035	.0039	.0043
	2	1 x D	0.5 x D	0.75 x D	450	625	fz	.0018	.0023	.0027	.0035	.0039	.0043
	3	1 x D	0.5 x D	0.75 x D	400	525	fz	.0015	.0020	.0023	.0029	.0034	.0038
	4	1 x D	0.4 x D	0.3 x D	350	475	fz	.0014	.0018	.0020	.0026	.0030	.0033
	5	1 x D	0.5 x D	0.75 x D	200	325	fz	.0012	.0016	.0018	.0023	.0027	.0030
	6	1 x D	0.4 x D	0.3 x D	150	225	fz	.0010	.0013	.0015	.0019	.0022	.0024
M	1	1 x D	0.5 x D	0.75 x D	250	325	fz	.0015	.0020	.0023	.0029	.0034	.0038
	2	1 x D	0.5 x D	0.75 x D	190	260	fz	.0012	.0016	.0018	.0023	.0027	.0030
	3	1 x D	0.5 x D	0.75 x D	200	260	fz	.0010	.0013	.0015	.0019	.0022	.0024
K	1	1 x D	0.5 x D	0.75 x D	400	525	fz	.0018	.0023	.0027	.0035	.0039	.0043
	2	1 x D	0.5 x D	0.75 x D	360	460	fz	.0015	.0020	.0023	.0029	.0034	.0038
	3	1 x D	0.5 x D	0.75 x D	330	430	fz	.0012	.0016	.0018	.0023	.0027	.0030
H	1	1 x D	0.4 x D	0.3 x D	300	450	fz	.0014	.0018	.0020	.0026	.0030	.0033

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

MDRHEC





Material Group		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.250	.313	.375	.500	.625	.750	1.000
P	0	1.0 x D	0.5 x D	0.5 x D	490	660	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	1	1.0 x D	0.5 x D	0.5 x D	490	660	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	2	1.0 x D	0.4 x D	0.5 x D	460	620	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	3	1.0 x D	0.4 x D	0.5 x D	390	520	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	4	1.0 x D	0.3 x D	0.4 x D	300	490	IPT	.0012	.0015	.0017	.0022	.0026	.0029	.0033
	5	1.0 x D	0.4 x D	0.5 x D	200	330	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
M	1	1.0 x D	0.4 x D	0.5 x D	300	380	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	2	1.0 x D	0.4 x D	0.5 x D	200	260	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
	3	1.0 x D	0.4 x D	0.5 x D	200	230	IPT	.0009	.0011	.0013	.0016	.0019	.0021	.0024
K	1	1.0 x D	0.5 x D	0.5 x D	390	490	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	2	1.0 x D	0.4 x D	0.5 x D	360	460	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	3	1.0 x D	0.4 x D	0.5 x D	360	430	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
S	1	1.0 x D	0.4 x D	0.5 x D	–	–	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	2	1.0 x D	0.4 x D	0.5 x D	–	–	IPT	.0007	.0009	.0010	.0013	.0015	.0018	.0021
H	1	1.0 x D	0.3 x D	0.4 x D	260	460	IPT	.0012	.0015	.0017	.0022	.0026	.0029	.0033

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HPRST



Material Group		Side Milling (A) and Slotting (B)			KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.250	.313	.378	.500	.625	.750	1.000
P	3	1.0 x D	0.5 x D	0.75 x D	390	520	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	1.0 x D	0.3 x D	0.75 x D	300	490	IPT	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	1.0 x D	0.5 x D	0.75 x D	200	330	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	6	1.0 x D	0.3 x D	0.3 x D	160	250	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
M	1	1.0 x D	0.5 x D	0.75 x D	300	380	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.0 x D	0.5 x D	0.75 x D	200	260	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	3	1.0 x D	0.5 x D	0.75 x D	200	230	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
K	1	1.0 x D	0.5 x D	1 x D	390	490	IPT	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	1.0 x D	0.5 x D	1 x D	360	460	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	3	1.0 x D	0.5 x D	1 x D	360	430	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
S	1	1.0 x D	0.3 x D	0.75 x D	160	300	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.0 x D	0.3 x D	0.75 x D	80	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	1.0 x D	0.3 x D	0.75 x D	80	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	1.0 x D	0.4 x D	0.75 x D	160	200	IPT	.0011	.0014	.0017	.0021	.0025	.0028	.0033
H	1	1.0 x D	0.3 x D	0.3 x D	260	460	IPT	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	2	1.0 x D	0.2 x D	0.2 x D	230	390	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	3	1.0 x D	0.2 x D	0.2 x D	200	300	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

RSM II

Multi-Flute End Mills

Primary Application

RSM II offers the highest productivity in machining aerospace structural components in titanium and titanium alloys. The RSM II is designed to utilise high-speed peel milling strategies with secure chip formation and evacuation in deep cavities. RSM II is available with the Safe-Lock™ system by HAIMER®.

- Excellent metal removal rates.
- Highest surface quality.
- Unmatched tool life and wear resistance using grade KC643M™.
- Highest process security.

Features and Benefits

Advanced Technology

- Maximum number of flutes for increased feed rates and less vibration tendency.
- Proprietary W-shaped flute form improves chip formation and reduces cutting forces.
- Unequal flute spacing increases tool life and surface quality.
- Proprietary AlTiN KC643M grade for increased tool life.

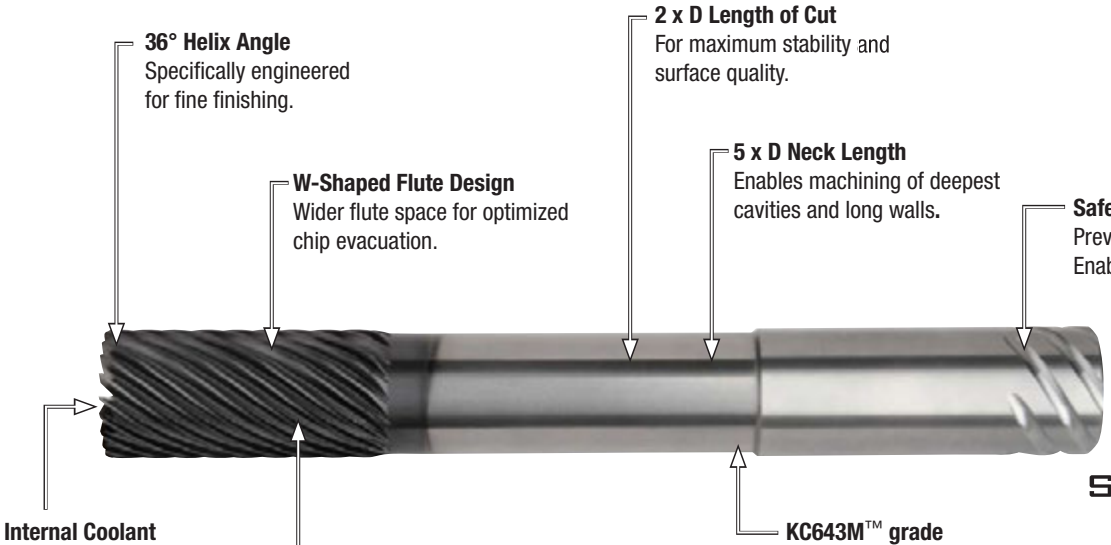
Customization

- Custom overall length and length of cut.
- Different radii per diameter.
- Custom shank styles.
- Tapered versions available.
- Uncoated K600 grade for milling critical-to-fly components.

Extensive Standard Offering

- Each diameter has an optimized number of flutes for constant edge-to-flute space ratio.
- Different radii per diameter.
- Safe-Lock™ and round shank.





36° Helix Angle
Specifically engineered for fine finishing.

W-Shaped Flute Design
Wider flute space for optimized chip evacuation.

2 x D Length of Cut
For maximum stability and surface quality.

5 x D Neck Length
Enables machining of deepest cavities and long walls.

Safe-Lock™ Shank
Prevents end mill pullout. Enables higher feed rates.

SAFE-λOCK® by HAIMER®

Internal Coolant
Increases tool life and flushes out chips in deep cavities.

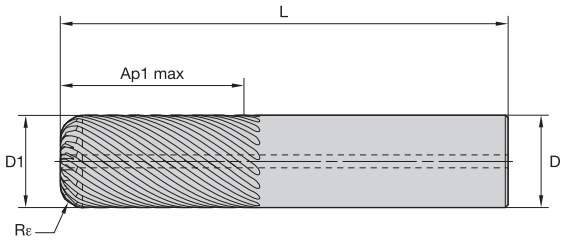
Eccentric Relief Grind
Improves edge stability and enables higher feed rates.

KC643M™ grade
Unmatched fine finishing and tool life results.

K600™ Uncoated Grade
Addresses critical-to-fly applications for uncoated tools.

- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.



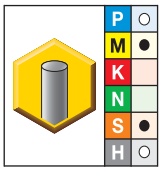




End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
< 1/8"	+0/-.002	< 1/8"	0/.00024
1/8–7/32"	+0/-.002	1/8–7/32"	0/.00031
1/4–3/8"	+0/-.002	1/4–3/8"	0/.00035
13/32–11/16"	+0/-.002	13/32–11/16"	0/.00043
23/32–1-3/16"	+0/-.002	23/32–1-3/16"	0/.00051

FSDE.. • Multi-Flute • Short • Inch



● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L	Rε	Z U
FSDE0375J9BCA	3/8	3/8	3/4	2	.015	9
FSDE0375J9BCB	3/8	3/8	3/4	2	.030	9
FSDE0500J9BCA	1/2	1/2	1	2 1/2	.015	9
FSDE0500J9BCB	1/2	1/2	1	2 1/2	.030	9
FSDE0500J9BCC	1/2	1/2	1	2 1/2	.060	9
FSDE0625JBBCB	5/8	5/8	1 1/4	3	.030	11
FSDE0750JFBCA	3/4	3/4	1 1/2	3 1/2	.015	15
FSDE0750JFBCB	3/4	3/4	1 1/2	3 1/2	.030	15
FSDE0750JFBCC	3/4	3/4	1 1/2	3 1/2	.060	15
FSDE0750JFBCE	3/4	3/4	1 1/2	3 1/2	.120	15
FSDE1000JJBCA	1	1	2	4	.015	19
FSDE1000JJBCB	1	1	2	4	.030	19
FSDE1000JJBCC	1	1	2	4	.060	19
FSDE1000JJBCE	1	1	2	4	.120	19

NOTE: For application data, please see page P99.

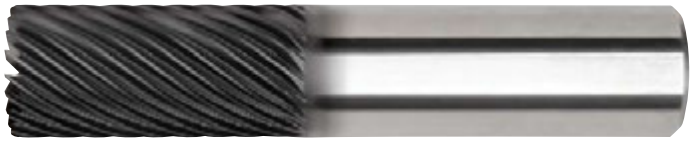
FSDE.. • Multi-Flute • Short • Inch • Roughing



Material Group		Side Milling (A) A ap	ae	KC643M Cutting Speed — vc SFM min		max	Recommended feed per tooth (IPT = inch/th) for side milling (A). D1 — Diameter in	1/4 .2500	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	4	Ap max	0.03–0.045	440	–	740	IPT	.0032	.0034	.0040	.0043	.0049	.0058
	5	Ap max	0.03–0.045	300	–	490	IPT	.0028	.0030	.0036	.0039	.0045	.0054
M	1	Ap max	0.03–0.045	440	–	570	IPT	.0035	.0038	.0045	.0049	.0056	.0068
	2	Ap max	0.03–0.045	300	–	390	IPT	.0028	.0030	.0036	.0039	.0045	.0054
	3	Ap max	0.03–0.045	300	–	340	IPT	.0024	.0025	.0030	.0032	.0036	.0042
S	1	Ap max	0.03–0.045	250	–	440	IPT	.0035	.0038	.0045	.0049	.0056	.0068
	2	Ap max	0.03–0.045	120	–	200	IPT	.0019	.0020	.0024	.0026	.0030	.0036
	3	Ap max	0.03–0.045	120	–	200	IPT	.0019	.0020	.0024	.0026	.0030	.0036
	4	Ap max	0.03–0.045	250	–	300	IPT	.0025	.0028	.0033	.0036	.0041	.0050
H	1	Ap max	0.03–0.045	390	–	690	IPT	.0032	.0034	.0040	.0043	.0049	.0058
	2	Ap max	0.03–0.045	340	–	590	IPT	.0024	.0025	.0030	.0032	.0036	.0042

NOTE: For better surface finish, reduce feed per tooth.

FSDE.. • Multi-Flute • Highest Surface Quality • Finishing

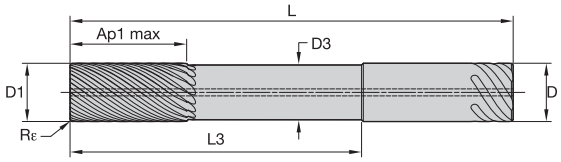


Material Group		Side Milling (A) A ap	ae	KC643M Cutting Speed — vc SFM min		max	Recommended feed per tooth (IPT = inch/th) for side milling (A). frac. dec.	D1 — Diameter 1/4 .2500	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	4	Ap max	.008–.012	445	–	1628	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	5	Ap max	.008–.012	295	–	1078	IPT	.0038	.0040	.0048	.0052	.0056	.0061
M	1	Ap max	.008–.012	445	–	1243	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	.008–.012	295	–	869	IPT	.0038	.0040	.0048	.0052	.0056	.0061
	3	Ap max	.008–.012	295	–	759	IPT	.0032	.0033	.0040	.0043	.0045	.0048
S	1	Ap max	.008–.012	245	–	979	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	.008–.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	3	Ap max	.008–.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	4	Ap max	.008–.012	245	–	649	IPT	.0033	.0037	.0044	.0048	.0051	.0056
H	1	Ap max	.008–.012	395	–	1518	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	2	Ap max	.008–.012	345	–	1298	IPT	.0032	.0033	.0040	.0043	.0045	.0048

NOTE: For better surface finish, reduce feed per tooth.

- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Reach optimized for machining deep cavities.



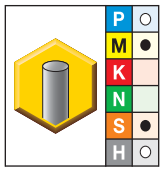


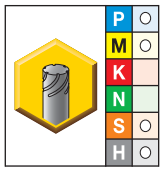


End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
< 1/8"	+0/-.002	< 1/8"	0/.00024
1/8–7/32"	+0/-.002	1/8–7/32"	0/.00031
1/4–3/8"	+0/-.002	1/4–3/8"	0/.00035
13/32–11/16"	+0/-.002	13/32–11/16"	0/.00043
23/32–1-3/16"	+0/-.002	23/32–1-3/16"	0/.00051

FSDE.. • Multi-Flute with Neck • Inch





● first choice
○ alternate choice

KC643M	KC643M	D1	D	D3	Ap1 max	L3	L	Rε	Z U
FSDE0250J7DYA	–	1/4	1/4	.235	1/2	1.250	3	.015	7
FSDE0375J9DYA	–	3/8	3/8	.353	3/4	1.875	4	.015	9
FSDE0375J9DYB	–	3/8	3/8	.353	3/4	1.875	4	.030	9
–	**FSDE0500N9DYA**	1/2	1/2	.470	1	2.500	5	.015	9
–	**FSDE0500N9DYB**	1/2	1/2	.470	1	2.500	5	.030	9
–	**FSDE0500N9DYC**	1/2	1/2	.470	1	2.500	5	.060	9
–	**FSDE0625NBDYB**	5/8	5/8	.588	1 1/4	3.125	5 1/4	.030	11
–	**FSDE0750NFDYA**	3/4	3/4	.705	1 1/2	3.750	6	.015	15
–	**FSDE0750NFDYB**	3/4	3/4	.705	1 1/2	3.750	6	.030	15
–	**FSDE0750NFDYC**	3/4	3/4	.705	1 1/2	3.750	6	.060	15
–	**FSDE0750NFDYE**	3/4	3/4	.705	1 1/2	3.750	6	.120	15
–	**FSDE1000NJDYA**	1	1	.940	2	5.000	7 1/2	.015	19
–	**FSDE1000NJDYB**	1	1	.940	2	5.000	7 1/2	.030	19
–	**FSDE1000NJDYC**	1	1	.940	2	5.000	7 1/2	.060	19
–	**FSDE1000NJDYE**	1	1	.940	2	5.000	7 1/2	.120	19

NOTE: For application data, please see page P101.

FSDE.. • Multi-Flute with Neck • Inch



Material Group		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
		ap	ae	min		max	frac.	1/4	3/8	1/2	5/8	3/4	1
							dec.	.2500	.3750	.5000	.6250	.7500	1.0000
P	4	Ap max	0.008–0.012	445	–	1628	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	5	Ap max	0.008–0.012	295	–	1078	IPT	.0038	.0040	.0048	.0052	.0056	.0061
M	1	Ap max	0.008–0.012	445	–	1243	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012	295	–	869	IPT	.0038	.0040	.0048	.0052	.0056	.0061
	3	Ap max	0.008–0.012	295	–	759	IPT	.0032	.0033	.0040	.0043	.0045	.0048
S	1	Ap max	0.008–0.012	245	–	979	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	3	Ap max	0.008–0.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	4	Ap max	0.008–0.012	245	–	649	IPT	.0033	.0037	.0044	.0048	.0051	.0056
H	1	Ap max	0.008–0.012	395	–	1518	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	2	Ap max	0.008–0.012	345	–	1298	IPT	.0032	.0033	.0040	.0043	.0045	.0048

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions.
For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.



FSDE 15-Flute End Mill

CHALLENGE

- Finishing contour milling on aerospace part with interrupted cut.
- Depth of cut: 1.575" (40mm).
- Titanium alloy R56400.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) radius.

CUTTING DATA

- vc 230 SFM
- fz .0030 IPT
- ap 1.569"
- ae .001"

RESULT

- 3.75 times longer tool life compared to competitor solution.

BENEFIT

- Machining time reduction of 46%.
- Metal removal rate increase of 87%.

FSDE 11-Flute End Mill

CHALLENGE

- Finishing long channel on aerospace frame part.
- Depth of cut: 1.535" (39mm).
- Titanium alloy.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M.
- Ø .625" (15.875mm) with 11 effective cutting edges and .003" (0.762mm) radius.

CUTTING DATA

- vc 425 SFM
- fz .0021 IPT
- ap 1.55"
- ae .001"

RESULT

- 2.5 times higher feed rates compared to initial solution.

BENEFIT

- Machining time reduction of 60%.
- Metal removal rate increase of 150%.

(continued)

(continued)



FSDE 15-Flute End Mill

CHALLENGE

- Finishing external profile.
- Depth of cut: .787" (20mm).
- Titanium alloy 6Al4V.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) corner radius.

CUTTING DATA

- vc 492 SFM
- fz .0020 IPT
- ap .784"
- ae .0024"

RESULT

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

BENEFIT

- Machining time reduction of 81% from 43.1–8.4 min vs competitor solution.
- Metal removal rate increase of 360% vs competitor solution.

FSDE 19-Flute End Mill

CHALLENGE

- Finishing external profile.
- Depth of cut: .787" (20mm).
- Titanium alloy 6Al4V.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M.
- Ø .984" (25mm) with 19 effective cutting edges and .039" (1mm) corner radius.

CUTTING DATA

- vc 492 SFM
- fz .0020 IPT
- ap .784"
- ae .0024"

RESULT

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

BENEFIT

- Machining time reduction of 81% from 43.1–8.3 min vs competitor solution.
- Metal removal rate increase of 366% vs competitor solution.

Materials to Cut	• Titanium and titanium alloys. • Nickel-based alloys. • Cobalt-based alloys. • Steels (P4–P5). • Stainless steels (M2–M3). • Hardened steels (H1).
Cutting Speed	• Refer to application data recommendation. • Highly dynamic machines recommended.
Feed Rate	• Refer to application data recommendation. • Highly dynamic machines recommended. • High-speed peel milling strategies require control of adequate feed rates.
Depth of Cut	• High-speed peel milling requires small depth of cut (approximately 5% of diameter) not exceeding 0.0393" (1mm).
Coolant	• Internal coolant for machining cavities. • External coolant for peripheral milling.
Adaptation	• Shrink Fit adaptation is preferred as alternate recommendation. • High-Performance Milling Chucks (HPMC) are applicable. • Collect chucks are not recommended due to high runout.
Roughing Application	• Not recommended.
Finishing Application	• Finishing and semi-finishing.
Milling Strategy	• Peel milling strategies are recommended. • Trochoidal milling is not recommended for this tool.
Applications	• Shoulder milling. • Shoulder milling and fine finishing. • Peel milling and HPC techniques. • Non-center cutting. • No ramping and helical interpolation.
Corner Machining	• Pre-mill corner pocket to leave appropriate depth-of-cut for finishing application. • Use RSM with depth-of-cut at approximately 5% of diameter and below 0.0393" (1mm). • RSM ll tool radius shall be smaller than final corner radius.
Engineered Solutions	• Available upon request.
Reconditioning Service	• Available with standard Kennametal reconditioning procedures. • Check services under Kennametal website for detailed information.

Service and Support

Customer Application Support (CAS)

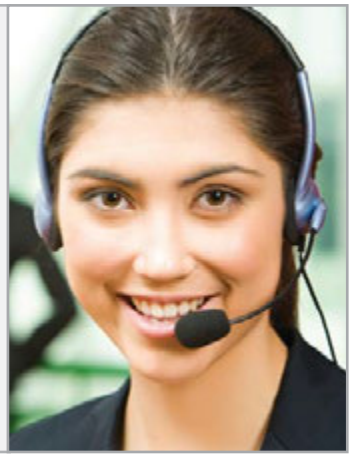
Get Fast and Reliable Answers to Your Toughest Metalcutting Problems

Our Customer Application Support (CAS) Team is the metalworking industry's leading help desk resource for tooling application solutions and problem resolution.

Easy Access to Proven Metalworking Expertise!

Kennametal Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of Kennametal tooling.

SERVICE LEVEL EXCELLENCE	Fast telephone response. Quick technical solutions. Efficient case management.
SERVICES	Operating parameters. Process optimization. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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Russia (cell phone)	Russian	+7 8005556394	eu.techsupport@kennametal.com
Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
South Africa	English	0800 981643	na.techsupport@kennametal.com
Sweden	English	020799246	na.techsupport@kennametal.com
Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com
UK	English	0800 032 8339	na.techsupport@kennametal.com
Ukraine	Russian	0800502664	eu.techsupport@kennametal.com
USA	English	800 835 3668	na.techsupport@kennametal.com

Numbers shown only serve the originating country listed.

High-Performance Solid Carbide Finishing End Mills

Primary Application

High-performance finishing end mills can be used for a wide range of workpiece materials such as steel, stainless steel, cast titanium, high-temp alloys, and in certain cases, hard materials.

- High-performance tools for excellent surface quality and accuracy.
- Reduce harmonics for chatter-free machining.
- Different front and flute styles for a wide range of applications like open contour, contour milling, and pocketing, and milling long and thin walls.

Features and Benefits

Advanced Technology

- Various styles available to choose from for the right application and workpiece material.
- Designated platforms for aerospace, transportation, and general engineering requirements.
- Selective styles for machining up to 6 x D.

Tailored Grades

- Wide range of grades from uncoated to proprietary Beyond™ grades to cover a wide range of requirements.

Highest metal removal rates and surface finish.



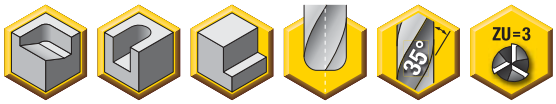
Customization

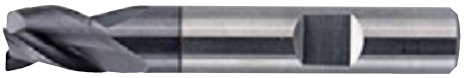
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Different radii available.

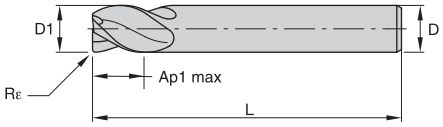
Standard Offering

- Diameter range 1/8–1".

- Center cutting.



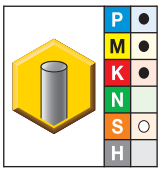


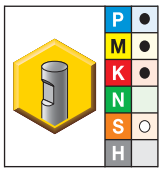


End Mill Tolerances

D1	tolerance	D	tolerance h6 +/-
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HPFSS 3 Flute • Soft Steels and Stainless Steels



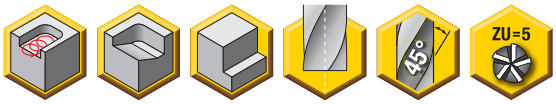


● first choice
○ alternate choice

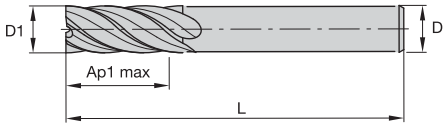
KC635M	KC635M	D1	D	Ap1 max	L	Rε
HPFSS125S3025	–	1/8	1/8	1/4	1 1/2	.010
HPFSS188S3031	–	3/16	3/16	5/16	2	.010
HPFSS250S3038	–	1/4	1/4	3/8	2	.020
HPFSS250S3050	–	1/4	1/4	1/2	2	.020
HPFSS312S3081	–	5/16	5/16	13/16	2 1/2	.020
HPFSS375S3050	–	3/8	3/8	1/2	2	.020
HPFSS375S3088	–	3/8	3/8	7/8	2 1/2	.020
–	**HPFSS500S3063**	1/2	1/2	5/8	2 1/2	.030
–	**HPFSS500S3125**	1/2	1/2	1 1/4	3	.030

NOTE: For application data, see page P111.

- Kennametal standard dimensions.
- Center cutting.





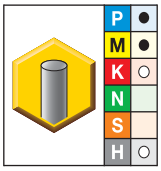


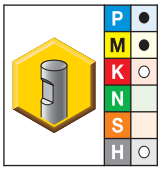
End Mill Tolerances

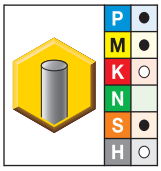
D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

beyond

HPFSS 5 Flute • Steel, Stainless Steels, and Titanium







● first choice
○ alternate choice

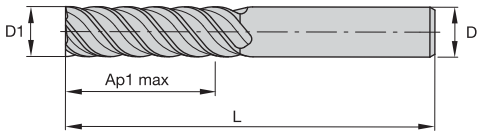
KCPM15	KCPM15	KC635M	D1	D	Ap1 max	L
–	–	HPFSS125S5025	1/8	1/8	1/4	1 1/2
–	–	HPFSS156S5056	5/32	3/16	9/16	2
–	–	HPFSS188S5031	3/16	3/16	5/16	2
HPFSS188S5056	–	–	3/16	3/16	9/16	2
HPFSS250S5038	–	–	1/4	1/4	3/8	2
HPFSS250S5075	–	–	1/4	1/4	3/4	2 1/2
HPFSS250S5125	–	–	1/4	1/4	1 1/4	4
HPFSS375S5050	–	–	3/8	3/8	1/2	2
HPFSS375S5088	–	–	3/8	3/8	7/8	2 1/2
HPFSS375S5150	–	–	3/8	3/8	1 1/2	4
–	HPFSS500S5063	–	1/2	1/2	5/8	2 1/2
–	HPFSS500S5125	–	1/2	1/2	1 1/4	3
–	HPFSS500S5200	–	1/2	1/2	2	4
–	HPFSS625S5075	–	5/8	5/8	3/4	3
–	HPFSS625S5163	–	5/8	5/8	1 5/8	4
–	HPFSS750S5088	–	3/4	3/4	7/8	3
–	HPFSS750S5163	–	3/4	3/4	1 5/8	4
–	HPFSS750S5325	–	3/4	3/4	3 1/4	5
–	HPFSS1000S5200	–	1	1	2	4
–	HPFSS1000S5325	–	1	1	3 1/4	6

NOTE: For application data, see page P111.

- Kennametal standard dimensions.
- Center cutting.



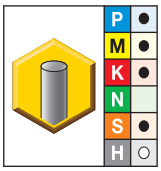




End Mill Tolerances

D1	tolerance	D	tolerance h6 +/-
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HPFT • Stainless Steels and High-Temp Alloys



● first choice
○ alternate choice

KC635M	D1	D	Ap1 max	L	Z U
HPFT250S6038	1/4	1/4	3/8	2	6
HPFT250S6075	1/4	1/4	3/4	2 1/2	6
HPFT312S6081	5/16	5/16	13/16	2 1/2	6
HPFT375S6088	3/8	3/8	7/8	2 1/2	6
HPFT375S6113	3/8	3/8	1 1/8	3	6
HPFT500S6063	1/2	1/2	5/8	2 1/2	6
HPFT500S6100	1/2	1/2	1	3	6
HPFT500S6200	1/2	1/2	2	4 1/2	6
HPFT625S6125	5/8	5/8	1 1/4	3 1/2	6
HPFT750S6150	3/4	3/4	1 1/2	4	6
HPFT750S6225	3/4	3/4	2 1/4	5	6
HPFT750S6300	3/4	3/4	3	5 1/4	6
HPFT750S6400	3/4	3/4	4	6 1/4	6
HPFT1000S6150	1	1	1 1/2	4	6
HPFT1000S6225	1	1	2 1/4	5	6
HPFT1000S6400	1	1	4	6 1/2	6

NOTE: For application data, see page P112.

HPFSS 3 Flute • With Radius • Soft Steels and Stainless Steels



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC635M Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
							dec.	.125	.188	.250	.313	.375	.438	.500	.625	.750
P	0	1.5 x D	0.3 x D	0.5 x D	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	1	1.5 x D	0.3 x D	0.5 x D	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	2	1.5 x D	0.3 x D	0.5 x D	460	620	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	3	1.5 x D	0.3 x D	0.5 x D	390	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	4	1.5 x D	0.3 x D	0.3 x D	300	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034
	5	1.5 x D	0.3 x D	0.5 x D	200	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
	6	1.5 x D	0.3 x D	0.3 x D	160	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025
M	1	1.5 x D	0.3 x D	0.5 x D	300	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	2	1.5 x D	0.3 x D	0.5 x D	200	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
	3	1.5 x D	0.3 x D	0.5 x D	200	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025
K	1	1.5 x D	0.3 x D	0.5 x D	390	490	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	2	1.5 x D	0.3 x D	0.5 x D	360	460	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	3	1.5 x D	0.3 x D	0.5 x D	360	430	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021
	4	1.5 x D	0.3 x D	0.5 x D	160	200	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028

HPFSS 5 Flute • Steel, Stainless Steels, and Titanium



Material Group		Side Milling (A) A ap	A ae	KC635M Cutting Speed — vc SFM min	max	KCPM15 Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1
								dec.	.125	.188	.250	.313	.375	.438	.500	.625	.750	1.000
P	0	1.5 x D	0.2 x D	490	660	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	1	1.5 x D	0.2 x D	490	660	490	660	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	2	1.5 x D	0.2 x D	460	620	460	620	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	3	1.5 x D	0.2 x D	390	520	390	520	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	4	1.5 x D	0.2 x D	300	490	300	490	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039
	5	1.5 x D	0.2 x D	200	330	200	330	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	6	1.5 x D	0.2 x D	160	250	160	250	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
M	1	1.5 x D	0.2 x D	300	380	300	380	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1.5 x D	0.2 x D	200	260	200	260	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
	3	1.5 x D	0.2 x D	200	230	200	230	IPT	.0005	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025	.0028
K	1	1.5 x D	0.2 x D	390	490	390	490	IPT	.0009	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044	.0049
	2	1.5 x D	0.2 x D	360	460	360	460	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	3	1.5 x D	0.2 x D	360	430	360	430	IPT	.0006	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031	.0036
S	1	1.5 x D	0.2 x D	160	300	–	–	IPT	.0007	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039	.0045
	2	1.5 x D	0.2 x D	80	130	–	–	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	3	1.5 x D	0.2 x D	80	130	–	–	IPT	.0004	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021	.0024
	4	1.5 x D	0.2 x D	160	200	–	–	IPT	.0005	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028	.0033
H	1	1.5 x D	0.2 x D	260	460	260	460	IPT	.0007	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034	.0039

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on > 1/2" diameter.

HPFT • Stainless Steels and High-Temp Alloys





Material Group		Side Milling (A)		KC635M		Recommended feed per tooth (IPT = inch/th) for side milling (A).								
		A		Cutting Speed — vc SFM			D1 — Diameter							
						frac.	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
		ap	ae	min	max	dec.	.188	.250	.313	.375	.438	.500	.625	.750
P	0	1.5 x D	0.05 x D	490	660	IPT	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	1	1.5 x D	0.05 x D	490	660	IPT	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	2	1.5 x D	0.05 x D	460	620	IPT	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	3	1.5 x D	0.05 x D	390	520	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	4	1.5 x D	0.05 x D	300	490	IPT	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034
	5	1.5 x D	0.05 x D	200	330	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
	6	1.5 x D	0.04 x D	160	250	IPT	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025
M	1	1.5 x D	0.05 x D	300	380	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	2	1.5 x D	0.05 x D	200	260	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
	3	1.5 x D	0.05 x D	200	230	IPT	.0008	.0010	.0013	.0015	.0017	.0019	.0022	.0025
K	1	1.5 x D	0.05 x D	390	490	IPT	.0013	.0018	.0023	.0027	.0031	.0034	.0039	.0044
	2	1.5 x D	0.05 x D	360	460	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	3	1.5 x D	0.05 x D	360	430	IPT	.0009	.0012	.0016	.0018	.0021	.0023	.0027	.0031
S	1	1.5 x D	0.04 x D	160	300	IPT	.0011	.0015	.0020	.0023	.0026	.0029	.0034	.0039
	2	1.5 x D	0.04 x D	80	130	IPT	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021
	3	1.5 x D	0.04 x D	80	130	IPT	.0006	.0008	.0010	.0012	.0014	.0015	.0018	.0021
	4	1.5 x D	0.05 x D	160	200	IPT	.0008	.0011	.0014	.0017	.0019	.0021	.0025	.0028
H	1	1.5 x D	0.04 x D	260	460	IPT	.0010	.0014	.0017	.0020	.0023	.0026	.0030	.0034

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group
These guidelines may require variations to achieve optimum results.

DUO-λOCK®

Replaceable head system

- High accuracy and repeatability.
- Maximum stability and productivity.
- Solid carbide performance.



DUO-λOCK®
by HAIMER® and Kennametal

Offering

- HARVI™ I, II, and III.
- Roughers and finishers.
- Aluminum and high-feed cutters.
- Corner rounding and chamfering tools.

Advanced Technology

- Up to 1 x D full slotting.
- 1,5 x D side milling up to 50% radial engagement.
- Extensive straight shanks, conical shanks, and integral adapters.
- Proprietary HARVI geometries enable roughing and finishing with one tool.

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

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MaxiMet™

Primary Application

The MaxiMet system provides extraordinary metal removal rates and combines roughing and finishing operations with any aluminum plunging, slotting, and profiling application. Its proprietary flute geometry is designed for high stiffness and improved chip evacuation, and generates exceptional wall to floor perpendicularity in thin-wall applications. To ensure a superior floor surface finish, the MaxiMet front geometry is equipped with a wiper facet grind.

- Use only one tool for roughing and finishing operations.
- Slotting depths up to 1 x D as well as side milling up to 0.5 x D radial and 1.5 x D axial engagement.
- Unequal flute spacing for chatter-free performance with the 3-flute series.
- Multiple corner radii and extended neck configurations available as standard.

Features and Benefits

Advanced Technology

- Increase output with fewer tool changes and increased metal removal rates.
- No specific tools for roughing and finishing necessary.
- Fewer passes due to 1 x D slotting capability.
- Perfect for MQL (minimum quantity lubrication) methods.

Tailored Grades

- K600 uncoated grade for longest tool life in aluminum and other non-ferrous materials.

Customization

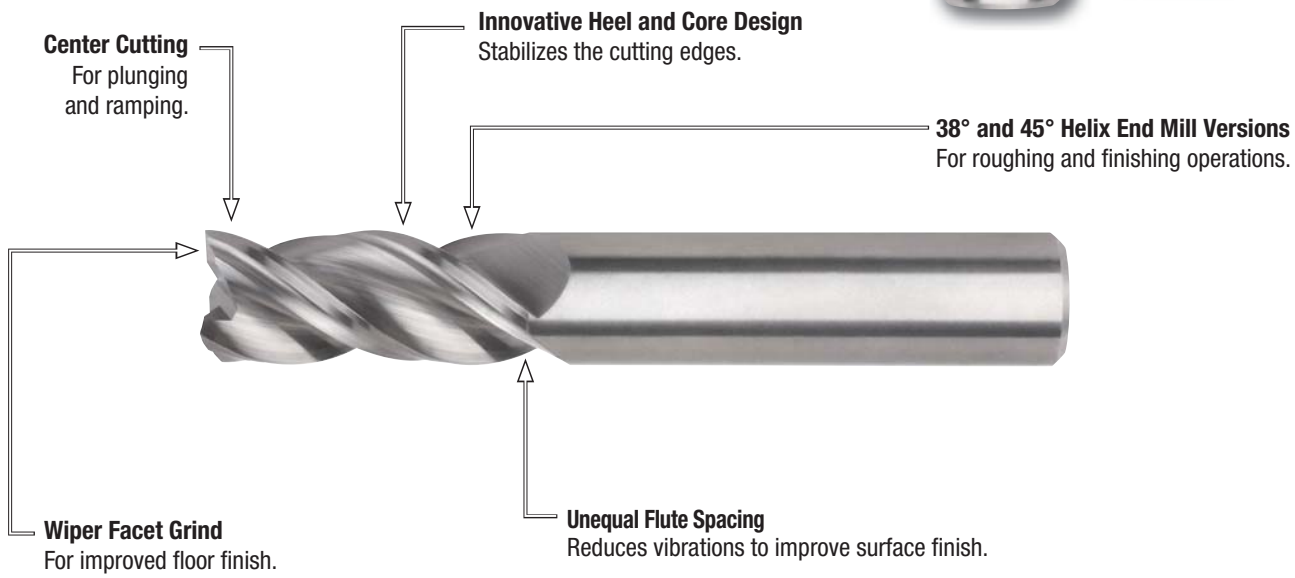
- Intermediate diameters available.
- Custom solutions available for machining titanium and other high-temperature alloys.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.

Extensive Standard Offering

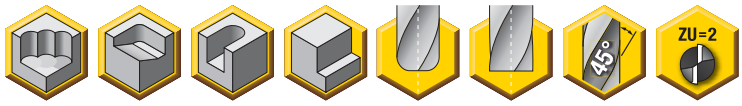
- Diameter ranges 3/16–1".
- Extended neck for long-reach applications and radii and sharp corner configurations.

Solid carbide end mills for high metal removal rates and superior surface finishes in aluminum.

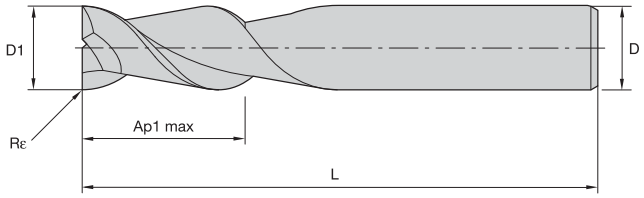




- Kennametal standards dimensions.
- Center cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
- Unique geometry delivers maximum metal removal rates.



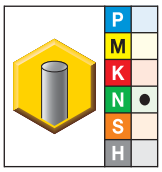




End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

ABDF • Wiper Facet



● first choice
○ alternate choice

K600	D1	D	Ap1 max	L	Rε
ABDF0188J2ARA	3/16	3/16	3/8	2	.015
ABDF0188J2AS	3/16	3/16	3/8	2	—
ABDF0250J2ARA	1/4	1/4	1/2	2 1/2	.015
ABDF0250J2ARB	1/4	1/4	1/2	2 1/2	.030
ABDF0250J2AS	1/4	1/4	1/2	2 1/2	—
ABDF0312J2ARA	5/16	5/16	5/8	2 1/2	.015
ABDF0312J2ARB	5/16	5/16	5/8	2 1/2	.030
ABDF0312J2AS	5/16	5/16	5/8	2 1/2	—
ABDF0375J2ARB	3/8	3/8	3/4	2 1/2	.030
ABDF0375J2AS	3/8	3/8	3/4	2 1/2	—
ABDF0500J2ARB	1/2	1/2	1 1/4	3	.030
ABDF0500J2ARC	1/2	1/2	1 1/4	3	.060
ABDF0500J2ARE	1/2	1/2	1 1/4	3	.120
ABDF0500J2AS	1/2	1/2	1 1/4	3	—
ABDF0625J2AS	5/8	5/8	1 1/4	3 1/2	—
ABDF0625J2BRB	5/8	5/8	1 5/8	3 1/2	.030
ABDF0625J2BRC	5/8	5/8	1 5/8	3 1/2	.060
ABDF0625J2BRE *	5/8	5/8	1 5/8	3 1/2	.120
ABDF0625J2BS	5/8	5/8	1 5/8	3 1/2	—
ABDF0750J2ARB *	3/4	3/4	1 1/2	4	.030
ABDF0750J2ARC	3/4	3/4	1 1/2	4	.060
ABDF0750J2ARE	3/4	3/4	1 1/2	4	.120
ABDF0750J2AS	3/4	3/4	1 1/2	4	—
ABDF0750J2BRB	3/4	3/4	1 5/8	4	.030
ABDF0750J2BRC	3/4	3/4	1 5/8	4	.060
ABDF0750J2BS	3/4	3/4	1 5/8	4	—
ABDF1000J2ARB *	1	1	1 1/2	4	.030
ABDF1000J2ARC	1	1	1 1/2	4	.060
ABDF1000J2ARE *	1	1	1 1/2	4	.120
ABDF1000J2AS *	1	1	1 1/2	4	—
ABDF1000J2BRB *	1	1	2	5	.030
ABDF1000J2BRC	1	1	2	5	.060
ABDF1000J2BS	1	1	2	5	—

NOTE: For application data, see page P122.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standards dimensions.
- Center cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
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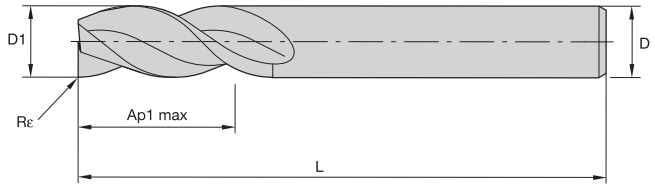
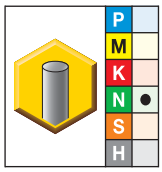


End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

ABDE • Wiper Facet



● first choice
○ alternate choice

K600	D1	D	Ap1 max	L	Rε
ABDE0188J3ARA	3/16	3/16	7/32	2	.015
ABDE0188J3AS	3/16	3/16	7/32	2	–
ABDE0250J3ARB	1/4	1/4	1/2	2 1/2	.030
ABDE0250J3AS	1/4	1/4	1/2	2 1/2	–
ABDE0312J3ARB	5/16	5/16	5/8	2 1/2	.030
ABDE0312J3AS	5/16	5/16	5/8	2 1/2	–
ABDE0375J3ARB	3/8	3/8	3/4	2 1/2	.030
ABDE0375J3AS	3/8	3/8	3/4	2 1/2	–
ABDE0500J3ARB	1/2	1/2	1 1/4	3	.030
ABDE0500J3ARC	1/2	1/2	1 1/4	3	.060
ABDE0500J3ARE	1/2	1/2	1 1/4	3	.120
ABDE0500J3AS	1/2	1/2	1 1/4	3	–
ABDE0625J3AS	5/8	5/8	1 1/4	3 1/2	–
ABDE0625J3BRB	5/8	5/8	1 5/8	3 1/2	.030
ABDE0625J3BS	5/8	5/8	1 5/8	3 1/2	–
ABDE0750J3ARB	3/4	3/4	1 1/2	4	.030
ABDE0750J3ARC	3/4	3/4	1 1/2	4	.060
ABDE0750J3ARE	3/4	3/4	1 1/2	4	.120
ABDE0750J3AS	3/4	3/4	1 1/2	4	–
ABDE0750J3BRB	3/4	3/4	1 5/8	4	.030
ABDE0750J3BRC	3/4	3/4	1 5/8	4	.060
ABDE0750J3BRE	3/4	3/4	1 5/8	4	.120
ABDE0750J3BS	3/4	3/4	1 5/8	4	–
ABDE1000J3ARB	1	1	1 1/2	4	.030
ABDE1000J3ARC	1	1	1 1/2	4	.060
ABDE1000J3ARE	1	1	1 1/2	4	.120
ABDE1000J3AS	1	1	1 1/2	4	–
ABDE1000J3BRB	1	1	2	5	.030
ABDE1000J3BRC	1	1	2	5	.060
ABDE1000J3BRE	1	1	2	5	.120
ABDE1000J3BS	1	1	2	5	–

NOTE: For application data, see page P122.

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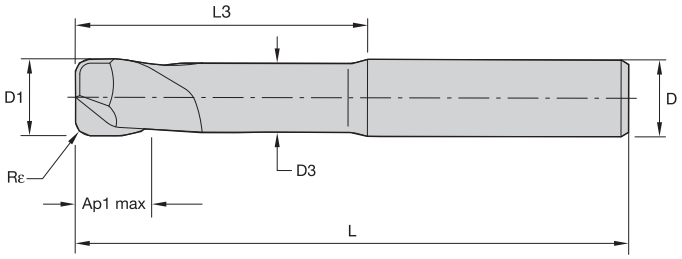
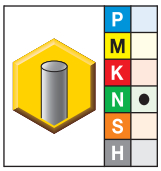


End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

ABDF • Wiper Facet • Extended Neck

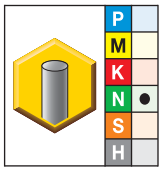


● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDF0250J2AQB *	1/4	1/4	.235	3/8	3/4	4	.030
ABDF0250J2BQB	1/4	1/4	.235	3/8	1 1/8	4	.030
ABDF0250J2BQ	1/4	1/4	.235	3/8	1 1/8	4	—
ABDF0250J2CQB	1/4	1/4	.235	3/8	2 1/8	4	.030
ABDF0250J2CQ	1/4	1/4	.235	3/8	2 1/8	4	—
ABDF0312J2AQB	5/16	5/16	.294	7/16	1 1/8	4	.030
ABDF0375J2AQB	3/8	3/8	.352	1/2	1 1/8	4	.030
ABDF0375J2AQ	3/8	3/8	.352	1/2	1 1/8	4	—
ABDF0375J2BQB	3/8	3/8	.352	1/2	2 1/8	4	.030
ABDF0375J2BQ	3/8	3/8	.352	1/2	2 1/8	4	—
ABDF0500J2AQB	1/2	1/2	.469	5/8	1 3/8	4	.030
ABDF0500J2AQE	1/2	1/2	.469	5/8	1 3/8	4	.120
ABDF0500J2AQ	1/2	1/2	.469	5/8	1 3/8	4	—
ABDF0500J2BQB	1/2	1/2	.469	5/8	2 1/4	4	.030
ABDF0500J2BQC	1/2	1/2	.469	5/8	2 1/4	4	.060
ABDF0500J2BQD	1/2	1/2	.469	5/8	2 1/4	4	.090
ABDF0500J2BQE	1/2	1/2	.469	5/8	2 1/4	4	.120
ABDF0500J2BQ	1/2	1/2	.469	5/8	2 1/4	4	—
ABDF0500J2CQB	1/2	1/2	.469	5/8	3 3/8	6	.030
ABDF0500J2CQC	1/2	1/2	.469	5/8	3 3/8	6	.060
ABDF0500J2CQD *	1/2	1/2	.469	5/8	3 3/8	6	.090
ABDF0500J2CQE	1/2	1/2	.469	5/8	3 3/8	6	.120
ABDF0500J2CQ	1/2	1/2	.469	5/8	3 3/8	6	—
ABDF0625J2AQ	5/8	5/8	.587	3/4	1 5/8	4	—
ABDF0625J2BQB	5/8	5/8	.587	3/4	3 3/8	6	.030
ABDF0625J2BQE *	5/8	5/8	.587	3/4	3 3/8	6	.120
ABDF0625J2BQ	5/8	5/8	.587	3/4	3 3/8	6	—
ABDF0750J2AQB *	3/4	3/4	.705	1	1 5/8	4	.030
ABDF0750J2AQE	3/4	3/4	.705	1	1 5/8	4	.120
ABDF0750J2AQ *	3/4	3/4	.705	1	1 5/8	4	—
ABDF0750J2BQB	3/4	3/4	.705	1	2 1/2	6	.030
ABDF0750J2BQC	3/4	3/4	.705	1	2 1/2	6	.060

(continued)

(ABDF • Wiper Facet • Extended Neck — continued)



● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDF0750J2BQD *	3/4	3/4	.705	1	2 1/2	6	.090
ABDF0750J2BQE	3/4	3/4	.705	1	2 1/2	6	.120
ABDF0750J2BQ	3/4	3/4	.705	1	2 1/2	6	–
ABDF0750J2CQB	3/4	3/4	.705	1	3 3/8	6	.030
ABDF0750J2CQ	3/4	3/4	.705	1	3 3/8	6	–
ABDF1000J2AQB *	1	1	.940	1 1/4	2 3/8	5	.030
ABDF1000J2AQE	1	1	.940	1 1/4	2 3/8	5	.120
ABDF1000J2AQ *	1	1	.940	1 1/4	2 3/8	5	–
ABDF1000J2BQB	1	1	.940	1 1/4	3 3/8	7	.030
ABDF1000J2BQE *	1	1	.940	1 1/4	3 3/8	7	.120
ABDF1000J2BQ *	1	1	.940	1 1/4	3 3/8	7	–
ABDF1000J2CQB *	1	1	.940	1 1/4	4 3/8	7	.030
ABDF1000J2CQ *	1	1	.940	1 1/4	4 3/8	7	–

NOTE: For application data, see page P123.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Effective in thin wall applications.
- Wiper facet, special end gash, and flute geometry provide better surface finishes.
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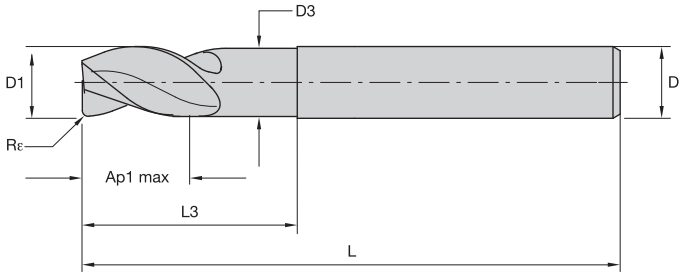
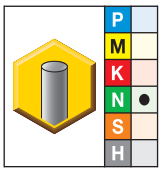


End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

ABDE • Wiper Facet • Extended Neck

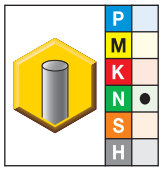


● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDE0250J3AQB	1/4	1/4	.234	3/8	3/4	4	.030
ABDE0250J3AQ	1/4	1/4	.234	3/8	3/4	4	–
ABDE0250J3BQB	1/4	1/4	.234	3/8	1 1/8	4	.030
ABDE0250J3BQ	1/4	1/4	.234	3/8	1 1/8	4	–
ABDE0250J3CQB	1/4	1/4	.234	3/8	2 1/8	4	.030
ABDE0250J3CQ	1/4	1/4	.234	3/8	2 1/8	4	–
ABDE0312J3AQB	5/16	5/16	.293	7/16	1 1/8	4	.030
ABDE0375J3AQB	3/8	3/8	.351	1/2	1 1/8	4	.030
ABDE0375J3AQ	3/8	3/8	.351	1/2	1 1/8	4	–
ABDE0375J3BQB	3/8	3/8	.351	1/2	2 1/8	4	.030
ABDE0375J3BQ	3/8	3/8	.351	1/2	2 1/8	4	–
ABDE0500J3AQB	1/2	1/2	.469	5/8	1 3/8	4	.030
ABDE0500J3AQE	1/2	1/2	.469	5/8	1 3/8	4	.120
ABDE0500J3AQ	1/2	1/2	.469	5/8	1 3/8	4	–
ABDE0500J3BQB	1/2	1/2	.469	5/8	2 1/4	4	.030
ABDE0500J3BQC	1/2	1/2	.469	5/8	2 1/4	4	.060
ABDE0500J3BQD	1/2	1/2	.469	5/8	2 1/4	4	.090
ABDE0500J3BQE	1/2	1/2	.469	5/8	2 1/4	4	.120
ABDE0500J3BQ	1/2	1/2	.469	5/8	2 1/4	4	–
ABDE0500J3CQB	1/2	1/2	.469	5/8	3 3/8	6	.030
ABDE0500J3CQC	1/2	1/2	.469	5/8	3 3/8	6	.060
ABDE0500J3CQD *	1/2	1/2	.469	5/8	3 3/8	6	.090
ABDE0500J3CQE	1/2	1/2	.469	5/8	3 3/8	6	.120
ABDE0500J3CQ	1/2	1/2	.469	5/8	3 3/8	6	–
ABDE0625J3AQB	5/8	5/8	.585	3/4	1 5/8	4	.030
ABDE0625J3AQ	5/8	5/8	.585	3/4	1 5/8	4	–
ABDE0625J3BQB	5/8	5/8	.585	3/4	3 3/8	6	.030
ABDE0625J3BQE	5/8	5/8	.585	3/4	3 3/8	6	.120
ABDE0625J3BQ	5/8	5/8	.585	3/4	3 3/8	6	–
ABDE0750J3AQB	3/4	3/4	.705	1	1 5/8	4	.030
ABDE0750J3AQE *	3/4	3/4	.705	1	1 5/8	4	.120
ABDE0750J3AQ	3/4	3/4	.705	1	1 5/8	4	–

(continued)

(ABDE • Wiper Facet • Extended Neck — continued)

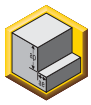


● first choice
○ alternate choice

K600	D1	D	D3	Ap1 max	L3	L	Rε
ABDE0750J3BQB	3/4	3/4	.705	1	2 1/2	6	.030
ABDE0750J3BQC	3/4	3/4	.705	1	2 1/2	6	.060
ABDE0750J3BQD	3/4	3/4	.705	1	2 1/2	6	.090
ABDE0750J3BQE	3/4	3/4	.705	1	2 1/2	6	.120
ABDE0750J3BQ	3/4	3/4	.705	1	2 1/2	6	—
ABDE0750J3CQB	3/4	3/4	.705	1	3 3/8	6	.030
ABDE0750J3CQ	3/4	3/4	.705	1	3 3/8	6	—
ABDE1000J3AQB	1	1	.940	1 1/4	2 3/8	5	.030
ABDE1000J3AQE *	1	1	.940	1 1/4	2 3/8	5	.120
ABDE1000J3AQ	1	1	.940	1 1/4	2 3/8	5	—
ABDE1000J3BQB	1	1	.940	1 1/4	3 3/8	7	.030
ABDE1000J3BQE	1	1	.940	1 1/4	3 3/8	7	.120
ABDE1000J3BQ	1	1	.940	1 1/4	3 3/8	7	—
ABDE1000J3CQB *	1	1	.940	1 1/4	4 3/8	7	.030
ABDE1000J3CQ	1	1	.940	1 1/4	4 3/8	7	—

NOTE: For application data, see page P123.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

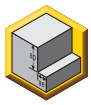
ABDF...





Material Group		Side Milling (A) and Slotting (B)			K600		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
N	1	1.5 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090
	2	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0014	.0018	.0023	.0027	.0036	.0045	.0054	.0072
	3	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	4	1.5 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	5	1.5 x D	0.5 x D	1.0 x D	820	3280	IPT	.0015	.0020	.0025	.0030	.0041	.0051	.0061	.0081

ABDE...

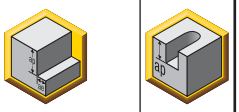




Material Group		Side Milling (A) and Slotting (B)			K600		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
N	1	1.5 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090
	2	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0014	.0018	.0023	.0027	.0036	.0045	.0054	.0072
	3	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	4	1.5 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	5	1.5 x D	0.5 x D	1.0 x D	820	3280	IPT	.0015	.0020	.0025	.0030	.0041	.0051	.0061	.0081

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
For cutting aluminum with high silicon, coating is recommended.
Ap for spindle with ceramic bearings, multiply by 0.5.
For better surface finish, reduce feed per tooth.
For tools with reach > 3 x D, reduce fz by 20%.
For tools with reach > 5 x D, reduce fz by 30%.
For tools with reach > 10 x D, reduce vc and fz by 30%.

ABDF... with Neck





Material Group		Side Milling (A) and Slotting (B)			K600		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	Cutting Speed — vc SFM			D1 — Diameter					
							frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
N	1	1 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	1 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	3	1 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	4	1 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	5	1 x D	0.5 x D	1.0 x D	820	3280	IPT	.0023	.0028	.0034	.0045	.0056	.0068	.0090

ABDE... with Neck





Material Group		Side Milling (A) and Slotting (B)			K600		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
		A		B	Cutting Speed — vc SFM			D1 — Diameter					
							frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
N	1	1 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	1 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	3	1 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	4	1 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0018	.0022	.0026	.0035	.0044	.0053	.0070
	5	1 x D	0.5 x D	1.0 x D	820	3280	IPT	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
For cutting aluminum with high silicon, coating is recommended.
Ap for spindle with ceramic bearings, multiply by 0.5.
For better surface finish, reduce feed per tooth.
For tools with reach > 3 x D, reduce fz by 20%.
For tools with reach > 5 x D, reduce fz by 30%.
For tools with reach > 10 x D, reduce vc and fz by 30%.

High-Performance Aluminum Solid Carbide End Mills

Primary Application

High-performance aluminum end mills from Kennametal provide the highest Metal Removal Rates (MRR) and high-quality surfaces while reducing machining time. The center-cutting design enables plunging, slotting, and profiling applications in any type of aluminum workpiece materials. Designed to deliver exceptional chip evacuation and generate the highest floor-to-wall straightness. The portfolio offers many styles to choose from.

- Tools combine roughing and finishing operations beside pure rougher with cord profile.
- Capable of full slot depths up to 1 x D and side milling up to 0.5 x D radially at 1.5 x D axially.
- Multiple corner radii and extended neck configurations available as standard.

Features and Benefits

Advanced Technology

- Double rake flute form for improved chip formation and evacuation.
- No specific tools for roughing and finishing necessary.
- Fewer passes due to 1 x D slotting capability.
- Best suited for MQL (minimum quantity lubrication) applications.

Tailored Grades

- K600 uncoated grade for highest tool life in aluminum and other non-ferrous materials.

Customization

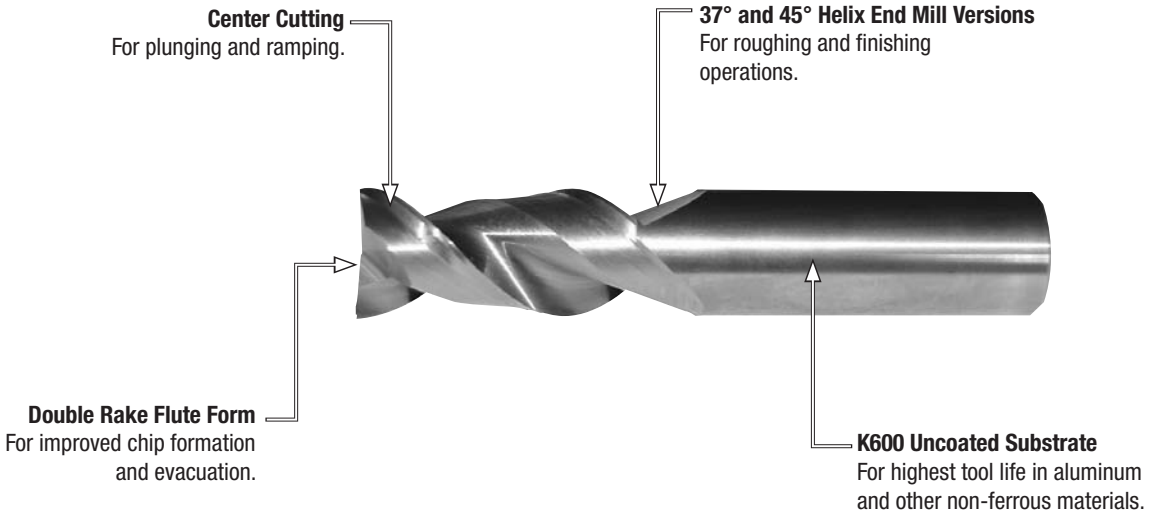
- Intermediate diameters available.
- Expanded length of tool and increased length of cut are possible.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.
- TiB_2 grade KC651M available as custom solution.

Extensive Standard Offering

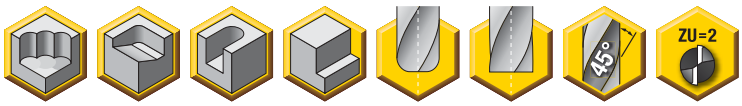
- Diameter ranges 1/8–1".
- Extended neck for long-reach applications as well as radii and sharp corner configurations.

Extended neck for long-reach applications as well as radii and sharp corner configurations.

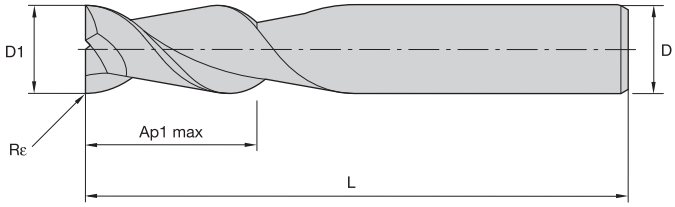




- Double-rake flute form.
- Center cutting.



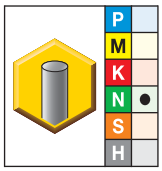




End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

AADF • Double-Rake Flute Form

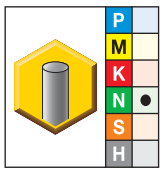


● first choice
○ alternate choice

K600	D1	D	Ap1 max	L	Rε
AADF0125J2A	1/8	1/8	1/4	2	–
AADF0125J2B	1/8	1/8	1/2	2	–
AADF0188J2A	3/16	3/16	5/16	2	–
AADF0188J2D	3/16	3/16	9/16	2 1/2	–
AADF0188J2B	3/16	3/16	5/8	2	–
AADF0250J2A	1/4	1/4	3/8	2	–
AADF0250J2E	1/4	1/4	5/8	2 1/2	–
AADF0250J2BRA	1/4	1/4	3/4	2 1/2	.015
AADF0250J2BRB	1/4	1/4	3/4	2 1/2	.030
AADF0250J2B	1/4	1/4	3/4	2 1/2	–
AADF0250J2FRB	1/4	1/4	1	3	.030
AADF0250J2F	1/4	1/4	1	3	–
AADF250J2I	1/4	1/4	1 1/8	3	–
AADF0250J2C	1/4	1/4	1 1/4	3 1/4	–
AADF0250J2G	1/4	1/4	1 3/4	4	–
AADF0375J2B	3/8	3/8	7/8	2 1/2	–
AADF0375J2DRA	3/8	3/8	1	3	.015
AADF0375J2DRB	3/8	3/8	1	3	.030
AADF0375J2D	3/8	3/8	1	3	–
AADF375J2H	3/8	3/8	1 1/8	3	–
AADF0375J2E	3/8	3/8	1 1/4	3 1/2	–
AADF0375J2CRB	3/8	3/8	1 1/2	4	.030
AADF0375J2CRC	3/8	3/8	1 1/2	4	.060
AADF0375J2C	3/8	3/8	1 1/2	4	–
AADF375J2G	3/8	3/8	1 3/4	4	–
AADF0500J2A	1/2	1/2	5/8	2 1/2	–
AADF0500J2E	1/2	1/2	5/8	3	–
AADF0500J2FRB	1/2	1/2	1	3	.030

(continued)

(AADF • Double-Rake Flute Form — continued)



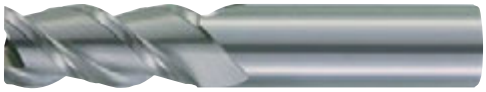
● first choice
○ alternate choice

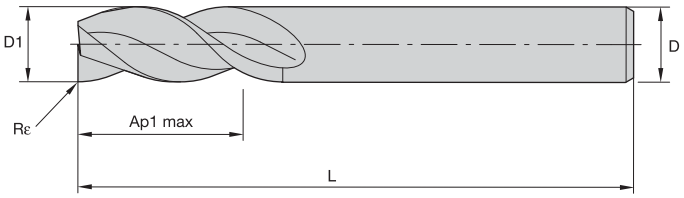
K600	D1	D	Ap1 max	L	Rε
AADF0500J2F	1/2	1/2	1	3	—
AADF500J2F	1/2	1/2	1	3	—
AADF0500J2BRA	1/2	1/2	1 1/4	3	.015
AADF0500J2BRB	1/2	1/2	1 1/4	3	.030
AADF0500J2B	1/2	1/2	1 1/4	3	—
AADF500J2B	1/2	1/2	1 1/4	3	—
AADF0500J2GRA	1/2	1/2	1 5/8	4	.015
AADF0500J2GRB	1/2	1/2	1 5/8	4	.030
AADF0500J2GRC	1/2	1/2	1 5/8	4	.060
AADF0500J2G	1/2	1/2	1 5/8	4	—
AADF0500J2CRA	1/2	1/2	2	4	.015
AADF0500J2CRB	1/2	1/2	2	4	.030
AADF0500J2CRC	1/2	1/2	2	4	.060
AADF0500J2C	1/2	1/2	2	4	—
AADF0500J2D	1/2	1/2	2	5	—
AADF0625J2BRB	5/8	5/8	2 1/4	5	.030
AADF0625J2FRB	5/8	5/8	2 1/2	5	.030
AADF0625J2GRB	5/8	5/8	3 1/4	6	.030
AADF0750J2F	3/4	3/4	1	4	—
AADF0750J2BRB	3/4	3/4	1 1/2	4	.030
AADF0750J2B	3/4	3/4	1 1/2	4	—
AADF0750J2CRA	3/4	3/4	2 1/4	5	.015
AADF0750J2CRB	3/4	3/4	2 1/4	5	.030
AADF0750J2C	3/4	3/4	2 1/4	5	—
AADF0750J2GRA	3/4	3/4	3 1/4	6	.015
AADF1000J2A	1	1	1 1/2	4	—
AADF1000J2D	1	1	2	5	—
AADF1000J2BRB	1	1	2 1/4	5	.030
AADF1000J2C	1	1	3	5	—

NOTE: For application data, see page P132.

- Double-rake flute form.
- Center cutting.



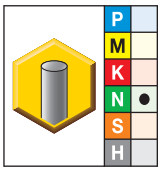




End Mill Tolerances

D1	tolerance h6	D	tolerance h6
<1/8"	+0/-.002"	<1/8"	+0/-.00024"
1/8–7/32"	+0/-.002"	1/8–7/32"	+0/-.00031"
1/4–3/8"	+0/-.00035"	1/4–3/8"	+0/-.00035"
13/32–11/16"	+0/-.00043"	13/32–11/16"	+0/-.00043"
23/32–1 3/16"	+0/-.00051"	23/32–1 3/16"	+0/-.00051"

AADE • Double-Rake Flute Form

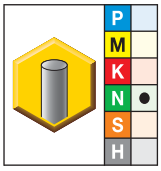


● first choice
○ alternate choice

K600	D1	D	Ap1 max	L	Rε
AADE125J3G	1/8	1/8	1/4	1 1/2	—
AADE125J3F	1/8	1/8	3/8	1 1/2	—
AADE0125J3D	1/8	1/8	1/2	3	—
AADE0125J3E	1/8	1/8	3/4	3	—
AADE0188J3C	3/16	3/16	5/16	3	—
AADE188J3F	3/16	3/16	9/16	2	—
AADE0188J3D	3/16	3/16	9/16	3	—
AADE0188J3E	3/16	3/16	3/4	3	—
AADE0250J3ARB	1/4	1/4	3/8	2	.030
AADE0250J3A	1/4	1/4	3/8	2	—
AADE0250J3D	1/4	1/4	1/2	2 1/2	—
AADE0250J3E	1/4	1/4	5/8	2 1/2	—
AADE0250J3BRA	1/4	1/4	3/4	2 1/2	.015
AADE0250J3BRB	1/4	1/4	3/4	2 1/2	.030
AADE0250J3B	1/4	1/4	3/4	2 1/2	—
AADE250J3B	1/4	1/4	3/4	2 1/2	—
AADE0250J3FRA	1/4	1/4	1	3	.015
AADE0250J3F	1/4	1/4	1	3	—
AADE250J3H	1/4	1/4	1 1/4	3	—
AADE0250J3CRA	1/4	1/4	1 1/4	3 1/4	.015
AADE0250J3CRB	1/4	1/4	1 1/4	3 1/4	.030
AADE0250J3C	1/4	1/4	1 1/4	3 1/4	—
AADE0250J3G	1/4	1/4	1 3/4	4	—
AADE0312J3A	5/16	5/16	13/16	2 1/2	—
AADE0312J3B	5/16	5/16	1	3	—
AADE0312J3DRB	5/16	5/16	1 1/4	3 1/4	.030
AADE0312J3D	5/16	5/16	1 1/4	3 1/4	—
AADE0375J3A	3/8	3/8	1/2	2	—
AADE0375J3F	3/8	3/8	1/2	3	—
AADE0375J3G	3/8	3/8	3/4	2 1/2	—
AADE0375J3BRB	3/8	3/8	7/8	2 1/2	.030
AADE0375J3BRC	3/8	3/8	7/8	2 1/2	.060

(continued)

(AADE • Double-Rake Flute Form — continued)

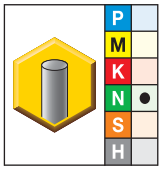


● first choice
○ alternate choice

K600	D1	D	Ap1 max	L	Rε
AADE0375J3B	3/8	3/8	7/8	2 1/2	–
AADE0375J3DRA	3/8	3/8	1	3	.015
AADE0375J3DRB	3/8	3/8	1	3	.030
AADE0375J3D	3/8	3/8	1	3	–
AADE375J3I	3/8	3/8	1 1/8	3	–
AADE0375J3ERA	3/8	3/8	1 1/4	3 1/2	.015
AADE0375J3ERB	3/8	3/8	1 1/4	3 1/2	.030
AADE0375J3ERC	3/8	3/8	1 1/4	3 1/2	.060
AADE0375J3E	3/8	3/8	1 1/4	3 1/2	–
AADE0375J3CRB	3/8	3/8	1 1/2	4	.030
AADE0375J3CRC	3/8	3/8	1 1/2	4	.060
AADE0375J3C	3/8	3/8	1 1/2	4	–
AADE0375J3H	3/8	3/8	2	4	–
AADE0375J3KRB	3/8	3/8	2 1/2	4	.030
AADE0375J3KRC	3/8	3/8	2 1/2	4	.060
AADE0375J3J	3/8	3/8	2 1/2	5	–
AADE438J3A	7/16	7/16	9/16	2 1/2	–
AADE0438J3A	7/16	7/16	7/8	2 1/2	–
AADE0500J3ARB	1/2	1/2	5/8	2 1/2	.030
AADE0500J3ARC	1/2	1/2	5/8	2 1/2	.060
AADE0500J3A	1/2	1/2	5/8	2 1/2	–
AADE0500J3FRA	1/2	1/2	1	3	.015
AADE0500J3FRB	1/2	1/2	1	3	.030
AADE0500J3FRC	1/2	1/2	1	3	.060
AADE0500J3F	1/2	1/2	1	3	–
AADE0500J3BRA	1/2	1/2	1 1/4	3	.015
AADE0500J3BRB	1/2	1/2	1 1/4	3	.030
AADE0500J3BRC	1/2	1/2	1 1/4	3	.060
AADE0500J3BRE	1/2	1/2	1 1/4	3	.120
AADE0500J3B	1/2	1/2	1 1/4	3	–
AADE0500J3KRB	1/2	1/2	1 1/2	4	.030
AADE0500J3KRC	1/2	1/2	1 1/2	4	.060
AADE0500J3K	1/2	1/2	1 1/2	4	–
AADE0500J3GRB	1/2	1/2	1 5/8	4	.030
AADE0500J3GRC	1/2	1/2	1 5/8	4	.060
AADE0500J3GRD	1/2	1/2	1 5/8	4	.090
AADE0500J3G	1/2	1/2	1 5/8	4	–
AADE0500J3CRA	1/2	1/2	2	4	.015
AADE0500J3CRB	1/2	1/2	2	4	.030
AADE0500J3CRC	1/2	1/2	2	4	.060
AADE0500J3C	1/2	1/2	2	4	–
AADE500J3H	1/2	1/2	2	4 1/2	–
AADE0500J3DRB	1/2	1/2	2 1/2	5	.030
AADE0500J3DRC	1/2	1/2	2 1/2	5	.060
AADE0500J3D	1/2	1/2	2 1/2	5	–
AADE0500J3LRB	1/2	1/2	3	5	.030
AADE0500J3LRC	1/2	1/2	3	5	.060
AADE0500J3L	1/2	1/2	3	5	–
AADE0500J3H	1/2	1/2	3 1/8	6	–
AADE625J3I	5/8	5/8	3/4	3	–
AADE0625J3A	5/8	5/8	1 1/4	3 1/2	–
AADE0625J3DRA	5/8	5/8	1 5/8	3 1/2	.015

(continued)

(AADE • Double-Rake Flute Form — continued)

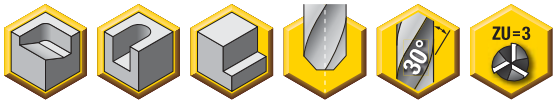


● first choice
○ alternate choice

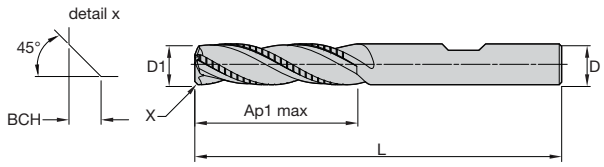
K600	D1	D	Ap1 max	L	Rε
AADE0625J3DRE	5/8	5/8	1 5/8	3 1/2	.120
AADE0625J3D	5/8	5/8	1 5/8	3 1/2	—
AADE0625J3E	5/8	5/8	2 1/8	4	—
AADE0625J3B	5/8	5/8	2 1/4	5	—
AADE0625J3FRE	5/8	5/8	2 1/2	5	.120
AADE0625J3F	5/8	5/8	2 1/2	5	—
AADE0625J3HRC	5/8	5/8	3	5 1/4	.060
AADE0625J3H	5/8	5/8	3	5 1/4	—
AADE0625J3G	5/8	5/8	3 1/4	6	—
AADE0750J3ARB	3/4	3/4	7/8	3	.030
AADE0750J3ARC	3/4	3/4	7/8	3	.060
AADE0750J3A	3/4	3/4	7/8	3	—
AADE750J3K	3/4	3/4	1	3	—
AADE0750J3F	3/4	3/4	1	4	—
AADE0750J3BRB	3/4	3/4	1 1/2	4	.030
AADE0750J3BRC	3/4	3/4	1 1/2	4	.060
AADE0750J3BRE	3/4	3/4	1 1/2	4	.120
AADE0750J3B	3/4	3/4	1 1/2	4	—
AADE0750J3HRB	3/4	3/4	1 5/8	4	.030
AADE0750J3HRD	3/4	3/4	1 5/8	4	.090
AADE0750J3H	3/4	3/4	1 5/8	4	—
AADE0750J3CRA	3/4	3/4	2 1/4	5	.015
AADE0750J3CRB	3/4	3/4	2 1/4	5	.030
AADE0750J3CRC	3/4	3/4	2 1/4	5	.060
AADE0750J3CRE	3/4	3/4	2 1/4	5	.120
AADE0750J3C	3/4	3/4	2 1/4	5	—
AADE0750J3DRB	3/4	3/4	3	5 1/4	.030
AADE0750J3DRC	3/4	3/4	3	5 1/4	.060
AADE0750J3D	3/4	3/4	3	5 1/4	—
AADE0750J3GRA	3/4	3/4	3 1/4	6	.015
AADE0750J3GRB	3/4	3/4	3 1/4	6	.030
AADE0750J3GRD	3/4	3/4	3 1/4	6	.090
AADE0750J3GRE	3/4	3/4	3 1/4	6	.120
AADE0750J3G	3/4	3/4	3 1/4	6	—
AADE0750J3K	3/4	3/4	4	6 1/4	—
AADE750J3J	3/4	3/4	4	6 1/2	—
AADE1000J3ARB	1	1	1 1/2	4	.030
AADE1000J3A	1	1	1 1/2	4	—
AADE1000J3K	1	1	2	4 1/2	—
AADE1000J3D	1	1	2	5	—
AADE1000J3BRC	1	1	2 1/4	5	.060
AADE1000J3B	1	1	2 1/4	5	—
AADE1000J3GRB	1	1	2 5/8	6	.030
AADE1000J3CRB	1	1	3	5 1/2	.030
AADE1000J3CRC	1	1	3	5 1/2	.060
AADE1000J3C	1	1	3	5 1/2	—
AADE1000J3ERA	1	1	3 1/4	6	.015
AADE1000J3ERB	1	1	3 1/4	6	.030
AADE1000J3ERE	1	1	3 1/4	6	.120
AADE1000J3E	1	1	3 1/4	6	—
AADE1000J3I	1	1	4	7	—
AADE1000J3HRA	1	1	4 1/8	7	.015
AADE1000J3H	1	1	4 1/8	7	—

NOTE: For application data, see page P132.

- Kennametal standard dimensions.
- Center cutting.
- Coarse pitch profile.



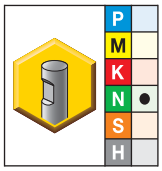


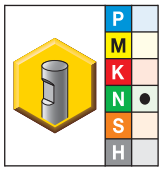


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-.0031"	<1/8"	+0/-.00024"
1/8–7/32"	-.0012/-.0041"	1/8–7/32"	+0/-.00031"
1/4–3/8"	-.0016/-.0051"	1/4–3/8"	+0/-.00035"
13/32–11/16"	-.002/-.0063"	13/32–11/16"	+0/-.00043"
23/32–1-3/16"	-.0026/-.0077"	23/32–1-3/16"	+0/-.00051"

SFRHEC • Roughing Profile



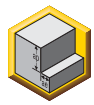


● first choice
○ alternate choice

K600	KC625M	D1	D	Ap1 max	L	BCH
SFRHEC250S3075	**–**	1/4	1/4	3/4	2 1/2	.024
–	**SFRHEC312S3075**	5/16	5/16	3/4	2 1/2	.024
SFRHEC375S3088	**SFRHEC375S3088**	3/8	3/8	7/8	2 1/2	.024
SFRHEC500S3100	**SFRHEC500S3100**	1/2	1/2	1	3	.039
SFRHEC500S3200	**SFRHEC500S3200**	1/2	1/2	2	4 1/2	.039
SFRHEC625S3225	**SFRHEC625S3225**	5/8	5/8	2 1/4	5	.039
SFRHEC750S3150	**SFRHEC750S3150**	3/4	3/4	1 1/2	4	.039
SFRHEC750S3225	**SFRHEC750S3225**	3/4	3/4	2 1/4	5	.039
–	**SFRHEC100S3150**	1	1	1 1/2	4	.039
SFRHEC100S3225	**SFRHEC100S3225**	1	1	2 1/4	5	.039

NOTE: For application data, see page P132.

AADF

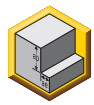




Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	.125	.188	.250	.313	.375	.500	.625	.750	1.000
N	1	1.5 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090
	2	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0009	.0014	.0018	.0023	.0027	.0036	.0045	.0054	.0072
	3	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0008	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	4	1.5 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0008	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	5	1.5 x D	0.5 x D	1.0 x D	820	3280	IPT	.0010	.0015	.0020	.0025	.0030	.0041	.0051	.0061	.0081

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

AADE





Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600 Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	0.125	0.188	0.250	0.313	0.375	0.500	0.625	0.750	1.000
N	1	1.5 x D	0.5 x D	1.0 x D	1640	6560	IPT	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090
	2	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0009	.0014	.0018	.0023	.0027	.0036	.0045	.0054	.0072
	3	1.5 x D	0.5 x D	1.0 x D	1640	4920	IPT	.0008	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	4	1.5 x D	0.5 x D	1.0 x D	1310	2460	IPT	.0008	.0012	.0016	.0020	.0024	.0032	.0039	.0047	.0063
	5	1.5 x D	0.5 x D	1.0 x D	820	3280	IPT	.0010	.0015	.0020	.0025	.0030	.0041	.0051	.0061	.0081

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

SFRHEC





Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	K600/KC625M Cutting Speed — vc SFM min	max	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. frac.	D1 — Diameter 1/4	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	0.250	0.375	0.500	0.625	0.750	1.000
N	1	1.25 x D	0.5 x D	1 x D	1650	6500	fz	.0028	.0041	.0055	.0070	.0085	.0110
	2	1.25 x D	0.5 x D	1 x D	1650	5050	fz	.0025	.0037	.0050	.0060	.0075	.0010

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

NOVO KNOWS CAD/CAM

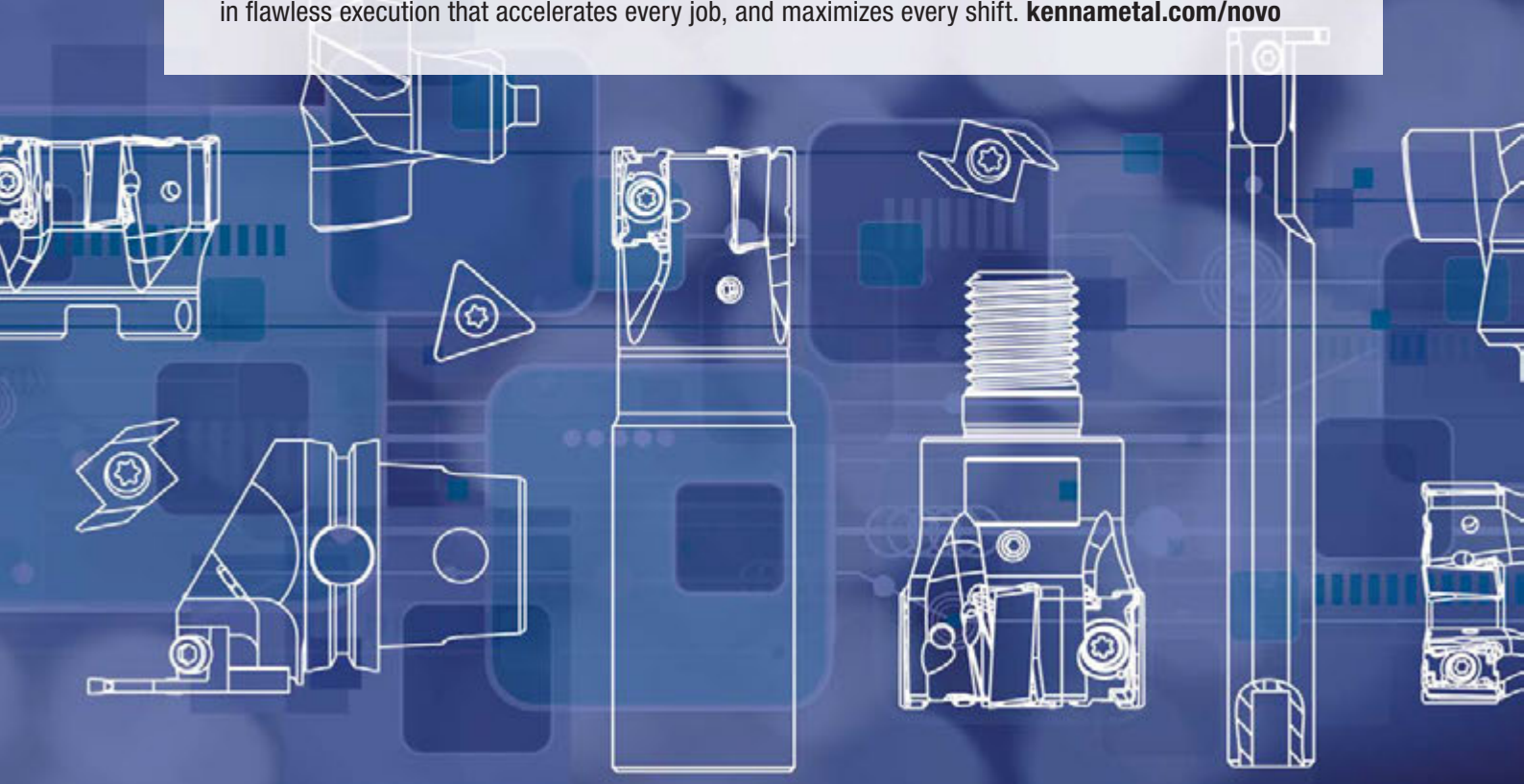
With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



CFRP KCN05™ Beyond™ Grade

Solid Carbide Routers

Primary Application

KCN05 solid carbide router products provide excellent tool life and produce smooth finishes with improved edge quality when machining difficult CFRP (carbon-fiber reinforced polymer) and non-ferrous components. The unique geometries are free cutting, reduce heat generation, and provide high-quality machined surfaces.

- Designed to avoid delamination and bur formation.
- Excellent tool life due to KCN05 diamond film coating.

Features and Benefits

Advanced Technology

- Compression-style routers for trimming designed to provide high feed rates and quality edges on both sides of the material. Up-cut/down-cut geometry promotes stable cutting conditions.
- Down-cut style routers intended for surface work. Excellent ramping capabilities eliminate surface delamination machining pockets.
- Bur style for highest material removal rates and superior surface quality. Designed for trimming fiberglass and CFRP, and for slotting and profiling.

Tailored Grades

- KCN05 diamond coating uses a proprietary substrate to optimize coating adhesion and improve tool life.

Customization

- Intermediate diameters available.
- Compression routers with six and eight flutes available for special wire CFRP.
- Bur-style routers with end cutting, drill-point cutting, and non-end cutting point styles available on request.
- K600 uncoated grade for fiberglass applications and as an economic alternative to KCN05 routers.

Extensive Standard Offering

- Diameters 1/4, 3/8, and 1/2".
- Different length versions.
- KCN05 routers.



Up-Cut/Down-Cut Geometry
Prevents delamination because cutting forces are directed inside the workpiece.

KCN05™ Diamond Coating
For excellent tool life and smooth finishes with improved edge quality.



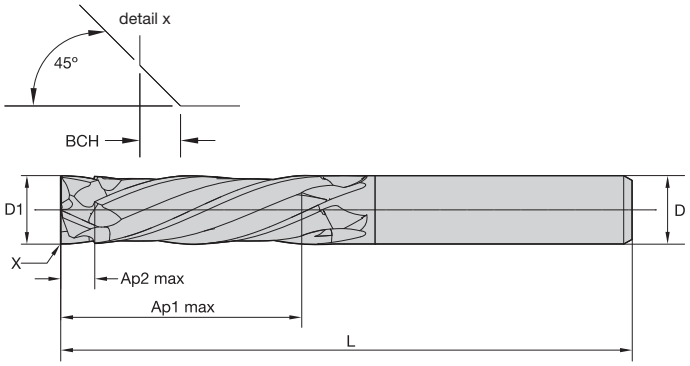
Highest Number of Cutting Edges
For excellent temperature control and highest metal removal rates.

Extended Length of Cut Version
Enables machining in different levels for multiplying tool life of same tool.

- Kennametal standard dimensions.
- Aerospace composites and fiberglass.
- Internal air coolant for ZU = 4.





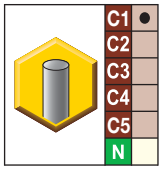


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .003"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

beyond

Compression-Style Router • CCNC • Inch



● first choice
○ alternate choice

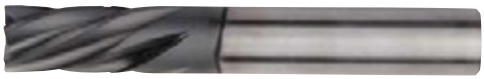
KCN05	D1	D	Ap1 max	Ap2 max	L	BCH	Z U
CCNC0250J3AH	1/4	1/4	3/4	0.1250	2 1/2	.005	3
CCNC0250J3BH	1/4	1/4	1 1/2	0.1250	4	.005	3
CCNC0375J4AH	3/8	3/8	3/4	0.1250	3 1/4	.005	4
CCNC0375J4BH	3/8	3/8	1 1/2	0.1250	4	.005	4
CCNC0500J4AH	1/2	1/2	3/4	0.1250	3 1/4	.005	4
CCNC0500J4BH	1/2	1/2	1 1/2	0.1250	4	.005	4

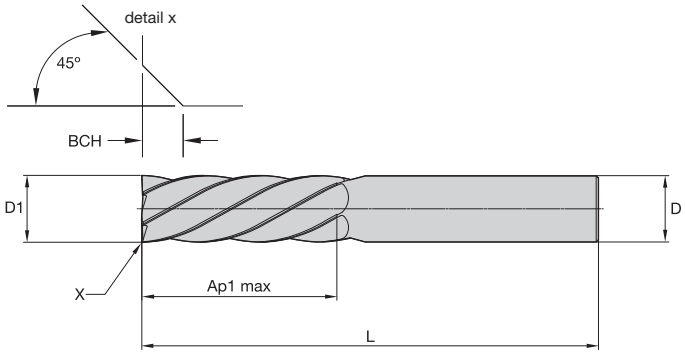
NOTE: For application data, see page P139.

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminum/Titanium

- Kennametal standard dimensions.
- Aerospace composites and fiberglass.





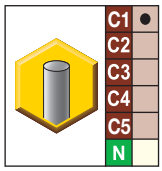


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .003"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

beyond

Down-Cut Router • CDDC • Inch



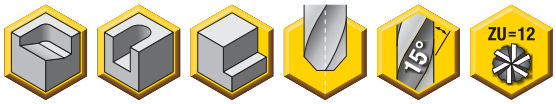
● first choice
○ alternate choice

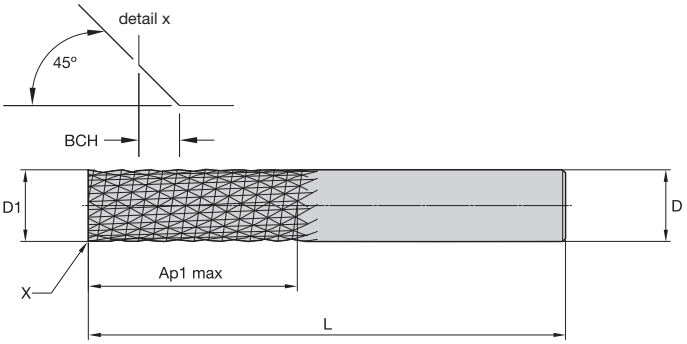
KCN05	D1	D	Ap1 max	L	BCH
CDDC0250J6AH	1/4	1/4	3/4	2 1/2	.010
CDDC0250J6BH	1/4	1/4	1 1/2	4	.010
CDDC0375J6AH	3/8	3/8	3/4	3 1/4	.010
CDDC0375J6BH	3/8	3/8	1 1/2	4	.010
CDDC0500J6AH	1/2	1/2	3/4	3 1/4	.010
CDDC0500J6BH	1/2	1/2	1 1/2	4	.010

NOTE: For application data, see page P139.

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminum/Titanium

- Kennametal standard dimensions.
- Aerospace composites and fiberglass.

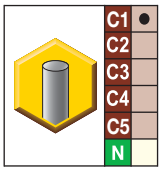






beyond

Bur-Style Router • CBDB • Inch



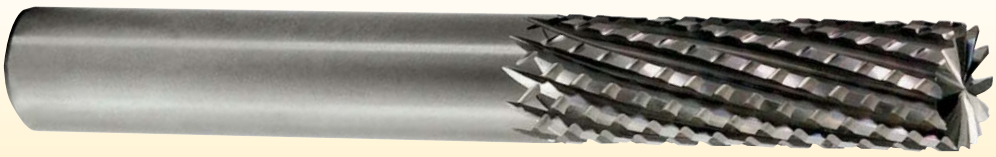
● first choice
○ alternate choice

KCN05	D1	D	Ap1 max	L	BCH
CBDB0250JXAS	1/4	1/4	3/4	2 1/2	.020
CBDB0250JXBS	1/4	1/4	1 1/2	4	.020
CBDB0375JXAS	3/8	3/8	3/4	3 1/4	.035
CBDB0375JXBS	3/8	3/8	1 1/2	4	.035
CBDB0500JXAS	1/2	1/2	3/4	3 1/4	.045
CBDB0500JXBS	1/2	1/2	1 1/2	4	.045

NOTE: For application data, see page P139.
12 RHS/RHC flutes. 10 LHS/RHC flutes, 6 end teeth.
For tolerance table, see page P137.

C1	CFRP, CFRP/CFRP
C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel
C5	CFRP/Aluminum/Titanium

Additional point styles are available upon request:



End Mill End Cutting



Drill-Point Cutting



Non-End Cutting

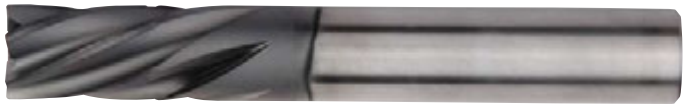
Compression-Style Router • CCNC • Inch



Material Group		Side Milling (A)		beyond KCN05			Feed per Tooth — fz information is for side milling (A).		
		A		Cutting Speed — vc SFM			D1 — Diameter		
		ap	ae	min	max	frac	1/4	3/8	1/2
C	1	Ap1 max	0.5 x D	330	500	fz	.0007	.0012	.0014

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Down-Cut Router • CDDC • Inch



Material Group		Side Milling (A)		beyond KCN05			Feed per Tooth — fz information is for side milling (A).		
		A		Cutting Speed — vc SFM			D1 — Diameter		
		ap	ae	min	max	frac	1/4	3/8	1/2
C	1	Ap1 max	1 x D	330	500	fz	.0018	.0030	.0036

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

Burr-Style Router • CBDB • Inch



Material Group		Side Milling (A) and Slotting (B)			beyond KCN05		Feed per Revolution — Inch per revolution (IPR) information is for side milling (A). For Slotting (B), reduce IPR by 10%.			
		A		B	Cutting Speed — vc SFM			D1 — Diameter		
		ap	ae	ap	min	max	frac	1/4	3/8	1/2
C	1	Ap1 max	0.2 x D	1 x D	330	500	IPR	.0059	.0098	.0118

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KenFeed™

Primary Application

The numerous effective cutting edges of KenFeed end mills make them the right choice for machining heat-treated steels up to 67 HRc. The KenFeed system combines roughing and semi-finishing into one tool by taking very shallow-depth cuts at extremely high feed rates to maximize metal removal. The 3 x D neck and extended-reach design is perfectly suited for pocketing using 3D machining techniques, such as ramping and helical interpolation. During face milling, the proprietary front end geometry of the KenFeed system is entirely in contact with the workpiece, providing up to 55% engagement compared to regular ball nose-type tooling that provides only 5–10%.

- Unique tool with new 6-flute style for high productivity.
- Innovative new geometry maximizes metal removal rates.
- High metal removal rates help to reduce manufacturing costs.

Features and Benefits

Advanced Technology

- Provides the benefits of indexable-style high-feed milling starting at 1/4".
- One tool for roughing and semi-finishing operations.
- Increases output by performing 3D machining, helical ramping, circular interpolation, face milling, and pocketing.
- Use in hardened materials from 40 to 67 HRC with two dedicated geometry variants.

Tailored Grades

- KC639M AlTiN-coated grade for longest tool life in hardened steels from 40 to 67 HRC.

Customization

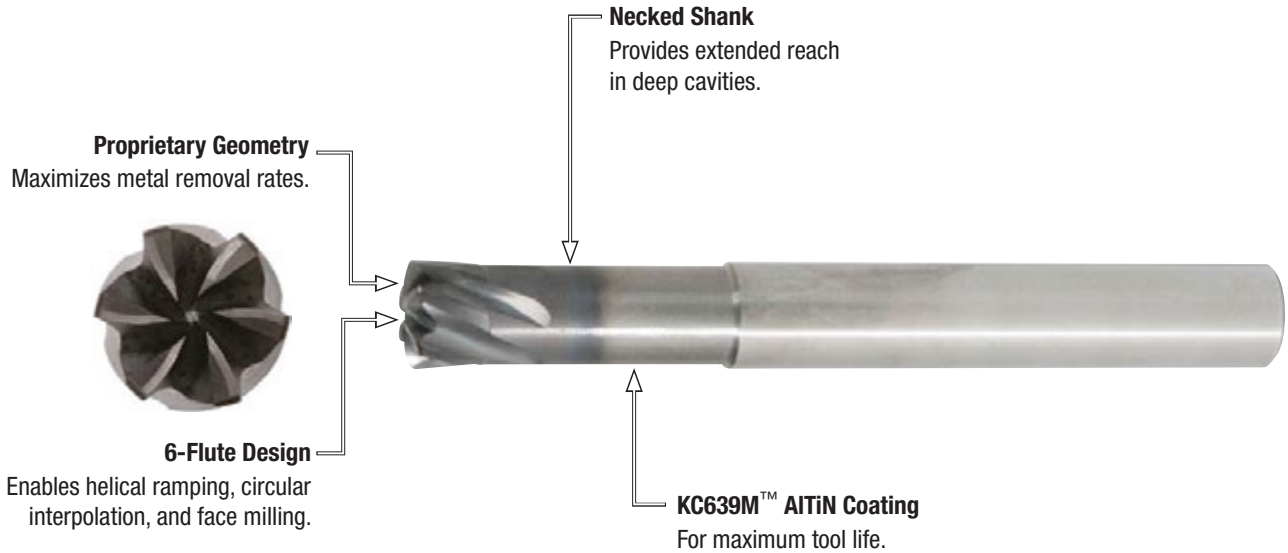
- Intermediate diameters available.
- Custom solutions available for machining titanium and other high-temperature alloys.
- Internal coolant axial and radial available.
- Various shank options and non-standard coatings available.

Extensive Standard Offering

- Diameter ranges 1/4–3/4".
- Extended neck for long-reach applications.

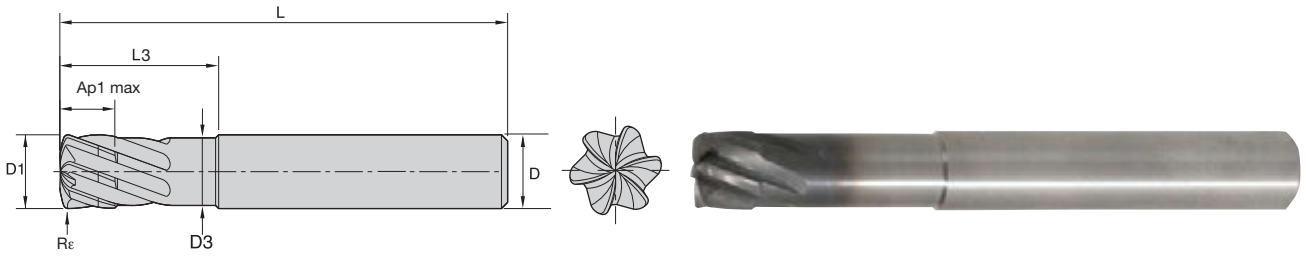
End mills for high-feed milling of medium and hard steels.



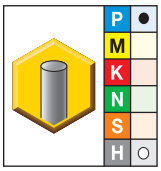


- Kennametal standard dimensions.
- Non-center cutting.
- High feed.





KenFeed • KMDA • <52 HRC • Medium Steels



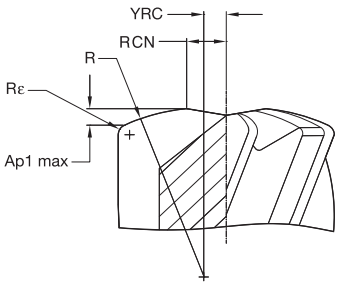
● first choice
○ alternate choice

KC639M	D1	D	D3	Ap1 max	L3	L	Rε
KMDA0250J6ANA	1/4	1/4	.211	.013	3/4	2 1/2	.016
KMDA0312J6ANA	5/16	5/16	.273	.017	1	3	.020
KMDA0375J6ANA	3/8	3/8	.336	.023	1 1/4	3 1/2	.023
KMDA0500J6ANA	1/2	1/2	.461	.027	1 1/2	4	.032
KMDA0625J6ANA	5/8	5/8	.586	.033	2	5	.040
KMDA0750J6ANA	3/4	3/4	.711	.040	2 1/2	5	.047

NOTE: For application data, see page P144.

End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"



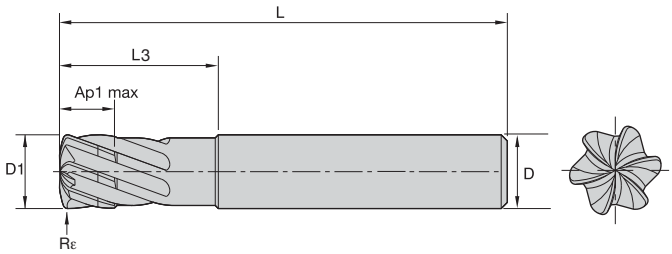
Programming Data

	geometrical parameters						ramping guide for circular and linear ramping						
							circular interpolation		linear ramping				
							optimal range of circle diameter for a single pass		calculated length per ramp angle				
catalog number	D1	Ap1 max	R	Rε	YRC	RCN	smallest	largest	1°	2°	3°	4°	5°
KMDA0250J6ANA	1/4	0.0133	0.250	0.0160	0.0313	0.0525	0.355	0.500	0.762	0.381	0.254	0.190	0.152
KMDA0312J6ANA	5/16	0.0166	0.313	0.0200	0.0391	0.0656	0.444	0.625	0.953	0.476	0.317	0.238	0.190
KMDA0375J6ANA	3/8	0.0200	0.375	0.0235	0.0469	0.0788	0.533	0.750	1.143	0.572	0.381	0.285	0.228
KMDA0500J6ANA	1/2	0.0266	0.500	0.0320	0.0625	0.1050	0.710	1.000	1.525	0.762	0.508	0.381	0.304
KMDA0625J6ANA	5/8	0.0333	0.625	0.0400	0.0781	0.1313	0.888	1.250	1.906	0.953	0.635	0.476	0.380
KMDA0750J6ANA	3/4	0.0399	0.750	0.0470	0.0938	0.1575	1.065	1.500	2.287	1.143	0.762	0.571	0.456
							recommended % of programmed feed rate to use while ramping		100%	70%	50%	30%	10%

NOTE: YRC = distance from center line to the crown of the R radius.
RCN = distance from center line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

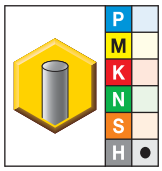
- Kennametal standard dimensions.
- Non-center cutting.
- High feed.







KHDA • Steels with Hardness • >52 HRC



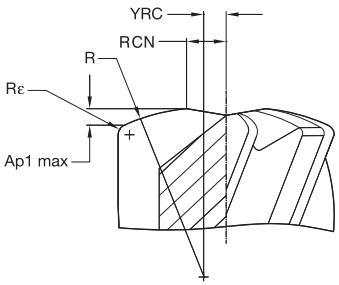
● first choice
○ alternate choice

KC639M	D1	D	Ap1 max	L3	L	Rε
KHDA0250J6ANA	1/4	1/4	.0082	.750	2 1/2	.016
KHDA0312J6ANA	5/16	5/16	.0103	1.000	3	.020
KHDA0375J6ANA	3/8	3/8	.0123	1.250	3 1/2	.020
KHDA0500J6ANA	1/2	1/2	.0164	1.500	4	.023
KHDA0625J6ANA	5/8	5/8	.0205	2.000	4 1/2	.032
KHDA0750J6ANA	3/4	3/4	.0250	2.500	5	.040

NOTE: For application data, see page P144.

End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"



Programming Data

geometrical parameters							ramping guide for circular and linear ramping						
							circular interpolation		linear ramping				
							optimal range of circle diameter for a single pass		calculated length per ramp angle				
catalog number	D1	Ap1 max	R	Rε	YRC	RCN	smallest	largest	1°	2°	3°	4°	5°
KHDA0250J6ANA	1/4	0.0082	0.375	0.0160	0.0313	0.0550	0.360	0.500	0.470	0.235	0.157	0.117	0.094
KHDA0312J6ANA	5/16	0.0103	0.469	0.0200	0.0391	0.0688	0.450	0.625	0.588	0.294	0.196	0.147	0.117
KHDA0375J6ANA	3/8	0.0123	0.563	0.0240	0.0469	0.0825	0.540	0.750	0.706	0.353	0.235	0.176	0.141
KHDA0500J6ANA	1/2	0.0164	0.750	0.0320	0.0625	0.1100	0.720	1.000	0.941	0.470	0.313	0.235	0.188
KHDA0625J6ANA	5/8	0.0205	0.938	0.0400	0.0781	0.1375	0.900	1.250	1.176	0.588	0.392	0.294	0.235
KHDA0750J6ANA	3/4	0.0246	1.125	0.0470	0.0938	0.1650	1.080	1.500	1.411	0.705	0.470	0.352	0.282
							recommended % of programmed feed rate to use while ramping		100%	70%	50%	30%	10%

NOTE: YRC = distance from center line to the crown of the R radius.
RCN = distance from center line to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.
R = the head radius size.
Rε = the shoulder radius or radius at the corner of the cutter.

KMDA • Steels with Hardness <52 HRC



Material Group		3D Milling/Profiling		KC639M Cutting Speed — vc SFM		frac.	D1 — Diameter					
		ap	ae	min	max	dec.	1/4	5/16	3/8	1/2	5/8	3/4
							0.250	0.313	0.375	0.500	0.625	0.750
P	4	0.05 x D	0.55 x D	528	594	fz	.0130	.0160	.0190	.0250	.0260	.0280
H	1	0.05 x D	0.55 x D	462	528	fz	.0130	.0160	.0190	.0250	.0260	.0280
	2	0.05 x D	0.55 x D	330	396	fz	.0080	.0090	.0110	.0150	.0190	.0230

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KHDA • Steels with Hardness >52 HRC



Material Group		3D Milling/Profiling		KC639M Cutting Speed — vc SFM		frac.	D1 — Diameter					
		ap	ae	min	max	dec.	1/4	5/16	3/8	1/2	5/8	3/4
							0.250	0.313	0.375	0.500	0.625	0.750
H	2	0.03 x D	0.55 x D	330	396	fz	.0080	.0090	.0110	.0150	.0190	.0230
	3	0.03 x D	0.55 x D	265	330	fz	.0080	.0090	.0110	.0150	.0190	.0230
	4	0.03 x D	0.55 x D	165	230	fz	.0060	.0080	.0090	.0130	.0160	.0190

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

GOmill™ GP

General Purpose End Mill Series

- Flexible — plunging, slotting, and profiling.
- Complete — wide range of diameters and lengths.
- Adaptive — wide range of applications and workpiece materials.
- Economical — excellent cost-benefit ratio.



Offering

- 2-flute version for unstable conditions.
- 3-flute version as alternative to 2 and 4 flutes.
- 4-flute version for high metal removal rates.

Advanced Technology

- Roughing and finishing with one tool.
- Eccentric relief increases edge stability.

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

High-Performance Hard-Machining Solid Carbide End Mills

Primary Application

These end mills from Kennametal for hard machining are engineered to machine hardened steels up to 67 HRC at extreme speeds and feeds. Designed with special coatings, substrates, and geometries to extend tool life in any application that requires machining of hardened workpiece materials.

- Capable of machining hardened steels more than 60 HRC.
- Unique design enables higher feeds and speeds to increase Metal Removal Rates (MRR).
- Sophisticated coatings for maximum wear resistance.

Features and Benefits

Advanced Technology

- Negative geometry for increased edge strength.
- Reinforced core for better rigidity.
- High helix for better surface finishes.

Tailored Grades

- Universal grade KC633M™.

Customization

- Intermediate diameters available.
- Expanded length of tool and increased length of cut possible.
- Toroidal as well as undercutting end mills (Spherical Lollipop-Style).
- Various shank options and non-standard coatings available.
- TiAlN wear-resistant substrate grade KC637M and AlTiN grade KC643M available as custom solution.

Extensive Standard Offering

- Diameter ranges 1/8–1".
- Extended neck for long-reach applications and radii and sharp corner configurations.
- Roughing and ball nose finishing geometries.

Sophisticated coatings for maximum wear resistance.



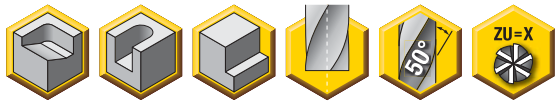
Parabolic Core Design
Proprietary technology stabilizes end mill to avoid deflection in longer length of cut.

Various Helix End Mill Versions
Dedicated application-specific design.

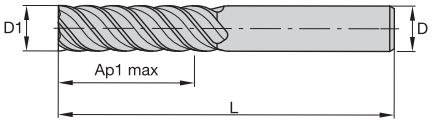


KC633M™ TiAlN-Coated Substrate
For longest tool life in challenging applications.

- Kennametal standard dimensions.
- Center cutting.



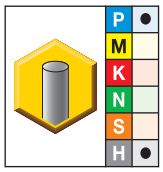




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HPFDM • Medium and Hardened Steels

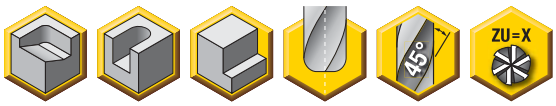


● first choice
○ alternate choice

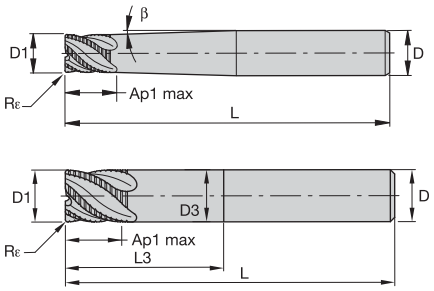
KC633M	D1	D	Ap1 max	L	Z U
HPFDM250S4038	1/4	1/4	3/8	3	4
HPFDM250S4063	1/4	1/4	5/8	3	4
HPFDM250S4088	1/4	1/4	7/8	3	4
HPFDM312S4050	5/16	5/16	1/2	4	4
HPFDM312S4075	5/16	5/16	3/4	4	4
HPFDM312S4113	5/16	5/16	1 1/8	4	4
HPFDM375S4056	3/8	3/8	9/16	4	4
HPFDM375S5094	3/8	3/8	15/16	4	5
HPFDM375S5131	3/8	3/8	1 5/16	4	5
HPFDM500S4075	1/2	1/2	3/4	5	4
HPFDM500S6125	1/2	1/2	1 1/4	5	6
HPFDM500S6175	1/2	1/2	1 3/4	5	6
HPFDM625S4094	5/8	5/8	15/16	5	4
HPFDM625S6156	5/8	5/8	1 9/16	5	6
HPFDM625S6219 *	5/8	5/8	2 3/16	5	6
HPFDM750S4113	3/4	3/4	1 1/8	6	4
HPFDM750S6188	3/4	3/4	1 7/8	6	6
HPFDM750S6263	3/4	3/4	2 5/8	6	6
HPFDM1000S5150	1	1	1 1/2	6	5
HPFDM1000S6250	1	1	2 1/2	6	6
HPFDM1000S6350	1	1	3 1/2	6	6

NOTE: For application data, see page P151.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Shallow-pitch profile.



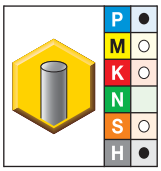




End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-.0031"	<1/8"	+0/-.00024"
1/8–7/32"	-.0012/-.0041"	1/8–7/32"	+0/-.00031"
1/4–3/8"	-.0016/-.0051"	1/4–3/8"	+0/-.00035"
13/32–11/16"	-.002/-.0063"	13/32–11/16"	+0/-.00043"
23/32–1-3/16"	-.0026/-.0077"	23/32–1-3/16"	+0/-.00051"

HPRDM • Rougher for Medium and Hardened Steels



● first choice
○ alternate choice

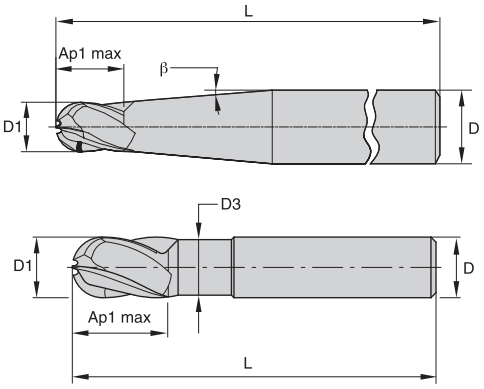
KC633M	D1	D	Ap1 max	L	Rε	β	Z U
HPRDM188S3019	3/16	1/4	3/16	3	.030	2.5	3
HPRDM250S4025	1/4	3/8	1/4	4	.030	2.5	4
HPRDM312S4031	5/16	3/8	5/16	4	.030	2.5	4
HPRDM375S4038	3/8	1/2	3/8	5	.030	2.5	4
HPRDM500S4050	1/2	5/8	1/2	5	.040	2.5	4

NOTE: For application data, see page P151.

- Kennametal standard dimensions.
- Center cutting.





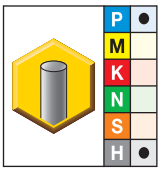


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

HPBNDM • Medium and Hardened Steels

● first choice
○ alternate choice



KC633M	D1	D	D3	Ap1 max	L3	L	β
HPBNDM125S4013	1/8	1/4	—	1/8	1.56	3	2.5
HPBNDM188S4019	3/16	1/4	—	3/16	.90	3	2.5
HPBNDM250S4025	1/4	3/8	—	1/4	1.68	4	2.5
HPBNDM375S4038	3/8	1/2	—	3/8	1.81	5	2.5
HPBNDM500S4050	1/2	5/8	—	1/2	1.93	5	2.5
HPBNDM625S4063	5/8	5/8	.59	5/8	1.87	5	—
HPBNDM750S4075	3/4	3/4	.71	3/4	2.25	6	—

NOTE: For application data, see page P152.

HPFDM



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC633M Cutting Speed — vc SFM min	max	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. frac.	D1 — Diameter 1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min	max	dec.	0.250	0.313	0.375	0.500	0.625	0.750	1.000
P	3	1 x D	0.4 x D	1 x D	390	520	fz	.0017	.0021	.0025	.0032	.0037	.0042	.0050
	4	1 x D	0.4 x D	0.75 x D	300	490	fz	.0015	.0019	.0022	.0029	.0033	.0036	.0043
H	1	1 x D	0.4 x D	0.75 x D	260	460	fz	.0015	.0019	.0022	.0029	.0033	.0036	.0043
	2	1 x D	0.3 x D	0.5 x D	230	390	fz	.0011	.0014	.0017	.0021	.0024	.0027	.0031
	3	1 x D	0.15 x D	0.3 x D	200	300	fz	.0009	.0011	.0013	.0017	.0020	.0022	.0027
	4	1 x D	0.1 x D	0.15 x D	160	230	fz	.0006	.0008	.0009	.0011	.0013	.0015	.0018

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

HPRDM



Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC633M Cutting Speed — vc SFM min	max	Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%. frac.	D1 — Diameter 3/16	1/4	5/16	3/8	1/2
		ap	ae	ap	min	max	dec.	.188	.250	.313	.375	.500
P	3	0.8 x D	0.5 x D	0.75 x D	390	520	IPT	.0011	.0015	.0020	.0023	.0029
	4	0.8 x D	0.4 x D	0.5 x D	300	490	IPT	.0010	.0014	.0017	.0020	.0026
	5	0.8 x D	0.5 x D	0.75 x D	200	330	IPT	.0009	.0012	.0016	.0018	.0023
	6	0.8 x D	0.4 x D	0.5 x D	160	250	IPT	.0008	.0010	.0013	.0015	.0019
M	1	0.8 x D	0.5 x D	0.75 x D	300	380	IPT	.0011	.0015	.0020	.0023	.0029
	2	0.8 x D	0.4 x D	0.75 x D	200	260	IPT	.0009	.0012	.0016	.0018	.0023
	3	0.8 x D	0.4 x D	0.75 x D	200	230	IPT	.0008	.0010	.0013	.0015	.0019
K	1	0.8 x D	0.5 x D	0.75 x D	390	490	IPT	.0013	.0018	.0023	.0027	.0034
	2	0.8 x D	0.5 x D	0.75 x D	360	460	IPT	.0011	.0015	.0020	.0023	.0029
	3	0.8 x D	0.4 x D	0.75 x D	360	430	IPT	.0009	.0012	.0016	.0018	.0023
S	1	0.8 x D	0.4 x D	0.75 x D	160	300	IPT	.0011	.0015	.0020	.0023	.0029
	2	0.8 x D	0.4 x D	0.75 x D	80	130	IPT	.0006	.0008	.0010	.0012	.0015
	3	0.8 x D	0.4 x D	0.75 x D	80	130	IPT	.0006	.0008	.0010	.0012	.0015
	4	0.8 x D	0.3 x D	0.5 x D	160	200	IPT	.0008	.0011	.0014	.0017	.0021
H	1	0.8 x D	0.5 x D	0.5 x D	260	460	IPT	.0010	.0014	.0017	.0020	.0026
	2	0.8 x D	0.2 x D	0.3 x D	230	390	IPT	.0008	.0010	.0013	.0015	.0019
	3	0.8 x D	0.15 x D	0.2 x D	200	300	IPT	.0006	.0008	.0010	.0012	.0015

NOTE: These guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

HPBNDM



Material Group		3D Milling/Profiling		KC633M Cutting Speed — vc SFM		Feed per Tooth — Finishing									
							D1 — Diameter								
						frac.	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4
		ap	ae	min	max	dec.	0.125	0.156	0.188	0.250	0.313	0.375	0.500	0.625	0.750
P	3	0.04 x D	0.04 x D	1360	1540	fz	.0033	.0042	.0052	.0070	.0090	.0105	.0135	.0157	.0175
	4	0.04 x D	0.04 x D	1190	1360	fz	.0031	.0039	.0047	.0063	.0081	.0093	.0120	.0139	.0152
H	1	0.03 x D	0.03 x D	950	1330	fz	.0033	.0041	.0050	.0068	.0086	.0100	.0128	.0148	.0163
	2	0.03 x D	0.03 x D	670	1140	fz	.0025	.0031	.0038	.0051	.0065	.0075	.0096	.0110	.0120
	3	0.02 x D	0.02 x D	710	1060	fz	.0021	.0026	.0032	.0043	.0054	.0063	.0082	.0095	.0107
	4	0.02 x D	0.02 x D	590	830	fz	.0014	.0017	.0021	.0028	.0036	.0042	.0054	.0063	.0070



Material Group		3D Milling/Profiling		KC633M Cutting Speed — vc SFM		Feed per Tooth — Semi-Finishing									
							D1 — Diameter								
						frac.	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4
		ap	ae	min	max	dec.	0.125	0.156	0.188	0.250	0.313	0.375	0.500	0.625	0.750
P	3	0.1 x D	0.05 x D	890	1000	fz	.0022	.0027	.0033	.0045	.0059	.0068	.0088	.0102	.0114
	4	0.1 x D	0.05 x D	780	890	fz	.0020	.0025	.0030	.0041	.0053	.0061	.0078	.0090	.0099
H	1	0.07 x D	0.1 x D	660	920	fz	.0025	.0031	.0038	.0051	.0066	.0076	.0098	.0113	.0124
	2	0.05 x D	0.04 x D	530	910	fz	.0022	.0027	.0033	.0044	.0057	.0065	.0084	.0096	.0105
	3	0.03 x D	0.03 x D	570	860	fz	.0019	.0025	.0030	.0040	.0051	.0059	.0076	.0089	.0100
	4	0.03 x D	0.03 x D	480	670	fz	.0013	.0016	.0020	.0027	.0034	.0039	.0051	.0059	.0066



Material Group		3D Milling/Profiling		KC633M Cutting Speed — vc SFM		Feed per Tooth — Roughing									
							D1 — Diameter								
						frac.	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4
		ap	ae	min	max	dec.	0.125	0.156	0.188	0.250	0.313	0.375	0.500	0.625	0.750
P	3	0.2 x D	0.1 x D	680	770	fz	.0010	.0012	.0015	.0020	.0026	.0030	.0039	.0046	.0051
	4	0.2 x D	0.1 x D	600	680	fz	.0009	.0011	.0014	.0018	.0023	.0027	.0035	.0040	.0044
H	1	0.15 x D	0.1 x D	460	640	fz	.0013	.0017	.0020	.0028	.0035	.0041	.0052	.0060	.0066
	2	0.1 x D	0.75 x D	390	670	fz	.0015	.0019	.0023	.0031	.0039	.0045	.0058	.0067	.0073
	3	0.05 x D	0.05 x D	450	680	fz	.0017	.0021	.0026	.0035	.0044	.0052	.0067	.0078	.0087
	4	0.05 x D	0.05 x D	380	530	fz	.0011	.0014	.0017	.0023	.0030	.0034	.0044	.0052	.0058

NOTE: These guidelines may require variations to achieve optimum results.

HARVI™ III Family



High-temperature alloy machining

- Profiling, semi-finishing, and finishing.
- Maximum metal removal rates in titanium and stainless steel.
- Supreme surface conditions.
- Complete family of square end, ball nose, and taper ball nose cutters.

KCSM15™

- Proprietary Beyond™ grade for exceptional tool life in titanium and stainless steels.

Advanced Technology

- Six unequally spaced flutes for chatter-free machining.
- Eccentric relief design increases tool life through higher edge stability.
- Proprietary tapered core provides highest tool stability in roughing and finishing operations.

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Beyond™ EADE

Solid Ceramic End Mills

Primary Application

EADE solid ceramic end mills offer higher productivity and tool life in roughing nickel-based high-temperature alloys. Beyond grade KYS40™ delivers best-in-class tool life and exceptionally high Metal Removal Rates (MRR), surpassing those of other solutions on the market today.

- Outstanding reduction of machining time.
- Fewer tool changes due to longer tool life.
- Benefit from throw-away type of tooling.

Features and Benefits

Advanced Technology

- KYS40 Beyond grade solid SiAlON ceramic designed for machining nickel-based high-temperature alloys.
- Cutting speeds up to 3300 SFM increase metal removal rates.
- Tool life up to 5x that of carbide end mills.

Extensive Standard Offering

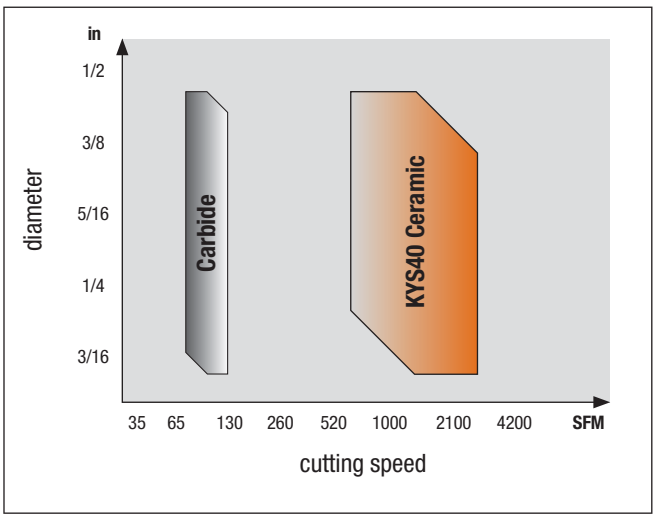
- 4-flute tooling for pocketing and slotting. Undersize end mills leaving stock for finishing operations.
- 6-flute tooling for face milling and profiling.

Customization

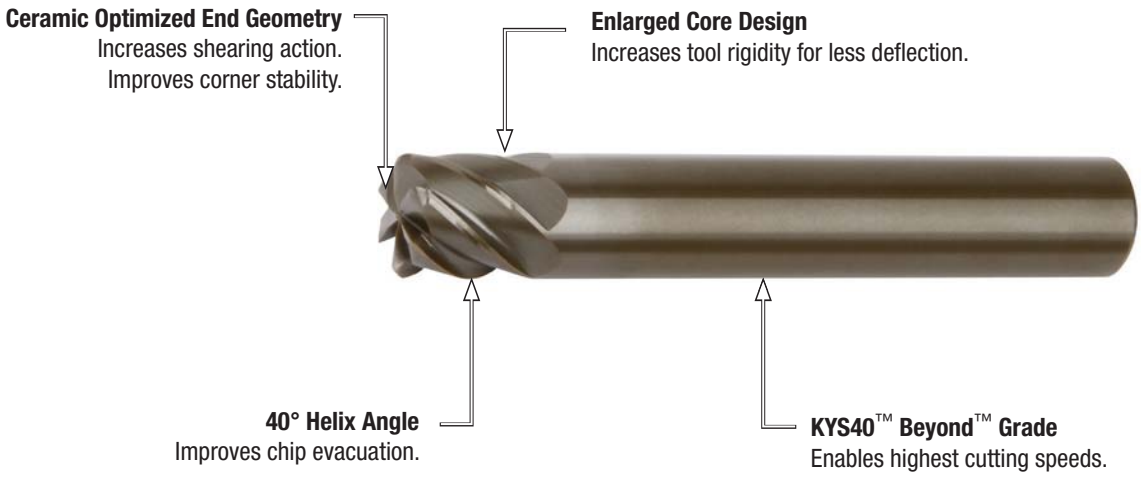
- Engineered solutions are available upon request.

Highest Cutting Speed Capability

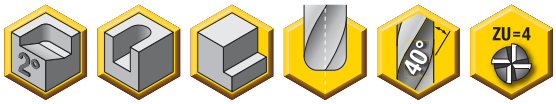
- Increase compared to carbide.



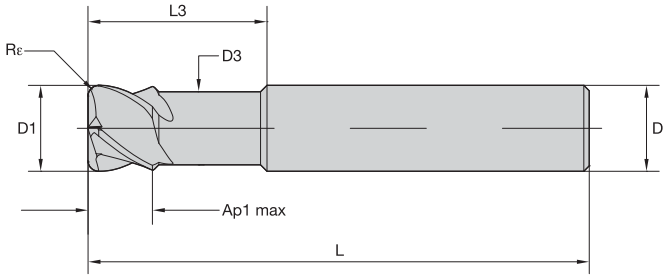



Ceramic Optimized End Geometry
Increases shearing action.
Improves corner stability.
Enlarged Core Design
Increases tool rigidity for less deflection.
40° Helix Angle
Improves chip evacuation.
KYS40™ Beyond™ Grade
Enables highest cutting speeds.

- Kennametal standard dimensions.
- Non-center cutting.
- Ramping up to 2,5°.
- Optimized geometry for roughing nickel-based high-temperature alloys.





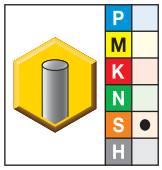


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤1/8"	-.00055/.00110"	≤1/8"	+0/-.00024"
>1/8–1/4"	-.00079/-.00150"	>1/8–1/4"	+0/-.00031"
>1/4–3/8"	-.00098/-.00185"	>1/4–3/8"	+0/-.00035"
>13/32–23/32"	-.00126/-.00232"	>13/32–23/32"	+0/-.00043"
>23/32–1-3/16"	-.00157/-.00287"	>23/32–1-3/16"	+0/-.00051"

beyond

EADE • 4 Flute with Neck • Inch

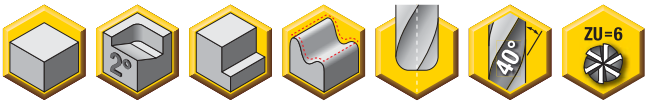


● first choice
○ alternate choice

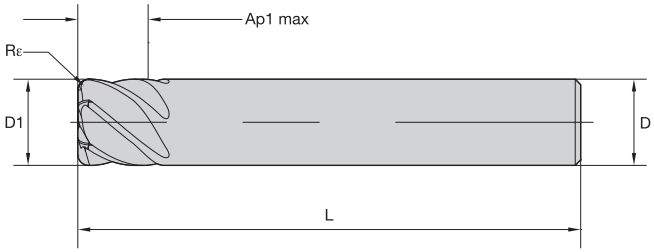
KYS40	D1	D1	D	D3	Ap1 max	L	L3	Rε
EADE0178J4AQX	–	.180	1/4	.173	9/64	2	3/8	.023
EADE0188J4AQX	3/16	.188	1/4	.180	9/64	2	3/8	.023
EADE0238J4AQB	–	.238	1/4	.229	3/16	2	1/2	.031
EADE0250J4AQB	1/4	.250	1/4	.240	3/16	2	1/2	.031
EADE0297J4AQX	19/64	.297	5/16	.285	15/64	2 1/4	5/8	.039
EADE0313J4AQX	5/16	.313	5/16	.300	15/64	2 1/4	5/8	.039
EADE0356J4AQX	–	.356	3/8	.341	9/32	2 1/2	3/4	.047
EADE0375J4AQX	3/8	.375	3/8	.360	9/32	2 1/2	3/4	.047
EADE0475J4AQC	–	.477	1/2	.458	3/8	2 3/4	1	.063
EADE0500J4AQC	1/2	.500	1/2	.480	3/8	2 3/4	1	.063

NOTE: For application data, see page P158.
For face milling, profiling, and 3D milling, do not exceed .019" of Ap.

- Kennametal standard dimensions.
- Non-center cutting.
- Ramping up to 2°.
- Optimized geometry for roughing nickel-based high-temperature alloys.





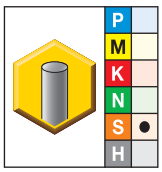


End Mill Tolerances

D1	tolerance e8	D	tolerance h6
≤1/8"	-.00055/.00110"	≤1/8"	+0/-.00024"
>1/8–1/4"	-.00079/-.00150"	>1/8–1/4"	+0/-.00031"
>1/4–3/8"	-.00098/-.00185"	>1/4–3/8"	+0/-.00035"
>13/32–23/32"	-.00126/-.00232"	>13/32–23/32"	+0/-.00043"
>23/32–1-3/16"	-.00157/-.00287"	>23/32–1-3/16"	+0/-.00051"

beyond

EADE • 6 Flute • Inch

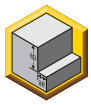


● first choice
○ alternate choice

KYS40	D1	D	Ap1 max	L	Rε
EADE0188J6ARX	3/16	3/16	9/64	2	.023
EADE0250J6ARB	1/4	1/4	3/16	2	.031
EADE0313J6ARX	5/16	5/16	15/64	2 1/4	.039
EADE0375J6ARX	3/8	3/8	9/32	2 1/2	.047
EADE0500J6ARC	1/2	1/2	3/8	2 3/4	.063

NOTE: For application data, see page P158.
For face milling, profiling, and 3D-milling, do not exceed .019" of Ap.

4-Flute with Neck • Inch

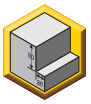




Material Group		Side Milling (A) and Slotting (B)			KYS40		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
		A		B	Cutting Speed — vc SFM			D1 — Diameter				
							frac.	3/16	1/4	5/16	3/8	1/2
		ap	ae	ap	min	max	dec.	.1875	.2500	.3125	.3750	.5000
S	3	Ap1 max	0.1 x D*	0,5 x D*	825	3300	IPT	.0094	.0100	.0109	.0113	.0133

NOTE: *For above cutting data, do not exceed an overall ae of .039".
Use ap of .039" as starting condition.

6-Flute • Inch





Material Group		Side Milling (A) and Profiling		KYS40		Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		Cutting Speed — vc SFM			D1 — Diameter				
						frac.	3/16	1/4	5/16	3/8	1/2
		ap	ae	min	max	dec.	.1875	.2500	.3125	.3750	.5000
S	3	Ap1 max*	0.1 x D*	825	3300	IPT	.0094	.0100	.0109	.0113	.0133

NOTE: *For above cutting data, do not exceed an overall ae of .039".
Use ap of .039" as starting condition.

A New Dimension

HARVI™ II

The next generation high-performance end mill, HARVI II dramatically improves metal removal rates without reducing tool life.

- Best suited for applications in the aerospace, medical, die and mold, automotive, and general engineering markets.
- Outstanding performance in stainless steel, titanium, INCONEL®, and other high-temperature alloys and steels.
- Increased metal removal rates in roughing and finishing operations.



Advanced Technology

- Five unequally-spaced flutes for chatter-free machining at high feed rates.
- 1 x D full slotting capability in:
  - — Titanium
  - — Stainless steel

Tailored Grades

- Proprietary KCPM15™ Beyond™ grade.
- Universal KC643M™ grade.

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EADE 4-Flute End Mill

CHALLENGE

- Roughing a slot on turbine blade.
- Depth of slot .866".
- INCONEL® 718 material.
- Dry machining.

SOLUTION

- Engineered solution EADE KYS40™ ceramic end mill with extended neck.
- Ø .449" (11,4mm) with 4 effective cutting edges and .059" (1,5mm) corner radii.

CUTTING DATA

- vc 2625 SFM
- fz .0012 IPT
- ap .0197"
- ae .866"

RESULT

- Customer proprietary information.

BENEFIT

- Machining time of 1 minute 54 seconds for one slot only.
- Metal removal rate of .9 in^3/m consistently achieved.
- Productivity significantly increased.

EADE 4-Flute End Mill

CHALLENGE

- Rough profiling of small turbine blades.
- INCONEL 718 material.
- Dry machining.

SOLUTION

- Standard EADE KYS40 ceramic end mill.
- Ø .449" (11,4mm) with 4 effective cutting edges and standard neck.

CUTTING DATA

- vc 2116 SFM
- fz .0012 IPT
- ap .0197"
- ae .866"

RESULT

- 3x tool life compared to 2x tool life with competitive solution in less time.

BENEFIT

- 3x higher productivity as a result of increased cutting data.
- 50% longer tool life compared to competitive carbide end mill.

(continued)

(continued)



EADE 6-Flute End Mill

CHALLENGE

- Rough profiling of aerospace parts.
- Haynes® 288 and INCONEL® 718 material.
- Dry machining.

SOLUTION

- Standard EADE KYS40™ ceramic end mill.
- Ø .394" (10mm) with 6 effective cutting edges.

CUTTING DATA

- vc 1516 SFM
- fz .0012 IPT
- ap .0197–.0394"
- ae varying

RESULT

- Customer proprietary information.

BENEFIT

- Machining time reduced.
- Productivity significantly increased.

EADE 6-Flute End Mill

CHALLENGE

- Rough profiling of blisk (blade integrated disc).
- INCONEL 718 material (42 HRC).
- Compressed air coolant.

SOLUTION

- Standard EADE KYS40 ceramic end mill.
- Ø .472" (12mm) with 6 effective cutting edges.

CUTTING DATA

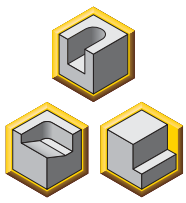
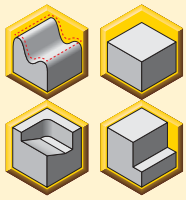
- vc 2228 SFM
- fz .0012 IPT
- ap varying up to .0197"
- ae varying

RESULT

- 2 blisk segments machined with one tool.
- 12 minute machining time per segment.

BENEFIT

- Unprecedented reduction in machining time.

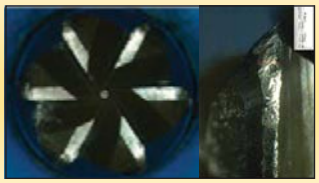
Materials to Cut	• Nickel-based high-temperature alloys. • Cobalt-based alloys after consulting technical assistance. • P6 and M1-3 stainless steels after consulting technical assistance. • Do not apply on iron-based high-temperature alloys.
Cutting Speed	• Maximum RPM machine can provide recommended cutting speed: 1.300–3.300 SFM. • Highly dynamic machines recommended. • Use of spindle speeders applicable (no wet coolant).
Feed Rate	• Refer to application data recommendation. • General starting condition fz .0012 IPT.
Depth of Cut	• Refer to application data recommendation. • General starting condition ap .019".
Coolant	• Power cool nozzle preferred to flush chips away. • Pressurized air applicable. • Minimal quantity lubrication (MQL) and dry applicable. • No coolant with emulsion or oil due to thermal shock.
Adaptation	• Hydraulic chuck with or without sleeve preferred. • Collet or milling power chucks applicable. • Balancing at 25,000 RPM (2,5G) preferred.
Roughing Application	Yes
Finishing Application	No
Milling Strategy	• Conventional milling preferred at lower speeds. • Climb milling preferred at higher speeds.
4-Flute EADE	• Slotting and pocketing. • Common sizes and undersize leaving finishing stock. • Side milling possible up to ap max with increased feed. • Non-center cutting. • Ramping and helical interpolation possible under 2.5°. 
6-Flute EADE	• Profiling and face milling. • Non-center cutting. • Side milling possible up to ap max with increased feed. • Ramping and helical interpolation possible under 2°. 
Engineered Solutions	Available upon request.
Reconditioning Service	Not applicable.

Wear Indication

New



Used



Wear rate .019".
Still good to use.

End of Tool Life



Wear rate .055".
End of tool life reached.

Chip Formation

Carbide



Regular curled chips. Shape and length depend on end mill geometry and cutting data.

Ceramic



Chips are nearly like dust. Pressurized air coolant recommended to blow away chips.

Causes of and Remedies for End Milling Problems

problem	cause	remedy
Excessive bur formation	• Softness of material to cut. • Excessive wear on radii.	• Use undersize end mills that leave stock for finishing operation. • Replace tool as end of tool life reached. • Check tool runout.
Sudden breakage	• Vibration of the workpiece. • Unstable tool clamping. • Use of 6-flute tooling in slotting.	• Check workpiece and tool clamping. • Use of 4-flute EADE recommended.
Chips sticking	• Lack of cutting speed.	• Increase cutting speed.
Chipping	• Unstable tool and/or workpiece clamping. • Initial cutting speed too high.	• Check workpiece and tool clamping. • Reduce cutting speed during initial cut and increase as cutting continues.
Thermal cracks	• Wet coolant.	• Do not use wet coolant.

GOmill™

Economical High-Performance End Mills

Primary Application

The GOmill line is specifically engineered to work on short length-of-cut applications in multiple workpiece materials, like soft and hard steels up to 48 HRC, stainless steels, high-temperature alloys, and cast iron. With the very short overall length and soft cutting geometries, this line is made to conform to the growing market of mill-turn machines.

- Extremely stable cutting tool due to extremely short design.
- Less vibration due to unequal flute spacing.
- Soft cut to support mill-turn machines as well driven units in lathe tooling.
- Use a new GOmill with 100% performance instead of regrinding.

Features and Benefits

Advanced Technology

- The 3-flute sharp and 4-flute chamfer versions support roughing, semi-finishing, and finishing applications.
- The 3-flute ball nose tool supports roughing and semi-finishing applications.
- All geometries work in slotting and side milling applications up to 1 x D depth of cut.
- Shortened shank applicable for all common clamping adapters without modifications. Only use clamping sleeve in hydraulic chucks to avoid vibrations.

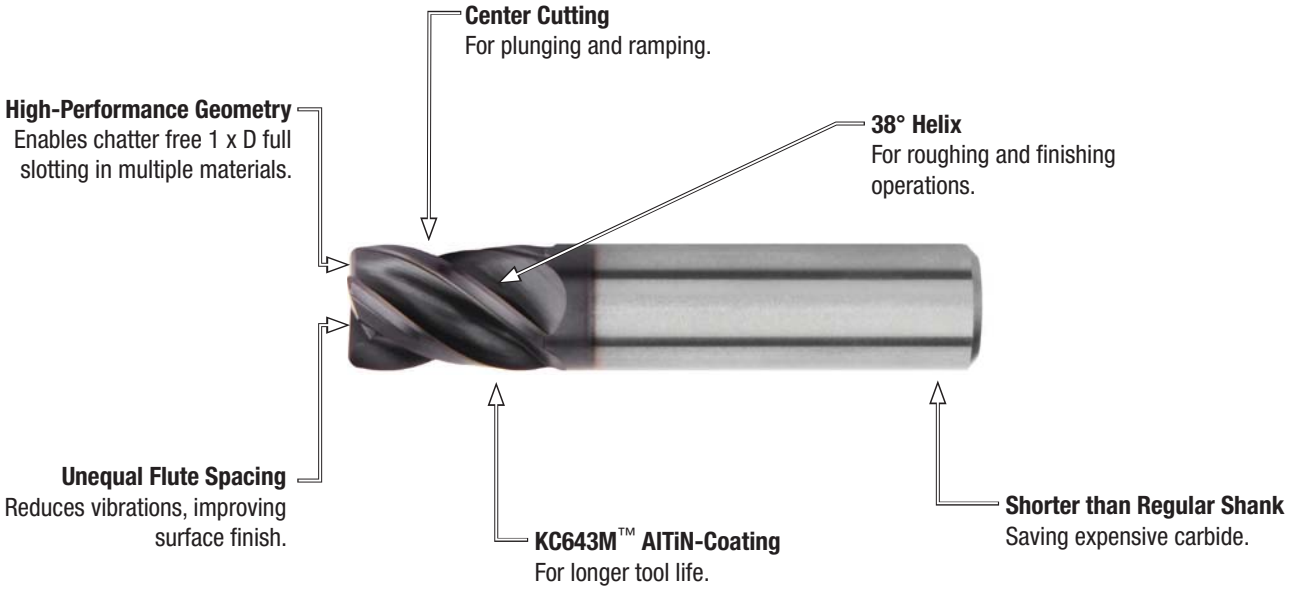
Tailored Grades

- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

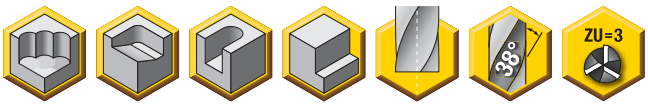
Extensive Standard Offering

- Diameter ranges 5/64–1/2".
- Straight shanks.

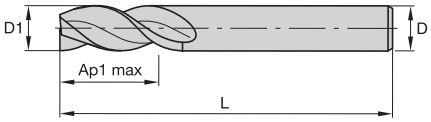



Center Cutting
For plunging and ramping.
High-Performance Geometry
Enables chatter free 1 x D full slotting in multiple materials.
38° Helix
For roughing and finishing operations.
Unequal Flute Spacing
Reduces vibrations, improving surface finish.
KC643M™ AlTiN-Coating
For longer tool life.
Shorter than Regular Shank
Saving expensive carbide.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing.
- Roughing/finishing.





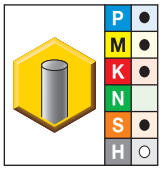


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

GOmill™

UEDE • 3-Flute • Sharp Edge



● first choice
○ alternate choice

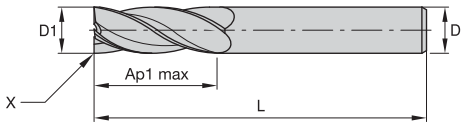
KC643M	D1	D	Ap1 max	L
UEDE0078J3AS	5/64	1/4	5/32	1 1/2
UEDE0094J3AS	3/32	1/4	5/32	1 1/2
UEDE0125J3AS	1/8	1/4	13/64	1 1/2
UEDE0156J3AS	5/32	1/4	17/64	1 1/2
UEDE0188J3AS	3/16	1/4	19/64	1 1/2
UEDE0250J3AS	1/4	1/4	21/64	1 1/2
UEDE0312J3AS	5/16	5/16	27/64	1 3/4
UEDE0375J3AS	3/8	3/8	31/64	2
UEDE0437J3AS	7/16	7/16	9/16	2 5/32
UEDE0500J3AS	1/2	1/2	5/8	2 5/32

NOTE: For application data, see page P170.
Use reducer sleeve when clamping in hydraulic chucks.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and finishing operations for fewer setups.





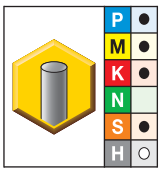


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

GOmill™

UEDE • 4-Flute • Chamfer



● first choice
○ alternate choice

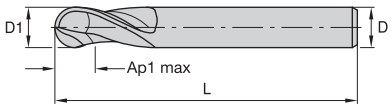
KC643M	D1	D	Ap1 max	L	BCH
UEDE0156J4AH	5/32	1/4	17/64	1 1/2	.016
UEDE0188J4AH	3/16	1/4	19/64	1 1/2	.016
UEDE0250J4AH	1/4	1/4	21/64	1 1/2	.016
UEDE0312J4AH	5/16	5/16	27/64	1 3/4	.016
UEDE0375J4AH	3/8	3/8	31/64	2	.016
UEDE0437J4AH	7/16	7/16	9/16	2 5/32	.016
UEDE0500J4AH	1/2	1/2	5/8	2 5/32	.016

NOTE: For application data, see page P170.
Use reducer sleeve when clamping in hydraulic chucks.

- Kennametal standard dimensions.
- Center cutting.
- Single tool for both semi-finishing and finishing operations for fewer setups.





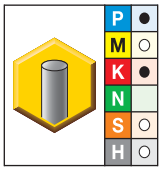


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

GOmill™

UEBD • 2-Flute • Ball Nose



● first choice
○ alternate choice

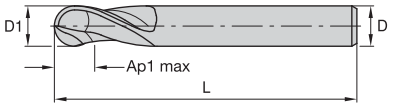
KC643M	D1	D	Ap1 max	L
UEBD0078J2A	5/64	1/4	5/32	1 1/2
UEBD0094J2A	3/32	1/4	5/32	1 1/2
UEBD0125J2A	1/8	1/4	13/64	1 1/2
UEBD0156J2A *	5/32	1/4	17/64	1 1/2
UEBD0188J2A	3/16	1/4	19/64	1 1/2
UEBD0250J2A	1/4	1/4	21/64	1 1/2
UEBD0312J2A *	5/16	5/16	27/64	1 3/4
UEBD0375J2A	3/8	3/8	31/64	2
UEBD0437J2A *	7/16	7/16	9/16	2 5/32
UEBD0500J2A	1/2	1/2	5/8	3

NOTE: For application data, see page P171.
Use reducer sleeve when clamping in hydraulic chucks.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Kennametal standard dimensions.
- Center cutting.
- Unequal flute spacing minimizes chatter for smoother machining.
- Single tool for both roughing and semi-finishing operations for fewer setups.





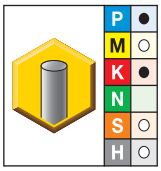


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

GOmill™

UEBD • 3-Flute • Ball Nose



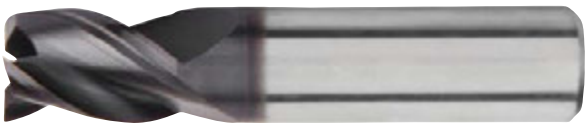
● first choice
○ alternate choice

KC643M	D1	D	Ap1 max	L
UEBD0078J3A	5/64	1/4	5/32	1 1/2
UEBD0094J3A	3/32	1/4	5/32	1 1/2
UEBD0125J3A	1/8	1/4	13/64	1 1/2
UEBD0156J3A	5/32	1/4	17/64	1 1/2
UEBD0188J3A	3/16	1/4	19/64	1 1/2
UEBD0250J3A	1/4	1/4	21/64	1 1/2
UEBD0312J3A	5/16	5/16	27/64	1 3/4
UEBD0375J3A	3/8	3/8	31/64	2
UEBD0437J3A	7/16	7/16	9/16	2 5/32
UEBD0500J3A	1/2	1/2	5/8	2 5/32

NOTE: For application data, see page P171.
Use reducer sleeve when clamping in hydraulic chucks.

UEDE • 3-Flute • Sharp Edge

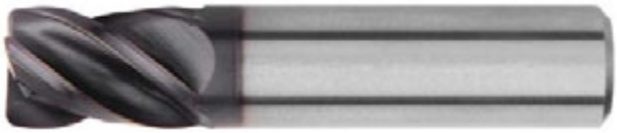




Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 5/64	1/8	3/16	1/4	5/16	3/8	1/2
							dec.	0.08	0.13	0.19	0.250	0.31	0.38	0.50
P	0	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	1	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	460	620	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	3	1.5 x D	0.5 x D	1 x D	390	520	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	4	1.5 x D	0.5 x D	0.75 x D	300	490	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026
	5	1.5 x D	0.5 x D	1 x D	200	330	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	6	1.5 x D	0.5 x D	0.75 x D	160	250	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
M	1	1.5 x D	0.5 x D	1 x D	300	380	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.5 x D	1 x D	200	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	3	1.5 x D	0.5 x D	1 x D	200	230	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
K	1	1.5 x D	0.5 x D	1 x D	390	490	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	360	460	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	3	1.5 x D	0.5 x D	1 x D	360	430	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	4	1.5 x D	0.5 x D	1 x D	160	200	IPT	.0003	.0005	.0008	.0011	.0014	.0017	.0021
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026

UEDE • 4-Flute • Chamfer



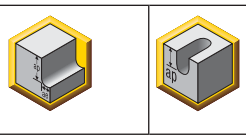


Material Group		Side Milling (A) and Slotting (B) A ap	A ae	B ap	KC643M Cutting Speed — vc SFM min	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. frac.	D1 — Diameter 5/64	1/8	5/32	3/16	1/4	5/16	3/8	1/2
							dec.	.0781	.1250	.1563	.1875	.2500	.3125	.3750	.5000
P	0	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0011	.0013	.0018	.0023	.0027	.0034
	1	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0011	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	460	620	IPT	.0005	.0009	.0011	.0013	.0018	.0023	.0027	.0034
	3	1.5 x D	0.5 x D	1 x D	390	520	IPT	.0004	.0007	.0009	.0011	.0015	.0020	.0023	.0029
	4	1.5 x D	0.5 x D	0.75 x D	300	490	IPT	.0004	.0007	.0008	.0010	.0014	.0017	.0020	.0026
	5	1.5 x D	0.5 x D	1 x D	200	330	IPT	.0004	.0006	.0007	.0009	.0012	.0016	.0018	.0023
	6	1.5 x D	0.5 x D	0.75 x D	160	250	IPT	.0003	.0005	.0006	.0008	.0010	.0013	.0015	.0019
M	1	1.5 x D	0.5 x D	1 x D	300	380	IPT	.0004	.0007	.0009	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.5 x D	1 x D	200	260	IPT	.0004	.0006	.0007	.0009	.0012	.0016	.0018	.0023
	3	1.5 x D	0.5 x D	1 x D	200	230	IPT	.0003	.0005	.0006	.0008	.0010	.0013	.0015	.0019
K	1	1.5 x D	0.5 x D	1 x D	390	490	IPT	.0005	.0009	.0011	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	360	460	IPT	.0004	.0007	.0009	.0011	.0015	.0020	.0023	.0029
	3	1.5 x D	0.5 x D	1 x D	360	430	IPT	.0004	.0006	.0007	.0009	.0012	.0016	.0018	.0023
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0004	.0007	.0009	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0005	.0006	.0008	.0010	.0012	.0015
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0005	.0006	.0008	.0010	.0012	.0015
	4	1.5 x D	0.5 x D	1 x D	160	200	IPT	.0003	.0005	.0006	.0008	.0011	.0014	.0017	.0021
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	IPT	.0004	.0007	.0008	.0010	.0014	.0017	.0020	.0026

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.

UEBD • 2-Flute • Ball Nose

GOmill





Material Group		Side Milling (A) and Slotting (B)			KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	5/64	1/8	3/16	1/4	5/16	3/8	1/2
		ap	ae	ap	min	max	dec.	0.08	0.13	0.19	0.25	0.31	0.38	0.50
P	0	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	1	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	460	620	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	3	1.5 x D	0.5 x D	1 x D	390	520	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	4	1.5 x D	0.5 x D	0.75 x D	300	490	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026
	5	1.5 x D	0.5 x D	1 x D	200	330	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	6	1.5 x D	0.5 x D	0.75 x D	160	250	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
M	1	1.5 x D	0.5 x D	1 x D	300	380	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.5 x D	1 x D	200	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	3	1.5 x D	0.5 x D	1 x D	200	230	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
K	1	1.5 x D	0.5 x D	1 x D	390	490	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	360	460	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	3	1.5 x D	0.5 x D	1 x D	360	430	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	4	1.5 x D	0.5 x D	1 x D	160	200	IPT	.0003	.0005	.0008	.0011	.0014	.0017	.0021
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026

UEBD • 3-flute • Ball Nose

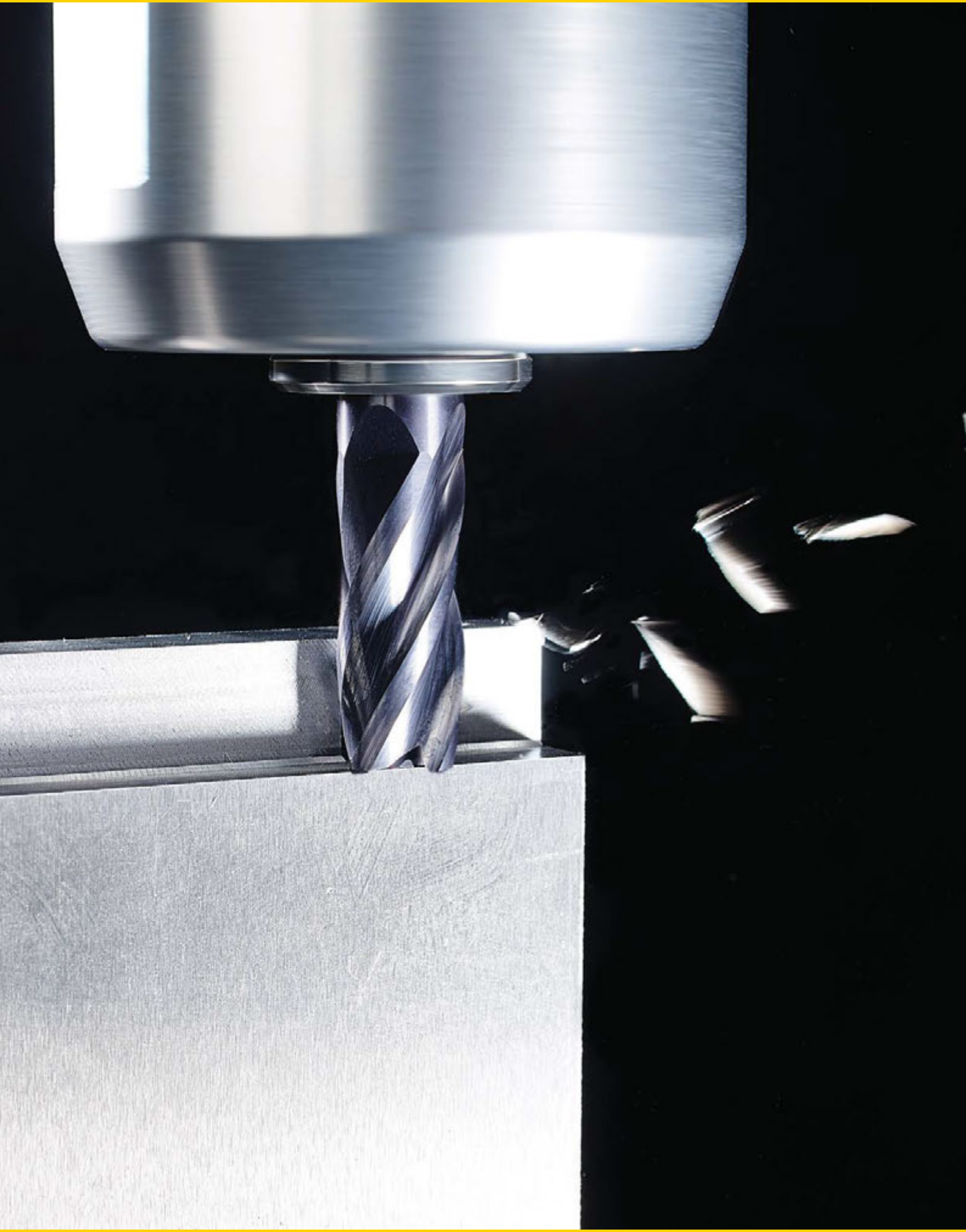
GOmill





Material Group		Side Milling (A) and Slotting (B)			KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed — vc SFM			D1 — Diameter						
							frac.	5/64	1/8	3/16	1/4	5/16	3/8	1/2
		ap	ae	ap	min	max	dec.	0.08	0.13	0.19	0.25	0.31	0.38	0.50
P	0	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	1	1.5 x D	0.5 x D	1 x D	490	660	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	460	620	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	3	1.5 x D	0.5 x D	1 x D	390	520	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	4	1.5 x D	0.5 x D	0.75 x D	300	490	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026
	5	1.5 x D	0.5 x D	1 x D	200	330	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	6	1.5 x D	0.5 x D	0.75 x D	160	250	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
M	1	1.5 x D	0.5 x D	1 x D	300	380	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.5 x D	1 x D	200	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
	3	1.5 x D	0.5 x D	1 x D	200	230	IPT	.0003	.0005	.0008	.0010	.0013	.0015	.0019
K	1	1.5 x D	0.5 x D	1 x D	390	490	IPT	.0005	.0009	.0013	.0018	.0023	.0027	.0034
	2	1.5 x D	0.5 x D	1 x D	360	460	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	3	1.5 x D	0.5 x D	1 x D	360	430	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023
S	1	1.5 x D	0.3 x D	0.3 x D	160	300	IPT	.0004	.0007	.0011	.0015	.0020	.0023	.0029
	2	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	3	1.5 x D	0.3 x D	0.3 x D	80	130	IPT	.0002	.0004	.0006	.0008	.0010	.0012	.0015
	4	1.5 x D	0.5 x D	1 x D	160	200	IPT	.0003	.0005	.0008	.0011	.0014	.0017	.0021
H	1	1.5 x D	0.5 x D	0.75 x D	260	460	IPT	.0004	.0007	.0010	.0014	.0017	.0020	.0026

NOTE: Those guidelines may require variations to achieve optimum results.
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
For better surface finish, reduce feed per tooth.



Solid End Milling • General Purpose Solid Carbide End Mills

GOmill Portfolio Overview Q2–Q3

GOmill GP 2-Flute End Mills Q4–Q12

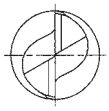
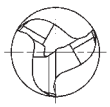
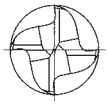
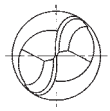
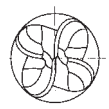
GOmill GP 3-Flute End Mills Q14–Q19

GOmill GP 4-Flute End Mills Q20–Q29

Catalog Numbering System Q30

GOmill GP Cross Reference Guide Q31–Q47

End Mill Type Recommendation

End Mills									
Z = number of teeth		Fine Finishing	Finishing	Roughing	Slot Milling	Plunging	Contour Milling	Peel Milling	Trochoidal Milling
end mill Z = 2		○	○	◑	●	●	○	○	○
end mill Z = 3		○	◑	◑	●	◑	○	○	○
end mill Z = 4		◑	●	●	●	○	○	●	●
Ball Nose End Mills									
ball nose end mill Z = 2					●		●		
ball nose end mill Z = 4					◑		●		

● first choice

◑ suitable with limitations

○ not recommended

Always select a tool with the shortest possible flute length whenever possible. This will increase the stability of the tool and give the best results.

When selecting an end mill, the following machining factors will affect your selection of the correct end mill for your application:

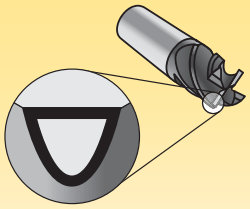
1. Tool overhang.
2. Coolant flow.
3. Machine and setup stability.
4. Machine power and torque.
5. Material to be machined.
6. Machine adapter size (CV40, CV50, HSK63, etc.).

Select Adapter per Technical Data/Characteristics

Technical data/characteristics	Toolholders				
	HydroForce™ high torque	Shrink Fit	Milling chuck	ER collet chuck	Weldon® adapter
torque transmission	★★★★★	★★★★	★★★★★	★★	★★★★★
radial runout (T.I.R.)[1]	★★★★★	★★★★★	★★★★	★★★	★
radial rigidity[2]	★★★★	★★★★★	★★★	★★★	★★★
tool length adjustment	★★★★★	★★★★	★	★★★★	★★
tool shank tolerance requirement	★★★★	★★	★★★	★★★★★	★★★
through coolant	★★★★★	★★★★★	★★★	★★★	★★
minimum quantity lubrication (MQL)	★★★★★	★★★★★	★	★	★
dampening capability	★★★★★	★	★★★	★★★	★★★
shank diameter range[3]	★★★★★	★	★★★★★	★★★★★	★
cost of toolholder	★★	★★★	★	★★★★	★★★★★
low requirement of external devices[4]	★★★★★	★	★★★★	★★★★	★★★★★
ease of handling	★★★★★	★★★	★★	★★★★	★★★★
dust resistance	★★★★★	★★★★★	★★★	★★★	★★★★
high-speed capability	★★★★★	★★★★★	★★★	★★★	★
balancing accuracy	★★★★★	★★★★★	★★★	★★★	★

[1] Radial runout may affect tool life.
[2] Radial rigidity for Weldon holder is low at a direction perpendicular to the screw.
[3] Accepts different shank diameters through the use of reduction sleeves or due to collapse range.
[4] Collet chucks and milling chucks may require the use of a torque or special wrench; Shrink Fit adapter requires a shrinking unit.

Grades and Grade Descriptions

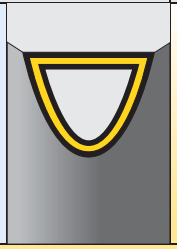


Coatings provide high-speed capability and are engineered for roughing to finishing.

P	Steel
M	Stainless Steel
K	Cast Iron

wear resistance ← → toughness

Grade

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC633M 	Coated carbide grade with PVD multilayer coating. KC633M™ is designed for dry milling most types of material, apart from the hardened variety. This grade is characterized by high hardness and wear resistance. It provides outstanding protection for solid carbide tools against cratering and abrasion.	P			■	■	■	■			
		M			■	■	■	■			
		K			■	■	■	■			

GOmill™ GP General Purpose Solid Carbide End Mills · 2 Flute

Primary Application

GOmill GP series offers plunging, slotting, and profiling with long tool life on a wide range of workpiece materials. They are designed to provide high Metal Removal Rates (MRR) and achieve good surface quality at an excellent cost-benefit ratio. A wide range of diameters and lengths are available with chamfered edge and ball nose as stocked standard.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for high tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and reduces reconditioning cost.
- 2-flute design for unstable conditions and high flexibility.

Tailored Grades

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless (wet).

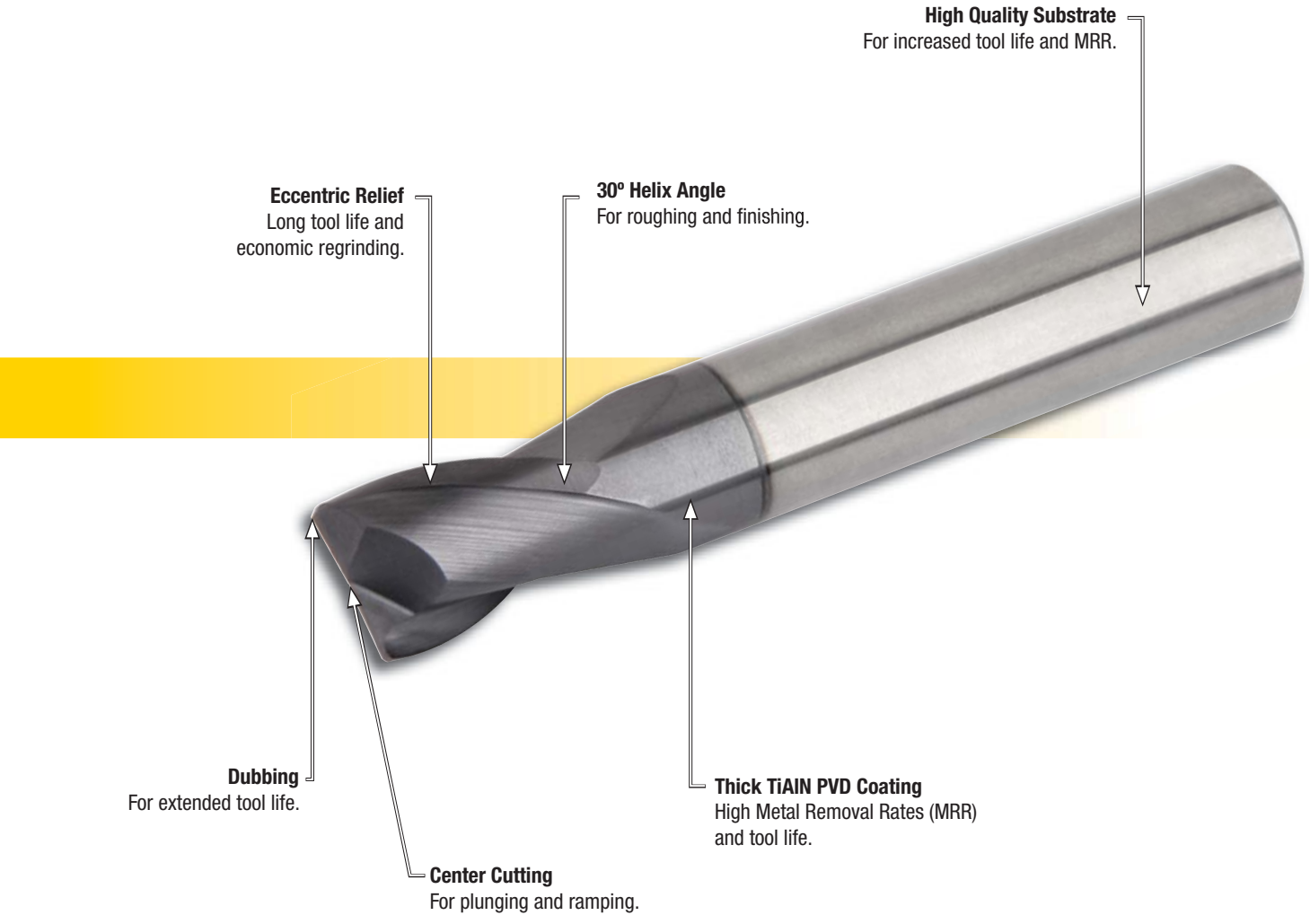
Customization

- Intermediate diameters available.

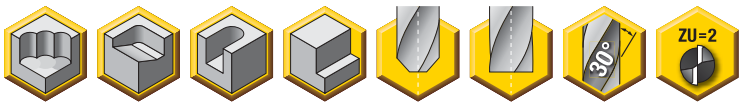
Extensive Standard Offering

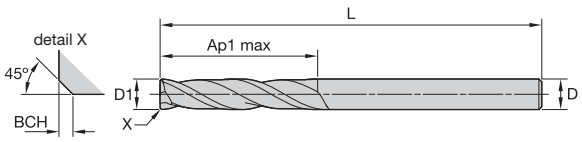
- Diameter range 1/64–1".
- Sharp edge, chamfer edge, and ball nose as standard offering.

Designed for roughing and finishing with one tool at a value price.



- Center cutting.



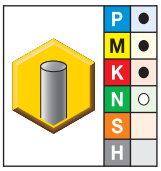


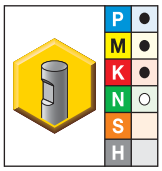


End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

2SE-2CH..IS-IR-IL-IX • 2 Flute • Inch



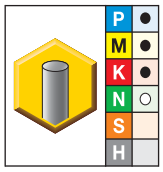


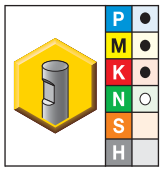
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2SE0016IR003A	–	1/64	1/8	1/32	1 1/2	–
2SE0031IR007A	–	1/32	1/8	5/64	1 1/2	–
2SE0062IR012A	–	1/16	1/8	1/8	1 1/2	–
2SE0062IL018A	–	1/16	1/8	3/16	1 1/2	–
2SE0062IX050A	–	1/16	1/8	1/2	2	–
2SE0078IR018A	–	5/64	1/8	3/16	1 1/2	–
2SE0093IR018A	–	3/32	1/8	3/16	1 1/2	–
2SE0093IL037A	–	3/32	1/8	3/8	1 1/2	–
2SE0093IX062A	–	3/32	1/8	5/8	2	–
2SE0109IR037A	–	7/64	1/8	3/8	1 1/2	–
2CH0125IR025A	–	1/8	1/8	1/4	1 1/2	.010
2SE0125IR025A	–	1/8	1/8	1/4	1 1/2	–
2CH0125IL050A	–	1/8	1/8	1/2	1 1/2	.010
2SE0125IL050A	–	1/8	1/8	1/2	1 1/2	–
2CH0125IX075A	–	1/8	1/8	3/4	2 1/4	.010
2SE0125IX075A	–	1/8	1/8	3/4	2 1/4	–
2CH0140IR056A	–	9/64	3/16	9/16	2	.010
2SE0140IR056A	–	9/64	3/16	9/16	2	–
2CH0156IR031A	–	5/32	3/16	5/16	2	.010
2SE0156IR031A	–	5/32	3/16	5/16	2	–
2CH0156IL056A	–	5/32	3/16	9/16	2	.010
2SE0156IL056A	–	5/32	3/16	9/16	2	–
2CH0171IR062A	–	11/64	3/16	5/8	2	.010
2SE0171IR062A	–	11/64	3/16	5/8	2	–
2CH0187IR062A	–	3/16	3/16	5/8	2	.010
2SE0187IR062A	–	3/16	3/16	5/8	2	–
2CH0187IL075A	–	3/16	3/16	3/4	2 1/2	.010
2SE0187IL075A	–	3/16	3/16	3/4	2 1/2	–
2CH0187IX112A	–	3/16	3/16	1 1/8	3	.010
2SE0187IX112A	–	3/16	3/16	1 1/8	3	–
2CH0218IR043A	–	7/32	1/4	7/16	2	.016
2SE0218IR043A	–	7/32	1/4	7/16	2	–

(continued)

(2SE-2CH..IS-IR-IL-IX • 2 Flute • Inch — continued)



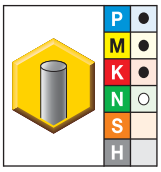


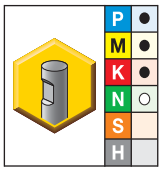
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH0218IL062A	—	7/32	1/4	5/8	2 1/2	.016
2SE0218IL062A	—	7/32	1/4	5/8	2 1/2	—
2CH0250IS050A	—	1/4	1/4	1/2	2	.016
2SE0250IS050A	—	1/4	1/4	1/2	2	—
2CH0250IR075A	—	1/4	1/4	3/4	2 1/2	.016
2SE0250IR075A	—	1/4	1/4	3/4	2 1/2	—
2CH0250IL112A	—	1/4	1/4	1 1/8	3	.016
2SE0250IL112A	—	1/4	1/4	1 1/2	3	—
2CH0250IX150A	—	1/4	1/4	1 1/2	4	.016
2SE0250IX150A	—	1/4	1/4	1 1/2	4	—
2CH0281IR075A	—	9/32	5/16	3/4	2 1/2	.016
2SE0281IR075A	—	9/32	5/16	3/4	2 1/2	—
2CH0312IS050A	—	5/16	5/16	1/2	2	.016
2SE0312IS050A	—	5/16	5/16	1/2	2	—
2CH0312IR081A	—	5/16	5/16	13/16	2 1/2	.016
2SE0312IR081A	—	5/16	5/16	13/16	2 1/2	—
2CH0312IL112A	—	5/16	5/16	1 1/8	3	.016
2SE0312IL112A	—	5/16	5/16	1 1/8	3	—
2CH0312IX162A	—	5/16	5/16	1 5/8	4	.016
2SE0312IX162A	—	5/16	5/16	1 5/8	4	—
2CH0343IR100A	—	11/32	3/8	1	2 1/2	.020
2SE0343IR100A	—	11/32	3/8	1	2 1/2	—
2CH0375IS062A	—	3/8	3/8	5/8	2	.020
2SE0375IS062A	—	3/8	3/8	5/8	2	—
2CH0375IR100A	—	3/8	3/8	1	2 1/2	.020
2SE0375IR100A	—	3/8	3/8	1	2 1/2	—
2CH0375IL112A	—	3/8	3/8	1 1/8	3	.020
2SE0375IL112A	—	3/8	3/8	1 1/2	3	—
2CH0375IX175A	—	3/8	3/8	1 3/4	4	.020
2SE0375IX175A	—	3/8	3/8	1 3/4	4	—
2CH0406IR100A	—	13/32	7/16	1	2 3/4	.020
2SE0406IR100A	—	13/32	7/16	1	2 3/4	—
2CH0437IR062A	—	7/16	7/16	5/8	2 1/2	.020
2SE0437IR062A	—	7/16	7/16	5/8	2 1/2	—
2CH0437IL100A	—	7/16	7/16	1	2 1/2	.020
2SE0437IL100A	—	7/16	7/16	1	2 1/2	—
2CH0437IX200A	—	7/16	7/16	2	4	.020
2SE0437IX200A	—	7/16	7/16	2	4	—
2CH0468IR100A	—	15/32	1/2	1	3	.020
2SE0468IR100A	—	15/32	1/2	1	3	—
2CH0500IS062A	—	1/2	1/2	5/8	2 1/2	.020
2SE0500IS062A	—	1/2	1/2	5/8	2 1/2	—
2CH0500IR100A	2CH0500IR100B	1/2	1/2	1	3	.020
2SE0500IR100A	2SE0500IR100B	1/2	1/2	1	3	—
2CH0500IL200A	2CH0500IL200B	1/2	1/2	2	4	.020
2SE0500IL200A	2SE0500IL200B	1/2	1/2	2	4	—
2CH0500IX300A	2CH0500IX300B	1/2	1/2	3	6	.020
2SE0500IX300A	2SE0500IX300B	1/2	1/2	3	6	—

(continued)

(2SE-2CH..IS-IR-IL-IX • 2 Flute • Inch — continued)



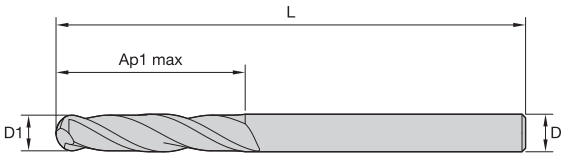


● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH0562IR075A	**—**	9/16	9/16	3/4	3	.020
2SE0562IR075A	**—**	9/16	9/16	3/4	3	—
2CH0562IL125A	**2CH0562IL125B**	9/16	9/16	1 1/4	3 1/2	.020
2SE0562IL125A	**2SE0562IL125B**	9/16	9/16	1 1/4	3 1/2	—
2CH0562IX225A	**2CH0562IX225B**	9/16	9/16	2 1/4	5	.020
2SE0562IX225A	**2SE0562IX225B**	9/16	9/16	2 1/4	5	—
2CH0625IR075A	**—**	5/8	5/8	3/4	3	.020
2SE0625IR075A	**—**	5/8	5/8	3/4	3	—
2CH0625IL125A	**2CH0625IL125B**	5/8	5/8	1 1/4	3 1/2	.020
2SE0625IL125A	**2SE0625IL125B**	5/8	5/8	1 1/4	3 1/2	—
2CH0625IX225A	**2CH0625IX225B**	5/8	5/8	2 1/4	5	.020
2SE0625IX225A	**2SE0625IX225B**	5/8	5/8	2 1/4	5	—
2CH0687IR137A	**2CH0687IR137B**	11/16	3/4	1 3/8	4	.020
2SE0687IR137A	**2SE0687IR137B**	11/16	3/4	1 3/8	4	—
2CH0750IS100A	**—**	3/4	3/4	1	3	.020
2SE0750IS100A	**—**	3/4	3/4	1	3	—
2CH0750IR150A	**—**	3/4	3/4	1 1/2	4	.020
2SE0750IR150A	**—**	3/4	3/4	1 1/2	4	—
2CH0750IR225A	**2CH0750IR225B**	3/4	3/4	2 1/4	5	.020
2SE0750IR225A	**2SE0750IR225B**	3/4	3/4	2 1/4	5	—
2CH0750IL300A	**2CH0750IL300B**	3/4	3/4	3	6	.020
2SE0750IL300A	**2SE0750IL300B**	3/4	3/4	3	6	—
2CH0750IX400A	**2CH0750IX400B**	3/4	3/4	4	7	.020
2SE0750IX400A	**2SE0750IX400B**	3/4	3/4	4	7	—
2CH0875IR150A	**2CH0875IR150B**	7/8	7/8	1 1/2	4	.020
2SE0875IR150A	**2SE0875IR150B**	7/8	7/8	1 1/2	4	—
2CH0875IL225A	**2CH0875IL225B**	7/8	7/8	2 1/4	5	.020
2SE0875IL225A	**2SE0875IL225B**	7/8	7/8	2 1/4	5	—
2CH1000IS150A	**—**	1	1	1 1/2	4	.020
2SE1000IS150A	**—**	1	1	1 1/2	4	—
2CH1000IR225A	**2CH1000IR225B**	1	1	2 1/4	5	.020
2SE1000IR225A	**2SE1000IR225B**	1	1	2 1/4	5	—
2CH1000IL300A	**2CH1000IL300B**	1	1	3	6	.020
2SE1000IL300A	**2SE1000IL300B**	1	1	3	6	—
2CH1000IX400A	**2CH1000IX400B**	1	1	4	7	.020
2SE1000IX400A	**2SE1000IX400B**	1	1	4	7	—

NOTE: For application data, please see page Q11.

• Center cutting.



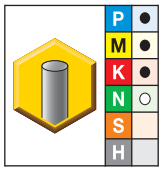




End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

2BN..IS-IR-IL-IX • 2 Flute • Ball Nose • Inch

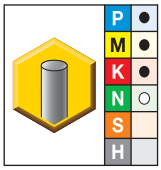


● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
2BN0031IR007A	1/32	1/8	5/64	1 1/2
2BN0047IR018A	3/64	1/8	3/16	1 1/2
2BN0063IR018A	1/16	1/8	3/16	1 1/2
2BN0094IR018A	3/32	1/8	3/16	1 1/2
2BN0094IL037A	3/32	1/8	3/8	1 1/2
2BN0109IR037A	7/64	1/8	3/8	1 1/2
2BN0125IS025A	1/8	1/8	1/4	1 1/2
2BN0125IR050A	1/8	1/8	1/2	1 1/2
2BN0125IL075A	1/8	1/8	3/4	2 1/4
2BN0125IX075A	1/8	1/8	3/4	3
2BN0156IR031A	5/32	3/16	5/16	2
2BN0156IL056A	5/32	3/16	9/16	2
2BN0187IS031A	3/16	3/16	5/16	1 1/2
2BN0187IR062A	3/16	3/16	5/8	2
2BN0187IL075A	3/16	3/16	3/4	2 1/2
2BN0187IX100A	3/16	3/16	1	4
2BN0219IR062A	7/32	1/4	5/8	2 1/2
2BN0250IS050A	1/4	1/4	1/2	2
2BN0250IR075A	1/4	1/4	3/4	2 1/2
2BN0250IR112A	1/4	1/4	1 1/8	3
2BN0250IL150A	1/4	1/4	1 1/2	4
2BN0250IX150A	1/4	1/4	1 1/2	6
2BN0312IR081A	5/16	5/16	13/16	2 1/2
2BN0312IL112A	5/16	5/16	1 1/8	3
2BN0312IX150A	5/16	5/16	1 1/2	6
2BN0375IS062A	3/8	3/8	5/8	2
2BN0375IR087A	3/8	3/8	7/8	2 1/2
2BN0375IL112A	3/8	3/8	1 1/8	3
2BN0375IX300A	3/8	3/8	3	6
2BN0406IR100A	13/32	7/16	1	2 1/2
2BN0437IR100A	7/16	7/16	1	2 1/2
2BN0500IS062A	1/2	1/2	5/8	2 1/2

(continued)

(2BN..IS-IR-IL-IX • 2 Flute • Ball Nose • Inch — continued)

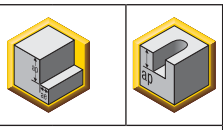


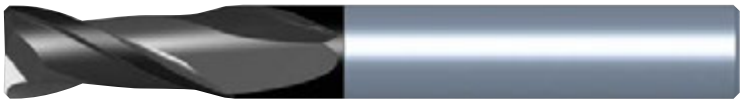
● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
2BN0500IR100A	1/2	1/2	1	3
2BN0500IX150A	1/2	1/2	1 1/2	6
2BN0500IL200A	1/2	1/2	2	4
2BN0500IX300A	1/2	1/2	3	6
2BN0625IR125A	5/8	5/8	1 1/4	3 1/2
2BN0625IL225A	5/8	5/8	2 1/4	5
2BN0625IX300A	5/8	5/8	3	6
2BN0750IS100A	3/4	3/4	1	3
2BN0750IR150A	3/4	3/4	1 1/2	4
2BN0750IL200A	3/4	3/4	2	6
2BN0750IX300A	3/4	3/4	3	6
2BN0875IR150A	7/8	7/8	1 1/2	4
2BN1000IR150A	1	1	1 1/2	4
2BN1000IL300A	1	1	3	6

NOTE: For application data, please see page Q12.

GOmill GP • 2SE/CH..IS-IR • 2 Flute • Short • Regular

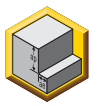




Material Group		Side Milling (A) and Slotting (B) A ap	ae	B ap	KC633M Cutting Speed — vc SFM min	–	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%. D1 — Diameter inch	1/64 .0156	1/32 .0313	1/16 .0625	5/64 .0781	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	460	–	620	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	0.5 x D	390	–	520	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	0.5 x D	300	–	490	IPT	.0001	.0002	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	0.5 x D	300	–	380	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	0.5 x D	200	–	260	IPT	.0001	.0002	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	0.5 x D	390	–	490	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	360	–	460	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	0.5 x D	820	–	3250	IPT	.0002	.0003	.0006	.0008	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0001	.0003	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0001	.0003	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

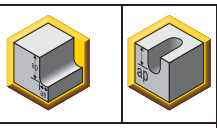
GOmill GP • 2SE/CH..IL-IX • 2 Flute • Long • Extra Long

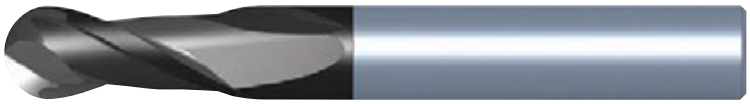



Material Group		Side Milling (A) A ap	ae	KC633M Cutting Speed — vc SFM min	–	max	Recommended feed per tooth (IPT = inch/th) for side milling (A). D1 — Diameter inch	1/16 .0156	5/64 .0781	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	490	–	660	IPT	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	490	–	660	IPT	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	460	–	620	IPT	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	390	–	520	IPT	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	300	–	490	IPT	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	300	–	380	IPT	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	200	–	260	IPT	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	390	–	490	IPT	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	360	–	460	IPT	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	820	–	3250	IPT	.0006	.0008	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	820	–	2450	IPT	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	820	–	2450	IPT	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

GOmill GP • 2BN..IS-IR • 2 Flute • Ball Nose • Short • Regular





Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.														
		A		B	Cutting Speed — vc SFM			D1 — Diameter														
		ap	ae	ap	min		max	inch	1/32 .0313	1/16 .0625	5/64 .0781	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	460	–	620	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	0.5 x D	390	–	520	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	0.5 x D	300	–	490	IPT	.0002	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	0.5 x D	300	–	380	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	0.5 x D	200	–	260	IPT	.0002	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	0.5 x D	390	–	490	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	360	–	460	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	0.5 x D	820	–	3250	IPT	.0003	.0006	.0008	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0003	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0003	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
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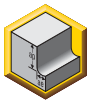
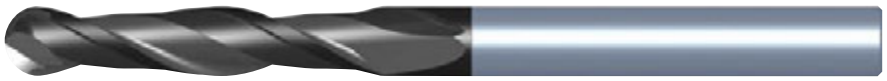
GOmill GP • 2BN..IL-IX • 2 Flute • Ball Nose • Long • Extra Long

Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A).									
		A		Cutting Speed — vc SFM			D1 — Diameter									
		ap	ae	min		max	inch	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	460	–	620	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	390	–	520	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	300	–	490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	300	–	380	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	200	–	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	390	–	490	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	360	–	460	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	820	–	3250	IPT	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



GOmill™ GP General Purpose Solid Carbide End Mills · 3 Flute

Primary Application

GOmill GP system offers plunging, slotting, and profiling with long tool life on a wide range of materials. Designed to provide high Metal Removal Rates (MRR) and to achieve good surface conditions at excellent cost-benefit ratio. A wide range of diameters and lengths with sharp edge are available from stock.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for long tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and enables higher flexibility and lower reconditioning cost.
- 3-flute design for maximum manufacturing flexibility.

Tailored Grade

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless steel (wet).

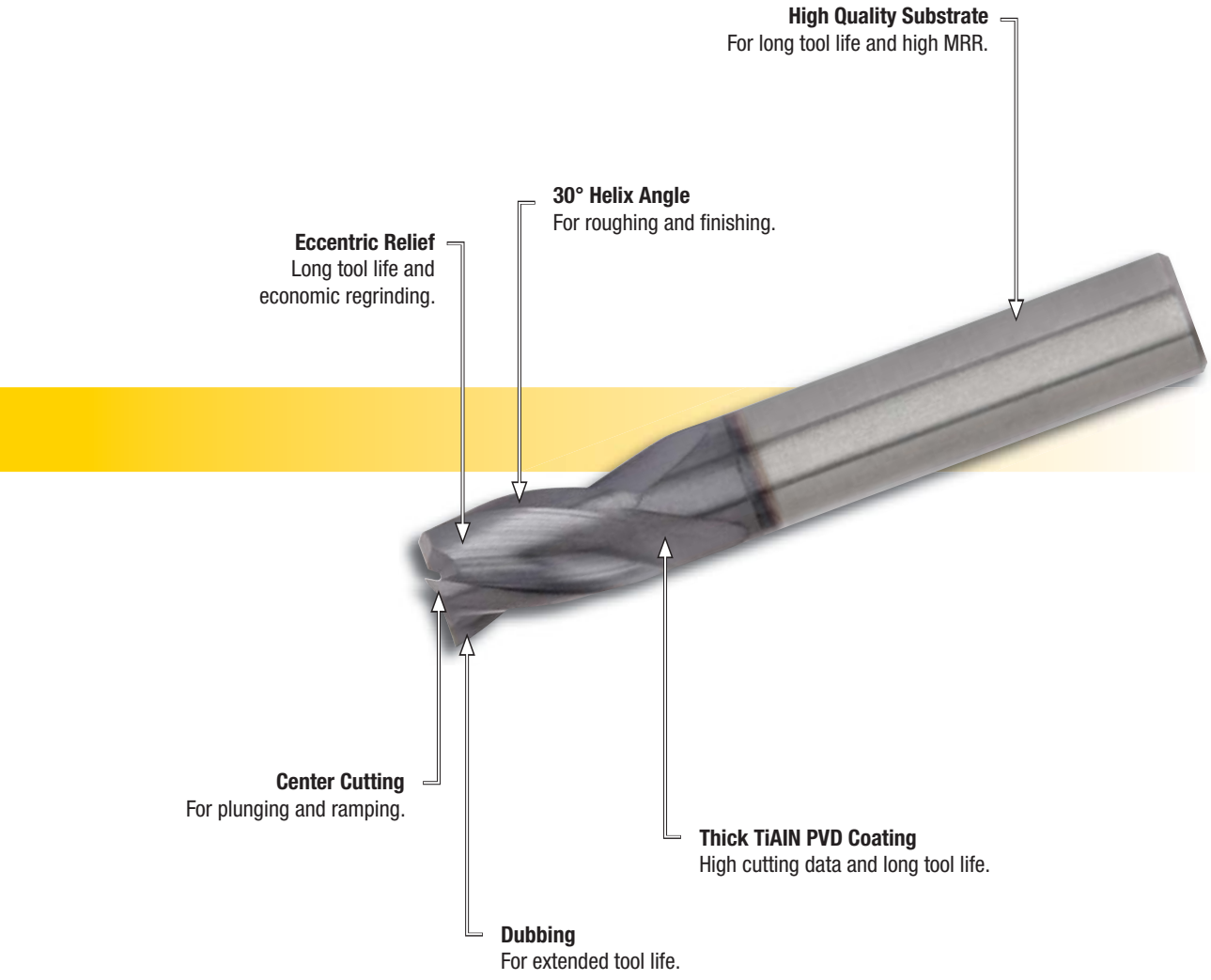
Customization

- Intermediate diameters available.

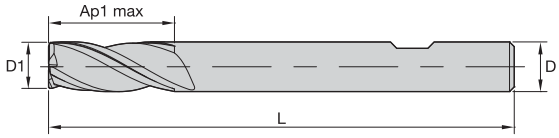
Extensive Standard Offering

- Diameter range 1/32–1".
- Sharp edge as standard offering.
- Four different lengths as factory standards in stock.

Designed for roughing and finishing with one tool at an economical price.



- Center cutting.

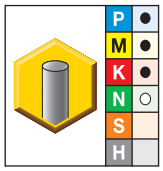


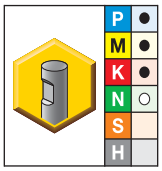


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

3SE..IS-IR-IL-IX • 3 Flute • Inch



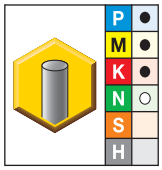


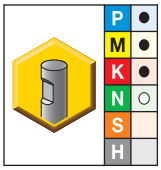
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L
3SE0031IR007A	–	1/32	1/8	5/64	1 1/2
3SE0047IR011A	–	3/64	1/8	7/64	1 1/2
3SE0062IR019A	–	1/16	1/8	3/16	1 1/2
3SE0078IR011A	–	5/64	1/8	7/64	1 1/2
3SE0094IR037A	–	3/32	1/8	3/8	1 1/2
3SE0109IR037A	–	7/64	1/8	3/8	1 1/2
3SE0125IR025A	–	1/8	1/8	1/4	1 1/2
3SE0125IL050A	–	1/8	1/8	1/2	2 1/2
3SE0125IX062A	–	1/8	1/8	5/8	3
3SE0156IR056A	–	5/32	3/16	9/16	2
3SE0188IS031A	–	3/16	3/16	5/16	2
3SE0188IR056A	–	3/16	3/16	9/16	2
3SE0188IL062A	–	3/16	3/16	5/8	3
3SE0188IX100A	–	3/16	3/16	1	4
3SE0219IR062A	–	7/32	1/4	5/8	2 1/2
3SE0219IL075A	–	7/32	1/4	3/4	2 1/2
3SE0250IS050A	–	1/4	1/4	1/2	2
3SE0250IR075A	–	1/4	1/4	3/4	2 1/2
3SE0250IL100A	–	1/4	1/4	1	3
3SE0250IX150A	–	1/4	1/4	1 1/2	4
3SE0281IR075A	–	9/32	5/16	3/4	2 1/2
3SE0281IL081A	–	9/32	5/16	13/16	2 1/2
3SE0312IR050A	–	5/16	5/16	1/2	2
3SE0312IL081A	–	5/16	5/16	13/16	2 1/2
3SE0375IS050A	–	3/8	3/8	1/2	2
3SE0375IR088A	–	3/8	3/8	7/8	2 1/2
3SE0375IL100A	–	3/8	3/8	1	2 1/2
3SE0375IX112A	–	3/8	3/8	1 1/8	3
3SE0437IR062A	–	7/16	7/16	5/8	2 1/2
3SE0437IL088A	–	7/16	7/16	7/8	2 1/2
3SE0437IX100A	–	7/16	7/16	1	2 1/2
3SE0500IR100A	–	1/2	1/2	1	3

(continued)

(3SE..IS-IR-IL-IX • 3 Flute • Inch — continued)



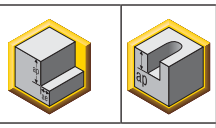


● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L
3SE0500IL200A	**–**	1/2	1/2	2	4
3SE0563IR112A	**3SE0563IR112B**	9/16	5/8	1 1/8	3 1/2
3SE0625IR075A	**3SE0625IR075B**	5/8	5/8	3/4	3
3SE0625IL125A	**3SE0625IL125B**	5/8	5/8	1 1/4	3 1/2
3SE0750IR100A	**–**	3/4	3/4	1	3
3SE0750IL150A	**3SE0750IL150B**	3/4	3/4	1 1/2	4
3SE0750IX225A	**3SE0750IX225B**	3/4	3/4	2 1/4	5
3SE1000IR150A	**–**	1	1	1 1/2	4
3SE1000IX225A	**3SE1000IX225B**	1	1	2 1/4	5

NOTE: For application data, please see pages Q18–Q19.

GOmill • 3SE..IS-IR • 3 Flute • Short • Regular





Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.													
		A		B	Cutting Speed — vc SFM				D1 — Diameter												
								frac.	1/32	1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	ap	min		max	dec.	.0313	.0625	.0781	.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0005	.0006	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0005	.0006	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	0.5 x D	460	–	620	IPT	.0002	.0005	.0006	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	2.0 x D	0.1 x D	0.5 x D	390	–	520	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	2.0 x D	0.1 x D	0.5 x D	300	–	490	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0014	.0017	.0020	.0026	.0030	.0034	.0039
M	1	2.0 x D	0.1 x D	0.5 x D	300	–	380	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	2.0 x D	0.1 x D	0.5 x D	200	–	260	IPT	.0002	.0003	.0004	.0005	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	2.0 x D	0.1 x D	0.5 x D	390	–	490	IPT	.0002	.0005	.0006	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	0.5 x D	360	–	460	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	2.0 x D	0.1 x D	0.5 x D	820	–	3250	IPT	.0003	.0007	.0008	.0010	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	2.0 x D	0.1 x D	0.5 x D	820	–	3250	IPT	.0003	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	2.0 x D	0.1 x D	0.5 x D	820	–	3250	IPT	.0003	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

GOmill • 3SE..IL-IX • 3 Flute • Long • Extra Long



Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A).								
		A		Cutting Speed — vc SFM				D1 — Diameter							
							frac.	1/8	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1
		ap	ae	min		max	dec.	.1250	.1563	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
P	0	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	2.0 x D	0.1 x D	490	–	660	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	460	–	620	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	2.0 x D	0.1 x D	390	–	520	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	2.0 x D	0.1 x D	300	–	490	IPT	.0007	.0008	.0014	.0017	.0020	.0026	.0030	.0034	.0039
M	1	2.0 x D	0.1 x D	300	–	380	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	2.0 x D	0.1 x D	200	–	260	IPT	.0006	.0007	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	2.0 x D	0.1 x D	390	–	490	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	360	–	460	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	2.0 x D	0.1 x D	820	–	3250	IPT	.0013	.0016	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	2.0 x D	0.1 x D	820	–	2450	IPT	.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	2.0 x D	0.1 x D	820	–	2450	IPT	.0011	.0014	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

GOmill™ GP General Purpose Solid Carbide End Mills · 4 Flute

Primary Application

GOmill GP system offers plunging, slotting, and profiling with long tool life in a wide range of workpiece materials. These end mills are designed to provide high Metal Removal Rates (MRR) and to achieve good surface quality at an excellent cost-benefit ratio. A wide range of diameters and lengths are available with chamfered edge and ball nose as stocked standard.

- Roughing and finishing with one tool.
- Excellent cost-benefit ratio.
- Multilayer KC633M™ grades for long tool life.



Features and Benefits

Advanced Technology

- Roughing and finishing with one tool reduces tool changes and unnecessary tooling inventory.
- Eccentric relief increases edge stability for longer tool life and better surface quality.
- Eccentric relief eases regrinding and reduces reconditioning cost.
- 4-flute design for high MRR and reduced machining time.

Tailored Grades

- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless steel (wet).

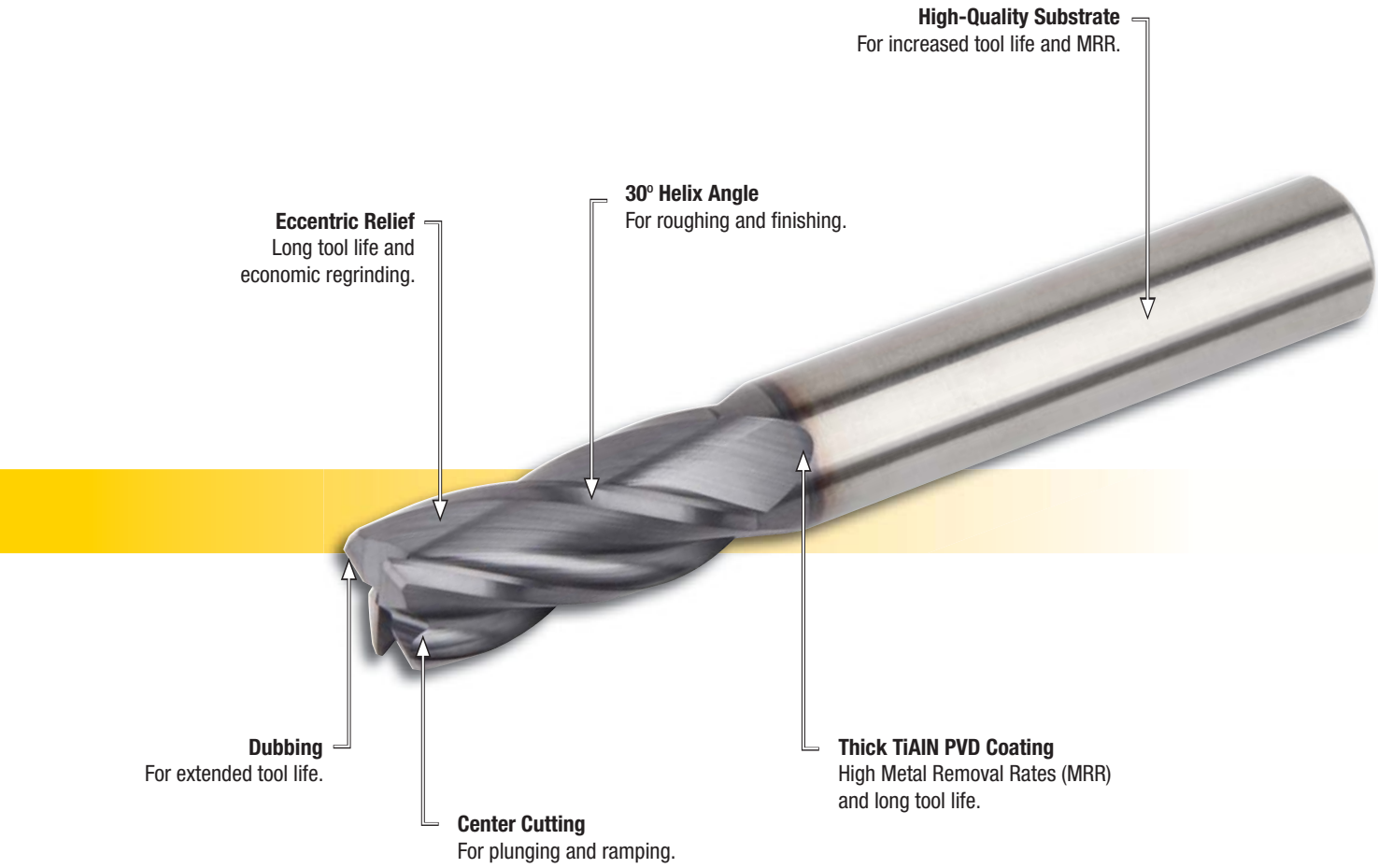
Customization

- Intermediate diameters available.

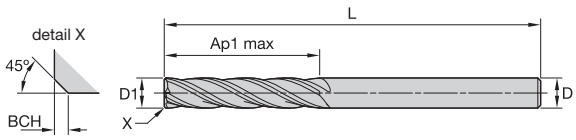
Extensive Standard Offering

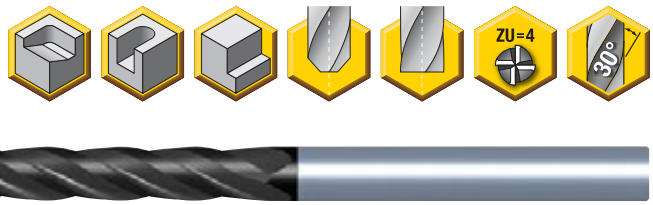
- Diameter range 1/64–1".
- Sharp edge, chamfer edge, and ball nose as standard offering.

Designed for roughing and finishing with one tool at a value price.



- Center cutting.

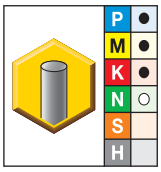


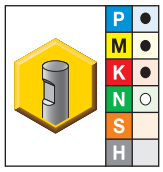


End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

4SE-4CH..IS-IR-IL-IX • 4 Flute • Inch



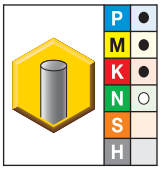


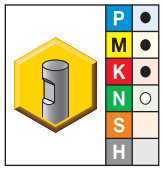
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4SE0015IR003A	–	1/64	1/8	1/32	1 1/2	–
4SE0031IR008A	–	1/32	1/8	5/64	1 1/2	–
4SE0062IR010A	–	1/16	1/8	7/64	1 1/2	–
4SE0078IR018A	–	5/64	1/8	3/16	1 1/2	–
4SE0093IR037A	–	3/32	1/8	3/8	1 1/2	–
4SE0093IL062A	–	3/32	1/8	5/8	2	–
4SE0109IR037A	–	7/64	1/8	3/8	1 1/2	–
4CH0125IS025A	–	1/8	1/8	1/4	1 1/2	.010
4SE0125IS025A	–	1/8	1/8	1/4	1 1/2	–
4CH0125IR050A	–	1/8	1/8	1/2	1 1/2	.010
4SE0125IR050A	–	1/8	1/8	1/2	1 1/2	–
4CH0125IL075A	–	1/8	1/8	3/4	2 1/4	.010
4SE0125IL075A	–	1/8	1/8	3/4	2 1/4	–
4CH0125IX100A	–	1/8	1/8	1	3	.010
4SE0125IX100A	–	1/8	1/8	1	3	–
4CH0140IR056A	–	9/64	3/16	9/16	2	.010
4SE0140IR056A	–	9/64	3/16	9/16	2	–
4CH0156IR056A	–	5/32	3/16	9/16	2	.010
4SE0156IR056A	–	5/32	3/16	9/16	2	–
4CH0187IR062A	–	3/16	3/16	5/8	2	.010
4SE0187IR062A	–	3/16	3/16	5/8	2	–
4CH0187IS075A	–	3/16	3/16	3/4	1 1/2	.010
4SE0187IS075A	–	3/16	3/16	3/4	1 1/2	–
4CH0187IL075A	–	3/16	3/16	3/4	2 1/2	.010
4SE0187IL075A	–	3/16	3/16	3/4	2 1/2	–
4CH0187IX112A	–	3/16	3/16	1 1/8	3	.010
4SE0187IX112A	–	3/16	3/16	1 1/8	3	–
4CH0203IR062A	–	13/64	1/4	5/8	2 1/2	.016
4SE0203IR062A	–	13/64	1/4	5/8	2 1/2	–
4CH0218IR043A	–	7/32	1/4	7/16	2	.016
4SE0218IR043A	–	7/32	1/4	7/16	2	–
4CH0218IL062A	–	7/32	1/4	5/8	2 1/2	.016

(continued)

(4SE-4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



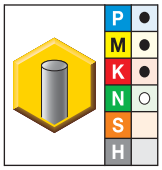


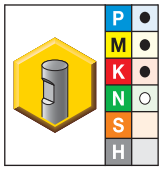
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4SE0218IL062A	–	7/32	1/4	5/8	2 1/2	–
4CH0234IR075A	–	15/64	1/4	3/4	2 1/2	.016
4SE0234IR075A	–	15/64	1/4	3/4	2 1/2	–
4CH0250IS050A	–	1/4	1/4	1/2	2	.016
4SE0250IS050A	–	1/4	1/4	1/2	2	–
4CH0250IR075A	–	1/4	1/4	3/4	2 1/2	.016
4SE0250IR075A	–	1/4	1/4	3/4	2 1/2	–
4CH0250IL112A	–	1/4	1/4	1 1/8	3	.016
4SE0250IL112A	–	1/4	1/4	1 1/8	3	–
4CH0250IX150A	–	1/4	1/4	1 1/2	4	.016
4SE0250IX150A	–	1/4	1/4	1 1/2	4	–
4CH0265IR075A	–	17/64	5/16	3/4	2 1/2	.016
4SE0265IR075A	–	17/64	5/16	3/4	2 1/2	–
4CH0281IR075A	–	9/32	5/16	3/4	2 1/2	.016
4SE0281IR075A	–	9/32	5/16	3/4	2 1/2	–
4CH0296IR081A	–	19/64	5/16	13/16	2 1/2	.016
4SE0296IR081A	–	19/64	5/16	13/16	2 1/2	–
4CH0312IS050A	–	5/16	5/16	1/2	2	.016
4SE0312IS050A	–	5/16	5/16	1/2	2	–
4CH0312IR081A	–	5/16	5/16	13/16	2 1/2	.016
4SE0312IR081A	–	5/16	5/16	13/16	2 1/2	–
4CH0312IL112A	–	5/16	5/16	1 1/8	3	.016
4SE0312IL112A	–	5/16	5/16	1 1/8	3	–
4CH0312IX162A	–	5/16	5/16	1 5/8	4	.016
4SE0312IX162A	–	5/16	5/16	1 5/8	4	–
4CH0328IR100A	–	21/64	3/8	1	2 1/2	.020
4SE0328IR100A	–	21/64	3/8	1	2 1/2	–
4CH0343IR100A	–	11/32	3/8	1	2 1/2	.020
4SE0343IR100A	–	11/32	3/8	1	2 1/2	–
4CH0359IR100A	–	23/64	3/8	1	2 1/2	.020
4SE0359IR100A	–	23/64	3/8	1	2 1/2	–
4CH0375IS062A	–	3/8	3/8	5/8	2	.020
4SE0375IS062A	–	3/8	3/8	5/8	2	–
4CH0375IR100A	–	3/8	3/8	1	2 1/2	.020
4SE0375IR100A	–	3/8	3/8	1	2 1/2	–
4CH0375IL112A	–	3/8	3/8	1 1/8	3	.020
4SE0375IL112A	–	3/8	3/8	1 1/8	3	–
4CH0375IX175A	–	3/8	3/8	1 3/4	4	.020
4SE0375IX175A	–	3/8	3/8	1 3/4	4	–
4CH0390IR100A	–	25/64	7/16	1	2 3/4	.020
4SE0390IR100A	–	25/64	7/16	1	2 3/4	–
4CH0406IR100A	–	13/32	7/16	1	2 3/4	.020
4SE0406IR100A	–	13/32	7/16	1	2 3/4	–
4CH0421IR100A	–	27/64	7/16	1	2 3/4	.020
4SE0421IR100A	–	27/64	7/16	1	2 3/4	–
4CH0437IS100A	–	7/16	7/16	1	2 1/2	.020
4SE0437IS100A	–	7/16	7/16	1	2 1/2	–
4CH0437IR100A	–	7/16	7/16	1	2 3/4	.020
4SE0437IR100A	–	7/16	7/16	1	2 3/4	–
4CH0437IL200A	–	7/16	7/16	2	4	.020
4SE0437IL200A	–	7/16	7/16	2	4	–
4CH0437IX300A	–	7/16	7/16	3	6	.020

(continued)

(4SE-4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



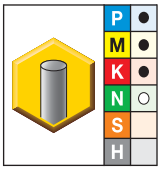


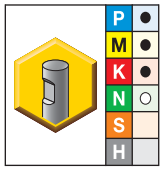
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4SE0437IX300A	–	7/16	7/16	3	6	–
4CH0453IR100A	–	29/64	1/2	1	3	.020
4SE0453IR100A	–	29/64	1/2	1	3	–
4CH0468IR100A	–	15/32	1/2	1	3	.020
4SE0468IR100A	–	15/32	1/2	1	3	–
4CH0484IR100A	–	31/64	1/2	1	3	.020
4SE0484IR100A	–	31/64	1/2	1	3	–
4CH0500IS062A	–	1/2	1/2	5/8	2 1/2	.020
4SE0500IS062A	–	1/2	1/2	5/8	2 1/2	–
4CH0500IR100A	4CH0500IR100B	1/2	1/2	1	3	.020
4SE0500IR100A	4SE0500IR100B	1/2	1/2	1	3	–
4CH0500IL200A	4CH0500IL200B	1/2	1/2	2	4	.020
4SE0500IL200A	4SE0500IL200B	1/2	1/2	2	4	–
4CH0500IX300A	–	1/2	1/2	3	6	.020
4SE0500IX300A	–	1/2	1/2	3	6	–
4CH0562IR075A	–	9/16	9/16	3/4	3	.020
4SE0562IR075A	–	9/16	9/16	3/4	3	–
4CH0562IL125A	4CH0562IL125B	9/16	9/16	1 1/4	3 1/2	.020
4SE0562IL125A	4SE0562IL125B	9/16	9/16	1 1/4	3 1/2	–
4CH0562IX225A	–	9/16	9/16	2 1/4	5	.020
4SE0562IX225A	–	9/16	9/16	2 1/4	5	–
4CH0625IS075A	–	5/8	5/8	3/4	3	.020
4SE0625IS075A	–	5/8	5/8	3/4	3	–
4CH0625IR125A	4CH0625IR125B	5/8	5/8	1 1/4	3 1/2	.020
4SE0625IR125A	4SE0625IR125B	5/8	5/8	1 1/4	3 1/2	–
4CH0625IL225A	4CH0625IL225B	5/8	5/8	2 1/4	5	.020
4SE0625IL225A	4SE0625IL225B	5/8	5/8	2 1/4	5	–
4CH0625IX400A	–	5/8	5/8	4	7	.020
4SE0625IX400A	–	5/8	5/8	4	7	–
4CH0687IR137A	–	11/16	3/4	1 3/8	4	.020
4SE0687IR137A	–	11/16	3/4	1 3/8	4	–
4SE0750IS100A	–	3/4	3/4	1	3	–
4CH0750IR150A	4CH0750IR150B	3/4	3/4	1 1/2	4	.020
4SE0750IR150A	4SE0750IR150B	3/4	3/4	1 1/2	4	–
4CH0750IR225A	4CH0750IR225B	3/4	3/4	2 1/4	5	.020
4SE0750IR225A	4SE0750IR225B	3/4	3/4	2 1/4	5	–
4CH0750IL300A	4CH0750IL300B	3/4	3/4	3	6	.020
4SE0750IL300A	4SE0750IL300B	3/4	3/4	3	6	–
4CH0750IX400A	–	3/4	3/4	4	7	.020
4SE0750IX400A	–	3/4	3/4	4	7	–

(continued)

(4SE-4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



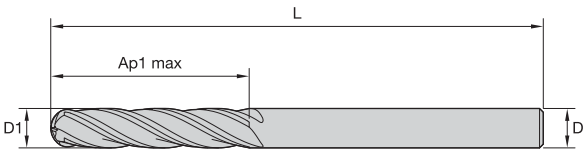


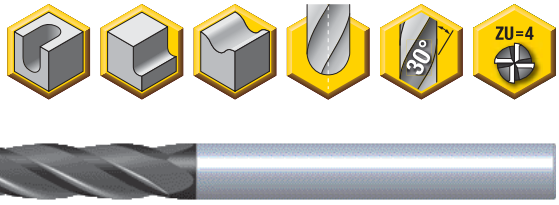
● first choice
○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH0875IR150A	**4CH0875IR150B**	7/8	7/8	1 1/2	4	.020
4SE0875IR150A	**4SE0875IR150B**	7/8	7/8	1 1/2	4	–
4CH0875IL225A	**4CH0875IL225B**	7/8	7/8	2 1/4	5	.020
4SE0875IL225A	**4SE0875IL225B**	7/8	7/8	2 1/4	5	–
4CH1000IS150A	**–**	1	–	1 1/2	4	.020
4CH1000IR225A	**4CH1000IR225B**	1	–	2 1/4	5	.020
4CH1000IL300A	**4CH1000IL300B**	1	–	3	6	.020
4CH1000IX400A	**–**	1	–	4	7	.020
4SE1000IS150A	**–**	1	1	1 1/2	4	–
4SE1000IR225A	**4SE1000IR225B**	1	1	2 1/4	5	–
4SE1000IL300A	**4SE1000IL300B**	1	1	3	6	–
4SE1000IX400A	**–**	1	1	4	7	–

NOTE: For application data, please see page Q28.

- Center cutting.

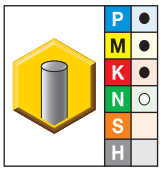




End Mill Tolerances

D1	tolerance	D	tolerance h6
All	+.000/- .002"	≤1/8"	+0/-.00024"
		>1/8–1/4"	+0/-.00031"
		>1/4–3/8"	+0/-.00035"
		>3/8–23/32"	+0/-.00043"
		>23/32–1 3/16"	+0/-.00051"

4BN..IS-IR-IL-IX • 4 Flute • Ball Nose • Inch

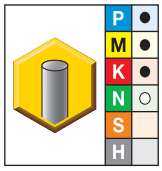


● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
4BN0031IR008A	1/32	1/8	5/64	1 1/2
4BN0047IR012A	3/64	1/8	1/8	1 1/2
4BN0062IR019A	1/16	1/8	3/16	1 1/2
4BN0078IR019A	5/64	1/8	3/16	1 1/2
4BN0094IR019A	3/32	1/8	3/16	1 1/2
4BN0094IL037A	3/32	1/8	3/8	1 1/2
4BN0109IR037A	7/64	1/8	3/8	1 1/2
4BN0125IS025A	1/8	1/8	1/4	1 1/2
4BN0125IR050A	1/8	1/8	1/2	1 1/2
4BN0125IL075A	1/8	1/8	3/4	2 1/4
4BN0125IX075A	1/8	1/8	3/4	3
4BN0141IR056A	9/64	3/16	9/16	2
4BN0156IR056A	5/32	3/16	9/16	2
4BN0172IR062A	11/64	3/16	5/8	2
4BN0187IR031A	3/16	3/16	5/16	1 1/2
4BN0187IL062A	3/16	3/16	5/8	2
4BN0187IX100A	3/16	3/16	1	4
4BN0203IR062A	13/64	1/4	5/8	2 1/2
4BN0219IR062A	7/32	1/4	5/8	2 1/2
4BN0234IR075A	15/64	1/4	3/4	2 1/2
4BN0250IS050A	1/4	1/4	1/2	2
4BN0250IR075A	1/4	1/4	3/4	2 1/2
4BN0250IR112A	1/4	1/4	1 1/8	3
4BN0250IL150A	1/4	1/4	1 1/2	4
4BN0250IX150A	1/4	1/4	1 1/2	6
4BN0281IR075A	9/32	5/16	3/4	2 1/2
4BN0312IS050A	5/16	5/16	1/2	2
4BN0312IR081A	5/16	5/16	13/16	2 1/2
4BN0312IL112A	5/16	5/16	1 1/8	3
4BN0312IX162A	5/16	5/16	1 5/8	4
4BN0344IR100A	11/32	3/8	1	2 1/2
4BN0375IS100A	3/8	3/8	1	2 1/2

(continued)

(4BN..IS-IR-IL-IX • 4 Flute • Ball Nose • Inch — continued)

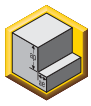


● first choice
○ alternate choice

KC633M	D1	D	length of cut Ap1 max	length L
4BN0375IL112A	3/8	3/8	1 1/8	3
4BN0375IR100A	3/8	3/8	1	4
4BN0375IX150A	3/8	3/8	1 1/2	6
4BN0437IR100A	7/16	1/2	1	2 1/2
4BN0500IS100A	1/2	1/2	1	3
4BN0500IR100A	1/2	1/2	1	4
4BN0500IX150A	1/2	1/2	1 1/2	6
4BN0500IR200A	1/2	1/2	2	4
4BN0500IL200A	1/2	1/2	2	4 1/2
4BN0500IX300A	1/2	1/2	3	6
4BN0562IR125A	9/16	9/16	1 1/4	3 1/2
4BN0625IR125A	5/8	5/8	1 1/4	3 1/2
4BN0625IL225A	5/8	5/8	2 1/4	5
4BN0750IR150A	3/4	3/4	1 1/2	4
4BN0750IL300A	3/4	3/4	3	6
4BN0875IR150A	7/8	7/8	1 1/2	4
4BN1000IR150A	1	1	1 1/2	4
4BN1000IL225A	1	1	2 1/4	5

NOTE: For application data, please see page Q29.

GOmill GP • 4SE/CH..IS-IR • 4 Flute • Short • Regular

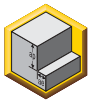




Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.															
		A		B	Cutting Speed — vc SFM			D1 — Diameter															
		ap	ae	ap	min		max	inch	1/64 .0156	1/32 .0313	1/16 .0625	5/64 .0781	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	460	–	620	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	0.5 x D	390	–	520	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	0.5 x D	300	–	490	IPT	.0001	.0002	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	0.5 x D	300	–	380	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	0.5 x D	200	–	260	IPT	.0001	.0002	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	0.5 x D	390	–	490	IPT	.0001	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	360	–	460	IPT	.0001	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	0.5 x D	300	–	380	IPT	.0002	.0003	.0006	.0008	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	0.5 x D	200	–	260	IPT	.0001	.0003	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	0.5 x D	390	–	490	IPT	.0001	.0003	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

GOmill GP • 4SE/CH..IL-IX • 4 Flute • Long • Extra Long




Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A).									
		A		Cutting Speed — vc SFM			D1 — Diameter									
		ap	ae	min		max	inch	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	460	–	620	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	390	–	520	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	300	–	490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	300	–	380	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	200	–	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	390	–	490	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	360	–	460	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	820	–	3250	IPT	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

GOmill GP • 4BN..IS-IR • 4 Flute • Ball Nose • Short • Regular



Material Group		Side Milling (A) and Slotting (B)			KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.														
		A		B	Cutting Speed — vc SFM			D1 — Diameter														
		ap	ae	ap	min		max	inch	1/32 .0313	1/16 .0625	5/64 .0781	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	0.5 x D	490	–	660	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	460	–	620	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	0.5 x D	390	–	520	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	0.5 x D	300	–	490	IPT	.0002	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	0.5 x D	300	–	380	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	0.5 x D	200	–	260	IPT	.0002	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	0.5 x D	390	–	490	IPT	.0002	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	0.5 x D	360	–	460	IPT	.0002	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	0.5 x D	820	–	3250	IPT	.0003	.0006	.0008	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0003	.0005	.0006	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	0.5 x D	820	–	2450	IPT	.0003	.0006	.0007	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

GOmill GP • 4BN..IL-IX • 4 Flute • Ball Nose • Long • Extra Long

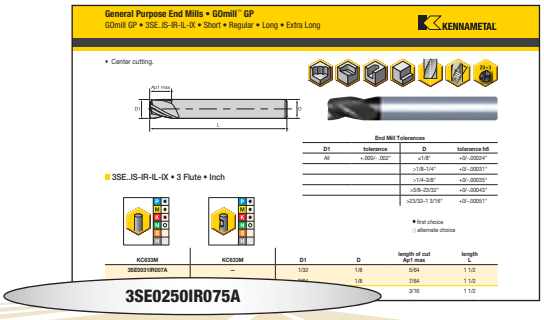


Material Group		Side Milling (A)		KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A).									
		A		Cutting Speed — vc SFM			D1 — Diameter									
		ap	ae	min		max	inch	3/32 .0938	1/8 .1250	3/16 .1875	1/4 .2500	5/16 .3125	3/8 .3750	1/2 .5000	5/8 .6250	3/4 .7500	1 1.0000
P	0	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	1	Ap1 max	0.1 x D	490	–	660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	460	–	620	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	3	Ap1 max	0.1 x D	390	–	520	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	Ap1 max	0.1 x D	300	–	490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
M	1	Ap1 max	0.1 x D	300	–	380	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	Ap1 max	0.1 x D	200	–	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	Ap1 max	0.1 x D	390	–	490	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049
	2	Ap1 max	0.1 x D	360	–	460	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	Ap1 max	0.1 x D	820	–	3250	IPT	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	Ap1 max	0.1 x D	820	–	2450	IPT	.0008	.0011	.0017	.0023	.0028	.0034	.0045	.0056	.0068	.0090

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



3	SE	0250	IR	075	A
Number of Flutes	End Mill Shape	Cutting Diameter inch	Standard	Ap1 max inch	Shank Style
2 = 2 Flute **3** = 3 Flute **4** = 4 Flute	**CH** = Chamfer Edge **BN** = Ball Nose **SE** = Sharp Edge		**IS** = Factory Standard Short **IR** = Factory Standard Regular **IL** = Factory Standard Long **IX** = Factory Standard Extra Long		**A** = Plain Shank **B** = Weldon® Shank

Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1115547	HEC328S4	KC610M	6086587	4SE0328IR100A	KC633M
1115548	HEC875S4	KC610M	6086520	4SE0875IR150A	KC633M
1115565	BNEC031S2	KC610M	5876721	2BN0031IR007A	KC633M
1115567	BNEC875S2	KC610M	5876774	2BN0875IR150A	KC633M
1115568	BNEC250S2113	KC610M	5876750	2BN0250IR112A	KC633M
1115569	BNEC312S2113	KC610M	5876754	2BN0312IL112A	KC633M
1115570	BNEC375S2113	KC610M	5876758	2BN0375IL112A	KC633M
1115582	BNEC016S4	KC610M	no replacement	no replacement	no replacement
1115583	BNEC047S4	KC610M	5824030	4BN0047IR012A	KC633M
1115584	BNEC172S4	KC610M	5824512	4BN0172IR062A	KC633M
1115587	BNEC375S4113	KC610M	5824532	4BN0375IL112A	KC633M
1115588	BNEC125S4300	KC610M	no replacement	no replacement	no replacement
1115589	HEC062S2013	KC610M	6086330	2SE0062IR012A	KC633M
1115591	HEC250S2050	KC610M	6086399	2SE0250IS050A	KC633M
1115592	HEC312S2050	KC610M	6086404	2SE0312IS050A	KC633M
1115593	HEC375S2063	KC610M	6086409	2SE0375IS062A	KC633M
1115594	HEC438S2063	KC610M	6086414	2SE0437IR062A	KC633M
1115595	HEC500S2063	KC610M	6086418	2SE0500IS062A	KC633M
1115596	HEC750S2100	KC610M	6086449	2SE0750IS100A	KC633M
1115597	HEC062S4013	KC610M	no replacement	no replacement	no replacement
1115597	HEC062S4013	KC610M	5824318	4CH0062IR011A	KC633M
1115598	HEC125S4025	KC610M	6086561	4SE0125IS025A	KC633M
1115599	HEC156S4031	KC610M	6086567	4SE0156IR056A	KC633M
1115599	HEC156S4031	KC610M	no replacement	no replacement	no replacement
1115601	HEC250S4050	KC610M	6086576	4SE0250IS050A	KC633M
1115602	HEC500S4063	KC610M	6086333	4SE0500IS062A	KC633M
1115603	HEC750S4100	KC610M	6086515	4SE0750IS100A	KC633M
1115616	HEC2MS2	KC610M	5873010	2CH0200MR006A	KC633M
1115617	HEC3MS2	KC610M	no replacement	no replacement	no replacement
1115618	HEC4MS2	KC610M	no replacement	no replacement	no replacement
1115619	HEC5MS2	KC610M	no replacement	no replacement	no replacement
1115620	HEC6MS2	KC610M	no replacement	no replacement	no replacement
1115621	HEC7MS2	KC610M	5873028	2CH0700MR020A	KC633M
1115622	HEC8MS2	KC610M	5873029	2CH0800MR020A	KC633M
1115624	HEC10MS2	KC610M	no replacement	no replacement	no replacement
1115624	HEC10MS2	KC610M	no replacement	no replacement	no replacement
1115626	HEC12MS2	KC610M	no replacement	no replacement	no replacement
1115632	HEC25MS2	KC610M	no replacement	no replacement	no replacement
1115633	HEC35MS2	KC610M	5873015	2CH0350MR012A	KC633M
1115635	HEC45MS2	KC610M	no replacement	no replacement	no replacement
1115638	HEC100S2	KC610M	6086456	2SE1000IS150A	KC633M
1115640	HEC125S2	KC610M	6086388	2SE0125IL050A	KC633M
1115642	HEC156S2	KC610M	6086392	2SE0156IL056A	KC633M
1115644	HEC188S2	KC610M	6086394	2SE0187IR062A	KC633M
1115645	HEC219S2	KC610M	6086398	2SE0218IL062A	KC633M
1115646	HEC062S2	KC610M	6086329	2SE0062IL018A	KC633M
1115647	HEC250S2	KC610M	6086400	2SE0250IR075A	KC633M
1115649	HEC281S2	KC610M	6086403	2SE0281IR075A	KC633M
1115651	HEC016S2	KC610M	6086327	2SE0016IR003A	KC633M
1115652	HEC312S2	KC610M	6086405	2SE0312IR081A	KC633M
1115653	HEC047S2	KC610M	no replacement	no replacement	no replacement
1115653	HEC047S2	KC610M	no replacement	no replacement	no replacement
1115654	HEC266S2	KC610M	no replacement	no replacement	no replacement
1115655	HEC375S2	KC610M	6086410	2SE0375IR100A	KC633M
1115656	HEC328S2	KC610M	no replacement	no replacement	no replacement
1115657	HEC344S2	KC610M	6086408	2SE0343IR100A	KC633M
1115658	HEC438S2	KC610M	6086415	2SE0437IL100A	KC633M
1115661	HEC500S2	KC610M	6086419	2SE0500IR100A	KC633M
1115662	HEC469S2	KC610M	6086417	2SE0468IR100A	KC633M
1115665	HEC625S2	KC610M	6086446	2SE0625IL125A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1115666	HEC688S2	KC610M	6086448	2SE0687IR137A	KC633M
1115667	HEC750S2	KC610M	6086450	2SE0750IR150A	KC633M
1115668	HEC094S2	KC610M	6086384	2SE0093IL037A	KC633M
1115669	HEC203S3	KC610M	no replacement	no replacement	no replacement
1115672	HEC016S4	KC610M	6086553	4SE0015IR003A	KC633M
1115673	HEC031S4	KC610M	5824317	4CH0031IR008A	KC633M
1115673	HEC031S4	KC610M	5824317	4CH0031IR008A	KC633M
1115674	HEC344S4	KC610M	6086588	4SE0343IR100A	KC633M
1115675	HEC360S4	KC610M	6086589	4SE0359IR100A	KC633M
1115678	HEC484S4	KC610M	6086603	4SE0484IR100A	KC633M
1115679	HEC125S2100	KC610M	no replacement	no replacement	no replacement
1115680	HEC125S2075	KC610M	6086389	2SE0125IX075A	KC633M
1115681	HEC125S4075	KC610M	6086563	4SE0125IL075A	KC633M
1115689	HEC100S3	KC610M	6143979	3SE1000IR150A	KC633M
1115691	HEC125S3	KC610M	6143910	3SE0125IL050A	KC633M
1115693	HEC156S3	KC610M	6143943	3SE0156IR056A	KC633M
1115694	HEC188S3	KC610M	6143945	3SE0188IR056A	KC633M
1115695	HEC219S3	KC610M	6143949	3SE0219IR062A	KC633M
1115696	HEC062S3	KC610M	6143905	3SE0062IR019A	KC633M
1115697	HEC250S3	KC610M	6143952	3SE0250IR075A	KC633M
1115698	HEC281S3	KC610M	6143955	3SE0281IR075A	KC633M
1115699	HEC312S3	KC610M	6143958	3SE0312IL081A	KC633M
1115701	HEC375S3	KC610M	6143964	3SE0375IL100A	KC633M
1115702	HEC438S3	KC610M	6143969	3SE0437IX100A	KC633M
1115705	HEC500S3	KC610M	6143970	3SE0500IR100A	KC633M
1115707	HEC625S3	KC610M	6143975	3SE0625IL125A	KC633M
1115710	HEC750S3	KC610M	6143977	3SE0750IL150A	KC633M
1115711	HEC094S3	KC610M	6143907	3SE0094IR037A	KC633M
1115714	HEC2MS4	KC610M	5824218	4CH0200MR006A	KC633M
1115715	HEC3MS4	KC610M	no replacement	no replacement	no replacement
1115716	HEC4MS4	KC610M	no replacement	no replacement	no replacement
1115717	HEC5MS4	KC610M	no replacement	no replacement	no replacement
1115718	HEC6MS4	KC610M	no replacement	no replacement	no replacement
1115719	HEC7MS4	KC610M	no replacement	no replacement	no replacement
1115720	HEC8MS4	KC610M	5824229	4CH0800MR020A	KC633M
1115721	HEC9MS4	KC610M	no replacement	no replacement	no replacement
1115722	HEC10MS4	KC610M	5824232	4CH1000MR022A	KC633M
1115723	HEC11MS4	KC610M	no replacement	no replacement	no replacement
1115724	HEC12MS4	KC610M	5824189	4CH1200DL026A	KC633M
1115725	HEC14MS4	KC610M	5824238	4CH1400MR032A	KC633M
1115726	HEC16MS4	KC610M	5824241	4CH1600MR032A	KC633M
1115727	HEC18MS4	KC610M	5824244	4CH1800MR038A	KC633M
1115728	HEC20MS4	KC610M	5824247	4CH2000MR038A	KC633M
1115729	HEC25MMS4	KC610M	no replacement	no replacement	no replacement
1115730	HEC25MS4	KC610M	no replacement	no replacement	no replacement
1115731	HEC35MS4	KC610M	no replacement	no replacement	no replacement
1115732	HEC45MS4	KC610M	no replacement	no replacement	no replacement
1115733	HEC100S4	KC610M	6086522	4SE1000IS150A	KC633M
1115734	HEC125S4	KC610M	6086562	4SE0125IR050A	KC633M
1115735	HEC156S4	KC610M	6086567	4SE0156IR056A	KC633M
1115736	HEC188S4	KC610M	6086568	4SE0187IR062A	KC633M
1115737	HEC219S4	KC610M	6086574	4SE0218IL062A	KC633M
1115738	HEC062S4	KC610M	5824318	4CH0062IR011A	KC633M
1115738	HEC062S4	KC610M	no replacement	no replacement	no replacement
1115739	HEC250S4	KC610M	6086577	4SE0250IR075A	KC633M
1115740	HEC281S4	KC610M	6086581	4SE0281IR075A	KC633M
1115741	HEC312S4	KC610M	6086584	4SE0312IR081A	KC633M
1115741	HEC312S4	KC610M	no replacement	no replacement	no replacement
1115742	HEC375S4	KC610M	6086591	4SE0375IR100A	KC633M
1115743	HEC438S4	KC610M	6086597	4SE0437IS100A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1115744	HEC500S4	KC610M	6086334	4SE0500IR100A	KC633M
1115746	HEC625S4	KC610M	6086511	4SE0625IR125A	KC633M
1115747	HEC688S4	KC610M	6086514	4SE0687IR137A	KC633M
1115748	HEC750S4	KC610M	6086516	4SE0750IR150A	KC633M
1115749	HEC094S4	KC610M	6086558	4SE0093IR037A	KC633M
1115751	HEC047S4	KC610M	no replacement	no replacement	no replacement
1115751	HEC047S4	KC610M	no replacement	no replacement	no replacement
1115785	BNEC2MS2	KC610M	5874192	2BN0200MR006A	KC633M
1115786	BNEC3MS2	KC610M	no replacement	no replacement	no replacement
1115787	BNEC4MS2	KC610M	no replacement	no replacement	no replacement
1115788	BNEC5MS2	KC610M	no replacement	no replacement	no replacement
1115789	BNEC6MS2	KC610M	no replacement	no replacement	no replacement
1115791	BNEC8MS2	KC610M	no replacement	no replacement	no replacement
1115793	BNEC10MS2	KC610M	no replacement	no replacement	no replacement
1115804	BNEC100S2	KC610M	5876775	2BN1000IR150A	KC633M
1115805	BNEC125S2	KC610M	5876728	2BN0125IR050A	KC633M
1115806	BNEC156S2	KC610M	5876742	2BN0156IL056A	KC633M
1115807	BNEC188S2	KC610M	5876744	2BN0187IR062A	KC633M
1115808	BNEC219S2	KC610M	5876747	2BN0219IR062A	KC633M
1115809	BNEC062S2	KC610M	5876722	2BN0063IR018A	KC633M
1115810	BNEC250S2	KC610M	5876749	2BN0250IR075A	KC633M
1115812	BNEC312S2	KC610M	5876753	2BN0312IR081A	KC633M
1115815	BNEC500S2	KC610M	5876763	2BN0500IR100A	KC633M
1115816	BNEC562S2	KC610M	no replacement	no replacement	no replacement
1115817	BNEC625S2	KC610M	5876767	2BN0625IR125A	KC633M
1115819	BNEC750S2	KC610M	5876771	2BN0750IR150A	KC633M
1115820	BNEC094S2	KC610M	5876725	2BN0094IL037A	KC633M
1115821	BNEC2MS4	KC610M	no replacement	no replacement	no replacement
1115822	BNEC3MS4	KC610M	no replacement	no replacement	no replacement
1115823	BNEC5MS4	KC610M	no replacement	no replacement	no replacement
1115824	BNEC6MS4	KC610M	no replacement	no replacement	no replacement
1115825	BNEC7MS4	KC610M	no replacement	no replacement	no replacement
1115826	BNEC8MS4	KC610M	5824924	4BN0800DL019A	KC633M
1115828	BNEC10MS4	KC610M	5824925	4BN1000DL022A	KC633M
1115830	BNEC12MS4	KC610M	5824926	4BN1200DL026A	KC633M
1115836	BNEC25MS4	KC610M	no replacement	no replacement	no replacement
1115837	BNEC35MS4	KC610M	no replacement	no replacement	no replacement
1115838	BNEC45MS4	KC610M	no replacement	no replacement	no replacement
1115839	BNEC100S4	KC610M	5824557	4BN1000IR150A	KC633M
1115840	BNEC125S4	KC610M	5824507	4BN0125IR050A	KC633M
1115841	BNEC156S4	KC610M	5824511	4BN0156IR056A	KC633M
1115842	BNEC188S4	KC610M	5824514	4BN0187IL062A	KC633M
1115843	BNEC219S4	KC610M	5824517	4BN0219IR062A	KC633M
1115844	BNEC062S4	KC610M	5824501	4BN0062IR019A	KC633M
1115845	BNEC250S4	KC610M	5824520	4BN0250IR075A	KC633M
1115846	BNEC281S4	KC610M	5824524	4BN0281IR075A	KC633M
1115847	BNEC312S4	KC610M	5824526	4BN0312IR081A	KC633M
1115848	BNEC375S4	KC610M	5824530	4BN0375IS100A	KC633M
1115850	BNEC500S4	KC610M	5824535	4BN0500IS100A	KC633M
1115851	BNEC562S4	KC610M	5824551	4BN0562IR125A	KC633M
1115852	BNEC625S4	KC610M	5824552	4BN0625IR125A	KC633M
1115854	BNEC750S4	KC610M	5824554	4BN0750IR150A	KC633M
1115855	BNEC094S4	KC610M	5824504	4BN0094IL037A	KC633M
1115865	BNEC078S4	KC610M	5824502	4BN0078IR019A	KC633M
1115866	BNEC109S4	KC610M	5824505	4BN0109IR037A	KC633M
1115867	HEC078S2	KC610M	6086382	2SE0078IR018A	KC633M
1115868	HEC109S2	KC610M	no replacement	no replacement	no replacement
1115869	HEC109S4	KC610M	6086560	4SE0109IR037A	KC633M
1115870	HEC141S2	KC610M	6086390	2SE0140IR056A	KC633M
1115871	HEC172S2	KC610M	6086393	2SE0171IR062A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1115872	HEC172S4	KC610M	no replacement	no replacement	no replacement
1115872	HEC172S4	KC610M	no replacement	no replacement	no replacement
1115872	HEC172S4	KC610M	no replacement	no replacement	no replacement
1115873	HEC203S2	KC610M	no replacement	no replacement	no replacement
1115874	HEC203S4	KC610M	6086572	4SE0203IR062A	KC633M
1115875	HEC234S2	KC610M	no replacement	no replacement	no replacement
1115876	HEC234S4	KC610M	6086575	4SE0234IR075A	KC633M
1115877	HEC297S4	KC610M	6086582	4SE0296IR081A	KC633M
1115878	HEC297S2	KC610M	no replacement	no replacement	no replacement
1115890	HEC031S2	KC610M	6086328	2SE0031IR007A	KC633M
1115894	BNEC031S4	KC610M	5824029	4BN0031IR008A	KC633M
1115895	HEC078S4	KC610M	6086556	4SE0078IR018A	KC633M
1115896	HEC266S4	KC610M	6086580	4SE0265IR075A	KC633M
1115896	HEC266S4	KC610M	6086580	4SE0265IR075A	KC633M
1115900	HEC6MS275M	KC610M	5873026	2CH0600ML028A	KC633M
1115901	HEC8MS275M	KC610M	5873031	2CH0800ML028A	KC633M
1115902	HEC10MS2100M	KC610M	no replacement	no replacement	no replacement
1115902	HEC10MS2100M	KC610M	no replacement	no replacement	no replacement
1115910	HEC6MS475M	KC610M	5824227	4CH0600ML028A	KC633M
1115911	HEC8MS475M	KC610M	5824230	4CH0800ML028A	KC633M
1115912	HEC141S4	KC610M	6086565	4SE0140IR056A	KC633M
1115913	HEC375S4063	KC610M	6086590	4SE0375IS062A	KC633M
1115914	HEC10MS4100M	KC610M	5824234	4CH1000MX045A	KC633M
1115915	HEC12MS4100M	KC610M	no replacement	no replacement	no replacement
1115919	HEC16MS4150M	KC610M	5824243	4CH1600MX075A	KC633M
1115921	HEC20MS4150M	KC610M	no replacement	no replacement	no replacement
1115923	BNEC6MS275M	KC610M	no replacement	no replacement	no replacement
1115934	BNEC6MS475M	KC610M	5824954	4BN0600MR030A	KC633M
1115935	BNEC8MS475M	KC610M	no replacement	no replacement	no replacement
1115936	BNEC10MS4100M	KC610M	5824956	4BN1000MR040A	KC633M
1115944	HEC469S4	KC610M	6086602	4SE0468IR100A	KC633M
1115945	HEC188S2075	KC610M	6086395	2SE0187IL075A	KC633M
1115946	HEC188S2113	KC610M	6086396	2SE0187IX112A	KC633M
1115947	HEC250S2113	KC610M	6086401	2SE0250IL112A	KC633M
1115948	HEC312S2113	KC610M	6086406	2SE0312IL112A	KC633M
1115949	HEC375S2113	KC610M	6086411	2SE0375IL112A	KC633M
1115952	HEC100S2225	KC610M	6086457	2SE1000IR225A	KC633M
1115953	HEC625S2225	KC610M	6086447	2SE0625IX225A	KC633M
1115954	HEC750S2225	KC610M	6086451	2SE0750IR225A	KC633M
1115955	HEC100S2300	KC610M	6086458	2SE1000IL300A	KC633M
1115957	HEC500S2300	KC610M	6086441	2SE0500IX300A	KC633M
1115959	HEC750S2300	KC610M	6086452	2SE0750IL300A	KC633M
1115960	HEC250S2150	KC610M	6086402	2SE0250IX150A	KC633M
1115961	HEC312S2163	KC610M	6086407	2SE0312IX162A	KC633M
1115962	HEC375S2175	KC610M	6086412	2SE0375IX175A	KC633M
1115963	HEC188S4075	KC610M	6086570	4SE0187IL075A	KC633M
1115964	BNEC500S4450	KC610M	5824539	4BN0500IL200A	KC633M
1115965	HEC188S4113	KC610M	6086571	4SE0187IX112A	KC633M
1115966	HEC250S4113	KC610M	6086578	4SE0250IL112A	KC633M
1115967	HEC312S4113	KC610M	6086585	4SE0312IL112A	KC633M
1115968	HEC375S4113	KC610M	6086592	4SE0375IL112A	KC633M
1115970	HEC500S4450	KC610M	no replacement	no replacement	no replacement
1115971	HEC100S4225	KC610M	6086523	4SE1000IR225A	KC633M
1115972	HEC625S4225	KC610M	6086512	4SE0625IL225A	KC633M
1115973	HEC750S4225	KC610M	6086517	4SE0750IR225A	KC633M
1115974	HEC100S4300	KC610M	6086524	4SE1000IL300A	KC633M
1115975	HEC438S4600	KC610M	6086600	4SE0437IX300A	KC633M
1115976	HEC500S4300	KC610M	6086336	4SE0500IX300A	KC633M
1115979	HEC750S4300	KC610M	6086518	4SE0750IL300A	KC633M
1115980	HEC250S4150	KC610M	6086579	4SE0250IX150A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1115981	HEC312S4163	KC610M	6086586	4SE0312IX162A	KC633M
1115982	HEC375S4175	KC610M	6086593	4SE0375IX175A	KC633M
1115983	BNEC188S2300	KC610M	no replacement	no replacement	no replacement
1115984	BNEC250S2150	KC610M	5876751	2BN0250IL150A	KC633M
1115986	BNEC375S2175	KC610M	no replacement	no replacement	no replacement
1115987	BNEC100S2300	KC610M	5876776	2BN1000IL300A	KC633M
1115989	BNEC500S2300	KC610M	5876766	2BN0500IX300A	KC633M
1115990	BNEC625S2300	KC610M	5876769	2BN0625IX300A	KC633M
1115991	BNEC750S2600	KC610M	5876773	2BN0750IX300A	KC633M
1115992	BNEC188S4300	KC610M	no replacement	no replacement	no replacement
1115993	BNEC250S4150	KC610M	5824522	4BN0250IL150A	KC633M
1115994	BNEC312S4400	KC610M	5824528	4BN0312IX162A	KC633M
1115995	BNEC375S4175	KC610M	no replacement	no replacement	no replacement
1115996	HEC625S4075	KC610M	6086340	4SE0625IS075A	KC633M
1115997	BNEC100S4300	KC610M	no replacement	no replacement	no replacement
1115999	BNEC500S4300	KC610M	5824540	4BN0500IX300A	KC633M
1116000	BNEC625S4300	KC610M	no replacement	no replacement	no replacement
1116001	BNEC750S4600	KC610M	5824555	4BN0750IL300A	KC633M
1116031	HEC125S4100	KC610M	6086564	4SE0125IX100A	KC633M
1191644	BNEC062S2	K600	5876722	2BN0063IR018A	KC633M
1191659	BNEC250S2	K600	5876749	2BN0250IR075A	KC633M
1191660	BNEC250S4	K600	5824520	4BN0250IR075A	KC633M
1191669	BNEC4MS4	KC610M	5824952	4BN0400MR025A	KC633M
1191670	BNEC500S2	K600	5876763	2BN0500IR100A	KC633M
1191672	BNEC500S4	K600	5824535	4BN0500IS100A	KC633M
1191679	BNEC750S4	K600	5824554	4BN0750IR150A	KC633M
1192162	HEC100S2	K600	6086456	2SE1000IS150A	KC633M
1192163	HEC10MS2100M	K600	no replacement	no replacement	no replacement
1192163	HEC10MS2100M	K600	no replacement	no replacement	no replacement
1192164	HEC10MS2	K600	no replacement	no replacement	no replacement
1192164	HEC10MS2	K600	no replacement	no replacement	no replacement
1192165	HEC10MS4100M	K600	5824234	4CH1000MX045A	KC633M
1192166	HEC10MS4	K600	5824232	4CH1000MR022A	KC633M
1192168	HEC12MS2	K600	no replacement	no replacement	no replacement
1192169	HEC12MS4100M	K600	no replacement	no replacement	no replacement
1192171	HEC12MS4	K600	5824189	4CH1200DL026A	KC633M
1192174	HEC14MS4	K600	5824238	4CH1400MR032A	KC633M
1192177	HEC16MS4150M	K600	5824243	4CH1600MX075A	KC633M
1192178	HEC16MS4	K600	5824241	4CH1600MR032A	KC633M
1192179	HEC188S4	K600	6086568	4SE0187IR062A	KC633M
1192181	HEC18MS4	K600	5824244	4CH1800MR038A	KC633M
1192183	HEC20MS2	K600	5873050	2CH2000MR038A	KC633M
1192185	HEC20MS4	K600	5824247	4CH2000MR038A	KC633M
1192186	HEC250S2	K600	6086400	2SE0250IR075A	KC633M
1192187	HEC250S4	K600	6086577	4SE0250IR075A	KC633M
1192189	HEC25MMS4	K600	no replacement	no replacement	no replacement
1192192	HEC2MS2	K600	5873010	2CH0200MR006A	KC633M
1192194	HEC312S4	K600	no replacement	no replacement	no replacement
1192194	HEC312S4	K600	6086584	4SE0312IR081A	KC633M
1192196	HEC375S2	K600	6086410	2SE0375IR100A	KC633M
1192197	HEC375S4	K600	6086591	4SE0375IR100A	KC633M
1192198	HEC3MS2	K600	no replacement	no replacement	no replacement
1192199	HEC3MS4	K600	no replacement	no replacement	no replacement
1192200	HEC438S4	K600	6086597	4SE0437IS100A	KC633M
1192201	HEC4MS2	K600	no replacement	no replacement	no replacement
1192202	HEC4MS4	K600	no replacement	no replacement	no replacement
1192203	HEC500S2	K600	6086419	2SE0500IR100A	KC633M
1192204	HEC500S4	K600	6086334	4SE0500IR100A	KC633M
1192206	HEC5MS2	K600	no replacement	no replacement	no replacement
1192207	HEC5MS4	K600	no replacement	no replacement	no replacement

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1192208	HEC625S3	K600	6143975	3SE0625IL125A	KC633M
1192209	HEC6MS275M	K600	5873026	2CH0600ML028A	KC633M
1192210	HEC6MS2	K600	no replacement	no replacement	no replacement
1192211	HEC6MS475M	K600	no replacement	no replacement	no replacement
1192212	HEC6MS4	K600	no replacement	no replacement	no replacement
1192213	HEC750S4	K600	6086516	4SE0750IR150A	KC633M
1192215	HEC8MS275M	K600	5873031	2CH0800ML028A	KC633M
1192216	HEC8MS2	K600	5873029	2CH0800MR020A	KC633M
1192218	HEC8MS4	K600	5824229	4CH0800MR020A	KC633M
1228656	HEC094S2	K600	6086384	2SE0093IL037A	KC633M
1232322	BNEC562S4	K600	5824551	4BN0562IR125A	KC633M
1232451	HEC438S3	K600	6143969	3SE0437IX100A	KC633M
1232452	HEC188S2	K600	6086394	2SE0187IR062A	KC633M
1232453	HEC500S3	K600	6143970	3SE0500IR100A	KC633M
1257524	BNEC016S2	KC610M	no replacement	no replacement	no replacement
1257525	BNEC016S2	K600	no replacement	no replacement	no replacement
1257527	BNEC031S2	K600	5876721	2BN0031IR007A	KC633M
1257530	BNEC031S4	K600	5824029	4BN0031IR008A	KC633M
1257531	BNEC047S2	KC610M	5876723	2BN0047IR018A	KC633M
1257532	BNEC047S2	K600	5876723	2BN0047IR018A	KC633M
1257534	BNEC047S4	K600	5824030	4BN0047IR012A	KC633M
1257537	BNEC062S4	K600	5824501	4BN0062IR019A	KC633M
1257539	BNEC078S2	KC610M	no replacement	no replacement	no replacement
1257540	BNEC078S2	K600	no replacement	no replacement	no replacement
1257541	BNEC078S4O	K600	5824502	4BN0078IR019A	KC633M
1257542	BNEC094S2	K600	5876725	2BN0094IL037A	KC633M
1257544	BNEC094S4	K600	5824504	4BN0094IL037A	KC633M
1257548	BNEC100S2	KC635M	5876775	2BN1000IR150A	KC633M
1257549	BNEC100S2	K600	5876775	2BN1000IR150A	KC633M
1257551	BNEC100S2300	K600	5876776	2BN1000IL300A	KC633M
1257553	BNEC100S4	KC635M	5824557	4BN1000IR150A	KC633M
1257554	BNEC100S4	K600	5824557	4BN1000IR150A	KC633M
1257557	BNEC100S4300	K600	no replacement	no replacement	no replacement
1257558	BNEC109S2	KC610M	5876726	2BN0109IR037A	KC633M
1257559	BNEC109S2	K600	5876726	2BN0109IR037A	KC633M
1257560	BNEC109S4O	K600	5824505	4BN0109IR037A	KC633M
1257568	BNEC125S2	KC635M	5876728	2BN0125IR050A	KC633M
1257569	BNEC125S2	K600	5876728	2BN0125IR050A	KC633M
1257571	BNEC125S2075	KC610M	5876729	2BN0125IL075A	KC633M
1257575	BNEC125S4	KC635M	5824507	4BN0125IR050A	KC633M
1257576	BNEC125S4	K600	5824507	4BN0125IR050A	KC633M
1257577	BNEC125S4075	KC610M	5824508	4BN0125IL075A	KC633M
1257578	BNEC125S4075	K600	5824508	4BN0125IL075A	KC633M
1257579	BNEC125S4300	K600	no replacement	no replacement	no replacement
1257584	BNEC141S4	KC610M	5824510	4BN0141IR056A	KC633M
1257585	BNEC156S2	K600	5876742	2BN0156IL056A	KC633M
1257587	BNEC156S4	K600	5824511	4BN0156IR056A	KC633M
1257594	BNEC172S4O	K600	5824512	4BN0172IR062A	KC633M
1257598	BNEC188S2	KC635M	5876744	2BN0187IR062A	KC633M
1257599	BNEC188S2	K600	5876744	2BN0187IR062A	KC633M
1257600	BNEC188S2075	KC610M	5876745	2BN0187IL075A	KC633M
1257601	BNEC188S2075	K600	5876745	2BN0187IL075A	KC633M
1257602	BNEC188S2300	K600	no replacement	no replacement	no replacement
1257605	BNEC188S4	KC635M	5824514	4BN0187IL062A	KC633M
1257606	BNEC188S4	K600	5824514	4BN0187IL062A	KC633M
1257607	BNEC188S4075	KC610M	no replacement	no replacement	no replacement
1257608	BNEC188S4075	K600	no replacement	no replacement	no replacement
1257609	BNEC188S4300	K600	no replacement	no replacement	no replacement
1257619	BNEC203S4	KC610M	5824516	4BN0203IR062A	KC633M
1257620	BNEC203S4	K600	5824516	4BN0203IR062A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1257621	BNEC219S2	K600	5876747	2BN0219IR062A	KC633M
1257624	BNEC219S4O	K600	5824517	4BN0219IR062A	KC633M
1257626	BNEC234S4	KC610M	5824518	4BN0234IR075A	KC633M
1257629	BNEC250S2	KC635M	5876749	2BN0250IR075A	KC633M
1257631	BNEC250S2113	K600	5876750	2BN0250IR112A	KC633M
1257632	BNEC250S2150	K600	5876751	2BN0250IL150A	KC633M
1257634	BNEC250S4	KC635M	5824520	4BN0250IR075A	KC633M
1257636	BNEC250S4113	KC610M	5824521	4BN0250IR112A	KC633M
1257637	BNEC250S4113	K600	5824521	4BN0250IR112A	KC633M
1257638	BNEC250S4150	K600	5824522	4BN0250IL150A	KC633M
1257641	BNEC266S4	KC610M	no replacement	no replacement	no replacement
1257642	BNEC266S4	K600	no replacement	no replacement	no replacement
1257647	BNEC281S4	K600	5824524	4BN0281IR075A	KC633M
1257650	BNEC312S2	KC635M	5876753	2BN0312IR081A	KC633M
1257651	BNEC312S2	K600	5876753	2BN0312IR081A	KC633M
1257656	BNEC312S4	KC635M	5824526	4BN0312IR081A	KC633M
1257657	BNEC312S4	K600	5824526	4BN0312IR081A	KC633M
1257659	BNEC312S4113	KC610M	5824527	4BN0312IL112A	KC633M
1257660	BNEC312S4113	K600	5824527	4BN0312IL112A	KC633M
1257661	BNEC312S4400	K600	5824528	4BN0312IX162A	KC633M
1257665	BNEC344S4	KC610M	5824529	4BN0344IR100A	KC633M
1257674	BNEC375S2113	K600	5876758	2BN0375IL112A	KC633M
1257675	BNEC375S2175	K600	no replacement	no replacement	no replacement
1257677	BNEC375S4	KC635M	5824530	4BN0375IS100A	KC633M
1257678	BNEC375S4	K600	5824530	4BN0375IS100A	KC633M
1257680	BNEC375S4113	K600	5824532	4BN0375IL112A	KC633M
1257681	BNEC375S4175	K600	no replacement	no replacement	no replacement
1257706	BNEC500S2	KC635M	5876763	2BN0500IR100A	KC633M
1257708	BNEC500S2300	K600	5876766	2BN0500IX300A	KC633M
1257709	BNEC500S4	KC635M	5824535	4BN0500IS100A	KC633M
1257711	BNEC500S4450	K600	5824539	4BN0500IL200A	KC633M
1257712	BNEC500S4300	K600	5824540	4BN0500IX300A	KC633M
1257714	BNEC562S2	KC635M	no replacement	no replacement	no replacement
1257715	BNEC562S2	K600	no replacement	no replacement	no replacement
1257718	BNEC562S4	KC635M	5824551	4BN0562IR125A	KC633M
1257723	BNEC625S2	KC635M	5876767	2BN0625IR125A	KC633M
1257724	BNEC625S2	K600	5876767	2BN0625IR125A	KC633M
1257726	BNEC625S2300	K600	5876769	2BN0625IX300A	KC633M
1257728	BNEC625S4	KC635M	5824552	4BN0625IR125A	KC633M
1257729	BNEC625S4	K600	5824552	4BN0625IR125A	KC633M
1257732	BNEC625S4300	K600	no replacement	no replacement	no replacement
1257740	BNEC750S2	KC635M	5876771	2BN0750IR150A	KC633M
1257741	BNEC750S2	K600	5876771	2BN0750IR150A	KC633M
1257744	BNEC750S2600	K600	5876773	2BN0750IX300A	KC633M
1257746	BNEC750S4	KC635M	5824554	4BN0750IR150A	KC633M
1257750	BNEC750S4600	K600	5824555	4BN0750IL300A	KC633M
1257755	BNEC875S2	KC635M	5876774	2BN0875IR150A	KC633M
1257758	BNEC875S4	KC610M	5824556	4BN0875IR150A	KC633M
1257759	BNEC875S4	KC635M	5824556	4BN0875IR150A	KC633M
1257760	BNEC875S4	K600	5824556	4BN0875IR150A	KC633M
1272879	HEC016S2	K600	6086327	2SE0016IR003A	KC633M
1272882	HEC016S4	K600	6086553	4SE0015IR003A	KC633M
1272883	HEC031S2	K600	6086328	2SE0031IR007A	KC633M
1272884	HEC031S3	KC610M	6143903	3SE0031IR007A	KC633M
1272886	HEC031S4	K600	6086554	4SE0031IR008A	KC633M
1272887	HEC047S2	K600	no replacement	no replacement	no replacement
1272888	HEC047S3	KC610M	6143904	3SE0047IR011A	KC633M
1272889	HEC047S4	K600	no replacement	no replacement	no replacement
1272890	HEC062S2	K600	6086329	2SE0062IL018A	KC633M
1272891	HEC062S3	K600	6143905	3SE0062IR019A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1272892	HEC062S4	K600	5824318	4CH0062IR011A	KC633M
1272894	HEC078S2	K600	6086382	2SE0078IR018A	KC633M
1272895	HEC078S4	K600	6086556	4SE0078IR018A	KC633M
1272896	HEC094S3	K600	6143907	3SE0094IR037A	KC633M
1272897	HEC094S4	K600	6086558	4SE0093IR037A	KC633M
1272900	HEC100S2	KC635M	6086456	2SE1000IS150A	KC633M
1272902	HEC100S2225	K600	6086457	2SE1000IR225A	KC633M
1272904	HEC100S3	K600	6143979	3SE1000IR150A	KC633M
1272905	HEC100S4	KC635M	6086522	4SE1000IS150A	KC633M
1272906	HEC100S4	K600	6086522	4SE1000IS150A	KC633M
1272908	HEC100S4225	K600	6086523	4SE1000IR225A	KC633M
1272910	HEC100S4300	K600	6086524	4SE1000IL300A	KC633M
1272911	HEC109S2	K600	no replacement	no replacement	no replacement
1272912	HEC109S3	K600	6143908	3SE0109IR037A	KC633M
1272912	HEC109S3	K600	6143908	3SE0109IR037A	KC633M
1272913	HEC109S4	K600	6086560	4SE0109IR037A	KC633M
1272915	HEC11MS4	K600	no replacement	no replacement	no replacement
1272917	HEC125S2	KC635M	6086388	2SE0125IL050A	KC633M
1272918	HEC125S2	K600	6086388	2SE0125IL050A	KC633M
1272919	HEC125S2075	K600	6086389	2SE0125IX075A	KC633M
1272920	HEC125S2100	K600	no replacement	no replacement	no replacement
1272921	HEC125S3	K600	6143910	3SE0125IL050A	KC633M
1272922	HEC125S4	KC635M	6086562	4SE0125IR050A	KC633M
1272923	HEC125S4	K600	6086562	4SE0125IR050A	KC633M
1272926	HEC125S4075	K600	6086563	4SE0125IL075A	KC633M
1272927	HEC125S4100	K600	6086564	4SE0125IX100A	KC633M
1272932	HEC141S2	K600	6086390	2SE0140IR056A	KC633M
1272933	HEC141S3	KC610M	6143942	3SE0141IR056A	KC633M
1272933	HEC141S3	KC610M	6143942	3SE0141IR056A	KC633M
1272934	HEC141S4	K600	6086565	4SE0140IR056A	KC633M
1272935	HEC156S2	K600	6086392	2SE0156IL056A	KC633M
1272936	HEC156S3	K600	6143943	3SE0156IR056A	KC633M
1272937	HEC156S4	K600	6086567	4SE0156IR056A	KC633M
1272942	HEC172S4	K600	no replacement	no replacement	no replacement
1272945	HEC188S2	KC635M	6086394	2SE0187IR062A	KC633M
1272948	HEC188S2075	K600	6086395	2SE0187IL075A	KC633M
1272949	HEC188S2113	K600	6086396	2SE0187IX112A	KC633M
1272950	HEC188S3	K600	6143945	3SE0188IR056A	KC633M
1272951	HEC188S4	KC635M	6086568	4SE0187IR062A	KC633M
1272954	HEC188S4075	K600	6086570	4SE0187IL075A	KC633M
1272956	HEC188S4113	K600	6086571	4SE0187IX112A	KC633M
1272957	HEC203S2	K600	no replacement	no replacement	no replacement
1272958	HEC203S4	K600	6086572	4SE0203IR062A	KC633M
1272959	HEC219S2	K600	6086398	2SE0218IL062A	KC633M
1272960	HEC219S3	K600	6143949	3SE0219IR062A	KC633M
1272962	HEC219S4	K600	6086574	4SE0218IL062A	KC633M
1272965	HEC234S2	K600	no replacement	no replacement	no replacement
1272967	HEC234S4	K600	6086575	4SE0234IR075A	KC633M
1272970	HEC250S2	KC635M	6086400	2SE0250IR075A	KC633M
1272973	HEC250S2113	K600	6086401	2SE0250IL112A	KC633M
1272974	HEC250S2150	K600	6086402	2SE0250IX150A	KC633M
1272975	HEC250S3	K600	6143952	3SE0250IR075A	KC633M
1272977	HEC250S4	KC635M	6086577	4SE0250IR075A	KC633M
1272981	HEC250S4113	K600	6086578	4SE0250IL112A	KC633M
1272982	HEC250S4150	K600	6086579	4SE0250IX150A	KC633M
1272987	HEC266S2	K600	no replacement	no replacement	no replacement
1272989	HEC281S2	K600	6086403	2SE0281IR075A	KC633M
1272990	HEC281S3	K600	6143955	3SE0281IR075A	KC633M
1272991	HEC281S4	K600	6086581	4SE0281IR075A	KC633M
1272992	HEC297S2	K600	no replacement	no replacement	no replacement

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1272994	HEC297S4	K600	6086582	4SE0296IR081A	KC633M
1272996	HEC312S2	KC635M	6086405	2SE0312IR081A	KC633M
1272997	HEC312S2	K600	6086405	2SE0312IR081A	KC633M
1273000	HEC312S2113	K600	6086406	2SE0312IL112A	KC633M
1273001	HEC312S2163	K600	6086407	2SE0312IX162A	KC633M
1273002	HEC312S3	K600	6143958	3SE0312IL081A	KC633M
1273003	HEC312S4	KC635M	6086584	4SE0312IR081A	KC633M
1273005	HEC312S4113	K600	6086585	4SE0312IL112A	KC633M
1273006	HEC312S4163	K600	6086586	4SE0312IX162A	KC633M
1273008	HEC328S2	K600	no replacement	no replacement	no replacement
1273009	HEC328S3	KC610M	no replacement	no replacement	no replacement
1273011	HEC344S2	K600	6086408	2SE0343IR100A	KC633M
1273012	HEC344S3	KC610M	no replacement	no replacement	no replacement
1273013	HEC344S3	K600	no replacement	no replacement	no replacement
1273014	HEC344S4	K600	6086588	4SE0343IR100A	KC633M
1273015	HEC35MS2	K600	5873015	2CH0350MR012A	KC633M
1273020	HEC360S4	K600	6086589	4SE0359IR100A	KC633M
1273021	HEC375S2	KC635M	6086410	2SE0375IR100A	KC633M
1273024	HEC375S2113	K600	6086411	2SE0375IL112A	KC633M
1273025	HEC375S2175	K600	6086412	2SE0375IX175A	KC633M
1273026	HEC375S3	K600	6143964	3SE0375IL100A	KC633M
1273031	HEC375S4	KC635M	6086591	4SE0375IR100A	KC633M
1273034	HEC375S4113	K600	6086592	4SE0375IL112A	KC633M
1273035	HEC375S4175	K600	6086593	4SE0375IX175A	KC633M
1273040	HEC406S3	KC610M	no replacement	no replacement	no replacement
1273049	HEC438S2	KC635M	6086415	2SE0437IL100A	KC633M
1273050	HEC438S2	K600	6086415	2SE0437IL100A	KC633M
1273053	HEC438S4	KC635M	6086597	4SE0437IS100A	KC633M
1273056	HEC438S4600	K600	6086600	4SE0437IX300A	KC633M
1273058	HEC45MS4	K600	no replacement	no replacement	no replacement
1273067	HEC500S2	KC635M	6086419	2SE0500IR100A	KC633M
1273071	HEC500S2300	K600	6086441	2SE0500IX300A	KC633M
1273072	HEC500S4	KC635M	6086334	4SE0500IR100A	KC633M
1273076	HEC500S4450	K600	no replacement	no replacement	no replacement
1273079	HEC500S4300	K600	6086336	4SE0500IX300A	KC633M
1273086	HEC625S2	KC635M	6086446	2SE0625IL125A	KC633M
1273087	HEC625S2	K600	6086446	2SE0625IL125A	KC633M
1273089	HEC625S2225	K600	6086447	2SE0625IX225A	KC633M
1273093	HEC625S4	KC635M	6086511	4SE0625IR125A	KC633M
1273094	HEC625S4	K600	6086511	4SE0625IR125A	KC633M
1273096	HEC625S4225	K600	6086512	4SE0625IL225A	KC633M
1273099	HEC688S2	K600	6086448	2SE0687IR137A	KC633M
1273101	HEC688S4	K600	6086514	4SE0687IR137A	KC633M
1273104	HEC750S2	KC635M	6086450	2SE0750IR150A	KC633M
1273105	HEC750S2	K600	6086450	2SE0750IR150A	KC633M
1273107	HEC750S2225	K600	6086451	2SE0750IR225A	KC633M
1273108	HEC750S2300	K600	6086452	2SE0750IL300A	KC633M
1273109	HEC750S3	K600	6143977	3SE0750IL150A	KC633M
1273110	HEC750S4	KC635M	6086516	4SE0750IR150A	KC633M
1273112	HEC750S4225	K600	6086517	4SE0750IR225A	KC633M
1273113	HEC750S4300	K600	6086518	4SE0750IL300A	KC633M
1273117	HEC875S2	KC610M	6086454	2SE0875IR150A	KC633M
1273118	HEC875S2	K600	6086454	2SE0875IR150A	KC633M
1273121	HEC875S4	K600	6086520	4SE0875IR150A	KC633M
1287025	HEC062S4013	K600	5824318	4CH0062IR011A	KC633M
1287026	HEC094S2018	KC610M	6086383	2SE0093IR018A	KC633M
1287027	HEC094S4018	KC610M	5824320	4CH0093IR037A	KC633M
1287028	HEC094S4018	K600	5824320	4CH0093IR037A	KC633M
1287029	HEC125S2025	KC610M	6086387	2SE0125IR025A	KC633M
1287030	HEC125S2025	K600	6086387	2SE0125IR025A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
1287031	HEC125S4025	K600	6086561	4SE0125IS025A	KC633M
1287032	HEC156S2031	KC610M	6086391	2SE0156IR031A	KC633M
1287033	HEC156S2031	K600	6086391	2SE0156IR031A	KC633M
1287034	HEC156S4031	K600	6086567	4SE0156IR056A	KC633M
1287041	HEC250S2050	K600	6086399	2SE0250IS050A	KC633M
1287042	HEC250S4050	K600	6086576	4SE0250IS050A	KC633M
1287043	HEC312S2050	K600	6086404	2SE0312IS050A	KC633M
1287044	HEC312S4050	KC610M	6086583	4SE0312IS050A	KC633M
1287045	HEC312S4050	K600	6086583	4SE0312IS050A	KC633M
1287047	HEC375S2063	K600	6086409	2SE0375IS062A	KC633M
1287048	HEC438S2063	K600	6086414	2SE0437IR062A	KC633M
1287049	HEC438S4063	KC610M	6086597	4SE0437IS100A	KC633M
1287050	HEC438S4063	K600	6086597	4SE0437IS100A	KC633M
1287053	HEC500S2063	K600	6086418	2SE0500IS062A	KC633M
1287054	HEC500S4063	K600	6086333	4SE0500IS062A	KC633M
1287057	HEC625S2075	KC610M	6086445	2SE0625IR075A	KC633M
1287058	HEC625S2075	K600	6086445	2SE0625IR075A	KC633M
1287059	HEC625S4075	K600	6086340	4SE0625IS075A	KC633M
1287062	HEC750S2100	K600	6086449	2SE0750IS100A	KC633M
1287063	HEC750S4100	K600	6086515	4SE0750IS100A	KC633M
1331259	BNEC234S4	K600	5824518	4BN0234IR075A	KC633M
1333665	HEC047S3	K600	6143904	3SE0047IR011A	KC633M
1339881	HEC375S4063	K600	6086590	4SE0375IS062A	KC633M
1509014	HEC109S3	KC610M	6143908	3SE0109IR037A	KC633M
1515714	HEC141S3	K600	6143942	3SE0141IR056A	KC633M
1535110	BNEC141S4O	K600	5824510	4BN0141IR056A	KC633M
1562642	HEC281S4	KC635M	6086581	4SE0281IR075A	KC633M
1616172	HEC031S2	KC635M	6086328	2SE0031IR007A	KC633M
1616173	HEC031S4	KC635M	6086554	4SE0031IR008A	KC633M
1616174	HEC062S2	KC635M	6086329	2SE0062IL018A	KC633M
1616176	HEC062S4	KC635M	5824318	4CH0062IR011A	KC633M
1616177	HEC094S2	KC635M	6086384	2SE0093IL037A	KC633M
1616178	HEC094S4	KC635M	6086558	4SE0093IR037A	KC633M
1616179	HEC156S2	KC635M	6086392	2SE0156IL056A	KC633M
1616180	HEC156S4	KC635M	6086567	4SE0156IR056A	KC633M
1616181	HEC219S2	KC635M	6086398	2SE0218IL062A	KC633M
1616182	HEC219S4	KC635M	6086574	4SE0218IL062A	KC633M
1616183	HEC281S2	KC635M	6086403	2SE0281IR075A	KC633M
2229299	BNEC094S2	KC635M	5876725	2BN0094IL037A	KC633M
2229301	BNEC094S4	KC635M	5824504	4BN0094IL037A	KC633M
2234615	BNEC375S4300	KC635M	no replacement	no replacement	no replacement
2657737	HEC094S2063	K600	6086385	2SE0093IX062A	KC633M
2657738	HEC094S4063	K600	6086559	4SE0093IL062A	KC633M
2657739	HEC188S2031	K600	no replacement	no replacement	no replacement
2657740	HEC188S4031	K600	no replacement	no replacement	no replacement
2657741	HEC219S2044	K600	6086397	2SE0218IR043A	KC633M
2657742	HEC219S4044	K600	6086573	4SE0218IR043A	KC633M
2657763	HEC375S2088	K600	no replacement	no replacement	no replacement
2657764	HEC375S3088	K600	6143963	3SE0375IR088A	KC633M
2657765	HEC375S3113	K600	6143965	3SE0375IX112A	KC633M
2657766	HEC375S4088	K600	6086591	4SE0375IR100A	KC633M
2657773	HEC438S2200	K600	6086416	2SE0437IX200A	KC633M
2657774	HEC438S4100	K600	6086598	4SE0437IR100A	KC633M
2657775	HEC438S4200	K600	no replacement	no replacement	no replacement
2657776	HEC500S2200	K600	6086420	2SE0500IL200A	KC633M
2657777	HEC500S3200	K600	6143971	3SE0500IL200A	KC633M
2657778	HEC500S4200	K600	no replacement	no replacement	no replacement
2657779	HEC562S2075	K600	6086442	2SE0562IR075A	KC633M
2657780	HEC562S2125	K600	6086443	2SE0562IL125A	KC633M
2657781	HEC562S2225	K600	6086444	2SE0562IX225A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
2657782	HEC562S4075	K600	6086337	4SE0562IR075A	KC633M
2657783	HEC562S4125	K600	6086338	4SE0562IL125A	KC633M
2657784	HEC562S4225	K600	6086339	4SE0562IX225A	KC633M
2657785	HEC625S2400	K600	no replacement	no replacement	no replacement
2657786	HEC625S4400	K600	6086513	4SE0625IX400A	KC633M
2657787	HEC750S2400	K600	6086453	2SE0750IX400A	KC633M
2657788	HEC750S3225	K600	6143978	3SE0750IX225A	KC633M
2657789	HEC750S4400	K600	6086519	4SE0750IX400A	KC633M
2657791	HEC875S4225	K600	6086521	4SE0875IL225A	KC633M
2657792	HEC100S2400	K600	6086459	2SE1000IX400A	KC633M
2657793	HEC100S3225	K600	6143980	3SE1000IX225A	KC633M
2657794	HEC100S4400	K600	6086525	4SE1000IX400A	KC633M
2657797	HEC1250S2200	K600	no replacement	no replacement	no replacement
2657798	HEC1250S4200	K600	no replacement	no replacement	no replacement
2657799	BNEC094S2018	K600	5876724	2BN0094IR018A	KC633M
2657800	BNEC125S2025	K600	5876727	2BN0125IS025A	KC633M
2657801	BNEC125S2075L	K600	5876730	2BN0125IX075A	KC633M
2657802	BNEC156S2031	K600	5876741	2BN0156IR031A	KC633M
2657823	BNEC188S2031	K600	5876743	2BN0187IS031A	KC633M
2657824	BNEC188S2100	K600	5876746	2BN0187IX100A	KC633M
2657825	BNEC250S2050	K600	5876748	2BN0250IS050A	KC633M
2657826	BNEC250S2150L	K600	5876752	2BN0250IX150A	KC633M
2657827	BNEC312S2050	K600	no replacement	no replacement	no replacement
2657828	BNEC312S2150	K600	5876755	2BN0312IX150A	KC633M
2657829	BNEC375S2063	K600	5876756	2BN0375IS062A	KC633M
2657830	BNEC375S2088	K600	5876757	2BN0375IR087A	KC633M
2657831	BNEC406S2100	K600	5876760	2BN0406IR100A	KC633M
2657832	BNEC438S2100	K600	5876761	2BN0437IR100A	KC633M
2657833	BNEC500S2063	K600	5876762	2BN0500IS062A	KC633M
2657834	BNEC500S2150	K600	5876764	2BN0500IX150A	KC633M
2657835	BNEC500S2200	K600	5876765	2BN0500IL200A	KC633M
2657836	BNEC750S2100	K600	5876770	2BN0750IS100A	KC633M
2657837	BNEC750S2200	K600	5876772	2BN0750IL200A	KC633M
2657839	BNEC094S4018	K600	5824503	4BN0094IR019A	KC633M
2657840	BNEC125S4025	K600	5824506	4BN0125IS025A	KC633M
2657841	BNEC125S4075L	K600	5824509	4BN0125IX075A	KC633M
2657842	BNEC156S4031	K600	5824511	4BN0156IR056A	KC633M
2657843	BNEC188S4031	K600	5824513	4BN0187IR031A	KC633M
2657844	BNEC188S4100	K600	5824515	4BN0187IX100A	KC633M
2657845	BNEC250S4050	K600	5824519	4BN0250IS050A	KC633M
2657846	BNEC250S4150L	K600	5824523	4BN0250IX150A	KC633M
2657847	BNEC312S4050	K600	5824525	4BN0312IS050A	KC633M
2657848	BNEC312S4150	K600	no replacement	no replacement	no replacement
2657849	BNEC375S4063	K600	no replacement	no replacement	no replacement
2657850	BNEC375S4088	K600	no replacement	no replacement	no replacement
2657851	BNEC406S4100	K600	no replacement	no replacement	no replacement
2657852	BNEC438S4100	K600	5824534	4BN0437IR100A	KC633M
2657853	BNEC500S4063	K600	no replacement	no replacement	no replacement
2657854	BNEC500S4150	K600	5824537	4BN0500IX150A	KC633M
2657855	BNEC500S4200	K600	5824538	4BN0500IR200A	KC633M
2657856	BNEC750S4100	K600	no replacement	no replacement	no replacement
2657857	BNEC750S4200	K600	no replacement	no replacement	no replacement
2657858	BNEC125S2075	K600	5876729	2BN0125IL075A	KC633M
2881042	HEC094S2063	KC610M	6086385	2SE0093IX062A	KC633M
2881073	HEC094S4063	KC610M	6086559	4SE0093IL062A	KC633M
2881074	HEC188S2031	KC610M	no replacement	no replacement	no replacement
2881075	HEC188S4031	KC610M	no replacement	no replacement	no replacement
2881076	HEC219S2044	KC610M	6086397	2SE0218IR043A	KC633M
2881077	HEC219S4044	KC610M	6086573	4SE0218IR043A	KC633M
2881078	HEC375S2088	KC610M	no replacement	no replacement	no replacement

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
2881079	HEC375S3088	KC610M	6143963	3SE0375IR088A	KC633M
2881080	HEC375S3113	KC610M	6143965	3SE0375IX112A	KC633M
2881081	HEC375S4088	KC610M	6086591	4SE0375IR100A	KC633M
2881082	HEC391S2100	KC610M	no replacement	no replacement	no replacement
2881083	HEC391S4100	KC610M	6086594	4SE0390IR100A	KC633M
2881084	HEC406S2100	KC610M	6086413	2SE0406IR100A	KC633M
2881085	HEC406S4100	KC610M	6086595	4SE0406IR100A	KC633M
2881087	HEC422S4100	KC610M	6086596	4SE0421IR100A	KC633M
2881088	HEC438S2200	KC610M	6086416	2SE0437IX200A	KC633M
2881089	HEC438S4100	KC610M	6086598	4SE0437IR100A	KC633M
2881090	HEC438S4200	KC610M	6086599	4SE0437IL200A	KC633M
2881091	HEC500S2200	KC610M	6086420	2SE0500IL200A	KC633M
2881092	HEC500S3200	KC610M	6143971	3SE0500IL200A	KC633M
2881093	HEC500S4200	KC610M	6086335	4SE0500IL200A	KC633M
2881094	HEC562S2075	KC610M	6086442	2SE0562IR075A	KC633M
2881095	HEC562S2125	KC610M	6086443	2SE0562IL125A	KC633M
2881096	HEC562S2225	KC610M	6086444	2SE0562IX225A	KC633M
2881097	HEC562S4075	KC610M	6086337	4SE0562IR075A	KC633M
2881098	HEC562S4125	KC610M	6086338	4SE0562IL125A	KC633M
2881099	HEC562S4225	KC610M	6086339	4SE0562IX225A	KC633M
2881100	HEC750S3225	KC610M	6143978	3SE0750IX225A	KC633M
2881101	HEC100S3225	KC610M	6143980	3SE1000IX225A	KC633M
2887945	HEC250S4150L	K600	no replacement	no replacement	no replacement
2887946	HEC375S4150L	K600	no replacement	no replacement	no replacement
2888924	BNEC375S4300L	K600	no replacement	no replacement	no replacement
2888925	BNEC375S2300L	K600	5876759	2BN0375IX300A	KC633M
2890374	HEC094S2063	KC635M	6086385	2SE0093IX062A	KC633M
2890375	HEC094S4063	KC635M	6086559	4SE0093IL062A	KC633M
2890376	HEC188S2031	KC635M	no replacement	no replacement	no replacement
2890377	HEC188S4031	KC635M	6086569	4SE0187IS075A	KC633M
2890378	HEC219S2044	KC635M	6086397	2SE0218IR043A	KC633M
2890379	HEC219S4044	KC635M	6086573	4SE0218IR043A	KC633M
2890380	HEC375S2088	KC635M	6086410	2SE0375IR100A	KC633M
2890381	HEC062S2013	KC635M	6086330	2SE0062IR012A	KC633M
2890382	HEC062S4013	KC635M	5824318	4CH0062IR011A	KC633M
2890383	HEC375S4088	KC635M	6086591	4SE0375IR100A	KC633M
2890384	HEC094S2018	KC635M	6086383	2SE0093IR018A	KC633M
2890385	HEC094S4018	KC635M	5824320	4CH0093IR037A	KC633M
2890386	HEC125S2025	KC635M	6086387	2SE0125IR025A	KC633M
2890387	HEC125S4025	KC635M	6086561	4SE0125IS025A	KC633M
2890388	HEC125S2075	KC635M	6086389	2SE0125IX075A	KC633M
2890389	HEC125S4075	KC635M	6086563	4SE0125IL075A	KC633M
2890390	HEC438S2200	KC635M	6086416	2SE0437IX200A	KC633M
2890391	HEC438S4100	KC635M	6086598	4SE0437IR100A	KC633M
2890392	HEC438S4200	KC635M	6086599	4SE0437IL200A	KC633M
2890393	HEC500S2200	KC635M	6086420	2SE0500IL200A	KC633M
2890394	HEC125S2100	KC635M	no replacement	no replacement	no replacement
2890395	HEC500S4200	KC635M	6086335	4SE0500IL200A	KC633M
2890396	HEC125S4100	KC635M	6086564	4SE0125IX100A	KC633M
2890397	HEC562S2125	KC635M	6086443	2SE0562IL125A	KC633M
2890398	HEC562S2225	KC635M	6086444	2SE0562IX225A	KC633M
2890399	HEC156S2031	KC635M	6086391	2SE0156IR031A	KC633M
2890400	HEC562S4125	KC635M	6086338	4SE0562IL125A	KC633M
2890401	HEC562S4225	KC635M	6086339	4SE0562IX225A	KC633M
2890402	HEC156S4031	KC635M	6086567	4SE0156IR056A	KC633M
2890403	HEC188S2075	KC635M	6086395	2SE0187IL075A	KC633M
2890404	HEC188S4075	KC635M	no replacement	no replacement	no replacement
2890405	HEC188S2113	KC635M	no replacement	no replacement	no replacement
2890406	HEC188S4113	KC635M	6086571	4SE0187IX112A	KC633M
2890781	HEC250S2050	KC635M	6086399	2SE0250IS050A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
2890782	HEC250S4050	KC635M	6086576	4SE0250IS050A	KC633M
2890863	HEC250S2113	KC635M	6086401	2SE0250IL112A	KC633M
2890864	HEC250S4113	KC635M	6086578	4SE0250IL112A	KC633M
2890865	HEC250S2150	KC635M	6086402	2SE0250IX150A	KC633M
2890866	HEC250S4150	KC635M	6086579	4SE0250IX150A	KC633M
2890867	HEC250S4150L	KC635M	no replacement	no replacement	no replacement
2890868	HEC312S2050	KC635M	6086404	2SE0312IS050A	KC633M
2890869	HEC312S4050	KC635M	6086583	4SE0312IS050A	KC633M
2890870	HEC312S2113	KC635M	6086406	2SE0312IL112A	KC633M
2890871	HEC312S4113	KC635M	6086585	4SE0312IL112A	KC633M
2890872	HEC312S2163	KC635M	6086407	2SE0312IX162A	KC633M
2890873	HEC312S4163	KC635M	6086586	4SE0312IX162A	KC633M
2890874	HEC375S2063	KC635M	6086409	2SE0375IS062A	KC633M
2890875	HEC375S4063	KC635M	6086590	4SE0375IS062A	KC633M
2890876	HEC375S2113	KC635M	6086411	2SE0375IL112A	KC633M
2890877	HEC375S4113	KC635M	6086592	4SE0375IL112A	KC633M
2890878	HEC375S2175	KC635M	6086412	2SE0375IX175A	KC633M
2890879	HEC375S4175	KC635M	6086593	4SE0375IX175A	KC633M
2890880	HEC375S4150L	KC635M	no replacement	no replacement	no replacement
2890881	HEC438S2063	KC635M	6086414	2SE0437IR062A	KC633M
2890882	HEC438S4063	KC635M	6086597	4SE0437IS100A	KC633M
2890883	HEC500S2063	KC635M	6086418	2SE0500IS062A	KC633M
2890884	HEC500S4063	KC635M	6086333	4SE0500IS062A	KC633M
2890885	HEC500S2300	KC635M	6086441	2SE0500IX300A	KC633M
2890886	HEC500S4300	KC635M	6086336	4SE0500IX300A	KC633M
2890887	HEC625S2075	KC635M	6086445	2SE0625IR075A	KC633M
2890888	HEC625S4075	KC635M	6086340	4SE0625IS075A	KC633M
2890889	HEC625S2225	KC635M	6086447	2SE0625IX225A	KC633M
2890890	HEC625S4225	KC635M	6086512	4SE0625IL225A	KC633M
2890891	HEC625S2400	KC635M	no replacement	no replacement	no replacement
2890892	HEC625S4400	KC635M	6086513	4SE0625IX400A	KC633M
2890893	HEC750S2100	KC635M	6086449	2SE0750IS100A	KC633M
2890894	HEC750S4100	KC635M	6086515	4SE0750IS100A	KC633M
2890895	HEC750S2225	KC635M	6086451	2SE0750IR225A	KC633M
2890896	HEC750S4225	KC635M	6086517	4SE0750IR225A	KC633M
2890897	HEC750S2300	KC635M	6086452	2SE0750IL300A	KC633M
2890898	HEC750S4300	KC635M	6086518	4SE0750IL300A	KC633M
2890899	HEC750S2400	KC635M	6086453	2SE0750IX400A	KC633M
2890900	HEC750S4400	KC635M	6086519	4SE0750IX400A	KC633M
2890901	HEC875S2225	KC635M	6086455	2SE0875IL225A	KC633M
2890902	HEC875S4225	KC635M	6086521	4SE0875IL225A	KC633M
2890903	HEC100S2225	KC635M	6086457	2SE1000IR225A	KC633M
2890904	HEC100S4225	KC635M	6086523	4SE1000IR225A	KC633M
2890905	HEC100S2300	KC635M	6086458	2SE1000IL300A	KC633M
2890906	HEC100S4300	KC635M	6086524	4SE1000IL300A	KC633M
2890907	HEC100S2400	KC635M	6086459	2SE1000IX400A	KC633M
2890908	HEC100S4400	KC635M	6086525	4SE1000IX400A	KC633M
2890912	HEC1250S4200	KC635M	no replacement	no replacement	no replacement
2890918	BNEC031S2	KC635M	5876721	2BN0031IR007A	KC633M
2890919	BNEC031S4	KC635M	5824029	4BN0031IR008A	KC633M
2890920	BNEC062S2	KC635M	5876722	2BN0063IR018A	KC633M
2890921	BNEC062S4	KC635M	5824501	4BN0062IR019A	KC633M
2890922	BNEC094S2018	KC635M	5876724	2BN0094IR018A	KC633M
2890943	BNEC094S4018	KC635M	5824503	4BN0094IR019A	KC633M
2890944	BNEC125S2025	KC635M	5876727	2BN0125IS025A	KC633M
2890945	BNEC125S2075	KC635M	5876729	2BN0125IL075A	KC633M
2890946	BNEC125S2075L	KC635M	5876730	2BN0125IX075A	KC633M
2890947	BNEC125S4025	KC635M	5824506	4BN0125IS025A	KC633M
2890948	BNEC125S4075	KC635M	5824508	4BN0125IL075A	KC633M
2890949	BNEC125S4075L	KC635M	5824509	4BN0125IX075A	KC633M

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(continued)

Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
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2890951	BNEC156S2031	KC635M	5876741	2BN0156IR031A	KC633M
2890952	BNEC156S4	KC635M	5824511	4BN0156IR056A	KC633M
2890953	BNEC156S4031	KC635M	5824511	4BN0156IR056A	KC633M
2890954	BNEC188S2031	KC635M	5876743	2BN0187IS031A	KC633M
2890955	BNEC188S2075	KC635M	5876745	2BN0187IL075A	KC633M
2890956	BNEC188S2100	KC635M	5876746	2BN0187IX100A	KC633M
2890957	BNEC188S4031	KC635M	5824513	4BN0187IR031A	KC633M
2890958	BNEC188S4075	KC635M	no replacement	no replacement	no replacement
2890959	BNEC188S4100	KC635M	5824515	4BN0187IX100A	KC633M
2890960	BNEC250S2050	KC635M	5876748	2BN0250IS050A	KC633M
2890961	BNEC250S2113	KC635M	5876750	2BN0250IR112A	KC633M
2890962	BNEC250S2150	KC635M	5876751	2BN0250IL150A	KC633M
2890963	BNEC250S2150L	KC635M	5876752	2BN0250IX150A	KC633M
2890964	BNEC250S4050	KC635M	5824519	4BN0250IS050A	KC633M
2890965	BNEC250S4113	KC635M	5824521	4BN0250IR112A	KC633M
2890966	BNEC250S4150	KC635M	5824522	4BN0250IL150A	KC633M
2890967	BNEC250S4150L	KC635M	5824523	4BN0250IX150A	KC633M
2890968	BNEC312S2050	KC635M	no replacement	no replacement	no replacement
2890969	BNEC312S2113	KC635M	5876754	2BN0312IL112A	KC633M
2890970	BNEC312S2150	KC635M	5876755	2BN0312IX150A	KC633M
2890971	BNEC312S4050	KC635M	no replacement	no replacement	no replacement
2890972	BNEC312S4113	KC635M	5824527	4BN0312IL112A	KC633M
2890973	BNEC312S4150	KC635M	no replacement	no replacement	no replacement
2890974	BNEC375S2063	KC635M	5876756	2BN0375IS062A	KC633M
2890975	BNEC375S2088	KC635M	5876757	2BN0375IR087A	KC633M
2890976	BNEC375S2113	KC635M	5876758	2BN0375IL112A	KC633M
2890977	BNEC375S2175	KC635M	no replacement	no replacement	no replacement
2890978	BNEC375S2300	KC635M	5876759	2BN0375IX300A	KC633M
2890979	BNEC375S4063	KC635M	no replacement	no replacement	no replacement
2890980	BNEC375S4088	KC635M	no replacement	no replacement	no replacement
2890981	BNEC375S4113	KC635M	5824532	4BN0375IL112A	KC633M
2890982	BNEC375S4175	KC635M	no replacement	no replacement	no replacement
2890983	BNEC438S2100	KC635M	5876761	2BN0437IR100A	KC633M
2890984	BNEC438S4100	KC635M	5824534	4BN0437IR100A	KC633M
2890985	BNEC500S2063	KC635M	5876762	2BN0500IS062A	KC633M
2890986	BNEC500S2150	KC635M	5876764	2BN0500IX150A	KC633M
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2890988	BNEC500S2300	KC635M	5876766	2BN0500IX300A	KC633M
2890989	BNEC500S4063	KC635M	no replacement	no replacement	no replacement
2890990	BNEC500S4150	KC635M	5824537	4BN0500IX150A	KC633M
2890991	BNEC500S4200	KC635M	5824538	4BN0500IR200A	KC633M
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2890993	BNEC625S2300	KC635M	5876769	2BN0625IX300A	KC633M
2890994	BNEC625S4300	KC635M	no replacement	no replacement	no replacement
2890995	BNEC750S2100	KC635M	5876770	2BN0750IS100A	KC633M
2890996	BNEC750S2200	KC635M	5876772	2BN0750IL200A	KC633M
2890997	BNEC750S4100	KC635M	no replacement	no replacement	no replacement
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2890999	BNEC100S2300	KC635M	5876776	2BN1000IL300A	KC633M
2891000	BNEC100S4300	KC635M	no replacement	no replacement	no replacement
3016760	BNEC094S2018	KC610M	5876724	2BN0094IR018A	KC633M
3016761	BNEC094S4018	KC610M	5824503	4BN0094IR019A	KC633M
3016762	BNEC125S2025	KC610M	5876727	2BN0125IS025A	KC633M
3016773	BNEC125S2075L	KC610M	no replacement	no replacement	no replacement
3016774	BNEC125S4025	KC610M	5824506	4BN0125IS025A	KC633M
3016775	BNEC125S4075L	KC610M	5824509	4BN0125IX075A	KC633M
3016776	BNEC156S2031	KC610M	5876741	2BN0156IR031A	KC633M
3016777	BNEC156S4031	KC610M	5824511	4BN0156IR056A	KC633M
3016778	BNEC188S2031	KC610M	5876743	2BN0187IS031A	KC633M

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Old General Purpose			GOmill GP Replacement		
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3016781	BNEC188S4100	KC610M	5824515	4BN0187IX100A	KC633M
3016782	BNEC250S2050	KC610M	5876748	2BN0250IS050A	KC633M
3016783	BNEC250S2150L	KC610M	5876752	2BN0250IX150A	KC633M
3016784	BNEC250S4050	KC610M	5824519	4BN0250IS050A	KC633M
3016785	BNEC250S4150L	KC610M	5824523	4BN0250IX150A	KC633M
3016786	BNEC312S2050	KC610M	no replacement	no replacement	no replacement
3016787	BNEC312S2150	KC610M	5876755	2BN0312IX150A	KC633M
3016788	BNEC312S4050	KC610M	no replacement	no replacement	no replacement
3016789	BNEC312S4150	KC610M	no replacement	no replacement	no replacement
3016790	BNEC375S2063	KC610M	5876756	2BN0375IS062A	KC633M
3016791	BNEC375S2088	KC610M	5876757	2BN0375IR087A	KC633M
3016792	BNEC375S2300L	KC610M	5876759	2BN0375IX300A	KC633M
3018900	BNEC375S4063	KC610M	no replacement	no replacement	no replacement
3018901	BNEC375S4088	KC610M	no replacement	no replacement	no replacement
3018902	BNEC375S4300L	KC610M	no replacement	no replacement	no replacement
3018913	BNEC406S2100	KC610M	5876760	2BN0406IR100A	KC633M
3018914	BNEC406S4100	KC610M	no replacement	no replacement	no replacement
3018915	BNEC438S2100	KC610M	5876761	2BN0437IR100A	KC633M
3018916	BNEC438S4100	KC610M	5824534	4BN0437IR100A	KC633M
3018917	BNEC500S2063	KC610M	5876762	2BN0500IS062A	KC633M
3018918	BNEC500S2150	KC610M	5876764	2BN0500IX150A	KC633M
3018919	BNEC500S2200	KC610M	5876765	2BN0500IL200A	KC633M
3018920	BNEC500S4063	KC610M	no replacement	no replacement	no replacement
3018921	BNEC500S4150	KC610M	5824537	4BN0500IX150A	KC633M
3018922	BNEC500S4200	KC610M	5824538	4BN0500IR200A	KC633M
3018923	BNEC750S2100	KC610M	5876770	2BN0750IS100A	KC633M
3018924	BNEC750S2200	KC610M	5876772	2BN0750IL200A	KC633M
3018925	BNEC750S4100	KC610M	no replacement	no replacement	no replacement
3018926	BNEC750S4200	KC610M	no replacement	no replacement	no replacement
5046911	HEC313S4044	K600	6086583	4SE0312IS050A	KC633M
5046912	HEC250S4038	K600	6086576	4SE0250IS050A	KC633M
5046913	HEC438S4088	K600	6086597	4SE0437IS100A	KC633M
5046916	HEC47S2013	K600	no replacement	no replacement	no replacement
5046917	HEC500S2200L	K600	no replacement	no replacement	no replacement
5056432	HEC16S2	KC625M	6086327	2SE0016IR003A	KC633M
5056433	HEC31S2	KC625M	6086328	2SE0031IR007A	KC633M
5056434	HEC47S2	KC625M	no replacement	no replacement	no replacement
5056435	HEC63S2	KC625M	6086381	2SE0062IX050A	KC633M
5056436	HEC63S2018	KC625M	6086329	2SE0062IL018A	KC633M
5056437	HEC63S2013	KC625M	6086330	2SE0062IR012A	KC633M
5056439	HEC78S2	KC625M	6086382	2SE0078IR018A	KC633M
5056460	HEC94S2018	KC625M	6086383	2SE0093IR018A	KC633M
5056461	HEC094S2	KC625M	6086384	2SE0093IL037A	KC633M
5056465	HEC109S2	KC625M	no replacement	no replacement	no replacement
5056467	HEC125S2100	KC625M	no replacement	no replacement	no replacement
5056468	HEC125S2075	KC625M	6086389	2SE0125IX075A	KC633M
5056470	HEC125S2	KC625M	6086388	2SE0125IL050A	KC633M
5056471	HEC125S2025	KC625M	6086387	2SE0125IR025A	KC633M
5056472	HEC156S2031	KC625M	6086391	2SE0156IR031A	KC633M
5056475	HEC156S2	KC625M	6086392	2SE0156IL056A	KC633M
5056476	HEC188S2113	KC625M	6086396	2SE0187IX112A	KC633M
5056477	HEC188S2075	KC625M	6086395	2SE0187IL075A	KC633M
5056478	HEC188S2	KC625M	6086394	2SE0187IR062A	KC633M
5056479	HEC188S2031	KC625M	no replacement	no replacement	no replacement
5056490	HEC219S2044	KC625M	6086397	2SE0218IR043A	KC633M
5056495	HEC219S2	KC625M	6086398	2SE0218IL062A	KC633M
5056497	HEC250S2150	KC625M	6086402	2SE0250IX150A	KC633M
5056498	HEC250S2113	KC625M	6086401	2SE0250IL112A	KC633M

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Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
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5056512	HEC312S2	KC625M	6086405	2SE0312IR081A	KC633M
5056513	HEC344S2	KC625M	6086408	2SE0343IR100A	KC633M
5056514	HEC375S2088	KC625M	no replacement	no replacement	no replacement
5056515	HEC375S2113	KC625M	6086411	2SE0375IL112A	KC633M
5056517	HEC438S2200	KC625M	6086416	2SE0437IX200A	KC633M
5056530	HEC438S2	KC625M	6086415	2SE0437IL100A	KC633M
5056532	HEC500S2300	KC625M	6086441	2SE0500IX300A	KC633M
5056534	HEC500S2200	KC625M	6086420	2SE0500IL200A	KC633M
5056535	HEC500S2	KC625M	6086419	2SE0500IR100A	KC633M
5056537	HEC500S2063	KC625M	6086418	2SE0500IS062A	KC633M
5056539	HEC625S2400	KC625M	no replacement	no replacement	no replacement
5056550	HEC625S2	KC625M	6086446	2SE0625IL125A	KC633M
5056553	HEC625S2075	KC625M	6086445	2SE0625IR075A	KC633M
5056554	HEC750S2300	KC625M	6086452	2SE0750IL300A	KC633M
5056555	HEC750S2	KC625M	6086450	2SE0750IR150A	KC633M
5056556	HEC750S2100	KC625M	6086449	2SE0750IS100A	KC633M
5056557	HEC875S2	KC625M	6086454	2SE0875IR150A	KC633M
5056558	HEC1000S2	KC625M	6086456	2SE1000IS150A	KC633M
5056858	HEC688S3138	K600	no replacement	no replacement	no replacement
5056859	HEC563S3113	K600	6143973	3SE0563IR112A	KC633M
5057012	HEC062S4050	K600	no replacement	no replacement	no replacement
5057013	HEC375S4100	K600	6086593	4SE0375IX175A	KC633M
5057014	HEC453S4100	K600	6086601	4SE0453IR100A	KC633M
5057015	HEC500S4100	K600	6086335	4SE0500IL200A	KC633M
5057016	HEC062S4050	KC625M	no replacement	no replacement	no replacement
5057017	HEC375S4100	KC625M	6086593	4SE0375IX175A	KC633M
5057018	HEC500S4100	KC625M	6086335	4SE0500IL200A	KC633M
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5057070	HEC500S4100	KC635M	6086335	4SE0500IL200A	KC633M
5057071	BNEC625S4075	KC635M	no replacement	no replacement	no replacement
5057072	BNEC100S4225	KC625M	5824558	4BN1000IL225A	KC633M
5057073	BNEC625S4075	KC625M	no replacement	no replacement	no replacement
5057079	BNEC100S4225	K600	5824558	4BN1000IL225A	KC633M
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5058686	HECL750S2200	KC625M	6086452	2SE0750IL300A	KC633M
5058687	HECL625S2200	KC625M	no replacement	no replacement	no replacement
5058981	BNECL500S2150	K600	5876764	2BN0500IX150A	KC633M
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5058984	BNECL375S2150	K600	5876759	2BN0375IX300A	KC633M
5058985	BNECL375S2100	K600	no replacement	no replacement	no replacement
5058986	BNECL312S2150	K600	5876755	2BN0312IX150A	KC633M
5058987	BNECL312S2100	K600	no replacement	no replacement	no replacement
5058989	BNECL250S2150	K600	5876752	2BN0250IX150A	KC633M
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5059061	BNECL188S2100	K600	5876746	2BN0187IX100A	KC633M
5059062	BNECL125S2075	K600	5876730	2BN0125IX075A	KC633M
5059063	BNECL750S2200	KC625M	5876773	2BN0750IX300A	KC633M
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5059066	BNECL500S2100	KC625M	5876765	2BN0500IL200A	KC633M
5059110	BNECL438S2300	KC625M	no replacement	no replacement	no replacement
5059111	BNECL375S2300	KC625M	5876759	2BN0375IX300A	KC633M
5059113	BNECL375S2150	KC625M	5876759	2BN0375IX300A	KC633M
5059114	BNECL375S2100	KC625M	no replacement	no replacement	no replacement
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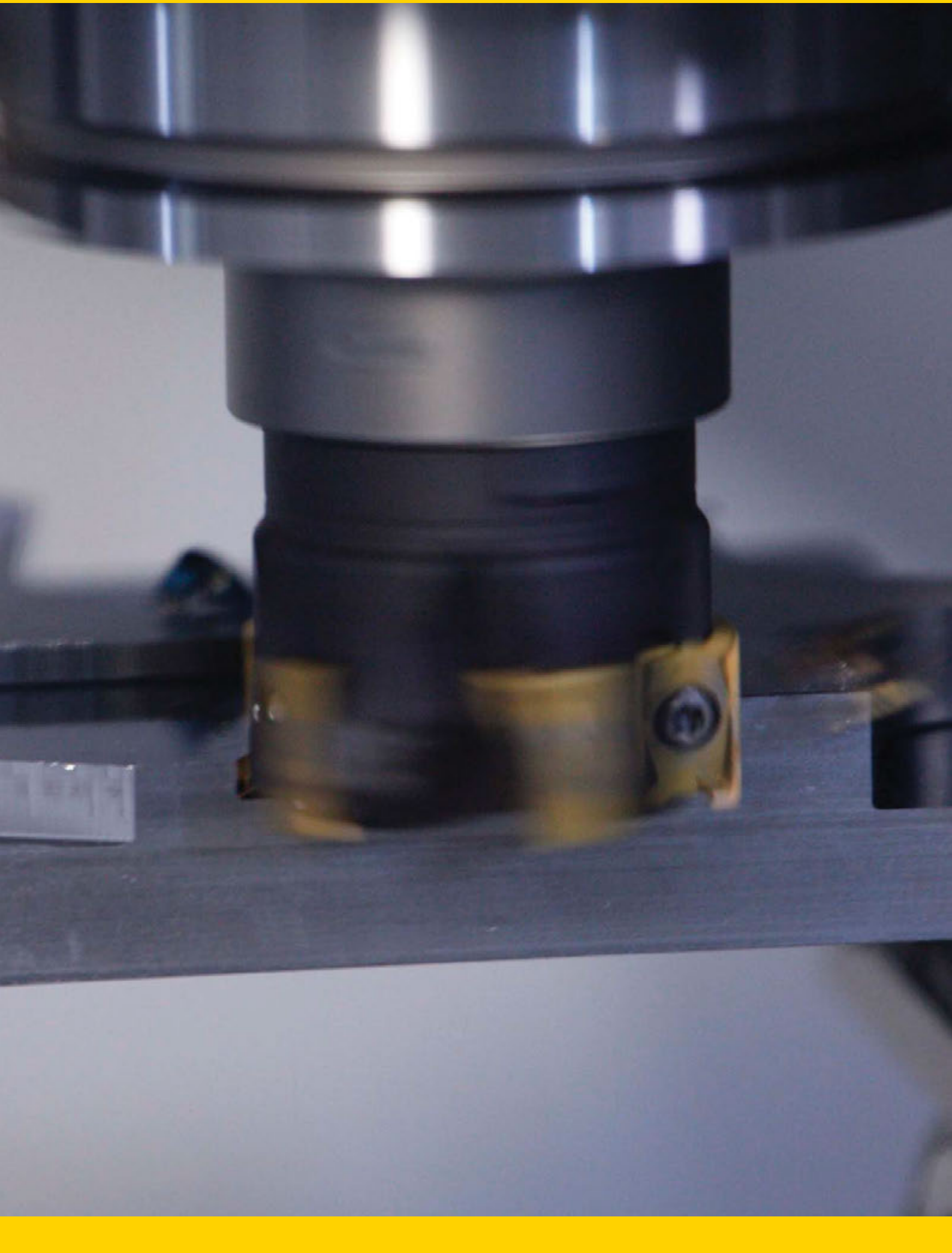
Old General Purpose			GOmill GP Replacement		
Order Number	Catalog Number	Grade	Order Number	Catalog Number	Grade
5059116	BNECL250S2150	KC625M	5876752	2BN0250IX150A	KC633M
5059118	BNECL250S2100	KC625M	5876750	2BN0250IR112A	KC633M
5059119	BNECL188S2100	KC625M	5876746	2BN0187IX100A	KC633M
5059161	BNECL125S2075	KC625M	5876730	2BN0125IX075A	KC633M
5061835	BNEC100S2225	K600	no replacement	no replacement	no replacement
5061837	BNEC750S2225	K600	no replacement	no replacement	no replacement
5061838	BNEC625S2225	K600	5876768	2BN0625IL225A	KC633M



Indexable Milling

Indexable Milling Introduction R2–R21

Face Milling S1–S126

Shoulder Milling T1–T136

Slot Milling U1–U41

Copy Milling V1–V159

Thread Milling W1–W55

Technical Information X1–X20

Recommended Starting Speeds X22–X37



Indexable Milling Products

Our latest Metalcutting Innovations are designed to deliver higher productivity, longer tool life, and increased application versatility.

For more information about the latest products and services from Kennametal, please contact your Kennametal Representative or Authorized Kennametal Distributor, or visit **kennametal.com**.

FACE MILLS

- Dodeka™ Mini
- Dodeka
- Dodeka MAX™
- Mill 16™
- KSSM 45°
- KSOM™ Mini
- KSOM
- KSSM8+™
- Fix-Perfect™
- HexaCut™
- KSSR™ 6°
- MEGA
- KBDM™
- KSCM™ PCD AluMill™
- Fix-Perfect 0° Aluminum

SHOULDER MILLS

- Mill 4-11™
- Mill 4-15™
- Mill 1-7™
- Mill 1-10™
- Mill 1-14™
- Mill 1-18™
- Mill 1-25™
- 5720VZ
- KSSM™
- KSSM-KSSP, Helical Cutters
- 5230VS





SLOT MILLS

- KTMS™ T-Slot
- KVNS™
- SN
- LN
- KSSM™

COPY MILLS

- 7792VX
- KenFeed™ 2X
- Rodeka™
- KSRM™
- 7713VR
- 5505VX
- KDMB™ and KDMT™
- Z-Axis • Plunge Milling Cutters
- KCRA
- KIPR

INDEXABLE THREAD MILLS

- TM Series
  - TM24
  - TM25
  - TM40
  - TM41
- KTMD U Series
- TMS — Thread Milling System







The Most Advanced Milling Solutions in the Industry

For unsurpassed quality, value, and performance, you can trust Kennametal to provide the most comprehensive line of reliable metalcutting tools. Whatever your indexable milling product requirements, be assured that you will find the appropriate solution in this all-inclusive, easy-to-use guide.

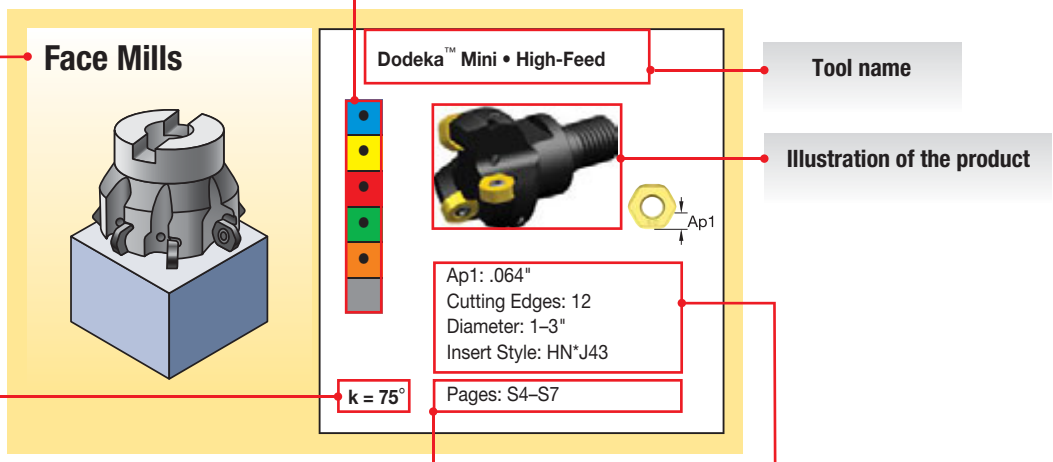
For every milling application, workpiece, or equipment need, we offer the best tools on the market, designed to reduce your machining time, provide superior surface finishes, and exceed your expectations!

Identify material to be machined:
Each tool has a material grid marked with a letter indicating the materials that can be machined.

● first choice
○ alternate choice

P	○	Steel
M	●	Stainless Steel
K		Cast Iron
N		Non-Ferrous
S	○	High-Temp Alloys
H	○	Hardened Materials

Choose your application:
- Face Milling
- Chamfer Milling
- Shoulder Milling
- Slotting
- Copy Milling
- Ceramic Milling
- Thread Milling



Tool name

Illustration of the product

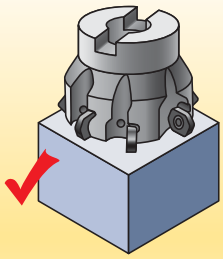
Lead angle

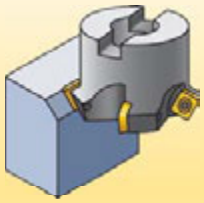
Location of introduction detail, tool bodies, inserts, and cutting data.

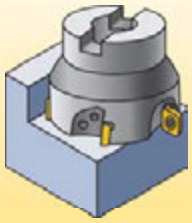
Select tool based on maximum depth of cut and diameter required:
Information is given in this area to provide specific detail as a quick reference.

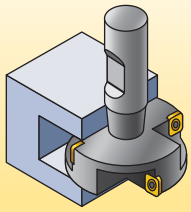
How to Navigate the 2018 Catalog

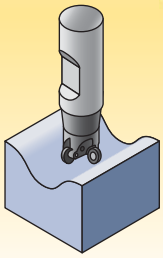
Step 1 • Select Application

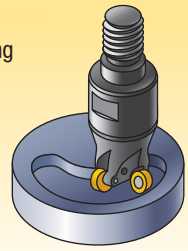

Face Milling

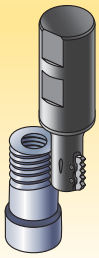

Chamfer Milling


Shoulder Milling (End Milling)


Slotting


Copy Milling

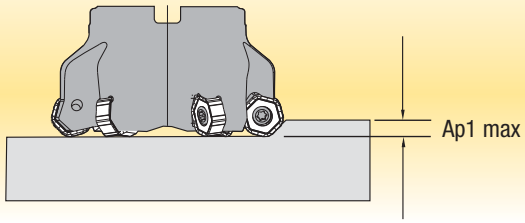

Ceramic Milling


Thread Milling

Step 2 • Select Workpiece Material

ISO Description		● first choice ○ alternate choice	Material Group	
Steel	P	●	P1–P2	Carbon steels
			P3–P4	Alloy steels and tool steels
			P5–P6	Ferritic, martensitic, and PH stainless steels
Stainless Steel	M	●	M1–M2	Austenitic stainless steels
			M3	Duplex stainless steels (ferritic and austenitic mixture)
Cast Iron	K		K1–K2	Gray, ductile, CGI, and malleable cast irons >80 KSI
			K3	Ductile, CGI, and malleable cast irons >80 KSI
Non-Ferrous Materials	N		N1–N2	Aluminum alloys <12.2% Si
			N3	Aluminum alloys >12.2% Si
High-Temp Alloys	S	●	S1–S2	Iron- and cobalt-based heat-resistant alloys
			S3	Nickel-based heat-resistant alloys
			S4	Alpha-Beta titanium alloys
Hardened Materials	H	○	H1	Hardened steels and irons

Step 3 • Select a Maximum Axial Depth of Cut (Ap)



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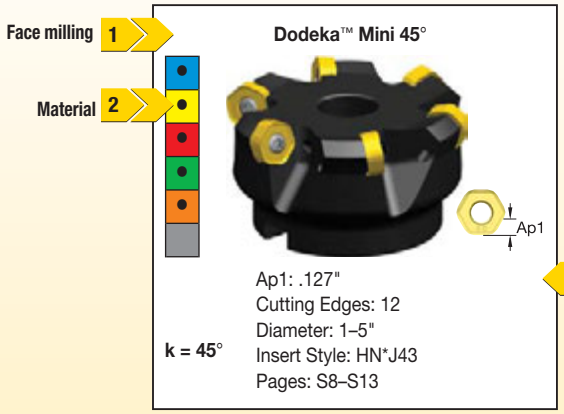
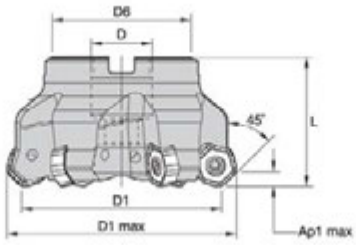
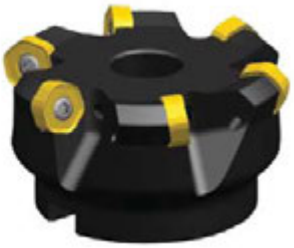
How to Navigate the 2018 Catalog *(continued)*

Step 4 • Select Milling Cutter from Application Selector



Select the Cutter





Dodeka Mini 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4130426	KSHR150HN4345M3	1.500	1.822	.500	1.440	1.575	.127	4	.57	16700
4130427	KSHR150HN4345F3	1.500	1.822	.500	1.440	1.575	.127	5	.56	16700
4130428	KSHR200HN4345C3	2.000	2.321	.750	1.750	1.575	.127	4	.93	12500
4130429	KSHR200HN4345M3	2.000	2.321	.750	1.750	1.575	.127	5	.93	12500
4130430	KSHR200HN4345F3	2.000	2.321	.750	1.750	1.575	.127	6	.97	12500
4130431	KSHR250HN4345C3	2.500	2.821	.750	1.750	1.575	.127	4	1.20	10000
4130432	KSHR250HN4345M3	2.500	2.821	.750	1.750	1.575	.127	6	1.27	10000
4130493	KSHR250HN4345F3	2.500	2.821	.750	1.750	1.575	.127	8	1.29	10000

4

Step 5 • Insert Selection Guide

Insert Selection Guide

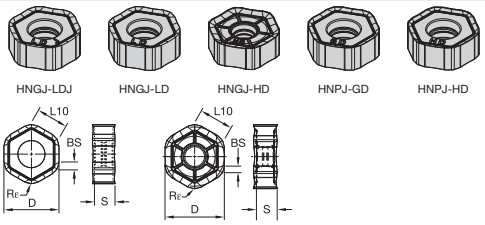
Material Group	Light Machining (Light geometry) wear resistance		General Purpose		Heavy Machining (Strong geometry) toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1 – P2	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
P3 – P4	.E..LD	KCPK30	.S..GD	KCPK30	.S..HD	KCPK30
P5 – P6	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KCPK30
M1 – M2	.E..LD	KCS22M	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1 – K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KCS20M	.S..GD	KCS20M	.S..HD	KCS20M
N1 – N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
S1 – S2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KC510M	.E..LD	KC510M	.E..LD	KC510M

5

(continued)

How to Navigate the 2018 Catalog *(continued)*

Step 6 • Insert Chart, Providing the Inserts and Grades



HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	●

Step 7 • Defining the Feed per Tooth

Geometry (S.GD)
20% radial width of cut, follow arrows for value.
% = radial width of cut (Ae) ÷ cutter diameter (D1)
Using a round or ball nose insert, consider the axial depth of cut; see separate chart on the cutter page.

Recommended Starting Feeds [IPT]

	Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
F..LDJ	.005	.010	.019	.004	.007	.014	.003	.006	.012	.003	.006	.012	.003	.006	.011	F..LDJ
E..LD	.005	.014	.029	.004	.011	.021	.003	.009	.019	.003	.009	.017	.003	.008	.017	E..LD
S..GD	.010	.022	.038	.007	.016	.028	.006	.014	.024	.006	.013	.022	.006	.013	.022	S..GD
S..HD	.010	.024	.039	.007		.029	.006	.015	.025	.006	.014	.023	.006	.014	.023	S..HD

NOTE: Use "Light Machining" values as starting feed r

7

7

Always consider starting with the "Light Machining" value. Once established, increase the feed per tooth from the chart.
These are minimum values and can be increased when the application has been proven.
Light Machining — Low Feed Rate, High Speed
General Purpose — Normal Feed, Normal Speed
Heavy Machining — Higher Feed, Reduced Speed

Step 8 • Recommended Starting Speeds [SFM]

8

8

Material Group		SC6525			SP4019			SP6519			KCSM30			KCSM40			X400		
P	1	1460	1000	560	1245	900	560	1165	855	510	1460	1265	1180	–	–	–	1015	755	475
	2	1280	885	475	1085	785	475	1015	755	460	1200	1065	870	–	–	–	900	675	410
	3	1150	785	410	970	690	410	900	655	395	1115	950	770	–	–	–	785	590	375
	4	820	575	310	755	525	310	690	490	295	985	805	655	–	–	–	590	425	280
	5	625	475	310	590	425	280	560	410	280	805	755	655	675	575	475	–	–	–
	6	560	395	230	510	360	195	475	330	195	720	560	425	590	425	310	–	–	–
M	1	785	705	560	1100	785	475	1065	770	460	885	785	720	820	675	560	–	–	–
	2	755	625	475	985	705	425	920	675	410	805	705	575	705	575	475	–	–	–
	3	575	510	360	785	575	360	770	560	330	605	525	410	575	425	330	–	–	–
K	1	1540	1065	575	1295	950	575	1165	870	560	–	–	–	–	–	–	–	–	–
	2	1200	820	460	1000	720	460	950	690	425	–	–	–	–	–	–	–	–	–
	3	–	–	–	920	675	410	870	625	395	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: For starting speed recommendations, please refer to section X22–X37 pages. Kennametal provides starting speed conditions for both wet and dry applications. Fine pitch cutters, such as Mill16™, KSSR™, and HexaCut™, also have separate speed tables provided.

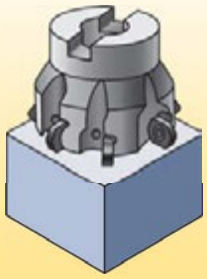
Choose the Application

- Face Milling
- Shoulder Milling
- Slotting
- Copy Milling
- Ceramic Milling
- Thread Milling

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Face Mills



Dodeka™ Mini • High-Feed



Ap1: .064"
Cutting Edges: 12
Diameter: 1–3"
Insert Style: HN*J43
k = 75° Pages: S4–S7

Dodeka™ Mini 45°



Ap1: .127"
Cutting Edges: 12
Diameter: 1–5"
Insert Style: HN*J43
k = 45° Pages: S8–S13

Dodeka™ Mini 30°



Ap1: .174"
Cutting Edges: 12
Diameter: 1.5–5"
Insert Style: HN*J43
k = 30° Pages: S14–S16

Dodeka™ • High Feed • 75°



Ap1: .087"
Cutting Edges: 12
Diameter: 2–6"
Insert Style: HN*J535
k = 75° Pages: S17–S19

Dodeka™



Ap1: .178"
Cutting Edges: 12
Diameter: 2–12"
Insert Style: HN*J535
k = 45° Pages: S20–S23

Dodeka MAX™



Ap1: .315"
Cutting Edges: 12
Diameter: 3–12"
Insert Style: HN*J75
k = 45° Pages: S24–S26

Mill 16™



Ap1: .217"
Cutting Edges: 16
Diameter: 2–10"
Split case: 12–20"
Insert Style: ON*X64
k= 46.5° Pages: S30–S34

KSSM™ 45°



Ap1: .260"
Cutting Edges: 4
Diameter: 1.26–7.87"
Insert Style: SE*T443
k= 45° Pages: S39–S41

KSOM™ Mini



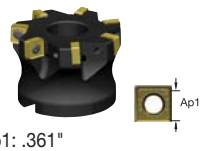
Ap1: .138" (8 cutting edges)
Ap2: .354" (4 cutting edges)
Diameter: 1.25–6"
Insert Style: OF*T53
k = 47° Pages: S44–S48

KSOM™



Ap1: .197" (8 cutting edges)
Ap2: .461" (4 cutting edges)
Diameter: 2.5–6"
Insert Style: OF*T64
k = 47° Pages: S50–S53

KSSM8+™ • IC10



Ap1: .361"
Cutting Edges: 8
Diameter: 2–4"
Insert Style: SN*J31
k= 2° Pages: S56–S57

KSSM8+ • IC12



Ap1: Ap1: .236" (-ENLD)
Ap1: .467" (-SNGD)
Cutting Edges: 8
Diameter: 2–6"
Insert Style: SN*J44
k= 3° Pages: S58–S60

Fix-Perfect™ 20° • Cast Iron • IC12



Ap1: .232" (8 cutting edges)
Ap2: .374" (4 cutting edges)
Diameter: 2–10"
Insert Style: SPHX1205
k = 20° Pages: S64–S66

Fix-Perfect™ 0° • Cast Iron • IC12



Ap1: .236" (8 cutting edges)
Ap1: .394" (4 cutting edges)
Diameter: 2–6"
Insert Style: SPHX1205
k = 0° Pages: S67–S69

Fix-Perfect™ 20° • Cast Iron • IC15



Ap1: .256" (8 cutting edges)
Ap2: .374" (4 cutting edges)
Diameter: 2–10"
Insert Style: SPHX15T6
k = 20° Pages: S70–S72

(continued)

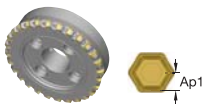
(Face Mills Application Selection Guide — continued)

HexaCut™ 45° • Cast Iron



Ap1: .256"
Cutting Edges: 12
Diameter: 3.15–12"
Insert Style: HN*535
k = 45° Pages: S77–S80

HexaCut™ 30° • Cast Iron



Ap1: .315"
Cutting Edges: 12
Diameter: 3.15–12"
Insert Style: HN*535
k = 30° Pages: S82–S83

KSSR™ 6°



Ap1: .197"
Cutting Edges: 8
Diameter: 2.5–10"
Insert Style: SNXF43
k = 6° Pages: S88–S90

MEGA 45° • Heavy Duty



Ap1: .675"
Cutting Edges: 4
Diameter: 5–12"
Insert Style: LNPU86
k = 45° Pages: S94–S95

MEGA 60 • Heavy Duty



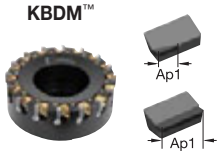
Ap1: .840"
Cutting Edges: 4
Diameter: 5–12"
Insert Style: LNPU76
k = 30° Pages: S98–S99

MEGA 90 • Heavy Duty



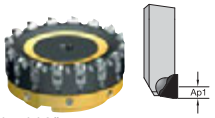
Ap1: 1.0"
Cutting Edges: 4
Diameter: 5–12"
Insert Style: LNPU76
k = 0° Pages: S100–S101

KBDM™



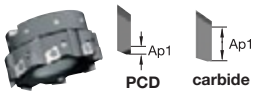
Ap1: 0.100/0.250/0.500"
Cutting Edges: 1
Diameter: 2.5–8"
Insert Style: KSDR10
Pages: S104–S106

KSCM™ AluMill™



Ap1: .118"
Cutting Edges: 1
Diameter: 2.5–12"
k = 0° Pages: S109–S111

Fix-Perfect™ 0° • Aluminum

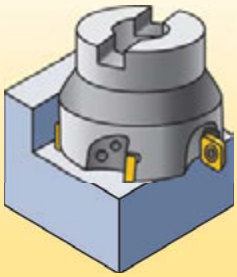


Ap1: .205" (PCD)
Ap1: .374" (carbide)
Cutting Edges: 4
Diameter: 1.5–8"
Insert Style: BGHX15L5
k = 0° Pages: S121–S125

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Shoulder Mills



Mill 4-11™



Ap1: .433"
Cutting Edges: 4
Diameter: .625–3"
Insert Style: LN*U43
Pages: T4–T10

k = 0°

Mill 4-15™



Ap1: .610"
Cutting Edges: 4
Diameter: 1–6"
Insert Style: LN*U54
Pages: T14–T20

k = 0°

Mill 1-7™



Ap1: .275"
Cutting Edges: 2
Diameter: .500–.745"
Insert Style: EP07
Pages: T24–T25

k = 0°

Mill 1-10™



Ap1: .396"
Cutting Edges: 2
Diameter: .500–4.00"
Insert Style: EC10
Pages: T29–T37

k = 0°

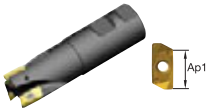
Mill 1-10™ Helical



Ap1: .70–1.80"
Cutting Edges: 2
Diameter: .750–2.00"
Insert Style: EC10
Pages: T40–T47

k = 0°

Mill 1-14™



Ap1: .551–.580"
Cutting Edges: 2
Diameter: .625–4.00"
Insert Style: EC14
Pages: T49–T59

k = 0°

Mill 1-14™ Helical



Ap1: 1.10–2.13"
Cutting Edges: 2
Diameter: 1.25–2.50"
Insert Style: EC14
Pages: T63–T70

k = 0°

Mill 1-18™



Ap1: .64–.71"
Cutting Edges: 2
Diameter: .97–8.00"
Insert Style: EC18
Pages: T75–T85

k = 0°

Mill 1-25™



Ap1: .98"
Cutting Edges: 2
Diameter: 1.50–5.00"
Insert Style: KG25
Pages: T89–T93

k = 0°

5720VZ16



Ap: .630"
Cutting Edges: 2
Diameter: 1–3"
Insert Style: ZDET16M5
Pages: T96–T100

k = 0°

KSSM™ 0° IC 10



Ap1: .259"
Cutting Edges: 4
Diameter: .750–3.0"
Insert Style: SP*T31
Pages: T107–T112

k = 0°

KSSM™ 0° IC 12



Ap1: .361"
Cutting Edges: 4
Diameter: 2.00–10.00"
Insert Style: SD*T43
Pages: T113–T117

k = 0°

KSSM™ • Helical 0° IC 12



Ap1: 1.691–4.110"
Cutting Edges: 4
Diameter: 2.00–3.00"
Insert Style: SD*T43
Pages: T119–T124

k = 0°

5230VS09



Cutting Edges: 4
Diameter: 2"
Insert Style: SD*T09
Pages: T127–T130

k = 0°

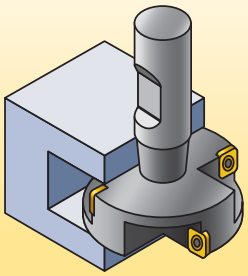
5230VS12



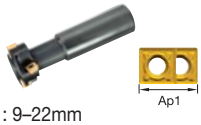
Cutting Edges: 4
Diameter: 2–4"
Insert Style: SDHT1204/
SDMW1204
Pages: T131–T133

k = 0°

Slotting



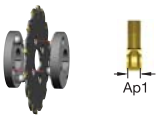
KTMS™ Slotting Cutter



k = 0°

Ap1: 9–22mm
Cutting Edges: 4
Diameter: 21–50mm
Insert Style: SDMT
Pages: U3–U4

KVNS™ A2™ Slotting Cutters



k = 0°

Ap1: .063–.245"
Cutting Edge: 1
Diameter: 2.5–10"
Pages: U7–U10

0° SN Slotting Cutters



k = 0°

B min: .161–.187"
Cutting Edges: 4
Diameter: 3–6"
Insert Style: SNHX
Pages: U13–U15

0° LN Slotting Cutters



k = 0°

B min: .250–.500"
Cutting Edges: 4
Diameter: 2.5–8"
Insert Style: LNEU/LNEQ
Pages: U17–U22

KSSM™ Slotting Cutters • IC 10



k = 0°

B min: .551–.709"
Cutting Edges: 4
Diameter: 4–12"
Insert Style: SP*T10T3
Pages: U25–U31

KSSM™ Slotting Cutters • IC 12



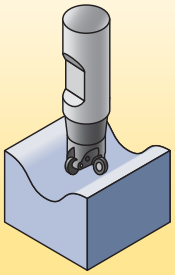
k = 0°

B min: .709–.917"
Cutting Edges: 4
Diameter: 5–12"
Insert Style: SD*T1204
Pages: U32–U40

● first choice
○ alternate choice

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Copy Mills



7792VXP06



Ap1: .035"
Cutting Edges: 4
Diameter: .625–1.250"
Insert Style: XP*T0603
Pages: V4–V8

7792VXD09



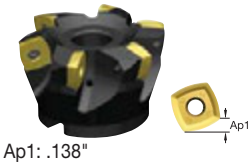
Ap1: .059"
Cutting Edges: 4
Diameter: 1–2"
Insert Style: XD*T0904
Pages: V9–V16

7792VXD12



Ap1: .098"
Cutting Edges: 4
Diameter: 1.25–6.3"
Insert Style: XD*T1205
Pages: V17–V24

7792VXE16



Ap1: .138"
Cutting Edges: 4
Diameter: 1.5–6"
Insert Style: XE*1605
Pages: V25–V29

KenFeed™ 2X Series



Ap1: .059"
Cutting Edges: 6
Diameter: 1–3"
Insert Style: WOEJ09
Pages: V36–V40

HF

Rodeka™ 10



Ap1: .200"
Cutting Edges: 8
Diameter: 1–2"
Insert Style: RN*J10
Pages: V44–V50

Rodeka™ IC12



Ap1: .117"/.236"
Cutting Edges: 12/8
Diameter: 1.25–4"
Insert Style: RN*J12
Pages: V51–V57

Round

Rodeka 16



Ap1: .156"
Cutting Edges: 12
Diameter: 1.5–5"
Insert Style: RN*J16
Pages: V58–V60

Rodeka 12X



Ap1: .236"
Cutting Edges: 8
Diameter: 1.575–3.15"
Insert Style: RNGJ12
Pages: V62–V64

KSRM™ • IC12



Ap1: .236"
Diameter: 1.25–4"
Insert Style: RP*T1204
Pages: V68–V73

Round

KSRM™ • IC16



Ap1: .315"
Diameter: 1.5–6"
Insert Style: RP*T1605
Pages: V75–V79

Round

KSRM™ • IC 1/2"



Ap1: .250"
Diameter: 1.25–3"
Insert Style: RP*T43
Pages: V81–V85

Round

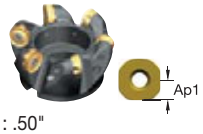
KSRM™ • IC 3/4"



Ap1: .375"
Diameter: 2–8"
Insert Style: RCGT64
Pages: V87–V90

Round

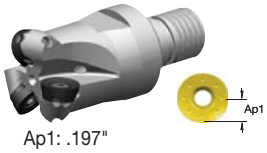
KSRM™ • IC 1.0"



Ap1: .50"
Diameter: 3–8"
Insert Style: RCGT86
Pages: V91–V93

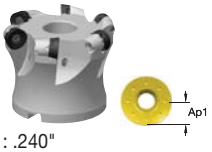
Round

7713VR10



Ap1: .197"
Diameter: 1–2.5"
Insert Style: RP*10
Pages: V97–V101

7713VR12



Ap1: .240"
Diameter: 1–3"
Insert Style: RP*12
Pages: V102–V107

(continued)

(Copy Mills Application Selection Guide — continued)

5505VX



Ap1: .625-2"
Diameter: .625-2"
Insert Style: XPNT
Pages: V111–V118

Ball Nose End Mills • KDMB™



Ap1: .125–.625"
Diameter: .25–1.25"
Insert Style: KDMB
Pages: V121–V131

KDMT™ High Feed



Ap1: up to .04"
Diameter: .5–.75"
Insert Style: KDMT
Pages: V132–V135

HF

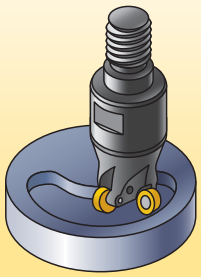
Z-Axis Plunge Mill



Ap1: .433"
Diameter: 1.25–6"
Insert Style: SD*T43
Pages: V139–V143

k = 1.5°

Ceramic Mills



KCRA



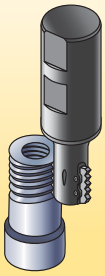
Ap1: .250"
Diameter: 1.5–3"
Insert Style: RNGN43
Pages: V148–V151

KIPR



Ap: .249"
Diameter: .625–1.5"
Insert Style: RPG2150/ RPG32/RPG43
Pages: V155–V159

Thread Mills



Indexable Thread Mills • Parallel and Conical Threads



Inserts: TM24, TM25, TM40, TM41
Diameter: .450–2.320"
Pages: W4–W27

KTMD U Series



Diameter: 580–2.090"
Pages: W29–W37

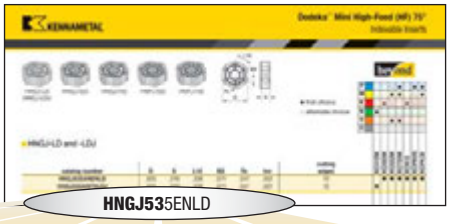
TMS Thread Milling System



Diameter: .354–1.811"
Mini Shank: STN10
Normal Shank: STN11, STN16, STN27
Long Shank: STN16, STN27
Pages: W39–W47

How Do Catalog Numbers Work?

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



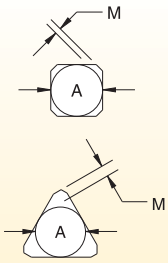
H — Insert Shape

A	Parallelogram	85°
C	Rhomboid	80°
E		75°
H	Hexagon	120°
L	Rectangular	90°
O	Octagon	135°
R	Round	—
S	Square	90°
T	Triangular	60°
X	Kennametal Standard Form	

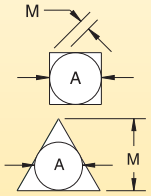
N — Insert Clearance Angle

A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

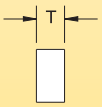
G — Tolerance Class



Indexable inserts with facets/wipers



Indexable inserts with corner radii



Insert thickness

J — Geometry and Clamping Type

5 — Size

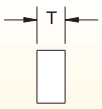
A	symbol
1.000	8
.750	6
.625	5
.500	4
.375	3
.250	2



inscribed circle "A"

For shapes A, L, and X, see position #1; use length of leading cutting edge in increments of 1/4".

3 — Thickness



insert thickness

T	in 1/16"
.0938	1.5
.125	2
.1562	2.5
.1875	3
.2188	3.5
.2500	4
.3125	5

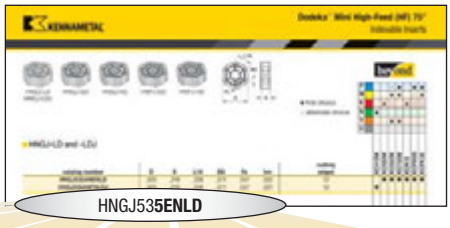
tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"	tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"
A	.001	.0002	.001	J	.002–.005*	.0002	.001
B	.001	.0002	.005	K	.002–.005*	.0005	.001
C	.001	.0005	.001	L	.002–.005*	.001	.001
D	.001	.0005	.005	M	.002–.005*	.003–.008*	.005
E	.001	.001	.001	N	.002–.005*	.003–.008*	.001
F	.0005	.0002	.001	P**	.0015	.0015	.0015
G	.001	.001	.005	U	.003–.010*	.005–.015*	.005
H	.0005	.0005	.001	—	—	—	—

*See table below for tolerances according to insert size and class.
**Kennametal standard only.

A	tolerances on "A"		tolerances on "M"	
	classes J, K, L, M, N	class U	classes M & N	class U
.1875–.3937	.002	.003	.003	.005
.4375–.5625	.003	.005	.005	.008
.5906–.8125	.004	.007	.006	.011
.8661–1.188	.005	.010	.007	.015
1.250–1.378	.006	.010	.008	.015

symbol	hole	shape of hole	chipbreaker	shape of insert's section
N	without		without	
R			single sided	
F			double sided	
A	with	cylindrical hole	without	
M			single sided	
G			double sided	
W		partly cylindrical hole, 40–60° countersink	without	
T			single sided	
Q		partly cylindrical hole, 40–60° double countersink	without	
U			double sided	
B		partly cylindrical hole, 70–90° countersink	without	
H			single sided	
C		partly cylindrical hole, 70–90° double countersink	without	
J			double sided	
X	special design			

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



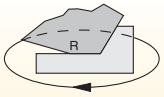
5	E	N	–	L	D	
Corner Configuration	Cutting Edge Form	Insert Hand	Facet Width	Edge Prep Size	Rake Face Angle	Added Info

F Sharp

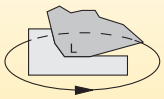
E Honed

T T-land

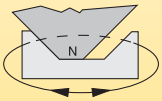
S Honed T-land



direction of cutter rotation



direction of cutter rotation



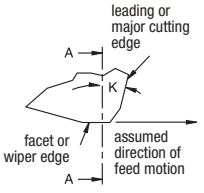
direction of cutter rotation

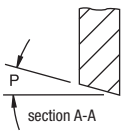
.0312	2
.0469	3
.0625	4
.0938	6

Facet width is number of 1/64" increments (1/32" for old styles).

L = Light — sharp or lightly honed and/or T-land
G = General — medium hone and/or T-land
H = Heavy — large hone and/or T-land

J = Polished rake face
P = Partial T-land
W = Wiper/radiused facet





radius	r
0	.004
0.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8

If letter is replaced by number(s), refer to table for radius "r".

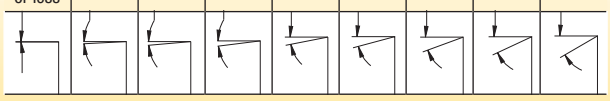
lead angle K

A	45°
D	handed 30°
K	neutral 30°
E	handed 15°
L	neutral 15°
P	0°

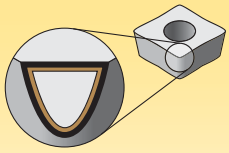
wiper edge clearance P

A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

N	A	B	C	P	D	E	F	G
0° or less	3°	5°	7°	11°	15°	20°	25°	30°



Nominal or average angle of rake on insert face at leading cutting edge before edge prep and before installation.

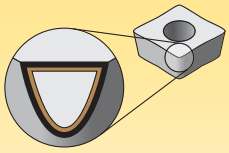


Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Grades

Coating	Grade Description	wear resistance ↔ toughness: 05	10	15	20	25	30	35	40	45
GH1	Uncoated submicron carbide grade with high wear resistance. GH1 is suitable for machining of aluminum and non-ferrous materials. Also a good choice for the finishing of cast iron. This grade can be used both wet and dry and is designed for light and general machining.	K, N	K, N	K, N						
GH2	Uncoated, fine grained carbide grade with good strength. GH is suitable for machining of aluminum and non-ferrous materials. Also good choice for cast iron for medium toughness requirements. This grade can be used both wet and dry and is designed for light and general machining.				K, N, S	K, N, S	K, N			
K110M	Uncoated carbide grade K110M is a universal grade for machining non-ferrous material. For use in light and general machining. K110M can be used with or without coolant.		K, N, S	K, N, S	N					
K115M	Uncoated carbide grade. K115M is a premium uncoated grade designed for high edge-wear resistance in non-ferrous and cast iron materials. Recommended to be used with coolant.	K, N	K, N	N						
K313	Uncoated carbide grade. K313 is suitable for machining cast iron, high-temperature alloys and non-ferrous materials. This grade can be used both wet and dry and is designed for light and general machining.	K, N, S	K, N, S	K, N						
KBK50	A high CBN content, PcBN tip brazed onto a carbide insert. Designed to machine at highest speeds and tool life on semi-finishing and finishing cast iron materials.	K	K	K						
KC410M	PVD, TiB_2 coating on grade KC410M is extremely hard and provides very good wear characteristics at higher cutting speeds. KC410M resists built-up edge, can help reduce burring, and generates excellent surface finishes. The grade is best suited for aluminum with <10% silicon and other non-ferrous materials.	N	N	N						



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

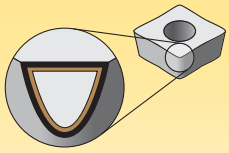
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ← → toughness

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC422M	The PVD TiB_2 coating is very wear resistant. Together with hard coating and a tough substrate, this is an excellent combination for medium to roughing applications in aluminum <10% silicon and other non-ferrous materials.	N									
KC505M	Coated carbide with PVD TiAlN. KC505M is a highly wear-resistant grade primarily used for light maching applications in steel and hardened steels.	P									
		H									
KC510M	Coated carbide grade with a TiAiN coating (PVD). KC510M is a highly wear-resistant grade primarily for use in milling aluminum and high-temperature alloys in light applications. Can also be used for machining of steel and hardened steel.	P									
		N									
		S									
		H									
KC514M	Coated carbide grade with a thicker PVD TiAlN coating. KC514M combines high wear resistance with good toughness. Primarily for light to medium machining of cast irons. This grade can be used both wet and dry.	K									
KC515M	Premium-coated grade K10 substrate with built-in wear resistance and (TiAlN) coating for extended life during finishing applications. Used in finish ball nose and back draft inserts for the die and mold industry. Capable of running at moderate to high cutting speeds.	P									
		M									
		K									
KC520M	Coated carbide grade with TiAlN coating (PVD). KC520M is a carbide grade developed specifically for general machining of ductile cast iron. This grade can be used with or without coolant.	K									
KC522M	Coated carbide grade with a AlTiN (PVD) coating. KC522M is engineered to provide better performance in general machining of high-temperature alloys and stainless steel. KC522M resists breakage and offers improved wear resistance and increased strength.	P									
		M									
		K									
		S									



Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

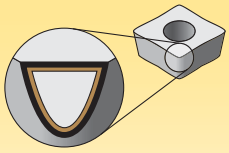
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ← → toughness

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC524M	Coated carbide grade with a thicker PVD TiAlN coating. KC524M combines good wear resistance with high toughness. Primarily for general machining of all cast irons. This grade can be used both wet and dry.	K									
KC525M	Coated carbide grade with a TiAlN coating (PVD). New universal carbide grade for milling steel, stainless steel, and high-temperature alloys. KC525M can be used with or without coolant. Primarily for use in light and general machining.	P, M, S									
KC530M	Premium PVD-coated carbide grade (P40) with a TiAlN coating. Enables extended tool life at moderate feeds and high cutting speeds. First choice for milling in all steels, including die and mold steels. Recommended for use without coolant.	P, M									
KC725M	Coated carbide grade with an advanced PVD TiAlN coating. KC725M is a high-performance grade for milling steel, stainless steel, and ductile cast iron. The good thermal shock resistance of the substrate makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P, M, S									
KC735M	PVD/TiN coated carbide grade. This grade offers an unusual combination of high toughness and wear resistance. Even under extreme toughness requirements, it achieves outstanding results in general and heavy-machining applications. Suitable for dry and wet machining.	P, M									
KCK15	Coated carbide grade with CVD multilayer coating (TiN/MT TiCN/Al_2O_3) and advanced Beyond™ post-coat treatment. KCK15 is a wear-resistant grade with balanced toughness for general milling of cast irons at higher speeds. Best results in dry, but can also be used wet.	K									
KCK20	A new PVD multilayer AlTiN + AlCrN coated carbide with an excellent combination of wear resistance and coating strength. The KCK20 grade is specifically engineered to maximize coating adhesion and edge strength, making this grade ideal in wet interrupted cutting of gray and ductile irons, and can also be used in dry conditions. It can be used in a wide range of applications, from finishing to roughing, to maximize productivity wherever strength and reliability are needed.	K									



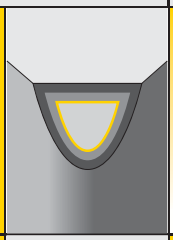
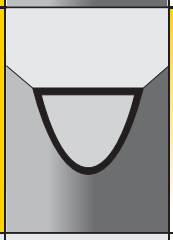
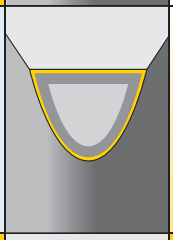
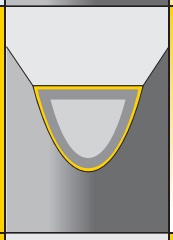
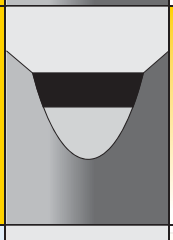
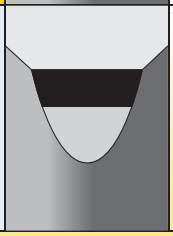
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

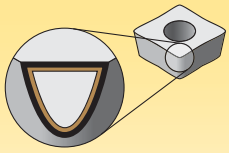
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ⟷ toughness

Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCPK30		Coated carbide grade with CVD multilayer (TiN/TiCN/Al_2O_3) and advanced Beyond™ post-coat treatment. Substrate is very tough. KCPK30 has a wide application area in general and roughing milling of steels and cast irons. Performs best dry, but can also be used wet.	P					■	■	■	■	
			K					■	■	■	■	
KCPM40		Coated carbide grade with an advanced PVD TiAlN/AlCrN coating. Tough substrate with excellent capability at higher temperatures. KCPM40™ is the first choice for milling steel and stainless steel. Good thermal shock resistance makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P					■	■	■	■	
			M					■	■	■	■	
KCSM30		Submicron substrate coated with high-performance TiAlN-PVD coating is an excellent choice for titanium, but also high-temperature alloys and stainless with higher speeds for light to medium cuts. First choice for application with thin to medium chip thickness, dry and wet.	P				■	■	■			
			M					■	■	■		
			S				■	■	■	■		
KCSM40		Coated carbide grade with an advanced PVD TiAlN/TiN coating. Premium substrate with newly developed binder composition. KCSM40 is a high-performance grade for titanium, super alloys, and stainless steel. High thermal shock resistance of the substrate makes this grade ideal for wet machining. First choice for roughing and unsuitable cutting conditions.	M					■	■	■	■	
			S					■	■	■	■	
KD1400		A PCD-tip brazed to a carbide carrier for high-speed machining of non-ferrous materials. KD1400 has excellent chipping resistance with good wear characteristics. Coolant is preferred.	N	■	■	■						
KD1410		A PCD-tip brazed to carbide for machining aluminum with a very high silicon content, abrasive non-ferrous materials, and fiber-reinforced plastics. KD1410 can be used at very high cutting speeds, even where good surface finishes are required. This grade can be used both wet or dry but is suggested to use coolant where good surface finishes are required.	N		■	■						

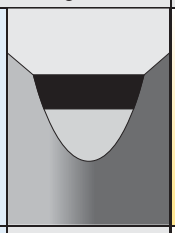
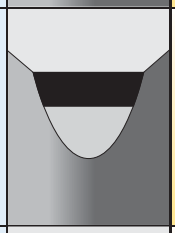
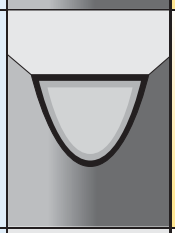
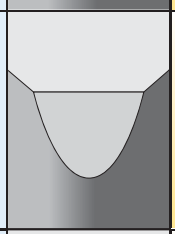
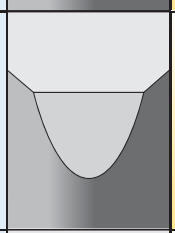
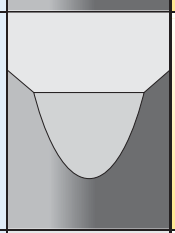
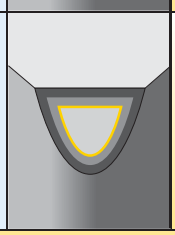


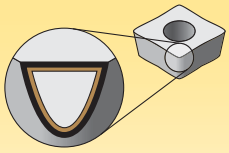
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ⟷ toughness

Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KD1415		PCD-tip brazed to carbide for general machining of aluminum with a low silicon content, non-ferrous heavy metals, and plastics. KD1415™ can be used at high cutting speeds and for continuous cutting, even where outstanding surface finishes are required. KD1415 is suitable for wet and dry machining.	N		■	■						
KD1425		A PCD-tipped brazed to a carbide carrier for high-speed machining of aluminum and other non-ferrous materials. KD1425™ provides superior wear resistance with moderate toughness to resist chipping. Coolant is preferred.	N	■	■	■						
KTPK20		Cermet with PVD-TiAlN/AlCrN multi-layer coating. This tough cermet is primarily used in light and general machining of steel, stainless steels, and cast irons. Performs best dry.	P M K			■ ■ ■	■ ■ ■	■ ■				
KY3500		A ceramic cutting material based on micro-grain Si_3N_4 primarily for use in light to general machining of gray cast iron and ferritic ductile cast iron. Dry machining is preferred while using this grade.	K				■	■	■	■		
KYS30		KYS30™ is the latest in the line of α/βSiAlON grades for general purpose to finish machining of high-temperature alloys. This grade provides excellent wear characteristics, with better toughness and thermal shock resistance than whisker ceramics. KYS30 also gives improved thermal stability.	S				■	■	■			
KYSP30		Combines excellent wear properties, fracture toughness, and thermal shock resistance for general purpose to finish machining of high-temperature alloys. KYSP30 provides superior depth-of-cut notch resistance compared to whisker ceramics.	S					■	■	■		
MP91M		CVD-coated carbide grade with TiN/MT-TiCN/Al_2O_3. Tough substrate in combination with wear resistant for roughing and semi-finishing of steel, cast iron, and hardened materials.	P K H					■ ■ ■	■ ■ ■	■ ■ ■		



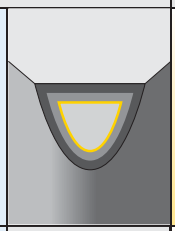
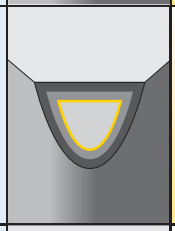
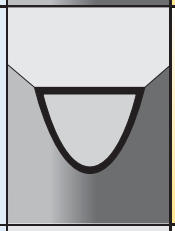
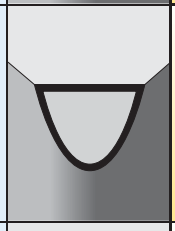
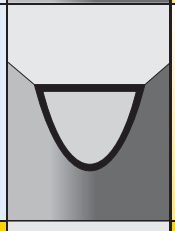
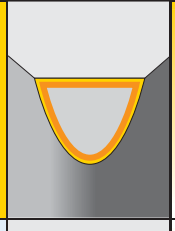
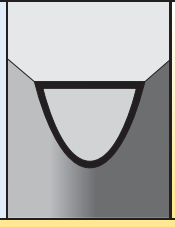
Coatings provide high-speed capability and are engineered for finishing to heavy roughing.

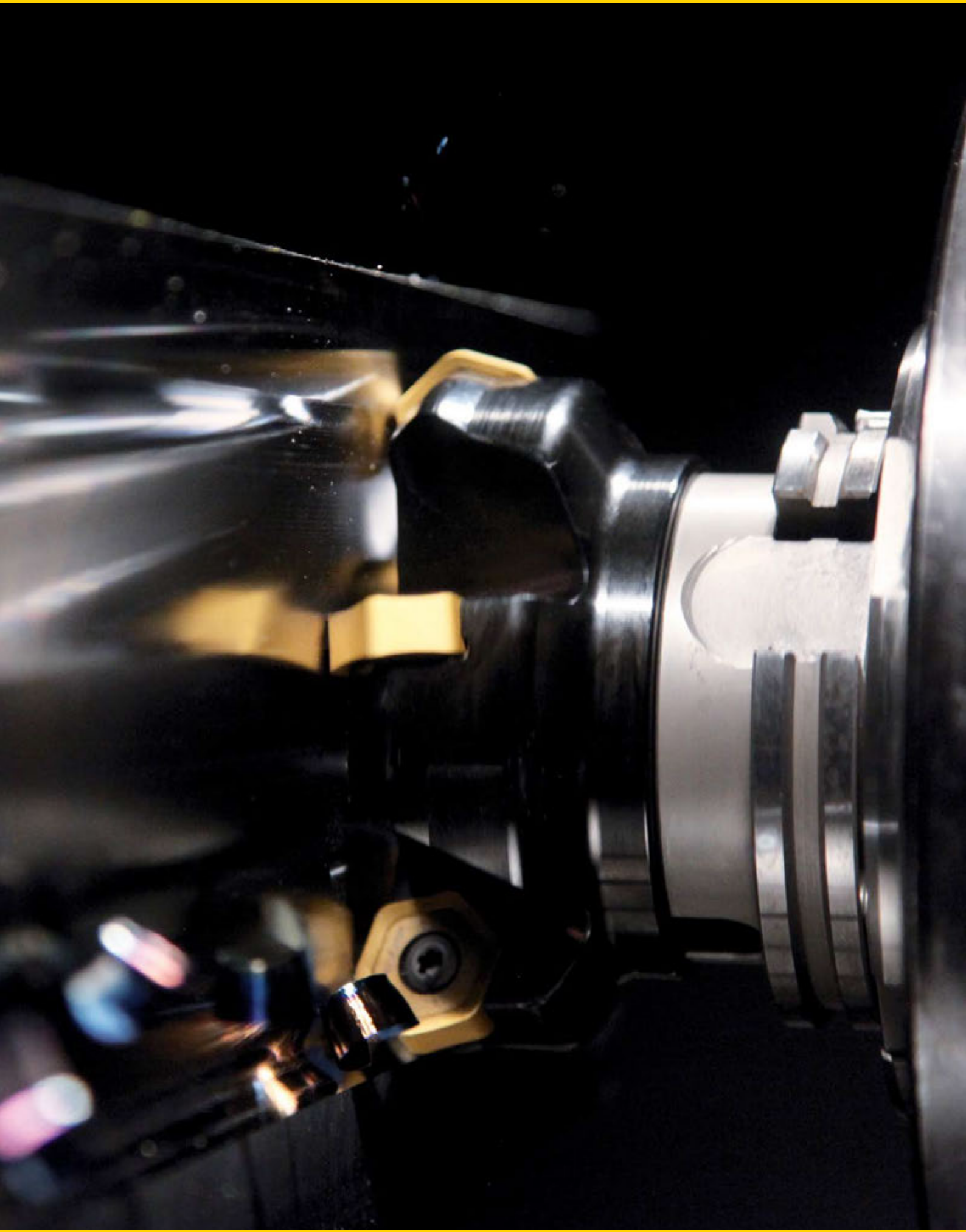
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Preferred grade.

wear resistance ⟷ toughness

Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
SC3025		Coated carbide grade with CVD multilayer coating (TiN/TiCN/Al_2O_3). SC3025 is a wear-resistant grade with balanced toughness for general milling of cast irons at higher speeds. Best results when using dry, but can also be used wet.	K									
SC6525		Coated carbide grade with CVD multi-layer (TiN/TiCN/Al_2O_3). Tough substrate with good speed capability. SC6525 has a wide application area in general and roughing milling of steels, stainless steels, and cast irons. Performs best dry, but can also be used wet.	P M K									
SP4019		Fine-grained substrate coated with PVD TiAlN nano-composite. First choice for applications with thin to medium chip thickness. This grade works on many workpiece materials, dry and wet.	M K N S H									
SP6519		Coated carbide grade with PVD TiAlN nano-composite coating on a tough substrate. Primarily for use in general and heavy machining, dry and wet.	P M K N S H									
X400		Coated carbide grade with thick PVD TiAlN nanocomposite on X-Grade™ technology substrate. With excellent toughness, good choice for difficult cutting conditions on alloyed and hardened steels. Usable in combination with high feeds.	P H									
X500		CVD TiN/TiCN/TiN coated carbide on tough substrate (X-Grade™ technology). For difficult applications with heavy impacts, vibrations, or unstable conditions. High stability against thermal cracks. Excellent grade for high-temperature alloys, stainless steels, and titanium.	P M S									
X700		PVD TiAlN nano-coating on premium substrate (X-Grade™ technology). Milling of stainless steel, super alloys, and titanium with medium applications.	M S									



Indexable Milling • Face Milling

Dodeka • Leader in Advanced Face Milling (12 Edges per Insert) S2–S26

Mill 16 • 16-Edged Inserts for Machining Cast Iron Materials S28–S35

KSSM 45° • Conventional Machining S38–S41

KSOM Mini • KSOM • Best in Class-Free Cutting Face Mills S42–S53

KSSM8+ • 8-Edged Double-Sided Face Mills with Lead Angle Close to 0° S54–S60

Fix-Perfect • Cast Iron Rougher and Finisher S62–S73

HexaCut Series • Machining Automotive Components S74–S84

KSSR • Cast Iron • Roughing and Finishing 6° Lead S86–S90

MEGA 45 • For True Heavy-Duty Machining S92–S95

MEGA 60/90 • For True Heavy-Duty Machining S96–S101

KBDM • PCD Face Milling S102–S107

KSCM AluMill S108–S118

Fix-Perfect Aluminum S120–S126

Dodeka™ Series

Leader in Advanced Face Milling Applications

Primary Application

Dodeka Mini, Dodeka, and Dodeka MAX™ platform face milling boosters are the most comprehensive face milling boosters on the market today. Twelve true cutting edges per insert mean low cost-per-edge and high productivity. With Beyond™ premium milling grades, achieve up to 30% higher metal removal rates (MRR), 25% lower cutting forces due to soft cutting action, and up to 35% better tool life in light to heavy machining.

Features and Benefits

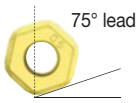
Dodeka Series • Most comprehensive face milling platform on the market. Providing an excellent cost-per-cutting edge with market leading performance. The Dodeka Series platform will cover all your face milling application needs.

All cutter body variations can be loaded with one insert style.

Dodeka Mini High-Feed 75°
Dodeka High-Feed 75°



12 True Cutting Edges



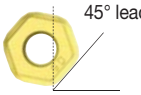
Dodeka Mini	**Ap1 max = .065"**
Dodeka	**Ap1 max = .087"**

Dodeka Mini HF and Dodeka HF can be loaded with all Dodeka Mini standard inserts, except wiper inserts.

Dodeka Mini 45°
Dodeka 45°
Dodeka MAX 45°



12 True Cutting Edges



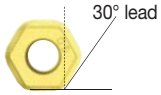
Dodeka Mini	**Ap1 max = .127"**
Dodeka	**Ap1 max = .178"**
Dodeka MAX	**Ap1 max = .315"**

Best-in-class leader in face milling up to Ap1 max = .315".

Dodeka Mini 30°



12 True Cutting Edges



Dodeka Mini	**Ap1 max = .171"**

Achieve a higher axial depth-of-cut capability up to Ap1 = .174" with standard Dodeka Mini inserts.



Dodeka™ Mini Series

insert size HN.J43
Ap1 max = .171"
pages S4–S16



Dodeka

insert size HN.J535
Ap1 max = .178"
pages S17–S23

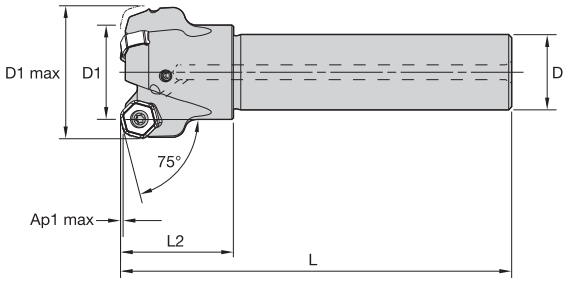


Dodeka MAX™

insert size HN.J75
Ap1 max = .315"
pages S24–S26

P M K N S **Applicable in most material groups • Excellent results in machining titanium**

- High-feed capability.
- .06" depth-of-cut capability.
- Twelve cutting edges per insert.





Dodeka Mini High-Feed 75° • Cylindrical End Mills

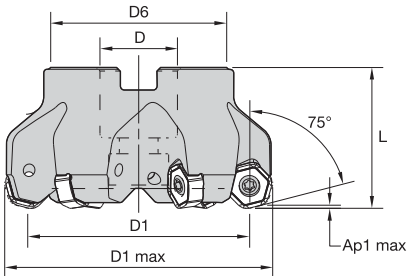
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4136407	**KSHRHF100D02C075HN43L480**	1.000	1.518	.750	4.800	1.250	.064	2	.73	19800
4136408	**KSHRHF100D03C075HN43L480**	1.000	1.518	.750	4.800	1.250	.064	3	.69	19800
4136410	**KSHRHF125D04C100HN43L520**	1.250	1.768	1.000	5.200	1.500	.065	4	1.28	17600

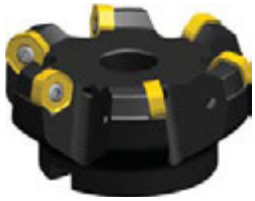
Spare Parts

D1	insert screw	in. lbs.	wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- High-feed capability.







Dodeka Mini High-Feed 75° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136411	KSHRHF150HN43F3	1.500	2.018	.750	1.750	1.575	.065	5	.75	16700
4136412	KSHRHF200HN43M3	2.000	2.517	.750	1.750	1.575	.065	5	1.10	12500
4136413	KSHRHF250HN43M3	2.500	3.017	.750	1.750	1.575	.065	6	1.49	10000
4136414	KSHRHF300HN43M4	3.000	3.517	1.000	2.189	1.750	.065	8	2.21	8300

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw
1.500	193.492	31	170.025	S445
2.000	193.492	31	170.025	S445
2.500	193.492	31	170.025	S445
3.000	193.492	31	170.025	S458



Dodeka Mini High-Feed

First choice for long reach face milling applications or light fixtures.

Chip thinning effect due to lead angle 14,5°. Tremendous enlargement of feed rate and metal removal rate (MRR).

Up to 40% shorter machining cycle time versus conventional milling.

Insert Selection Guide

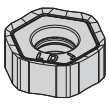
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

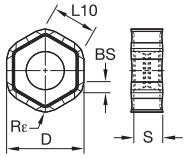
Indexable Inserts

- First choice for machining aluminum.

● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											


HNGJ-LDJ

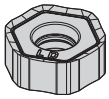


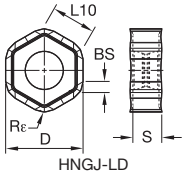
HNGJ-LDJ

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.


HNGJ-LD



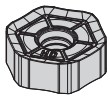
HNGJ-LD

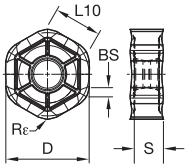
HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	—	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–

Face Milling

• First choice for high-performance heavy roughing.


HNGJ-HD



HNGJ-HD

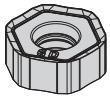
● first choice
○ alternate choice

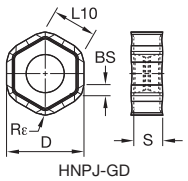
P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										

HNGJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	–	●	–	●	●	●	●

• First choice for general purpose.


HNPJ-GD

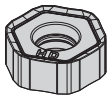


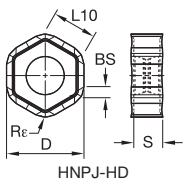
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	●

• First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	●	●	●	●	●	●	●
HNPJ438ANSNHD	.472	–	.253	.126	.174	.004	12	–	–	–	–	●	●	●	●	●	●

Recommended Starting Feeds

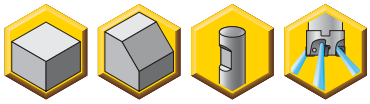
Recommended Starting Feeds [IPT]

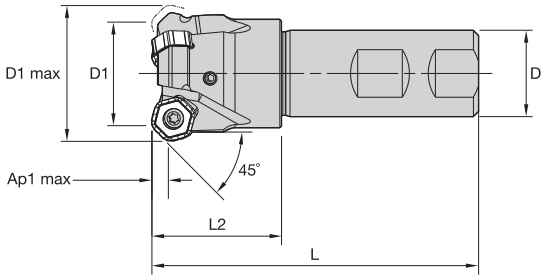
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.018	**.051**	.089	.013	**.036**	.063	.010	**.027**	.047	.008	**.024**	.041	.008	**.022**	.037	.F..LDJ
.E..LD	.020	**.066**	.112	.015	**.047**	.079	.011	**.035**	.058	.010	**.030**	.051	.009	**.028**	.046	.E..LD
.S..GD	.036	**.086**	.132	.026	**.061**	.092	.019	**.045**	.068	.017	**.039**	.059	.015	**.036**	.054	.S..GD
.S..HD	.036	**.093**	.153	.026	**.066**	.106	.019	**.049**	.078	.017	**.042**	.068	.015	**.039**	.062	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







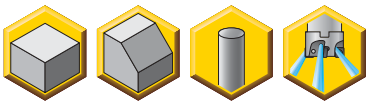
Dodeka Mini 45° • Weldon® End Mills

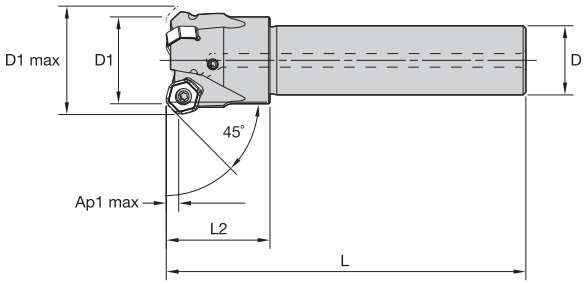
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130514	**KSHR100D02W075HN06**	1.000	1.322	.750	3.280	1.250	.127	2	.46	19800
4130515	**KSHR100D03W075HN06**	1.000	1.322	.750	3.280	1.250	.127	3	.44	19800
4130516	**KSHR125D03W100HN06**	1.250	1.572	1.000	3.780	1.500	.127	3	.88	17600
4130517	**KSHR125D04W100HN06**	1.250	1.572	1.000	3.780	1.500	.127	4	.89	17600

Spare Parts

D1	 insert screw	 in. lbs.	 wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







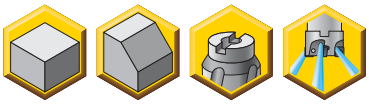
Dodeka Mini 45° • Cylindrical End Mills

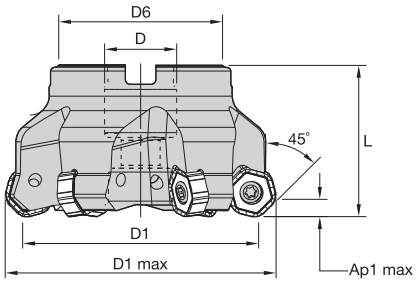
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130518	**KSHR100D02C075HN06L480**	1.000	1.322	.750	4.800	1.250	.127	2	.64	19800
4130519	**KSHR100D03C075HN06L480**	1.000	1.322	.750	4.800	1.250	.127	3	.62	19800
4130533	**KSHR100D03C100HN06L800**	1.000	1.322	1.000	8.000	1.250	.127	3	1.64	19800
4130520	**KSHR125D03C100HN06L520**	1.250	1.572	1.000	5.200	1.500	.127	3	1.19	17600
4130521	**KSHR125D04C100HN06L520**	1.250	1.572	1.000	5.200	1.500	.127	4	1.20	17600

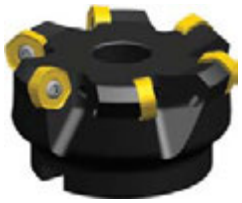
Spare Parts

D1	 insert screw	 in. lbs.	 wrench
1.000	**193.492**	31	**170.025**
1.250	**193.492**	31	**170.025**

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.







Dodeka Mini 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4130426	**KSHR150HN4345M3**	1.500	1.822	.500	1.440	1.575	.127	4	.57	16700
4130427	**KSHR150HN4345F2**	1.500	1.822	.500	1.440	1.575	.127	5	.56	16700
4130428	**KSHR200HN4345C3**	2.000	2.321	.750	1.750	1.575	.127	4	.93	12500
4130429	**KSHR200HN4345M3**	2.000	2.321	.750	1.750	1.575	.127	5	.93	12500
4130430	**KSHR200HN4345F3**	2.000	2.321	.750	1.750	1.575	.127	6	.97	12500
4130431	**KSHR250HN4345C3**	2.500	2.821	.750	1.750	1.575	.127	4	1.20	10000
4130432	**KSHR250HN4345M3**	2.500	2.821	.750	1.750	1.575	.127	6	1.27	10000
4130493	**KSHR250HN4345F3**	2.500	2.821	.750	1.750	1.575	.127	8	1.29	10000
4130494	**KSHR300HN4345C4**	3.000	3.321	1.000	2.189	1.750	.127	5	1.90	8300
4130495	**KSHR300HN4345M4**	3.000	3.321	1.000	2.189	1.750	.127	8	2.09	8300
4130496	**KSHR300HN4345F4**	3.000	3.321	1.000	2.189	1.750	.127	10	2.07	8300
4130497	**KSHR400HN4345C6**	4.000	4.321	1.500	3.661	1.750	.127	6	3.48	6300
4130498	**KSHR400HN4345M6**	4.000	4.321	1.500	3.661	1.750	.127	9	3.66	6300
4130499	**KSHR400HN4345F6**	4.000	4.321	1.500	3.661	1.750	.127	12	3.62	6300
4130500	**KSHR500HN4345C6**	5.000	5.320	1.500	3.652	2.380	.127	8	6.38	5000
4130501	**KSHR500HN4345M6**	5.000	5.320	1.500	3.652	2.380	.127	12	6.59	5000
4130502	**KSHR500HN4345F6**	5.000	5.320	1.500	3.652	2.380	.127	16	6.70	5000

Spare Parts

D1	insert screw	in. lbs.	wrench	socket-head cap screw	coolant lock screw assembly
1.500	**193.492**	31	**170.025**	**S424**	**–**
2.000	**193.492**	31	**170.025**	**S445**	**–**
2.500	**193.492**	31	**170.025**	**S445**	**–**
3.000	**193.492**	31	**170.025**	**S458**	**–**
4.000	**193.492**	31	**170.025**	**–**	**S2165C**
5.000	**193.492**	31	**170.025**	**–**	**S2163C**

Insert Selection Guide

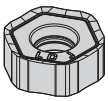
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

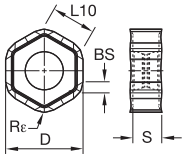
Indexable Inserts

- First choice for machining aluminum.

● first choice
○ alternate choice

	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		●	○	●
K			●	●	○		●	○		
N	●	●	○							
S					●	●				●
H										


HNGJ-LDJ

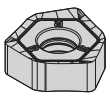


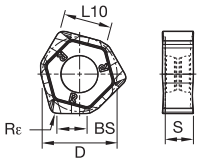
HNGJ-LDJ

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- Wiper insert for fine finishing aluminum.


Wiper XNGJ *



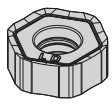
Wiper XNGJ *

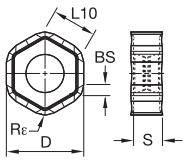
XNGJ-LDJ3W

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ43ANFNLDJ3W	.472	.189	.283	.063	.178	.001	3	–	●	–	–	–	–	–	–	–	–

* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for light machining.


HNGJ-LD*



HNGJ-LD*

● first choice
○ alternate choice

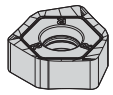
P					○	●		●	●	○	
M					●	●		●	○	●	
K			●	●	○		●	○			
N	●	●	○								
S					●	●				●	
H											

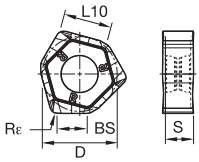
HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	—	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–

* For wiper insert HNGJ-LD, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- Wiper insert for excellent floor finish.


Wiper XNGJ *

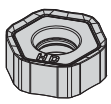


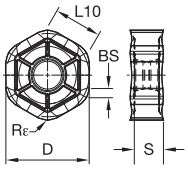
Wiper XNGJ *

XNGJ-LD3W

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
XNGJ43ANENLD3W	.472	.189	.283	.063	.178	.002	3	–	–	●	–	●	●	–	–	●	●

* For wiper insert XNGJ, 3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.


HNGJ-HD



HNGJ-HD

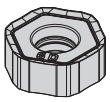
HNGJ-HD

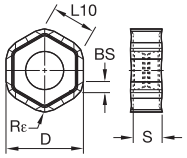
catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	–	●	–	–	–	●	●

- First choice for general purpose.

● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											


HNPJ-GD

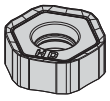


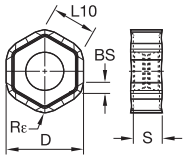
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	–	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	–	–	–	●	●	●	●	●	●	●
HNPJ438ANSNHD	.472	—	.253	.126	.174	.004	12	–	–	–	–	●	●	●	●	●	●

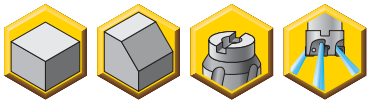
Recommended Starting Feeds [IPT]

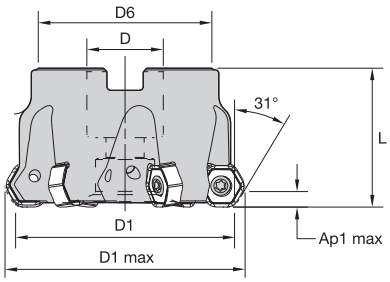
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.007	**.018**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.F..LDJ
.E..LD	.007	**.024**	.040	.005	**.017**	.029	.004	**.013**	.021	.003	**.011**	.019	.003	**.010**	.017	.E..LD
.S..GD	.013	**.031**	.046	.009	**.022**	.033	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Higher Ap1 max with standard inserts.
- Productivity booster in all materials.







Dodeka Mini 30° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136389	**KSHRHD150HN43M2**	1.500	1.750	.500	1.440	1.575	.171	4	.48	16700
4136390	**KSHRHD150HN43F2**	1.500	1.750	.500	1.440	1.575	.171	5	.48	16700
4136391	**KSHRHD200HN43C3**	2.000	2.250	.750	1.750	1.575	.171	4	.85	12500
4136392	**KSHRHD200HN43M3**	2.000	2.250	.750	1.750	1.575	.171	5	.87	12500
4136394	**KSHRHD250HN43M3**	2.500	2.750	.750	1.750	1.575	.171	6	1.21	10000
4136395	**KSHRHD300HN43C4**	3.000	3.250	1.000	2.189	1.750	.171	5	1.86	8300
4136396	**KSHRHD300HN43M4**	3.000	3.250	1.000	2.189	1.750	.171	8	1.96	8300
4136397	**KSHRHD400HN43C6**	4.000	4.249	1.500	3.661	1.750	.171	6	3.36	6300
4136399	**KSHRHD500HN43C6**	5.000	5.249	1.500	3.652	2.380	.171	8	6.31	5000
4136400	**KSHRHD500HN43M6**	5.000	5.249	1.500	3.652	2.380	.171	12	6.53	5000

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw	 coolant lock screw assembly
1.500	**193.492**	31	**170.025**	**S424**	**–**
2.000	**193.492**	31	**170.025**	**S445**	**–**
2.500	**193.492**	31	**170.025**	**S445**	**–**
3.000	**193.492**	31	**170.025**	**S458**	**–**
4.000	**193.492**	31	**170.025**	**–**	**S2165C**
5.000	**193.492**	31	**170.025**	**–**	**S2163C**

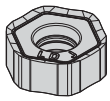
Insert Selection Guide

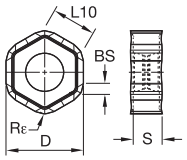
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCPK30
M1–M2	.E..LD	KC522M	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LD	KC510M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	.E..LD	KC510M	**.E..LD**	**KC510M**	.E..LD	KC510M

- First choice for machining aluminum.

● first choice
○ alternate choice

		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P						○	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											


HNGJ-LDJ

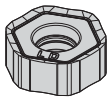


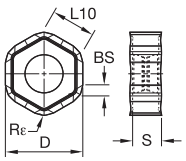
HNGJ-LDJ

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	–	–	–	–	–	–	–	–

- First choice for light machining.

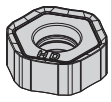

HNGJ-LD

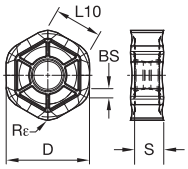


HNGJ-LD

HNGJ-LD

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	–	–	●	●	●	●	●	●	●	–
HNGJ438ANENLD	.472	–	.253	.126	.177	.002	12	–	–	–	–	–	●	–	●	–	–


HNGJ-HD



HNGJ-HD

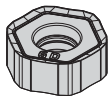
● first choice
○ alternate choice

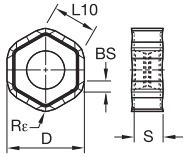
		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●	●		●	●	○
M						●	●		●	○	●
K				●	●	○		●	○		
N		●	●	○							
S						●	●				●
H											

HNGJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12

- First choice for general purpose.


HNPJ-GD

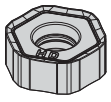


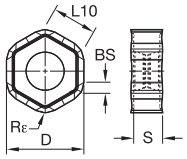
HNPJ-GD

HNPJ-GD

catalog number	D	BS	L10	Rε	S	hm	cutting edges
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	BS	L10	Rε	S	hm	cutting edges
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12
HNPJ438ANSNHD	.472	—	.253	.126	.174	.004	12

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

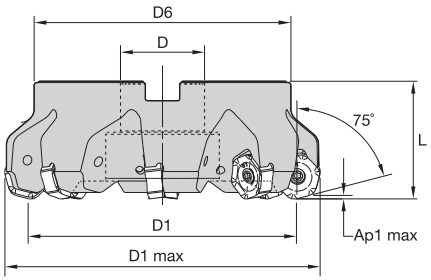
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.015**	.026	.004	**.011**	.019	.003	**.008**	.014	.003	**.007**	.012	.002	**.006**	.011	.F..LDJ
.E..LD	.006	**.019**	.032	.004	**.014**	.023	.003	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.S..GD	.011	**.025**	.038	.008	**.018**	.027	.006	**.013**	.020	.005	**.012**	.018	.005	**.011**	.016	.S..GD
.S..HD	.011	**.027**	.043	.008	**.019**	.031	.006	**.014**	.023	.005	**.013**	.020	.005	**.012**	.018	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- High feed rates for rough face milling.
- .08" depth-of-cut capability.
- Twelve cutting edges per insert.







Dodeka High-Feed 75° • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4047419	KSHRHF200HN5315C3	2.000	2.746	.750	1.750	1.595	.087	4	1.13	11300
4047420	KSHRHF250HN5315C3	2.500	3.245	.750	2.144	1.595	.087	5	1.60	8900
4047421	KSHRHF300HN5315C4	3.000	3.745	1.000	2.346	1.770	.087	6	2.23	7400
4047422	KSHRHF400HN5315C5	4.000	4.744	1.250	3.819	1.770	.087	8	3.91	5800
4047583	KSHRHF500HN5315C6	5.000	5.416	1.500	3.810	2.400	.087	9	6.87	4700
4047584	KSHRHF600HN5315C8	6.000	6.748	2.000	4.880	2.400	.087	12	10.51	4000

Spare Parts



D1	insert screw	in. lbs.	wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw	coolant lock screw	coolant shower plate
2.000	193.492	31	170.025	S445	S445CG	–	–	–
2.500	193.492	31	170.025	S445	S445CG	–	–	–
3.000	193.492	31	170.025	S458	S458CG	–	–	–
4.000	193.492	31	170.025	–	–	S2162C	–	–
5.000	193.492	31	170.025	–	–	–	420.201	470.240
6.000	193.492	31	170.025	–	–	–	420.241	470.241

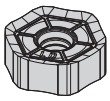
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	**–**	**–**	–	–

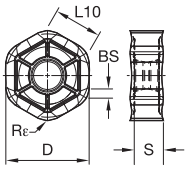
Indexable Inserts

beyond

- First choice for light machining and aluminum.



HNGJ-LD
HNGJ-LDJ



HNGJ-LD
HNGJ-LDJ

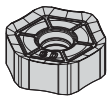
● first choice
○ alternate choice

P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N		●								
S				●	●				●	
H										

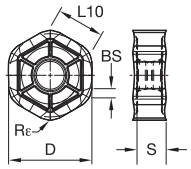
HNGJ-LDJ and -LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	●	–	–	–	–	–	–	–	–
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	–	●	●	●	●	●	–	●	–

- First choice for general purpose.



HNGJ-GD

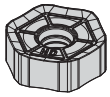


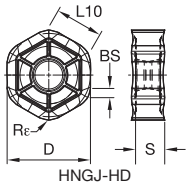
HNGJ-GD

HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	–	–	●	●	●	●	●	–

- First choice for heavy roughing.


HNGJ-HD



HNGJ-HD

● first choice
○ alternate choice

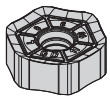
beyond

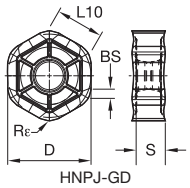
P			○	●		●	●	○	
M			●	●		●	○	●	
K		●	○		●	○			●
N	●								
S			●	●				●	
H									

HNGJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	–	●	●	●	●	●	–
HNGJ53511ANSNHD	.625	.214	.334	—	.171	.008	12	–	●	–	●	–	●	●	●	–

- First choice for general purpose.


HNPJ-GD

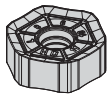


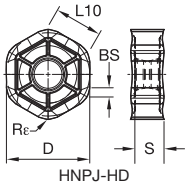
HNPJ-GD

HNPJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	–	●	●	●	●	●	●	–	–

- First choice for heavy roughing.


HNPJ-HD



HNPJ-HD

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	●	●	●	●	●	●	–
HNPJ53511ANSNHD	.625	.214	.334	—	.171	.005	12	–	–	●	●	●	●	●	●	–

Recommended Starting Feeds

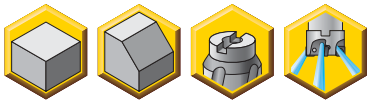
Recommended Starting Feeds [IPT]

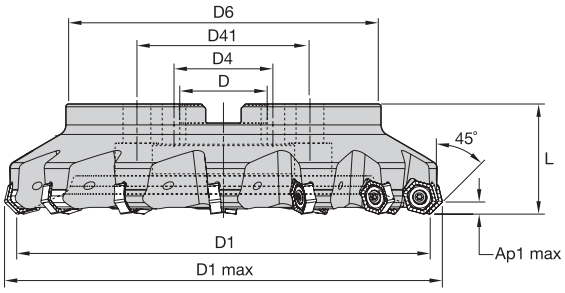
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.018	**.051**	.089	.013	**.036**	.063	.010	**.027**	.047	.008	**.024**	.041	.008	**.022**	.037	.F..LDJ
.E..LD	.025	**.073**	.112	.018	**.052**	.079	.014	**.039**	.058	.012	**.034**	.051	.011	**.031**	.046	.E..LD
.S..GD	.036	**.079**	.129	.026	**.056**	.090	.019	**.042**	.066	.017	**.036**	.058	.015	**.033**	.053	.S..GD
.S..HD	.036	**.093**	.153	.026	**.066**	.106	.019	**.049**	.078	.017	**.042**	.068	.015	**.039**	.062	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- Through-coolant on cutters <4.0" diameter. 5.0" diameter cutters and above do not have through-coolant.
- Soft cutting action.



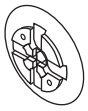




Dodeka 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
3326850	KSHR200HN5345C3	2.000	2.434	.750	–	–	1.593	1.570	.178	4	.81	12500
3326851	KSHR200HN5345M3	2.000	2.434	.750	–	–	1.593	1.570	.178	5	.82	12500
3747124	KSHR250HN5345XC3	2.500	2.933	.750	–	–	1.986	1.570	.177	5	1.25	10000
3326852	KSHR250HN5345C3	2.500	2.933	.750	–	–	1.986	1.570	.178	6	1.32	10000
3326923	KSHR250HN5345M3	2.500	2.933	.750	–	–	1.986	1.570	.178	7	1.34	10000
3747125	KSHR300HN5345XC4	3.000	3.433	1.000	–	–	2.189	1.750	.177	5	1.86	8300
3326924	KSHR300HN5345C4	3.000	3.433	1.000	–	–	2.189	1.750	.178	6	1.79	8300
3326925	KSHR300HN5345M4	3.000	3.433	1.000	–	–	2.032	1.750	.178	9	1.97	8300
3747126	KSHR400HN5345XC5	4.000	4.232	1.250	–	–	2.722	1.750	.177	6	3.17	6300
3326926	KSHR400HN5345C5	4.000	4.432	1.250	–	–	2.722	1.750	.178	8	2.93	6300
3326927	KSHR400HN5345M5	4.000	4.432	1.250	–	–	2.722	1.750	.178	11	3.14	6300
3747127	KSHR500HN5345XC6	5.000	5.431	1.500	–	–	3.652	2.380	.177	8	6.20	5000
3326928	KSHR500HN5345C6	5.000	5.431	1.500	–	–	3.652	2.380	.178	10	5.94	5000
3326929	KSHR500HN5345M6	5.000	5.431	1.500	–	–	3.652	2.380	.178	14	6.21	5000
3747128	KSHR600HN5345XC8	6.000	6.432	2.000	–	–	4.722	2.380	.177	10	9.01	4100
3326930	KSHR600HN5345C8	6.000	6.432	2.000	–	–	4.722	2.380	.178	12	9.10	4100
3326931	KSHR600HN5345M8	6.000	6.432	2.000	–	–	4.722	2.380	.178	16	9.36	4100
3494648	KSHR800HN5345C10	8.000	8.432	2.500	4.000	–	5.118	2.380	.177	16	13.14	3130
3494649	KSHR1000HN5345C10	10.000	10.433	2.500	4.000	–	7.120	2.380	.177	20	24.52	2510
3494650	KSHR1200HN5345C10	12.000	12.433	2.500	4.000	7.000	9.016	3.150	.177	24	42.66	2090

Spare Parts

D1	 insert screw	 in. lbs.	 wrench	 socket-head cap screw	 socket-head cap screw with coolant groove	 coolant lock screw	 coolant lock screw assembly	 coolant shower plate
2.000	**193.492**	31	**170.025**	**S445**	**S445CG**	–	–	–
2.500	**193.492**	31	**170.025**	**S445**	**S445CG**	–	–	–
3.000	**193.492**	31	**170.025**	**S458**	**S458CG**	–	–	–
4.000	**193.492**	31	**170.025**	–	–	–	**S2162C**	–
5.000	**193.492**	31	**170.025**	–	–	**420.201**	–	**470.240**
6.000	**193.492**	31	**170.025**	–	–	**420.241**	–	**470.241**
8.000	**193.492**	31	**170.025**	–	–	–	–	**470.242**
10.000	**193.492**	31	**170.025**	–	–	–	–	**470.243**
12.000	**193.492**	31	**170.025**	–	–	–	–	**470.244**

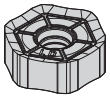
NOTE: Please order all spare parts separately.

Insert Selection Guide

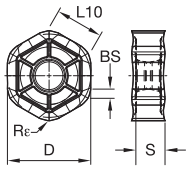
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.S..HD	KC520M
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GD**	**KCSM40**	.S..HD	KCSM40
H1	–	–	–	–	–	–

beyond

- First choice for light machining and aluminum.



HNGJ-LD
HNGJ-LDJ



HNGJ-LD
HNGJ-LDJ

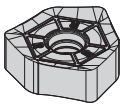
● first choice
○ alternate choice

P			○	●		●	●	○	
M			●	●		●	○	●	
K		●	○		●	○			●
N	●								
S			●	●				●	
H									

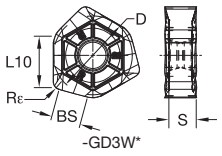
HNGJ-LDJ and -LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	●	–	–	–	–	–	–	–	–
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	–	●	●	●	●	●	–	●	–

- Wiper insert for excellent surface floor finish.



-GD3W*



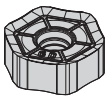
-GD3W*

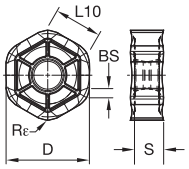
XNGJ-LDJ3W and -GD3W

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
XNGJ535ANFNLDJ3W	.625	.217	.377	.230	.063	.001	3	●	–	–	–	–	–	–	–	–
XNGJ535ANSNGD3W	.625	.217	.377	.230	.063	.004	3	–	–	–	●	●	●	–	●	–

*3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for general purpose.


HNGJ-GD



HNGJ-GD

● first choice
○ alternate choice

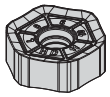
| | | |

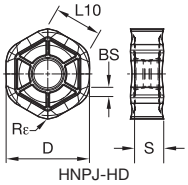
beyond

- First choice for heavy roughing.

● first choice
○ alternate choice

P				○	●		●	●	○	
M				●	●		●	○	●	
K			●	○		●	○			●
N	●									
S				●	●				●	
H										


HNPJ-HD

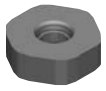


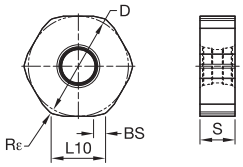
HNPJ-HD

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	–	●	●	●	●	●	●	●	–
HNPJ53511ANSNHD	.625	.214	.334	—	.171	.005	12	–	–	●	●	●	●	●	●	–

- Ceramic KYON 3500 for machining gray cast iron with high cutting speed.


HNEC-ANSN



HNEC-ANSN

HNEC-ANSN Ceramic Insert

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
HNEC535ANSN	.625	.219	.361	.077	.047	.008	12	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

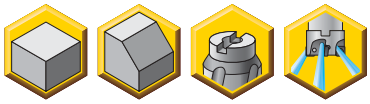
Recommended Starting Feeds [IPT]

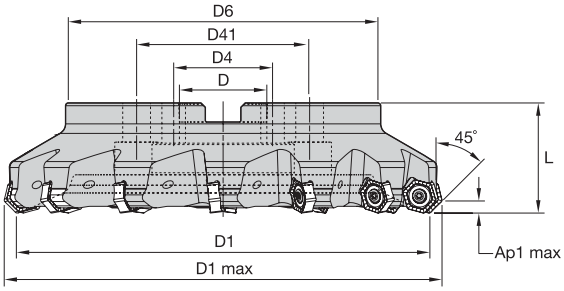
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.007	**.018**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.F..LDJ
.E..LD	.009	**.026**	.040	.007	**.019**	.029	.005	**.014**	.021	.004	**.012**	.019	.004	**.011**	.017	.E..LD
.S..GD	.013	**.028**	.045	.009	**.020**	.032	.007	**.015**	.024	.006	**.013**	.021	.006	**.012**	.019	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Twelve cutting edges per insert.
- 25% lower cutting forces.
- Laser-hardened pocket seats.



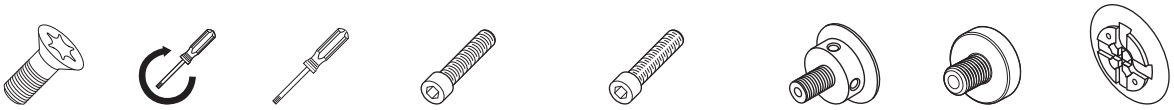




Dodeka MAX 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
4057578	**KSHR300HN7545M4**	3.000	3.682	1.000	—	2.188	1.750	.315	4	2.14	8300
4057579	**KSHR400HN7545M5**	4.000	4.682	1.250	—	2.875	1.750	.315	5	3.18	6300
4057580	**KSHR500HN7545M6**	5.000	5.682	1.500	—	3.812	2.375	.315	6	6.40	5000
4057581	**KSHR600HN7545M8**	6.000	6.682	2.000	—	5.000	2.375	.315	9	9.87	4100
4057582	**KSHR800HN7545M10**	8.000	8.682	2.500	4.000	5.000	2.375	.315	12	13.55	3130
4057576	**KSHR1000HN7545C10**	10.000	10.682	2.500	4.000	6.963	2.375	.315	12	25.80	2510
4057583	**KSHR1000HN7545M10**	10.000	10.682	2.500	4.000	6.963	2.375	.315	14	13.55	2510

Spare Parts



D1	insert screw	in. lbs.	Torx Plus wrench	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw assembly	coolant lock screw	coolant shower plate
3.000	**193.531**	71	**TTP25**	**S458**	**S458CG**	—	—	—
4.000	**193.531**	71	**TTP25**	—	—	**S2162C**	—	—
5.000	**193.531**	71	**TTP25**	—	—	—	**420.201**	**470.240**
6.000	**193.531**	71	**TTP25**	—	—	—	**420.241**	**470.241**
8.000	**193.531**	71	**TTP25**	—	—	—	—	**470.242**
10.000	**193.531**	71	**TTP25**	—	—	—	—	**470.243**

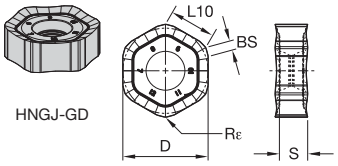
NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus bit (order number 6205892 BTQTP25L90) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD**	**KCPK30**	.S..HD	KCPM40
P3–P4	.E..GD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
M3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
K1–K2	.E..GD	KCK15	**.S..GD**	**KCK15**	.S..HD	KCK15
K3	.E..GD	KCK15	**.S..GD**	**KC520M**	.S..HD	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
S3	.E..GD	KCPM40	**.S..GD**	**KC725M**	.S..HD	KCSM40
S4	.E..GD	KC725M	**.S..GD**	**KC725M**	.S..HD	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining.



HNGJ-GD

HNGJ-GD

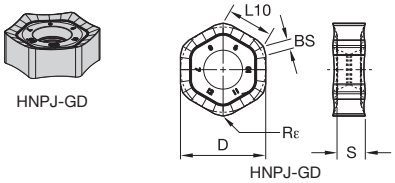
● first choice
○ alternate choice

		KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P			●		●	●	○
M			●		○	○	●
K		●		●	●		
N							
S			●				●
H							

HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNGJ75ANENGD	.875	.292	.505	.074	.047	.002	12	–	●	–	●	●	–

- First choice for general purpose.



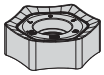
HNPJ-GD

HNPJ-GD

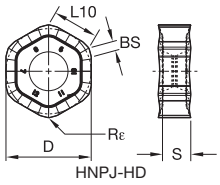
HNPJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ755ANSNGD	.875	.296	.505	–	.079	.005	12	●	●	–	●	–	–

- First choice for heavy roughing.



HNPJ-HD



HNPJ-HD

● first choice
○ alternate choice

		KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P			●		●	●	○
M			●		○	○	●
K		●		●	●		
N							
S			●				●
H							

HNPJ-HD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
HNPJ75ANSNHD	.875	.288	.505	.074	.047	.010	12	–	●	●	●	●	●
HNPJ755ANSNHD	.875	.292	.505	—	.079	.009	12	–	●	–	●	●	–
HNPJ759ANSNHD	.875	.289	.505	—	.138	.009	12	●	–	●	●	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GD	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.025	.004	**.012**	.022	.004	**.011**	.020	.E..GD
.S..GD	.013	**.029**	.050	.009	**.021**	.036	.007	**.016**	.027	.006	**.014**	.023	.006	**.013**	.021	.S..GD
.S..HD	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HD

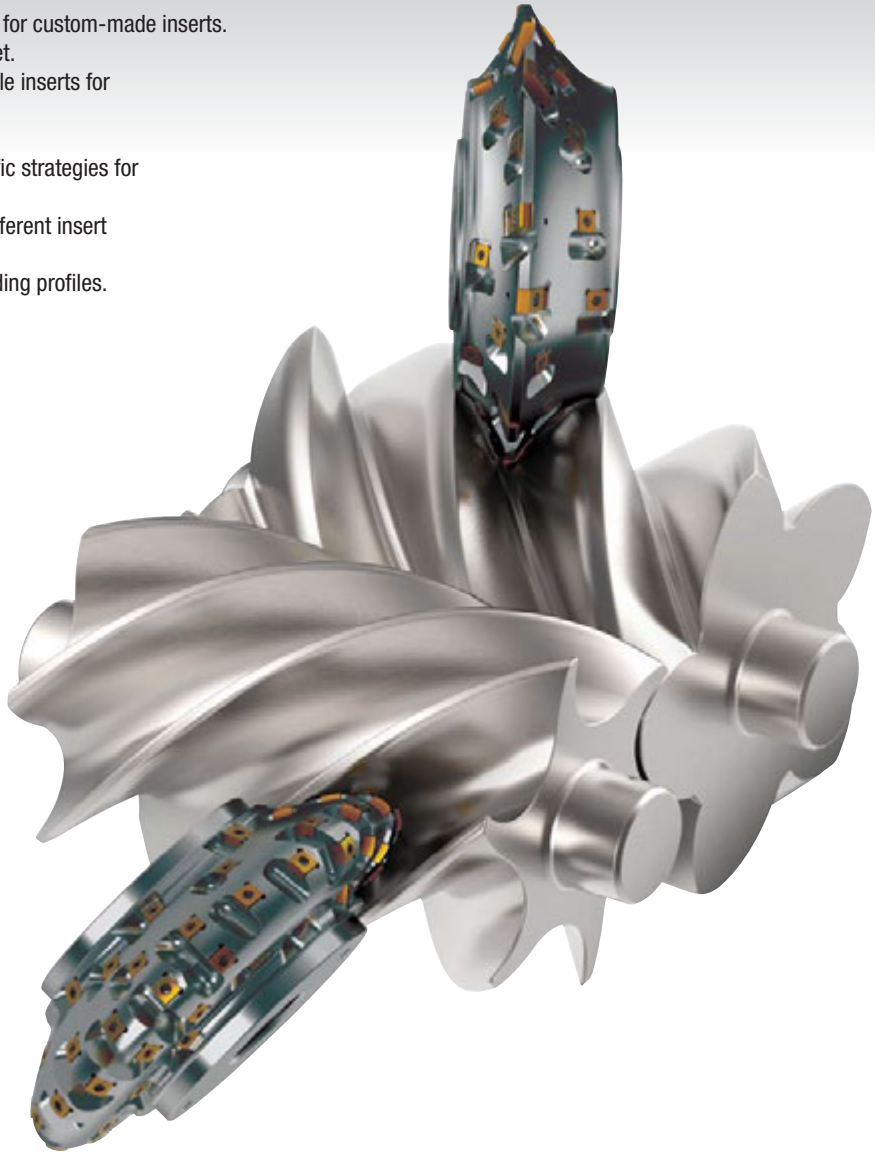
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Solution Capabilities

SCREW-ROTOR MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in milling of screw-rotors.

- Faster availability due to standardized processes for custom-made inserts.
- Solutions for all machines currently on the market.
- Very close contour profile with standardized profile inserts for minimum grinding allowance.
- Tools can be used in many different materials.
- Increased productivity through application-specific strategies for optimized milling.
- Smooth cutting action due to multiple rows of different insert alignments for optimum performance.
- Innovative solutions for small rotors with demanding profiles.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

Mill 16™

Face Mills for Cast Iron Machining.



Screw-On Clamping



Wedge Clamping

Features

- 16 effective cutting edges per insert.
- Ap1 max = .216" (5,5mm).
- Coarse, medium and fine pitch cutters.
- Cutter bodies with pocket seat numbering system.
- Cutter diameter range = 1.969–9.843" (50–250mm).
- High-precision periphery ground inserts.
- Inserts with cutting edge numbering system.
- Lower cutting forces.
- Clearance on second main cutting edge.

Benefits

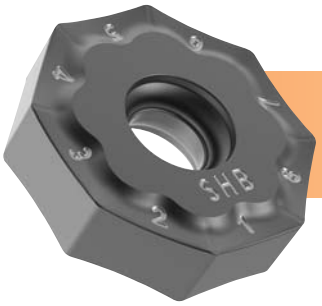
- Low cost per edge to cut cost per part (CPP).
- Perfect fit for most cast iron face milling requirements.
- High feed rates to boost productivity and reduce cycle time.
- Comprehensive standard offering to address most needs of the shop floor.
- Improved axial runout and tool life.
- Very smooth cutting action and lower cutting forces.
- Orientated edge positioning to support axial and radial runout.
- Reliable cutting above Ap1 = .216" (5,5mm) addresses castings with varying skin thickness.

Primary Application

The new Mill 16™ series is a specially-made platform for rough milling of components like engine heads and blocks, housings and gear boxes in cast iron materials (CGI, DCI, GCI), and all other cast iron face milling jobs. Best-in-class for machining CGI materials.

Split Case Design

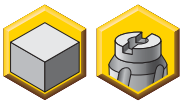


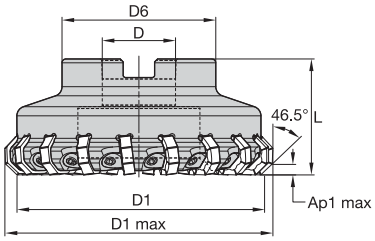


Innovative insert design to reduce cutting forces and increase productivity at lower cost per edge.

- Semi-finishing and light machining
- Medium roughing
- Heavy roughing

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.







Mill 16 • Shell Mills • Wedge Clamping

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
6001979	**MILL16E200Z05ON08W**	2.000	2.495	.750	2.000	2.000	.215	5	1.45	11100
6001980	**MILL16E250Z06ON08W**	2.500	2.995	.750	2.000	2.000	.215	6	2.03	9300
6134103	**MILL16E300Z08ON08W**	3.000	3.495	1.000	2.189	1.750	.215	8	2.17	8200
6002121	**MILL16E300Z10ON08W**	3.000	3.495	1.000	2.189	1.750	.215	10	2.06	8200
6134104	**MILL16E400Z10ON08W**	4.000	4.494	1.250	3.150	2.000	.215	10	4.27	6800
6002122	**MILL16E400Z14ON08W**	4.000	4.494	1.250	3.150	2.000	.215	14	4.09	6800
6134105	**MILL16E500Z14ON08W**	5.000	5.494	1.500	3.150	2.375	.215	14	6.55	5900
6002123	**MILL16E500Z18ON08W**	5.000	5.494	1.500	3.150	2.375	.215	18	6.38	5900
6134106	**MILL16E600Z16ON08W**	6.000	6.494	2.000	3.937	2.381	.215	16	8.68	5300
6002124	**MILL16E600Z22ON08W**	6.000	6.494	2.000	3.937	2.381	.215	22	8.39	5300
6134107	**MILL16E800Z20ON08W**	8.000	8.494	2.500	5.118	2.400	.215	20	14.60	4500
6002125	**MILL16E800Z28ON08W**	8.000	8.494	2.500	5.118	2.400	.215	28	14.29	4500
6134108	**MILL16E1000Z24ON08W ***	10.000	10.494	2.500	5.512	2.400	.215	24	22.08	4000
6019339	**MILL16E1000Z34ON08W**	10.000	10.494	2.500	5.512	2.400	.215	34	21.69	4000

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

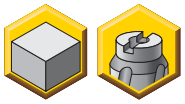
Spare Parts

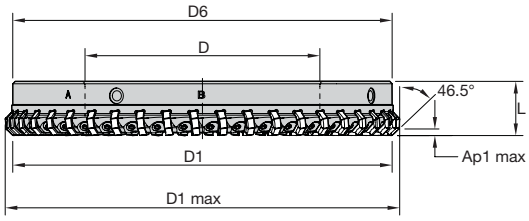


D1	wedge	wedge screw	in. lbs.	wrench	mounting screw with coolant grooves	adjustable torque wrench	bit SW3 for adjustable torque wrench
2.000	**CW16**	**12748601000**	62	**12148044900**	**KLSS0714C**	**DTQ50140**	**BTQSW3L90**
2.500	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
3.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
4.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
5.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
6.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
8.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**
10.000	**CW16**	**12748601000**	62	**12148044900**	**–**	**DTQ50140**	**BTQSW3L90**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.







Mill 16 • Split Case Design

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
6202190	MILL16E1200Z42ON08WSC *	12.000	12.494	7.677	12.000	1.772	.215	42	22.48	3600
6202291	MILL16E1400Z48ON08WSC *	14.000	14.494	9.055	14.000	1.772	.215	48	30.97	3300
6202292	MILL16E1600Z56ON08WSC *	16.000	16.494	11.024	16.000	1.772	.215	56	37.15	3100
6202293	MILL16E2000Z70ON08WSC *	20.000	20.494	14.961	20.000	1.772	.215	70	48.45	2800

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

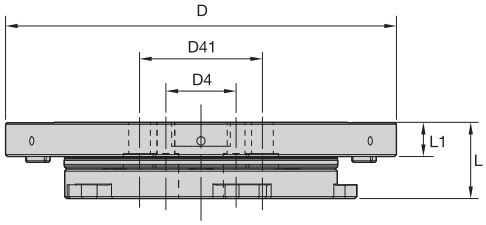
Spare Parts






D1	wedge	wedge screw	in. lbs.	wrench
12.000	CW16	12748601000	62	12148044900
14.000	CW16	12748601000	62	12148044900
16.000	CW16	12748601000	62	12148044900
20.000	CW16	12748601000	62	12148044900

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.





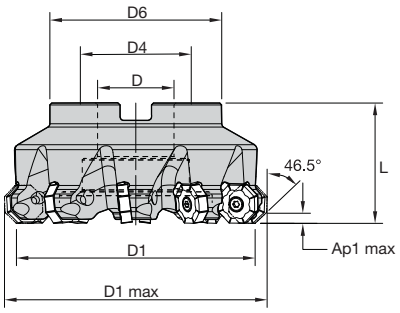
Carrier Flange Assembly

order number	catalog number	D	D4	D41	L1	L	lbs
6152251	D315CFA *	12.402	4.000	7.000	1.339	3.071	59.29
6152252	D355CFA *	13.976	4.000	7.000	1.378	3.071	81.99
6152253	D400CFA *	15.748	4.000	7.000	1.378	3.071	112.34
6152254	D500CFA *	19.685	4.000	7.000	1.378	3.071	192.59

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.



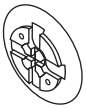




Mill 16 • Screw-On Clamping

order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
6159069	**MILL16E200Z04ON08SC**	2.000	2.498	.750	–	1.969	1.580	.216	4	.90	14500
6159070	**MILL16E250Z04ON08SC**	2.500	2.973	.750	–	1.969	1.576	.220	4	1.29	12200
6159072	**MILL16E300Z05ON08SC**	3.000	3.473	1.000	–	2.362	1.751	.220	5	2.17	10700
6159074	**MILL16E400Z06ON08SC**	4.000	4.473	1.250	–	3.150	2.001	.220	6	4.11	8900
6159076	**MILL16E500Z08ON08SC**	5.000	5.473	1.500	–	3.543	2.376	.220	8	6.85	7700
6159078	**MILL16E600Z10ON08SC**	6.000	6.472	2.000	–	3.937	2.382	.220	10	8.07	7000
6159080	**MILL16E800Z10ON08SC**	8.000	8.472	2.500	4.000	5.118	2.401	.220	10	14.17	5900
6159082	**MILL16E1000Z12ON08SC**	10.000	10.472	2.500	4.000	5.512	2.401	.220	12	23.86	5200

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench	 socket-head cap screw	 socket-head cap screw with coolant groove	 coolant lock screw	 coolant shower plate
2.000	**MS2060**	40	**TTP20**	–	**KLSS0714C**	–	–
2.500	**MS2060**	40	**TTP20**	**S445**	–	–	–
3.000	**MS2060**	40	**TTP20**	**S458**	–	–	–
4.000	**MS2060**	40	**TTP20**	–	–	**420.162**	–
5.000	**MS2060**	40	**TTP20**	–	–	**420.201**	**470.232**
6.000	**MS2060**	40	**TTP20**	–	–	**420.241**	**470.241**
8.000	**MS2060**	40	**TTP20**	–	–	–	**470.242**
10.000	**MS2060**	40	**TTP20**	–	–	–	**470.243**

Insert Selection Guide

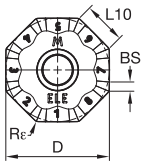
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KC514M	.S..GP	KC514M	.S..HB	KC514M
K3	.E..LE	KCK20	.S..GP	KCK20	.S..HB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts

- ...ANENLE = semi-finishing with improved surface floor finish.
- ...ENLE = light machining.

● first choice
○ alternate choice


ONGX08-LE



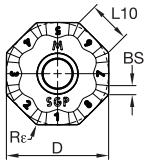
ONGX08-LE

ONGX-LE • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX64ANENLE	.787	.229	.323	.059	.031	.002	●	●	●	–	–
ONGX645ENLE	.787	.229	.326	—	.079	.002	●	●	●	–	–

- ...ANSNGP = medium roughing with improved surface floor finish.
- ...SNGP = medium roughing with low cutting forces.


ONGX-GP



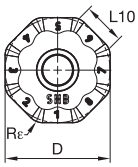
ONGX-GP

ONGX-GP • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX64ANSNGP	.787	.229	.323	.059	.031	.006	●	●	●	–	–
ONGX645SNGP	.787	.229	.326	—	.079	.006	●	●	●	●	–

- First choice for heavy roughing.


ONGX-HB



ONGX-HB

● first choice
○ alternate choice

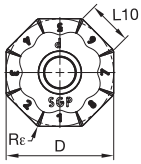
P	
M	
K	●
N	
S	
H	

ONGX-HB • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONGX642SNHB	.787	.229	.326	–	.032	.007	●	●	–	–	–
ONGX645SNHB	.787	.229	.326	–	.079	.007	●	●	●	●	–
ONGX648SNHB	.787	.229	.326	–	.118	.007	●	●	●	–	–

- Medium roughing with lower cutting forces.


ONPX-GP



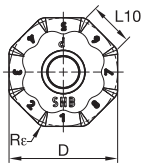
ONPX-GP

ONPX-GP • Precision Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX642SNGP	.787	.229	.326	–	.032	.006	–	●	●	●	–

- Heavy roughing with regular performance.


ONPX-HB



ONPX-HB

ONPX-HB • Precision Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30	KY3500
ONPX645SNHB	.787	.229	.326	–	.079	.007	–	●	●	●	–

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LE	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.025	.004	**.012**	.022	.004	**.011**	.020	.E..LE
.S..GP	.013	**.029**	.049	.009	**.021**	.035	.007	**.016**	.026	.006	**.014**	.023	.006	**.012**	.021	.S..GP
.S..HB	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..HB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

User Information

- Only use with indexable inserts ONPX0806**/ONGX0806** (ONPX64**/ONGX64**).
- Only use original Kennametal spare parts as per the current catalog.

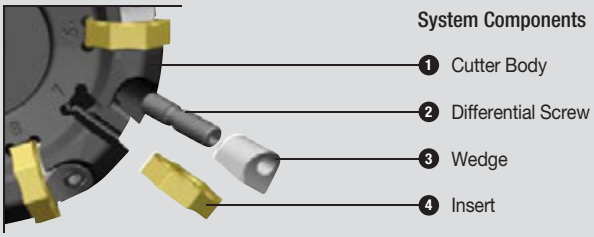


- Maintenance and repair of cutters should only be carried out by Kennametal.
- The tools must only be used in combination with suitable tool adapters and machine spindles.
- Use only the recommended torque settings when assembling the cutters for use. For further information contact the KMT CAS Team.

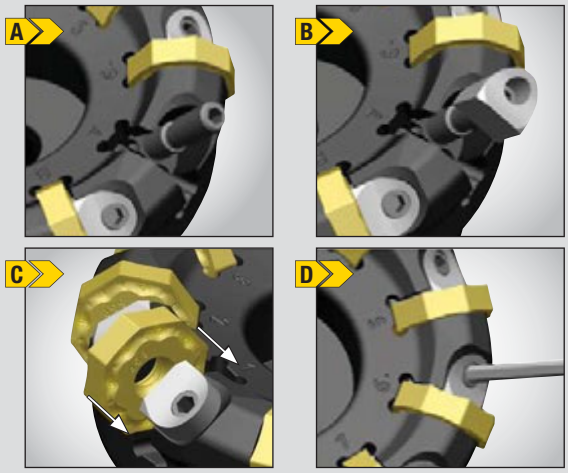
* These assembly instructions relate only to the Kennametal Mill 16 Face Mill family and not to its connection to a spindle or spindle adapter.

Preparation

- Prior to use, ensure the cutter is thoroughly cleaned and remove all dirt, grease, and anti-corrosive protection.
- Carefully grease the differential screws with copper grease. Ensure the rest of the cutter is clean.
- When loading the inserts into the cutter, please ensure that they are inserted in the clean pocket seat in the correct position.
- Mounting position: The flat side of the clamping wedge sits on top of the insert face. We recommend to mount the inserts by following the insert's edge numbering system for orientated insert seating. Active cutting edges shall all have the same cutting edge number.



Insert Clamping and Adjusting



Pre-setting of Inserts

A. Screw the differential screw ❷ into the cutter body ❶ by approximately 2 turns using a 3mm hex wrench.

B. Place wedge ❸ on differential screw ❷ and fasten into the cutter body.

C. Push insert ❹ into the pocket seat by hand in the direction shown.

D. Clamp insert ❹ with wedge ❸ by rotating the differential screw with a clamping force of MA = 18 in/lbs (2 Nm). The differential screw must not stick out of wedge.

E. Repeat steps A–D for all inserts.

Tightening the Inserts

F. Tighten all inserts of the pockets with the wedge using the differential screw with a clamping torque of MA = 62 in/lbs (7 Nm).

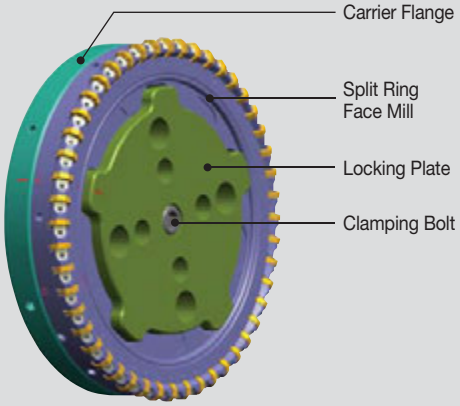
Split Cutter Assembly Instructions

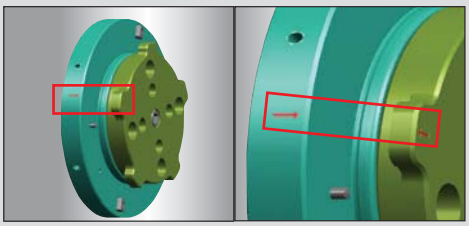
Please read and follow the instructions below for safe and productive application.

User Information

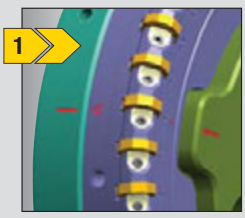
These assembly instructions relate only to Kennametal split-case milling cutters and not to its connection to a spindle or spindle adapter.

System Components

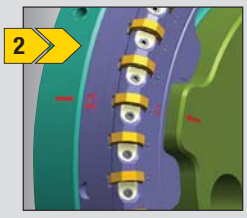




Initial position must be in such a way that the arrows in the carrier flange and locking plate coincide with each other.



Place the split ring face mill over the carrier flange in such a way that arrows in the locking plate and carrier flange coincide with the marking "A" in the cutter.



Turn the cutter ring clockwise from marking "A" to marking "B".



Tighten the clamping bolt with a torque of 100 Nm.

Extended Kennametal Service

Adjustable Torque Wrenches

When working with inserts, it is especially important to use the correct torque. Kennametal offers extended service levels by assuring best tightening with adjustable torque wrenches. Please order separately as needed.

Adjustable torque wrenches • 5.3–47.8 in. lbs (0,6–5,4 Nm)



3641463



3641464

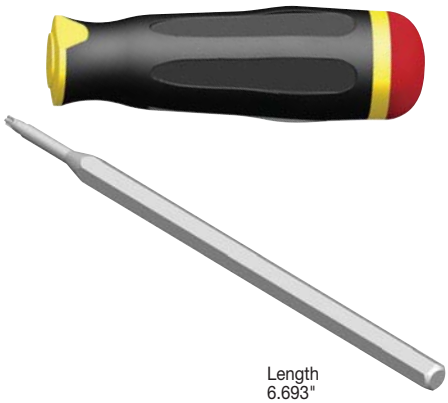


3641465

Order Number	ANSI/ISO Catalog Number	Description	Nm range	in. lbs range
3641463	**DTQ0615**	Torque control wrench handle	0,7–1,5 Nm	5.4–13.3
3641464	**DTQ1530**	Torque control wrench handle	1,6–3,0 Nm	13.4–26.6
3641465	**DTQ3054**	Torque control wrench handle	3,1–5,4 Nm	26.7–47.8

Blades

Order Number	Description	Drive	Max Torque
3641466	Blade Screw Driver TORX	BTQT6	0,8 Nm
3641467	Blade Screw Driver TORX	BTQT7	1,4 Nm
3641468	Blade Screw Driver TORX	BTQT8	2,4 Nm
3641469	Blade Screw Driver TORX	BTQT9	3,3 Nm
3641470	Blade Screw Driver TORX	BTQT10	4,0 Nm
3641471	Blade Screw Driver TORX	BTQT15	7,0 Nm
3641472	Blade Screw Driver TORX	BTQT20	10,5 Nm
3641473	Blade Screw Driver TORX	BTQT25	20,0 Nm
3641474	Blade Screw Driver TORX PLUS	BTQ6IP	0,9 Nm
3641475	Blade Screw Driver TORX PLUS	BTQ7IP	1,7 Nm
3641476	Blade Screw Driver TORX PLUS	BTQ8IP	2,8 Nm
3641477	Blade Screw Driver TORX PLUS	BTQ9IP	3,6 Nm
3641478	Blade Screw Driver TORX PLUS	BTQ10IP	5,0 Nm



Length
6.693"
(170mm)

Adjustable torque wrenches • 3.7–10.3 in. lbs (5–14 Nm)

Order Number	ANSI/ISO Catalog Number	Description
6197561	DTQ50140	Torque Wrench Handle 5-14Nm + bitholder
6205876	BTQSW3L90	Bit SW3 L=90mm
6205877	BTQT15L90	Bit Torx 15 L=90mm
6205878	BTQT20L90	Bit Torx 20 L=90mm
6205879	BTQT25L90	Bit Torx 25 L=90mm
6205880	BTQTP15L90	Bit Torx Plus 15 L=90mm
6205891	BTQTP20L90	Bit Torx Plus 20 L=90mm
6205892	BTQTP25L90	Bit Torx Plus 25 L=90mm



NOTE: For a complete overview of our screw drivers, bits, torque wrenches, and bit drivers, see pages X2–X3.

Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

KSSM™ 45°

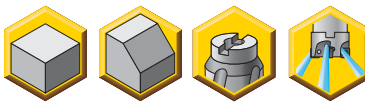
Universal face mill for conventional machining.

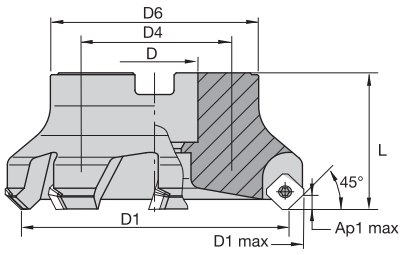


Features and Benefits

- Insert SE.T1404.
- Ap1 max = .260".
- Four true cutting edges.
- Pocket seat protection with carbide shims.
- Easy handling and rapid insert change.

- Consumes less power.
- Rapid insert changes.







KSSM 45° • Shell Mills

order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
1817866	**KSSISR197SE44345C3**	1.970	2.515	.750	–	1.750	1.575	.260	3	.87	22500
1817867	**KSSISR197SE44345M3**	1.970	2.515	.750	–	1.750	1.575	.260	4	.88	22500
1817868	**KSSISR248SE44345C4**	2.480	3.024	1.000	–	2.190	1.575	.260	4	1.31	20200
1817869	**KSSISR248SE44345M4**	2.480	3.024	1.000	–	2.190	1.575	.260	5	1.30	20200
1817870	**KSSISR315SE44345C4**	3.150	3.691	1.000	–	2.190	1.969	.260	4	2.16	18000
1817871	**KSSISR315SE44345M4**	3.150	3.691	1.000	–	2.190	1.969	.260	6	2.19	18000
1817872	**KSSISR394SE44345C5**	3.940	4.477	1.250	–	2.880	1.969	.260	5	3.58	16000
1817933	**KSSISR394SE44345M5**	3.940	4.477	1.250	–	2.880	1.969	.260	7	3.60	16000
1817934	**KSSISR492SE44345C6**	4.920	5.460	1.500	–	3.810	2.480	.260	6	6.50	14400
1817935	**KSSISR492SE44345M6**	4.920	5.460	1.500	–	3.810	2.480	.260	8	6.56	14400
1817936	**KSSISR630SE44345C6**	6.300	6.836	1.500	–	3.810	2.480	.260	7	9.91	12500
1817937	**KSSISR630SE44345M6**	6.300	6.836	1.500	–	3.810	2.480	.260	10	10.03	12500
1817938	**KSSISR787SE44345C10**	7.870	8.410	2.500	4.000	6.125	2.480	.260	8	13.24	11300
1817939	**KSSISR787SE44345M10**	7.870	8.410	2.500	4.000	6.125	2.480	.260	12	13.37	11300

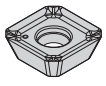
Spare Parts

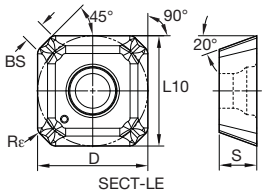
D1	insert screw	in. lbs.	Torx Plus driver	shim	shim screw	hex driver	in. lbs.	socket-head cap screw
1.970	**MS2078**	35	**DT15IP**	–	–	–	–	**S2043**
2.480	**MS2078**	35	**DT15IP**	–	–	–	–	**S2044**
3.150	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
3.940	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
4.920	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
6.300	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–
7.870	**MS2078**	35	**DT15IP**	**SM455**	**SRS3**	**DH35M**	40	–

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..GP2	KCPK30	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..GP2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
M3	.E..GP2	KCPM40	**.E..GB2**	**KCPM40**	.S..GP2	KCPM40
K1–K2	.E..GP2	KCK15	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..GP2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GP2**	**KC725M**	.S..GP2	KC725M
S3	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
S4	.E..GB2	KC725M	**.S..GP2**	**KC725M**	.S..GB2	KC725M
H1	–	–	–	–	–	–

Indexable Inserts


SECT-LE



SECT-LE

● first choice
○ alternate choice

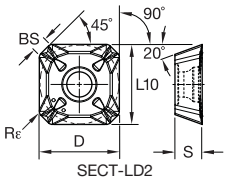
beyond

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
P				●		●		○	●	
M				●		○	○	●	○	
K			●		●	○		○		●
N		●								
S				●			●	●		
H										

SECT-LE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT443AEFN7LE	.551	.188	.551	.104	.039	.001	4	●	–	–	–	–	–	–	–	–


SECT-LD2

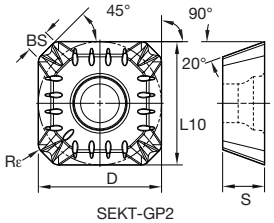


SECT-LD2

SECT-LD2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECT443AEEN7LD2	.551	.188	.551	.104	.039	.002	4	–	–	●	–	–	–	–	–	–


SEKT-GP2

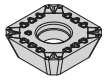


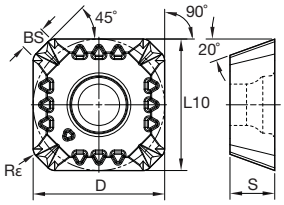
SEKT-GP2

SEKT-GP2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEKT443AEEN7GP2	.551	.188	.551	.104	.039	.002	4	–	●	●	●	●	–	–	●	–
SEKT443AESN7GP2	.551	.188	.551	.104	.039	.004	4	–	●	●	●	●	–	–	●	–

Face Milling


SEPT-GB2



SEPT-GB2

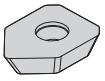
beyond

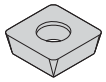
● first choice
○ alternate choice

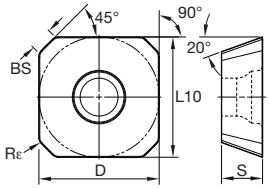
P			●		●		○	●		
M			●		○	○	●	○		
K		●		●	○		○		●	
N	●									
S			●			●	●			
H										

SEPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SEPT443AEEN7GB2	.551	.188	.551	.104	.039	.003	4	–	–	●	●	●	–	–	–	–
SEPT443AESN7GB2	.551	.188	.551	.104	.039	.005	4	–	–	●	●	●	–	–	–	–


SECW-GNW


SECW-GN



SECW-GNW
SECW-GN

SECW-GN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW443AESN7GN	.551	.188	.551	.104	.039	.006	4	–	–	–	–	–	–	–	–	●

SECW-GNW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCSM30	KC522M	KCPM40	KY3500
SECW443AEEN22GNW	.551	.188	.325	.325	.063	.002	2	–	–	●	–	–	–	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.007	**.024**	.040	.005	**.017**	.029	.004	**.013**	.021	.003	**.011**	.019	.003	**.010**	.017	.F..LE
.E..LD2	.007	**.025**	.045	.005	**.018**	.032	.004	**.013**	.024	.003	**.012**	.021	.003	**.011**	.019	.E..LD2
.E..LD	.009	**.026**	.046	.007	**.019**	.033	.005	**.014**	.024	.004	**.012**	.021	.004	**.011**	.020	.E..LD
.E..GP	.007	**.025**	.050	.005	**.018**	.036	.004	**.013**	.027	.003	**.012**	.023	.003	**.011**	.021	.E..GP
.E..GP2	.009	**.029**	.050	.007	**.021**	.036	.005	**.016**	.027	.004	**.014**	.023	.004	**.012**	.021	.E..GP2
.E..GB2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.E..GB2
.S..GP2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GP2
.S..GB2	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GB2
.S..GN	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM™ Mini • KSOM Milling Tools

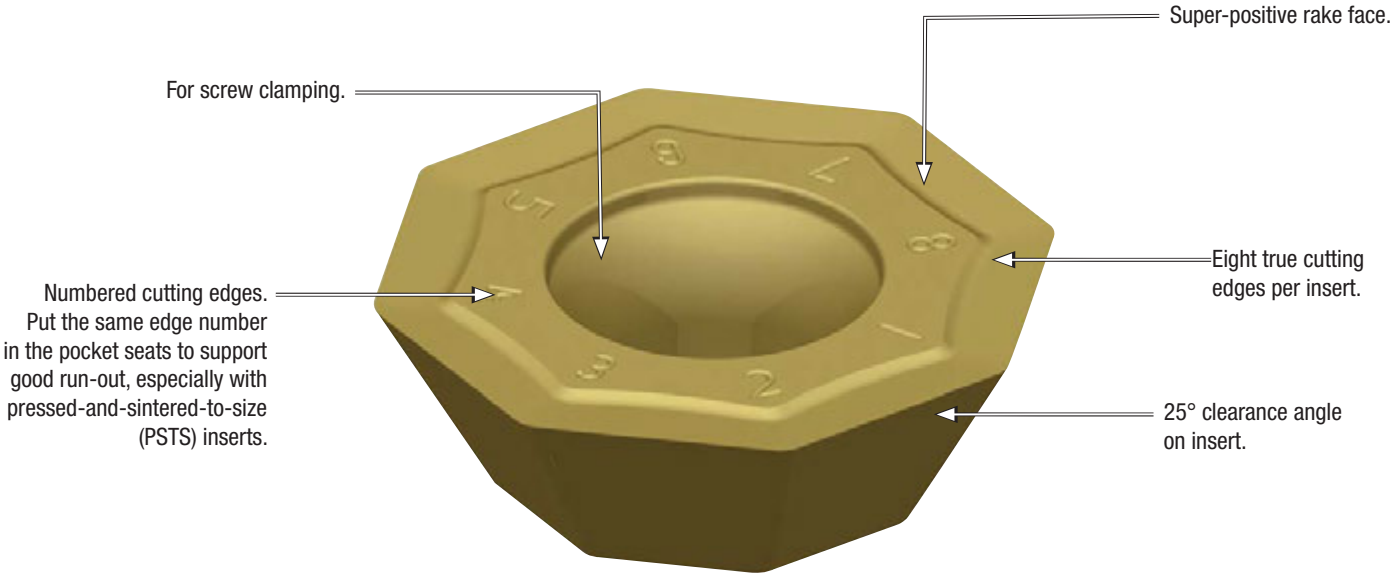
Primary Application

High-positive face mills with eight cutting edges for use in most workpieces materials. Due to its design, face milling, plunging, helical interpolation, and ramping are possible with KSOM mills.

Features and Benefits

- Super-positive rake face for soft cutting action.
- Low cutting forces deliver higher feed capability.
- 25° clearance angle on insert allows excellent free cutting.
- Excellent performance in stainless steel and super alloys.
- First choice solution for machining turbocharger materials like 1.4826, 1.4838, 1.4848, and 1.4849.

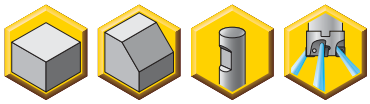




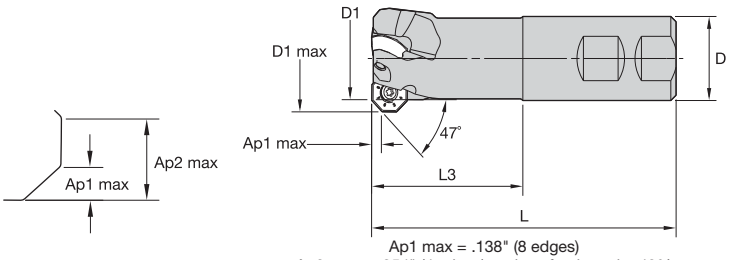
KSOM Mini: insert OF*T53
— Ap1 max = .138" (8 indexes)
— Ap2 max = .354" (4 indexes)

KSOM insert OF*T64
— Ap1 max = .197" (8 indexes)
— Ap2 max = .461" (4 indexes)

- Eight cutting edges per insert.
- Super soft cutting.







Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

KSOM Mini • Weldon® End Mills

order number	catalog number	D1	D1 max	D	L	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
3093625	**KSOM125OF5345M3**	1.250	1.610	.750	3.047	1.000	.138	2	11.0°	.53	20050
3093600	**KSOM125OF5345F5**	1.250	1.610	1.250	4.530	2.250	.138	3	11.0°	1.45	20050
3093627	**KSOM150OF5345M3**	1.500	1.856	.750	3.047	1.000	.138	3	8.0°	.60	16710
3093623	**KSOM150OF5345F3**	1.500	1.856	.750	3.047	1.000	.138	4	8.0°	.56	16710

Spare Parts

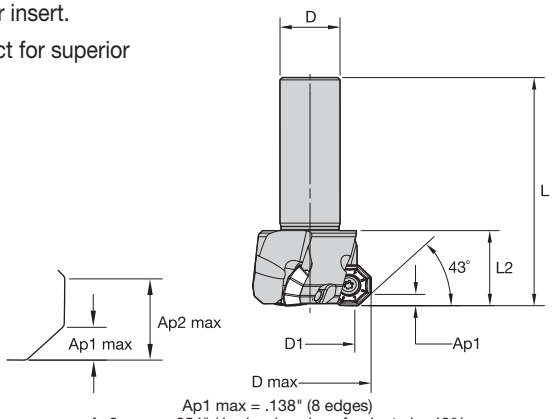
D1	 insert screw	 in. lbs.	 Torx Plus wrench
1.250	**193.433**	53	**TTP15**
1.500	**193.433**	53	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

- Eight cutting edges per insert.
- Super soft cutting effect for superior surface floor finishing.







Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

Cylindrical End Mills

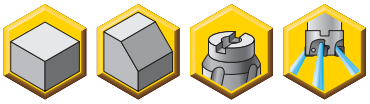
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
5358938	**KSOM125Z03C100OF53X**	1.250	1.603	1.000	3.280	1.000	.138	3	11.0°	.74	20050

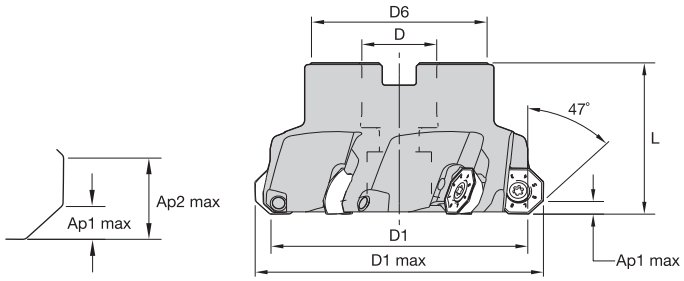
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench
1.250	**193.433**	53	**TTP15**

NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus20 (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- Eight cutting edges per insert.
- Super soft cutting.





Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%

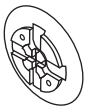


KSOM Mini • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
5359020	**KSOM150Z04OF53S050X**	1.500	1.850	.500	1.440	1.575	.138	4	8.0°	.58	16710
3093634	**KSOM200OF5345M3**	2.000	2.350	.750	1.593	1.570	.138	4	5.2°	.85	12530
5359021	**KSOM200Z06OF53S075X**	2.000	2.346	.750	1.750	1.570	.138	6	5.2°	.88	12530
3093635	**KSOM250OF5345M3**	2.500	2.846	.750	1.986	1.570	.138	5	3.8°	1.38	10030
5359023	**KSOM250Z07OF53S075X**	2.500	2.843	.750	2.144	1.570	.138	7	3.8°	1.43	10030
3093636	**KSOM300OF5345M4**	3.000	3.343	1.000	2.031	1.750	.138	6	3.0°	1.88	8350
5359024	**KSOM300Z09OF53S100X**	3.000	3.341	1.000	2.188	1.750	.138	9	3.0°	1.98	8350
3093637	**KSOM400OF5345M5**	4.000	4.340	1.250	2.722	1.750	.138	7	2.1°	2.77	6270
3093638	**KSOM500OF5345M6**	5.000	5.340	1.500	3.652	2.380	.138	8	1.6°	5.63	5010
3093632	**KSOM500OF5345F6**	5.000	5.340	1.500	3.652	2.380	.138	12	1.6°	6.07	5010

NOTE: "X" in the catalog number stands for improved finishing capabilities.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench	 socket-head cap screw	 coolant lock screw	 coolant lock screw	 coolant shower plate
1.500	**193.433**	53	**TTP15**	**S424**	**–**	**–**	**–**
2.000	**193.433**	53	**TTP15**	**S445**	**–**	**–**	**–**
2.500	**193.433**	53	**TTP15**	**S445**	**–**	**–**	**–**
3.000	**193.433**	53	**TTP15**	**S458**	**–**	**–**	**–**
4.000	**193.433**	53	**TTP15**	**–**	**S2162C**	**–**	**–**
5.000	**193.433**	53	**TTP15**	**–**	**–**	**420.201**	**470.240**

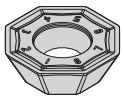
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus15 (order number 6205880) may be purchased separately in order to ensure proper torque setting.

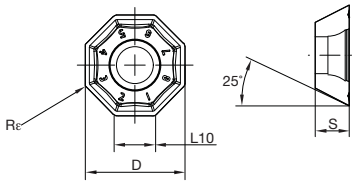
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPK30
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.E..GB	KCK15
K3	.E..LB	KCPK30	**.E..GB**	**KC520M**	.S..HB	KCPK30
N1–N2	.F..LBJ	KC410M	**.E..LBJ**	**KC422M**	.E..LBJ	KC422M
N3	.F..LBJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for machining aluminum with low feed rate.


OF.T-LNJ



OF.T-LNJ

● first choice
○ alternate choice

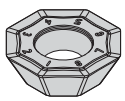
beyond

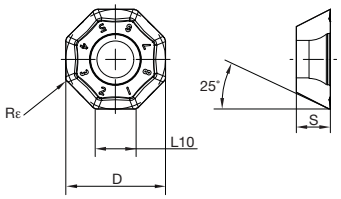
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N		●	●							
S					●	●				●
H										

OFKT-LNJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFFN4LNJ	.579	.197	.236	–	.031	.001	8	●	–	–	–	–	–	–	–	–

- First choice for machining aluminum.


OF.T-LBJ

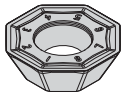


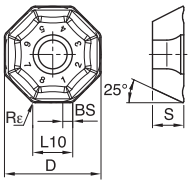
OF.T-LBJ

OFKT-LBJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN4LBJ	.579	.197	.236	–	.031	.001	8	–	●	–	–	–	–	–	–	–
OFKT53AFFN4LBJ	.579	.197	.236	–	.031	.001	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.
- -LB light geometry is the first choice for turbine blade applications.


OF.T-LB



OF.T-LB

● first choice
○ alternate choice

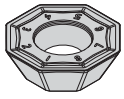
beyond

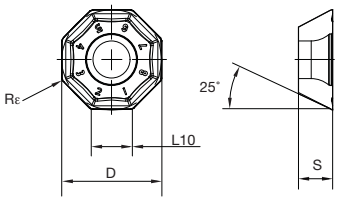
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N	●	●								
S					●	●				●
H										

OFKT-LB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN6LB	.579	.197	.236	.048	.031	.004	8	–	–	–	●	●	●	●	–	●
OFKT53AFSN6LB	.579	.197	.236	.048	.031	.009	8	–	–	●	●	●	–	●	–	–

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.


OF.T-GB

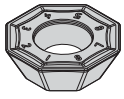


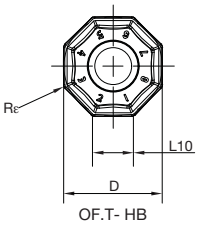
OF.T-GB

OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFEN4GB	.579	.197	.236	—	.031	.006	8	–	–	●	●	●	●	●	●	●

- First choice for heavy roughing.


OF.T- HB

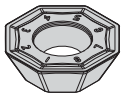


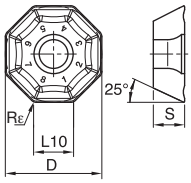
OF.T- HB

OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFKT53AFSN4HB	.579	.197	.236	—	.031	.008	8	–	–	–	●	●	–	●	–	●

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.


OF.T-GB



OF.T-GB

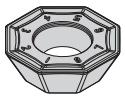
● first choice
○ alternate choice

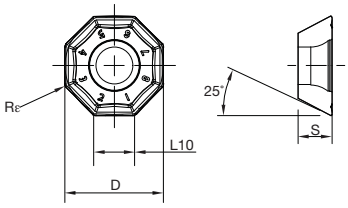
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P					○	●		●	●	○
M					●	●		○	○	●
K				●	○		●	○		
N		●	●							
S					●	●				●
H										

OFPT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT53AFEN4GB	.579	.197	.236	—	.031	.006	8	–	–	●	–	●	●	●	●	–

- First choice for heavy roughing.


OF.T- HB



OF.T- HB

OFPT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
OFPT53AFSN4HB	.579	.197	.236	—	.031	.008	8	–	–	●	–	●	●	●	–	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

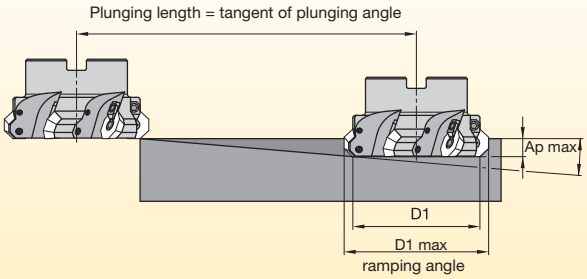
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LBJ	.007	**.025**	.041	.005	**.018**	.030	.004	**.013**	.022	.003	**.012**	.019	.003	**.011**	.018	.F..LBJ
.F..LNJ	.007	**.025**	.041	.005	**.018**	.030	.004	**.013**	.022	.003	**.012**	.019	.003	**.011**	.018	.F..LNJ
.E..LBJ	.007	**.025**	.045	.005	**.018**	.033	.004	**.013**	.024	.003	**.012**	.021	.003	**.011**	.019	.E..LBJ
.E..LB	.014	**.029**	.047	.010	**.021**	.034	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.E..LB
.S..LB	.014	**.029**	.051	.010	**.021**	.037	.007	**.016**	.027	.006	**.014**	.024	.006	**.012**	.022	.S..LB
.E..GB	.014	**.034**	.055	.010	**.025**	.039	.007	**.018**	.029	.006	**.016**	.025	.006	**.015**	.023	.E..GB
.S..HB	.014	**.034**	.059	.010	**.025**	.042	.007	**.018**	.031	.006	**.016**	.027	.006	**.015**	.025	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM Mini Application • OF.T06L5

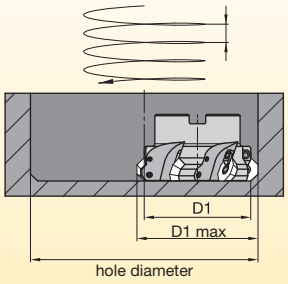
Ramping



Inch version

D1 inch	D1 max inch	Ap max inch	ramping angle (°)	ramping length inch
1.25	1.61	.354	11,0	1.82
1.50	1.85	.354	8,0	2.52
2.00	2.35	.354	5,2	3.89
2.50	2.85	.354	3,8	5.34
3.00	3.34	.354	3,0	6.76
4.00	4.34	.354	2,1	9.66
5.00	5.34	.354	1,6	12.69
6.00	6.34	.354	1,3	15.61

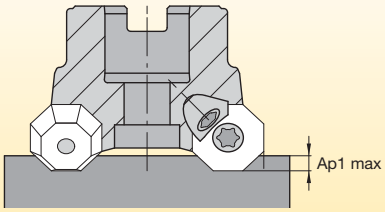
Helical Interpolation



Inch version

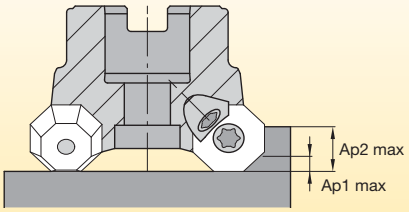
D1 inch	D1 max inch	hole diameter min inch	hole diameter max inch	Ap/Rev inch
1.25	1.61	2.41	3.20	.185
1.50	1.85	2.91	3.69	.185
2.00	2.35	3.90	4.68	.185
2.50	2.85	4.93	5.68	.185
3.00	3.34	5.89	6.68	.185
4.00	4.34	7.89	8.67	.185
5.00	5.34	9.89	10.67	.185
6.00	6.34	11.89	12.67	.185

Plunging



max plunging depth	inch
Ap1 max	.13

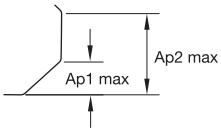
Face Milling

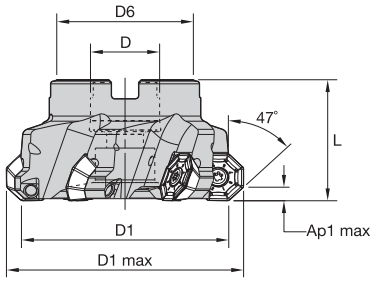


max DOC Ap	inch	chipload (fz)
Ap1 max	.14	1 x fz
Ap2 max	.35	0,6 x fz

- Eight cutting edges per insert.
- Super soft cutting.







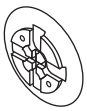
Ap1 max = .138" (8 edges)
Ap2 max = .354" (4 edges); reduce feed rate by 40%



KSOM • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
3093645	**KSOM250OF6445M3**	2.500	2.945	.750	1.986	1.750	.197	4	5.5°	1.47	10100
3093640	**KSOM250OF6445F3**	2.500	2.945	.750	1.986	1.750	.197	5	5.5°	1.29	10100
3093646	**KSOM300OF6445M4**	3.000	3.441	1.000	2.031	1.750	.197	4	4.2°	1.83	7900
3093641	**KSOM300OF6445F4**	3.000	3.441	1.000	2.031	1.750	.197	6	4.2°	1.68	7900
3093647	**KSOM400OF6445M5**	4.000	4.436	1.250	2.722	1.750	.197	5	2.9°	2.69	6300
3093642	**KSOM400OF6445F5**	4.000	4.436	1.250	2.722	1.750	.197	8	2.9°	2.79	6300
3093648	**KSOM500OF6445M6**	5.000	5.433	1.500	3.652	2.380	.197	6	2.2°	5.54	5000
3093643	**KSOM500OF6445F6**	5.000	5.433	1.500	3.652	2.380	.197	10	2.2°	5.94	5000
3093649	**KSOM600OF6445M8**	6.000	6.431	2.000	4.722	2.380	.197	7	1.8°	8.51	3900
3093644	**KSOM600OF6445F8**	6.000	6.431	2.000	4.722	2.380	.197	12	1.8°	8.66	3900

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench	 socket-head cap screw	 coolant lock* screw assembly	 coolant* lock screw	 coolant* shower plate
2.500	**193.409**	53	**TTP20**	**S445**	**–**	**–**	**–**
3.000	**193.409**	53	**TTP20**	**S458**	**–**	**–**	**–**
4.000	**193.409**	53	**TTP20**	**–**	**S2162C**	**–**	**–**
5.000	**193.409**	53	**TTP20**	**–**	**–**	**420.201**	**470.240**
6.000	**193.409**	53	**TTP20**	**–**	**–**	**420.241**	**470.241**

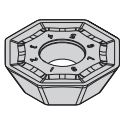
* Coolant clamping screw and coolant cap must be purchased separately.

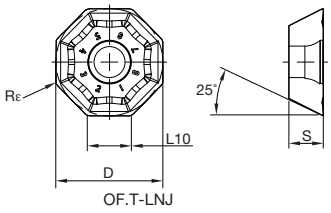
NOTE: Adjustable torque wrench (order number 6197561) and bit TorxPlus20 (order number 6205891) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LB	KCPK30	**.E..GB**	**KCPM40**	.S..HB	KCPM40
P3–P4	.E..LB	KCPK30	**.E..GB**	**KCPK30**	.S..HB	KCPK30
P5–P6	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M1–M2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
M3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
K1–K2	.E..LB	KCK15	**.E..GB**	**KC520M**	.S..HB	KCK15
K3	.E..LB	KC520M	**.E..GB**	**KC520M**	.S..HB	KC520M
N1–N2	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
N3	.F..LNJ	KC410M	**.F..LNJ**	**KC410M**	.F..LNJ	KC410M
S1–S2	.E..LB	KC725M	**.E..GB**	**KC725M**	.S..HB	KC725M
S3	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
S4	.E..LB	KCSM40	**.E..GB**	**KCSM40**	.S..HB	KCSM40
H1	–	–	**–**	**–**	–	–

- First choice for machining aluminum.


OF.T-LNJ



OF.T-LNJ

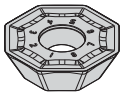
● first choice
○ alternate choice

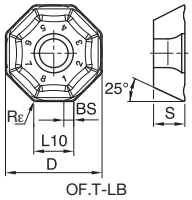
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										

OFKT-LNJ

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT64AFFN6LNJ	.736	.236	.295	–	.047	.001	8	●	–	–	–	–	–	–	–	–

- First choice for light machining.


OF.T-LB



OF.T-LB

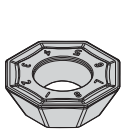
OFKT-LB

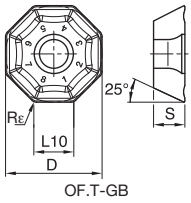
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFKT64AFEN6LB	.736	.236	.295	.083	.047	.004	8	–	–	●	●	–	●	–	–	●
OFKT64AFSN6LB	.736	.236	.295	.083	.047	.009	8	–	–	–	●	–	●	–	–	–

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.

● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										


OF.T-GB

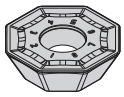


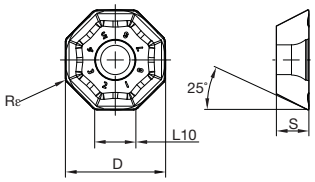
OF.T-GB

OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFKT64AFEN6GB	.736	.236	.295	—	.047	.006	8

- First choice for heavy roughing.


OF.T- HB

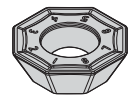


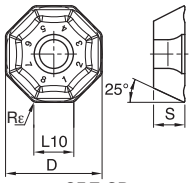
OF.T- HB

OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFKT64AFSN6HB	.736	.236	.295	—	.047	.008	8

- First choice for general purpose.


OF.T-GB

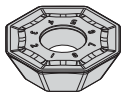


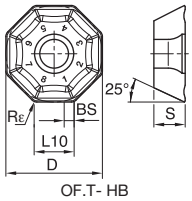
OF.T-GB

OFPT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFPT64AFEN6GB	.736	.236	.295	—	.047	.006	8

- First choice for heavy roughing.


OF.T- HB



OF.T- HB

OFPT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges
OFPT64AFSN6HB	.736	.236	.295	—	.047	.008	8

Face Milling

Recommended Starting Feeds [IPT]

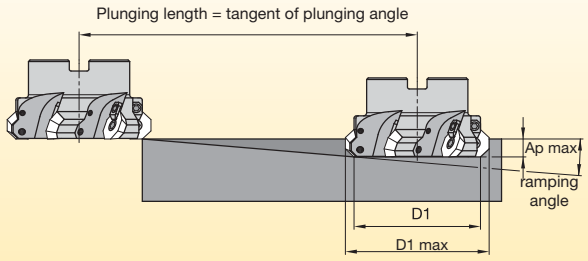
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LNJ	.007	**.027**	.048	.005	**.019**	.035	.004	**.015**	.026	.003	**.013**	.022	.003	**.012**	.021	.F..LNJ
.E..LB	.014	**.029**	.047	.010	**.021**	.034	.007	**.016**	.025	.006	**.014**	.022	.006	**.013**	.020	.E..LB
.S..LB	.014	**.029**	.053	.010	**.021**	.038	.007	**.016**	.028	.006	**.014**	.025	.006	**.012**	.022	.S..LB
.E..GB	.014	**.034**	.055	.010	**.025**	.039	.007	**.018**	.029	.006	**.016**	.026	.006	**.015**	.023	.E..GB
.S..HB	.014	**.034**	.059	.010	**.025**	.042	.007	**.018**	.031	.006	**.016**	.027	.006	**.015**	.025	.S..HB

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSOM Application • OF.T07L6

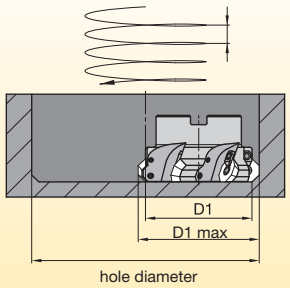
Ramping



Inch version

D1 inch	D1 max inch	Ap max inch	ramping angle (°)	ramping length inch
2.50	2.94	.46	5.5	4.78
3.00	3.44	.46	4.2	6.27
4.00	4.43	.46	2.9	9.09
5.00	5.43	.46	2.2	11.99
6.00	6.43	.46	1.8	14.65

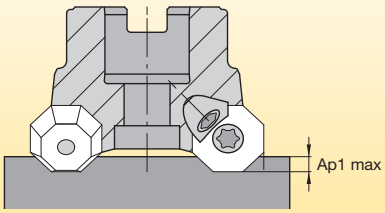
Helical Interpolation



Inch version

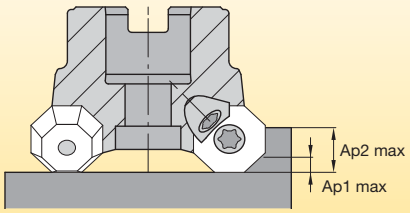
D1 inch	D1 max inch	hole diameter min inch	hole diameter max inch	Ap/Rev inch
2.50	2.94	4.872	5.748	.248
3.00	3.44	5.868	6.744	.248
4.00	4.43	7.863	8.739	.248
5.00	5.43	9.859	10.736	.248
6.00	6.43	11.857	12.733	.248

Plunging



max plunging depth	inch
Ap1 max	.17

Face Milling



max DOC Ap	inch	chipload (fz)
Ap1 max	.20	1 x fz
Ap2 max	.46	0,6 x fz

KSSM8+™ Face Milling Platform

Primary Application

The KSSM8+ platform is a first-choice face milling platform for **versatility** and a **reduced cost per edge**. This platform just got better with the latest pressing technology from Kennametal, which delivers pressed and sintered-to-size (PSTS) inserts ideal for general machining in **cast iron and steel**. With our latest KCPM40™ grade offering, PSTS inserts deliver exceptional performance. Now more than ever, the KSSM8+ platform is the economical solution for applications requiring a **near 0° shoulder**.

Features and Benefits

Features

- Double-sided insert with 8 cutting edges.
- Face mill with close to a 0° shoulder.
  - IC 10 (2° lead)
  - IC 12,7 (3° lead)
- Medium and fine density cutters.
- -LD and -GD geometry inserts.

Benefits

- Maximized number of cutting edges.
- Lower cost-per-edge.
- Reduced power consumption.
- Reduced deformation/chatter.
- Exceptional surface finish.
- Stronger edge for roughing.

Versatile Platform with Multiple Insert Options and Grades

Cost per Edge
Double-sided square inserts,
8 cutting edges.

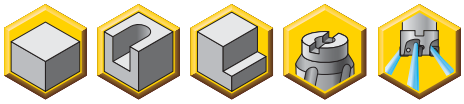


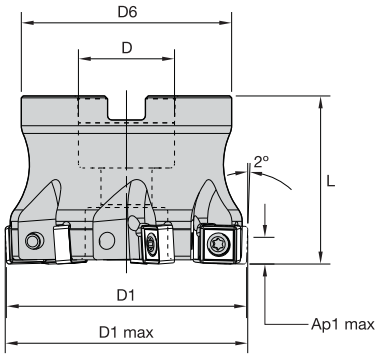


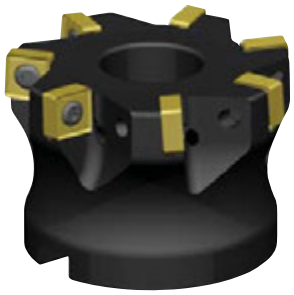
Optimized Cutting Forces
4° axial and 10° radial rake
angles reduce power consumption.

Through Tool Coolant/Air
Directed to the cutting edge
for optimum cooling.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.







KSSM8+ • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
5420251	**KSSM88D200SN3125S075Z05**	2.000	2.025	.750	1.750	1.750	.361	5	.85	32500
5420252	**KSSM88D200SN3125S075Z06**	2.000	2.025	.750	1.750	1.750	.361	6	.85	32500
5420255	**KSSM88D300SN3125S100Z07**	3.000	3.025	1.000	2.190	1.750	.361	7	1.82	25500
5420257	**KSSM88D300SN3125S100Z09**	3.000	3.419	1.000	2.190	1.750	.361	9	1.82	25500
5420258	**KSSM88D400SN3125S150Z08**	4.000	4.025	1.500	3.380	2.000	.361	8	3.73	21700

NOTE: Standard milling cutters will accept insert nose radii up to .078" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver	 socket-head cap screw	 coolant lock screw assembly
2.000	**193.492**	35.000	**DT15**	**S445**	**–**
3.000	**193.492**	35.000	**DT15**	**S458**	**–**
4.000	**193.492**	35.000	**DT15**	**–**	**S-2165-C**

NOTE: For coolant shower plates (MCC..), only use low-presssure coolant.

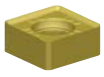
Insert Selection Guide

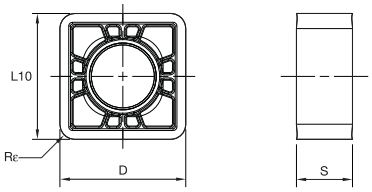
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
M3	.E..LD	KC725M	**.S..GD**	**KCPK30**	.S..GD	KCPM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
S3	.E..LD	KC725M	**.E..LD**	**KC725M**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.E..LD**	**KC725M**	.E..LD	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- First choice for light machining of cast iron and steel.
- Low cutting forces.

● first choice
○ alternate choice


SNHJ-LD

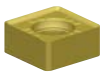


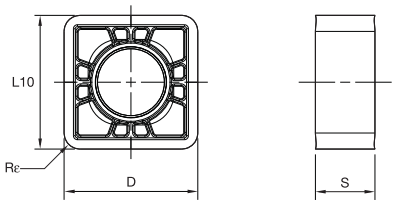
SNHJ-LD

SNHJ-LD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ31252ENLD	.394	.157	.394	.031	.002	8	●	–	●	●	–	●	–	–
SNHJ31253ENLD	.394	.157	.394	.047	.002	8	–	–	●	●	–	–	–	–

- First choice for general purpose machining.


SNPJ-GD



SNPJ-GD

SNPJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ31252SNGD	.394	.157	.394	.031	.003	8	●	–	–	●	–	●	●	–
SNPJ31253SNGD	.394	.157	.394	.047	.003	8	–	–	–	●	–	–	●	–

Recommended Starting Feeds

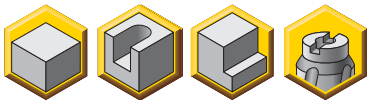
Recommended Starting Feeds [IPT]

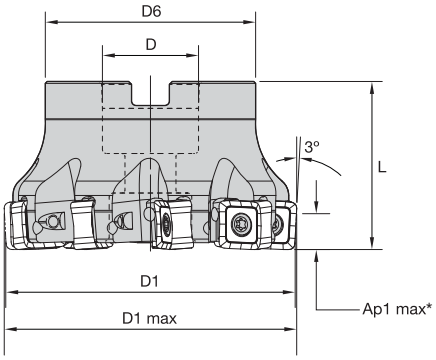
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.016**	.028	.005	**.012**	.020	.004	**.009**	.015	.003	**.008**	.013	.003	**.007**	.012	.E..LD
.S..GD	.009	**.020**	.032	.007	**.015**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.S..GD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.







KSSM8+ • Shell Mills

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max*	Z	lbs	max RPM
5420150	**KSSM87D200SN440S075Z05**	2.000	2.045	.750	1.750	1.750	.236	5	.81	22500
5420154	**KSSM87D300SN440S100Z07**	3.000	3.045	1.000	2.190	1.750	.236	7	1.86	17400
5420155	**KSSM87D300SN440S100Z09**	3.000	3.045	1.000	2.190	1.750	.236	9	1.83	17400
5420156	**KSSM87D400SN440S150Z08**	4.000	4.045	1.500	3.380	2.000	.236	8	3.69	14700
5420157	**KSSM87D400SN440S150Z11**	4.000	4.045	1.500	3.380	2.000	.236	11	3.68	14700
5420160	**KSSM87D600SN440S150Z12**	6.000	6.045	1.500	3.380	2.380	.236	12	8.17	11700
5420161	**KSSM87D600SN440S150Z16**	6.000	6.045	1.500	3.380	2.380	.236	16	8.16	11700

NOTE: Standard milling cutters will accept insert nose radii up to .078" without modification.
*Ap1 max. .236" using insert SNHJ442ENLD.
*Ap1 max. .467" using insert SNPJ442SNGD.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver	 socket-head cap screw	 coolant lock screw assembly
2.000	**193.492**	35.000	**DT15**	**S445**	**–**
3.000	**193.492**	35.000	**DT15**	**S458**	**–**
4.000	**193.492**	35.000	**DT15**	**–**	**S2165C**
6.000	**193.492**	35.000	**DT15**	**–**	**S2163C**

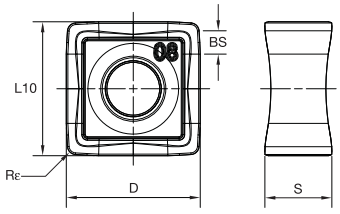
NOTE: For coolant shower plates (MCC..), only use low-pressure coolant.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KC725M	**.E..LD**	**KCPK30**	.S..GD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
P5–P6	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..GD	KCPM40
M1–M2	.E..LD	KC725M	**.S..GD**	**KC522M**	.S..GD	KCSM40
M3	.E..LD	KC725M	**.S..GD**	**KCPM40**	.S..GD	KCSM40
K1–K2	.E..LD	KC520M	**.E..LD**	**KCK15**	.S..GD	KC520M
K3	.E..LD	KCK15	**.S..GD**	**KC520M**	.S..GD	KCK15
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
S3	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KCPM40
S4	.E..LD	KC725M	**.S..GD**	**KCSM40**	.S..GD	KC522M
H1	–	–	**–**	**–**	–	–

- First choice for light machining of cast iron and steel.


SNHJ-LD



SNHJ-LD

● first choice
○ alternate choice

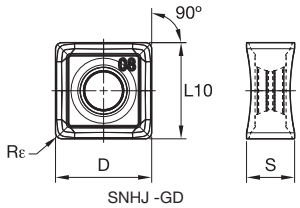
P			○	●			●	●	○
M			●	●			○	●	●
K		●	○		●	●	○		
N									
S			●	●				○	●
H									

SNHJ-LD

catalog number	D	S	BS	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ442ENLD	.500	.250	.086	.500	.031	.002	8	●	–	●	●	–	●	–	–
SNHJ444ENLD	.500	.250	.059	.500	.063	.002	8	●	–	●	●	–	●	–	–

- First choice for high-performance roughing.


SNHJ -GD



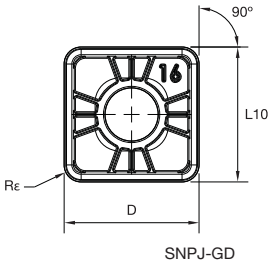
SNHJ -GD

SNHJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNHJ442SNGD	.500	.250	.500	.031	.005	8	●	●	–	●	–	●	●	●

- First choice for regular roughing.


SNPJ-GD



SNPJ-GD

● first choice
○ alternate choice

beyond

	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
P	○	●	●			●	●	○
M		●	●			○	●	●
K	●	○		●	●	○		
N								
S		●	●				○	●
H								

SNPJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCK20	KCPK30	KCPM40	KCSM40
SNPJ442SNGD	.500	.178	.500	.031	.005	8	●	–	–	●	–	●	●	–
SNPJ444SNGD	.500	.178	.500	.063	.005	8	–	–	–	●	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.018**	.033	.005	**.013**	.024	.004	**.010**	.018	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.S..GD	.009	**.023**	.036	.007	**.017**	.026	.005	**.013**	.019	.004	**.011**	.017	.004	**.010**	.016	.S..GD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Solution Capabilities

RAIL MILLING

Kennametal customers benefit from the highest service levels, our long-term experience, and application knowledge in the rail milling industry.

- Solutions for all applications in rail and wheel machining.
- Technical support to find the right tools for the application and to learn how to use them the best way.
- Highly productive tooling solutions, including indexable inserts up to eight cutting edges.
- High-performance tools with helix-like partitions and long tool life.
- Solutions available to optimize vibration, performance, and cutting action, depending on the application.



Experience the advantages at your Authorized Kennametal Distributor or at **kennametal.com**.

KENNAMETAL®

kennametal.com

Fix-Perfect™ Cast Iron Rougher and Finisher

Primary Application

Performance booster in machining cast iron materials. Based on workpiece requirements, Fix-Perfect roughers and finishers cover all face and shoulder milling applications when machining cast iron materials with best-in-class productivity. Eight true cutting edges per insert deliver low cost per edge and best cost per part (CPP) ceramic inserts available as standard line items.

Features and Benefits

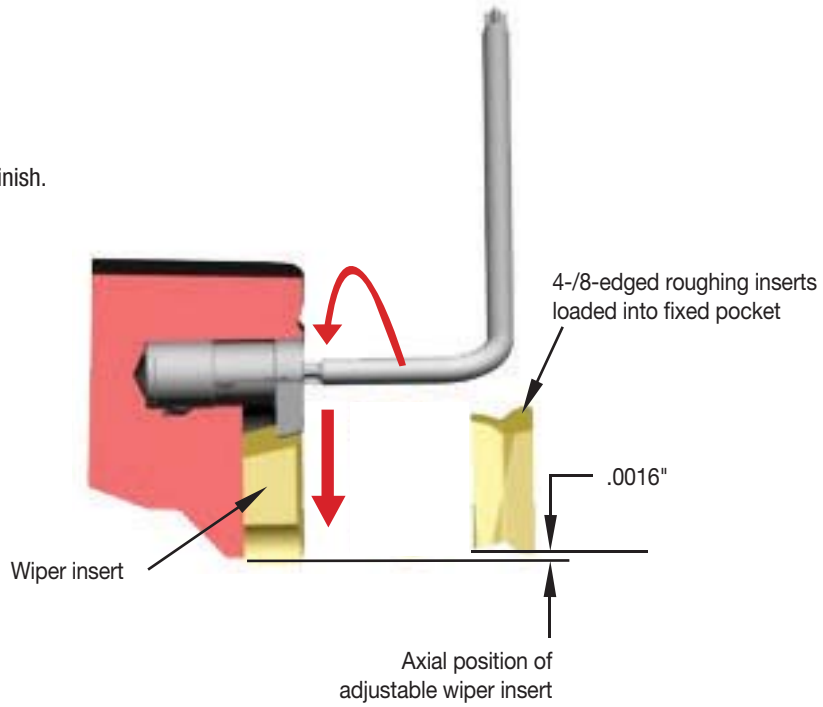
Fix-Perfect Cast Iron 20° and 0° Roughing and Finishing in One Tool

- Innovative tangential insert clamping.
- First choice for high feed rates.
- Protection of non-cutting edges.
- Adjustable element for fine finishing with wiper inserts.
- PCBN-tipped wiper inserts available for excellent floor finish.
- Micro-precise runout setup.

Fix-Perfect Cast Iron *Finisher Best-in-Class Fine-Finishing Concept

- Rigid and stable cutter design.
- High-precision pocket seat.
- Perfect axial runout without insert adjustment.
- Reliable, excellent floor finish and flatness.
- Easy handling and low-cost cutter setup.

*Finisher inch cutters available as custom solution







Fix-Perfect™ *Finisher



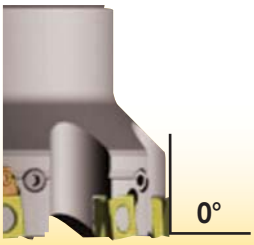
Fix-Perfect Cast Iron

Fix-Perfect Cast Iron 20º and 0º

Fix-Perfect 20°

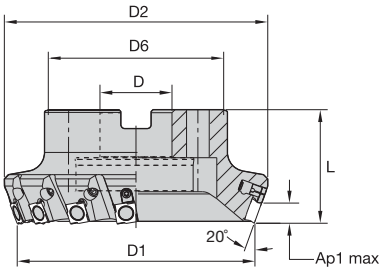


Fix-Perfect 0°



*Finisher inch cutters available as custom solution

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Adjustable pockets (D1 = 3–10").



Ap1max: .232" (8 edges)
Ap2 max: .374" (4 edges); reduce feed rate by 30%



Fix-Perfect 20° • Shell Mills

order number	catalog number	D1	D	D2	D4	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1724429	**50A04RP70SP12CUFP**	2.000	.750	2.504	—	1.750	1.750	.232	4	0	1.24	8595
1724378	**50A05RP70SP12CUFP**	2.000	.750	2.504	—	1.750	1.750	.232	5	0	1.19	8595
1724379	**63A07RP70SP12CUFP**	2.500	.750	2.988	—	1.750	1.750	.232	7	0	1.55	6876
1724432	**80A06RP70SP12C1WUFP**	3.000	1.000	3.504	—	2.190	1.750	.232	6	1	2.21	5730
1724380	**80A08RP70SP12C2WUFP**	3.000	1.000	3.504	—	2.190	1.750	.232	8	2	2.43	5730
1532258	**100B08RP70SP12C2WUFP**	4.000	1.500	4.488	—	2.880	1.750	.232	8	2	3.30	4298
1724391	**100B12RP70SP12C3WUFP**	4.000	1.500	4.488	—	2.880	1.750	.232	12	3	3.10	4298
1532257	**125B10RP70SP12C2WUFP**	5.000	1.500	5.504	—	3.810	2.375	.232	10	2	6.50	3438
1724434	**160B12RP70SP12C3WUFP**	6.000	2.000	6.504	—	4.882	2.375	.232	12	3	10.10	2865
1724395	**160B18RP70SP12C3WUFP**	6.000	2.000	6.504	—	4.882	2.375	.232	18	3	10.10	2865
1532255	**200C16RP70SP12C4WUFP**	8.000	2.500	8.504	4.000	5.120	2.375	.232	16	4	14.10	2149
1532254	**250C20RP70SP12C4WUFP**	10.000	2.500	10.504	4.000	7.120	2.375	.232	20	4	29.30	1719

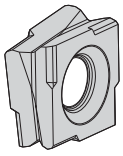
Spare Parts

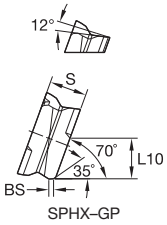
D1	adjusting element	adjusting element screw	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw
2.000	—	—	—	**410.081**	**121.612**	**170.003**	45	**S445**
2.500	—	—	—	**410.081**	**121.612**	**170.003**	45	**S445**
3.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	**S458**
4.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
5.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
6.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
8.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—
10.000	**479.100**	**193.300**	**KT9**	**410.081**	**121.612**	**170.003**	45	—

NOTE: Please order spare parts separately.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
K3	.E..GP	KC520M	**.E..GP**	**KCK15**	.S..GP	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX–GP



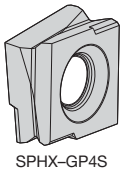
SPHX–GP

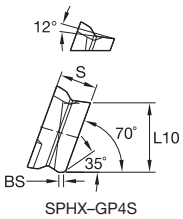
● first choice
○ alternate choice

P								
M								
K	●	●	●	○	○	●	●	
N								
S								
H								

SPHX-GP • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCELGP	.213	.217	.028	.002	8	–	●	●	–	–	–	–
SPHX1205ZCERGP	.213	.217	.028	.002	8	–	●	●	–	●	–	–
SPHX1205ZCSRGP	.213	.217	.028	.006	8	–	–	●	–	●	–	–
SPHX1205ZCTLGPK	.213	.217	.028	.009	8	–	–	–	–	–	–	●
SPHX1205ZCTRGP	.213	.217	.028	.009	8	–	–	–	●	–	–	–
SPHX1205ZCTRGPK	.213	.217	.028	.009	8	–	–	–	–	–	–	●

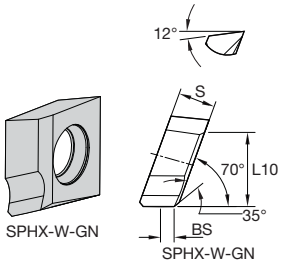

SPHX–GP4S



SPHX–GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGP4S	.395	.217	.028	.002	4	–	–	●	–	–	–	–
SPHX1205ZCTRGP4SK	.396	.217	.028	.009	4	–	–	–	–	–	–	●

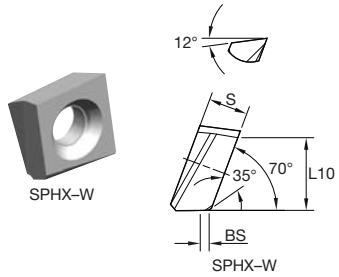


● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-W • Finishing • GN

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCERGNT1W	.394	.217	.079	.001	1	–	–	–	–	–	●	–
SPHX1205ZCFRGN1W	.394	.217	.079	.001	1	–	●	●	–	–	–	–
SPHX1205ZCFRGN1WK	.394	.217	.079	.001	1	–	–	–	–	–	–	●



SPHX-W • Finishing • GP

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX1205ZCER-GP1W	.394	.217	.079	.001	1	–	●	●	–	–	–	–
SPHX1205ZCTR-GP1WK	.394	.217	.079	.009	1	–	–	–	–	–	–	●

NOTE: SPHX-W: Wiper Facet BS = .08".

Face Milling

Recommended Starting Feeds

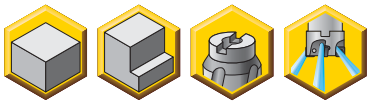
Recommended Starting Feeds [IPT]

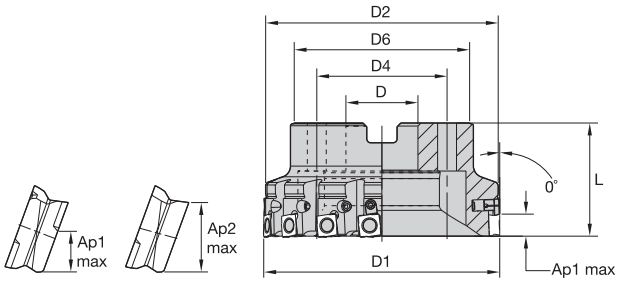
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	.006	**.020**	.038	.004	**.014**	.027	.003	**.011**	.020	.003	**.009**	.018	.002	**.009**	.016	.E..GP
.T..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.T..GP
.S..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Eight cutting edges per insert.
- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Adjustable pockets (D1 = 3–6").





Ap1 max = .236" (8 edges)
Ap2 max = .394" (4 edges); reduce feed rate by 30%



Fix-Perfect 0° • Shell Mills

order number	catalog number	D1	D	D2	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1724407	**50A04RP90SP12CUFP**	2.000	.750	1.929	1.750	1.750	.236	4	0	.93	8595
1514498	**50A05RP90SP12CUFP**	2.000	.750	1.929	1.750	1.750	.236	5	0	.93	8595
1724409	**63A05RP90SP12CUFP**	2.500	.750	2.433	1.750	1.750	.236	5	0	1.24	6876
1724417	**80A06RP90SP12C1WUFP**	3.000	1.000	2.906	2.190	1.750	.236	6	1	1.81	5730
1724339	**80A08RP90SP12C2WUFP**	3.000	1.000	2.906	2.190	1.750	.236	8	2	1.90	5730
1724419	**100B08RP90SP12C2WUFP**	4.000	1.500	3.906	2.882	1.750	.236	8	2	2.60	4298
1724351	**100B12RP90SP12C3WUFP**	4.000	1.500	3.906	2.882	1.750	.236	12	3	2.86	3130
1724421	**125B10RP90SP12C2WUFP**	5.000	1.500	4.906	3.811	2.375	.236	10	2	6.30	3438
1724353	**125B15RP90SP12C3WUFP**	5.000	1.500	4.906	3.811	2.375	.236	15	3	6.40	3438
1724424	**160B12RP90SP12C3WUFP**	6.000	2.000	5.906	4.882	2.375	.236	12	3	9.10	2865

Spare Parts

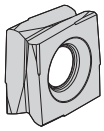
D1	adjusting element	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw
2.000	–	–	**410.081**	**121.612**	**170.003**	45	**S446**
2.500	–	–	**410.081**	**121.612**	**170.003**	45	**S445**
3.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	**S458**
4.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–
5.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–
6.000	**479.100**	**KT9**	**410.081**	**121.612**	**170.003**	45	–

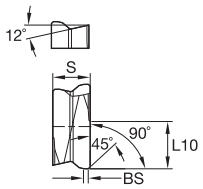
NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
K3	.E..GPB	KC520M	**.E..GPB**	**KCK15**	.S..GPB	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • SPHX1205... • Roughing


SPHX-GPB



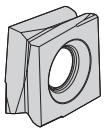
SPHX-GPB

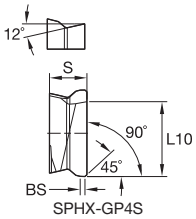
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P							○	●		
M							○	●		
K		●	●	●	○	○			●	●
N										
S							○	●		
H										

SPHX-GPB • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX120508PCSRGP	.256	.217	—	.002	8	–	–	●	–	–	–	–	–	–
SPHX1205PCELGPB	.259	.217	.028	.001	8	–	–	●	–	–	–	–	–	–
SPHX1205PCERGPB	.259	.217	.028	.001	8	–	●	●	–	●	–	–	–	–
SPHX1205PCSRGPB	.259	.217	.028	.006	8	–	–	●	–	●	–	●	–	–
SPHX1205PCTLGPBK	.259	.217	.028	.009	8	–	–	–	–	–	–	–	–	●
SPHX1205PCTRGPB	.259	.217	.028	.009	8	–	–	–	●	–	–	–	–	–
SPHX1205PCTRGPBK	.259	.217	.028	.009	8	–	–	–	–	–	–	–	–	●

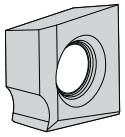

SPHX-GP4S

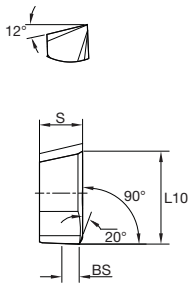


SPHX-GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGP4SB	.436	.217	.028	.001	4	–	●	●	–	–	–	–	–	–
SPHX1205PCTRGP4SBK	.436	.217	.028	.009	4	–	–	–	–	–	–	–	–	●


SPHX-GN1WB
SPHX-GN1WBK



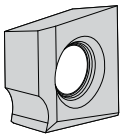
SPHX-GN1WB
SPHX-GN1WBK

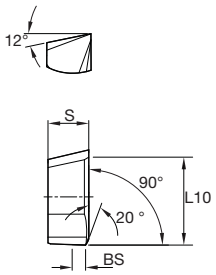
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
P						○	●			
M						○	●			
K		●	●	●	○	○			●	●
N										
S						○	●			
H										

SPHX-W • Finishing • GN

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCERGN1WB	.433	.205	.079	.002	1	–	–	–	–	●	–	–	–	–
SPHX1205PCERGNT1WB	.500	.217	.079	.001	1	–	–	–	–	–	–	–	●	–
SPHX1205PCFLGN1WB	.433	.217	.079	.001	1	–	–	●	–	–	–	–	–	–
SPHX1205PCFRGN1WB	.433	.205	.079	.001	1	–	●	●	●	–	–	●	–	–
SPHX1205PCFRGN1WBK	.433	.205	.079	.001	1	–	–	–	–	–	–	–	–	●


SPHX-GP1WB



SPHX-GP1WB

SPHX-W • Finishing • GP

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KC715M	KC725M	KB1340	KY3500
SPHX1205PCELGPB	.259	.217	.028	.001	8	–	–	●	–	–	–	–	–	–
SPHX1205PCER-GP1WB	.433	.217	.079	.001	1	–	●	●	–	–	–	–	–	–
SPHX1205PCTR-GP1WBK	.433	.217	.079	.009	1	–	–	–	–	–	–	–	–	●

NOTE: SPHX-W-GP: Wiper Facet BS = .08".

Face Milling

Recommended Starting Feeds

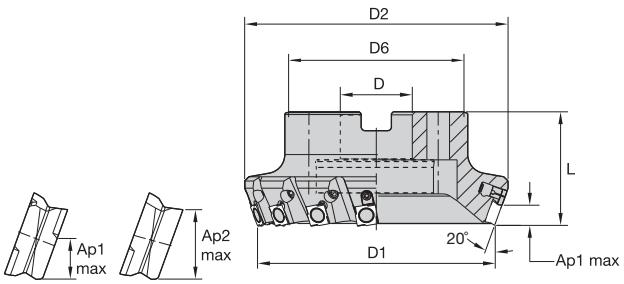
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GPB	.005	**.019**	.033	.003	**.013**	.023	.003	**.010**	.018	.002	**.009**	.015	.002	**.008**	.014	.E..GPB
.T..GPB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.T..GPB
.S..GPB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GPB

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Rough and finish in one operation.
- Tangential mounted inserts deliver higher feed rates.
- Eight cutting edges per insert.



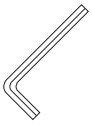


Ap1max: .256" (8 edges)
Ap2 max: .374" (4 edges); reduce feed rate by 30%

Fix-Perfect 20° • Shell Mills

order number	catalog number	D1	D	D2	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1806847	**125B08RP70SP15C2WUFP**	5.000	1.500	5.559	3.807	2.375	.256	8	2	7.00	3500
1806848	**160B10RP70SP15C2WUFP**	6.000	2.000	6.559	4.877	2.375	.256	10	2	10.40	2800

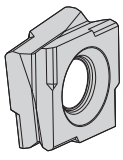
Spare Parts

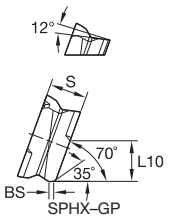
D1	 adjusting element	 adjusting element screw	 Torx wrench	 clamp stud	 clamp screw	 hex wrench	 in. lbs.
5.000	**479.100**	**193.300**	**KT9**	**410.084**	**121.616**	**170.003**	45
6.000	**479.100**	**193.300**	**KT9**	**410.084**	**121.616**	**170.003**	45

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..GP	KCK15	**.E..GP**	**KCK15**	.E..GP	KCK15
K3	.E..GP	KCK15	**.E..GP**	**KCK15**	.S..GP	KCPK30
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SPHX–GP



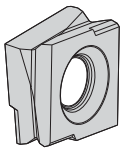
SPHX–GP

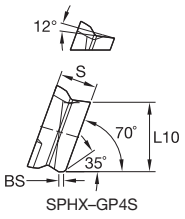
● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-GP • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP	.257	.260	.047	.001	8	–	–	●	–	●	–	–
SPHX15T6ZCSRGP	.257	.260	.047	.006	8	●	–	–	–	●	–	–
SPHX15T6ZCTRGPK	.256	.260	.047	.009	8	–	–	–	–	–	–	●

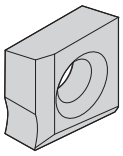

SPHX–GP4S

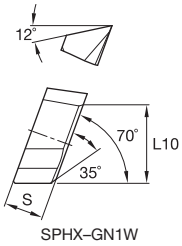


SPHX–GP4S

SPHX-GP4S • Roughing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCERGP4S	.492	.260	.047	.002	4	–	–	●	–	–	–	–
SPHX15T6ZCTRGP4SK	.493	.260	.047	.009	4	–	–	–	–	–	–	●


SPHX–GN1W



SPHX–GN1W

● first choice
○ alternate choice

		K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
P								
M								
K		●	●	●	○	○	●	●
N								
S								
H								

SPHX-GN1W • Finishing

catalog number	L10	S	BS	hm	cutting edges	K110M	KC520M	KCK15	KTPK20	KCPK30	KB1340	KY3500
SPHX15T6ZCFRGN1W	.433	.260	.106	.001	1	–	–	●	–	–	–	–

Recommended Starting Feeds

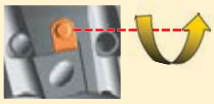
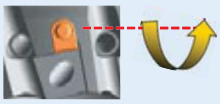
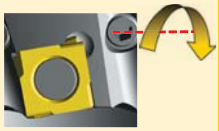
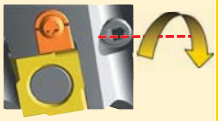
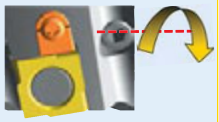
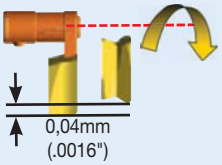
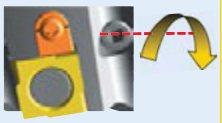
Recommended Starting Feeds [IPT]

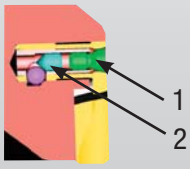
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GP	.005	**.020**	.035	.004	**.014**	.025	.003	**.011**	.019	.002	**.009**	.016	.002	**.009**	.015	.E..GP
.S..GP	.010	**.025**	.040	.007	**.018**	.029	.005	**.013**	.021	.005	**.012**	.019	.004	**.011**	.017	.S..GP

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Introduction to Fitting Cutting Bodies

procedures:	roughing		roughing/finishing	
	 fixed pocket	 adjustable pocket	 fixed pocket	 adjustable pocket
1 Reset adjusting element T x T9	–		–	
2 Insert roughing insert Tighten SW 3 M_{An} = 44 in. lbs.				–
3 Tighten adjusting element gently	–		–	–
4 Insert finishing insert and pre-tighten SW 3 M_{VG} = 9 in. lbs.	–	–	–	
5 The finishing insert is positioned .0016" in front of the highest roughing insert	–	–	–	
6 Tighten the finishing insert M_{An} = 44 in. lbs.	–	–	–	



NOTE: This process must be repeated whenever an indexable insert is changed. The ball is loose.

Changing the adjusting element
1. Remove the taper screw①
2. Loosen the SW 1,5 screw②
3. Remove the adjusting element.

ATTENTION: The maximum permissible cutting speed of the milling cutter heads is vc max = 3000 SFM. Only use original parts when clamping the indexable inserts.

Next Generation of HexaCut™

Milling Inserts Are Now Available for Roughing and Semi-Finishing of Cast Iron Materials

Primary Application

The Kennametal HexaCut face milling program is specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron. Twelve cutting edges drastically reduce your cost per edge and increase tool life. Shorter setup times and excellent cutter accuracy allow you to apply the HexaCut program to the most demanding jobs. One ceramic and eight carbide grades with six insert geometries deliver high feed rates and will enable you to reach optimum horsepower.

Features and Benefits

- New insert topographies for existing HexaCut platform with latest cutting edge design.
- Specifically engineered for rough and semi-finish face milling of cast, ductile, and compacted graphite iron.
- Up to 20% better tool life and 10% less power consumption.
- High precision ground on insert IC to achieve a better axial and radial runout.
- First HexaCut roughing insert with integrated wiper facet for better floor finish.





New Standard Insert Offering for HexaCut™ Series

Roughing and semi-finishing of automotive engine blocks and other cast iron face milling operations.



HNHX0905..ENLE
New geometry for semi-finishing and light roughing operations.



HNHX0905ANSNGE
New geometry for roughing; integrated wiper facet for advanced floor finish.

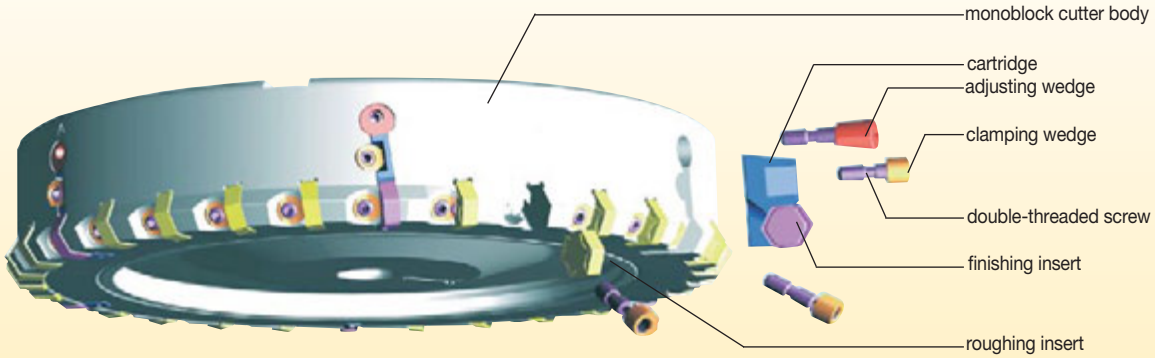


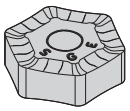
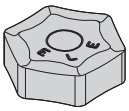
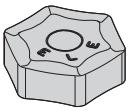
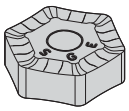
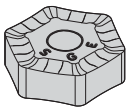
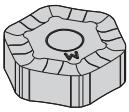
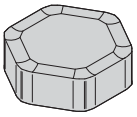
HNHX0905..SNGE
New geometry with improved rake and edge prep design for roughing operations.



HNPX0905..SNGE
New stable geometry for heavy roughing in severe machining conditions.

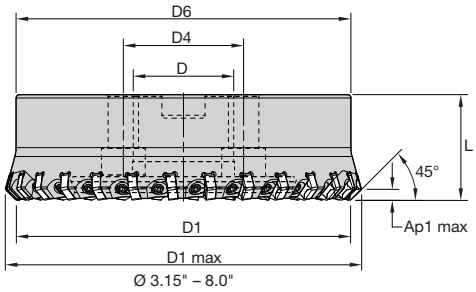
HexaCut 30° Cutter Body Design with Fixed and Adjustable Pocket Seats



			▼= roughing indexable insert						▼▼ = finishing indexable insert
									
Recommended combination of standard indexable inserts and geometries			HNGX 090516 -SNGE Z = 12	HNHX 090516 - ENLE Z = 12	HNHX 090520 -ENLE Z = 12	HNHX 090520 -SGE Z = 12	HNHX 090530 -SNGE Z = 12	HNHX 0905 -ANSNGE Z = 12	HNGF 090504 -MF Z = 12
Operation	Lead	Ap max							
▼/▼▼	45°	.256"	■ OR	■ OR	■ OR	■	■	■	
▼	30°	.315"	■ OR	■ OR	■ OR	■	■		
▼▼	30°	.040"		■	■ OR	■ OR	■		■
▼/▼▼	30°	.315"	■ OR	■ OR	■ OR	■	■		

NOTE: Z = number of cutting edges.

- Monoblock cutter design.
- Twelve cutting edges per insert.
- High feed rates.
- CGI milling solution.





HexaCut Shell Mills • Monoblock Cutter Design • Right Hand

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
2402838	**K400B14RF45HN09C**	4.000	4.500	1.250	4.000	1.970	.256	14	5.00	3400
2402839	**K500B18RF45HN09C**	5.000	5.500	1.500	5.000	2.380	.256	18	10.00	3000

NOTE: Split case design with adapter flange for D1 = 10" and D1 = 12" can be ordered as preferred custom solution standard.

Spare Parts

				
D1	**wedge**	**wedge screw**	**in. lbs.**	**wrench**
4.000	**12748358200**	**12748600900**	62	**12148044900**
5.000	**12748358200**	**12748600900**	62	**12148044900**

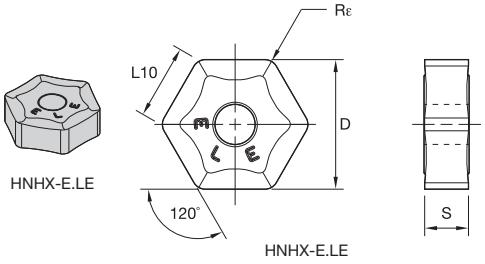
NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LE	KCK15	**.S..GE**	**KCK15**	.S..GE	KCK15
K3	.E..LE	KCK15	**.S..GE**	**KC514M**	.S..GE	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts • HexaCut • HN..0905...

- For semi-finishing and light roughing operations.



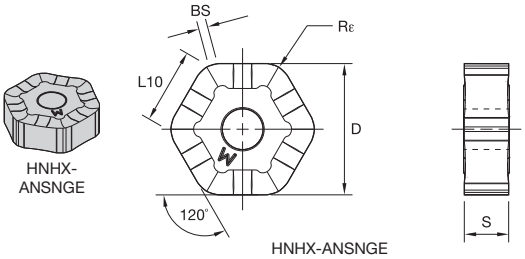
● first choice
○ alternate choice

	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
P						
M						
K	●	●	●	●	●	●
N						
S						
H						

HNHX-E.LE

catalog number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX5354ENLE	.638	.219	.368	.063	.002	12	●	●	–	–	–	–
HNHX5355ENLE	.638	.219	.368	.079	.002	12	●	●	–	–	–	–

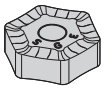
- Roughing geometry with integrated wiper facet for advanced floor finish.

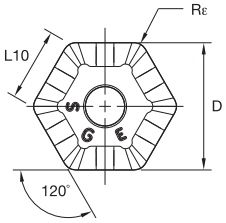


HNHX-ANSNGE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX53ANSNGE	.638	.219	.351	.044	.047	.006	12	●	●	–	–	–	–

- Roughing geometry with improved rake design for lower cutting forces.


HNHX-S.GE



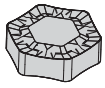
HNHX-S.GE

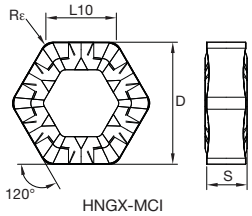
● first choice
○ alternate choice

P	
M	
K	●
N	
S	
H	

HNHX-S.GE

catalog number	D	S	L10	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNHX5354SNGE	.638	.219	.368	.063	.006	12	●	●	–	–	–	–
HNHX5355SNGE	.638	.219	.368	.079	.006	12	●	●	–	–	–	–
HNHX5358SNGE	.638	.219	.368	.118	.006	12	–	●	–	–	–	–

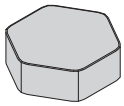

HNGX-MCI

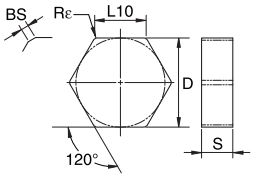


HNGX-MCI

HNGX-MCI

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNGX5358MCI	.638	.219	.368	—	.118	.002	12	–	●	–	–	–	–


HNEN-SN

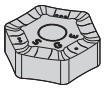


HNEN-SN

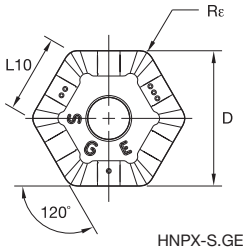
HNEN-SN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNEN090508S	.625	.219	.361	—	.031	.008	12	–	–	–	–	–	●
HNEN0905ANSN	.625	.222	.361	—	—	.008	12	–	–	–	–	●	●
HNEN0905XNSN	.638	.219	.368	.051	—	.008	12	–	–	–	–	–	●

- Heavy roughing geometry for severe machining conditions.



HNPX-S.GE



HNPX-S.GE



● first choice
○ alternate choice

		KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
P							
M							
K		●	●	●	●	●	●
N							
S							
H							

HNPX-S.GE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KCK15	KCK20	KCPK30	KD200	KY3500
HNPX5354SNGE	.638	.219	.368	–	.063	.006	12	–	●	–	–	–	–
HNPX5355SNGE	.638	.219	.368	–	.079	.006	12	–	●	–	–	–	–
HNPX5358SNGE	.638	.219	.368	–	.118	.006	12	–	●	–	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...MCI	.010	**.026**	.046	.007	**.019**	.033	.006	**.014**	.025	.005	**.012**	.021	.004	**.011**	.020	...MCI
.E..LE	.010	**.025**	.046	.007	**.018**	.033	.006	**.014**	.025	.005	**.012**	.021	.004	**.011**	.020	.E..LE
.S..GE	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	.S..GE
...SN	.013	**.033**	.053	.009	**.024**	.038	.007	**.018**	.028	.006	**.015**	.025	.006	**.014**	.023	...SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Adjustment Instructions

Before Being Used for the First Time

- The milling cutter must be carefully cleaned of anti-corrosive materials, dust, etc.
- The milling cutter should only be washed when all components have been dismantled.
- Only the double-threaded screws of the clamping or adjusting wedge should be lubricated with copper grease; all other components must have clean metallic surfaces.
- A torque wrench is recommended to tighten the double-threaded screws.
- When fitting indexable inserts on the milling cutter, ensure that they are inserted in the correct position in a clean insert seat and that they are held in position during clamping.

For 45° Roughing Mills without Anvils

- The double-threaded screws on the clamping wedges for the indexable inserts are first pre-tightened to approximately 17 in. lbs. and then tightened to a final torque of 62 in. lbs.

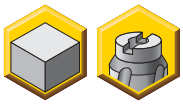
ATTENTION

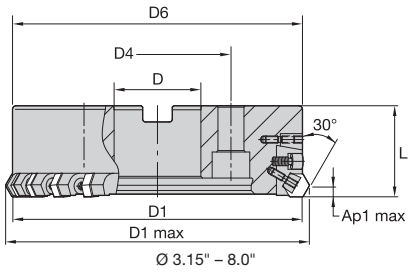
At each tool adjustment, the body, indexable inserts, and spare parts must be checked and replaced, if necessary. Before each tool use, the double-threaded screws of the indexable inserts and the stops must be tightened in the specified order to a torque of 62 in. lbs. In addition, even if the cartridges have not been adjusted, the double-threaded screws of the adjusting wedges must be checked to see if these have been tightened to a torque of 26 in. lbs. If not, they must be re-tightened to this torque.

NOTE: The tools must only be used in accordance with their function. We accept no liability for their improper use. Changes of any kind and/or printing errors are not valid grounds for claims.



- CGI milling solution.
- Monoblock cutter design.
- High feed rates.
- Twelve cutting edges.



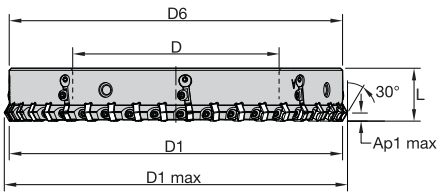




HexaCut Shell Mills • Monoblock Cutter Design with Adjustable Pockets • Right Hand

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
2430830	**K315A62RF60HN09C**	3.150	3.490	1.000	3.150	2.000	.315	8	2	3.50	3900
2430931	**K600B164RF60HN09C**	6.000	6.340	2.000	6.000	2.380	.315	20	4	15.80	2600

NOTE: Split case design with adapter flange for D1=10" and D1=12" can be ordered as preferred custom solution standard.





HexaCut Shell Mills • Split Case Design

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
6202335	**K1200Z328RF60HN09WSC**	12.000	12.369	7.677	12.000	1.969	.300	40	8	25.87	1800

NOTE: For carrier flange assembly order number, please see page S31.

Spare Parts

D1	clamp wedge	axial adjustment wedge	wedge screw	lbs	wrench
3.150	**12748358200**	**12748308500**	**12748600900**	4	**12148044900**
6.000	**12748358200**	**12748308500**	**12748600900**	16	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

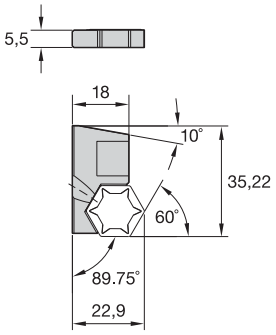
Setup for Roughing:

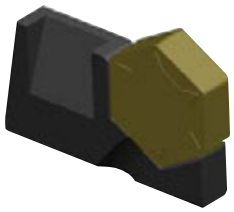
For a cutting depth of <.315" and an achievable surface finish of Ra >3,2.

High-performance roughing:
HNHX0905ANSNGE, HNHX090516SNGE,
HNHX090520SNGE, HNHX090530SNGE, HNPX090516SNGE,
HNPX090520SNGE HNPX090530SNGE, HNEN0905XNSN.

Semi-finishing and light machining:
HNHX090516ENLE, HNHX090520ENLE, HNHX090530ENLE.

Same inserts to be loaded into fixed and adjustable (cartridges) pockets.





order number	catalog number
2018164	12748500200

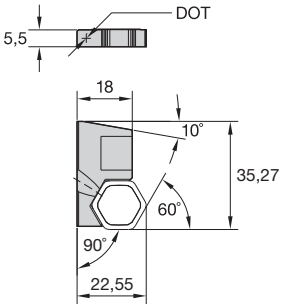
NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

Setup for Finishing:

For a cutting depth of <.039" and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats) .

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).





order number	catalog number
2018166	12748500400

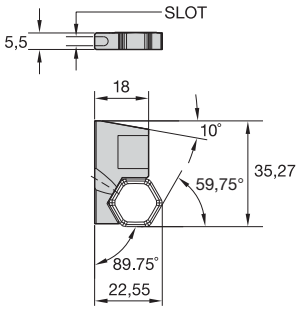
NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

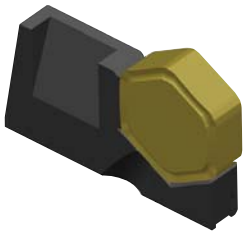
Setup for Finishing Cartridge for Low Axial Cutting Forces: (Reduced Lead Angle to Support Increased Clearance on the Wiper Edge).

For a cutting depth of <.039" and an achievable surface finish of Ra 1,6.

Semi-finishing insert:
HNHX090520ENLE (loaded into fixed pocket seats)

Finishing wiper insert:
HNGF090504MF, HNGF090512MF (loaded into finishing cartridge).





order number	catalog number
2033468	12748503400

NOTE: Cartridges need to be ordered separately. Number of adjustable pockets (Z ADJ) related to cutting.

CBN Cartridge

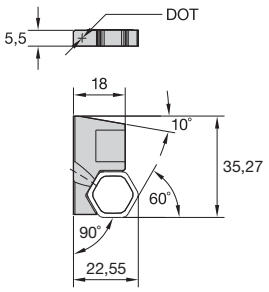
For a cutting depth of <1mm and an achievable surface finish of Ra 1,6.

Semi-finishing insert:

HNEN0905AMSN KY3500 (loaded into fixed pocket seats).

Finishing wiper insert:

HNEN905ANSN KD200 (loaded into finishing cartridge).



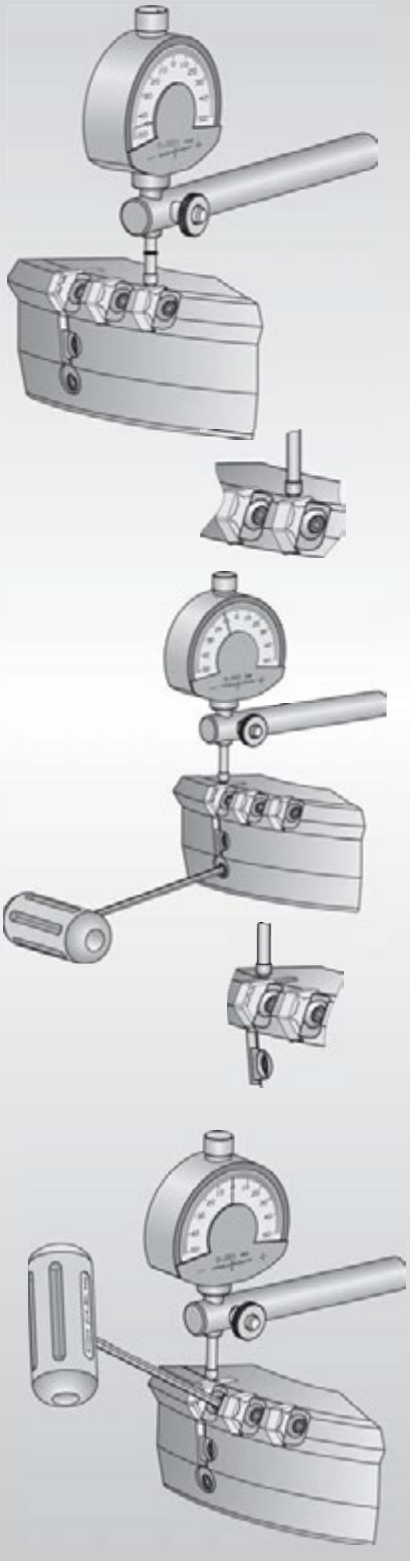


order number	catalog number
3400879	12748500500

Insert setting procedure

This procedure is to be used on all 30° lead roughing/finishing mills using the unmarked roughing cartridge, the finishing cartridge (marked •) and the corrected edge cartridge (marked ▬). These steps must be followed when adjusting the cutters for finishing inserts.

1. Clean all insert pockets.
2. Mount all wedges and cartridges. Torque the cartridge lock wedge screw to 26 in. lbs.
3. Mount all inserts, making sure they are seated properly in the pocket, and torque the insert lock wedge screws to 26 in. lbs.
4. Torque the wedge screws for all fixed pocket inserts to 62 in. lbs.
5. Loosen the cartridge insert wedge screw and the cartridge lock wedge screw.
6. Pressing the insert into the cartridge pocket, adjust the cartridge to .008–.012" below the fixed pocket inserts.
7. Torque the insert lock wedge screw and the cartridge lock wedge screw to 26 in. lbs.
8. Adjust the axial position to .0010–.0015" above the fixed pocket inserts.
9. Loosen the cartridge insert lock wedge screws and then re-torque to 26 in. lbs.
10. Adjust the axial position to the final dimension, .0015–.0020" above the highest fixed pocket insert.
11. Torque the insert lock wedge screws and the cartridge lock wedge screws to 62 in. lbs.
12. Conduct a final check of the axial runout and position.



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Kennametal offers world-class products and services globally. Our distributors know us, and more importantly, they know you. They know better than anyone in the industry how to put the global power of Kennametal to work for you — in your industry, in your region, and for your business.

The KSSR™ 6° Inserts

Primary Application

The Kennametal new line of KSSR 6° inserts are versatile, easy to use, and right- or *left-hand neutral, making them ideal for automotive machining operations or any other industry that relies on transfer line manufacturing. Available in carbide and ceramic grades for applications in cast and ductile irons and alloy steels, KSSR 6° inserts can be used for all fine and coarse pitch styles.

*Left-hand cutters are available as non-stock standard.

Features and Benefits

KSSR 6° Features

- Available in metric and inch products, diameters from 2.5–4"; for larger diameter custom solution is available.
- Fine and coarse pitch styles.
- Easy to use and to adjust with shorter setup time.
- Wiper inserts in carbide and ceramic provide excellent surface quality.

Improved Versatility

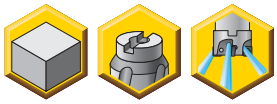
- Proven solution for the automotive segment.
- Right- and *left-hand cutters, ideal for transfer lines.
- Premium grades in carbide and ceramic for applications in cast and ductile irons and alloy steels.
- Inserts are neutral and can be used for right- or left-hand cutting.

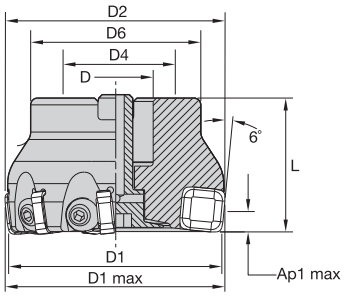


Unrivaled Benefits

- Capability: .20" maximum depth of cut.
- Excellent accuracy:
  Radial = +/- .0001"
  Axial = adjustable +/- .0001"
- Inserts have eight true cutting edges.

- Eight cutting edges per insert.
- Fast and easy insert indexing.
- Highest feed rates.
- CGI specialist.







KSSR 6° • Shell Mills • Right Hand • Fixed Pockets

order number	catalog number	D1	D1 max	D	D2	D6	L	Ap1 max	Z	lbs	max RPM
2476832	**KSSR250SN434M3**	2.500	2.579	.750	2.520	1.770	1.500	.200	9	1.10	7500
2476963	**KSSR300SN434M4**	3.000	3.079	1.000	3.017	2.200	1.750	.200	11	1.98	6300
2476964	**KSSR400SN434M5**	4.000	4.079	1.250	4.014	2.870	1.750	.200	15	3.08	4700

NOTE: Coolant screw and coolant cap must be ordered separately.
2466094 and 2466095 are non-stock standard.

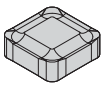
Spare Parts

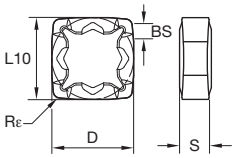
D1	 clamp wedge	 wedge screw	 in. lbs.	 wrench
2.500	**12748358200**	**12748600900**	62	**12148044900**
3.000	**12748358200**	**12748600900**	62	**12148044900**
4.000	**12748358200**	**12748600900**	62	**12148044900**

NOTE: Adjustable torque wrench (order number 6197561) and 3mm hex bit (order number 6205876) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	.E..LD	KCK15	**.S..GP**	**KCK15**	.S..HE	KCK15
K3	.E..LD	KCK20	**.S..GP**	**KCK20**	.S..HE	KCK20
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–


SNXF-LD



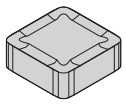
SNXF-LD

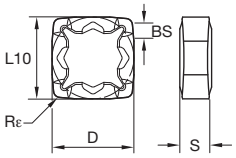
● first choice
○ alternate choice

P							
M							
K	●	●	●	●	●	●	
N							
S							
H							

SNXF-LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433ENLD	.500	.180	.500	—	.047	.002	8	●	●	●	●	●	–
SNXF43ZNENLD	.500	.174	.500	.067	.063	.002	8	●	●	●	●	●	–

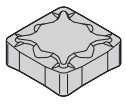

SNXF-GP

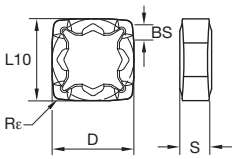


SNXF-GP

SNXF-GP

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433SNGP	.500	.184	.500	—	.047	.002	8	●	●	●	●	●	–
SNXF43ZNSNGP	.500	.184	.500	.040	.047	.003	8	●	●	●	●	●	–

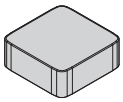

SNXF-HE

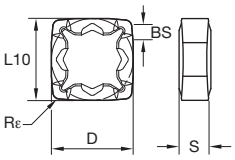


SNXF-HE

SNXF-HE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433SNHE	.500	.183	.500	—	.047	.002	8	–	●	●	●	●	–
SNXF43ZNSNHE	.500	.183	.500	.039	.047	.002	8	●	–	●	●	●	–


SNXF-SN



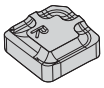
SNXF-SN

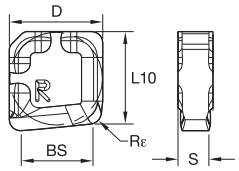
● first choice
○ alternate choice

P	
M	
K	
N	
S	
H	

SNXF-SN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
SNXF433AMSN	.500	.187	.500	—	.047	.008	8	–	–	–	–	–	●
SNXF43ZNAMSN	.500	.187	.500	.039	.047	.008	8	–	–	–	–	–	●

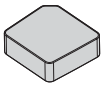

XNXF-LDW

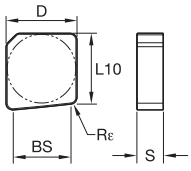


XNXF-LDW

XNXF-LDW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF43ZNENLDW	.500	.174	.500	.374	.063	.002	2	–	–	●	–	–	–


XNXF-ENW



XNXF-ENW

XNXF-ENW

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC514M	KC524M	KCK15	KCK20	KCPK30	KY3500
XNXF43ZNENW	.500	.188	.500	.374	.047	.008	2	–	–	–	–	–	●

Face Milling

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

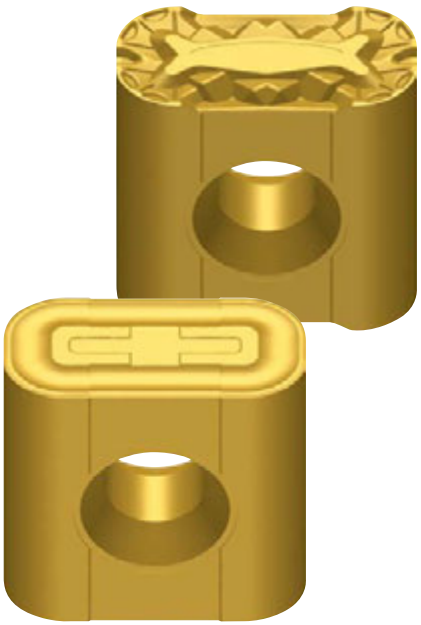
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LD	.007	**.018**	.033	.005	**.013**	.024	.004	**.010**	.018	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.S..GP	.008	**.020**	.036	.006	**.015**	.026	.004	**.011**	.019	.004	**.009**	.017	.003	**.009**	.015	.S..GP
.S..HE	.007	**.020**	.038	.005	**.015**	.027	.004	**.011**	.020	.003	**.010**	.018	.003	**.009**	.016	.S..HE
.A..SN	.009	**.023**	.038	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.A..SN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Kennametal Tools for **Railways** and **Wheel Machining**

Kennametal offers a complete line of tooling for wheel and axle maintenance in railroad shops. All tools incorporate the latest technology for maximum metal removal and higher productivity. They are proven performers in actual use over extended periods of time, under a wide range of operating conditions. Standard off-the-shelf inserts and fewer pieces of hardware reduce inventory and operating costs. Included in this range are tools for reconditioning mounted wheel sets, wheel boring, wheel truing, axle turning, and journal burnishing.



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KENNAMETAL®

kennametal.com

MEGA 45°

Superior Heavy-Duty Milling

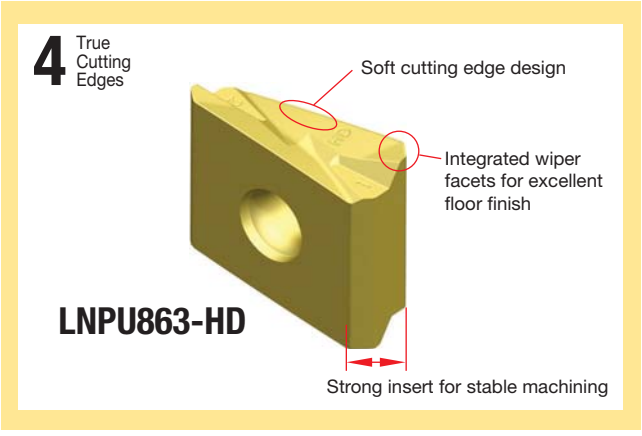
Primary Application

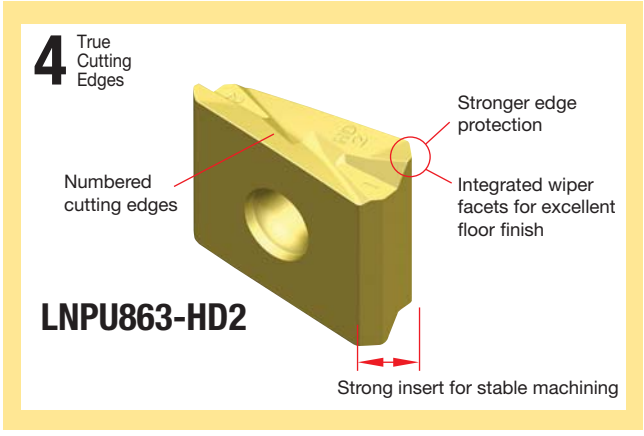
With four true cutting edges per heavy-duty MEGA 45° insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 45° inserts for all steel and cast iron indexable milling needs.

Features and Benefits

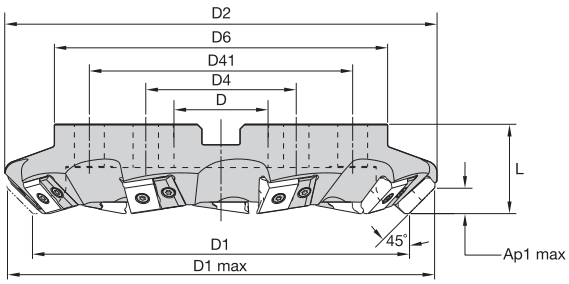
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 45° insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved run out for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.




4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU863-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU863-HD2
Strong insert for stable machining

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.





MEGA 45 • Shell Mills

order number	catalog number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4032274	**MEGA45D500LN863M6**	5.000	6.391	1.500	6.700	—	—	3.810	2.375	.675	6	9.18	12520
4032277	**MEGA45D800LN863M10**	8.000	9.392	2.500	9.550	4.000	—	6.500	2.375	.675	9	19.86	9890
4105177	**MEGA45D1000LN863C10**	10.000	11.392	2.500	11.500	4.000	7.000	8.858	2.375	.675	9	28.04	8850
4032278	**MEGA45D1000LN863M10 ***	10.000	11.392	2.500	11.500	4.000	7.000	8.858	2.375	.675	11	29.05	8850
4105178	**MEGA45D1200LN863C10**	12.000	13.392	2.500	13.500	4.000	7.000	8.858	3.150	.675	10	47.50	8080
4032279	**MEGA45D1200LN863M10**	12.000	13.392	2.500	13.500	4.000	7.000	8.858	3.150	.675	13	48.82	8080

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	insert screw	in. lbs.	shim	universal bit torque driver	drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
8.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
10.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim



catalog number
SM-906LH

NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

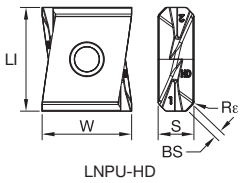
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPK30**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPK30	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
S3	.S..HD	KC725M	**.S..HD2**	**KCPM40**	.S..HD2	KCSM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–

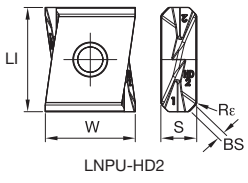
Indexable Inserts


LNPU-HD


LNPU-HD2



LNPU-HD



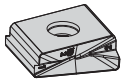
LNPU-HD2

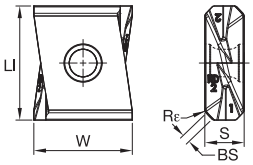
● first choice
○ alternate choice

P		●		●	●	○
M					○	●
K	●		●	○		
N						
S						●
H						

LNPU-HD

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU863ANSRHD	1.142	.088	.985	.047	.394	.009	4	–	●	●	●	–	–
LNPU863ANSRHD2	1.142	.088	.986	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD2



LNPU-HD2

LNPU-HD2 • Left Hand

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU863ANSLHD	1.142	.088	.985	.047	.394	.009	4	–	–	–	●	●	–
LNPU863ANSLHD2	1.142	.088	.986	.047	.394	.009	4	–	–	–	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.013	**.033**	.053	.009	**.023**	.038	.007	**.018**	.028	.006	**.015**	.024	.006	**.014**	.022	.S..HD
.S..HD2	.013	**.036**	.060	.009	**.026**	.043	.007	**.019**	.032	.006	**.017**	.028	.006	**.015**	.025	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

MEGA 60 and 90

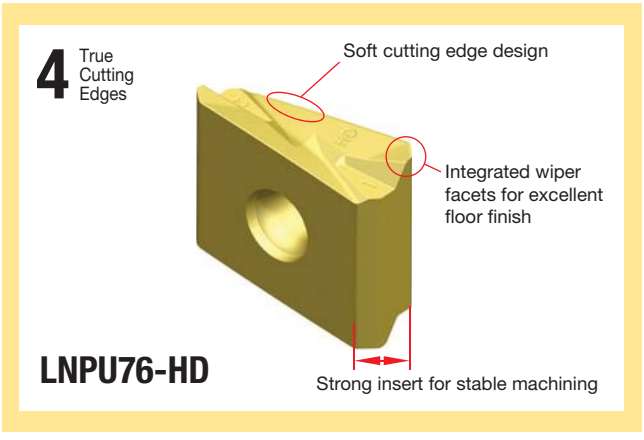
Primary Application

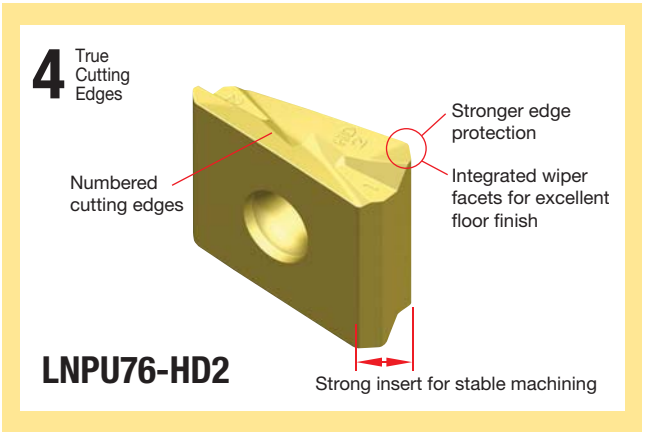
The real performance booster in heavy-duty milling. With four true cutting edges per heavy-duty insert, you are getting the low cost per edge and high productivity you need and have come to expect from Kennametal. The soft cutting edge design enables 30% lower cutting forces, and the carbide shim provides protection to the cutter body. Choose MEGA 60 and MEGA 90 for all steel and cast iron indexable milling needs.

Features and Benefits

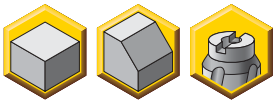
Features	Benefits
• Four true cutting edges per heavy-duty MEGA 60 and 90 insert.	• Low cost per edge and high productivity.
• Soft cutting edge design.	• 30% lower cutting forces.
• Up to 30% increased Metal Removal Rates (MRR).	• Performance leader in steel and cast iron materials.
• Carbide pocket shims.	• Excellent cutter body protection.
• Cutting edge numbering system.	• Improved runout for better tool life and floor finish.
• HD2 geometry.	• Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.

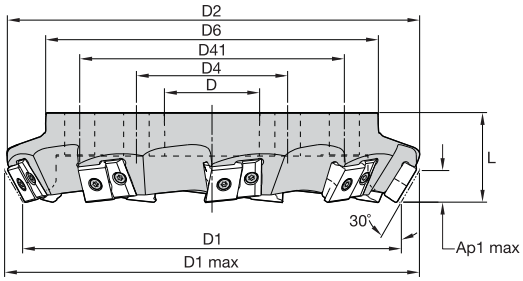



4 True Cutting Edges
Soft cutting edge design
Integrated wiper facets for excellent floor finish
LNPU76-HD
Strong insert for stable machining


4 True Cutting Edges
Stronger edge protection
Numbered cutting edges
Integrated wiper facets for excellent floor finish
LNPU76-HD2
Strong insert for stable machining

- Up to 30% higher metal removal rate (MRR).
- Cutter body protection with carbide shims.







MEGA 60 • Shell Mills

order number	catalog number	D1	D1 max	D	D2	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4147496	**MEGA60D500LN76M6**	5.000	5.982	1.500	6.181	—	—	3.810	2.375	.843	6	8.03	11040
4147497	**MEGA60D600LN76M8**	6.000	6.982	2.000	7.126	—	—	5.000	2.375	.842	7	11.07	10080
4147499	**MEGA60D800LN76M10**	8.000	8.981	2.500	8.976	4.000	—	6.500	2.375	.842	9	17.83	8720
4147523	**MEGA60D1200LN76M10** *	12.000	12.981	2.500	12.953	4.000	7.000	8.858	3.150	.841	13	41.92	7120

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	insert screw	in. lbs.	shim	universal bit torque driver	drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
6.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
8.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim



catalog number
SM-906LH

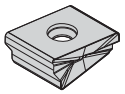
NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

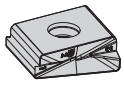
Insert Selection Guide

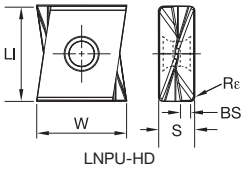
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts

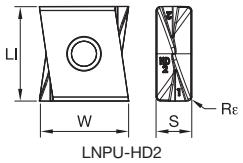
beyond


LNPU-HD


LNPU-HD2



LNPU-HD



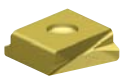
LNPU-HD2

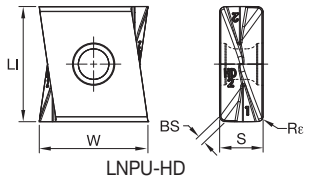
● first choice
○ alternate choice

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSRHD	1.043	.091	.985	.047	.394	.009	4	–	●	●	●	●	–
LNPU763PNSRHD2	1.043	.091	.984	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD



LNPU-HD

LNPU-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSLHD2	1.043	.091	.984	.047	.394	.009	4	●	–	–	●	●	–

Recommended Starting Feeds

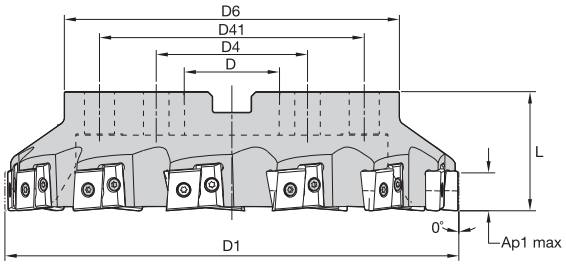
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.011	**.027**	.043	.008	**.019**	.031	.006	**.014**	.023	.005	**.013**	.020	.005	**.012**	.018	.S..HD
.S..HD2	.011	**.027**	.048	.008	**.019**	.034	.006	**.014**	.025	.005	**.013**	.022	.005	**.012**	.020	.S..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Up to 30% higher Metal Removal Rate (MRR).
- Cutter body protection with carbide shims.

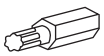




MEGA 90 • Shell Mills

order number	catalog number	D1	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4136381	**MEGA90D500LN76M6**	5.000	1.500	—	—	3.810	2.375	1.002	6	6.86	9990
4136382	**MEGA90D600LN76M8**	6.000	2.000	—	—	5.000	2.375	1.002	7	10.23	9120
4136385	**MEGA90D1000LN76C10**	10.000	2.500	4.000	—	6.500	2.375	1.002	9	22.48	7060
4136387	**MEGA90D1200LN76C10**	12.000	2.500	4.000	7.000	8.858	3.150	1.002	10	38.12	6440
4136388	**MEGA90D1200LN76M10**	12.000	2.500	4.000	7.000	8.858	3.150	1.002	13	38.21	6440

Spare Parts

D1	 insert screw	 in. lbs.	 shim	 universal bit torque driver	 drive bit
5.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
6.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
10.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**
12.000	**MS1162**	45	**SM-906**	**DTQ3054**	**BTQT25**

NOTE: Shim screw: MS1162.

Left-handed shim

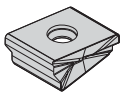


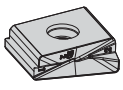
catalog number
SM-906LH

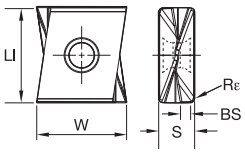
NOTE: Left hand inserts and shims available as standard line items. Left hand cutter bodies to be requested as tailor-made custom solutions. Please refer to the Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

Insert Selection Guide

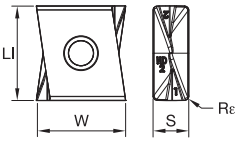
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..HD	KC725M	**.S..HD**	**KCPM40**	.S..HD2	KCPM40
P3–P4	.S..HD	KCPK30	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
P5–P6	.S..HD	KC725M	**.S..HD2**	**KCPK30**	.S..HD2	KCPM40
M1–M2	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
M3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD2	KC520M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..HD	KC725M	**.S..HD**	**KC725M**	.S..HD2	KCSM40
S3	.S..HD	KCPM40	**.S..HD2**	**KCSM40**	.S..HD2	KCPM40
S4	.S..HD	KC725M	**.S..HD2**	**KCSM40**	.S..HD2	KCSM40
H1	–	–	**–**	**–**	–	–


LNPU-HD


LNPU-HD2



LNPU-HD



LNPU-HD2

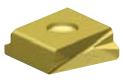
● first choice
○ alternate choice

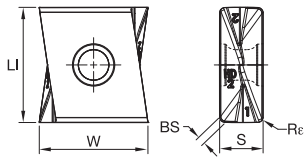
beyond

P			●		●	●	○
M						○	●
K		●		●	○		
N							
S							●
H							

LNPU-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSRHD	1.043	.091	.985	.047	.394	.009	4	–	●	●	●	●	–
LNPU763PNSRHD2	1.043	.091	.984	.047	.394	.009	4	–	–	–	●	●	●


LNPU-HD



LNPU-HD

LNPU-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPU763PNSLHD2	1.043	.091	.984	.047	.394	.009	4	●	–	–	●	●	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..HD	.009	**.023**	.037	.007	**.017**	.026	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..HD
.S..HD2	.009	**.023**	.041	.007	**.017**	.029	.005	**.013**	.022	.004	**.011**	.019	.004	**.010**	.018	.S..HD2

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KBDM PCD Face Mills

Indexable Milling

Application

The new KBDM PCD milling platform is designed and engineered for aluminum face milling applications, targeting automotive requirements.

This proven design delivers consistent performance time and time again, and has done so for 20+ years. KBDM's new look, black anodized aluminum with yellow wedges, gives it a unique appearance. However, it's what is behind the cover that really matters. Performance is key, and KBDM does not disappoint.



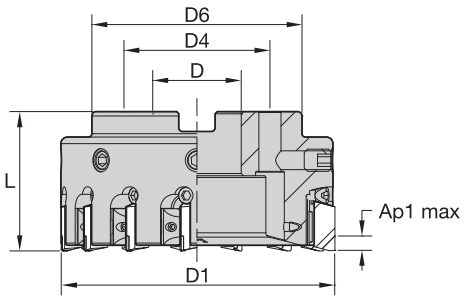
Features and Benefits

- Cutter bodies manufactured from hard anodized aluminum provide lighter weight and excellent wear and erosion resistance.
- High-density platform geared toward faster machining cycles to help lower overall costs.
- All pockets are adjustable. Very-user friendly for axial adjustment less than 0.0002" (0,005mm), with a total adjustment of 0.032" (0,8mm).
- Two grades, KD1400™ and KD1425™, provide options in maximizing efficiencies based upon application.
- Roughing, semi-finishing, and fine-finishing with one platform.
- Two corner radii — 0.031 and 0.093" (0,8 and 2,4mm).
- Mini-tip insert for finishing applications.
- All standard inserts have a 0.06" (1,5mm) wiper facet for better surface qualities.
- Full face wiper available as a standard item.

Delivering Customer-Driven Performance for 20+ Years.









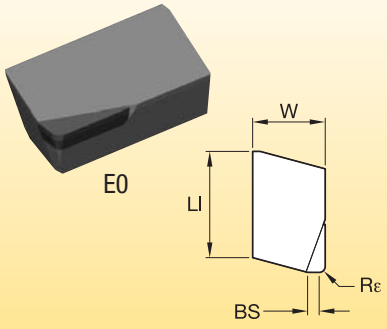
Face Mills

order number	catalog number	D1	D	D4	D6	L	Z	Z ADJ	lbs	max RPM
6044579	**KBDM250SD06**	2.500	1.000	–	2.441	2.000	6	6	1.00	20000
6044580	**KBDM300SD08**	3.000	1.000	–	2.190	2.000	8	8	1.40	20000
6044711	**KBDM400SD12**	4.000	1.250	–	2.875	2.000	12	12	2.50	17320
6044712	**KBDM500SD16**	5.000	1.500	–	3.812	2.375	16	16	4.40	15500
6044713	**KBDM600SD18**	6.000	1.500	–	3.812	2.375	18	18	7.00	14150
6044714	**KBDM800SD24**	8.000	2.500	4.000	5.000	2.375	24	24	1.40	12240

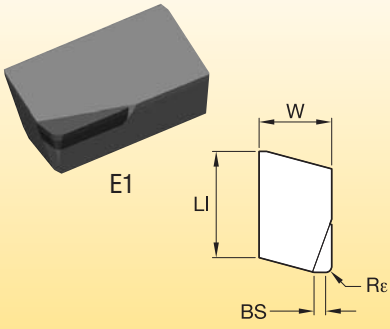
Spare Parts

D1	screw	wedge	wedgelock screw	coolant lock screw	coolant shower plate
2.500	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS25**	**–**
3.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS30**	**–**
4.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS40**	**–**
5.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS50**	**–**
6.000	**LS103**	**HDWM5EUS**	**SWSM515**	**SALS6150**	**–**
8.000	**LS103**	**HDWM5EUS**	**SWSM515**	**–**	**SSP8**

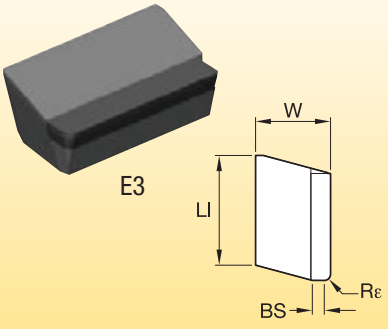
Technical Information • Ap1 max for PCD Inserts



Ap1 max .100"



Ap1 max .250"



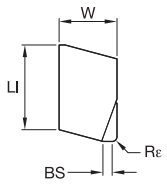
Ap1 max .500"

Insert Selection Guide • KBDM • Inch

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.KSDR.....	KD1400	**.KSDR.....**	**KD1400**	.KSDR.....	KD1400
N3	.KSDR.....	KD1400	**.KSDR.....**	**KD1425**	.KSDR.....	KD1425
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–



E0



E0

● first choice
○ alternate choice

P			
M			
K			
N	●	●	
S			
H			

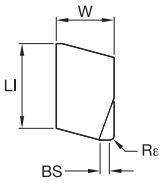
PCD Inserts • KSDR Mini-Tip • E0

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E0W0S	.624	.375	—	.031	.001	●	●
KSDR100031E0W4S	.625	.375	.060	.031	.001	●	●

NOTE: For Mini-tip (E0), Ap1 max = .100".



E1



E1

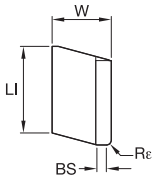
PCD Inserts • KSDR • E1

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E1W4S	.625	.375	.060	.031	.001	●	●
KSDR100093E1W4S	.625	.375	.060	.093	.001	●	●

NOTE: For E1 inserts, Ap1 max = .250".



E3



E3

● first choice
○ alternate choice

P			
M			
K			
N		●	●
S			
H			

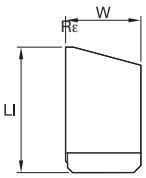
PCD Inserts • KSDR • E3

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR100031E3W4S	.625	.375	.060	.031	.001	●	●

NOTE: For Full Edge (E3), Ap1 max = .500".



KSDR



KSDR

PCD Inserts • KSDR Wiper

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
KSDR102S	.625	.375	.035	–	.001	●	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

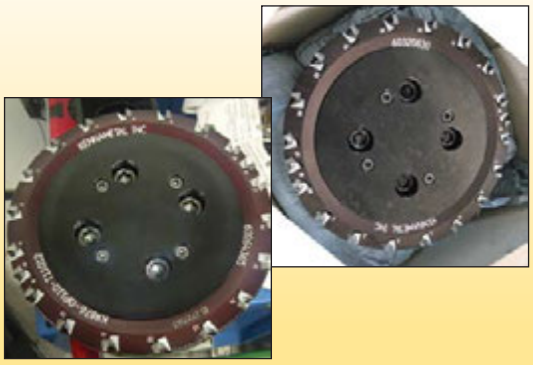
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.KSDR…..	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.KSDR…..

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Face Milling

PCD Custom Solutions for Indexable Milling

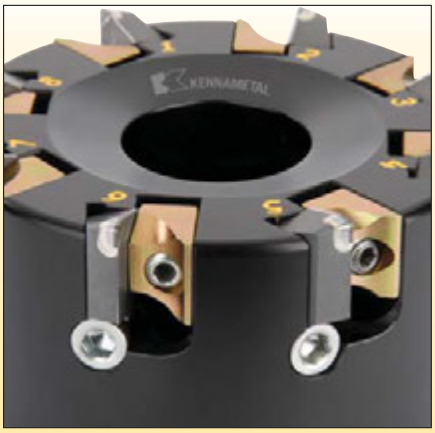
- Diameters up to 21.65" (550mm).
- Integral shank options, ie, HSK.
- Left-hand rotation.
- Internal coolant capable.
- PCD lengths up to 0.50" (12,7mm).
- Specific edge preps and nose radii available.



Insert Setting and Fine Adjustment Procedure

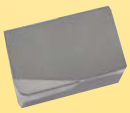
Face Mills

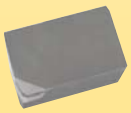
- Apply a small amount of lubricant to the following areas:
  - — Pocket area where the wedge slides.
  - — Threads of the insert locking screw.
  - — Threads of the axial adjustment screw.
- Install cartridges applying light torque to the wedge assembly locking screw.
- Turn axial adjustment screw until the cartridge is .0004–.0006" (0,01–0,015mm) below the final set height.
- Tighten the wedge assembly locking screw to 31 In/lbs and (4 Nm) to (3,5 Nm).
  - — 170.170 — Torque Screwdriver mm #**1138787**.
  - — 170.181 — 1/4" Drive Bit — 4mm Hex mm #**1138857**.
- Repeat for all inserts/pockets before final axial setting.
- Final Setting: Turn the axial adjustment screw moving the PCD insert 0.0002" (0,005um) to the final set height. Repeat for all pockets.



General

- Non-contact gages are preferred.
- Contact gages can be used with the following precautions:
  - — Indicator point must be flat and parallel to the base.
  - — Always approach the PCD insert from the relief angle under the PCD segment.
  - — Do NOT let the indicator drop on the PCD segment.
- Remove all worn PCD inserts.
- Clean the pockets of the cutter completely.





KBDM Wiper Setup

- Set Wiper 0.0006–0.0008" (15–20 microns) higher than standard PCD inserts. The KSDR102S Wiper is designed to be used only with 0.031 corner radius standard inserts in the other pockets.
- At this setting, the wiper radius will cover 0.28" (7,1mm) advancement before another wiper would be needed.
- Wiper radius is 30.0" (762mm).
- Ideal setup is to use only 1 wiper to achieve best surface quality. Use when Wt is a requirement.

Example: KBDM200SD24 Face Mill
Feed per tooth: 0.008" (0,2mm)
# of inserts: 24
Advancement per revolution:
Metric: 0,2 x 24 = 4,8mm
Inch: 0.008 x 24 = 0.192"
4,8mm < 7,1mm wiper length

NOTE: Large diameter cutters 10.0" (250mm) and up would be candidates for more than 1 wiper. Due to more inserts in the cutter, the advancement per revolution might exceed the coverage of 1 wiper.

The KSCM™ AluMill™ System

Primary Application

The KSCM AluMill face milling program is specifically engineered to deliver best-in-class performance in high-volume aluminum machining operations. Runs at higher speeds with no chatter while still easy to adjust. KD1420™ grade materials provide long tool life, and with the Kennametal Blue Box™ program for reconditioning worn cartridges, you can reduce inventory costs as well!

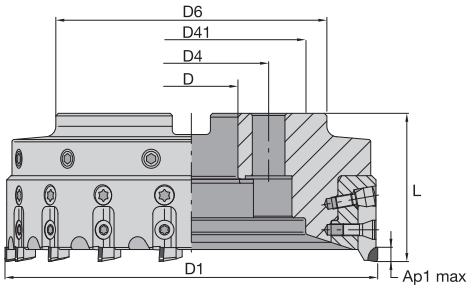
Features and Benefits

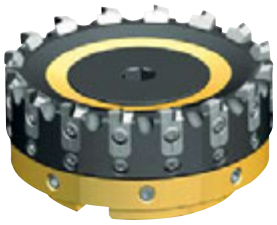
- Anti-vibration cutter design.
- Best rigidity for high feed rates.
- Unique dovetail wedge clamping design.
- No radial movement of cartridges.
- Centrifugal force protection cartridge design.
- Integrated chip gash into cartridge.
- Quick setup and easy adjust concept.
- Flexible cartridge configuration.
- No bur cartridges for fine finishing.
- Blue Box™ service.



- PCD cartridge face mill for high production aluminum face milling.
- Rough and finish in one operation.
- Precision balanceable cutter bodies produce mirror-finish surfaces.







KSCM AluMill • Shell Mills

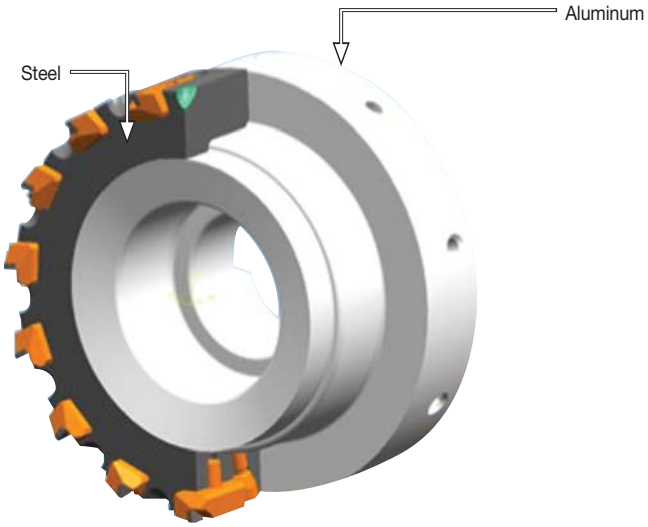
order number	catalog number	D1	D	D6	L	Z	Z ADJ	lbs	max RPM
2982056	KSCM125R16CAB40U	5.000	1.500	3.772	2.380	16	16	5.46	19100

NOTE: Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.

Spare Parts

D1	cartridge screw	drive bit	coolant lock screw	balancing screw
5.000	193.465	170.279	420.042	193.462

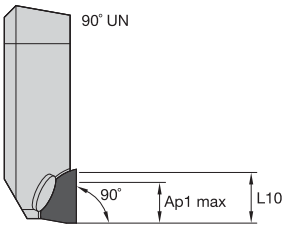
NOTE: All cutters are bi-metallic except the 3.00" (80mm) diameter.
Ap1 max is dependent on the cartridge configuration; see the values listed under the cartridges.
Please order KSCM cutters bodies and cartridges separately.



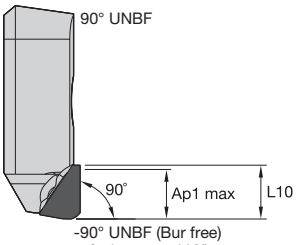
Cartridge Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
N3	KCSM…	KD1420	**KCSM…**	**KD1420**	KCSM…	KD1420
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

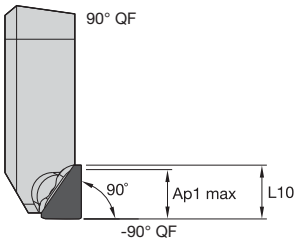
Cartridges • KSCM AluMill



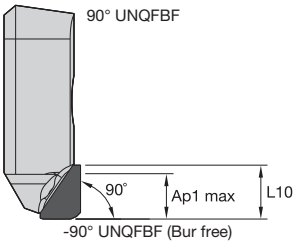
-90° UN
Ap1 max = .118"



-90° UNBF (Bur free)
Ap1 max = .118"



-90° QF
Ap1 max = .118"



-90° UNQFBF (Bur free)
Ap1 max = .118"

cartridge combination	ratio	max ap	surface quality
UN	—	.118	Rz 2–Rz 4
UN + QF	3:1	.118	Rz 1,5–Rz 2,5
PT + UN	X:1	.118	Rz 3,2–Rz 17

● first choice
○ alternate choice

		KD1400	KD1420
P			
M			
K			
N		●	●
S			
H			

Cartridges • KSCM AluMill • 90° -UN

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA90UN	0	.240	.001	–	●

Cartridges • KSCM AluMill • 90° -UNBF

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMA90UNBF	—	.244	—	●	●
KSCMCA90UNBF	0	.242	.001	–	●

NOTE: KSCMA90UNBF & KSCMA90QFBF should be the 1st choice solutions for KSCM PCD milling applications.
For setup instructions reference pages S117-S118.

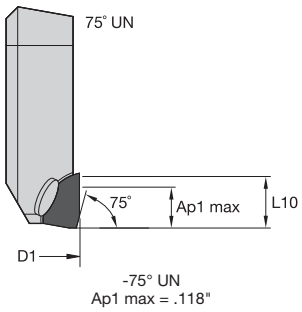
Cartridges • KSCM AluMill • 90° -QF

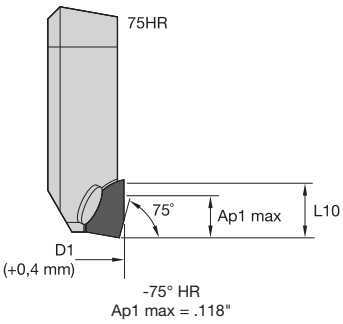
catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA90QF	0	.244	.001	–	●

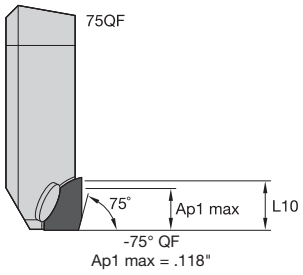
Cartridges • KSCM AluMill • 90° -QFBF

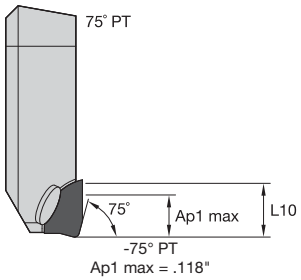
catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMA90QFBF	—	.244	—	●	●
KSCMCA90QFBF	0	.244	.001	–	●

NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less effective teeth.









● first choice
○ alternate choice

P		
M		
K		
N	●	●
S		
H		

Cartridges • KSCM AluMill • 75° -UN

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75UN	15	.240	.001	–	●

Cartridges • KSCM AluMill • 75° -HR

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75HR	15	.213	.001	–	●

Cartridges • KSCM AluMill • 75° -QF

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75QF	15	.240	.001	–	●

Cartridges • KSCM AluMill • 75° -PT

catalog number	KRI ANSI	L10	hm	KD1400	KD1420
KSCMCA75PT	15	.240	.001	–	●

NOTE: KSCMA: Blanks without PCD segment, if cutter is not fully loaded with cartridges.
For low horsepower machines and cutter configurations with less effective teeth.

cartridge combination	ratio	max ap	surface quality
UN	–	.118	Rz 2–Rz 4
UN + QF	3:1	.118	Rz 1,5–Rz 2,5
PT + UN	X:1	.118	Rz 3,2–Rz 17

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

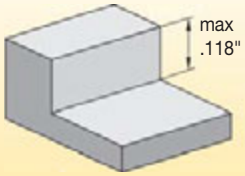
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
KCSM…	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	KCSM…

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Tool Configuration • Universal Cartridge

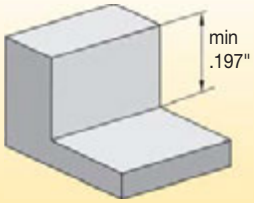


Face milling cutter fitted entirely with universal cartridges.



Depth of Cut:
max .118"

Surface Quality:
Rz2 - Rz4



Contouring:
PCD cutting edge length = .197"

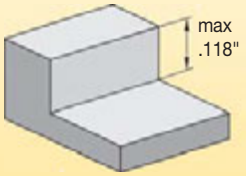
Tool Configuration • Universal Cartridge



+ Finishing Cartridge

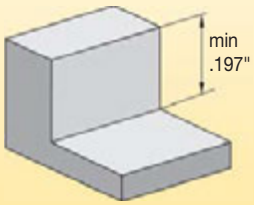


Fitting the face milling cutter with universal and finishing cartridges in a ratio of approximately 3:1.



Depth of Cut:
max .118"

Surface Quality:
Rz1,5 - Rz2,5

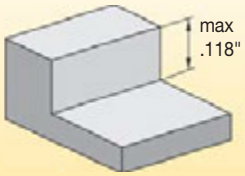


Contouring:
PCD cutting edge length = .197"

Tool Configuration • Edge Cartridge

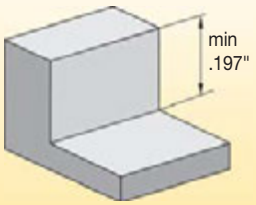


Fitting the face milling cutter entirely with edge cartridges.



Depth of Cut:
max .118"

Surface Quality:
Rz2 - Rz4

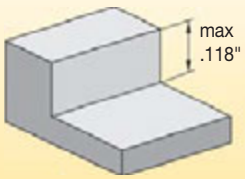


Contouring:
PCD cutting edge length = .197"

Tool Configuration • Cartridge for Defined Surfaces

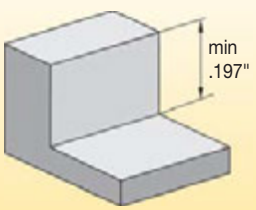


Fitting the face milling cutter entirely with cartridges for defined surfaces.



Depth of Cut:
max .118"

Surface Quality:
Rz3,2 - Rz17



Contouring:
PCD cutting edge length = .197"

Tool Configuration • Universal Cartridge, 75° Face Milling







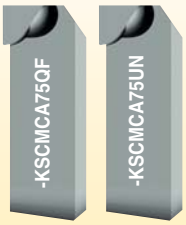
1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Universal Cartridge + Finishing Cartridge (Ratio Approx. 3:1), 75°







1. Insert universal cartridges at ratio of approximately 4:1 in the body. Make sure they are evenly distributed!
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

6. Insert finishing cartridges as described in Steps 1–5 but with an axial advance of .0003" + .0008". Max permitted runout error of 3 µm with finishing cartridges.

Tool Configuration • Edge Cartridges, 90° Shoulder Milling







1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 88 in. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs

4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.

Tool Configuration • Cartridge for Defined Surface, 75°



1. Insert cartridges into the body.
2. Screw in the clamping screws (RH), and tighten to 7 ft. lbs.
3. Screw in the adjusting screws (RH), and tighten to 26 in. lbs.



4. Determine which cartridge is in the highest axial position.
5. By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.



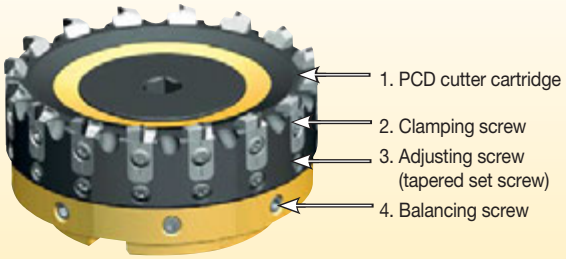


NOTE: The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).

Instruction for Mounting the Face Milling Cutter on the Appropriate Toolholder

User Information:

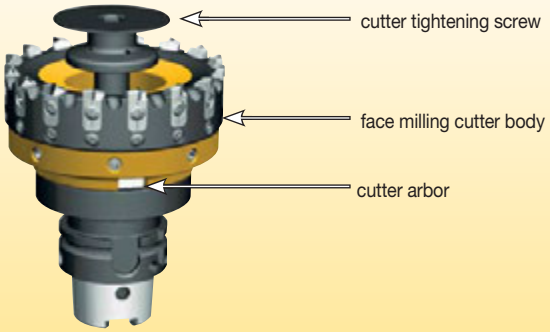
- Tools conform to EN ISO 15641.
- Absolute cleanliness must be observed when assembling the face milling cutter.
- An optimum cutting result will only be achieved by adjusting and balancing the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of the balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body.
- The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. If, after repeated use, the coating is no longer adequate to secure the screws, the screws must be replaced.
- The maximum permitted operating speed (quoted on the tool) must not be exceeded.
- The maximum permitted operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.



Instructions for Fitting the Cutter Cartridge • Tool Construction

When mounting the face milling cutter (dimensions similar to DIN 8030 Form B), place the body of the face milling cutter on the arbor. Ensure that the contact faces are clean. Screw in the cutter fastening bolt (RH) and tighten with the appropriate torque.

Tightening torque for the central cutter tightening screw:
M20 (adapter diameter 40): **184 ft. lbs.**
M16 (adapter diameter 32): **110 ft. lbs.**
M12 (adapter diameter 27): **59 ft. lbs.**

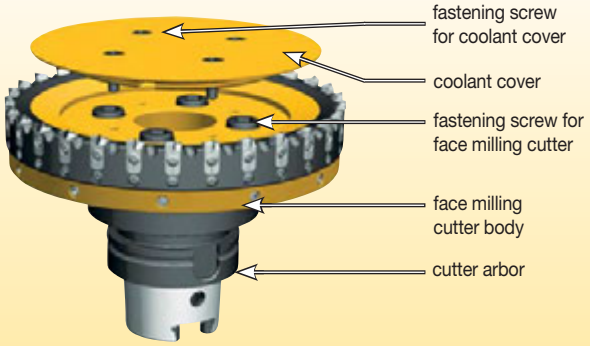


Mounting the Face Milling Cutter (Dimensions Similar to DIN 8030 Form C)

Place the body of the face milling cutter on the arbor. Ensure that the contact faces are clean. Screw in the fastening bolt (RH) and tighten with the appropriate torque. Put the aluminum coolant cover in place and fasten with the Torx fastening screws.

Tightening torque for the face milling cutter fastening screws:
M20: 184 ft. lbs.
M16: 81 ft. lbs.
M12: 36 ft. lbs.

Tightening torque for the coolant cover fastening screws:
M8: 13 ft. lbs.



KSCM AluMill
Reconditioning Service

Kennametal



New Supply

On request, the face mill will be delivered with cartridges already mounted and adjusted.



Service Level • PCD Insert Reconditioning

Reconditioning of PCD cartridges up to three times.

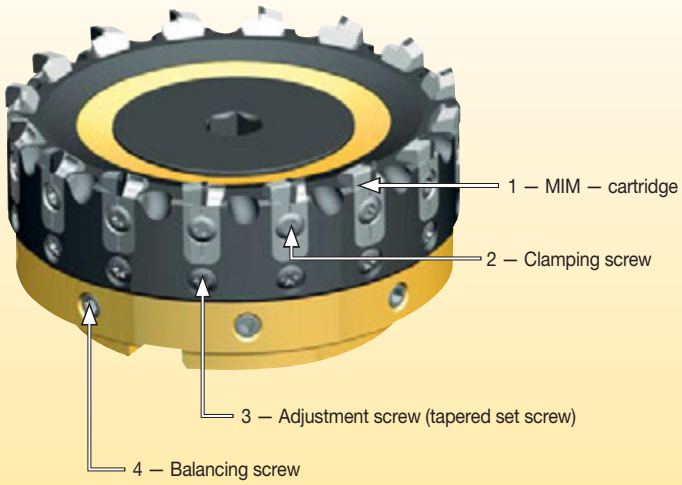
• Tool diameter and length remain constant.



Face mill will be delivered with exchanged cartridges already mounted, adjusted, and balanced.



Tool Design



Information:

- KSCM tools conform to EN ISO 15641.
- Absolute cleanliness is needed when assembling the cutter.
- For optimum results, adjust and balance the complete tool system (face milling cutter + toolholder).
- Balancing is achieved with the aid of balancing screws. Quality class G2.5 DIN-ISO 1940.
- The balancing screw must not protrude above the body. The balancing and adjustment screws have an adhesive coating according to DIN 267, Part 28. After repeated use, the coating may no longer be adequate to secure the screws; the screws must be replaced.
- Do not exceed the maximum operating speed.
- Maximum operating speed is only permitted with clamping systems manufactured by Kennametal in accordance with DIN 69982 Form B with enlarged plane bearing surface. Reduce the operating speed if clamping systems with increased projection length or made by other manufacturers are used.
- Tools and fittings are to be serviced and repaired by Kennametal.
- Screws sealed with lacquer have been adjusted by the manufacturer, and must not be moved.
- A centrifugal force test was done.
- If the tools will be used for HSC, referred to in DIN EN ISO 15641, machines have to fulfill the special safety requirements.

Assembling

1 Lubricate small cove on the MIM cartridge with copper paste of Liqui Moly.



2 Insert universal cartridges at approximate ratio 3:1 into the body. Make sure that they are distributed evenly!

3 Screw in the clamping screws (RH) and tighten to 8 Nm.

4 Screw in the adjusting screws (RH) and tighten to 3 Nm.

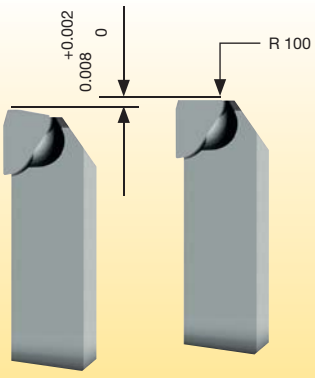


5 Determine which cartridge is in the highest axial position.

6 By turning the adjusting screws to the right, adjust the remaining cartridges for even running. Max permitted runout error 3 µm.



7 Insert finishing cartridges as described in steps 1–6 with an axial advance of 0,008 +0,002mm. Max permitted runout error of 3 µm with finishing cartridges.



NOTE:
- The process must be repeated when the cartridges are changed. To dismantle, remove the adjusting element (Part 3), clamping screw (Part 2), and cartridge (Part 1).
- For special requirements, e.g. surface quality, the configuration and the adjustment of the tool and inserts have to be done in relation with these requirements.
- If spare parts have to be ordered, reference the drawing.

Leader in Advanced Face Milling Applications

Dodeka™ Mini



The Dodeka Mini series is the most comprehensive face milling booster on the market today and offers fast, accurate indexing — with only one screw!

It is the first choice for long-reach face milling applications, or light fixtures with up to 40% shorter machining cycle time. With a standard offering of 15°, 45°, and 60° in combination with Beyond™ premium milling grades, expect up to 35% better tool life in light to heavy machining.

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

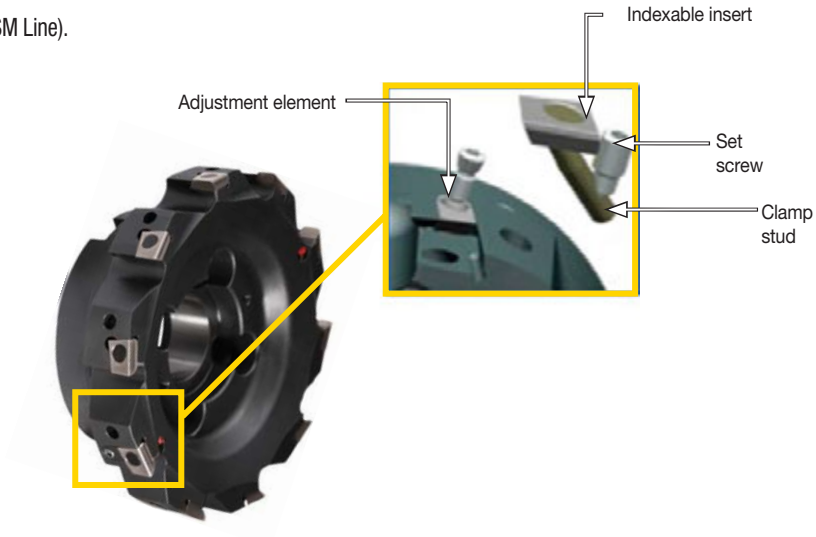
Fix-Perfect™ 0° Aluminum

Primary Application

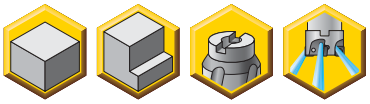
The Fix-Perfect 0° milling cutter is excellent for machining aluminum and non-ferrous materials. The 24° positive rake provides free cutting action while producing superior finishes and flatness.

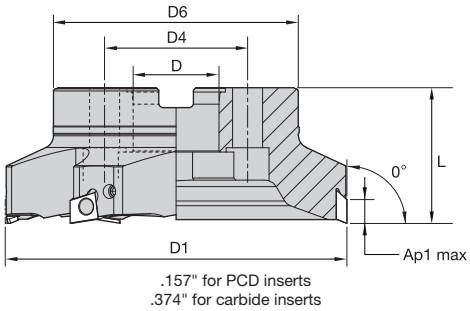
Features and Benefits

- Achieve true 0º shoulder.
- Roughing and finishing in one tool.
- Full safety first insert clamping.
- Easy adjustable pocket seats for fine finishing (PM, HPM, HSM Line).
- Achievable floor surface quality: Ra = 0.5.
- Very soft cutting action.
- Axial depth of cut Ap1 max = 3.74".



- Excellent for milling aluminum and non-ferrous materials.
- Good choice for thin-wall or poorly fixtured workpieces.
- 24° positive rake enables free cutting action.
- Produces excellent finish and flatness.
- Maximum speed is 6,500 SFM.





.157" for PCD inserts
.374" for carbide inserts



Fix-Perfect • Shell Mills • M Line • Fixed Pockets

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
2235052	**50A03RP90BG15CUM**	2.000	.750	1.750	1.570	.374	3	.90	12530
2235053	**63A03RP90BG15CUM**	2.500	.750	1.750	1.570	.374	3	1.10	10030
2235054	**80A03RP90BG15CUM**	3.000	1.000	2.189	1.750	.374	3	1.60	8350
2235055	**100B04RP90BG15CUM**	4.000	1.250	2.880	1.750	.374	4	2.80	6270
2235056	**125B05RP90BG15CUM**	5.000	1.500	3.810	2.380	.374	5	5.40	5010
2235057	**160B06RP90BG15CUM**	6.000	2.000	4.880	2.380	.374	6	8.50	4180

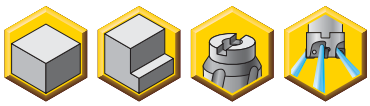
* 8-, 10-, and 12-inch diameter cutters are non-stock standards.

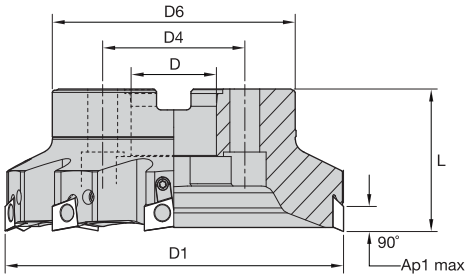
Spare Parts

D1	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw	coolant lock screw	coolant shower plate
2.000	**410.083**	**420.060**	**170.003**	45	**S446**	**420.101 SCREW**	**–**
2.500	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**	**–**
3.000	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**	**–**
4.000	**410.083**	**420.060**	**170.003**	45	**–**	**420.161**	**–**
5.000	**410.083**	**420.060**	**170.003**	45	**–**	**420.201**	**470.240**
6.000	**410.083**	**420.060**	**170.003**	45	**–**	**420.241**	**470.241**

NOTE: Please order spare parts separately.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

- High-speed Machining.
- Produces excellent surface finish and flatness.
- Fixed and adjustable pockets.







Fix-Perfect • Shell Mills • PM Line • Fixed and Adjustable Pockets

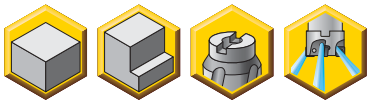
order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1803174	**40A02RP90BG15CUPM**	1.500	.500	1.250	1.570	.375	2	0	.49	33418
1803175	**50A03RP90BG15CUPM**	2.000	.750	1.750	1.570	.375	3	0	.84	25063
1803177	**63A04RP90BG15C1WUPM**	2.500	.750	1.750	1.570	.375	4	1	1.17	22750
1803178	**80A05RP90BG15C1WUPM**	3.000	1.000	2.032	1.750	.375	5	1	1.85	16710
1805715	**80A06RP90BG15C2WUPM**	3.000	1.000	2.032	1.750	.375	6	2	1.85	16710
1803179	**100B06RP90BG15C2WUPM**	4.000	1.250	2.724	1.750	.375	6	2	3.22	12500
1805716	**100B08RP90BG15C2WUPM**	4.000	1.250	2.724	1.750	.375	8	2	3.22	12500
1806465	**125B08RP90BG15C2WUPM**	5.000	1.500	3.810	2.375	.375	8	2	5.95	10000
1806466	**160B10RP90BG15C2WUPM**	6.000	2.000	4.880	2.375	.394	10	2	9.26	8500

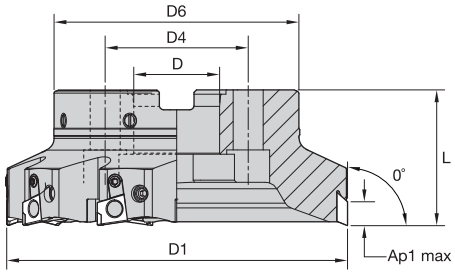
Spare Parts

D1	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw	coolant lock screw	coolant shower plate
1.500	**KT15**	**410.083**	**420.060**	**170.003**	45	**S425**	**420.081**	**–**
2.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**S446**	**420.101 SCREW**	**–**
2.500	**KT15**	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**	**–**
3.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**	**–**
4.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**–**	**420.161**	**–**
5.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**–**	**420.201**	**470.240**
6.000	**KT15**	**410.083**	**420.060**	**170.003**	45	**–**	**420.241**	**470.241**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw 193.337.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Torque wrench (KTW45 and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

- Produces excellent surface finish and flatness.
- High-speed machining.



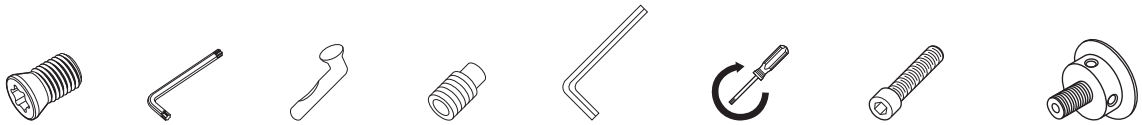




Fix-Perfect • Shell Mills • HPM Line • All Pockets Adjustable

order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
1805720	**63A04RP90BG15C4WUHPM**	2.500	.750	1.750	1.570	.374	4	4	1.17	20051
1805745	**80A05RP90BG15C5WUHPM**	3.000	1.000	2.190	1.750	.374	5	5	1.83	16710

Spare Parts



D1	adjusting element screw	Torx wrench	clamp stud	set screw	hex wrench	in. lbs.	socket-head cap screw	coolant lock screw
2.500	**193.326**	**KT15**	**410.083**	**420.060**	**170.003**	45	**S445**	**420.101 SCREW**
3.000	**193.326**	**KT15**	**410.083**	**420.060**	**170.003**	45	**S458**	**420.121**

NOTE: Please order spare parts separately.
For all diameters: adjusting element screw 193.326.
If the adjusting element needs to be replaced, please return the cutter to the Kennametal Service Center.
Cutters with 4" have an aluminum body.
Torque wrench (KTW45) and 3mm hex bit (69709922164) may be purchased separately to ensure proper torque setting.

Insert Selection Guide

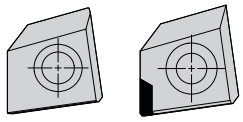
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	BGHX...	K110M	**BGHX...**	**KC510M**	BGHX...	KD1415
N3	BGHX...	K110M	**BGHX...**	**KD1410**	BGHX...	KD1410
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts for Fix-Perfect • BGHX15L5...

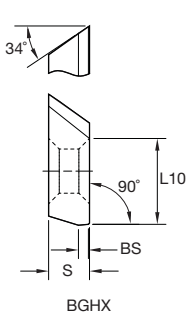
- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges.

● first choice
○ alternate choice

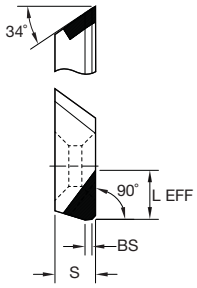
	K110M	KC510M	KD1410	KD1415
P				
M				
K				
N	●	●	●	●
S				
H				


BGHX

BGHX



BGHX



BGHX

Face Milling

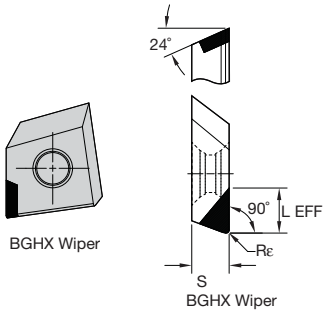
BGHX • Roughing

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCERGGT	.205	.197	.035	–	.001	1	–	–	●	●
BGHX15L5PCFRGG	.413	.197	.048	–	.001	2	●	●	–	–
BGHX15L5PCTRGG	.413	.197	.048	–	.001	2	●	●	–	–
BGHX15L5PCERGGTM	–	.197	.047	–	.001	1	–	–	●	–

- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges with corner radii.

● first choice
○ alternate choice

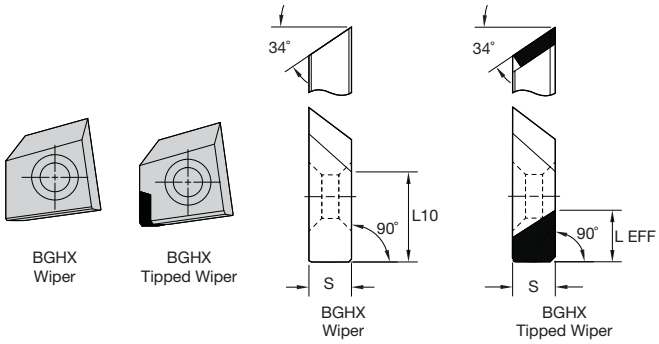
P					
M					
K					
N	●	●	●	●	
S					
H					



BGHT • Roughing with Radius

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L504ERGET	.205	.197	—	.016	.001	1	–	–	–	●
BGHX15L504PCFRGG	.413	.197	.047	.016	.001	2	●	–	–	–
BGHX15L508PCFRGG	.413	.197	.047	.031	.001	2	●	●	–	–
BGHX15L515PCFRGG	.413	.197	.047	.059	.001	2	●	●	–	–

- Roughing Fix-Perfect inserts for aluminum and non-ferrous materials.
- 0.374" (9,5mm) max depth of cut.
- Two cutting edges.



BGHX-ET • Finishing

catalog number	L10	S	BS	Rε	hm	cutting edges	K110M	KC510M	KD1410	KD1415
BGHX15L5PCSRLET	.236	.197	.035	—	.001	1	–	–	●	●
BGHX15L5PCTRHET	.236	.197	.035	—	.001	1	–	–	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

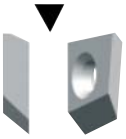
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
BGHX...	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	BGHX...

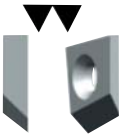
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

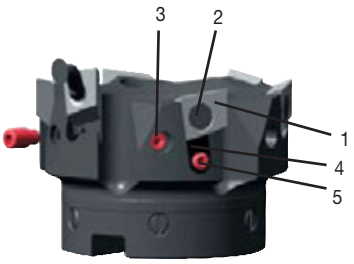
Introduction to Fitting Cutting Bodies

Roughing indexable inserts
BGHX15L5PC..GG.

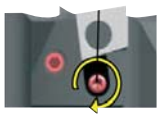
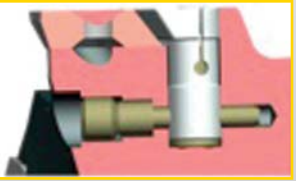
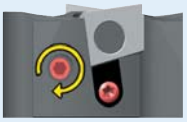


Finishing indexable inserts
BGHX15L5PC..GG.1W





Clean dust, grease, etc., from the insert seat, insert (1), and clamp stud (2).

	PM	HPM/HSM	PM/HPM/HSM
1	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).	Loosen the adjusting element (4).  Loosen the adjusting screw (5).
2	Insert the indexable inserts and tighten with the clamping screw (3) 44 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 13 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.	Insert the indexable inserts and pre-tighten with the clamping screw (3) 9 in. lbs.  ATTENTION: Ensure that the insert is correctly positioned in the insert seat. Determine which cutting body is the highest on the axis.
3	Tension the adjusting element (4) by tightening the adjusting screw (5) to the specified torque of 4.5 in. -lbs. 	Extract by .0008" the insert that is axially the highest by turning the adjusting screw (5).  Adjust the remaining inserts to the desired runout with maximum travel of the inserts .008".	Adjust the finishing indexable insert(s) to the desired projection, preferably .0015" by turning the adjusting screw (5).  ATTENTION: Ensure that the insert is correctly positioned in the insert seat.
4	 **Adjustment element to be replaced by Kennametal Service Center only.**	Clamp the insert by tightening the clamping screw (3) to the specified torque of 44 in. lbs. 	Clamp the insert by tightening the clamping screw (3) to the specified torque of 44 in. lbs. 

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FEATURES

Scan a Kennametal tool package barcode or search a product catalog number to access complete product information.

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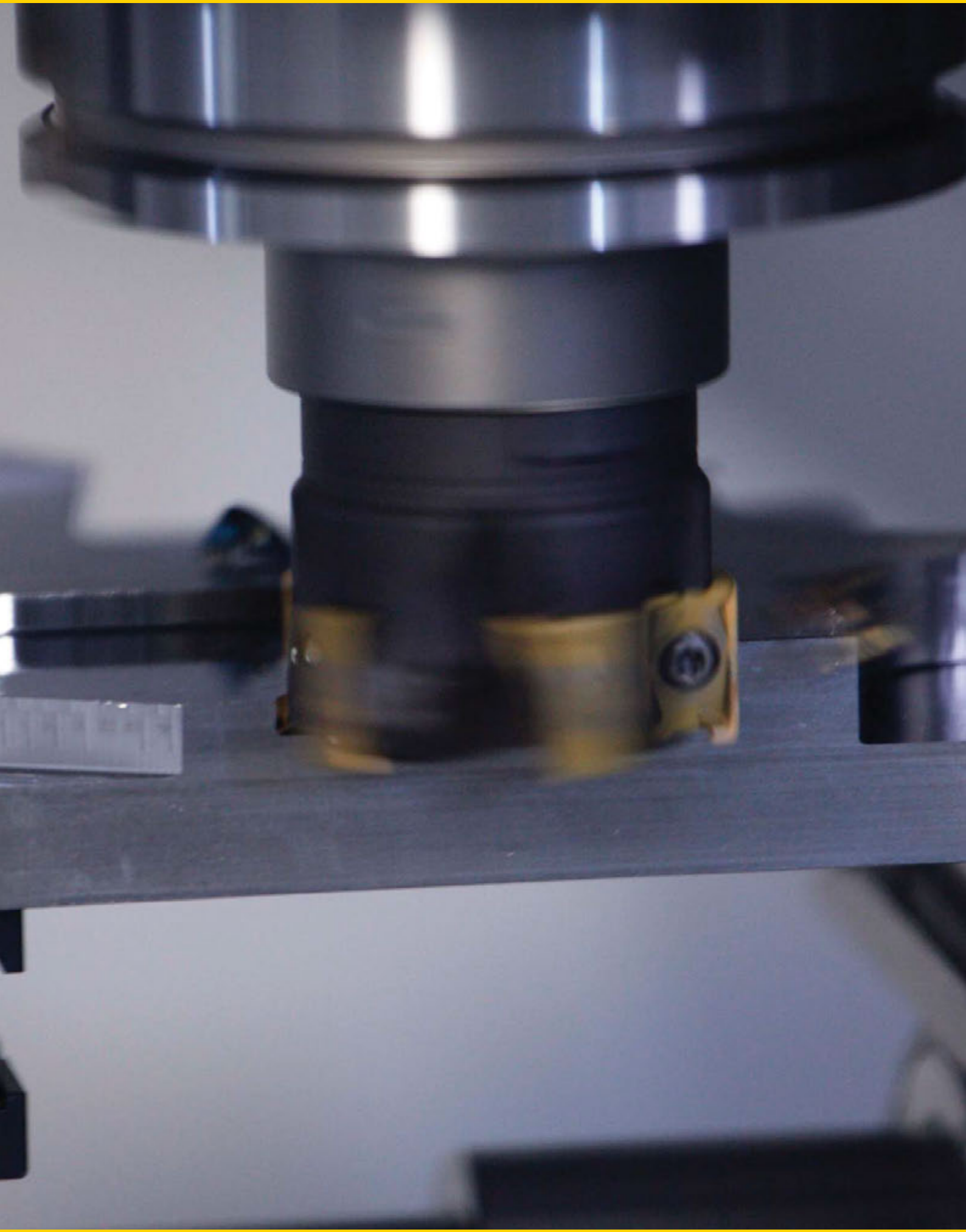


Indexable Milling • Shoulder Milling

Mill 4 • Double-Sided Shoulder Milling T2–T21

Mill 4-11 ..... T2–T11

Mill 4-15 ..... T12–T21

Mill 1 • Single-Sided Shoulder Milling T22–T93

Mill 1-7 ..... T22–T26

Mill 1-10 ..... T28–T47

Mill 1-14 ..... T48–T73

Mill 1-18 ..... T74–T86

Mill 1-25 ..... T88–T93

Stellram 5720VZ16 Series • High-Speed Aluminum Cutting T94–T104

KSSM • Square Shoulder Milling T106–T117

KSSM-KSSP • Helical Square Shoulder Milling T118–T124

Stellram 5230VS Series T126–T136

Mill 4-11™

One tool for all applications.

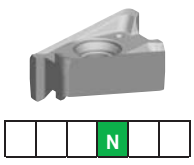
The Mill 4™ series is specially engineered to achieve excellent surface quality and higher metal removal rates in shoulder milling applications. Its unique design allows you to apply the tool in multiple passes (stepping down) with outstanding results.

From roughing to finishing operations, the Mill 4 series is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys.

Features and Benefits

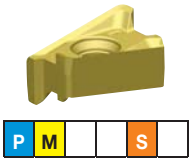
- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.
- “Stepless” solution for multiple-pass operations.
- Comprehensive offering to cover all applications in all material groups.

-ELEJ



For non-ferrous materials.

-EGE



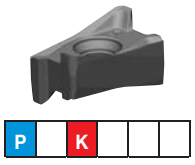
1st choice for stainless steel. Lower cutting forces.

-SGE



First choice for Mill 4 platform, especially when machining steels.

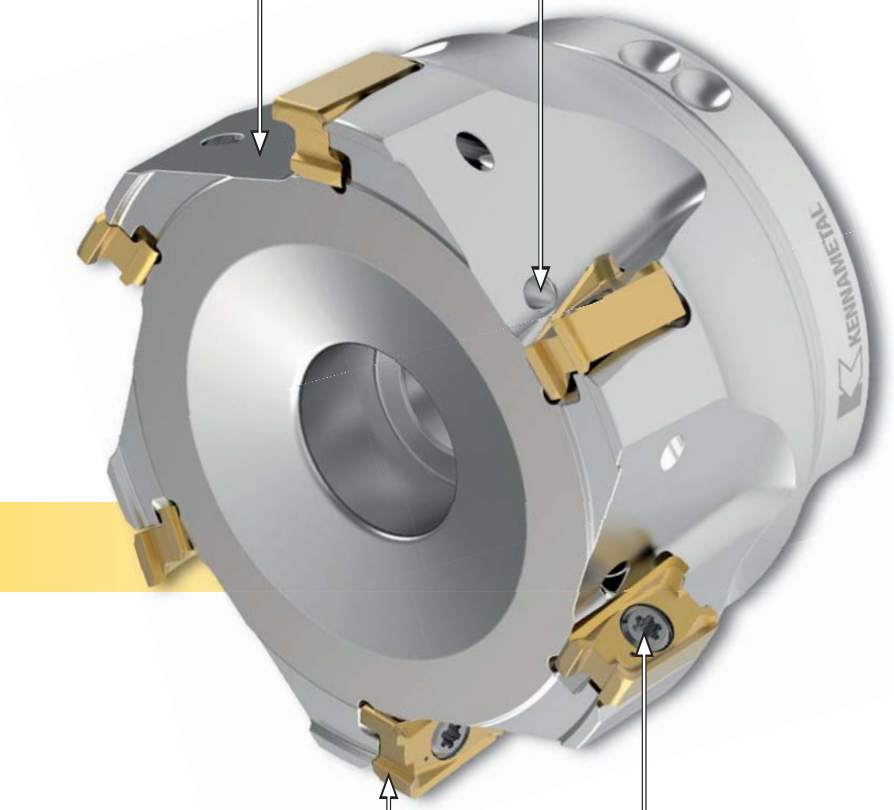
-SGEM



1st choice for cast iron. Strongest cutting edge.

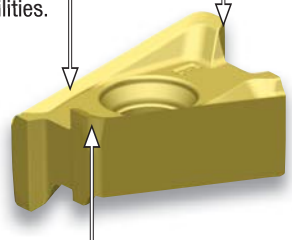
Uneven pocket spacing.

Screw-on, end mills, and shell mill cutter with internal coolant.



Integrated wiper facet for best-in-class floor finisher.

Up to 0.433" (11mm) Ap capabilities.

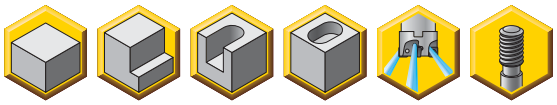


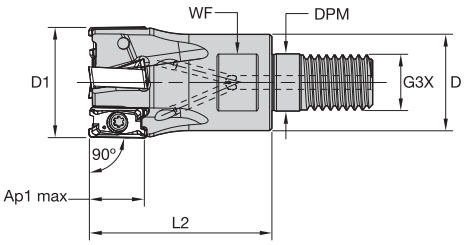
Multiple corner nose radii available from .016" (0,4mm) up to .063" (1,6mm).

TP9 insert screw (M3) to provide higher reliability and safe processes.

Double-sided insert with 4 cutting edges.

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finish capabilities. Best choice for stepping down operations.
- Up to 0.433" (11mm) depth of cut.
- Screw-on cutters provided better rigidity and stability when used with small spindles: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







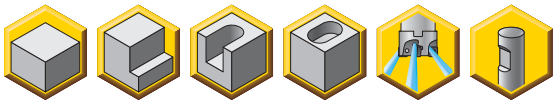
Screw-On End Mills

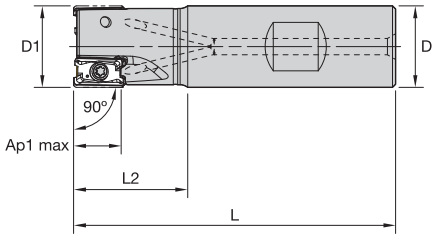
order number	catalog number	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	lbs	max RPM
6139893	**M4D075L1103M10L110**	.750	.705	.413	M10	1.100	15	.433	3	.01	41700
6139894	**M4D100L1104M12L125**	1.000	.827	.492	M12	1.250	17	.433	4	.19	33900
6139895	**M4D125L1105M16L175**	1.250	1.142	.669	M16	1.750	24	.433	5	.49	29200

Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.750	**MS2263**	13.3	**DT9IP**
1.000	**MS2263**	13.3	**DT9IP**
1.250	**MS2263**	13.3	**DT9IP**

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finish capabilities.
- Best choice for stepping down operations.
- Up to 0.433" (11mm) depth of cut.







Weldon End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
6139928	**M4D062L1102W062L100**	.625	.625	2.906	1.000	.433	2	.20	48000
6139929	**M4D075L1102W075L110**	.750	.750	3.130	1.100	.433	2	.32	41700
6139930	**M4D075L1103W075L110**	.750	.750	3.130	1.100	.433	3	.32	41700
6139896	**M4D100L1103W075L175**	1.000	.750	3.780	1.750	.433	3	.45	33900
6140051	**M4D100L1103W100L175**	1.000	1.000	4.030	1.750	.433	3	.77	33900
6140052	**M4D125L1104W125L225**	1.250	1.250	4.530	2.250	.433	4	1.37	29200
6139897	**M4D150L1105W125L225**	1.500	1.250	4.530	2.250	.433	5	1.48	26200

Spare Parts

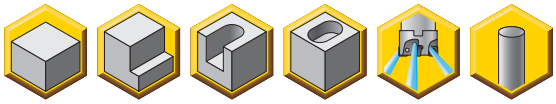


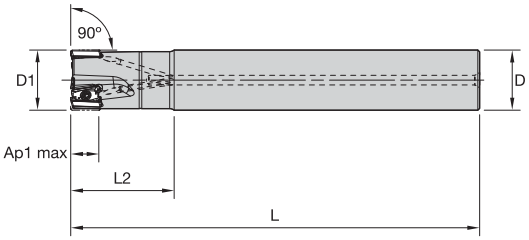




D1	insert screw	in. lbs.	Torx Plus driver
.625	**MS2263**	13.3	**DT9IP**
.750	**MS2263**	13.3	**DT9IP**
1.000	**MS2263**	13.3	**DT9IP**
1.250	**MS2263**	13.3	**DT9IP**
1.500	**MS2263**	13.3	**DT9IP**

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finish capabilities.
- Best choice for stepping down operations.
- Up to 0.433" (11mm) depth of cut.







Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
6140053	**M4D062L1102C062L400**	.625	.625	4.000	1.000	.433	2	.30	48000
6139898	**M4D062L1102C062L600**	.625	.625	6.000	1.000	.433	2	.47	48000
6140055	**M4D075L1102C075L600**	.750	.750	6.000	1.100	.433	2	.67	41700
6140054	**M4D075L1103C075L400**	.750	.750	4.000	1.100	.433	3	.43	41700
6139899	**M4D075L1103C075L600**	.750	.750	6.000	1.100	.433	3	.66	41700
6201903	**M4D100L1104C075L450**	1.000	.750	4.500	1.750	.433	4	.53	33900
6140057	**M4D100L1103C100L700**	1.000	1.000	7.000	1.750	.433	3	1.42	33900
6140056	**M4D100L1104C100L450**	1.000	1.000	4.500	1.750	.433	4	.87	33900
6139900	**M4D100L1104C100L700**	1.000	1.000	7.000	1.750	.433	4	1.41	33900
6201904	**M4D125L1105C100L500**	1.250	1.000	5.000	2.250	.433	5	1.05	29200
6139921	**M4D125L1104C125L800**	1.250	1.250	8.000	2.250	.433	4	2.57	29200
6140058	**M4D125L1105C125L500**	1.250	1.250	5.000	2.250	.433	5	1.55	29200

Spare Parts

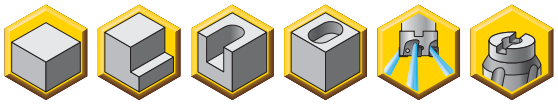


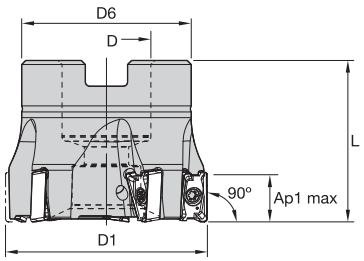




D1	insert screw	in. lbs.	Torx Plus driver
.625	**MS2263**	13.3	**DT9IP**
.750	**MS2263**	13.3	**DT9IP**
1.000	**MS2263**	13.3	**DT9IP**
1.250	**MS2263**	13.3	**DT9IP**

- One tool for all applications: from roughing to finishing.
- Superior wall and surface finish capabilities.
- Best choice for stepping down operations.
- Up to 0.433" (11mm) depth of cut.







Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
6140059	**M4D150L1105S050L157**	1.500	.500	1.421	1.575	.433	5	.49	26200
6139922	**M4D150L1106S050L157**	1.500	.500	1.421	1.575	.433	6	.49	26200
6140060	**M4D200L1105S075L157**	2.000	.750	1.750	1.575	.433	5	.80	22100
6140061	**M4D200L1107S075L157**	2.000	.750	1.750	1.575	.433	7	.81	22100
6140062	**M4D250L1107S075L157**	2.500	.750	1.750	1.575	.433	7	1.20	19500
6139923	**M4D250L1107S100L157**	2.500	1.000	2.190	1.575	.433	7	1.28	19500
6140063	**M4D300L1108S100L175**	3.000	1.000	2.190	1.750	.433	8	2.01	17600
6139924	**M4D300L1108S125L175**	3.000	1.250	2.665	1.750	.433	8	2.13	17600

Spare Parts

D1	D	 insert screw	 in. lbs.	 Torx Plus driver	 socket-head cap screw
1.500	.500	**MS2263**	13.3	**DT9IP**	**S424**
2.000	.750	**MS2263**	13.3	**DT9IP**	**S445**
2.500	.750	**MS2263**	13.3	**DT9IP**	**S445**
2.500	1.000	**MS2263**	13.3	**DT9IP**	**S458**
3.000	1.000	**MS2263**	13.3	**DT9IP**	**S458**
3.000	1.250	**MS2263**	13.3	**DT9IP**	**S467**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P3–P4	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P5–P6	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GEM	KCPM40
M1–M2	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GEM	KC522M
M3	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
K1–K2	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KCK15
K3	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
S1–S2	.E..GE	KCSM40	**.S..GE**	**KC725M**	.S..GE	KCSM40
S3	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
S4	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
H1	–	–	**–**	**–**	–	–

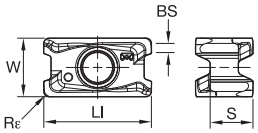
Indexable Inserts • Mill 4-11

● first choice
○ alternate choice

	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●			○	●	●
H									



LNGU11-ELEJ



LNGU11-ELEJ

LNGU11-ELEJ • For Aluminum and Other Non-Ferrous Alloys

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU431ERLEJ	.479	.190	.260	.054	.016	.002	4	●	–	–	–	–	–	–	–	–
LNGU432ERLEJ	.479	.190	.260	.039	.031	.002	4	●	–	–	–	–	–	–	–	–

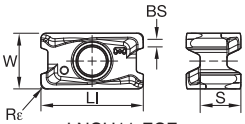
- -EGE is the first choice for stainless steel and high-temp alloys.
- Use -EGE geometry for the highest finishing requirements in light machining for all materials.

● first choice
○ alternate choice

P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●			○	●	●
H									



LNGU11-EGE



LNGU11-EGE

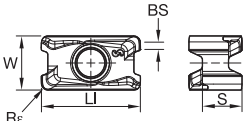
LNGU11-EGE • Precision Ground • For Stainless Steel and High-Temp Alloys

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU431ERGE	.479	.190	.260	.054	.016	.003	4	–	–	●	●	–	–	●	–	–
LNGU432ERGE	.479	.190	.260	.039	.031	.003	4	–	–	●	●	–	–	●	●	●
LNGU433ERGE	.479	.190	.260	.025	.047	.003	4	–	–	●	–	–	–	●	–	●

- -SGE is the universal geometry for Mill 4-11. First choice when machining steel, as well as stainless steel, and high-temp alloys in heavy applications.
- Precision ground insert results in a great versatility for both roughing and finishing operations.



LNGU11-SGE



LNGU11-SGE

LNGU11-SGE • Precision Ground • Universal Geometry • General Purpose for Roughing and Finishing Operations

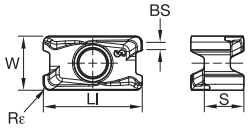
catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU431SRGE	.479	.190	.260	.054	.016	.004	4	–	–	●	–	–	–	●	–	●
LNGU432SRGE	.479	.190	.260	.039	.031	.004	4	–	–	●	●	●	●	●	–	●

- -SGE is the universal geometry for Mill 4-11. First choice when machining steel, as well as stainless steel, and high-temp alloys in heavy applications.
- Precision-pressed insert is a perfect choice for roughing operations with a better cost-per-edge and great surface quality.

● first choice
○ alternate choice

		KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	●	○	●
K			●	○		●	○			
N		●								
S				●	●			○	●	●
H										


LNPU11-SGE

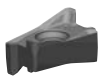


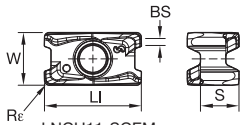
LNPU11-SGE

LNPU11-SGE • Precision Pressed • General Purpose for Roughing and Semi-Finishing Operations

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNPU432SRGE	.476	.190	.260	.036	.031	.004	4	–	●	●	●	●	●	●	–	–
LNPU433SRGE	.476	.190	.260	.021	.047	.004	4	–	●	●	●	●	●	●	–	–
LNPU434SRGE	.476	.190	.260	.001	.063	.004	4	–	●	●	●	–	●	●	–	–

- -SGEM geometry is the first choice for cast iron machining in medium and heavy applications.
- -M stands for margins, which are used to reinforce the geometry.


LNGU11-SGEM



LNGU11-SGEM

LNGU11-SGEM • Precision Ground • For Cast Iron and Heavy Applications

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU432SRGEM	.479	.190	.260	.036	.031	.004	4	–	●	●	–	●	●	●	–	–
LNGU433SRGEM	.479	.190	.260	.022	.047	.004	4	–	●	–	–	●	●	●	–	–
LNGU434SRGEM	.479	.190	.260	.004	.063	.004	4	–	●	–	–	●	●	●	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.005	**.014**	.023	.004	**.010**	.017	.003	**.008**	.012	.002	**.007**	.011	.002	**.006**	.010	.E..LEJ
.E..GE	.009	**.016**	.022	.007	**.012**	.016	.005	**.009**	.012	.004	**.008**	.010	.004	**.007**	.010	.E..GE
.S..GE	.009	**.018**	.025	.007	**.013**	.018	.005	**.010**	.014	.004	**.009**	.012	.004	**.008**	.011	.S..GE
.S..GEM	.009	**.018**	.028	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.S..GEM

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Mill 4-11 Starter Kits

Order one of our starting kits and test the performance of our new Mill 4 platform. The kits are set up to serve the majority of shoulder milling applications, delivered with a cutter body as well as 20 inserts from a premium Kennametal grade.

Detailed order information can be found in the table below.

Order one Mill 4 Kit and experience the next level of shoulder milling!



Mill 4-11 Starter Kits • Inch

order number	catalog number	cutter diameter/ flutes	cutter type	material group	application range	content				
						cutter	quantity	insert	grade	quantity
6214774	M4-11KITD062Z2W062SGEKCPM40	0.62z2	Weldon	P	∇/∇∇	M4D062L1102W062L100	1	LNPU110408SRGE	KCPM40	20
6214775	M4-11KITD062Z2C062SGEKCPM40	0.62z2	Cylindrical	P	∇/∇∇	M4D062L1102C062L400	1	LNPU110408SRGE	KCPM40	20
6214776	M4-11KITD075Z2W075SGEKCPM40	0.75z2	Weldon	P	∇/∇∇	M4D075L1102W075L110	1	LNPU110408SRGE	KCPM40	20
6214777	M4-11KITD075Z3W075SGEKCPM40	0.75z3	Weldon	P	∇/∇∇	M4D075L1103W075L110	1	LNPU110408SRGE	KCPM40	20
6214778	M4-11KITD075Z3C075SGEKCPM40	0.75z3	Cylindrical	P	∇/∇∇	M4D075L1103C075L400	1	LNPU110408SRGE	KCPM40	20
6214779	M4-11KITD100Z3W100SGEKCPM40	1.00z3	Weldon	P	∇/∇∇	M4D100L1103W100L175	1	LNPU110408SRGE	KCPM40	20
6214780	M4-11KITD100Z4C100SGEKCPM40	1.00z4	Cylindrical	P	∇/∇∇	M4D100L1104C100L450	1	LNPU110408SRGE	KCPM40	20
6214801	M4-11KITD125Z4W125SGEKCPM40	1.25z4	Weldon	P	∇/∇∇	M4D125L1104W125L225	1	LNPU110408SRGE	KCPM40	20
6214802	M4-11KITD125Z5C125SGEKCPM40	1.25z5	Cylindrical	P	∇/∇∇	M4D125L1105C125L500	1	LNPU110408SRGE	KCPM40	20
6214803	M4-11KITD150Z5S050SGEKCPM40	1.50z5	Shell Mill	P	∇/∇∇	M4D150L1105S050L157	1	LNPU110408SRGE	KCPM40	20
6214804	M4-11KITD200Z5S075SGEKCPM40	2.00z5	Shell Mill	P	∇/∇∇	M4D200L1105S075L157	1	LNPU110408SRGE	KCPM40	20
6214805	M4-11KITD200Z7S075SGEKCPM40	2.00z7	Shell Mill	P	∇/∇∇	M4D200L1107S075L157	1	LNPU110408SRGE	KCPM40	20
6214806	M4-11KITD062Z2W062SGEKC725M	0.62z2	Weldon	M+S	∇∇/∇∇∇	M4D062L1102W062L100	1	LNGU110408ERGE	KC725M	20
6214807	M4-11KITD062Z2C062SGEKC725M	0.62z2	Cylindrical	M+S	∇∇/∇∇∇	M4D062L1102C062L400	1	LNGU110408ERGE	KC725M	20
6214808	M4-11KITD075Z3W075SGEKC725M	0.75z3	Weldon	M+S	∇∇/∇∇∇	M4D075L1103W075L110	1	LNGU110408ERGE	KC725M	20
6214809	M4-11KITD075Z3C075SGEKC725M	0.75z3	Cylindrical	M+S	∇∇/∇∇∇	M4D075L1103C075L400	1	LNGU110408ERGE	KC725M	20
6214810	M4-11KITD100Z3W100SGEKC725M	1.00z3	Weldon	M+S	∇∇/∇∇∇	M4D100L1103W100L175	1	LNGU110408ERGE	KC725M	20
6214821	M4-11KITD100Z4C100SGEKC725M	1.00z4	Cylindrical	M+S	∇∇/∇∇∇	M4D100L1104C100L450	1	LNGU110408ERGE	KC725M	20
6214822	M4-11KITD125Z4W125SGEKC725M	1.25z4	Weldon	M+S	∇∇/∇∇∇	M4D125L1104W125L225	1	LNGU110408ERGE	KC725M	20
6214823	M4-11KITD125Z5C125SGEKC725M	1.25z5	End Mill	M+S	∇∇/∇∇∇	M4D125L1105C125L500	1	LNGU110408ERGE	KC725M	20
6214824	M4-11KITD150Z5S050SGEKC725M	1.50z5	Shell Mill	M+S	∇∇/∇∇∇	M4D150L1105S050L157	1	LNGU110408ERGE	KC725M	20
6214825	M4-11KITD200Z5S075SGEKC725M	2.00z5	Shell Mill	M+S	∇∇/∇∇∇	M4D200L1105S075L157	1	LNGU110408ERGE	KC725M	20
6214826	M4-11KITD200Z7S075SGEKC725M	2.00z7	Shell Mill	M+S	∇∇/∇∇∇	M4D200L1107S075L157	1	LNGU110408ERGE	KC725M	20

∇ Heavy/Roughing
∇∇ Medium
∇∇∇ Light machining/Finishing

Mill 4-15™ • Double-Sided Shoulder Milling

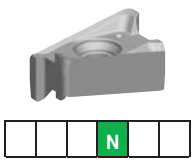
Primary Application

The Mill 4-15 series is specially engineered to achieve excellent surface quality and higher material removal rates in shoulder milling applications. Its unique design enables multiple passes (stepping down) with outstanding results. The Mill 4™ platform is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, and titanium, from roughing to finishing operations.

Features and Benefits

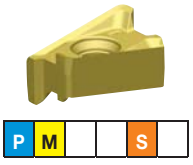
- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.
- "Stepless" solution. No mismatch when machining walls in different steps.

-EGEJ



For non-ferrous materials.

-EGE



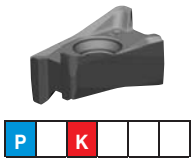
1st choice for stainless steel. Lower cutting forces.

-SGE



First choice for Mill 4 platform, especially when machining steels.

-SGEM



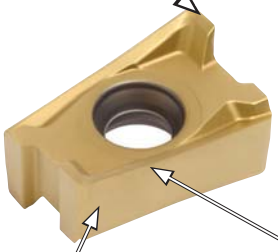
1st choice for cast iron. Strongest cutting edge.

Screw-on, end mill, and shell mill cutters with effective internal coolant supply.

State-of-the-art stepping down capabilities — "stepless" solution.



Multiple corner nose radii available.

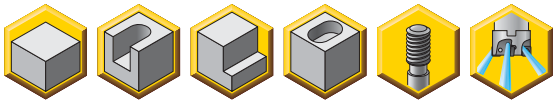


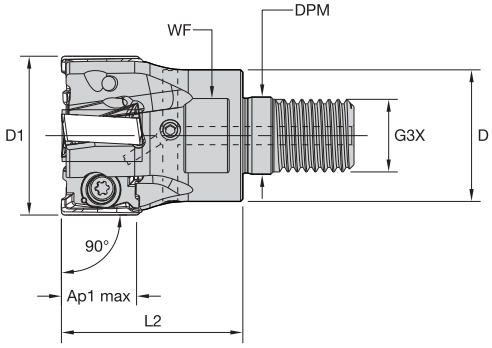
Up to .610" (15,5mm) depth-of-cut capabilities.

Innovative cutting geometry to provide superior wall and surface finish capabilities.

Integrated wiper facet for best-in-class floor finishing.

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to .610" (15,5mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







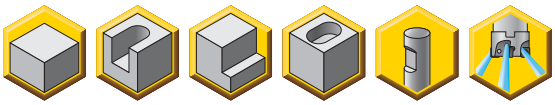
Screw-On End Mills

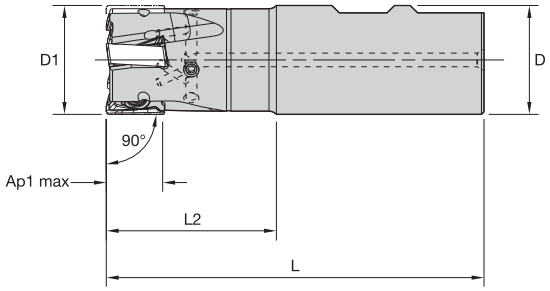
order number	catalog number	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	lbs	max RPM
5568064	**M4D100L1502M12L125**	1.000	.827	.492	M12	1.250	17	.610	2	.73	26300
5568065	**M4D125L1503M16L175**	1.250	1.142	.669	M16	1.750	24	.610	3	.44	22100
5568066	**M4D150L1504M16L175**	1.500	1.142	.669	M16	1.750	24	.610	4	.52	19500

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS-2071**	31.0	**DT15IP**
1.250	**MS-2071**	31.0	**DT15IP**
1.500	**MS-2071**	31.0	**DT15IP**

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to .610" (15,5mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Weldon® End Mills

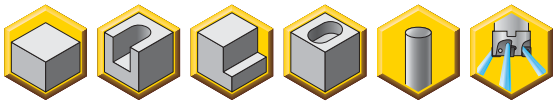
order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
5568067	**M4D100L1502W075L175**	1.000	.750	3.780	1.750	.610	2	.73	26300
5544366	**M4D100L1502W100L175**	1.000	1.000	4.030	1.750	.610	2	.73	26300
5544367	**M4D125L1503W100L225**	1.250	1.000	4.530	2.250	.610	3	.90	22100
5568068	**M4D125L1503W125L225**	1.250	1.250	4.530	2.250	.610	3	1.30	22100
5568069	**M4D150L1503W125L225**	1.500	1.250	4.530	2.250	.610	3	1.41	19500
5544368	**M4D150L1504W125L225**	1.500	1.250	4.530	2.250	.610	4	1.41	19500

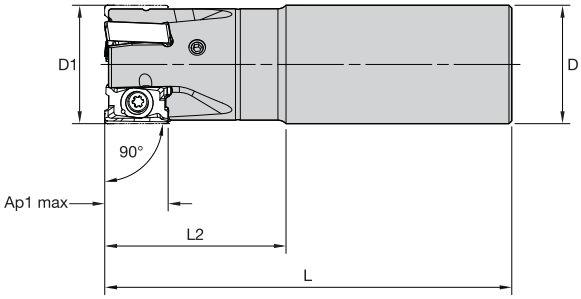
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS-2071**	31	**DT15IP**
1.250	**MS-2071**	31	**DT15IP**
1.500	**MS-2071**	31	**DT15IP**

NOTE: Weldon type not recommended for finishing operations.

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to .610" (15,5mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







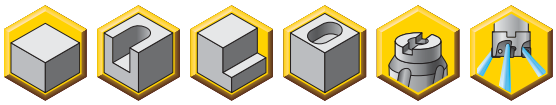
Cylindrical End Mills

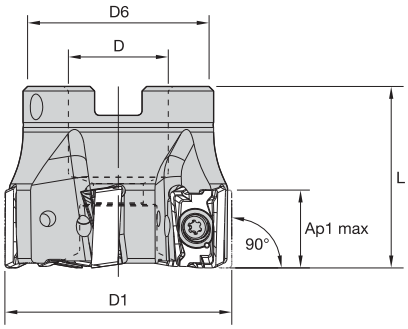
order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
5544369	**M4D100L1502C100L800**	1.000	1.000	8.000	1.750	.610	2	1.59	26300
5568080	**M4D100L1502C100L1000**	1.000	1.000	10.000	1.750	.610	2	2.03	26300
5544400	**M4D125L1503C125L800**	1.250	1.250	8.000	2.250	.610	3	2.50	22100
5568081	**M4D125L1503C125L1000**	1.250	1.250	10.000	2.250	.610	3	3.18	22100
5544401	**M4D150L1504C125L800**	1.500	1.250	8.000	2.250	.610	4	2.60	19500
5568082	**M4D150L1504C125L1000**	1.500	1.250	10.000	2.250	.610	4	3.29	19500

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS-2071**	31.0	**DT15IP**
1.250	**MS-2071**	31.0	**DT15IP**
1.500	**MS-2071**	31.0	**DT15IP**

- Superior wall and surface finish capabilities.
- True 90° capabilities. Stepless solution when using multiple steps.
- Engineered to run up to .610" (15,5mm) depth of cut.
- Effective internal coolant feature, reaching the cutting edge precisely.







Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
5544402	M4D150L1505S050L157	1.500	.500	1.420	1.575	.610	5	.43	19500
5702499	M4D200L1504S075L175	2.000	.750	1.750	1.575	.610	4	.78	16100
5544403	M4D200L1505S075L157	2.000	.750	1.750	1.575	.610	5	.73	16100
5544404	M4D200L1506S075L157	2.000	.750	1.750	1.575	.610	6	.71	16100
5568083	M4D250L1505S075L157	2.500	.750	1.750	1.575	.610	5	1.09	14100
5544405	M4D250L1506S075L157	2.500	.750	1.750	1.575	.610	6	1.05	14100
5568084	M4D250L1507S100L175	2.500	1.000	2.190	1.750	.610	7	1.31	14100
5702495	M4D300L1505S100L175	3.000	1.000	2.190	1.750	.610	5	1.86	12700
5544406	M4D300L1507S100L175	3.000	1.000	2.190	1.750	.610	7	1.82	12700
5568085	M4D300L1509S100L175	3.000	1.000	2.190	1.750	.610	9	1.85	12700
5544407	M4D300L1508S125L200	3.000	1.250	2.665	2.000	.610	8	2.22	12700
5702496	M4D400L1506S150L200	4.000	1.500	3.380	2.000	.610	6	3.33	10800
5568086	M4D400L1508S150L200	4.000	1.500	3.380	2.000	.610	8	3.31	10800
5544408	M4D400L1511S150L200	4.000	1.500	3.380	2.000	.610	11	3.25	10800
5702500	M4D500L1507S150L238	5.000	1.500	3.907	2.380	.610	7	6.91	9600
5613026	M4D500L1509S150L238	5.000	1.500	3.907	2.380	.610	9	6.84	9660
5613027	M4D500L1512S150L238	5.000	1.500	3.907	2.380	.610	12	6.98	9660
5702497	M4D600L1508S200L238	6.000	2.000	4.880	2.380	.610	8	12.20	8600
5613028	M4D600L1510S200L238	6.000	2.000	4.880	2.380	.610	10	9.55	8600
5702498	M4D600L1512S200L238	6.000	2.000	4.880	2.380	.610	12	12.09	8600

Spare Parts

D1	D	insert screw	in. lbs.	Torx Plus driver	coolant lock screw	coolant lock screw assembly
1.500	.500	MS-2071	31.0	DT15IP	–	–
2.000	.750	MS-2071	31.0	DT15IP	–	–
2.500	.750	MS-2071	31.0	DT15IP	–	–
2.500	1.000	MS-2071	31.0	DT15IP	–	–
3.000	1.000	MS-2071	31.0	DT15IP	–	–
3.000	1.250	MS-2071	31.0	DT15IP	–	–
3.000	1.000	MS-2071	31.0	DT15IP	–	–
4.000	1.500	MS-2071	31.0	DT15IP	420.201	S2165C
5.000	1.500	MS-2071	31.0	DT15IP	420.201	S2165C
6.000	2.000	MS-2071	31.0	DT15IP	420.241	S2192C

NOTE: Coolant lock screw assembly must be ordered separately.

Insert Selection Guide

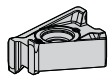
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
P3–P4	.E..GE	KCPM40	**.S..GE**	**KCPK30**	.S..GEM	KCPK30
P5–P6	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GEM	KCPK30
M1–M2	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GEM	KCPM40
M3	.E..GE	KCPM40	**.S..GE**	**KCPM40**	.S..GEM	KCPM40
K1–K2	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
K3	.S..GE	KC520M	**.S..GE**	**KCK15**	.S..GEM	KC520M
N1–N2	.E..GEJ	KC422M	**.E..GEJ**	**KC422M**	.E..GEJ	KC422M
N3	.E..GEJ	KC422M	**.E..GEJ**	**KC422M**	.E..GEJ	KC422M
S1–S2	.E..GE	KC725M	**.S..GE**	**KC725M**	.S..GE	KC725M
S3	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
S4	.E..GE	KCSM40	**.S..GE**	**KCSM40**	.S..GE	KCSM40
H1	–	–	–	–	–	–

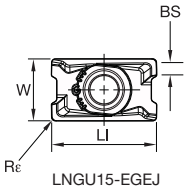
Indexable Inserts • Mill 4-15™

- -EGEJ is the first choice for roughing and finishing of aluminum and other non-ferrous alloys.

● first choice
○ alternate choice

		KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	●	○	●
K			●	○		●	○			
N		●								
S				●	●			○	●	●
H										


LNGU15-EGEJ



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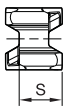
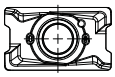
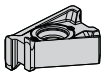


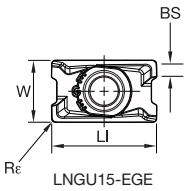

Back view

LNGU15-EGEJ • For Aluminum and Other Non-Ferrous Alloys

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU541ERGEJ	.670	.394	.274	.087	.016	.001	4	●	–	–	–	–	–	–	–	–
LNGU542ERGEJ	.670	.394	.274	.072	.031	.001	4	●	–	–	–	–	–	–	–	–

- -EGE is the first choice for stainless steel and high-temp alloys.
- Best choice for finishing operations in steels, stainless steels, and high-temp alloys.


LNGU15-EGE



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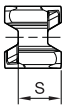


LNGU15-EGE • Precision Ground • For Stainless Steel and High-Temp Alloys

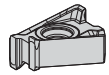
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU541ERGE	.670	.394	.274	.087	.016	.003	4	–	–	●	●	–	–	●	●	–
LNGU542ERGE	.670	.394	.274	.072	.031	.003	4	–	–	●	●	–	–	●	●	●
LNGU543ERGE	.670	.394	.274	.057	.047	.003	4	–	–	●	●	–	–	●	●	●
LNGU544ERGE	.670	.394	.274	.042	.063	.003	4	–	–	–	●	–	–	●	●	–

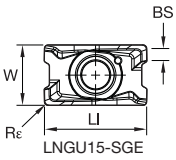
- -SGE is the universal geometry for Mill 4-15.
- First choice when machining steel.
- Suitable for stainless steel and high-temp alloys in medium-heavy applications.

beyond

P				○	●		●	●		○
M				●	●		○	●	○	●
K			●	○		●	○			
N	●									
S				●	●			○	●	●
H										

● first choice
○ alternate choice


LNGU15-SGE

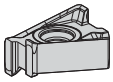


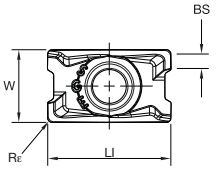
LNGU15-SGE

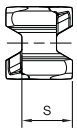
LNGU15-SGE • Precision Ground • For Steel Machining, Finishing, and Light Roughing

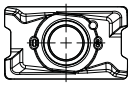
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU541SRGE	.669	.394	.274	.086	.016	.004	4	–	●	●	●	●	●	–	–	–
LNGU542SRGE	.670	.394	.274	.071	.031	.004	4	–	●	●	●	●	●	–	–	●
LNGU543SRGE	.670	.394	.274	.056	.047	.004	4	–	●	●	●	●	●	–	–	●
LNGU544SRGE	.670	.394	.274	.042	.063	.004	4	–	●	●	●	●	●	–	–	–

- -SGE is the first choice for machining steel, as well as stainless steel and high-temp alloys in heavy applications.


LNPU15-SGE





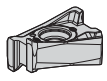

Back View

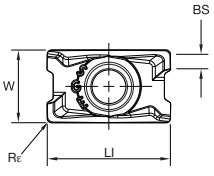
LNPU15-SGE

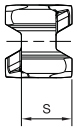
LNPU15-SGE • Precision Pressed • For Steel Machining in Medium-Heavy Roughing

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNPU541SRGE	.665	.394	.274	.085	.016	.004	4	–	●	●	●	●	●	–	–	–
LNPU542SRGE	.665	.394	.274	.070	.031	.004	4	–	●	●	●	●	●	●	–	–
LNPU543SRGE	.665	.394	.274	.058	.047	.004	4	–	●	●	●	–	●	●	–	–
LNPU544SRGE	.666	.394	.274	.042	.063	.004	4	–	●	●	●	●	●	●	–	–
LNPU545SRGE	.666	.394	.274	.028	.078	.004	4	–	–	●	●	●	●	●	–	–

- -SGEM geometry is the first choice for cast iron machining in medium and heavy applications


LNGU15-SGEM





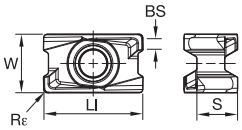
LNGU15-SGEM

LNGU15-SGEM • For Cast Iron Machining

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU542SRGEM	.670	.394	.274	.067	.031	.004	4	–	●	–	–	●	●	●	–	–
LNGU543SRGEM	.670	.394	.274	.053	.047	.004	4	–	●	–	–	●	–	●	–	–
LNGU544SRGEM	.670	.394	.274	.037	.064	.004	4	–	●	–	–	●	●	●	–	–
LNGU545SRGEM	.670	.394	.274	.013	.078	.004	4	–	●	–	–	●	●	●	–	–

- H stands for helical.
- Insert specially design to fit in helical cutters (porcupine).


LNGU15-SGEH



LNGU15-SGEH

● first choice
○ alternate choice

beyond

	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	●	○	●
K		●	○		●	○			
N	●								
S			●	●			○	●	●
H									

LNGU15-SGEH • For Mill 4-15 Helical Cutters (Porcupine Style)

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
LNGU542SRGEH	.670	.394	.274	.071	.031	.004	4	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40%-100%			
.E..GEJ	.005	**.019**	.034	.003	**.014**	.024	.003	**.010**	.018	.002	**.009**	.016	.002	**.008**	.014	.E..GEJ
.E..GE	.009	**.020**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.009**	.016	.004	**.009**	.015	.E..GE
.S..GE	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GE
.S..GEM	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GEM

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Mill 4-15 Starter Kits

Order one of our starting kits and test the performance of our new Mill 4 platform. The kits are set up to serve the majority of shoulder milling applications and workpiece materials, delivered with a cutter body as well as 20 inserts from a premium Kennametal grade.



Order one Mill 4 kit, and experience the next level of shoulder milling!



Detailed order information can be found in the table below:

Mill 4-15 Inch Starter Kits

material group	order number	catalog number	cutter kit	application range	content				
					cutter	qty	insert	grade	qty
P	5972205	M4KITD100Z02W100SGEKCPM40	D1.00 x z2	∇∇	M4D100L1502W100L175	1	LNPU15T608SRGE	KCPM40	20
P	5972206	M4KITD125Z03W100SGEKCPM40	D1.50 x z3	∇∇	M4D125L1503W100L225	1	LNPU15T608SRGE	KCPM40	20
P	5972207	M4KITD150Z04W125SGEKCPM40	D1.50 x z4	∇∇	M4D150L1504W125L225	1	LNPU15T608SRGE	KCPM40	20
P	5972208	M4KITD150Z05S050SGEKCPM40	D1.50 x z5	∇∇	M4D150L1505S050L157	1	LNPU15T608SRGE	KCPM40	20
P	5972209	M4KITD200Z05S075SGEKCPM40	D2.00 x z5	∇∇	M4D200L1505S075L157	1	LNPU15T608SRGE	KCPM40	20
P	5972210	M4KITD200Z06S075SGEKCPM40	D2.00 x z6	∇∇	M4D200L1506S075L157	1	LNPU15T608SRGE	KCPM40	20
P	5972351	M4KITD250Z06S075SGEKCPM40	D2.50 x z6	∇∇	M4D250L1506S075L157	1	LNPU15T608SRGE	KCPM40	20
P	5972352	M4KITD300Z07S100SGEKCPM40	D3.00 x z7	∇∇	M4D300L1507S100L175	1	LNPU15T608SRGE	KCPM40	20
P	5972353	M4KITD400Z08S150SGEKCPM40	D4.00 x z8	∇∇	M4D400L1508S150L200	1	LNPU15T608SRGE	KCPM40	20
M + S	5972354	M4KITD100Z02C100EGEKC725M	D1.00 x z2	∇∇∇	M4D100L1502C100L800	1	LNGU15T608ERGE	KC725M	20
M + S	5972355	M4KITD125Z03C125EGEKC725M	D1.25 x z3	∇∇∇	M4D125L1503C125L800	1	LNGU15T608ERGE	KC725M	20
M + S	5972356	M4KITD150Z05S050EGEKC725M	D1.50 x z5	∇∇∇	M4D150L1505S050L157	1	LNGU15T608ERGE	KC725M	20
M + S	5972357	M4KITD200Z05S075EGEKC725M	D2.00 x z5	∇∇∇	M4D200L1505S075L157	1	LNGU15T608ERGE	KC725M	20
M + S	5972358	M4KITD200Z06S075EGEKC725M	D2.00 x z6	∇∇∇	M4D200L1506S075L157	1	LNGU15T608ERGE	KC725M	20
M + S	5972359	M4KITD250Z06S075EGEKC725M	D2.50 x z6	∇∇∇	M4D250L1506S075L157	1	LNGU15T608ERGE	KC725M	20
M + S	5972360	M4KITD300Z07S100EGEKC725M	D3.00 x z7	∇∇∇	M4D300L1507S100L175	1	LNGU15T608ERGE	KC725M	20
K	5972371	M4KITD100Z02W100SGEMKC520M	D1.00 x z2	∇	M4D100L1502W100L175	1	LNGU15T608SRGEM	KC520M	20
K	5972372	M4KITD125Z03W100SGEMKC520M	D1.25 x z3	∇	M4D125L1503W100L225	1	LNGU15T608SRGEM	KC520M	20
K	5972373	M4KITD150Z05S050SGEMKC520M	D1.50 x z5	∇	M4D150L1505S050L157	1	LNGU15T608SRGEM	KC520M	20
K	5972374	M4KITD200Z06S075SGEMKC520M	D2.00 x z6	∇	M4D200L1506S075L157	1	LNGU15T608SRGEM	KC520M	20
K	5972375	M4KITD250Z07S075SGEMKC520M	D2.50 x z7	∇	M4D250L1507S100L175	1	LNGU15T608SRGEM	KC520M	20
K	5972376	M4KITD300Z09S100SGEMKC520M	D3.00 x z9	∇	M4D300L1509S100L175	1	LNGU15T608SRGEM	KC520M	20
K	5972377	M4KITD400Z11S150SGEMKC520M	D4.00 x z11	∇	M4D400L1511S150L200	1	LNGU15T608SRGEM	KC520M	20

∇ Heavy/Roughing
∇∇ Medium
∇∇∇ Light machining/Finishing

Mill 1-7™

Primary Application

Mill 1-7 is engineered for small-component machining and covers multiple applications, including ramping, slotting, and plunging. Mill 1-7 tools provide solutions for roughing and finishing operations in energy, aerospace, and general engineering, where small-diameter end mills are required.



Features and Benefits

- Mill 1-7 inserts enable the use of higher density cutters, providing greater feed and higher metal removal rates.
- Super positive rake provides soft action and low cutting forces for smooth entry and exit from the component. Run at higher feed rates while using less power.
- Inserts are designed with elliptical cutting edges and are optimized for a straight 90° wall.
- Inserts are available in five grades: KC725M™, KCSM30™, KCPM40™, KCPK30™, and KC522M™.
- Ramping, slotting, and plunging capabilities in one platform.



High-Performance Shoulder Mill



20º rake face angle and 13º clearance angle for soft cutting action and reduced cutting forces.

Internal coolant/air supply.

All pockets are machined into heat-treated material, which guarantees runout and pocket strength.

Elliptical edge generates 90º wall.

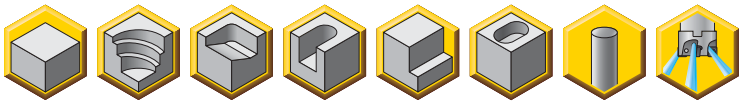
Chip gash designed for excellent chip evacuation.

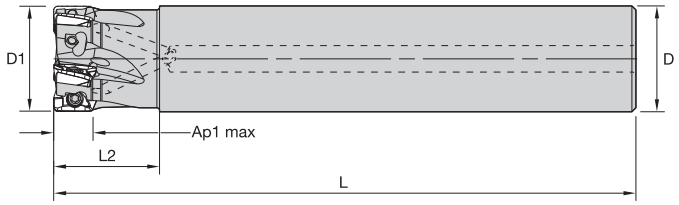
Margin along the main cutting edge and wiper facet for extra strength.

Insert screw: Torx 6.

Increase ramping capability up to 5.5º.

- Mill 90° walls.
- Aggressive ramping rates.
- High speed machining.
- Ramp, slot, plunge, face, and shoulder milling.







Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
5190087	**M1D050E0702C050L400**	.500	.500	4.000	.750	.274	2	4.6°	.19	62680
5190088	**M1D062E0703C062L500**	.620	.625	5.000	1.000	.275	3	3.0°	.37	56010
5190089	**M1D075E0705C075L600**	.745	.750	6.000	1.000	.273	5	2.2°	.66	51100

Spare Parts

D1	insert screw	in. lbs.	Torx wrench
.500	**12148006000**	4.4	**FT6**
.620	**12148006000**	4.4	**FT6**
.745	**12148006000**	4.4	**FT6**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
P3–P4	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
P5–P6	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
M1–M2	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KCPM40
M3	.S..GE	KC725M	**.S..GE**	**KCPK30**	.S..GE	KCPM40
K1–K2	.S..GE	KCPK30	**.S..GE**	**KCPK30**	.S..GE	KCPK30
K3	.S..GE	KCPK30	**.S..GE**	**KCPK30**	.S..GE	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KC725M
S3	.S..GE	KC725M	**.S..GE**	**KC725M**	.S..GE	KCPM40
S4	.S..GE	KC522M	**.S..GE**	**KC725M**	.S..GE	KC725M
H1	–	–	**–**	**–**	–	–

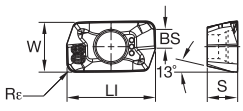
Indexable Inserts

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .276" (7mm).

● first choice
○ alternate choice

	KC522M	KC725M	KCPK30	KCSM30	KCPM40
P	○	●	●		●
M	●	●	○	○	○
K	○		○		
N					
S	●	●		●	
H	●				


EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

catalog number	Ll	W	S	BS	Rε	hm	cutting edges	KC522M	KC725M	KCPK30	KCSM30	KCPM40
EP0708SGE	.322	.185	.110	.067	.031	.003	2	●	●	●	●	●

Recommended Starting Feeds

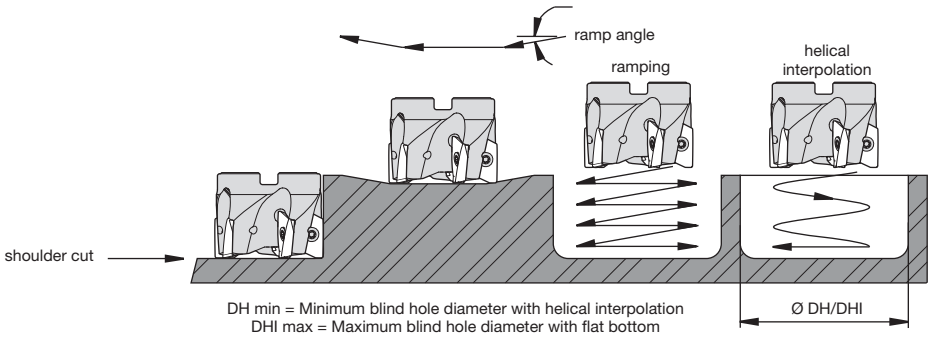
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..GE	.009	**.018**	.027	.007	**.013**	.019	.005	**.010**	.014	.004	**.009**	.013	.004	**.008**	.012	.S..GE

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



cutting diameter	max ramp angle to non-cutting corner tangent	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
.500	4.56°	.628	.886	1.000
.625	2.97°	.877	1.095	1.250
.750	2.17°	1.126	1.362	1.500

NOTE: Max ramp angle decreases as nose radius increases.

Titanium and Stainless Steel Machining with New Milling Grade KCSM40™



Achieving maximum metal removal rates with highly engineering solutions from Kennametal.

- Ideal for roughing and semi-finishing operations.
- Available for the following milling series:
  - Mill 1™
  - Mill 4™
  - Dodeka™
  - MEGA™
  - KSOM™
  - NGE™
  - KSSM™
  - KSSM8+™
  - Rodeka™
  - 5230 Series
  - 7713 Series
  - 7792 Series
- This new carbide substrate provides toughness and fatigue resistance, minimizing the tendency for thermal cracking.
- The new coating provides high hot hardness and high abrasive resistance for unmatched tool life.
- KCSM40 milling grade is the first choice for high metal removal jobs in titanium structural aerospace components.
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Mill 1-10™

High-Performance Shoulder Milling Platform

Primary Application

The multifunctional Mill 1-10 platform works with all tool materials in shoulder, ramp, slot, plunge, and helical milling with one insert style to improve productivity and reduce inventory and machining costs. The super positive cutting rake, soft cutting action, and low cutting forces enable higher feed rates and spindle protection. Innovative insert and cutter body designs offer improved ramping capabilities.



Features and Benefits

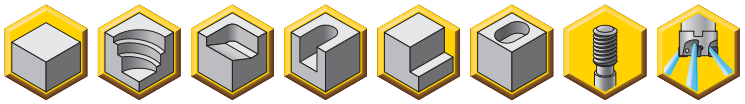
Versatility

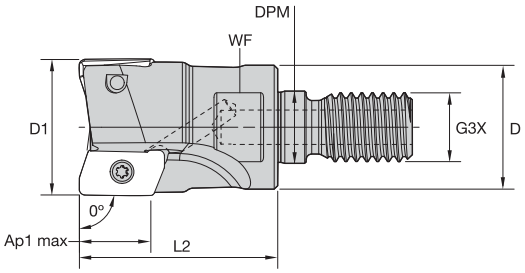
- Works with all tool materials.
- Capable of shoulder, ramp, plunge, and helical milling.
- Internal coolant and air supply.

Advantages

- Optimized soft cutting edge.
- Elliptical edge generates 0° wall.
- Increased ramping capability due to state of the art insert and cutter body design.
- Innovative chip gash design for excellent chip evacuation and perfect cutter body stability.
- All pockets are machined into heat-treated materials, guaranteeing best-in-class runout and pocket strength.
- Inserts feature innovative margin along the main cutting edge, corner nose radius, and wiper facet for perfect edge stability.

- Mill 0° walls.
- Ramping capable for all Mill 1-10.
- Generates superior surface finish.
- High RPM capabilities.







Screw-On End Mills

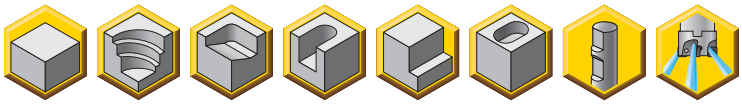
order number	catalog number	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	max ramp angle	lbs	max RPM
3742470	**M1D062E1002CM08**	.625	.512	.335	M8	1.000	10	.396	2	9.5°	.05	53000
3742471	**M1D075E1002CM10**	.750	.709	.413	M10	1.100	15	.398	2	6.5°	.09	45900
3742472	**M1D075E1003CM10**	.750	.709	.413	M10	1.100	15	.398	3	6.5°	.10	45900
3742513	**M1D100E1003CM12**	1.000	.827	.492	M12	1.250	17	.395	3	4.0°	.19	39700
3742514	**M1D100E1004CM12**	1.000	.827	.492	M12	1.250	17	.395	4	4.0°	.18	39700
3742516	**M1D125E1005CM16**	1.250	1.142	.669	M16	1.500	22	.392	5	2.5°	.38	35500
3742517	**M1D150E1006CM16**	1.500	1.142	.669	M16	1.500	22	.390	6	2.0°	.46	32400

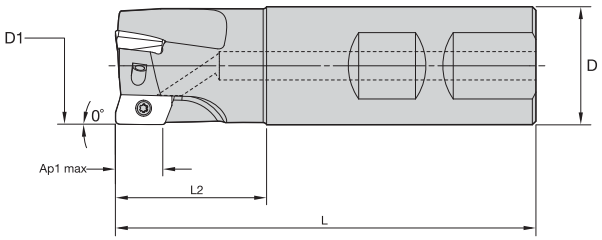
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus wrench
.625	**MS2205**	9.0	**F7IP**
.750	**MS2205**	9.0	**F7IP**
1.000	**MS2205**	9.0	**F7IP**
1.250	**MS2205**	9.0	**F7IP**
1.500	**MS2205**	9.0	**F7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills

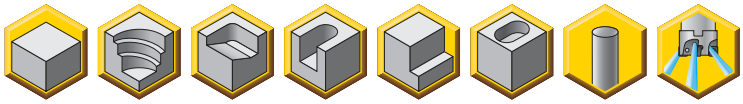
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
3742552	**M1D062E1002W075L100**	.625	.750	3.030	1.000	.396	2	9.5°	.28	50300
3742553	**M1D075E1002W075L110**	.750	.750	3.130	1.100	.398	2	6.5°	.30	45900
3742554	**M1D075E1003W075L110**	.750	.750	3.130	1.100	.398	3	6.5°	.30	45900
3897781	**M1D100E1003W075L125**	1.000	.750	3.280	1.250	.395	3	4.0°	.40	39700
3897782	**M1D100E1004W075L125**	1.000	.750	3.280	1.250	.395	4	4.0°	.40	39700
3742555	**M1D100E1003W100L125**	1.000	1.000	3.530	1.250	.395	3	4.0°	.65	39700
3742556	**M1D100E1004W100L125**	1.000	1.000	3.530	1.250	.395	4	4.0°	.64	39700
3742557	**M1D125E1004W125L160**	1.250	1.250	3.880	1.600	.392	4	2.5°	1.12	35500
3742558	**M1D125E1005W125L160**	1.250	1.250	3.880	1.600	.392	5	2.5°	1.11	35500

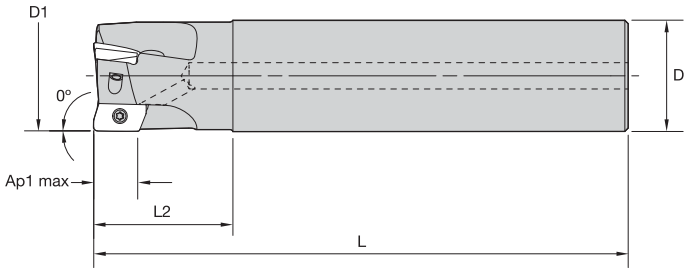
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.625	**MS2205**	9.0	**DT7IP**
.750	**MS2205**	9.0	**DT7IP**
1.000	**MS2205**	9.0	**DT7IP**
1.250	**MS2205**	9.0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.
- High RPM capabilities.







Cylindrical End Mills

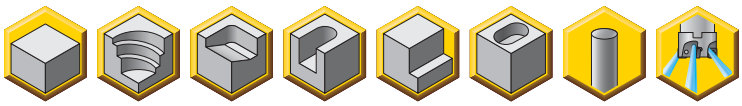
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
3742518	M1D050E1001C062L350	.500	.625	3.500	.800	.404	1	11.5°	.25	56500
3742536	M1D062E1002C062L670	.625	.625	6.700	.999	.396	2	9.5°	.49	50300
3742519	M1D062E1002C075L400	.625	.750	4.000	1.000	.396	2	9.5°	.40	50300
3742520	M1D075E1002C075L450	.750	.750	4.500	1.100	.398	2	6.5°	.46	45900
3742538	M1D075E1002C075L670	.750	.750	6.700	1.250	.398	2	6.5°	.70	45900
3742521	M1D075E1003C075L450	.750	.750	4.500	1.100	.398	3	6.5°	.46	45900
3742540	M1D075E1003C075L670	.750	.750	6.700	1.250	.398	3	6.5°	.71	45900
3742542	M1D088E1003C075L670	.875	.750	6.700	1.250	.396	3	5.0°	.74	42600
3897779	M1D100E1003C075L480	1.000	.750	4.800	1.250	.395	3	4.0°	.58	39700
3897780	M1D100E1004C075L480	1.000	.750	4.800	1.250	.395	4	4.0°	.58	39700
3742522	M1D100E1003C100L480	1.000	1.000	4.800	1.250	.395	3	4.0°	.92	39700
3742543	M1D100E1003C100L800	1.000	1.000	8.000	1.600	.395	3	4.0°	1.59	39700
3742533	M1D100E1004C100L480	1.000	1.000	4.800	1.250	.395	4	4.0°	.92	39700
3742545	M1D100E1004C100L800	1.000	1.000	8.000	1.600	.395	4	4.0°	1.59	39700
3742547	M1D110E1004C100L800	1.100	1.000	8.000	1.600	.394	4	3.3°	1.64	38000
3742534	M1D125E1004C125L520	1.250	1.250	5.200	1.600	.392	4	2.5°	1.57	35500
3742548	M1D125E1004C125L800	1.250	1.250	8.000	1.900	.392	4	2.5°	2.48	35500
3742535	M1D125E1005C125L520	1.250	1.250	5.200	1.600	.392	5	2.5°	1.57	35500
3742550	M1D125E1005C125L800	1.250	1.250	8.000	1.900	.392	5	2.5°	2.48	35500

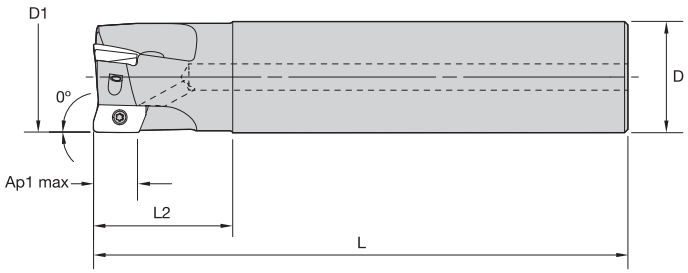
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.500	MS2205	9.0	DT7IP
.625	MS2205	9.0	DT7IP
.750	MS2205	9.0	DT7IP
.875	MS2205	9.0	DT7IP
1.000	MS2205	9.0	DT7IP
1.100	MS2205	9.0	DT7IP
1.250	MS2205	9.0	DT7IP

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.
- High RPM capabilities.







Cylindrical End Mills • Long Length

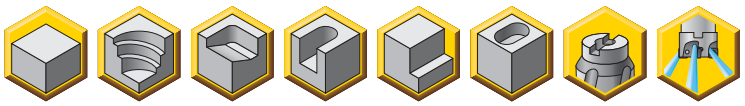
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
3742537	**M1D062E1002C062L670R**	.625	.625	6.688	.987	.384	2	8.0°	.49	50300
3742541	**M1D075E1003C075L670R**	.750	.750	6.689	1.239	.387	3	5.3°	.71	45900
3742544	**M1D100E1003C100L800R**	1.000	1.000	7.989	1.589	.385	3	3.0°	1.59	39700
3742546	**M1D100E1004C100L800R**	1.000	1.000	7.989	1.589	.384	4	3.0°	1.59	39700
3742551	**M1D125E1005C125L800R**	1.250	1.250	7.989	1.889	.382	5	2.0°	2.48	35500

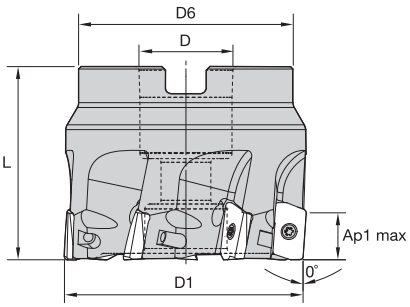
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.625	**MS2205**	9.0	**DT7IP**
.750	**MS2205**	9.0	**DT7IP**
1.000	**MS2205**	9.0	**DT7IP**
1.250	**MS2205**	9.0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
"R" in catalog number designates factory-relieved tool for insert radii greater than .079".

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.
- High RPM capabilities.







Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
3745039	**M1D150E1004S075L157**	1.500	.750	1.420	1.575	.391	4	2.0°	.46	32400
3745040	**M1D150E1006S075L157**	1.500	.750	1.420	1.575	.391	6	2.0°	.49	32400
3745041	**M1D200E1005S075L157**	2.000	.750	1.750	1.575	.389	5	1.5°	.92	28100
3745042	**M1D200E1008S075L157**	2.000	.750	1.750	1.575	.389	8	1.5°	.89	28100
3745043	**M1D250E1006S075L157**	2.500	.750	1.750	1.575	.389	6	1.0°	1.29	25100
3745045	**M1D250E1009S075L157**	2.500	.750	1.750	1.575	.389	9	1.0°	1.26	25100
3745047	**M1D300E1008S100L175**	3.000	1.000	2.190	1.750	.389	8	.8°	2.08	22900
3745048	**M1D300E1010S100L175**	3.000	1.000	2.190	1.750	.389	10	.8°	2.07	22900
3745049	**M1D400E1008S150L200**	4.000	1.500	3.380	2.000	.389	8	.5°	3.82	19800

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver	 socket-head cap screw
1.500	**MS2205**	9.0	**DT7IP**	**S445**
2.000	**MS2205**	9.0	**DT7IP**	**S445**
2.500	**MS2205**	9.0	**DT7IP**	**S445**
3.000	**MS2205**	9.0	**DT7IP**	**S458**
4.000	**MS2205**	9.0	**DT7IP**	**–**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KC725M**	.E..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCPM40**	.E..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.E..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.E..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
H1	.E..LD	KC510M	–	–	–	KC510M

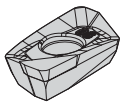
Indexable Inserts

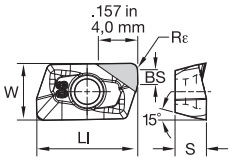
- Roughing and finishing of aluminum and non-ferrous alloys.
- Suitable for wet and dry machining.
- High precision.
- PCD inserts for long tool life.
- Ap1 max = 0.393" (10mm).

● first choice
○ alternate choice

beyond

	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
P				○		○	●		●	●		○	
M						●	●		○	○	○	●	
K				●	●	○		●	○				
N	●	●	●	○									●
S						●	●				●	●	
H													


EDCT-PCD



EDCT-PCD

EDCT-PCD

catalog number	LI	W	S	BS	Rε	hm	cutting edges
EC1004FR-PCD	.474	.266	.148	.083	.016	.001	1
EC1008FR-PCD	.474	.265	.148	.067	.031	.001	1

- Periphery ground and polished rake face.
- Roughing and finishing of aluminum alloys.
- Perfect floor surface finish.
- Ap1 max = 0.393" (10mm).

● first choice
○ alternate choice

beyond

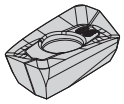
| | | |

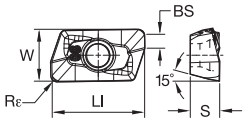
- Finishing and high-precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = .393" (10mm).

● first choice
○ alternate choice

beyond

P					○		○	●		●	●		○			
M							●	●		○	○	○	●			
K					●	●	○		●	○						
N	●	●	●	○										●		
S							●	●				●	●			
H																


EDCT-LD

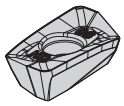


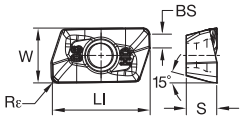
EDCT-LD

EDCT-LD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EC1002ELD	.474	.266	.148	.090	.008	.002	2	–	–	–	–	–	–	●	–	●	–	–	–	–
EC1004ELD	.474	.266	.148	.078	.016	.002	2	–	–	–	–	●	●	●	–	●	–	–	–	–
EC1008ELD	.474	.266	.148	.067	.031	.002	2	–	–	–	●	●	●	●	●	●	●	–	●	–
EC1012ELD	.475	.265	.148	.051	.047	.002	2	–	–	–	–	–	●	●	–	–	–	–	●	–
EC1016ELD	.475	.265	.148	.036	.062	.002	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EC1020ELD	.475	.265	.148	.019	.079	.002	2	–	–	–	–	–	–	●	–	●	–	–	–	–
EC1024ELD	.475	.265	.148	.004	.094	.002	2	–	–	–	–	–	●	●	–	–	–	–	●	–
EC1031ELD	.453	.264	.148	—	.122	.002	2	–	–	–	–	–	–	●	–	●	–	–	●	–

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .393" (10mm)


EDPT-E.HD



EDPT-E.HD

EDPT-E.HD

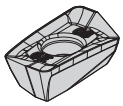
catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EP1004EHD	.474	.266	.148	.082	.016	.003	2	–	–	–	–	●	●	●	●	●	●	–	–	–
EP1008EHD	.474	.265	.148	.067	.031	.003	2	–	–	–	–	●	●	●	●	●	●	–	●	–
EP1010EHD	.474	.265	.148	.059	.039	.003	2	–	–	–	–	–	●	●	●	●	–	–	–	–
EP1012EHD	.475	.265	.148	.051	.047	.003	2	–	–	–	–	●	●	●	–	●	●	–	●	–
EP1016EHD	.475	.265	.148	.036	.062	.003	2	–	–	–	–	–	●	●	–	●	●	●	●	–
EP1020EHD	.475	.265	.148	.019	.079	.003	2	–	–	–	–	–	–	●	–	●	●	–	●	–
EP1024EHD	.475	.265	.148	.004	.094	.003	2	–	–	–	–	–	–	●	–	●	–	–	●	–
EP1031EHD	.453	.264	.148	—	.122	.003	2	–	–	–	–	–	●	●	–	●	–	–	●	–

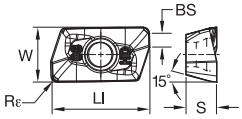
- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .393" (10mm).

● first choice
○ alternate choice

beyond

P				○		○	●		●	●		○			
M						●	●		○	○	○	●			
K				●	●	○		●	○						
N	●	●	●	○											●
S						●	●				●	●			
H															


EDPT-S.GE

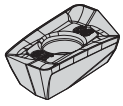


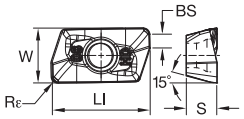
EDPT-S.GE

EDPT-S.GE

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EP1004SGE	.474	.266	.148	.082	.016	.005	2	–	–	–	–	–	●	●	–	●	●	–	–	–
EP1008SGE	.474	.265	.148	.067	.031	.005	2	–	–	–	–	–	●	●	–	●	●	–	●	–
EP1012SGE	.475	.265	.148	.051	.047	.005	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EP1016SGE	.475	.265	.148	.036	.062	.005	2	–	–	–	–	–	●	●	–	●	–	–	●	–
EP1031SGE	.453	.264	.148	—	.122	.005	2	–	–	–	–	–	●	●	–	●	–	–	●	–

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.393" (10mm).


EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KD1410
EP1004SGD	.474	.266	.148	.082	.016	.005	2	–	–	–	–	–	–	●	●	●	–	–	–	–
EP1008SGD	.474	.265	.148	.067	.031	.005	2	–	–	–	–	●	–	●	●	●	●	–	–	–
EP1012SGD	.475	.265	.148	.051	.047	.005	2	–	–	–	–	●	–	●	●	●	–	–	–	–
EP1016SGD	.475	.265	.148	.036	.062	.005	2	–	–	–	–	–	–	●	–	●	–	–	–	–

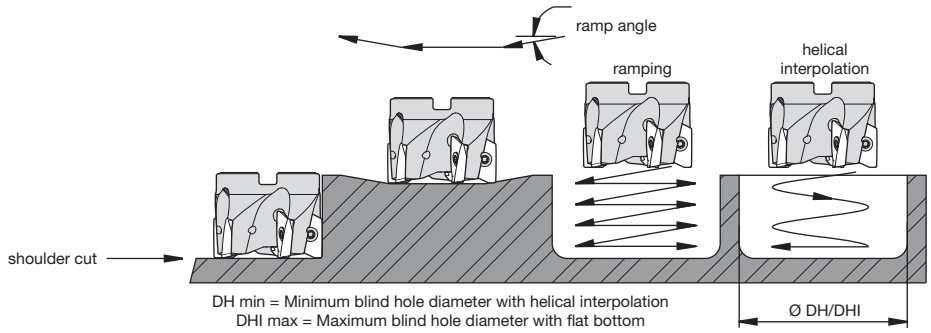
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.F..LDJ
.F..-PCD	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.F..-PCD
.E..LDJ	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.E..LDJ
.E..LD	.005	**.014**	.023	.004	**.010**	.016	.003	**.008**	.012	.002	**.007**	.011	.002	**.006**	.010	.E..LD
.S..GE	.009	**.018**	.028	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.S..GE
.S..GD	.009	**.019**	.028	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.S..GD
.E..HD	.009	**.020**	.032	.007	**.014**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.E..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



insert style	cutting diameter	max ramp angle to non-cutting corner tangent	max ramp angle to steel body interference	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill-1, 10mm	.500	not recommended	not recommended	not recommended	not recommended	not recommended
Mill-1, 10mm	.625	9.9°	12.5°	.758	1.121	1.250
Mill-1, 10mm	.750	6.8°	9.7°	.998	1.367	1.500
Mill-1, 10mm	.875	5.1°	6.8°	1.248	1.617	1.750
Mill-1, 10mm	1.000	4.1°	5.1°	1.498	1.867	2.000
Mill-1, 10mm	1.100	3.5°	4.3°	1.698	2.067	2.200
Mill-1, 10mm	1.250	2.9°	3.4°	1.999	2.367	2.500
Mill-1, 10mm	1.500	2.2°	2.4°	2.499	2.867	3.000
Mill-1, 10mm	2.000	1.2°	1.6°	3.509	3.876	4.000
Mill-1, 10mm	2.500	1.2°	1.2°	4.509	4.876	5.000
Mill-1, 10mm	3.000	0.9°	1.0°	5.509	5.876	6.000
Mill-1, 10mm	4.000	0.7°	0.7°	7.509	7.876	8.000

NOTE: Max ramp angle decreases as nose radius increases.

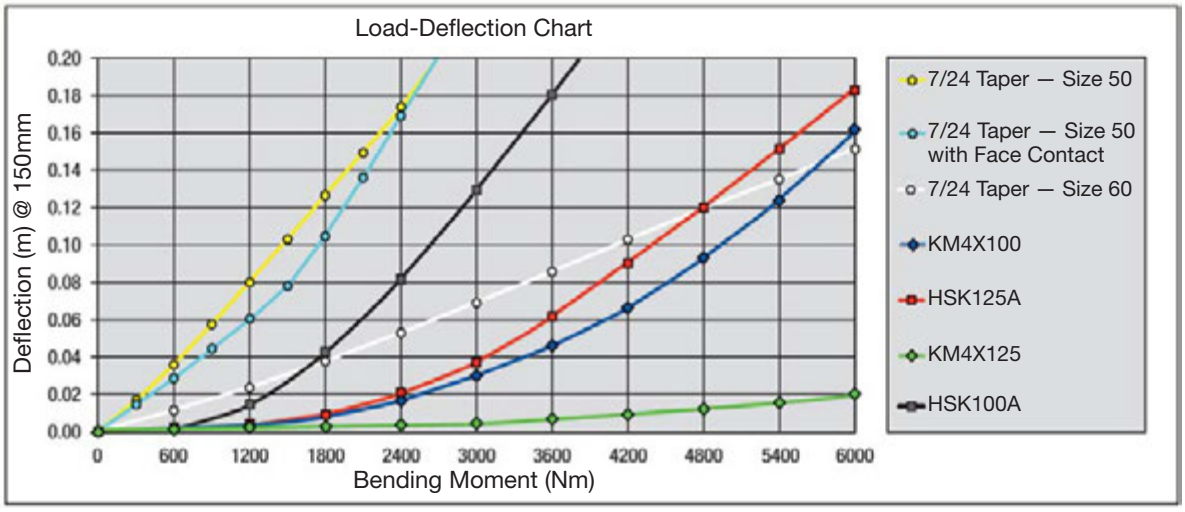
KM4X™



The Latest Innovation in Spindle Interface Technology!

Dramatically increase your metal removal rates when machining high-temperature alloys!

- Run jobs at significantly faster feeds and speeds than what is achievable with other spindle interfaces.
- Unique use of clamping force and interference level increases clamping capability 2 to 3 times.
- Achieve lower cost of ownership, increased throughput, and superior results.



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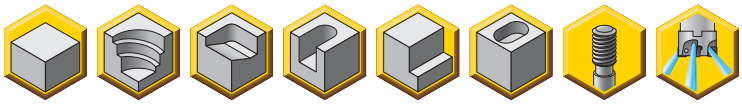
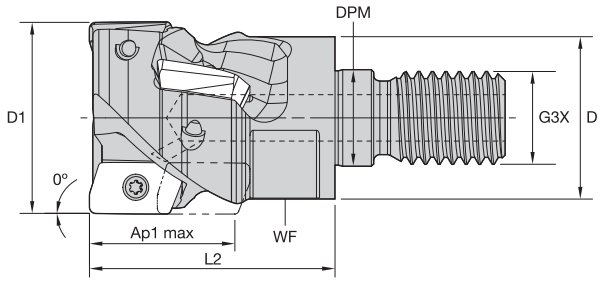
kennametal.com

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.







Screw-On Helical Mills

order number	catalog number	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3746106	**M1HR125ED10M16Z2L160C4**	1.250	1.142	.669	M16	1.614	24	.735	4	2	2.5°	.43	29400
3746107	**M1HR125ED10M16Z3L160C6**	1.250	1.142	.669	M16	1.614	24	.735	6	3	2.5°	.40	29400

Spare Parts



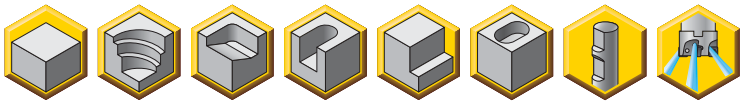


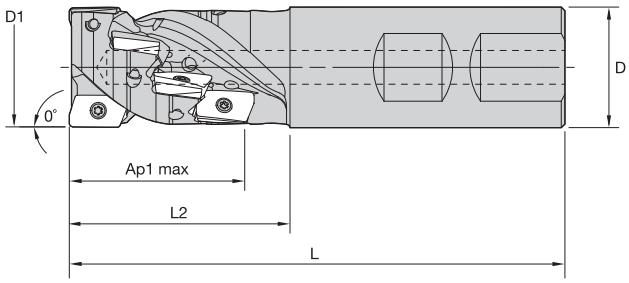


D1	insert screw	in. lbs.	Torx Plus wrench
1.250	**MS2205**	9.0	**F7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.







Weldon® Helical Mills

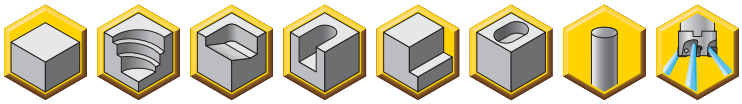
order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3746093	**M1HR075ED10W075Z2L140C6**	.750	.750	3.422	1.392	1.093	6	2	6.5°	.30	38000
3746097	**M1HR100ED10W100Z2L180C8**	1.000	1.000	4.071	1.790	1.432	8	2	4.0°	.64	32900
3746098	**M1HR125ED10W125Z2L210C10**	1.250	1.250	4.371	2.090	1.764	10	2	2.5°	1.16	29400
3746099	**M1HR125ED10W125Z3L210C15**	1.250	1.250	4.371	2.090	1.764	15	3	2.5°	1.08	29400

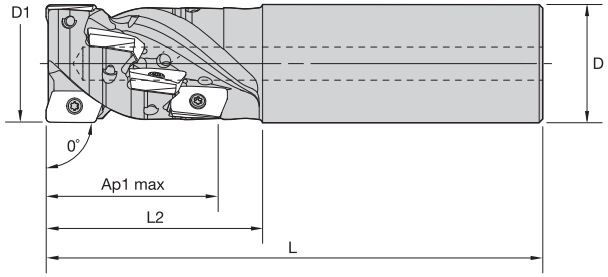
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.750	**MS2205**	9.0	**DT7IP**
1.000	**MS2205**	9.0	**DT7IP**
1.250	**MS2205**	9.0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.







Cylindrical Helical Mills

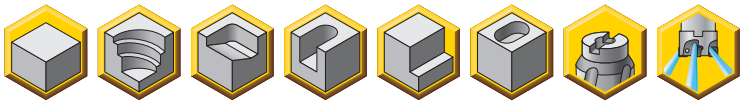
order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3746100	**M1HR075ED10C075Z2L110C4**	.750	.750	4.406	1.053	.745	4	2	6.5°	.47	38000
3746101	**M1HR100ED10C100Z2L110C4**	1.000	1.000	4.800	1.053	.740	4	2	4.0°	.89	32900

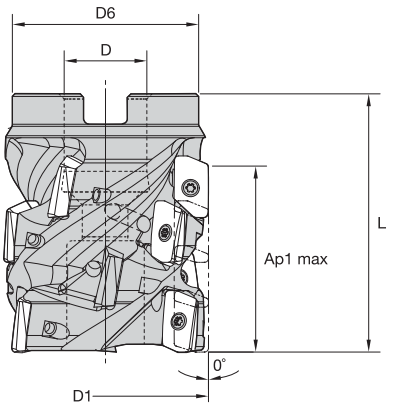
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.750	**MS2205**	9.0	**DT7IP**
1.000	**MS2205**	9.0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping rates.
- Generates superior surface finish.







Helical Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3746108	**M1HR150ED10S075Z3L200C12**	1.500	.750	1.421	2.000	1.417	12	3	2.0°	.56	26900
3746109	**M1HR150ED10S075Z5L200C20**	1.500	.750	1.420	2.000	1.417	20	5	2.0°	.51	26900
3746110	**M1HR200ED10S075Z3L240C15**	2.000	.750	1.750	2.400	1.745	15	3	1.5°	1.47	23300
3746111	**M1HR200ED10S075Z5L240C25**	2.000	.750	1.750	2.400	1.745	25	5	1.5°	1.31	23300

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.500	**MS2205**	9.0	**DT7IP**
2.000	**MS2205**	9.0	**DT7IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Insert Selection Guide

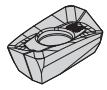
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..LD	KCSM40	**.S..GD**	**KC725M**	.E..HD	KCSM40
M3	.E..LD	KCSM40	**.S..GD**	**KCPM40**	.E..HD	KCSM40
K1–K2	.E..LD	KCK15	**.S..GD**	**KCK15**	.E..HD	KCK15
K3	.E..LD	KC520M	**.S..GD**	**KC520M**	.E..HD	KC520M
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LD	KC510M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
S4	.E..LD	KCSM40	**.S..GE**	**KCSM40**	.E..HD	KCSM40
H1	.E..LD	KC510M	–	–	–	–

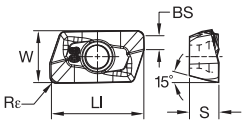
Indexable Inserts

- Periphery ground and polished rake face.
- Roughing and finishing of aluminum alloys.
- Perfect floor surface finish.
- Ap1 max = 0.393" (10mm).

● first choice
○ alternate choice

		K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		○	●		●	●		○
M							●	●		○	○	○	●
K					●	●	○		●	○			
N		●	●	●	○								
S							●	●				●	●
H													


EDCT-F.LDJ



EDCT-F.LDJ

EDCT-F.LDJ

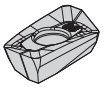
catalog number	Ll	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1002FLDJ	.474	.266	.148	.090	.008	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1004FLDJ	.474	.266	.148	.078	.016	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1008FLDJ	.474	.265	.148	.067	.031	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1012FLDJ	.475	.265	.148	.051	.047	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1016FLDJ	.475	.265	.148	.036	.062	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1020FLDJ	.475	.265	.148	.019	.079	.001	2	–	●	–	–	–	–	–	–	–	–	–	–
EC1031FLDJ	.453	.264	.148	—	.122	.001	2	–	●	–	–	–	–	–	–	–	–	–	–

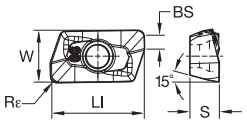
- Perfect floor surface finish.
- Ap1 max = 0.393" (10mm).

beyond

● first choice
○ alternate choice

P					○		○	●		●	●		○
M							●	●		○	○	○	●
K					●	●	○		●	○			
N	●	●	●	○									
S							●	●				●	●
H													


EDCT-E.LDJ

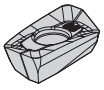


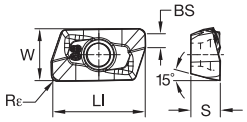
EDCT-E.LDJ

EDCT-E.LDJ

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1004ELDJ	.474	.266	.148	.078	.016	.001	2	–	–	●	–	–	–	–	–	–	–	–	–
EC1008ELDJ	.474	.265	.148	.067	.031	.001	2	–	–	●	–	–	–	–	–	–	–	–	–
EC1016ELDJ	.475	.265	.148	.036	.062	.001	2	–	–	●	–	–	–	–	–	–	–	–	–
EC1020ELDJ	.475	.265	.148	.019	.079	.001	2	–	–	●	–	–	–	–	–	–	–	–	–
EC1024ELDJ	.475	.265	.148	.004	.094	.001	2	–	–	●	–	–	–	–	–	–	–	–	–

- Finishing and high precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 0.393" (10mm).


EDCT-LD

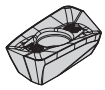


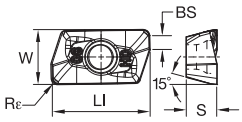
EDCT-LD

EDCT-LD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1002ELD	.474	.266	.148	.090	.008	.002	2	–	–	–	–	–	–	●	–	●	–	–	–
EC1004ELD	.474	.266	.148	.078	.016	.002	2	–	–	–	–	●	●	●	–	●	–	–	–
EC1008ELD	.474	.266	.148	.067	.031	.002	2	–	–	–	●	●	●	●	●	●	–	–	–
EC1012ELD	.475	.265	.148	.051	.047	.002	2	–	–	–	–	–	●	●	–	–	–	–	–
EC1016ELD	.475	.265	.148	.036	.062	.002	2	–	–	–	–	–	●	●	–	●	–	–	–
EC1020ELD	.475	.265	.148	.019	.079	.002	2	–	–	–	–	–	–	●	–	●	–	–	–
EC1024ELD	.475	.265	.148	.004	.094	.002	2	–	–	–	–	–	●	●	–	–	–	–	–
EC1031ELD	.453	.264	.148	—	.122	.002	2	–	–	–	–	–	–	–	–	●	–	–	–

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.393" (10mm).


EDPT-E.HD



EDPT-E.HD

● first choice
○ alternate choice

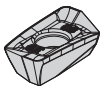
beyond

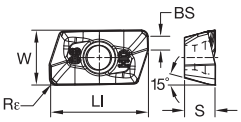
		K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		○	●		●	●		○
M							●	●		○	○	○	●
K					●	●	○		●	○			
N		●	●	●	○								
S							●	●				●	●
H													

EDPT-E.HD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1004EHD	.474	.266	.148	.082	.016	.003	2	–	–	–	–	●	●	●	●	●	–	–	–
EP1008EHD	.474	.265	.148	.067	.031	.003	2	–	–	–	–	●	●	●	●	●	–	–	–
EP1010EHD	.474	.265	.148	.059	.039	.003	2	–	–	–	–	–	●	●	●	●	–	–	–
EP1012EHD	.475	.265	.148	.051	.047	.003	2	–	–	–	–	●	●	●	–	●	–	–	–
EP1016EHD	.475	.265	.148	.036	.062	.003	2	–	–	–	–	–	●	●	–	●	–	–	–
EP1020EHD	.475	.265	.148	.019	.079	.003	2	–	–	–	–	–	–	●	–	●	–	–	–
EP1024EHD	.475	.265	.148	.004	.094	.003	2	–	–	–	–	–	–	●	–	●	–	–	–
EP1031EHD	.453	.264	.148	—	.122	.003	2	–	–	–	–	–	●	●	–	●	–	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.393" (10mm).


EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

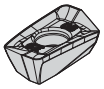
catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1004SGE	.474	.266	.148	.082	.016	.005	2	–	–	–	–	–	●	●	–	●	–	–	–
EP1008SGE	.474	.265	.148	.067	.031	.005	2	–	–	–	–	–	●	●	–	●	–	–	–
EP1012SGE	.475	.265	.148	.051	.047	.005	2	–	–	–	–	–	●	●	–	●	–	–	–
EP1016SGE	.475	.265	.148	.036	.062	.005	2	–	–	–	–	–	●	●	–	●	–	–	–
EP1031SGE	.453	.264	.148	—	.122	.005	2	–	–	–	–	–	●	●	–	●	–	–	–

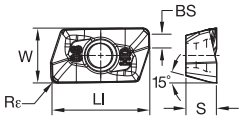
- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.393" (10mm).

● first choice
○ alternate choice

beyond

	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○		○	●		●	●		○
M						●	●		○	○	○	●
K				●	●	○		●	○			
N	●	●	●	○								
S						●	●				●	●
H												


EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges
EP1004SGD	.474	.266	.148	.082	.016	.005	2
EP1008SGD	.474	.265	.148	.067	.031	.005	2
EP1012SGD	.475	.265	.148	.051	.047	.005	2
EP1016SGD	.475	.265	.148	.036	.062	.005	2

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.F..LDJ
.F..-PCD	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.F..-PCD
.E..LDJ	.005	**.014**	.023	.003	**.010**	.017	.003	**.008**	.013	.002	**.007**	.011	.002	**.006**	.010	.E..LDJ
.E..LD	.005	**.014**	.023	.004	**.010**	.016	.003	**.008**	.012	.002	**.007**	.011	.002	**.006**	.010	.E..LD
.S..GE	.009	**.018**	.028	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.S..GE
.S..GD	.009	**.019**	.028	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.S..GD
.E..HD	.009	**.020**	.032	.007	**.014**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.E..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Mill 1-14™

Primary Application

The Mill 1-14 series is a versatile, functional cutter system for a range of cutting tasks. Mill 1-14 cutters can be used for profiling, slotting, ramping, helical interpolation, circular interpolation, and other milling applications. It's a single tool with multi-functional benefits. Mill 1-14 inserts are specially designed to add cutting versatility. Innovative micro-geometry features contribute greatly to enhanced performance, various rake angles, negative T-land, and small hone. Results include significantly reduced cycle times and lower cutting forces. Test results in producing 0° walls have proven excellent with the GD2 geometry.





Features and Benefits

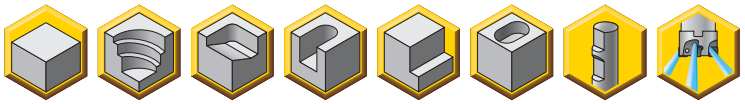
Features

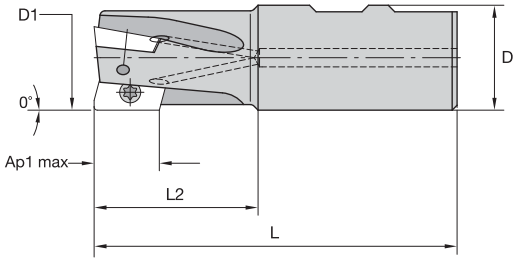
- Insert geometries and grades for most workpiece materials.
- Insert radii from .016" (0,15mm) up to .157" (4mm).
- Axial depth of cut up to .551" (14mm).
- Beyond™ grade technology.

Benefits

- Easy cutting action, even on entry and exiting the workpiece.
- Polished geometry for aluminum machining.
- Slotting, profiling, ramping, helical interpolation, and plunging.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills

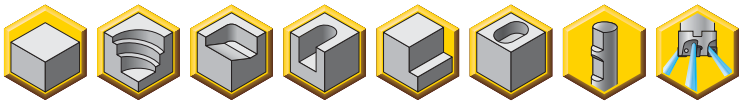
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2624243	**M1D062E1401W075L150**	.625	.750	3.530	1.500	.580	1	25.0°	.31	8000
2623856	**M1D075E1402W075L175**	.750	.750	3.780	1.750	.580	2	18.0°	.35	49600
2624245	**M1D088E1402W100L175**	.875	1.000	4.030	1.750	.580	2	13.2°	.66	43500
2624189	**M1D097E1403W100L175**	.970	1.000	4.030	1.750	.580	3	10.9°	.69	40100
2623857	**M1D100E1402W100L175**	1.000	1.000	4.030	1.750	.580	2	10.4°	.71	39200
2479508	**M1D100E1403W100L175**	1.000	1.000	4.030	1.750	.580	3	10.2°	.71	39200
2479506	**M1D125E1404W125L225**	1.250	1.250	4.530	2.250	.570	4	7.2°	1.25	33400

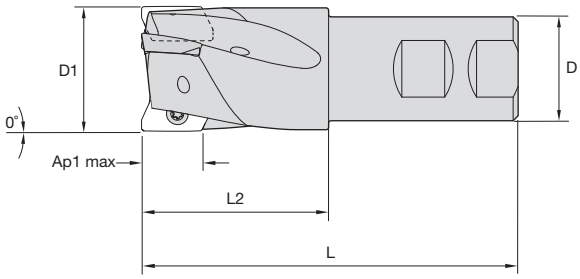
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.625	**MS2167**	20.0	**DT9IP**
.750	**MS2167**	20.0	**DT9IP**
.875	**MS2166**	20.0	**DT9IP**
.970	**MS2166**	20.0	**DT9IP**
1.000	**MS2166**	20.0	**DT9IP**
1.250	**MS2166**	20.0	**DT9IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills • Reduced Shank

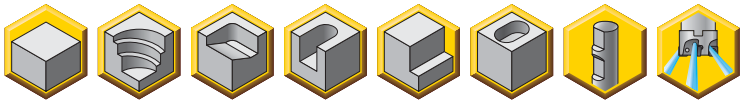
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2479507	**M1D100E1403W075L175**	1.000	.750	3.780	1.750	.575	3	10.4°	.46	39200
2624199	**M1D100E1403W100L175R**	1.000	1.000	4.010	1.730	.580	3	10.4°	.70	39200
2623858	**M1D125E1403W100L225**	1.250	1.000	4.530	2.250	.571	3	7.2°	.94	33400
2479512	**M1D125E1404W100L225**	1.250	1.000	4.530	2.250	.571	4	7.2°	.97	33400
2624201	**M1D125E1404W125L225R**	1.250	1.250	4.510	2.230	.570	4	7.2°	1.25	33400
2624194	**M1D150E1404W125L225**	1.500	1.250	4.530	2.250	.567	4	5.5°	1.49	29600
2623859	**M1D150E1405W125L225**	1.500	1.250	4.530	2.250	.567	5	5.5°	1.53	29600
2624271	**M1D150E1405W125L225R**	1.500	1.250	4.510	2.230	.555	5	5.5°	1.53	29600

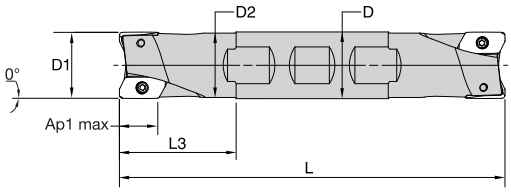
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
"R" in catalog number designates factory-relieved tool for insert radii greater than .079".

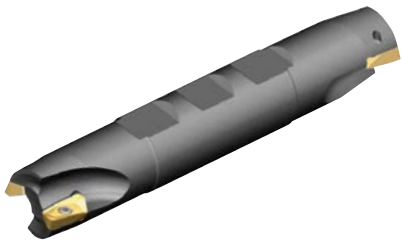
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2166**	20	**DT9IP**
1.250	**MS2166**	20	**DT9IP**
1.500	**MS2166**	20	**DT9IP**

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills • Double Ended

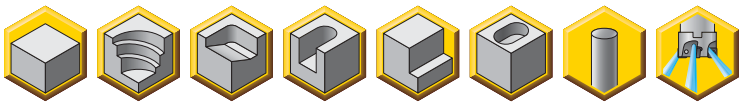
order number	catalog number	D1	D	D2	L	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2624188	**M1D075E1402W075L175DE**	.750	.750	.681	5.530	1.750	.551	2	18.0°	.53	49600
2624191	**M1D100E1403W100L175DE**	1.000	1.000	.950	5.780	1.750	.580	3	10.2°	1.00	39200

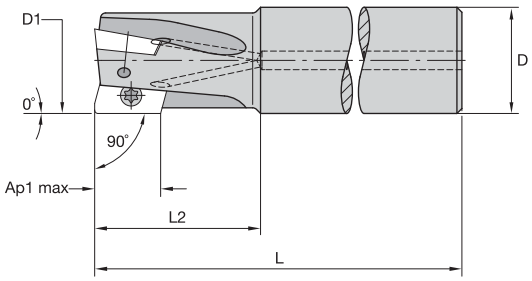
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.750	**MS2167**	20	**DT9IP**
1.000	**MS2166**	20	**DT9IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Aggressive ramping angles.
- Generates superior surface finish.
- Mill 0° walls.
- High RPM capabilities.







Cylindrical End Mills

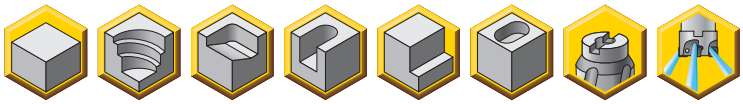
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2624187	**M1D075E1402C075L650**	.750	.750	6.500	1.750	.570	2	18.5°	.65	49600
2624197	**M1D075E1402C075L800**	.750	.750	8.000	1.750	.570	2	18.5°	.82	49600
2624198	**M1D100E1402C100L1000**	1.000	1.000	10.000	1.750	.570	2	10.2°	1.91	39200
2624190	**M1D100E1403C100L750**	1.000	1.000	7.500	1.750	.570	3	10.2°	1.44	39200
2624200	**M1D125E1403C125L1000**	1.250	1.250	10.000	2.250	.570	3	6.9°	3.09	33400
2624192	**M1D125E1404C125L800**	1.250	1.250	8.000	2.250	.570	4	6.9°	2.44	33400
5903140	**M1D150E1403C125L1000**	1.500	1.250	10.000	2.250	.560	3	5.2°	3.08	29600
2624202	**M1D150E1404C125L1000**	1.500	1.250	10.000	2.250	.560	4	5.2°	3.31	29600
2624250	**M1D150E1405C125L800**	1.500	1.250	8.000	2.250	.560	5	5.2°	2.65	29600

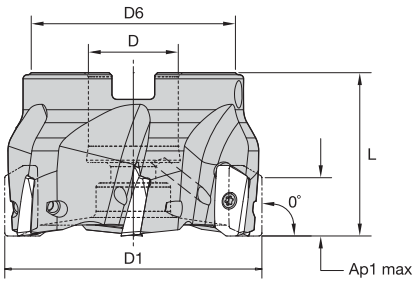
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.750	**MS2167**	20	**DT9IP**
1.000	**MS2166**	20	**DT9IP**
1.250	**MS2166**	20	**DT9IP**
1.500	**MS2166**	20	**DT9IP**

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Shell Mills

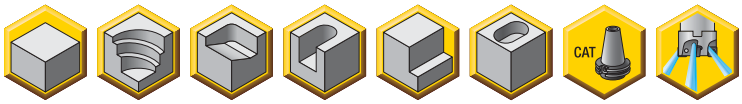
order number	catalog number	D1	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
2479509	M1D125E1404S050L157	1.250	.500	1.204	1.575	.570	4	6.9°	.28	33400
2624255	M1D150E1405S075L157	1.500	.750	1.414	1.575	.560	5	5.2°	.39	29600
5898598	M1D200E1403S075L157	2.000	.750	1.750	1.575	.560	3	3.4°	.67	24700
2624270	M1D200E1405S075L157	2.000	.750	1.750	1.575	.560	5	3.4°	.72	24700
2479510	M1D200E1406S075L157	2.000	.750	1.750	1.575	.560	6	3.4°	.70	24700
2624274	M1D250E1405S075L157	2.500	.750	1.750	1.575	.560	5	2.5°	1.04	21700
2624254	M1D250E1407S075L157	2.500	.750	1.750	1.575	.560	7	2.5°	1.04	21700
5898597	M1D300E1404S100L175	3.000	1.000	2.188	1.750	.560	4	2.0°	1.56	19600
2624277	M1D300E1406S100L175	3.000	1.000	2.188	1.750	.560	6	2.0°	1.79	19600
2624275	M1D300E1408S100L175	3.000	1.000	2.188	1.750	.560	8	2.0°	1.78	19600
2624279	M1D400E1408S150L200	4.000	1.500	3.625	2.000	.560	8	1.5°	3.97	16700
2624278	M1D400E1410S150L200	4.000	1.500	3.625	2.000	.560	10	1.5°	3.99	16700

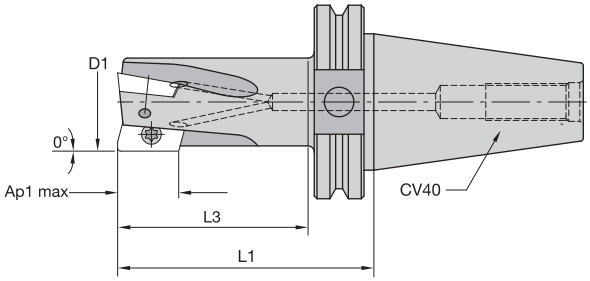
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver	socket-head cap screw with coolant groove	coolant screw assembly
1.250	MS2166	20	DT9IP	S422CG	–
1.500	MS2166	20	DT9IP	S445CG	–
2.000	MS2166	20	DT9IP	S445CG	–
2.500	MS2166	20	DT9IP	S445CG	–
3.000	MS2166	20	DT9IP	S2044CG	–
4.000	MS2166	20	DT9IP	–	S2165C

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







End Mills • Steep Taper CV40

order number	catalog number	CSMS system size	D1	L1	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2624246	**M1D100E1403CV40L300**	CV40	1.000	3.000	1.500	.570	3	10.2°	2.40	39200
2624248	**M1D125E1404CV40L300**	CV40	1.250	3.000	1.500	.570	4	6.9°	2.56	33400
2624253	**M1D150E1405CV40L300**	CV40	1.500	3.000	1.625	.560	5	5.2°	2.72	29600

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2166**	20	**DT9IP**
1.250	**MS2166**	20	**DT9IP**
1.500	**MS2166**	20	**DT9IP**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
P3–P4	.S..GE	KCPK30	**.S..GD2**	**KCPK30**	.E..HD2	KCPK30
P5–P6	.S..GE	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
M1–M2	.E..LD	KC522M	**.S..GD2**	**KC725M**	.E..HD2	KC522M
M3	.E..GD	KCSM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
K1–K2	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
K3	.S..GE	KCPM20	**.S..GD2**	**KC520M**	.E..HD2	KC520M
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD2**	**KCSM30**	.E..HD2	KCSM30
S3	.E..GD	KCSM40	**.S..GD2**	**KCSM30**	.E..HD2	KCSM30
S4	.S..GE	KCSM40	**.S..GD2**	**KCSM30**	.E..HD2	KCSM30
H1	–	–	**–**	**–**	–	–

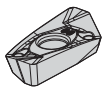
Indexable Inserts

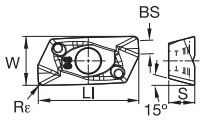
- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).

● first choice
○ alternate choice

beyond

	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N	●	●								
S				●	●				●	●
H										


EDCT-F.LDJ



EDCT-F.LDJ

EDCT-F.LDJ

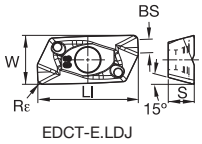
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1402FLDJ	.687	.334	.177	.124	.008	.001	2	●	–	–	–	–	–	–	–	–	–
EC1404FLDJ	.687	.334	.177	.116	.016	.001	2	●	–	–	–	–	–	–	–	–	–
EC1408FLDJ	.688	.334	.177	.101	.031	.001	2	●	–	–	–	–	–	–	–	–	–
EC1412FLDJ	.688	.333	.177	.085	.047	.001	2	●	–	–	–	–	–	–	–	–	–
EC1416FLDJ	.688	.333	.177	.070	.062	.001	2	●	–	–	–	–	–	–	–	–	–
EC1431FLDJ	.689	.331	.177	.010	.122	.001	2	●	–	–	–	–	–	–	–	–	–
EC1440FLDJ	.651	.329	.177	—	.157	.001	2	●	–	–	–	–	–	–	–	–	–

- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).

● first choice
○ alternate choice

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											


EDCT-E.LDJ

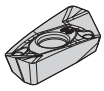


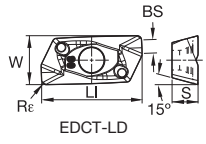
EDCT-E.LDJ

EDCT-E.LDJ

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404ELDJ	.687	.334	.177	.116	.016	.001	2	–	●	–	–	–	–	–	–	–	–
EC1408ELDJ	.688	.334	.177	.101	.031	.001	2	–	●	–	–	–	–	–	–	–	–
EC1424ELDJ	.689	.332	.177	.039	.094	.001	2	–	●	–	–	–	–	–	–	–	–

- Finishing and high-precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).


EDCT-LD

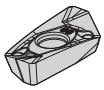


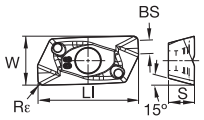
EDCT-LD

EDCT-LD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404ELD	.687	.334	.177	.116	.016	.002	2	–	–	–	●	–	–	–	–	–	–
EC1408ELD	.688	.334	.177	.101	.031	.002	2	–	–	–	●	–	–	–	–	–	–
EC1412ELD	.688	.333	.177	.085	.047	.002	2	–	–	–	●	–	–	–	–	–	–
EC1416ELD	.688	.333	.177	.070	.062	.002	2	–	–	–	●	–	–	–	–	–	–
EC1431ELD	.689	.331	.177	.010	.122	.002	2	–	–	–	●	–	–	–	–	–	–

- Light machining and finish applications.
- Medium hone for increased edge protection.
- Periphery ground for high-precision machining.
- Ap1 max = .551" (14mm).


EDCT-E.GD



EDCT-E.GD

beyond

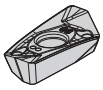
● first choice
○ alternate choice

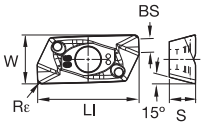
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											

EDCT-E.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404EGD	.687	.334	.177	.116	.016	.002	2	–	–	–	–	●	–	–	●	–	–
EC1408EGD	.688	.334	.177	.101	.031	.002	2	–	–	–	–	●	–	–	●	–	●
EC1412EGD	.688	.333	.177	.085	.047	.002	2	–	–	–	–	●	–	–	–	–	●
EC1416EGD	.688	.333	.177	.070	.062	.002	2	–	–	–	–	●	–	–	–	–	●
EC1431EGD	.689	.331	.177	.010	.122	.002	2	–	–	–	–	●	–	–	–	–	●

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .551" (14mm).


EDPT-E.HD



EDPT-E.HD

EDPT-E.HD

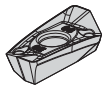
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1404EHD	.687	.330	.177	.116	.016	.003	2	–	–	●	●	●	●	●	●	–	–
EP1408EHD	.688	.330	.177	.101	.031	.003	2	–	–	●	●	●	●	●	●	–	●
EP1412EHD	.688	.329	.177	.085	.047	.003	2	–	–	●	●	●	●	●	●	–	●
EP1416EHD	.688	.329	.177	.070	.062	.003	2	–	–	–	●	●	●	●	●	●	●
EP1420EHD	.688	.329	.177	.054	.079	.003	2	–	–	–	●	●	–	●	–	–	●
EP1424EHD	.689	.328	.177	.039	.094	.003	2	–	–	–	●	●	–	●	●	–	●
EP1431EHD	.689	.327	.177	.010	.122	.003	2	–	–	–	●	●	–	●	–	●	●
EP1440EHD	.651	.325	.177	—	.157	.003	2	–	–	–	●	●	–	●	–	●	●

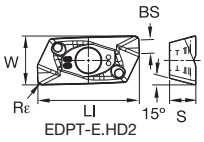
- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).

beyond

P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N	●	●									
S					●	●				●	●
H											

● first choice
○ alternate choice


EDPT-E.HD2

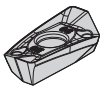


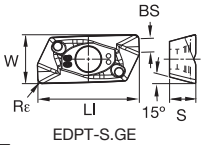
EDPT-E.HD2

EDPT-E.HD2

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1408EHD2	.688	.330	.177	.101	.031	.003	2	–	–	–	●	●	●	●	●	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .551" (14mm).


EDPT-S.GE

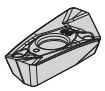


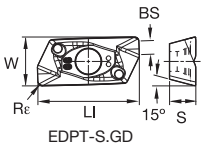
EDPT-S.GE

EDPT-S.GE

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1404SGE	.686	.323	.175	.110	.016	.005	2	–	–	–	●	●	–	●	–	–	–
EP1408SGE	.686	.322	.175	.094	.031	.005	2	–	–	–	●	●	–	●	●	–	●
EP1412SGE	.687	.320	.175	.078	.047	.005	2	–	–	–	●	●	–	●	–	–	●
EP1416SGE	.687	.320	.175	.062	.062	.005	2	–	–	–	●	●	–	●	–	–	●
EP1431SGE	.687	.318	.175	.005	.122	.005	2	–	–	–	–	●	–	●	–	–	●

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .551" (14mm).


EDPT-S.GD



EDPT-S.GD

EDPT-S.GD

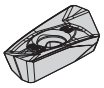
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1408SGD	.688	.330	.177	.101	.031	.004	2	–	–	●	–	●	–	●	●	–	●
EP1412SGD	.688	.329	.177	.085	.047	.004	2	–	–	●	–	●	–	●	●	–	●
EP1416SGD	.688	.329	.177	.070	.062	.004	2	–	–	●	–	●	–	●	●	–	●

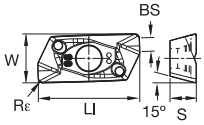
- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .551" (14mm).

● first choice
○ alternate choice

beyond

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											


EDPT-S.GD2



EDPT-S.GD2

EDPT-S.GD2

catalog number	Ll	W	S	BS	Rε	hm	cutting edges
EP1408SGD2	.688	.330	.177	.103	.031	.004	2

Recommended Starting Feeds

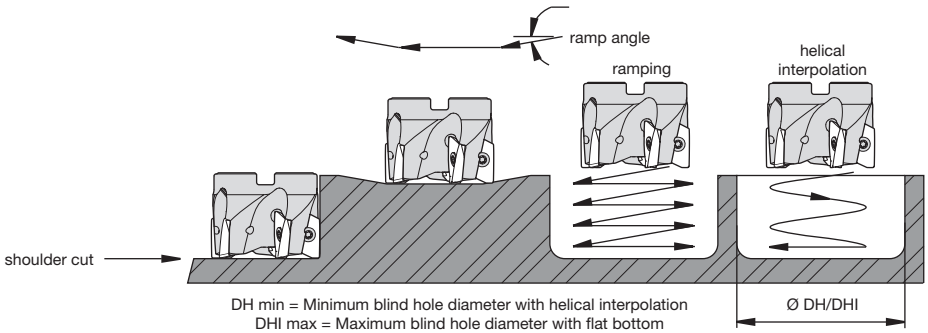
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.013**	.023	.003	**.009**	.017	.003	**.007**	.013	.002	**.006**	.011	.002	**.006**	.010	.F..LDJ
.E..LDJ	.005	**.017**	.028	.003	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.E..LDJ
.E..LD	.005	**.016**	.028	.004	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.E..LD
.E..GD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..GD
.S..GE	.009	**.020**	.032	.007	**.014**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.S..GE
.S..GD	.009	**.020**	.032	.007	**.014**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.S..GD
.S..GD2	.009	**.020**	.032	.007	**.014**	.023	.005	**.011**	.017	.004	**.009**	.015	.004	**.009**	.014	.S..GD2
.E..HD	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.E..HD
.E..HD2	.008	**.023**	.037	.006	**.017**	.027	.004	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.E..HD2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



insert style	cutting diameter	max ramp angle	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill-1, 14mm	.625	25°	.625	1.065	1.25
Mill-1, 14mm	.750	18°	.869	1.130	1.50
Mill-1, 14mm	.875	13°	1.113	1.562	1.75
Mill-1, 14mm	.970	11°	1.300	1.752	1.94
Mill-1, 14mm	1.000	10°	1.360	1.812	2.00
Mill-1, 14mm	1.250	7°	1.862	2.312	2.50
Mill-1, 14mm	1.500	6°	2.361	2.812	3.00
Mill-1, 14mm	1.250	7°	1.873	2.322	2.50
Mill-1, 14mm	1.500	5°	2.370	2.822	3.00
Mill-1, 14mm	2.000	4°	3.368	3.822	4.00
Mill-1, 14mm	2.500	3°	4.367	4.822	5.00
Mill-1, 14mm	3.000	2°	5.366	5.822	6.00
Mill-1, 14mm	4.000	2°	7.366	7.822	8.00

NOTE: Max ramp angle decreases as nose radius increases.

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Mill 1-14™
Helical Cutters

Primary Application

Mill 1-14 helical cutters will increase axial depth of cut. Designed with axial support pins for added stability, the Mill 1-14 helical cutters feature essential Load-Optimized Insert Spacing™ (LOIS) technology. LOIS dramatically minimizes unwanted vibrations and fluctuations in power requirements, resulting in a much smoother-sounding cut. Up to nine different coolant nozzle diameters enable tailoring to suit each machine tool, providing remarkably consistent, focused coolant flow.



Features and Benefits

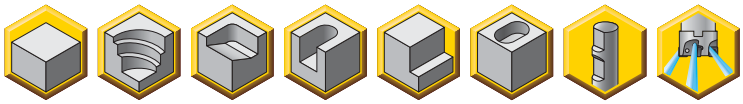
Functions

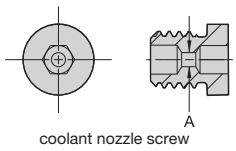
- Improves axial depth of cut better than standard end mills due to the positioning of inserts in helical configuration.
- Up to nine different coolant nozzle diameters tailored to suit each machine tool.
- One tool that offers features common to end mills, but rarely seen on a helical cutter:
  Helical ramping from solid, slotting, contouring, ramping, and plunging.

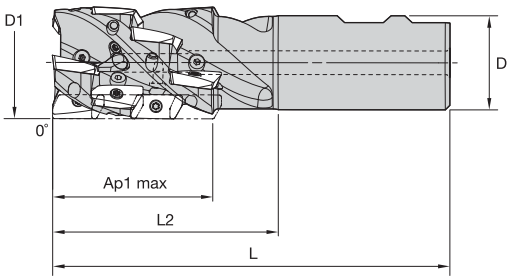
Benefits

- Increases depth of cut.
- Consistent, focused coolant flow.
- Built for performance, accuracy, and versatility.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 0° walls.
- Axial support pins.
- Unique coolant nozzles.









Helical Weldon® End Mills • Slot and Profile

order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3732889	M1HR125E14W125Z2L200C4	1.250	1.250	4.280	2.000	1.100	4	2	6.9°	1.10	31100
3732890	M1HR150E14W125Z3L200C6	1.500	1.250	4.280	2.000	1.090	6	3	5.2°	1.18	28400
3732891	M1HR150E14W125Z3L250C9	1.500	1.250	4.780	2.500	1.612	9	3	5.2°	1.31	28400
3732892	M1HR150E14W125Z3L300C12	1.500	1.250	5.280	3.000	2.130	12	3	5.2°	1.39	28400
3732935	M1HR200E14W150Z3L300C12	2.000	1.500	5.690	3.001	2.104	12	3	3.4°	2.63	24600

Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver	pin	coolant nozzle screw
1.250	MS2148	20	DT9IP	ASPM07001802	MS2191C20
1.500	MS2148	20	DT9IP	ASPM07001802	MS2191C20
2.000	MS2148	20	DT9IP	ASPM07001802	MS2191C20

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Optional Coolant Nozzle Screws

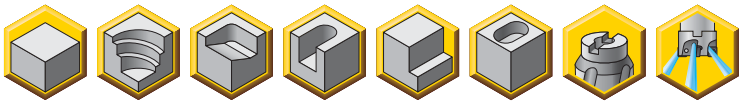
order number	catalog number	A
3400611	MS2191C00	—
3400612	MS2191C06	.024
3400613	MS2191C08	.032
3400616	MS2191C12	.047
3400617	MS2191C14	.055
3400618	MS2191C16	.063
3400619	MS2191C18	.071
3400620	MS2191C20	.079

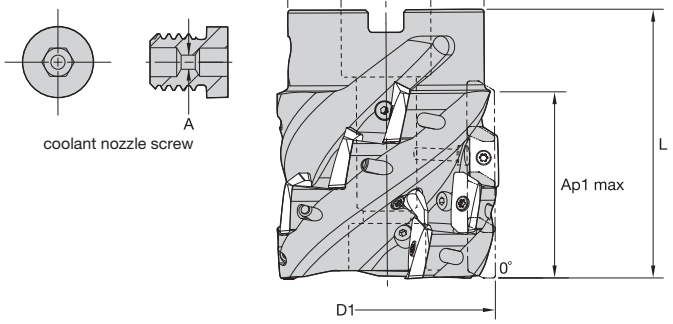
Coolant Nozzle Key

order number	T-handle hex wrench	drive size
1993552	THW2M	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 this is a .047" hole.
All coolant nozzles are interchangeable with the original that is supplied with the cutter. This gives flexibility for coolant flow.

- Aggressive ramping rates.
- Generates superior surface finish.
- Mill 0° walls.
- Axial support pins.
- Unique coolant nozzles.







Helical Shell Mills • Slot and Profile

order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z U	max ramp angle	lbs	max RPM
3732933	**M1HR200E14S075Z3L200C6**	2.000	.750	1.750	2.000	1.070	6	3	3.4	.98	24600
3732934	**M1HR200E14S075Z3L250C9**	2.000	.750	1.750	2.500	1.591	9	3	3.4	1.27	24600
3732937	**M1HR250E14S100Z3L250C9**	2.500	1.000	2.188	2.500	1.570	9	3	2.5	2.12	22000
3732938	**M1HR250E14S100Z4L250C12**	2.500	1.000	2.188	2.500	1.570	12	4	2.5	2.05	22000
3732939	**M1HR250E14S100Z3L300C12**	2.500	1.000	2.188	3.000	2.080	12	3	2.5	2.61	22000

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

order number	D1	L	 insert screw	 in. lbs.	 Torx Plus driver	 pin	 socket-head cap screw	 coolant nozzle screw
3732933	2.000	2.000	**MS2148**	20	**DT9IP**	**ASPM07001802**	**S447**	**MS2191C20**
3732934	2.000	2.500	**MS2148**	20	**DT9IP**	**ASPM07001802**	**S449**	**MS2191C16**
3732937	2.500	2.500	**MS2148**	20	**DT9IP**	**ASPM07001802**	**S462**	**MS2191C20**
3732938	2.500	2.500	**MS2148**	20	**DT9IP**	**ASPM07001802**	**S462**	**MS2191C16**
3732939	2.500	3.000	**MS2148**	20	**DT9IP**	**ASPM07001802**	**S464**	**MS2191C16**

Optional Coolant Nozzle Screws

order number	catalog number	A
3400611	MS2191C00	–
3400612	MS2191C06	.024
3400613	MS2191C08	.032
3400616	MS2191C12	.047
3400617	MS2191C14	.055
3400618	MS2191C16	.063
3400619	MS2191C18	.071
3400620	MS2191C20	.079

Coolant Nozzle Key





order number	catalog number	drive size
1993552	THW2M	2 MM

NOTE: Check the spare parts column for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 this is a .047" (1,20mm) hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter. This gives flexibility with coolant flow.

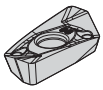
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
P3–P4	.E..GD	KCPM40	**.S..GD2**	**KCPK30**	.E..HD2	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
M1–M2	.E..LD	KC522M	**.E..GD**	**KCSM40**	.E..HD2	KC522M
M3	.E..GD	KCSM40	**.S..GD2**	**KCPM40**	.E..HD2	KCPM40
K1–K2	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
K3	.S..GD2	KC520M	**.E..HD2**	**KC520M**	.E..HD2	KCK15
N1–N2	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S3	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC725M
S4	.E..GD	KCSM40	**.S..GD2**	**KC725M**	.E..HD2	KC522M
H1	–	–	–	–	–	–

Indexable Inserts

- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).

● first choice
○ alternate choice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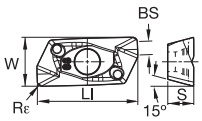


EDCT-F.LDJ

EDCT-F.LDJ

	beyond										
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				
N	●	●									
S				●	●				●	●	
H											

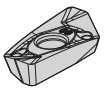
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1402FLDJ	.687	.334	.177	.124	.008	.001	2	●	–	–	–	–	–	–	–	–	–
EC1404FLDJ	.687	.334	.177	.116	.016	.001	2	●	–	–	–	–	–	–	–	–	–
EC1408FLDJ	.688	.334	.177	.101	.031	.001	2	●	–	–	–	–	–	–	–	–	–
EC1412FLDJ	.688	.333	.177	.085	.047	.001	2	●	–	–	–	–	–	–	–	–	–
EC1416FLDJ	.688	.333	.177	.070	.062	.001	2	●	–	–	–	–	–	–	–	–	–
EC1431FLDJ	.689	.331	.177	.010	.122	.001	2	●	–	–	–	–	–	–	–	–	–
EC1440FLDJ	.651	.329	.177	–	.157	.001	2	●	–	–	–	–	–	–	–	–	–

- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).

beyond

● first choice
○ alternate choice

		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											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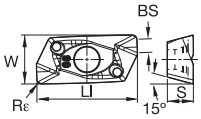
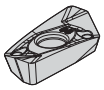


EDCT-E.LDJ

EDCT-E.LDJ

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404ELDJ	.687	.334	.177	.116	.016	.001	2	–	●	–	–	–	–	–	–	–	–
EC1408ELDJ	.688	.334	.177	.101	.031	.001	2	–	●	–	–	–	–	–	–	–	–
EC1424ELDJ	.689	.332	.177	.039	.094	.001	2	–	●	–	–	–	–	–	–	–	–

- Finishing and high precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 0.551" (14mm).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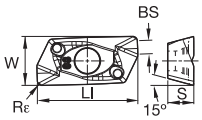


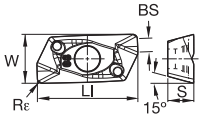
EDCT-LD

EDCT-LD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404ELD	.687	.334	.177	.116	.016	.002	2	–	–	–	●	–	–	–	–	–	–
EC1408ELD	.688	.334	.177	.101	.031	.002	2	–	–	–	●	–	–	–	–	–	–
EC1412ELD	.688	.333	.177	.085	.047	.002	2	–	–	–	●	–	–	–	–	–	–
EC1416ELD	.688	.333	.177	.070	.062	.002	2	–	–	–	●	–	–	–	–	–	–
EC1431ELD	.689	.331	.177	.010	.122	.002	2	–	–	–	●	–	–	–	–	–	–

- Light machining and finish applications.
- Medium hone for increased edge protection.
- Periphery ground for high precision machining.
- Ap1 max = 0.551" (14mm).


EDCT-E.GD



EDCT-E.GD

● first choice
○ alternate choice

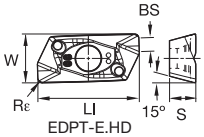
		KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○	●		●	●		○
M					●	●		○	○	○	●
K				●	○		●	○			
N		●	●								
S					●	●				●	●
H											

EDCT-E.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1404EGD	.687	.334	.177	.116	.016	.002	2	–	–	–	–	●	–	–	●	–	–
EC1408EGD	.688	.334	.177	.101	.031	.002	2	–	–	–	–	●	–	–	●	–	●
EC1412EGD	.688	.333	.177	.085	.047	.002	2	–	–	–	–	●	–	–	–	–	●
EC1416EGD	.688	.333	.177	.070	.062	.002	2	–	–	–	–	●	–	–	–	–	●
EC1431EGD	.689	.331	.177	.010	.122	.002	2	–	–	–	–	●	–	–	–	–	●

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).


EDPT-E.HD



EDPT-E.HD

EDPT-E.HD

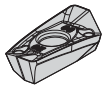
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1404EHD	.687	.330	.177	.116	.016	.003	2	–	–	●	●	●	●	●	●	–	–
EP1408EHD	.688	.330	.177	.101	.031	.003	2	–	–	●	●	●	●	●	●	–	●
EP1412EHD	.688	.329	.177	.085	.047	.003	2	–	–	●	●	●	●	●	●	–	●
EP1416EHD	.688	.329	.177	.070	.062	.003	2	–	–	–	●	●	●	●	●	●	●
EP1420EHD	.688	.329	.177	.054	.079	.003	2	–	–	–	●	●	–	●	–	–	●
EP1424EHD	.689	.328	.177	.039	.094	.003	2	–	–	–	●	●	–	●	●	–	●
EP1431EHD	.689	.327	.177	.010	.122	.003	2	–	–	–	●	●	–	●	–	●	●
EP1440EHD	.651	.325	.177	—	.157	.003	2	–	–	–	●	●	–	●	–	●	●

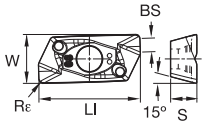
- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).

beyond

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N	●	●								
S				●	●				●	●
H										

● first choice
○ alternate choice


EDPT-E.HD2

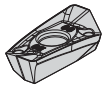


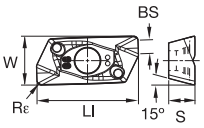
EDPT-E.HD2

EDPT-E.HD2

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1408EHD2	.688	.330	.177	.101	.031	.003	2	–	–	–	●	●	●	●	●	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).


EDPT-S.GE



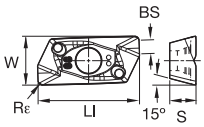
EDPT-S.GE

EDPT-S.GE

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1404SGE	.686	.323	.175	.110	.016	.005	2	–	–	–	●	●	–	●	–	–	–
EP1408SGE	.686	.322	.175	.094	.031	.005	2	–	–	–	●	●	–	●	●	–	●
EP1412SGE	.687	.320	.175	.078	.047	.005	2	–	–	–	●	●	–	●	–	–	●
EP1416SGE	.687	.320	.175	.062	.062	.005	2	–	–	–	●	●	–	●	–	–	●
EP1431SGE	.687	.318	.175	.005	.122	.005	2	–	–	–	–	●	–	●	–	–	●

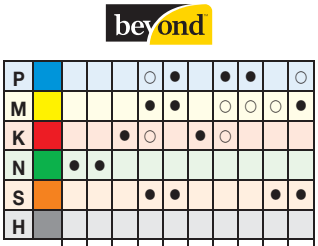
- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).


EDPT-S.GD



EDPT-S.GD

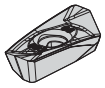
● first choice
○ alternate choice

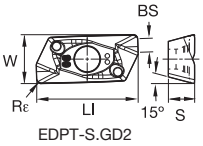


EDPT-S.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1408SGD	.688	.330	.177	.101	.031	.004	2	–	–	●	–	●	–	●	●	–	●
EP1412SGD	.688	.329	.177	.085	.047	.004	2	–	–	●	–	●	–	●	●	–	●
EP1416SGD	.688	.329	.177	.070	.062	.004	2	–	–	●	–	●	–	●	●	–	●

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = 0.551" (14mm).


EDPT-S.GD2



EDPT-S.GD2

EDPT-S.GD2

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1408SGD2	.688	.330	.177	.103	.031	.004	2	–	–	●	–	●	–	●	●	–	–

Recommended Starting Feeds

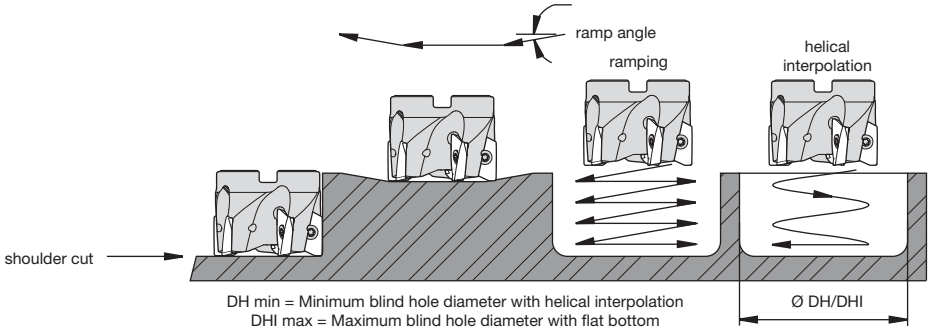
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.019**	.033	.003	**.013**	.023	.003	**.010**	.018	.002	**.009**	.015	.002	**.008**	.014	.F..LDJ
.E..LDJ	.005	**.019**	.033	.003	**.014**	.024	.003	**.010**	.018	.002	**.009**	.015	.002	**.008**	.014	.E..LDJ
.E..LD	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD
.E..GD	.007	**.020**	.035	.005	**.015**	.025	.004	**.011**	.019	.003	**.010**	.016	.003	**.009**	.015	.E..GD
.S..GE	.009	**.020**	.035	.007	**.014**	.025	.005	**.011**	.019	.004	**.009**	.017	.004	**.009**	.015	.S..GE
.S..GD	.009	**.020**	.035	.007	**.014**	.025	.005	**.011**	.019	.004	**.009**	.016	.004	**.009**	.015	.S..GD
.S..GD2	.009	**.020**	.035	.007	**.014**	.025	.005	**.011**	.019	.004	**.009**	.016	.004	**.009**	.015	.S..GD2
.E..HD	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.E..HD
.E..HD2	.008	**.023**	.037	.006	**.017**	.027	.004	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.E..HD2

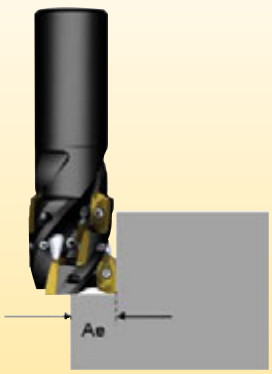
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



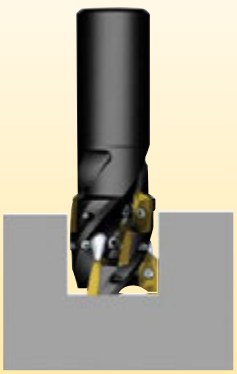
insert style	cutting diameter	max ramp angle	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill 1-14	1.25	5.4°	1.862	2.312	2.5
Mill 1-14	1.50	4.0°	2.370	2.822	3
Mill 1-14	2.00	2.6°	3.368	3.822	4
Mill 1-14	2.50	1.9°	4.367	4.822	5

Best Machining Practices



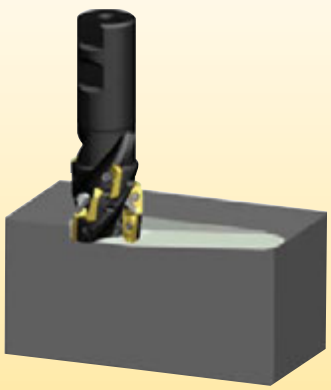
Contouring/Profiling

Ae = up to 50% of cutter Ø. This can be used with or without coolant/air blast, depending on materials being machined.



Slotting

Full width cutting or profiling over 50% of the cutter Ø. It is suggested to use coolant or air blast to evacuate chips. If necessary, reduce coolant nozzle hole size, which adds more pressure, and the chip is forced out of the chip gash.

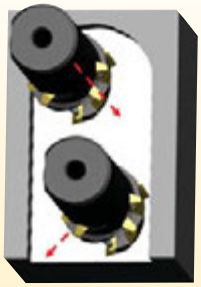


Ramping

Only machine to the depth of the first insert. Observe the ramping angles given in the catalog.

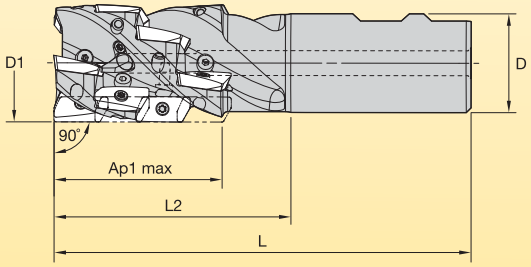
Slotting by Plunging

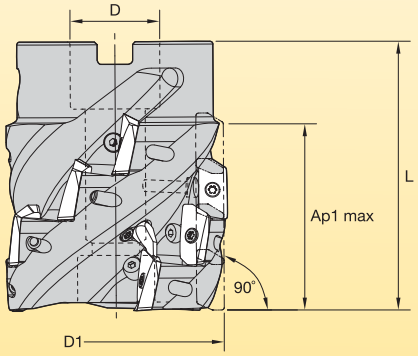
Slot with the alternate side method, alternating the cuts from side to side. This will enable the cutter to move away from the material prior to moving back up in the Z-axis. The cutter will not be in contact with the workpiece. Follow the direction of the arrows. Move 3 axes simultaneously into the center of the slot. Maximum step over 0.315" (8,0mm).



With multiple Z-axis passes, when the final depth is achieved, move straight back up in the Z-axis, then repeat at the next step over.







	catalog number	order number	D1	ZU[1]	Z	Mtg. [2]	D	L2	L	Ap1 max	max Ra[3]	max CR[4]	max RPM
Inch Cutters	M1HR125E14W125Z2L200C4	3732889	1.25	2	4	W	1.25	2.00	4.28	1.09	5.4°	0.094	31100
	M1HR150E14W125Z3L200C6	3732890	1.50	3	6	W	1.25	2.00	4.28	1.09	4.0°	0.094	28400
	M1HR150E14W125Z3L250C9	3732891	1.50	3	9	W	1.25	2.50	4.78	1.61	4.0°	0.094	28400
	M1HR150E14W125Z3L300C12	3732892	1.50	3	12	W	1.25	3.00	5.28	2.13	4.0°	0.094	28400
	M1HR200E14S075Z3L200C6	3732933	2.00	3	6	S	0.75	—	2.00	1.07	2.6°	0.094	24600
	M1HR200E14S075Z3L250C9	3732934	2.00	3	9	S	0.75	—	2.50	1.59	2.6°	0.094	24600
	M1HR200E14W150Z3L300C12	3732935	2.00	3	12	W	1.50	3.00	5.69	2.10	2.6°	0.094	24600
	M1HR250E14S100Z3L200C6	3732936	2.50	3	6	S	1.00	—	2.00	1.06	1.9°	0.094	22000
	M1HR250E14S100Z3L250C9	3732937	2.50	3	9	S	1.00	—	2.50	1.57	1.9°	0.062	22000
	M1HR250E14S100Z4L250C12	3732938	2.50	4	12	S	1.00	—	2.50	1.57	1.9°	0.062	22000
	M1HR250E14S100Z3L300C12	3732939	2.50	3	12	S	1.00	—	3.00	2.07	1.9°	0.062	22000
	[5] M1HR250E14S100Z5L300C20	3786638	2.50	5	20	S	1.00	—	3.00	2.07	1.9°	0.062	22000

Metric Cutters	M1H32J2R50B32S90ED14C4	3742932	32	2	4	W	32	50	111	27,8	5,4°	2,4	31100
	M1H40J3R50B32S90ED14C6	3743033	40	3	6	W	32	50	111	27,6	3,8°	2,4	28400
	M1H40J3R65B32S90ED14C9	3743034	40	3	9	W	32	65	126	40,8	3,8°	2,4	28400
	M1H40J4R80B32S90ED14C12	5085631	40	4	12	W	32	80	141	40,8	3,8°	2,5	28400
	M1H40J3R80B32S90ED14C12	3743035	40	3	12	W	32	80	141	54,0	3,8°	2,4	28400
	M1H50T3R50A22S90ED14C6	3743036	50	3	6	S	22	—	50	27,3	2,7°	2,4	24600
	M1H50T3R65A22S90ED14C9	3743037	50	3	9	S	22	—	65	40,4	2,7°	2,4	24600
	M1H50J3R80B40S90ED14C12	3743038	63	3	12	W	40	80	151	53,5	1,9°	2,4	24600
	M1H63T3R50A27S90ED14C6	3743039	63	3	6	S	27	—	50	27,0	1,9°	1,6	22000
	M1H63T3R65A27S90ED14C9	3743040	63	3	9	S	27	—	65	39,9	1,9°	1,6	22000
	M1H63T4R65A27S90ED14C12	3743041	63	4	12	S	27	—	65	39,9	1,9°	1,6	22000
	M1H63T3R75A27S90ED14C12	3743042	63	3	12	S	27	—	75	52,8	1,9°	1,6	22000
	[5] M1H63T5R75A27S90ED14C20	3831819	63	5	20	S	27	—	75	52,8	1,9°	1,6	22000

[1] Number of effective flutes.
[2] Mounting style: W = Weldon®; S = Shell Mill.
[3] Max ramp angle when radial depth of cut exceeds 0.31" (8mm)
[4] Max insert corner radius allowed in first row without cutter body modification.
[5] Recommended for profiling applications only.

Profile, Slot, and Ramp

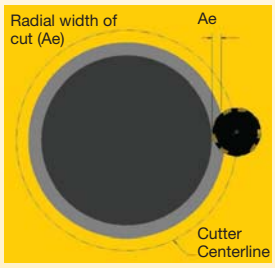
When taking a cut that equals up to 50% of the cutter diameter, you can operate without coolant, unless your material is coolant-dependent. When using more than 50% of the cutter diameter, there is a need to have coolant through the nozzles, or an air blast through the nozzles. This will assist with chip evacuation. Please use the feed table when taking a small percentage of the cutter diameter. This will improve the volume of material removed. To achieve a superior surface finish on the base, adjust the feed to suit the finish required.

When using this cutter for plunging, the maximum suggested step over is .130" (3,30mm). Always try to move the cutter and insert away from the material when retracting in the Z-axis. This can be done when employing the alternate cut method (zig zag method). Use a 3-axis move to get all axes moving at the same time, suggest .010" (0,25mm).

When machining a conventional slot, you have to move straight up in the Z-axis.

Circular and Helical Interpolation

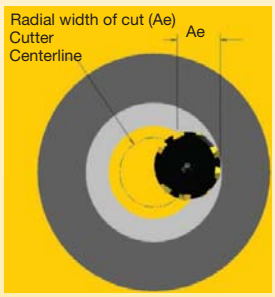
External



When profiling around the external part of a component, it is important to increase the feed rate. This will maintain the chip thickness value.
The programmed feed rate needs to be calculated at the cutter centerline.

For external profiling, adjust the feed rate for feed at the cutter centerline.
Increase the feed rate for external profiling.

Internal



When machining inside a component profile, the area of contact is larger.
The feed rate needs to be at the centerline, and the feed rate needs to be slower.

For internal profiling, adjust the feed rate for feed at the cutter centerline.
This will effectively reduce the feed rate as the distance traveled is less than the peripheral distance.

Cutting Data

Reference pages X23–X27 for speed tables. Reference platform pages for feed data. Each insert has an average chip thickness value that will enable you to determine the feed per tooth.

Please remember when using less than 50% of the cutter diameter, the feed rate will need to be increased. Failure to do so will result in premature insert failure.

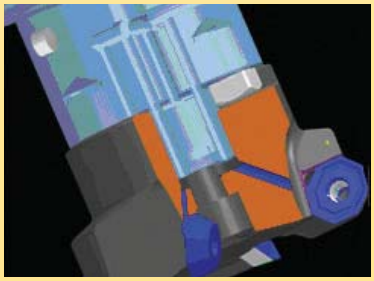
Running too slowly will reduce tool life.

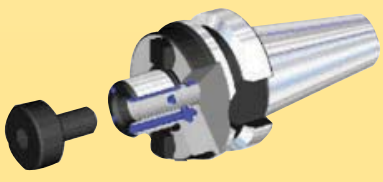
Spare Parts

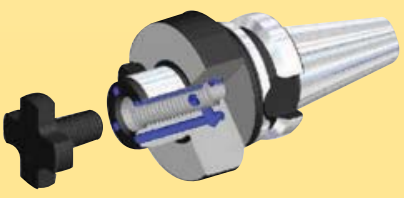
Please make sure all the spare parts in the cutters are fully tightened prior to using the product.

Shell mill cutters no longer have coolant grooved bolts. We now have adapters that will enable the coolant to be fed through the adapter pilot diameter.

True Through Coolant Shell Mill Adapters







Mill 1-18™

Primary Application

The Mill 1-18 series is a versatile, functional cutter system for a range of cutting tasks. Mill 1-18 cutters can be used for profiling, slotting, ramping, helical interpolation, plunging, and other milling applications. It's a single tool with multi-functional benefits. Mill 1-18 inserts are specially designed to add cutting versatility, especially for larger axial depths of cut. Results include significantly reduced cycle times and lower cutting forces.



Features and Benefits

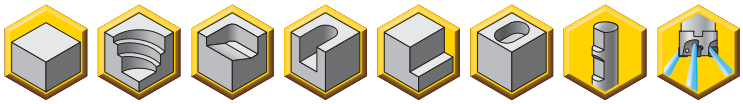
Features

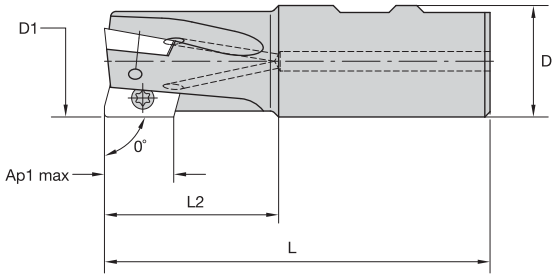
- Inserts for larger axial depth of cut.
- Inserts radii up to .250" (6,35mm).
- Axial depth of cut up to .708" (18mm).
- Cutter diameters up to 8" (160mm).
- Beyond™ grade technology.

Benefits

- Slotting, profiling, ramping, helical interpolation, and plunging.
- Angled screw for insert retention.
- Insert geometries and grades for most workpiece materials.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2267545	**M1D097E1802W100L175**	.970	1.000	4.030	1.750	.710	2	17.7°	.66	37710
2267546	**M1D100E1802W100L175**	1.000	1.000	4.030	1.750	.710	2	16.7°	.68	37000
2267550	**M1D100E1802W100L175R**	1.000	1.000	3.968	1.688	.640	2	13.4°	.67	37000
2267547	**M1D100E1802W100L375**	1.000	1.000	6.030	3.750	.710	2	16.7°	1.00	37000
2267552	**M1D100E1802W100L375R**	1.000	1.000	5.968	3.688	.640	2	13.4°	.99	37000
2267623	**M1D125E1803W125L225**	1.250	1.250	4.530	2.250	.710	3	10.9°	1.17	32300
2267624	**M1D125E1803W125L225R**	1.250	1.250	4.469	2.188	.650	3	7.5°	1.16	32300
2267625	**M1D125E1803W125L425**	1.250	1.250	6.530	4.250	.710	3	10.9°	1.71	32300
2267626	**M1D125E1803W125L425R**	1.250	1.250	6.468	4.188	.650	3	7.5°	1.71	32300

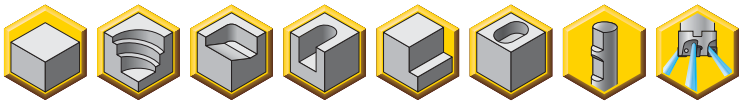
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
"R" in catalog number designates factory-relieved tool for insert radii greater than .079". For example: M1D100E1802W100L375**R**.

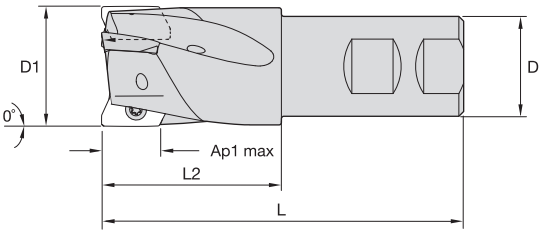
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.970	**MS2126**	35	**DT15IP**
1.000	**MS2126**	35	**DT15IP**
1.250	**MS2126**	35	**DT15IP**

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Weldon® End Mills • Reduced Shank

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2452372	**M1D100E1802W075L175**	1.000	.750	3.780	1.750	.710	2	14.0°	.43	37000
2452414	**M1D125E1802W100L225**	1.250	1.000	4.530	2.250	.710	2	10.9°	.95	32300
2635710	**M1D125E1803W100L225**	1.250	1.000	4.530	2.250	.710	3	10.9°	.89	32300
2267627	**M1D150E1803W125L225**	1.500	1.250	4.530	2.250	.710	3	8.2°	1.43	29020
2267651	**M1D150E1803W125L425**	1.500	1.250	6.530	4.250	.710	3	8.2°	2.26	29020
2267631	**M1D150E1803W125L425R**	1.500	1.250	6.468	4.188	.640	3	5.2°	2.25	29020
2267629	**M1D150E1804W125L225**	1.500	1.250	4.530	2.250	.710	4	8.2°	1.38	29020
2267628	**M1D150E1804W125L225R**	1.500	1.250	4.468	2.188	.640	4	5.2°	1.38	29020
2267621	**M1D200E1805W125L225**	2.000	1.250	4.530	2.250	.700	5	5.5°	2.00	24670

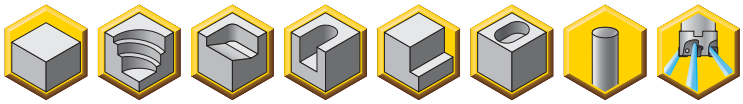
NOTE: "Standard milling cutters will accept insert nose radii up to .079" without modification.
R" in catalog number designates factory-relieved tool for insert radii greater than .079". For example: M1D100E1802W100L375**R**.

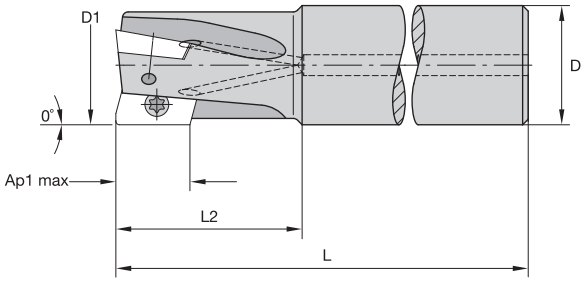
Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
1.000	**MS2126**	35	**DT15IP**
1.250	**MS2126**	35	**DT15IP**
1.500	**MS2126**	35	**DT15IP**
2.000	**MS2126**	35	**DT15IP**

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2267534	**M1D100E1802C100L800**	1.000	1.000	8.000	3.750	.710	2	16.7°	1.41	37000
2267535	**M1D100E1802C100L1000**	1.000	1.000	10.000	3.750	.710	2	16.7°	1.82	37000
2267536	**M1D125E1802C125L800**	1.250	1.250	8.000	4.250	.710	2	10.9°	2.27	32300
2267537	**M1D125E1802C125L1000**	1.250	1.250	10.000	4.250	.710	2	10.9°	2.94	32300
2267538	**M1D150E1803C125L800**	1.500	1.250	8.000	4.250	.710	3	8.2°	2.75	29020
2267539	**M1D150E1803C125L1000**	1.500	1.250	10.000	4.250	.710	3	8.2°	3.42	29020
5194531	**M1D150E1803C125L1000AL**	1.500	1.250	10.000	2.000	.710	3	8.2°	3.11	29020

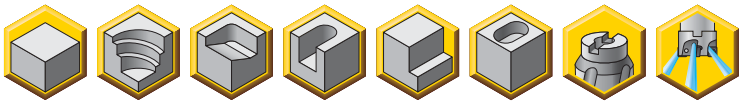
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
Cylindrical shank with no through coolant.
Cutters designated with the -AL suffix have relieved flutes for aggressive aluminum machining.

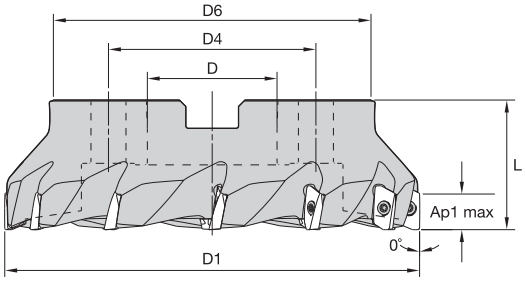
Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2126**	35	**DT15IP**
1.250	**MS2126**	35	**DT15IP**
1.500	**MS2126**	35	**DT15IP**

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







Shell Mills

order number	catalog number	D1	D	D4	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
2267542	**M1D200E1803S075L157**	2.000	.750	—	1.688	1.575	.700	3	5.2°	.71	24670
5067568	**M1D200E1803S075L157AL**	2.000	.750	—	1.688	1.575	.700	3	5.2°	.60	24670
2267650	**M1D200E1805S075L157**	2.000	.750	—	1.688	1.575	.700	5	5.2°	.69	24670
5067567	**M1D250E1804S075L157AL**	2.500	.750	—	1.750	1.575	.690	4	3.8°	.83	21820
2267632	**M1D250E1806S075L157**	2.500	.750	—	1.750	1.575	.690	6	3.8°	1.00	21820
5135356	**M1D300E1804S100L175AL**	3.000	1.000	—	2.188	1.750	.690	4	3.0°	1.44	19780
2267616	**M1D300E1805S100L175**	3.000	1.000	—	2.188	1.750	.690	5	3.0°	1.72	19780
2267643	**M1D300E1807S100L175**	3.000	1.000	—	2.188	1.750	.690	7	3.0°	1.75	19780
2267617	**M1D400E1806S150L200**	4.000	1.500	—	3.625	2.000	.690	6	2.1°	3.80	16970
2267644	**M1D400E1808S150L200**	4.000	1.500	—	3.625	2.000	.690	8	2.1°	3.83	16970
2267645	**M1D500E1809S150L200**	5.000	1.500	—	3.750	2.000	.690	9	1.6°	5.75	15100
2267646	**M1D600E1808S150L200**	6.000	1.500	—	3.750	2.000	.690	8	1.3°	7.46	13740
2267618	**M1D600E1808S200L200**	6.000	2.000	—	4.875	2.000	.690	8	1.3°	8.77	13740
2267620	**M1D800E1812S250L250**	8.000	2.500	4.000	6.125	2.500	.690	12	1.0°	15.35	11850

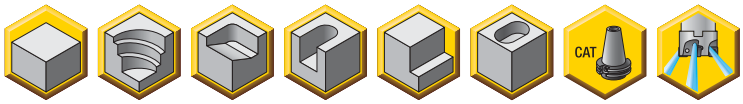
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
"Speed screw" differential lock-up system is identified by the "SS" in the catalog number. For example: M1D200E1803**SS**075L157.
Cutters designated with the -AL suffix have relieved flutes for aggressive aluminum machining.

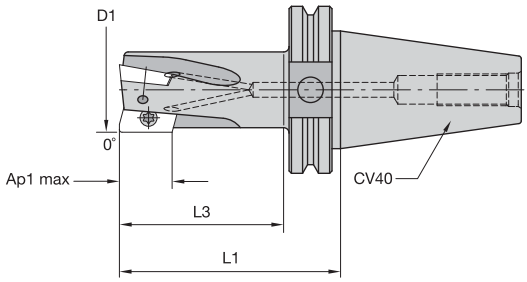
Spare Parts

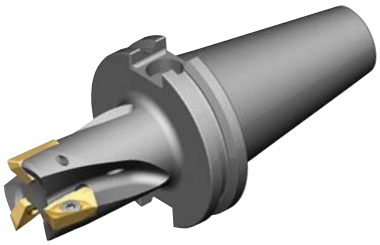
order number	D1	 insert screw	 in. lbs.	 Torx Plus driver	 socket-head cap screw with coolant groove	 coolant screw assembly	 coolant screw assembly
2267542	2.000	**MS2126**	35	**DT15IP**	**S445CG**	—	—
5067568	2.000	**MS2126**	35	**DT15IP**	**S445CG**	—	—
2267650	2.000	**MS2126**	35	**DT15IP**	**S445CG**	—	—
5067567	2.500	**MS2126**	35	**DT15IP**	**S445CG**	—	—
2267632	2.500	**MS2126**	35	**DT15IP**	**S445CG**	—	—
5135356	3.000	**MS2126**	35	**DT15IP**	**S2044CG**	—	—
2267616	3.000	**MS2126**	35	**DT15IP**	**S2044CG**	—	—
2267643	3.000	**MS2126**	35	**DT15IP**	**S2044CG**	—	—
2267617	4.000	**MS2126**	35	**DT15IP**	—	—	**S2165C**
2267644	4.000	**MS2126**	35	**DT15IP**	—	—	**S2165C**
2267645	5.000	**MS2126**	35	**DT15IP**	—	—	**S2165C**
2267646	6.000	**MS2126**	35	**DT15IP**	—	—	**S2165C**
2267618	6.000	**MS2126**	35	**DT15IP**	—	**KLS20C**	—
2267620	8.000	**MS2126**	35	**DT15IP**	—	—	—

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







End Mills • Steep Taper CV40

order number	catalog number	CSMS system size	D1	L1	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2267549	**M1D100E1802CV40L250**	CV40	1.000	2.500	1.625	.710	2	16.7°	1.98	37000
2541967	**M1D100E1802CV40L450**	CV40	1.000	4.500	2.625	.710	2	16.7°	2.72	37000
2267551	**M1D125E1803CV40L288**	CV40	1.250	2.875	2.000	.710	3	10.9°	2.20	32300
2541970	**M1D125E1803CV40L488**	CV40	1.250	4.875	3.000	.710	3	10.9°	3.03	32300
2267548	**M1D150E1804CV40L288**	CV40	1.500	2.875	2.000	.710	4	8.2°	2.36	29020
2541972	**M1D150E1804CV40L488**	CV40	1.500	4.875	3.000	.710	4	8.2°	3.41	29020

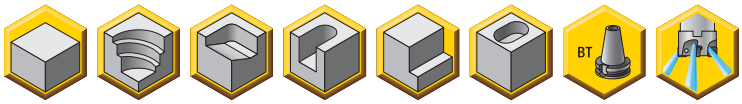
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

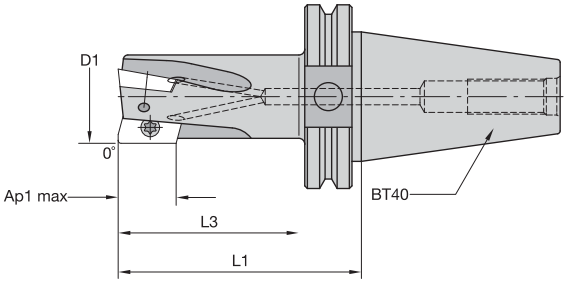
Spare Parts

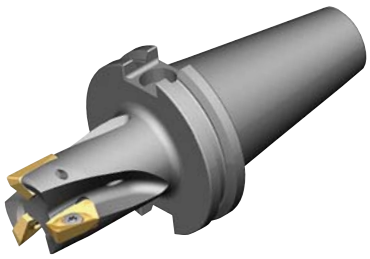
D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2126**	35	**DT15IP**
1.250	**MS2126**	35	**DT15IP**
1.500	**MS2126**	35	**DT15IP**

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

- Mill 0° walls.
- Aggressive ramping angles.
- Generates superior surface finish.
- High RPM capabilities.







End Mills • Steep Taper BT40

order number	catalog number	CSMS system size	D1	L1	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2541969	**M1D100E1802BT40L450**	BT40	1.000	4.500	2.625	.710	2	16.7°	2.83	37000
2541984	**M1D150E1804BT40L488**	BT40	1.500	4.875	3.000	.710	4	8.2°	3.50	29020

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2126**	35.0	**DT15IP**
1.500	**MS2126**	35.0	**DT15IP**

NOTE: Additional insert screws may be ordered in packages of five pieces from catalog number MS2126PKG.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
P3–P4	.E..GD	KCPK30	**.S..GD**	**KCPK30**	.E..HD	KCPK30
P5–P6	.E..GD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
M1–M2	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
M3	.E..GD	KCPM40	**.S..GD**	**KCPM40**	.E..HD	KCPM40
K1–K2	.E..GD	KC520M	**.E..GD**	**KC520M**	.S..GD	KCK15
K3	.E..GD	KC520M	**.S..GD**	**KCK15**	.E..HD	KCPK30
N1–N2	.F..LDJ	KC410M	**.E..LDJ**	**KC422M**	.E..LDJ	KC422M
N3	.F..LDJ	KC410M	**.F..LDJ**	**KC410M**	.F..LDJ	KC410M
S1–S2	.E..GD	KC725M	**.S..GD**	**KC725M**	.E..HD	KC725M
S3	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
S4	.E..GD	KCSM40	**.S..GD**	**KCSM40**	.E..HD	KCSM40
H1	–	–	**–**	**–**	–	–

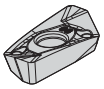
Indexable Inserts

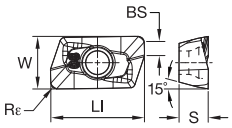
- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.708" (18mm).

● first choice
○ alternate choice

beyond

	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○		●		●	●		○
M				●	●	●		○	○	○	●
K			●	○			●	○			
N	●	●									
S				●	●	●				●	●
H											


EDCT-F.LDJ



EDCT-F.LDJ

EDCT-F.LDJ

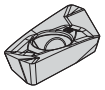
catalog number	Ll	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1804FJ	.856	.432	.217	.121	.016	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1808FJ	.857	.432	.217	.106	.031	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1812FJ	.857	.432	.217	.090	.047	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1816FJ	.858	.431	.217	.075	.062	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1820FJ	.858	.431	.217	.059	.079	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1824FJ	.858	.430	.217	.044	.095	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1832FJ	.858	.430	.217	.013	.125	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1840FJ	.818	.428	.217	—	.157	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1848FJ	.795	.426	.217	—	.188	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1850FJ	.785	.426	.217	—	.197	.001	2	●	–	–	–	–	–	–	–	–	–	–
EC1864FJ	.737	.422	.217	—	.250	.001	2	●	–	–	–	–	–	–	–	–	–	–

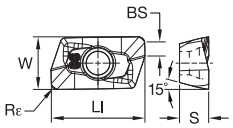
- Roughing and finishing of aluminum alloys.
- Periphery ground and polished rake face.
- Perfect floor surface finish.
- Ap1 max = 0.708" (18mm).

● first choice
○ alternate choice

beyond

		KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		●		●	●		○
M					●	●	●		○	○	○	●
K				●	○			●	○			
N		●	●									
S					●	●	●				●	●
H												


EC-E.LDJ

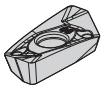


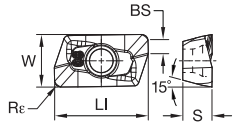
EC-E.LDJ

EDCT-E.LDJ

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1808EJ	.857	.432	.217	.106	.031	.001	2	–	●	–	–	–	–	–	–	–	–	–
EC1812EJ	.857	.432	.217	.090	.047	.001	2	–	●	–	–	–	–	–	–	–	–	–
EC1816EJ	.858	.431	.217	.075	.062	.001	2	–	●	–	–	–	–	–	–	–	–	–
EC1824EJ	.858	.430	.217	.044	.094	.001	2	–	●	–	–	–	–	–	–	–	–	–
EC1832EJ	.858	.430	.217	.013	.125	.001	2	–	●	–	–	–	–	–	–	–	–	–
EC1864EJ	.737	.422	.217	—	.250	.001	2	–	●	–	–	–	–	–	–	–	–	–

- Finishing and high-precision applications.
- Light machining.
- 15° Positive rake angle.
- Perfect floor surface finish.
- Ap1 max = 0.708" (18mm).


EDCT-LD



EDCT-LD

EDCT-LD

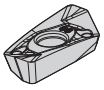
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1808E2	.857	.432	.217	.106	.031	.002	2	–	–	–	●	–	–	–	–	–	–	–
EC1816E	.858	.431	.217	.075	.062	.002	2	–	–	–	●	–	–	–	–	–	–	–
EC1832E	.858	.430	.217	.013	.125	.002	2	–	–	–	●	–	–	–	–	–	–	–
EC1840E	.818	.428	.217	—	.157	.002	2	–	–	–	●	–	–	–	–	–	–	–
EC1848E	.795	.426	.217	—	.188	.002	2	–	–	–	●	–	–	–	–	–	–	–
EC1864E	.737	.422	.217	—	.250	.002	2	–	–	–	●	–	–	–	–	–	–	–

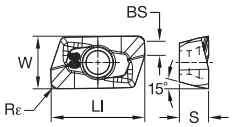
- Light machining and finish applications.
- Periphery ground for high-precision machining.
- Medium hone for increased edge protection.
- Ap1 max = 0.708" (18mm).

● first choice
○ alternate choice

beyond

		KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		●		●	●		○
M					●	●	●		○	○	○	●
K				●	○			●	○			
N		●	●									
S					●	●	●				●	●
H												


EDCT-EGD

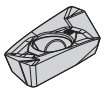


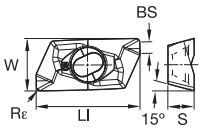
EDCT-EGD

EDCT-E.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EC1804E	.856	.432	.217	.121	.016	.004	2	–	–	–	–	–	●	–	–	●	–	–
EC1808E	.857	.432	.217	.106	.031	.004	2	–	–	–	–	–	●	–	–	●	–	–
EC1812E	.857	.432	.217	.090	.047	.004	2	–	–	–	–	–	●	–	–	●	–	–

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .708" (18mm).


EDPT-E.GD

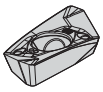


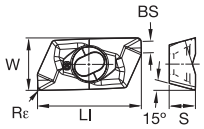
EDPT-E.GD

EDPT-E.GD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1808E	.857	.432	.217	.106	.031	.004	2	–	–	●	–	–	●	–	●	●	–	●
EP1812E	.857	.433	.217	.090	.047	.004	2	–	–	–	–	–	●	–	–	●	–	–
EP1816E	.858	.431	.217	.075	.062	.004	2	–	–	–	●	–	●	–	●	●	–	●
EP1824E	.858	.430	.217	.044	.095	.004	2	–	–	–	–	–	●	–	–	–	–	–
EP1832E	.858	.430	.217	.013	.125	.004	2	–	–	●	●	–	●	–	●	–	–	●
EP1848E	.795	.426	.217	—	.189	.004	2	–	–	–	–	–	●	–	–	–	–	●
EP1864E	.740	.422	.217	—	.250	.004	2	–	–	–	●	–	●	–	●	–	–	●

- Medium roughing and semi-finishing.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .708" (18mm).


EDPT-E.HD



EDPT-E.HD

● first choice
○ alternate choice

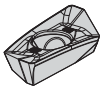
beyond

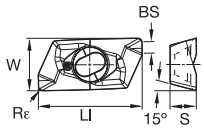
		KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P					○		●		●	●		○
M					●	●	●		○	○	○	●
K				●	○			●	○			
N		●	●									
S					●	●	●				●	●
H												

EDPT-E.HD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1808EHD	.857	.429	.217	.106	.031	.003	2	–	–	–	–	–	●	–	●	●	–	●
EP1812EHD	.857	.428	.217	.090	.047	.003	2	–	–	–	–	–	●	–	●	–	–	●
EP1816EHD	.857	.428	.217	.075	.062	.003	2	–	–	–	–	–	●	–	●	●	–	●
EP1832EHD	.858	.426	.217	.012	.125	.003	2	–	–	–	–	–	●	–	●	●	–	●
EP1840EHD	.823	.424	.217	—	.157	.003	2	–	–	–	–	–	●	–	–	–	–	●
EP1848EHD	.794	.423	.217	—	.188	.003	2	–	–	–	–	–	●	–	●	–	–	●
EP1864EHD	.740	.420	.217	—	.250	.003	2	–	–	–	–	–	●	–	●	–	–	–

- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS — Precision Pressed and Sintered to Size.
- Ap1 max = .708" (18mm).


EDPT-S.GE



EDPT-S.GE

EDP T-S.GE

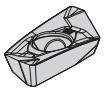
catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1808SGE	.855	.421	.214	.095	.031	.005	2	–	–	–	●	–	●	–	●	–	–	●
EP1812SGE	.856	.420	.214	.079	.047	.005	2	–	–	–	●	–	–	–	●	–	–	●
EP1816SGE	.856	.420	.214	.063	.062	.005	2	–	–	–	–	–	–	–	●	–	–	●
EP1832SGE	.856	.418	.214	.003	.125	.005	2	–	–	–	–	–	–	–	●	–	–	●

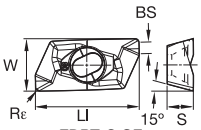
- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS – Precision Pressed and Sintered to Size.
- Ap1 max = .708" (18mm).

● first choice
○ alternate choice

beyond

	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○		●		●	●		○
M				●	●	●		○	○	○	●
K			●	○			●	○			
N	●	●									
S				●	●	●				●	●
H											


EDPT-S.GE



EDPT-S.GE

EDPT-S.GE

catalog number	LI	W	S	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
EP1808S	.857	.429	.217	.106	.031	.006	2	–	–	–	–	–	●	●	●	●	–	●
EP1812S	.857	.429	.217	.090	.047	.006	2	–	–	–	–	–	●	●	●	●	–	●
EP1816S	.858	.428	.217	.075	.062	.006	2	–	–	–	–	–	●	–	●	●	–	●
EP1832S	.858	.426	.217	.013	.125	.006	2	–	–	–	–	–	●	–	●	–	–	●
EP1848S	.795	.423	.216	—	.189	.005	2	–	–	–	–	–	–	–	–	–	–	●
EP1864S	.739	.419	.217	—	.250	.005	2	–	–	–	–	–	●	–	–	–	–	●

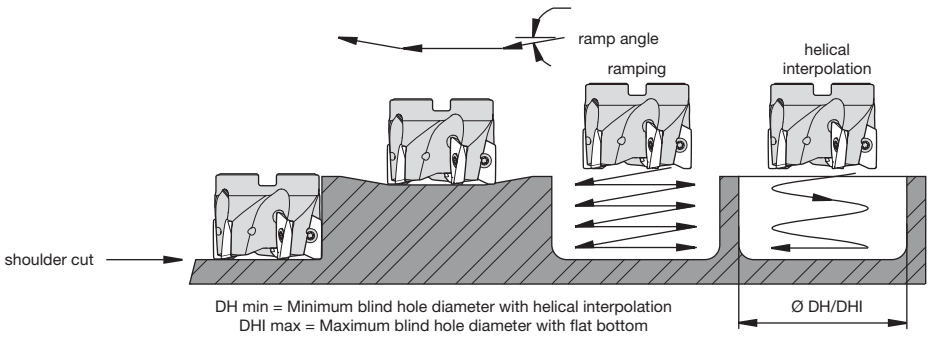
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.019**	.033	.003	**.013**	.023	.003	**.010**	.018	.002	**.009**	.015	.002	**.008**	.014	.F..LDJ
.E..LDJ	.005	**.018**	.032	.003	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LDJ
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..GD	.009	**.020**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GD
.S..GE	.009	**.020**	.035	.007	**.014**	.025	.005	**.011**	.019	.004	**.009**	.017	.004	**.009**	.015	.S..GE
.S..GD	.009	**.020**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.009**	.016	.004	**.009**	.015	.S..GD
.E..HD	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.E..HD

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Examples



insert style	cutting diameter	max ramp angle	DH min (min hole diameter)	DHI min (min flat-bottomed hole diameter)	max diameter (no flat bottom)
Mill 1–18	.970	18°	1.124	1.776	1.94
Mill 1–18	1.000	17°	1.182	1.836	2.00
Mill 1–18	1.250	11°	1.686	2.336	2.50
Mill 1–18	1.500	8°	2.182	2.836	3.00
Mill 1–18	2.000	5°	3.180	3.836	4.00
Mill 1–18	1.500	8°	2.180	2.836	3.00
Mill 1–18	2.000	5°	3.176	3.862	4.00
Mill 1–18	2.500	4°	4.174	4.862	5.00
Mill 1–18	3.000	3°	5.174	5.862	6.00
Mill 1–18	4.000	2°	7.174	7.862	8.00
Mill 1–18	5.000	2°	9.172	9.862	10.00
Mill 1–18	6.000	1°	11.172	11.862	12.00
Mill 1–18	8.000	1°	15.172	15.862	16.00

Flange Mount Adapters



For HARVI™ Ultra Helical Cutters

HARVI ultra helical cutters can be used with our flange mount adapters to create a powerful combination on nearly all spindle connections on the market.

Our flange mount adapters enable the same cutting tool to be easily adapted to different machine spindle connections.

The Portfolio Features:


CV


DV


BT


HSK


KM4X™

Visit **kennametal.com** or contact your local Authorized Kennametal Distributor.

KENNAMETAL®

kennametal.com

Mill 1-25™

Primary Application

Also known as Mill1 Max, the Mill 1-25 cutter is made specifically for aluminum machining, but can also be used when machining cast iron. High-feed capabilities enable routing applications with an axial depth of cut of up to .98" (25mm).



Features and Benefits

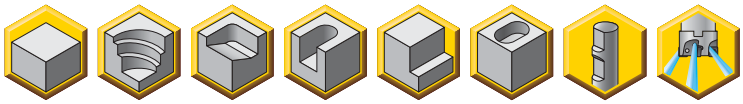
Functions

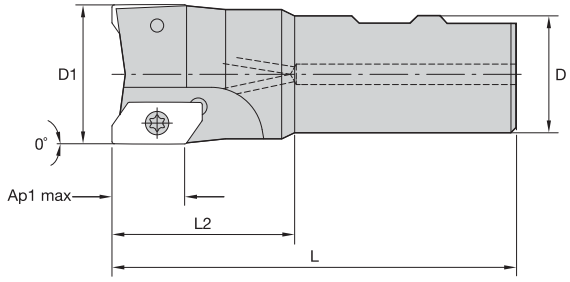
- Strong, thick inserts over .200" (5,2mm) thick.
- Axial depth of cut up to .98" (25mm).
- Cylindrical, monoblock/HSK63A, CV50, and shell mills.

Benefits

- Made for machining aluminum, but also used for machining cast iron.
- High-feed capability for routing applications.
- Balanced-by-design — if running over 10,000 RPM, balance the cutter assembly.

- For aluminum machining.
- High-speed capability.
- Insert screws should be changed when inserts are changed.







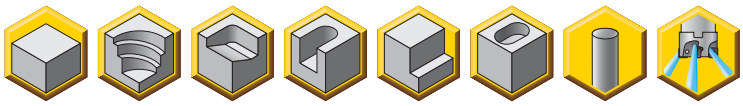
Weldon® End Mills

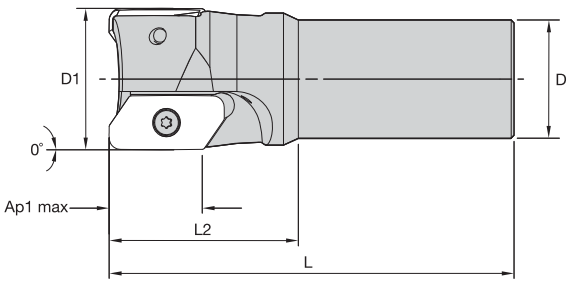
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2530317	**M1D150K2502W125L200**	1.500	1.250	4.280	2.000	.980	2	16.5°	1.21	25200

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	insert screw	in. lbs.	Torx driver
1.5000	**MS1374**	35.0	**DT15**







Cylindrical End Mills

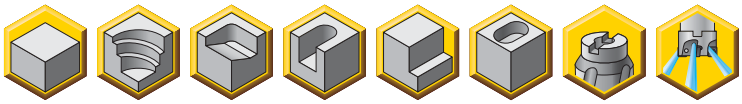
order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
2530318	**M1D150K2502C125L200**	1.500	1.250	4.280	2.000	.980	2	16.5°	1.23	25200
2530320	**M1D150K2502C125L400**	1.500	1.250	6.280	4.000	.980	2	16.5°	2.07	25200
2530322	**M1D200K2503C125L200**	2.000	1.250	4.155	2.000	.976	3	10.0°	1.54	20300

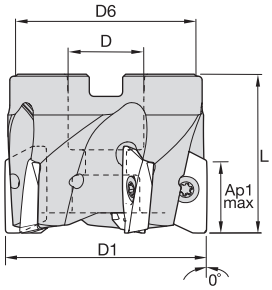
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	insert screw	in. lbs.	Torx driver
1.500	**MS1374**	35.0	**DT15**
2.000	**MS1374**	35.0	**DT15**

- For aluminum machining.
- High-speed capability.
- Insert screws should be changed when inserts are changed.
- Ap1 Max 0.985" (25mm).





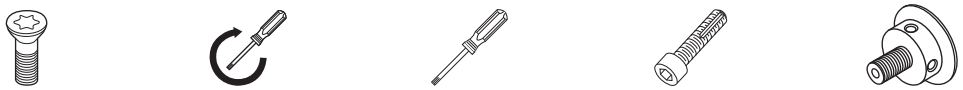


Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
2581445	**M1D200K2502S075L200**	2.000	.750	1.750	2.000	.980	2	10.0°	.87	20300
2581447	**M1D250K2503S100L225**	2.500	1.000	2.190	2.250	.970	3	7.0°	1.49	17500
2496869	**M1D300K2503S100L225**	3.000	1.000	2.190	2.250	.970	3	5.0°	2.33	15600
2581449	**M1D400K2504S125L225**	4.000	1.250	2.880	2.250	.970	4	3.5°	3.05	13100

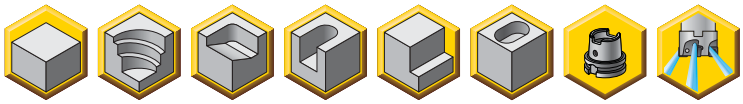
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

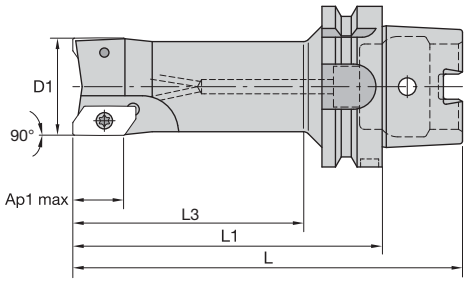
Spare Parts



D1	insert screw	in. lbs.	Torx driver	socket-head cap screw with coolant groove	coolant lock screw assembly
2.000	**MS1374**	35.0	**DT15**	**S445CG**	**—**
2.500	**MS1374**	35.0	**DT15**	**S459CG**	**—**
3.000	**MS1374**	35.0	**DT15**	**S458CG**	**—**
4.000	**MS1374**	35.0	**DT15**	**—**	**S2164C**

- Roughing and finishing of aluminum alloys
- Aggressive ramping angles.
- All integral shank tools are balanced to G2.5 at 10,000 RPM.
- High-speed capability.
- Ap1 Max 0.985" (25mm).
- Replace insert screws when inserts are changed.







Monoblocks • HSK63A

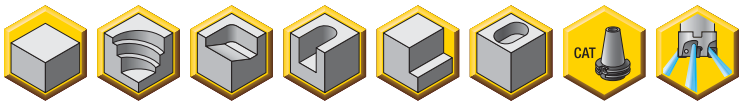
order number	catalog number	shank taper	D1	L	L1	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2530357	**M1D150K2502HSK63L477**	HSK63A	1.500	6.028	4.772	3.500	.984	2	16.5°	2.60	25200

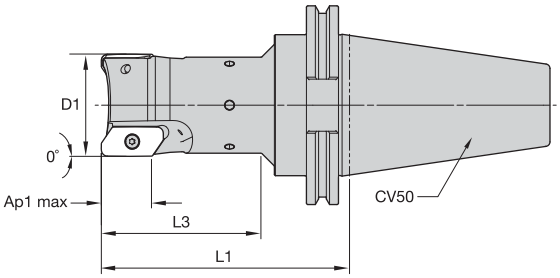
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver	 balancing screw
1.500	**MS1374**	35.0	**DT15**	**KUAM27**

- For aluminum machining.
- High-speed capability.
- All integral shank tools are balanced to G2.5 at 10,000 RPM.
- Insert screws should be changed when inserts are changed.







Monoblocks • CV50

order number	catalog number	taper shank	D1	L1	L3	Ap1 max	Z	max ramp angle	lbs	max RPM
2530374	**M1D200K2503CV50L700**	CV50	2.000	7.000	5.375	.976	3	10.0°	10.62	20300

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	insert screw	in. lbs.	Torx driver	balancing screw
2.000	**MS1374**	35.0	**DT15**	**KUAM27**

Insert Selection Guide

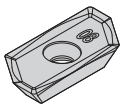
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.E..LDJ	KC410M	**.E..LDJ**	**KC410M**	.E..LDJ	KC410M
N3	.E..LDJ	KC410M	**.E..LDJ**	**KC410M**	.E..LDJ	KC410M
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

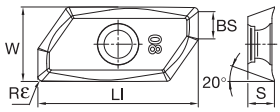
Indexable Inserts • KE..25L5..

- Roughing and finishing of aluminum alloys.
- Periphery ground for accuracy and consistency.
- Radiused cutting edge minimizes lap lines.
- Wiper facet with large radius for better floor surface finish.
- Ap1 max 0.985" (25mm).

● first choice
○ alternate choice

	KC410M
P	
M	
K	
N	●
S	
H	


KEGT-LDJ



KEGT-LDJ

KEGT-LDJ

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC410M
KG2508ELDJ	1.236	.205	.575	.210	.031	.001	2	●
KG2512ELDJ	1.239	.205	.575	.195	.047	.001	2	●
KG2516ELDJ	1.239	.205	.575	.179	.063	.001	2	●
KG2520ELDJ	1.239	.205	.575	.164	.079	.001	2	●
KG2531ELDJ	1.239	.205	.575	.120	.122	.001	2	●
KG2540ELDJ	1.239	.205	.575	.085	.157	.001	2	●
KG2550ELDJ	1.239	.205	.575	.045	.197	.001	2	●
KG2564ELDJ	1.181	.205	.575	—	.252	.001	2	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	.005	**.023**	.042	.003	**.017**	.030	.003	**.013**	.023	.002	**.011**	.020	.002	**.010**	.018	.E..LDJ
.E..LDJ2	.005	**.023**	.042	.003	**.017**	.030	.003	**.013**	.023	.002	**.011**	.020	.002	**.010**	.018	.E..LDJ2

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Stellram® 5720VZ16 Series

Taking extreme high-speed aluminum machining to the highest level.

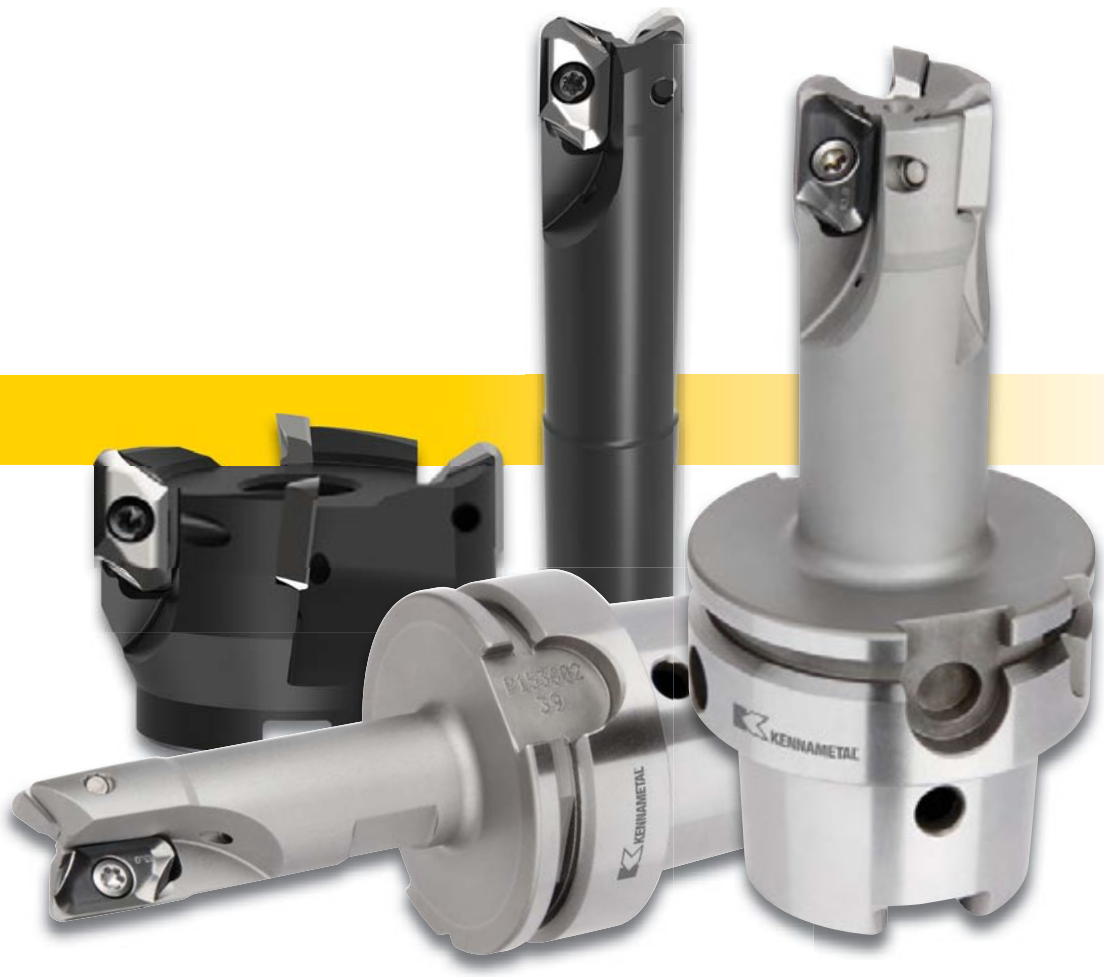


Features and Benefits

- Specially designed for machining pockets and profiles on aluminum and aluminum alloys.
- The 5720VZ16 series is designed, manufactured, and tested in accordance with EN ISO 15641:2001 to ensure maximum stability in high-speed applications.
- The internal coolant enables better chip evacuation and higher feed rates.
- The pockets are reinforced to enable for heavy feeding and safe ramping during machining. These features increase tool life and productivity.
- Excellent tools for thin-walled machining due to very low cutting pressure.
- Twelve different insert radii are available, each with the same cutting depth capacity of .630" (16mm).
- Cylindrical shank and HSK63A integral shanks are designed and balanced to G6.3 at 30,000 RPM for diameters up to 50mm. Diameter larger than 50mm are balanced to G6.3 at 24,000 RPM.

Metric monoblock cutters with HSK63A are available as standard in diameters 25, 32, 40, and 50mm.

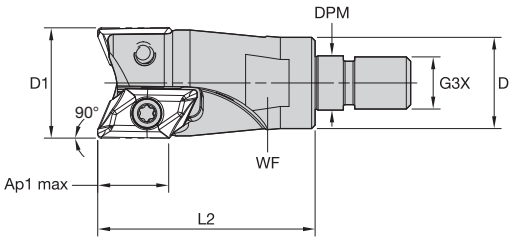
The Stellram® 5720VZ16 cutters are our latest design for high metal removal in aluminum applications.



Maximum ap = .630"
Diameter Range = 1–3"

- High-speed profiling and pocketing aluminum alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Screw-On End Mills

order number	catalog number	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	max ramp angle	lbs	max RPM
5672512	**A5720VZ16SA1.00Z02R2**	1.000	.827	.492	M12	1.969	18	.630	2	14.7°	.23	50000
5672719	**A5720VZ16SA1.25Z02R2**	1.250	1.142	.669	M16	1.969	24	.630	2	11.5°	.45	41500
5672521	**A5720VZ16SA1.25Z3R2**	1.250	1.142	.669	M16	1.967	24	.630	3	11.5°	.39	41500

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security. A dynamometric key and the right torque value are important, also.

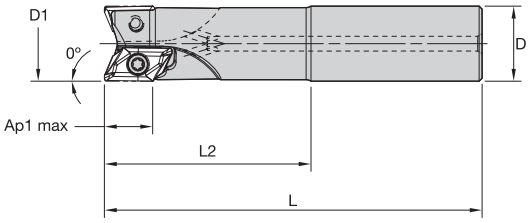
Spare Parts

D1	insert screw	in. lbs.	Torx driver
1.000	**DP5009A**	54.0	**TP20**
1.250	**DP5009A**	54.0	**TP20**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- High-speed profiling and pocketing aluminum alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max ramp angle	lbs	max RPM
5672718	**C5720VZ16CA1.0Z02R2.7**	1.000	1.000	5.030	2.750	.630	2	14.7°	.87	50000
5673549	**C5720VZ16CA1.25Z2R3.0**	1.250	1.250	5.280	2.997	.630	2	11.5°	1.49	41500
5672885	**C5720VZ16CA1.25Z3R3.0**	1.250	1.250	5.280	3.000	.630	3	11.5°	1.46	41500

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security. A dynamometric key and the right torque value are important, also.

Spare Parts



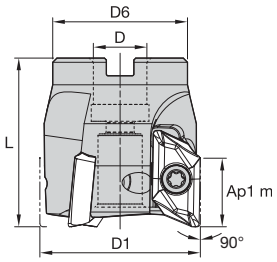


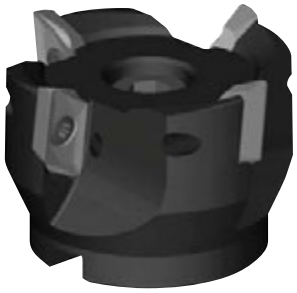
D1	insert screw	in. lbs.	Torx driver
1.000	**DP5009A**	54.0	**TP20**
1.250	**DP5009A**	54.0	**TP20**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- High-speed profiling and pocketing aluminum alloy components in the aerospace industry.
- Maximum stability in high-speed applications.
- Through-tool coolant allows better chip evacuation and higher feed rates.







Shell Mills • Coarse and Medium Pitch

order number	catalog number	D1	D	D6	L	Ap1 max	Z	max ramp angle	lbs	max RPM
5681118	**C5720VZ16-A1.50Z03R**	1.500	.500	1.260	1.575	.630	3	8.1°	.34	36500
5672871	**C5720VZ16-A2.00Z04R**	2.000	.750	1.772	1.574	.630	4	7.8°	.55	30000
5673799	**C5720VZ16-A2.00Z03R**	2.000	.750	1.772	1.575	.630	3	7.8°	.65	30000
5673175	**C5720VZ16-A2.50Z04R**	2.500	1.000	1.969	1.969	.630	4	5.8°	1.26	26000
5672872	**C5720VZ16-A2.50Z05R**	2.500	1.000	1.969	1.971	.630	5	5.8°	1.32	26000
5673338	**C5720VZ16-A3.00Z04R**	3.000	1.000	1.969	1.969	.630	4	4.6°	1.91	23000
5673745	**C5720VZ16-A3.00Z05R**	3.000	1.000	1.969	1.969	.630	5	4.6°	1.68	23000

NOTE: It is important to change the screw each time the insert is changed to ensure the highest security. A dynamometric key and the right torque value are important, also.

Spare Parts



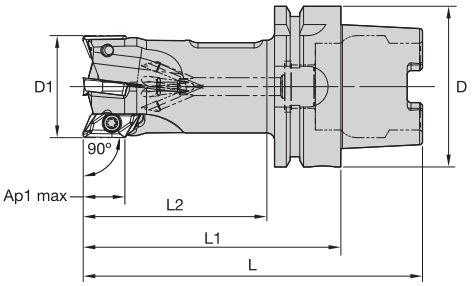



D1	insert screw	in. lbs.	Torx driver	socket-head cap screw
1.500	**DP5009A**	54.0	**TP20**	**#1/4-28X3/4SHCSA**
2.000	**DP5009A**	54.0	**TP20**	**#3/8-24X1SHCSA**
2.500	**DP5009A**	54.0	**TP20**	**#1/2-20X1-1/4SHCSA**
3.000	**DP5009A**	54.0	**TP20**	**#1/2-20X1-1/4SHCSA**

NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

- Providing solutions for the aerospace and aluminum industries' requirements for high-power and high-speed spindles.
- Specifically reinforced for highest metal removal rates for depths of cut ≤16mm.
- Locking system ensures operation safety and accuracy.
- Thin-walled machining for airframe components.







Monoblocks • HSK63A

order number	catalog number	D1	D	L	L1	L2	Ap1 max	Z	max ramp angle	kg	max RPM*
6087904	**5720VZ16HA025Z2R75**	25	63	133	101	75	16	2	14.5°	0,81	51000
5672766	**5720VZ16HA032Z3R75**	32	63	133	101	75	16	3	11.4°	0,92	41500
5673629	**5720VZ16HA040Z4R75**	40	63	133	101	75	16	4	7.8°	1,09	35000
6160117	**5720VZ16HA050Z4R75**	50	63	133	101	75	16	4	7.9°	1,41	30000

*Max RPM as per ISO 15641
NOTE: It is important to change the screw each time the insert is changed to ensure the highest security.
A dynamometric key and the right torque value are important, also.

Spare Parts







insert screw	Nm	driver
DP5009A	6,0	**TP20**

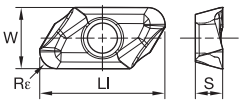
NOTE: Adjustable torque wrench (order number 6197561) and Torx Plus 20 bit (order number 6205891) may be purchased separately in order to ensure proper torque setting.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	.F..721	GH1	**.F..721**	**GH1**	.F..721	GH1
N3	.F..721	GH1	**.F..721**	**GH1**	.F..721	GH1
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Milling Inserts


ZDET-721



ZDET-721

● first choice
○ alternate choice

P		
M		
K		○
N		●
S		
H		

ZDET-721 • Sharp edge preparation for finishing applications

catalog number	LI	W	S	Resultant WorkPiece Radius In	hm	cutting edges	GH1
ZDET16M5PDFR721	.902	.443	.197	.010	.001	2	●
ZDET16M508FR721	.906	.443	.197	.032	.001	2	●
ZDET16M512FR721	.906	.443	.197	.047	.001	2	●
ZDET16M516FR721	.906	.443	.197	.063	.001	2	●
ZDET16M520FR721	.906	.443	.197	.079	.001	2	●
ZDET16M525FR721	.906	.443	.197	.098	.001	2	●
ZDET16M530FR721	.906	.443	.197	.118	.001	2	●
ZDET16M532FR721	.906	.443	.197	.126	.001	2	●
ZDET16M540FR721	.906	.443	.197	.157	.001	2	●
ZDET16M550FR721	.906	.443	.197	.197	.001	2	●
ZDET16M560FR721	.906	.443	.197	.236	.001	2	●
ZDET16M504FR721	.906	.443	.197	.020	.001	2	●

ZDET-ER721 • Honed edge preparation for roughing applications. Apply under unstable conditions.

catalog number	LI	W	S	Resultant WorkPiece Radius In	hm	cutting edges	GH1
ZDET16M525ER721	.906	.443	.197	.098	.001	2	●
ZDET16M530ER721	.906	.443	.197	.118	.001	2	●
ZDET16M540ER721	.906	.443	.197	.157	.001	2	●

NOTE: Inserts will be delivered with two screws. Because of heavy force to the screw, it is important to change the screw when changing the insert.

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)												Insert Geometry
	10%			20%			30%			40–100%			
.F..721	.001	**.013**	.016	.001	**.010**	.012	.001	**.008**	.011	.001	**.008**	.010	.F..721
.E..721	.003	**.013**	.016	.002	**.010**	.012	.002	**.008**	.011	.002	**.008**	.010	.E..721

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5720VZ16 Ramp Angle

cutter diameter	Insert ZDET16M5...FR-721								
	Facet 0.047	0.062	0.079	0.098	0.118	0.125	0.157	0.216	0.236
1.000	14.8	16.9	9.2	9.4	18.5	18.5	8.8	10.9	7.0
1.250	11.5	12.1	12.1	12.4	12.7	12.7	13.4	14.0	13.6
1.500	8.1	8.5	8.5	8.7	8.8	8.8	9.1	9.5	9.8
2.000	7.8	7.1	7.2	7.7	7.4	7.4	8.8	8.8	9.0
2.500	5.8	5.3	5.4	5.7	5.5	5.5	6.9	6.5	6.6
3.000	4.6	4.3	4.3	4.6	4.4	4.4	5.4	5.1	5.2

5720VZ16 Possible Maximum ap Slotting

Possible Max ap Slotting		
diameter	number of inserts	ap max
1.000	2	0.300
1.250	2	0.435
1.250	3	0.240
1.500	3	0.350
2.000	3	0.435
2.000	4	0.350
2.500	4	0.435
2.500	5	0.350
3.000	4	0.435
3.000	5	0.435

NOTE: Ap max depends on connection with cutter diameter, rigidity of the cutter, rigidity of the machine, and size of the flute.

5720VZ16 Possible Metal Removal

Possible Metal Removal Calculated with 24,000 RPM		
cutter diameter	ZU	MRR in^3/min
1.00	2	97
1.25	2	197
1.25	3	182.7
1.50	3	316
2.00	3	483
2.00	4	527
2.50	4	811
2.50	5	830
3.00	4	1030
3.00	5	1288

NOTE: The chart above shows total metal removal capacity (based on 24,000 RPM) by cutter diameter and number of teeth.
The maximum RPM is engraved on the cutter bodies.

Machinability by Materials • Aluminum

Alloy Group	Alloy Designation	Chemical Composition Limits (WT%)											
		Cu	Si	Fe	Mn	Mg	Zn	Cr	Ti	Pb	Bi	Al	Others
Al	1050	0.05	0.25	0.40	0.50	0.05	0.05	–	–	–	–	99.50min	–
	1100	0.05–0.20	Si+Fe 1.00 max	–	0.05	–	0.10	–	–	–	–	99.00min	–
AlCu	2011	5.00–6.00	0.40	0.70	–	–	0.30	–	–	0.20	0.60	remaining	–
	2014	3.90–5.00	0.50–1.20	0.70	0.40–1.20	0.20–0.80	0.25	0.10	0.15	–	–	remaining	–
	2017	3.50–4.50	0.20–0.80	0.70	0.40–1.00	0.40–0.80	0.25	0.10	0.15	–	–	remaining	–
	2024	3.80–4.90	0.50	0.50	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–
	2218	3.50–4.50	0.90	1	0.20	1.20–1.80	0.25	0.10	–	–	–	remaining	Ni1.7–2.3
	2224	3.80–4.40	0.12	0.15	0.30–0.90	1.20–1.80	0.25	0.10	0.15	–	–	remaining	–
AlMn	3003	0.05–0.20	0.60	0.70	1.00–1.50	–	0.10	–	–	–	–	remaining	–
AlSi	4032	0.50–1.30	11.00–13.50	1	–	0.80–1.30	0.25	0.10	–	–	–	remaining	Ni0.5–1.3
AlMg	5052	0.10	0.25	0.40	0.10	2.20–2.80	0.10	0.15–0.35	–	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H34
	5056	0.10	0.30	0.40	0.05–0.20	4.50–5.60	0.10	0.05–0.20	–	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H32
	5083	0.10	0.40	0.40	0.40–1.00	4.00–4.90	0.25	0.05–0.25	0.15	–	–	remaining	–
	5086	0.10	0.40	0.50	0.20–0.70	3.50–4.50	0.25	0.05–0.25	0.15	–	–	remaining	–
	–	–	–	–	–	–	–	–	–	–	–	–	H116
AlMgSi	6061	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.35	0.15	–	–	remaining	–
	6063	0.10	0.20–0.60	0.35	0.10	0.45–0.90	0.10	0.10	0.10	–	–	remaining	–
	6070	0.15–0.40	1.00–1.70	0.50	0.40–1.00	0.50–1.20	0.25	0.10	0.15	–	–	remaining	–
	6151	0.35	0.60–1.20	1	0.20	0.45–0.80	0.25	0.15–0.35	0.15	–	–	remaining	–
	6262	0.15–0.40	0.40–0.80	0.70	0.15	0.80–1.20	0.25	0.04–0.14	0.15	0.40	0.70	remaining	–
	6351	0.10	0.70–1.30	0.50	0.40–0.80	0.40–0.80	0.20	–	0.20	–	–	remaining	–
	6463	0.20	0.20–0.60	0.15	0.05	0.45–0.90	0.05	–	–	–	–	remaining	–
AlZn	7001	1.60–2.60	0.35	0.40	0.20	2.60–3.40	6.80–8.00	0.18–0.35	0.20	–	–	remaining	–
	7003	0.20	0.30	0.35	0.30	0.50–1.00	5.00–6.50	0.20	0.20	–	–	remaining	Zr0.05–0.25
	7050	2.00–2.60	0.12	0.15	0.10	1.90–2.60	5.70–6.70	0.04	0.06	–	–	remaining	Zr0.08–0.15
	7075	1.20–2.00	0.40	0.50	0.30	2.10–2.90	5.10–6.10	0.18–0.28	0.20	–	–	remaining	–
	7178	1.60–2.40	0.40	0.50	0.30	2.40–3.10	6.30–7.30	0.18–0.35	0.20	–	–	remaining	–
	7475	1.20–1.90	0.10	0.12	0.06	1.90–2.60	5.20–6.20	0.18–0.25	0.06	–	–	remaining	–

(continued)

Machinability

A Excellent
B Good-to-Excellent
C Good
D Not Good

Vc = π x D x n/1000 m/min = mm x RPM

D: Tool diameter, N: RPM, Vc: Cutting speed, π = 3.1416

Choose a cutting speed in the range of values, compatible with the cutter max rotation capacity (engraved on the body) and your spindle stability.

(Machinability by Materials • Aluminum — continued)

	Typical Tremper	Rm (Mpa)	Machinability Chip Formation	Machinability	Typical Applications	vc SFM min–max	fz IPT max
	H14	105	D	A	• Chemical equipment. • Sheet metal work. • Coiled tube.	2625–9840	0.008
	H14	90	D	A			
	T3	310	A	A	• Screw machine products. • Tuck frame. • Aircraft structure. • Jet engine impellers. • Aircraft engine • Cylinder heads.	1315–8200	0.010
	T6	430	B	A			
	T4	390	B	A			
	T4	465	B	A			
	T72	331	B	B			
	–	–	A	A			
	H14	140	D	B	• Cooking utensils. • Chemical equipment.	656–8200	0.008
	T6	379	B	D	• Pistons.	656–3280	0.007
	H14	260	C	A	• Architectural. • Cable sheeting. • Welded pressure vessels. • Hydraulic tubes. • Transportation equipment.	1315–9840	0.010
	–	–	–	–			
	H12	300	C	A			
	–	–	–	–			
	H112	335	C	A			
	H32	300	C	A			
	–	–	–	–			
	T6	300	C	B	• Heavy-duty structure. • Furniture. • Architectural. • Heavy-duty welded structure. • Pipeline. • Heat sink.	1315–8200	0.008
	T5	200	C	B			
	T6	379	C	C			
	T6	–	C	C			
	T9	400	B	B			
	T6	310	D	C			
	T6	241	C	B			
	O	–	B	A	• High-strength structure. • Aircraft structure.	1315–9840	0.010
	T5	400	B	A			
	T73	530	B	A			
	T6	570	B	A			
	T6	600	B	A			
	T61	565	B	A			

Recommendations for High Speed Machining at 8,000 RPM or above

- Check spindle condition:
  - Runout
  - Clamping of the attachment in traction
  - Marking and cleanliness
- Check that the tool is suitable for the required use.
- Inserts must be locked positively in the pocket and secured using the torx screw provided. The screw must be torqued to the correct value as indicated in the charts on the product pages.
- Because of heavy force to the screw, it is important to change the screw when changing the insert.
- Check the balancing of the assembled tool: cutter body, inserts, and attachment.
- Before start up, note the maximum RPM engraved on the tool. The maximum RPM is linked to a precise balancing value.
- Ensure that the field of application of the tool shown in our technical documents and technological parameters is observed:

A_e (mm)	width of cut, lateral engagement (radial)
a_p (mm)	Axial depth of cut
f_z (mm/tooth)	Feed per tooth
n (RPM)	revolutions per minute

Kennametal cannot accept responsibility for misuse of this product due to:

- Non-observance of the above instructions
- Machine without casing
- Incorrect clamping of workpieces
- No safety device on the machine
- Any misuse or incorrect clamping

The optimum rotation must be determined by condition of the spindle.
The spindle must be rigid to run at these higher RPMs.

Under no circumstances must any attempt be made to repair this tool.
The only permitted maintenance is the indexing or replacement of the inserts.

When assembling the cutter to a Shrink Fit holder, the maximum protrusion cannot exceed 10% of the reach of tool.

Balancing:

- Cylindrical shank and HSK63A integral shanks are designed and balanced to G6.3 at 30,000 RPM for diameters up to 50mm. Diameter larger than 50mm are balanced to G6.3 at 24,000 RPM.
- Cylindrical shank tools mounted in a Shrink Fit holder or any other chuck mill holder + inserts + screws must be re-inspected for balance as an assembly by the end-user when at or exceeding 8,000 RPM. End-user must balance the assembly at a G6.3 at 30,000 RPM maximum.
- Shell mill and modular head cutters are not balanced. These tools must be re-inspected for balance as an assembly, cutter + inserts + screws, by the end-user for high speed machining at 8,000 RPM or above. End-user must balance the assembly at a G6.3 value minimum.
- Balancing requires removing some material by drilling or milling operations. To avoid making modular heads weaker, limit these operations by avoiding high RPM. It is not recommended to remove material by drilling operation.
- For each new modular head added to the same extension, re-balance the assembly. For each new shell mill installed on the same toolholder, re-balance the assembly.

Tighten the modular head to the extension; with lubricant, apply the torque value of:

Thread sizes (mm)	Torque Values Ft. Lbs.
M6	7.37
M8	22.12
M10	36.87
M12	59.00
M16	81.13

Tighten the bolt between the shell mill and toolholder; with lubricant, apply the torque value of:

Thread sizes (inch)	Cutter Bore Size (inch)	Torque Values Ft. Lbs.
0.250	0.500	7.37
0.375	0.750	22.12
0.500	1.000	36.87
0.625	1.250	59.00
0.750	1.500	81.13

Mobile App

The Kennametal mobile app makes it easy to access product information, calculators, and much more from iPhone® and Android™ devices.



FEATURES

Scan a Kennametal tool package barcode or search a product catalog number to access complete product information.

Product information includes tool image, dimensions, grades, and product highlights.

View product availability at global locations.

Get speed and feed information in inch and metric values for all metalcutting products.

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Available on the App Store

KSSM™ Platform

Primary Application

The Kennametal KSSM platform is a versatile solution providing three insert sizes that cover a wide range of applications: face milling, shoulder milling, slotting, profiling, and Z-axis (plunge milling).



Features and Benefits

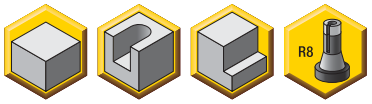
KSSM IC 10 Inserts

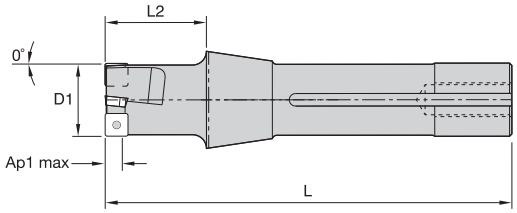
- Four cutting edges.
- Excellent surface finishes.
- Low power requirements.

KSSM IC 12 Inserts

- Four cutting edges.
- Excellent surface finishes.
- Low power requirements.
- Increased depth of cut.

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Bridgeport Shank

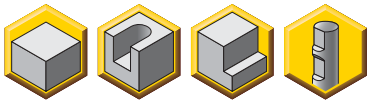
order number	catalog number	D1	L	L2	Ap1 max	Z	lbs	max RPM
1229112	**KISBR150SP10T30F**	1.500	5.180	1.250	.259	4	1.20	30300
1229113	**KISBR200SP10T30F**	2.000	5.180	1.250	.259	5	1.50	26300

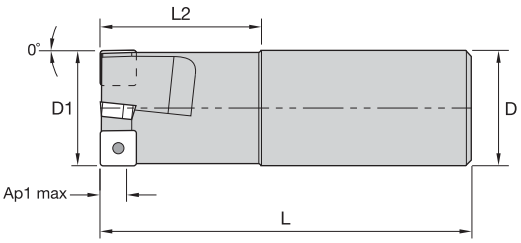
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
1.500	**MS2148**	10.0	**DT9IP**
2.000	**MS2148**	10.0	**DT9IP**

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







Weldon® End Mills

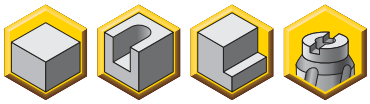
order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
1229091	**KISR075SP10T30F**	.750	.750	3.500	1.470	.259	1	.40	42900
1229092	**KISR100SP10T30F**	1.000	1.000	3.500	1.220	.259	2	.60	37100
1229095	**KISR125SP10T30F**	1.250	1.250	4.030	1.750	.259	3	1.10	33200
1229096	**KISR150SP10T30F**	1.500	1.500	4.030	1.340	.259	4	1.63	30300

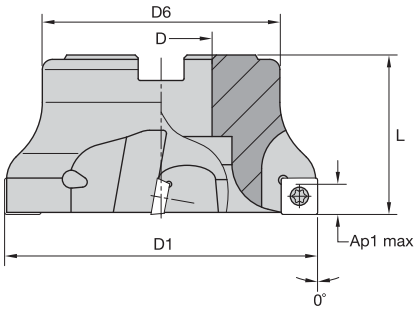
NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.750	**MS2148**	10.0	**DT9IP**
1.000	**MS2148**	10.0	**DT9IP**
1.250	**MS2148**	10.0	**DT9IP**
1.500	**MS2148**	10.0	**DT9IP**

- Mill 90° walls.
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges per insert.







End Mills • Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	lbs	max RPM
1229047	**KSSR150SP10T30F2**	1.500	.500	1.355	1.250	.259	4	.30	30300
1229078	**KSSR200SP10T30F3**	2.000	.750	1.625	1.750	.259	5	.60	26300
1229079	**KSSR250SP10T30F4**	2.500	1.000	2.065	1.750	.259	6	.90	23500
1229080	**KSSR300SP10T30F4**	3.000	1.000	2.065	1.750	.259	8	1.30	21450
1229081	**KSSR400SP10T30F5**	4.000	1.250	2.755	2.000	.259	10	2.50	18600

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.

Spare Parts

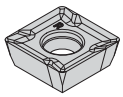
D1	 insert screw	 in. lbs.	 Torx Plus driver	 socket-head cap screw
1.500	**MS2148**	10.0	**DT9IP**	**S422**
2.000	**MS2148**	10.0	**DT9IP**	**S445**
2.500	**MS2148**	10.0	**DT9IP**	**–**
3.000	**MS2148**	10.0	**DT9IP**	**–**
4.000	**MS2148**	10.0	**DT9IP**	**–**

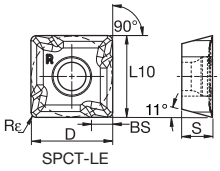
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPK30
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LD	KC510M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
S4	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
H1	.F..LD	KC510M	–	–	–	–

Indexable Inserts • SP.T10T3

- Aluminum workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.


SPCT-LE



SPCT-LE

● first choice
○ alternate choice

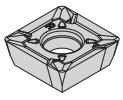
beyond

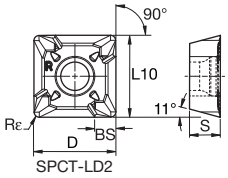
	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	●
N	●		○								
S			●	●				●	●		
H			○								

SPCT-LE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPCT31251PPFL8LE	.394	.156	.394	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–	–
SPCT31251PPFR8LE	.394	.156	.394	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–	–
SPCT3125PPFL8LE	.394	.156	.394	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–	–
SPCT3125PPFR8LE	.394	.156	.394	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–	–
SPCT31253PPFR8LE	.394	.156	.394	.106	.047	.001	4	●	–	–	–	–	–	–	–	–	–	–
SPCT31255FNLE	.394	.156	.394	—	.078	.001	4	●	–	–	–	–	–	–	–	–	–	–

- Light and finish machining.
- Precision ground.
- 75° rake face.
- Four cutting edges.


SPCT-LD2



SPCT-LD2

● first choice
○ alternate choice

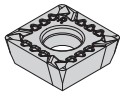
beyond

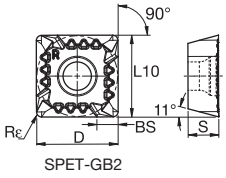
	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	●
N	●		○								
S			●	●				●	●		
H			○								

SPCT-LD2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPCT31251PPEL8LD2	.394	.156	.394	.106	.016	.002	4	–	–	–	●	–	–	–	–	–	–	–
SPCT31251PPER8LD2	.394	.156	.394	.106	.016	.002	4	–	–	–	●	–	–	–	–	–	–	–
SPCT3125PPEL8LD2	.394	.156	.394	.106	.031	.002	4	–	–	–	●	–	–	–	–	–	–	–
SPCT3125PPER8LD2	.394	.156	.394	.106	.031	.002	4	–	●	–	●	–	–	●	–	–	–	–
SPCT31253PPEL8LD2	.394	.156	.394	.106	.047	.002	4	–	–	–	●	–	–	–	–	–	–	–
SPCT31253PPER8LD2	.394	.156	.394	.106	.047	.002	4	–	–	–	●	–	–	–	–	–	–	–
SPCT31254ENLD2	.394	.156	.394	—	.063	.002	4	–	–	–	●	–	–	–	●	–	–	–
SPCT31255ENLD2	.394	.156	.394	—	.078	.002	4	–	–	–	●	–	–	–	–	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SPET-GB2

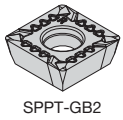


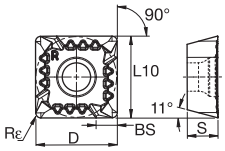
SPET-GB2

SPET-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPET31251PPEL8GB2	.394	.156	.394	.106	.016	.003	4	–	–	–	●	●	●	–	–	–	–	–
SPET31251PPER8GB2	.394	.156	.394	.106	.016	.003	4	–	–	–	●	●	●	–	–	–	–	–
SPET3125PPEL8GB2	.394	.156	.394	.106	.031	.003	4	–	●	–	●	●	●	–	–	–	–	–
SPET3125PPER8GB2	.394	.156	.394	.106	.031	.003	4	–	●	–	●	●	●	●	–	–	–	–
SPET3125PPSL8GB2	.394	.156	.394	.106	.031	.005	4	–	–	–	●	–	●	–	–	–	–	–
SPET3125PPSR8GB2	.394	.156	.394	.106	.031	.005	4	–	●	–	●	●	●	–	–	–	–	–

- Medium machining.
- PSTS — Precision Pressed and Sintered to Size.
- 5° rake face.
- Four cutting edges.


SPPT-GB2



SPPT-GB2

● first choice
○ alternate choice

beyond

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	●
N	●		○								
S			●	●				●	●		
H			○								

SPPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KTPK20	KY3500
SPPT3125PPER8GB2	.394	.156	.394	.106	.031	.003	4	–	–	–	–	●	●	–	–	–	–	–
SPPT3125PPSR8GB2	.394	.156	.394	.106	.031	.005	4	–	–	–	–	●	●	–	–	–	●	–

Recommended Starting Feeds

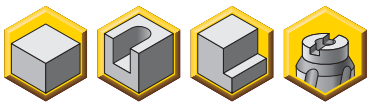
Recommended Starting Feeds [IPT]

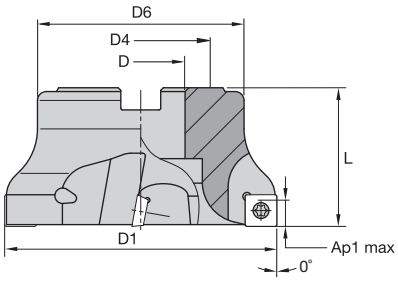
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.005	**.017**	.028	.003	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.F..LE
.F..LD	.005	**.017**	.028	.003	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.F..LD
.E..LD2	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD2
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..GB2	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB2
.S..GB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB
.S..GB2	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB2
.S..GN	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Mill 0° walls.
- Excellent surface finishes.
- Low power requirements.
- 4 cutting edges per insert.





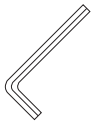


End Mills • Shell Mills

order number	catalog number	D1	D	D4	D6	L	Ap1 max	Z	lbs	max RPM
1024970	KSSISR200SD430C3	2.000	.750	—	1.625	1.750	.361	3	.79	20450
1024994	KSSISR200SD430F3	2.000	.750	—	1.625	1.750	.361	5	.77	20450
1024972	KSSISR200SD430M3	2.000	.750	—	1.625	1.750	.361	4	.75	20450
1025000	KSSISR250SD430F4	2.500	1.000	—	2.065	1.750	.361	6	1.23	18290
1024998	KSSISR250SD430M4	2.500	1.000	—	2.065	1.750	.361	5	1.20	18290
1024930	KSSISR300SD430C4	3.000	1.000	—	2.065	1.750	.361	4	1.42	16700
1024932	KSSISR300SD430F4	3.000	1.000	—	2.065	1.750	.361	7	1.38	16700
1024931	KSSISR300SD430M4	3.000	1.000	—	2.065	1.750	.361	6	1.38	16700
1025025	KSSISR400SD430C5	4.000	1.250	—	2.755	2.000	.361	5	3.05	14460
1025033	KSSISR400SD430F5	4.000	1.250	—	2.755	2.000	.361	8	3.01	14460
1025029	KSSISR400SD430M5	4.000	1.250	—	2.755	2.000	.361	7	3.03	14460
1025027	KSSISR400SD430C6	4.000	1.500	—	3.685	2.000	.361	5	3.58	14460
1025065	KSSISR400SD430F6	4.000	1.500	—	3.685	2.000	.361	8	3.62	14460
1025031	KSSISR400SD430M6	4.000	1.500	—	3.685	2.000	.361	7	3.57	14460
1024933	KSSISR500SD430C6	5.000	1.500	—	3.685	2.380	.361	6	5.82	12940
1024965	KSSISR500SD430F6	5.000	1.500	—	3.685	2.380	.361	10	5.96	12940
1024964	KSSISR500SD430M6	5.000	1.500	—	3.685	2.380	.361	8	5.91	12940
1024966	KSSISR600SD430C6	6.000	1.500	—	3.685	2.380	.361	8	8.52	11800
1024968	KSSISR600SD430F6	6.000	1.500	—	3.685	2.380	.361	12	8.60	11800
1024967	KSSISR600SD430M6	6.000	1.500	—	3.685	2.380	.361	10	8.58	11800
1025071	KSSISR600SD430C8	6.000	2.000	—	4.875	2.380	.361	8	7.37	11800
1025094	KSSISR600SD430M8	6.000	2.000	—	4.875	2.380	.361	10	7.44	11800
1025102	KSSISR800SD430C10	8.000	2.500	4.000	6.125	2.380	.361	10	15.40	10230
1025136	KSSISR800SD430F10	8.000	2.500	4.000	6.125	2.380	.361	14	15.30	10230
1025134	KSSISR800SD430M10	8.000	2.500	4.000	6.125	2.380	.361	12	15.40	10230
1025140	KSSISR1000SD430M10	10.000	2.500	4.000	8.125	2.380	.361	16	25.90	9150

NOTE: Standard milling cutters will accept insert nose radii up to .079" without modification.
2" cutter does not have shims.
2", 2.5", and 3" fine-pitch cutters do not have shims.

Spare Parts

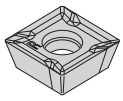
D1	 insert screw	 in. lbs.	 Torx Plus driver	 shim	 shim screw	 in. lbs.	 hex driver	 socket-head cap screw
2.000	MS2078	35.0	DT15IP	—	—	40.0	—	S445
2.500	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	S458
3.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—
4.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—
5.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—
6.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—
8.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—
10.000	MS2078	35.0	DT15IP	SM449	SRS3	40.0	DH35M	—

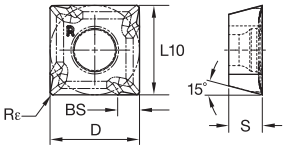
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1 - P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3 - P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5 - P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1 - M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1 - K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1 - N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1 - S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts • SD.T1204

- Aluminum workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.


SDCT-LE



SDCT-LE

● first choice
○ alternate choice

beyond

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P			○	●		●	●		○	
M			●	●		○	○	○	●	
K		●	○		●	○				●
N	●		○							
S			●	●				●	●	
H			○							

SDCT-LE

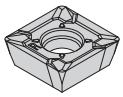
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT431PDFL8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT431PDFR8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT43PDFL8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT43PDFR8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT433PDFL8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT433PDFR8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT434FNLE	.500	.188	.500	—	.063	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT435FNLE	.500	.188	.500	—	.078	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT436FNLE	.500	.188	.500	—	.094	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT438FNLE	.500	.188	.500	—	.125	.001	4	●	–	–	–	–	–	–	–	–	–

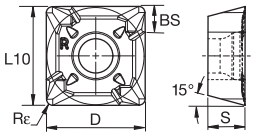
- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.

beyond

P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N	●			○							
S				●	●				●	●	
H				○							

● first choice
○ alternate choice


SDCT-LD2

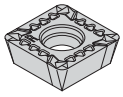


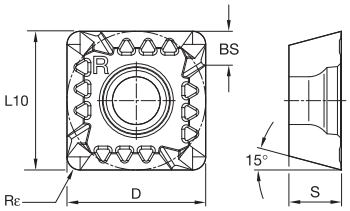
SDCT-LD2

SDCT-LD2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT431PDEL8LD2	.500	.188	.500	.106	.016	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT431PDER8LD2	.500	.188	.500	.115	.016	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT43PDEL8LD2	.500	.188	.500	.130	.031	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT43PDER8LD2	.500	.188	.500	.130	.031	.002	4	–	●	–	●	–	–	●	–	●	–
SDCT433PDEL8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT433PDER8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	●	–
SDCT434ENLD2	.500	.188	.500	–	.063	.002	4	–	–	–	●	–	–	–	–	●	–
SDCT435ENLD2	.500	.188	.500	–	.078	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT436ENLD2	.500	.188	.500	–	.094	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT438ENLD2	.500	.188	.500	–	.125	.002	4	–	–	●	●	–	–	–	●	●	–
SDCT4316ENLD2	.500	.188	.500	–	.250	.002	2	–	–	–	●	–	–	–	–	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB2

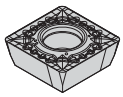


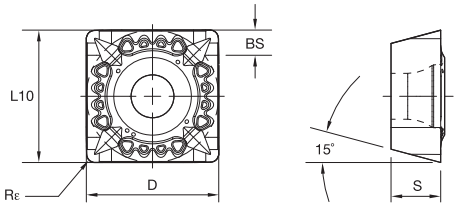
SDET-GB2

SDET-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET43PDEL8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	–	–	–	–
SDET43PDER8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	●	–	●	–
SDET43PDSL8GB2	.500	.188	.500	.130	.031	.005	4	–	–	–	●	–	●	–	–	–	–
SDET43PDSR8GB2	.500	.188	.500	.130	.031	.005	4	–	●	–	●	●	●	●	–	–	–
SDET433PDEL8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	–	–	–	–	–
SDET433PDER8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	●	●	–	–	–
SDET434SNGB2	.500	.188	.500	–	.063	.005	4	–	●	–	●	●	●	–	–	–	–
SDET435SNGB2	.500	.188	.500	–	.078	.005	4	–	●	–	●	●	●	●	–	–	–
SDET436SNGB2	.500	.188	.500	–	.094	.005	4	–	–	–	●	●	●	–	–	–	–
SDET438SNGB2	.500	.188	.500	–	.125	.005	4	–	●	–	●	●	●	–	–	–	–
SDET438XENGB2	.500	.188	.500	–	.125	.003	2	–	–	–	●	–	–	–	–	–	–
SDET4316SNGB2	.500	.188	.500	–	.250	.005	2	–	–	–	–	–	●	–	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB



SDET-GB

● first choice
○ alternate choice

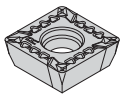
beyond

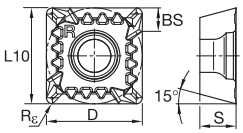
P				○	●		●	●		○			
M				●	●		○	○	○	●			
K			●	○		●	○				●		
N		●		○									
S				●	●				●	●			
H				○									

SDET-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET43PDER8GB	.500	.188	.500	.101	.031	.003	4	–	●	–	–	–	–	–	–	●	–
SDET43PDSR8GB	.500	.188	.500	.101	.031	.006	4	–	–	–	●	–	●	●	●	●	–
SDET433PDER8GB	.500	.188	.500	.086	.047	.003	4	–	–	–	●	–	–	●	–	●	–
SDET433PDSR8GB	.500	.188	.500	.085	.047	.006	4	–	–	–	●	–	–	–	–	●	–
SDET434ENGB	.500	.188	.500	—	.062	.003	4	–	–	–	–	–	–	–	–	●	–
SDET434SNGB	.500	.188	.500	—	.062	.006	4	–	–	–	●	–	–	–	–	●	–
SDET436ENGB	.500	.188	.500	—	.094	.003	4	–	–	–	●	–	–	–	–	●	–
SDET436SNGB	.500	.188	.500	—	.094	.006	4	–	–	–	●	–	–	–	–	●	–
SDET438ENGB	.500	.188	.500	—	.125	.003	4	–	–	–	●	–	–	–	–	●	–
SDET438SNGB	.500	.188	.500	—	.125	.006	4	–	–	–	–	–	–	–	–	●	–
SDET4312ENGB	.500	.188	.500	—	.188	.003	2	–	–	–	●	–	–	–	–	●	–
SDET4312SNGB	.500	.188	.500	—	.188	.006	2	–	–	–	●	–	–	–	–	●	–
SDET4316ENGB	.500	.188	.500	—	.250	.003	2	–	–	–	●	–	–	–	–	●	–
SDET4316SNGB	.500	.188	.500	—	.250	.006	2	–	–	–	●	–	●	–	●	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDPT-GB2

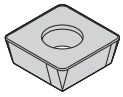


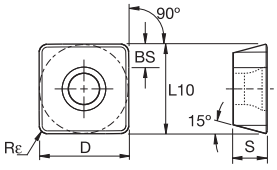
SDPT-GB2

SDPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDPT43PDER8GB2	.500	.188	.500	.106	.031	.003	4	–	–	–	●	●	●	●	–	●	–
SDPT43PDSR8GB2	.500	.188	.500	.106	.031	.005	4	–	–	–	●	●	●	●	–	●	–

- Heavy machining.
- Precision ground.
- 0° rake face flat top.
- Four cutting edges.


SDCW-GN



SDCW-GN

● first choice
○ alternate choice

beyond

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P			○	●		●	●		○	
M			●	●		○	○	○	●	
K		●	○		●	○				●
N	●		○							
S			●	●				●	●	
H			○							

SDCW-GN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCW43EDSR8GN	.500	.188	.500	.132	.031	.006	4	–	–	–	–	–	–	–	–	–	●
SDCW43PDSR8GN	.500	.188	.500	.099	.031	.006	4	–	–	–	–	–	–	–	–	–	●
SDCW433PDSR8GN	.500	.188	.500	.120	.047	.006	4	–	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.005	**.017**	.030	.003	**.012**	.021	.003	**.009**	.016	.002	**.008**	.014	.002	**.007**	.013	.F..LE
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..LD2	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD2
.E..GB	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB
.E..GB2	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB2
.S..GB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB
.S..GB2	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB2
.S..GN	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSSM-KSSP Helical

Primary Application

KSSM-KSSP helical cutters were originally developed and proven for the aerospace industry, but are now available for all industries. The proprietary variable rake design minimizes vibration and chatter.



Features and Benefits

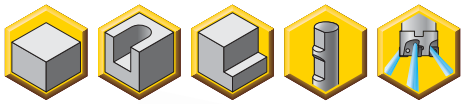
Features

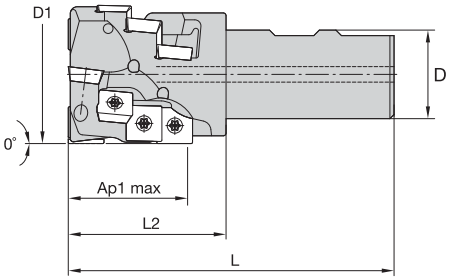
- Patented HARVI™ technology.
- Progressive helical rakes.
- Unique coolant supply.

Benefits

- Increased tool life in titanium.
- Increased metal removal rates.
- Lower power consumption.
- Ensures chip evacuation, even on exotic materials.

- Patented HARVI™ technology.
- Progressive helical rakes.
- Increased metal removal rates (MRR).
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges.







Weldon® End Mills

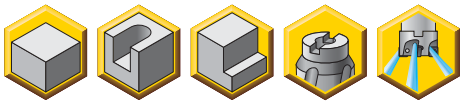
order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U	lbs	max RPM
2528269	**KSSP200R3SD43W125L169**	2.000	1.250	4.530	2.250	1.691	12	3	1.73	16300

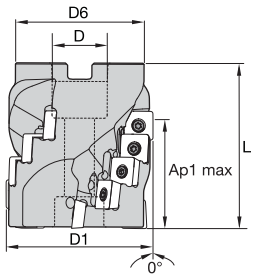
NOTE: Maximum nose radii of lead insert is .094" for a 2" diameter cutter.
All subsequent inserts up the flute should have a maximum nose radius of .031" to avoid lap lines.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx wrench
2.000	**MS1273**	35.0	**TT15**

- Patented HARVI™ technology.
- Progressive helical rakes.
- Increased Metal Removal Rates (MRR).
- Excellent surface finishes.
- Low power requirements.
- Four cutting edges.







Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	Z U	lbs	max RPM
2601012	**KSSP200R3SD43L125**	2.000	.750	1.750	1.875	1.275	9	3.0	.87	16300
2400680	**KSSP200R3SD43L168**	2.000	.750	1.750	2.250	1.691	12	3.0	1.02	16300
3045090	**KSSP200R3SD43L200HC**	2.000	.750	1.913	3.000	2.072	15	3.0	1.42	16300
2400681	**KSSP250R3SD43L200**	2.500	1.000	2.190	2.750	2.005	15	3.0	2.34	14550
2400682	**KSSP300R4SD43L240**	3.000	1.250	2.750	3.250	2.427	24	4.0	4.07	13300
2977923	**KSSP300R5SD43L400HC**	3.000	1.250	2.900	5.000	4.114	55	5.0	5.95	13300

NOTE: ZU = Effective number of flutes.
Maximum nose radii of lead insert is .094" for 2" diameter cutters and .125" for 2.50" diameter cutters and above.
All subsequent inserts up the flutes should have a maximum nose radius of .031" to avoid lap lines.

Spare Parts

order number	D1	 insert screw	 in. lbs.	 Torx Plus wrench	 Torx wrench
2601012	2.000	**MS1273**	35.0	**–**	**TT15**
2400680	2.000	**MS1273**	35.0	**–**	**TT15**
3045090	2.000	**MS2085**	35.0	**TTP15**	**–**
2400681	2.500	**MS1273**	35.0	**–**	**TT15**
2400682	3.000	**MS1273**	35.0	**–**	**TT15**
2977923	3.000	**MS2085**	35.0	**TTP15**	**–**

Insert Selection Guide

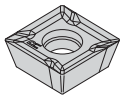
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

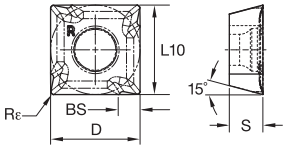
- Aluminum workpiece materials.
- Precision ground.
- 20° rake face.
- Four cutting edges.

beyond

P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							

● first choice
○ alternate choice


SDCT-LE

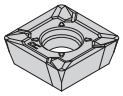


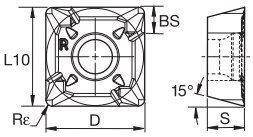
SDCT-LE

SDCT-LE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT431PDFL8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT431PDFR8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT43PDFL8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT43PDFR8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT433PDFL8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT433PDFR8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT434FNLE	.500	.188	.500	—	.063	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT435FNLE	.500	.188	.500	—	.078	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT436FNLE	.500	.188	.500	—	.094	.001	4	●	–	–	–	–	–	–	–	–	–
SDCT438FNLE	.500	.188	.500	—	.125	.001	4	●	–	–	–	–	–	–	–	–	–

- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.


SDCT-LD2



SDCT-LD2

● first choice
○ alternate choice

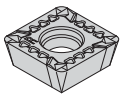
beyond

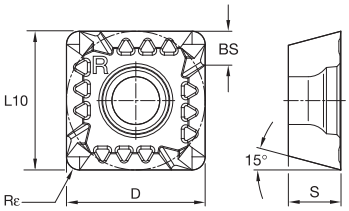
		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P				○	●		●	●		○	
M				●	●		○	○	○	●	
K			●	○		●	○				●
N		●		○							
S				●	●				●	●	
H				○							

SDCT-LD2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCT431PDEL8LD2	.500	.188	.500	.106	.016	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT431PDER8LD2	.500	.188	.500	.115	.016	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT43PDEL8LD2	.500	.188	.500	.130	.031	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT43PDER8LD2	.500	.188	.500	.130	.031	.002	4	–	●	–	●	–	–	●	–	●	–
SDCT433PDEL8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT433PDER8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	●	–
SDCT434ENLD2	.500	.188	.500	–	.063	.002	4	–	–	–	●	–	–	–	–	●	–
SDCT435ENLD2	.500	.188	.500	–	.078	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT436ENLD2	.500	.188	.500	–	.094	.002	4	–	–	–	●	–	–	–	–	–	–
SDCT438ENLD2	.500	.188	.500	–	.125	.002	4	–	–	●	●	–	–	–	●	●	–
SDCT4316ENLD2	.500	.188	.500	–	.250	.002	2	–	–	–	●	–	–	–	–	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB2

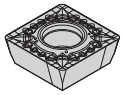


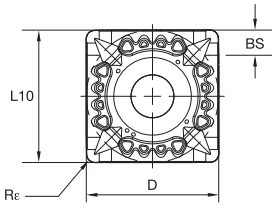
SDET-GB2

SDET-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET43PDEL8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	–	–	–	–
SDET43PDER8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	●	–	●	–
SDET43PDSL8GB2	.500	.188	.500	.130	.031	.005	4	–	–	–	●	–	●	–	–	–	–
SDET43PDSR8GB2	.500	.188	.500	.130	.031	.005	4	–	●	–	●	●	●	●	–	–	–
SDET433PDEL8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	–	–	–	–	–
SDET433PDER8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	●	●	–	–	–
SDET434SNGB2	.500	.188	.500	–	.063	.005	4	–	●	–	●	●	●	–	–	–	–
SDET435SNGB2	.500	.188	.500	–	.078	.005	4	–	●	–	●	●	●	●	–	–	–
SDET436SNGB2	.500	.188	.500	–	.094	.005	4	–	–	–	●	●	●	–	–	–	–
SDET438SNGB2	.500	.188	.500	–	.125	.005	4	–	●	–	●	●	●	–	–	–	–
SDET438XENGB2	.500	.188	.500	–	.125	.003	2	–	–	–	●	–	–	–	–	–	–
SDET4316SNGB2	.500	.188	.500	–	.250	.005	2	–	–	–	–	–	●	–	–	–	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDET-GB



SDET-GB

● first choice
○ alternate choice

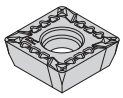
beyond

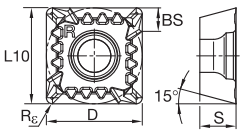
P			○	●		●	●		○		
M			●	●		○	○	○	●		
K		●	○		●	○				●	
N	●		○								
S			●	●				●	●		
H			○								

SDET-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDET43PDER8GB	.500	.188	.500	.101	.031	.003	4	–	●	–	–	–	–	–	–	●	–
SDET43PDSR8GB	.500	.188	.500	.101	.031	.006	4	–	–	–	●	–	●	●	●	●	–
SDET433PDER8GB	.500	.188	.500	.086	.047	.003	4	–	–	–	●	–	–	●	–	●	–
SDET433PDSR8GB	.500	.188	.500	.085	.047	.006	4	–	–	–	●	–	–	–	–	●	–
SDET434ENGB	.500	.188	.500	–	.062	.003	4	–	–	–	–	–	–	–	–	●	–
SDET434SNGB	.500	.188	.500	–	.062	.006	4	–	–	–	●	–	–	–	–	●	–
SDET436ENGB	.500	.188	.500	–	.094	.003	4	–	–	–	●	–	–	–	–	●	–
SDET436SNGB	.500	.188	.500	–	.094	.006	4	–	–	–	●	–	–	–	–	●	–
SDET438ENGB	.500	.188	.500	–	.125	.003	4	–	–	–	●	–	–	–	–	●	–
SDET438SNGB	.500	.188	.500	–	.125	.006	4	–	–	–	–	–	–	–	–	●	–
SDET4312ENGB	.500	.188	.500	–	.188	.003	2	–	–	–	●	–	–	–	–	●	–
SDET4312SNGB	.500	.188	.500	–	.188	.006	2	–	–	–	●	–	–	–	–	●	–
SDET4316ENGB	.500	.188	.500	–	.250	.003	2	–	–	–	●	–	–	–	–	●	–
SDET4316SNGB	.500	.188	.500	–	.250	.006	2	–	–	–	●	–	●	–	●	●	–

- Medium machining.
- Precision ground.
- 5° rake face.
- Four cutting edges.


SDPT-GB2

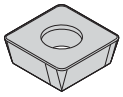


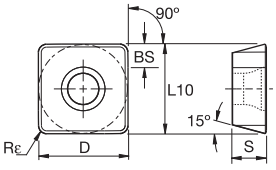
SDPT-GB2

SDPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDPT43PDER8GB2	.500	.188	.500	.106	.031	.003	4	–	–	–	●	●	●	●	–	●	–
SDPT43PDSR8GB2	.500	.188	.500	.106	.031	.005	4	–	–	–	●	●	●	●	–	●	–

- Heavy machining.
- Precision ground.
- 0° rake face flat top.
- Four cutting edges.


SDCW-GN



SDCW-GN

● first choice
○ alternate choice

beyond

	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
P			○	●		●	●		○	
M			●	●		○	○	○	●	
K		●	○		●	○				●
N	●		○							
S			●	●				●	●	
H			○							

SDCW-GN

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40	KY3500
SDCW43EDSR8GN	.500	.188	.500	.132	.031	.006	4	–	–	–	–	–	–	–	–	–	●
SDCW43PDSR8GN	.500	.188	.500	.099	.031	.006	4	–	–	–	–	–	–	–	–	–	●
SDCW433PDSR8GN	.500	.188	.500	.120	.047	.006	4	–	–	–	–	–	–	–	–	–	●

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.005	**.017**	.030	.003	**.012**	.021	.003	**.009**	.016	.002	**.008**	.014	.002	**.007**	.013	.F..LE
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..LD2	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD2
.E..GB	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB
.E..GB2	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB2
.S..GB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB
.S..GB2	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB2
.S..GN	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

NOVO KNOWS CAD/CAM

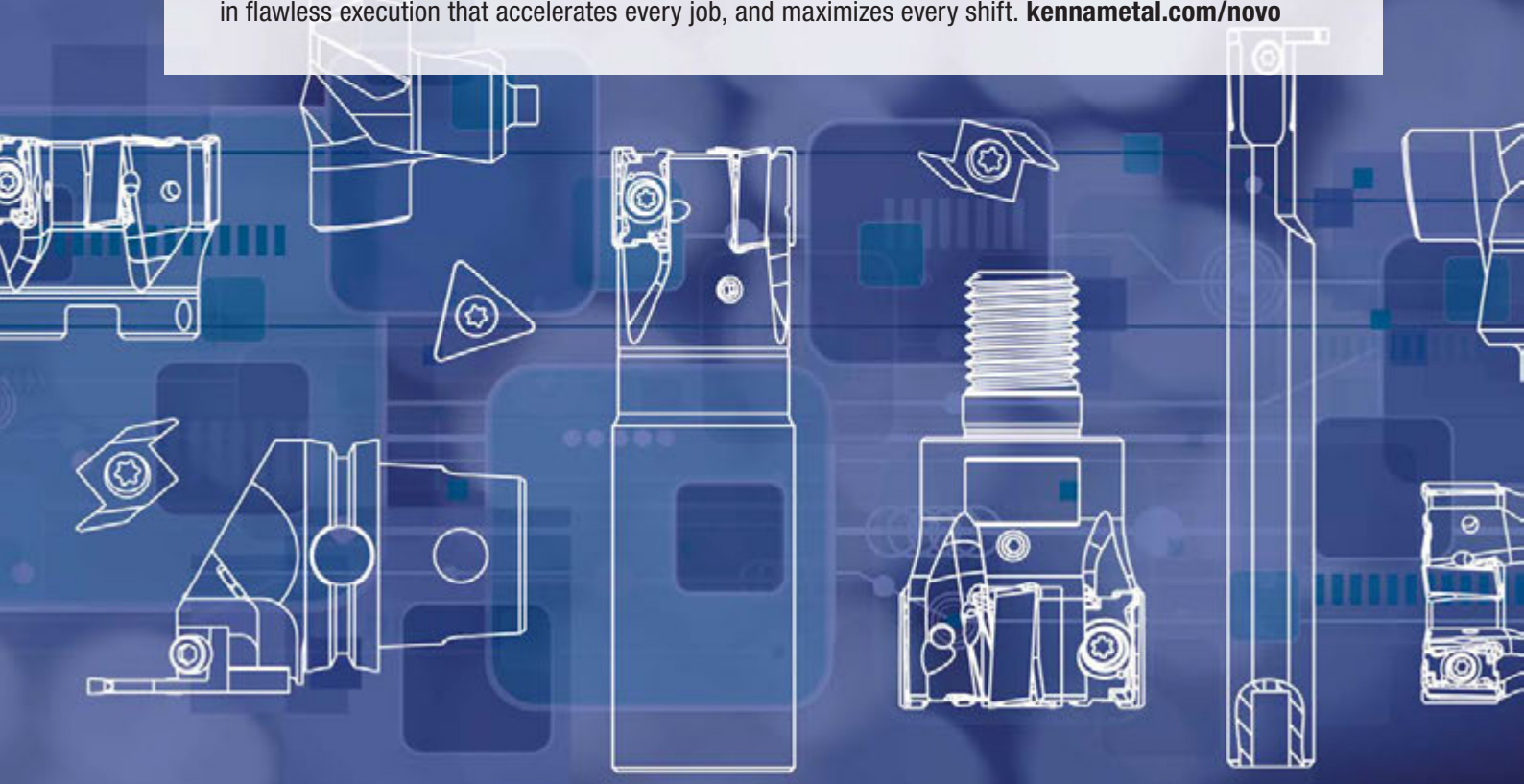
With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



5230VS • High Performance Long-Edge Milling Cutters

The Stellram® **5230VS09** and **5230VS12** cutter series is perfectly suited for profiling and full slotting.

Designed for high material removal rates in titanium and high-temperature alloys. Several applications have achieved metal removal rates of up to two times greater than the previous operating cutting parameters.

The advanced chevron design ensures that one cutting point is always in contact with the material during entrance and exit. This provides optimum harmonic stability resulting in maximum tool life and a 30% improvement in surface finish. A generous flute capacity, coupled with each cutting edge having its own coolant jet, ensures excellent chip evacuation. This works to enhance surface finish and increases metal removal rates for a higher level of productivity.

The advanced 5230VS series is ideal for rough machining of steel, alloyed steel, stainless steel, and particularly for titanium and high-temperature alloys.

Features and Benefits

- Insert positioning provides smooth, progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provides constant chip evacuation and temperature stability in the cutting zone.
- The advanced chevron design improves stability and lowers power consumption, increasing tool life up to two times greater than comparable cutter in today's market.
- Proven versatility in wide application area in titanium and high-temperature alloys increasing productivity.



5230VS

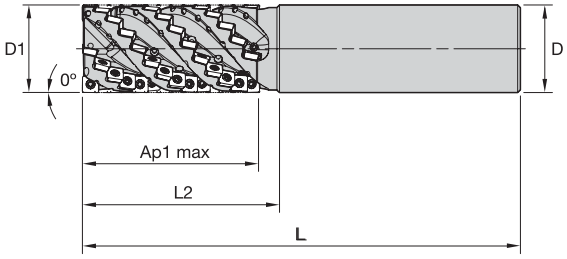
5230VS09:
(a_p max is determined by selection of cutter diameter)
Diameter range and maximum a_p= 2.000" diameter with a_p 2.010", 3.150" or 4.000"

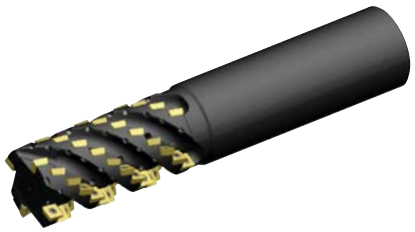
5230VS12:

(a_p max is determined by selection of cutter diameter)
Diameter range and maximum a_p= 2.500" diameter with a_p 2.244" or 3.700"
3.000" diameter with a_p 2.560" or 4.433"
4.000" diameter with a_p 3.000" or 5.236"

- High material removal rates in titanium and high-temperature alloys.
- Chevron design improves stability and lowers power consumption.
- Insert positioning provides smooth, progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provide constant chip evacuation and temperature stability in the cutting zone.







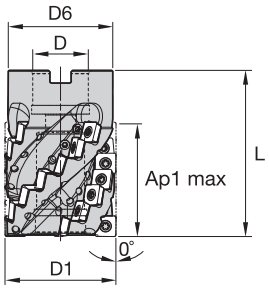
Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U
5673041	C5230VS09CA2.0Z04R4.0	2.000	2.000	10.000	4.500	4.000	56	4

Spare Parts

D1	insert screw	in. lbs.	Torx driver	coolant control screw	Torx driver
2.000	F3508T	18.6	T15	F3006T	T9

- High material removal rates in titanium and high-temperature alloys.
- Chevron design improves stability and lowers power consumption.
- Insert positioning provides smooth progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provide constant chip evacuation and temperature stability in the cutting zone.





Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Ap2 max	Z	Z U
5673176	**C5230VS09-A2.0Z4R2.0**	2.000	1.000	1.882	2.990	2.010	1.750	28	4
5673530	**C5230VS09-A2.0Z04R3.1**	2.000	1.000	1.882	4.173	3.150	—	44	4

NOTE: Ap2 max is the max Ap for slotting.

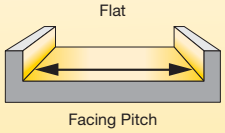
Spare Parts

order number	D1	 insert screw	 in. lbs.	 Torx driver	 coolant control screw	 Torx driver	 steel coolant plug	 nord lock washer	 socket-head cap screw
5673530	2.000	**F3508T**	18.6	**T15**	**F3006T**	**T9**	**SB3621**	**NLW-0.375**	**#1/2-20X1-1/4SHCSA**
5673176	2.000	**F3508T**	18.6	**T15**	**F3006T**	**T9**	**SB3413**	**NLW-0.375**	**#1/2-20X1-1/4SHCSA**

NOTE: Tighten mounting bolt to 59–74 ft. lbs.
Tighten steel coolant plug to 25 ft. lbs.

5230VS09 Technical Information (Inch)

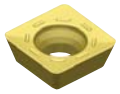
Product		Dimension					
EDP	**Item Description**	Facing Pitch	Ramping Angle°	Helical Hole min. – max.		a_p max Helical/Linear	Max RPM
033073	**C5230VS09-CA2.0Z4R4.0**	2.000	-	–	–	–	32,500
031430	**C5230VS09-A2.0Z4R2.0**	2.000	–	–	–	–	32,500
031581	**C5230VS09-A2.0Z4R3.1**	2.000	–	–	–	–	32,500

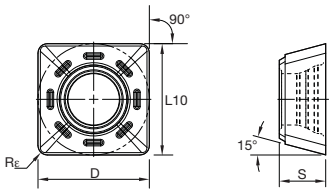


Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..422	SP6519	**.E..423**	**SP6519**	.E..41	SP6519
P3–P4	.E..423	SP6519	**.E..41**	**MP91M**	...TN	MP91M
P5–P6	.E..423	SP6519	**.E..41**	**SP6519**	...TN	SP6519
M1–M2	.E..422	KCSM40	**.E..423**	**KCSM40**	.E..41	KCSM40
M3	.E..423	KCSM40	**.E..41**	**KCSM40**	...TN	KCSM40
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..422	X500	**.E..423**	**X500**	.E..41	X500
S3	.E..422	KCSM40	**.E..423**	**KCSM40**	.E..41	KCSM40
S4	.E..423	X500	**.E..41**	**X500**	...TN	X500
H1	–	–	–	–	–	–

Milling Inserts


SDHT09-422



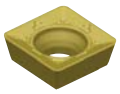
SDHT09-422

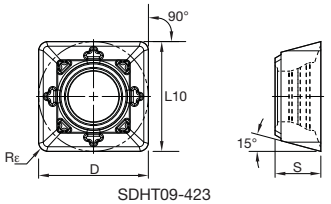
● first choice
○ alternate choice

		KCSM40	MP91M	SP6519	X500
P		○	●	○	○
M		●		●	●
K			●	○	
N					
S		●		●	●
H			○		

SDHT09-422

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT09T308EN422	.375	.375	.156	.031	.001	4	●	–	●	●
SDHT09T3AEEN422	.375	.375	.156	—	.002	4	–	–	●	–


SDHT09-423

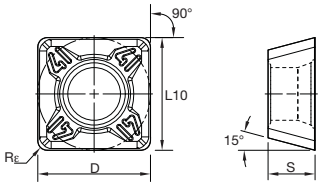


SDHT09-423

SDHT09-423

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT09T308EN423	.375	.375	.156	.031	.002	4	●	–	●	●


SDMT09-41



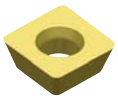
SDMT09-41

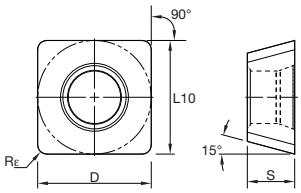
● first choice
○ alternate choice

P	○	●	○	○	
M	●		●	●	
K		●	○		
N					
S	●		●	●	
H		○			

SDMT09-41

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMT09T308EN41	.375	.375	.156	.032	.002	4	●	●	●	●


SDMW09-TN



SDMW09-TN

SDMW09-TN

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMW09T308TN	.375	.375	.156	.031	.004	4	●	–	–	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

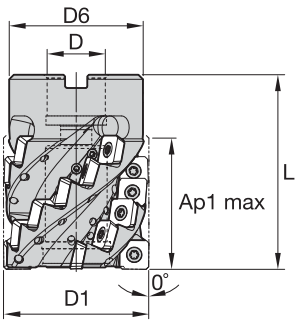
Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..422	.005	**.019**	.030	.003	**.014**	.022	.003	**.010**	.016	.002	**.009**	.014	.002	**.008**	.013	.E..422
.E..423	.005	**.019**	.030	.004	**.013**	.021	.003	**.010**	.016	.002	**.009**	.014	.002	**.008**	.013	.E..423
.E..41	.007	**.021**	.033	.005	**.015**	.023	.004	**.011**	.018	.003	**.010**	.015	.003	**.009**	.014	.E..41
...TN	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	...TN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- High material removal rates in titanium and high-temperature alloys.
- Chevron design improves stability and lowers power consumption.
- Insert positioning provides smooth progressive penetration and cutting action for extended tool life.
- Individual coolant jets to each insert provide constant chip evacuation and temperature stability in the cutting zone.







Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Ap2 max	Z	Z U
5673797	C5230VS12-A2.5Z4R2.24	2.500	1.000	2.303	3.347	2.244	2.000	24	4
5672481	C5230VS12-A2.5Z4R3.70	2.500	1.000	2.283	4.882	3.701	—	40	4
5673747	C5230VS12-A3.0Z5R2.56	3.000	1.250	2.764	3.740	2.559	2.360	35	5
5673617	C5230VS12-A3.0Z5R4.33	3.000	1.250	2.764	5.630	4.331	—	60	5

NOTE: Ap2 max is the max Ap for slotting.

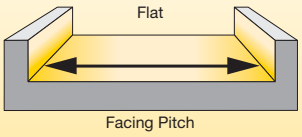
Spare Parts

D1	Z	insert screw	in. lbs.	Torx driver	coolant control screw	Torx driver	steel coolant plug	nord lock washer	socket-head cap screw
2.500	24	F4011T	27.4	T20	F3006T	T9	—	NLW-0.375	#1/2-20X1-1/4SHCSA
2.500	40	F4011T	27.4	T20	F3006T	T9	SB3230	NLW-0.375	#1/2-20X1-1/4SHCSA
3.000	35	F4011T	27.4	T20	F3006T	T9	—	NLW12SP	#5/8-18X1-1/2SHCSA
3.000	60	F4011T	27.4	T20	F3006T	T9	SB3232	NLW12SP	#5/8-18X1-1/2SHCSA

NOTE: Tighten mounting bolt on 2.5" cutters to 59–74 ft. lbs, 3" cutters to 81–110 ft. lbs, and 4" cutters to 89–132 ft. lbs.
Tighten steel coolant plug to 25 ft. lbs for 2.5" cutters and 45 ft. lbs for 3" and 4" cutters.

5230VS12 Technical Information (inch)

Product		Dimension					
EDP	Item Description	Facing Pitch	Ramping Angle°	Helical Hole min.–max.		a_p max Helical/Linear	Max RPM
031234	C5230VS12-A2.5Z4R2.24	2.500	–	–	–	–	21,000
031133	C5230VS12-A2.5Z4R3.70	2.500	–	–	–	–	21,000
031606	C5230VS12-A3.0Z5R2.56	3.000	–	–	–	–	18,500
031607	C5230VS12-A3.0Z5R4.33	3.000	–	–	–	–	18,500
031237	C5230VS12-A4.0Z6R5.23	4.000	–	–	–	–	16,000



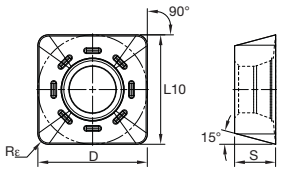
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..422	SP6519	**.E..41**	**SP6519**	.E..423	SP6519
P3–P4	.E..41	MP91M	**.E..423**	**SP6519**	...TN	SP6519
P5–P6	.E..41	SP6519	**.E..423**	**SP6519**	...TN	SP6519
M1–M2	.E..422	KCSM40	**.E..41**	**KCSM40**	.E..423	KCSM40
M3	.E..41	KCSM40	**.E..423**	**KCSM40**	...TN	KCSM40
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..422	KCSM40	**.E..41**	**KCSM40**	.E..423	KCSM40
S3	.E..41	KCSM40	**.E..423**	**KCSM40**	...TN	KCSM40
S4	.E..41	X500	**.E..423**	**X500**	...TN	X500
H1	–	–	–	–	–	–

Milling Inserts



SDHT12-422



SDHT12-422

● first choice
○ alternate choice

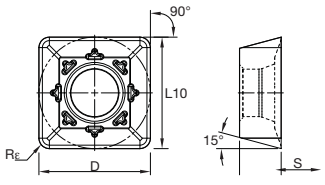
P		○	●	○	○	
M		●		●	●	
K			●	○		
N						
S		●		●	●	
H			○			

SDHT12-422

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT120412EN422	.500	.500	.187	.047	.002	4	●	–	●	●



SDHT12-423

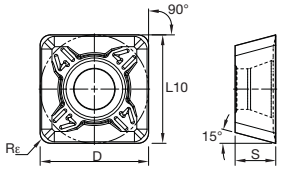


SDHT12-423

SDHT12-423

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDHT120412EN423	.500	.500	.187	.047	.002	4	●	–	●	●


SDMT12-41



SDMT12-41

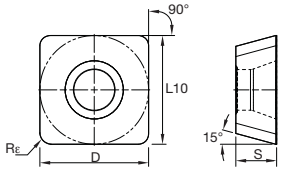
● first choice
○ alternate choice

		KCSM40	MP91M	SP6519	X500
P		○	●	○	○
M		●		●	●
K			●	○	
N					
S		●		●	●
H			○		

SDMT12-41

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMT120412EN41	.500	.500	.187	.047	.002	4	●	●	●	●


SDMW12-TN



SDMW12-TN

SDMW12-TN

catalog number	D	L10	S	Rε	hm	cutting edges	KCSM40	MP91M	SP6519	X500
SDMW120412TN	.500	.500	.187	.047	.002	4	●	–	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..422	.007	**.021**	.035	.005	**.015**	.025	.004	**.011**	.019	.003	**.010**	.016	.003	**.009**	.015	.E..422
.E..41	.007	**.021**	.035	.005	**.015**	.025	.004	**.011**	.019	.003	**.010**	.016	.003	**.009**	.015	.E..41
.E..423	.008	**.023**	.037	.006	**.017**	.027	.004	**.013**	.020	.004	**.011**	.017	.003	**.010**	.016	.E..423
...TN	.008	**.023**	.037	.006	**.017**	.027	.004	**.013**	.020	.004	**.011**	.017	.003	**.010**	.016	...TN

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of diameter.

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

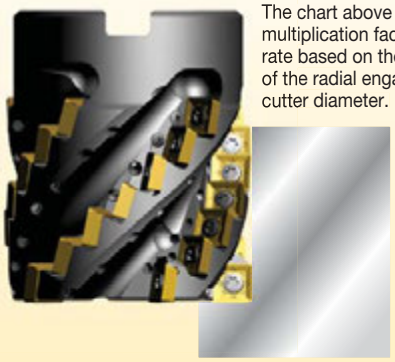
Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

h_m Correction Coefficient Chart

Cutter Ø 2.000"			Cutter Ø 2.500"			Cutter Ø 3.000"			Cutter Ø 4.000"		
ae%	ae (Inch)	Coefficient Factor	ae%	ae (Inch)	Coefficient Factor	ae%	ae (Inch)	Coefficient Factor	ae%	ae (Inch)	Coefficient Factor
5	0.100	2.294	5	0.125	2.329	5	0.150	2.294	5	0.200	2.294
10	0.200	1.667	10	0.250	1.667	10	0.300	1.667	10	0.400	1.667
15	0.300	1.400	15	0.375	1.425	15	0.450	1.407	15	0.600	1.407
20	0.400	1.250	20	0.500	1.250	20	0.600	1.250	20	0.800	1.250
25	0.500	1.155	25	0.625	1.160	25	0.750	1.155	25	1.000	1.155
35	0.700	1.048	35	0.875	1.056	35	1.050	1.048	35	1.400	1.056
50–100	1.000–2.000	1.000	50–100	1.250–2.500	1.000	50–100	1.500–3.000	1.000	50–100	2.000–4.000	1.000

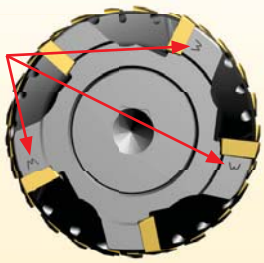
Example: A 3.000" diameter cutter using a 0.300" radial engagement (ae) = 10% of the cutter diameter. At 10%, your coefficient is 1.667 (see above table); therefore you must multiply your feed rate by 1.667 for correcting the feed for profiling.



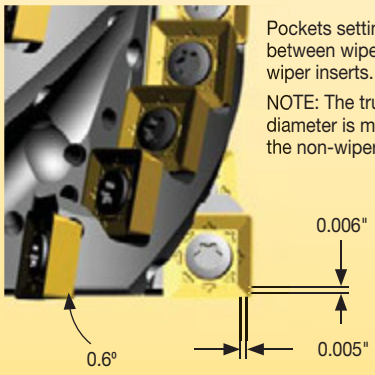
The chart above shows the multiplication factor for the feed rate based on the percentage of the radial engagement of the cutter diameter.



Wiper pockets are identified with a **W** engraved on the face of the body.



The 5230VS cutter series is designed with wiper pockets which provide a much better face surface finish. The non-wiper pockets generate the 90° corner. The same inserts can be utilized in all pockets.



Pockets setting difference between wiper and non-wiper inserts.

NOTE: The true cutter diameter is measured at the non-wiper pockets.



Non-wiper pocket positions are set back and square to axis to give a true 90° approach.

Wiper pocket positions are in front and angled to allow facing.

Cutter diameter (inch)	Number of Wiper Inserts
2.000	2
2.500	2
3.000	3
4.000	3

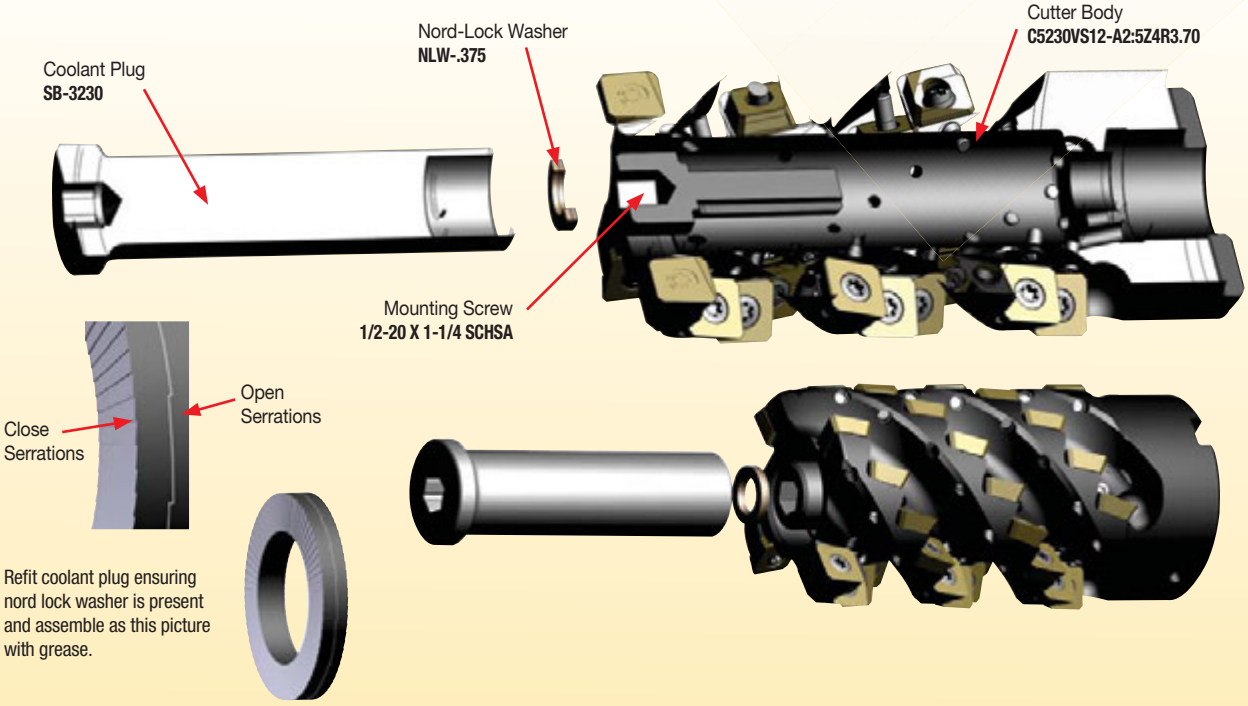
5230VS09 and 5230VS12 Fitting Instructions for Shell Mill Cutters

NOTE: All Shell Mill 5230VS09 and 5230VS12 chevron porcupine cutters are supplied assembled with mounting bolt, nord-lock washer, and steel coolant plug.

Please follow the instructions below to disassemble the cutter, attach the cutter to a shell mill adapter, and reassemble coolant plug. It is very important to use the proper torque when reassembling the cutter with the mounting bolt, nord-lock washer, and coolant plug.



Example of cutter: C5230VS12-A2.5Z4R3.70 assembly



Refit coolant plug ensuring nord lock washer is present and assemble as this picture with grease.

1. Remove coolant plug. *(NOTE: Ensure the nord-lock washer is retained to the bottom of the coolant plug.)*
2. Fit the cutter body to the shell mill adapter and secure using the mounting bolt supplied with the cutter.
   NOTE: The mounting bolt must be properly torqued to the specific torque setting shown in Detail 1 on page T136.
3. Refit coolant plug ensuring nord-lock washer is present and in the proper location on the bottom of the coolant plug. A small amount of grease can be used to hold the nord-lock washer in place.
4. Tighten coolant plug with specific torque setting shown in Detail 2 on page T136.
5. NOTE: If axial depth of cut (a_p) is less then maximum a_p of cutter, then **F3006T** coolant control screws supplied separately can be used to block coolant holes forcing more coolant to the front of the cutter. If these screws are used, please secure with loctite or similar product.

Torque values for mounting bolts

Excessive condition is when long reach extensions are required or when cutting parameters are elevated to extreme parameters.

5230VS09	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	Torque Values in ft lbs. for Mounting Bolt		Coolant Plug Description	Coolant Plug Tightening ft lbs.
		Normal Condition	Excessive Condition		
C5230VS09-A2.0Z4R2.0	1/2-20 x 1-1/4 SHCSA	59	74	SB-3413	25
C5230VS09-A2.0Z4R3.1				SB-3621	

5230VS12	Detail 1			Detail 2	
Cutter	Mounting Bolt Description	Torque Values in ft lbs. for Mounting Bolt		Coolant Plug Description	Coolant Plug Tightening ft lbs.
		Normal Condition	Excessive Condition		
C5230VS12-A2.5Z4R2.24	1/2-20 x 1-1/4 SHCSA	59	74	SB-3229	25
C5230VS12-A2.5Z4R3.70				SB-3230	
C5230VS12-A3.0Z5R2.56	5/8-18 x 1-1/2 SHCSA	81.1	110.6	SB-3231	45
C5230VS12-A3.0Z5R4.33				SB-3232	
C5230VS12-A4.0Z6R3.00	3/4-16 x 1-3/4 SHCSA	88.5	132.76	SB-3233	45
C5230VS12-A4.0Z6R5.23				SB-3234	

Mounting Bolt Hex Keys

M12 = Hex Key Size 10
M16 = Hex Key Size 14
M20 = Hex Key Size 17



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Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

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- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

Program is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

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Indexable Milling • Slot Milling

KTMS • T-Slot Platform U2–U5

KVNS • Very-Narrow Slotting Platform U6–U10

SN • Popular Square Inserted Cutter U12–U15

LN • Adjustable Width Cutter System U16–U22

KSSM10 • Neutral, Right-, and Left-Hand Cutters, 10mm IC U24–U31

KSSM12 • Neutral, Right-, and Left-Hand Cutters, 12mm IC U32–U41

KTMS™ Slotting Cutter

Primary Application

KTMS slotting cutters produce “T” slots in machine beds as well as small radial depths of cut for machining shallow radial slots. There is always a need to prepare the slot before using this type of cutter — preparation is the key to success. See the technical information for information about the pre-machining on page U5.

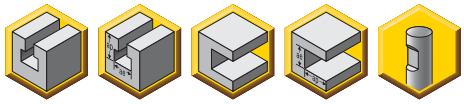
Please note that all of these cutters have metric diameters, speeds, and feeds.

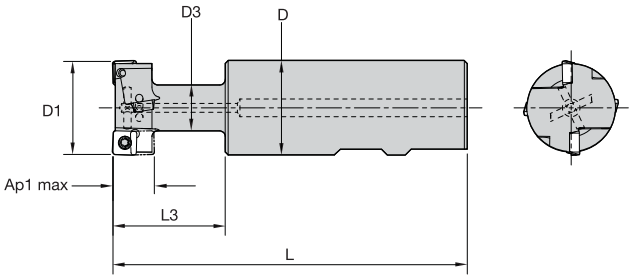


Features and Benefits

- Only available in metric dimensions.
- Slot widths from 9–22mm.
- Three different insert sizes.
- Preparing the component before slotting is the key to success.
- Prepare workpiece with a slot.
- Honed insert edges.
- Feed rates between 0,10–0,15mm; lower feed rates will induce vibration.
- Use air flow to evacuate chips.
- Always start the cutting process with a new cutting edge.

- Prepare workpiece with a slot.
- Honed insert edges.
- Feed rates between 0,10–0,15mm; lower feed rates will induce vibration.
- Use air flow to evacuate chips.
- Always start the cutting process with a new cutting edge.





KTMS • T-Slot Cutter with Through Coolant • Metric

order number	catalog number	D1	D	D3	L	L3	Ap1 max	Z	Z U	insert 1	kg
3577119	**KTMS21S25SD06H**	21	25	11	109	29	9,0	2	1	SDMT060304EGG	0,35
3577121	**KTMS25S25SD06H**	25	25	13	112	32	11,0	4	2	SDMT060304EGG	0,36
3577133	**KTMS32S32SD08H**	32	32	16	120	38	14,0	4	2	SDMT080308EGG	0,60
3577135	**KTMS40S32SD12H**	40	32	21	130	50	18,0	4	2	SDMT120408EGG	0,66
3577137	**KTMS50S32SD12H**	50	32	27	140	60	22,0	4	2	SDMT120408EGG	0,85

Spare Parts

D1	 insert screw	 Nm	 Torx driver
21	**MS2206**	1,2	**DT8**
25	**MS2206**	1,2	**DT8**
32	**MS2207**	2,0	**DT10**
40	**MS2208**	3,5	**DT15**
50	**MS2208**	3,5	**DT15**

Insert Selection Guide

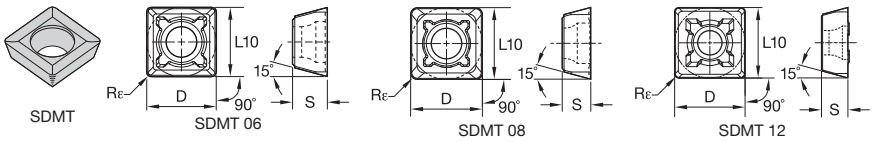
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	..EGG	KC735M	**..EGG**	**KC735M**	..EGG	KC735M
P3–P4	..EGG	KC735M	**..EGG**	**KC735M**	..EGG	KC735M
P5–P6	..EGG	KC735M	**..EGG**	**KC735M**	..EGG	KC735M
M1–M2	–	–	**–**	**–**	–	–
M3	–	–	**–**	**–**	–	–
K1–K2	..EGG	KC505M	**..EGG**	**KC505M**	..EGG	KC505M
K3	..EGG	KC505M	**..EGG**	**KC505M**	..EGG	KC505M
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	–	–	**–**	**–**	–	–
H1	**–**	**–**	–	–	–	–

Indexable Insert • T-Slot Cutters SDMT • EGG

- Honed insert edges.
- Four cutting edges.

● first choice
○ alternate choice

P		●	●
M			
K	●		
N			
S			
H			



SDMT-EGG

catalog number	D	S	L10	Rε	hm	cutting edges	KC505M	KC730M	KC735M
SDMT060304EGG	6,35	3,18	6,35	0,4	0,06	4	–	●	●
SDMT080308EGG	8,00	3,18	8,00	0,8	0,06	4	●	●	●
SDMT120408EGG	12,70	4,76	12,70	0,8	0,06	4	●	●	●

Recommended Starting Feeds

Recommended Starting Feeds [mm]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.06..EGG	0.20	**0.46**	0.70	0.14	**0.33**	0.50	0.11	**0.25**	0.38	0.09	**0.22**	0.33	0.08	**0.20**	0.30	.06..EGG
.08..EGG	0.20	**0.53**	0.82	0.14	**0.38**	0.59	0.11	**0.29**	0.44	0.09	**0.25**	0.39	0.08	**0.23**	0.35	.08..EGG
.12..EGG	0.20	**0.59**	0.92	0.14	**0.43**	0.66	0.11	**0.32**	0.50	0.09	**0.28**	0.43	0.08	**0.25**	0.40	.12..EGG

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

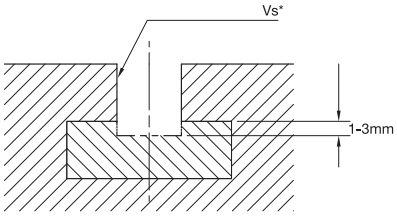


Fig. 1

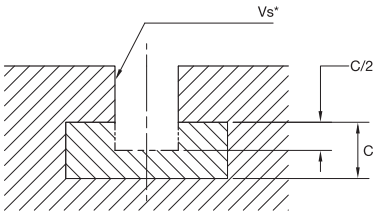


Fig. 2

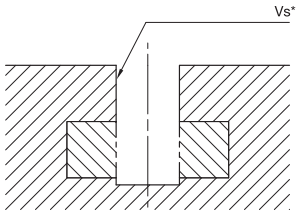
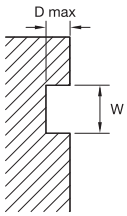


Fig. 3



Side Slotting

Steel

- Machining a vertical slot, depth to be kept at a minimum as shown in Figure 1.
- If the depth is greater than Figure 1, chip evacuation problems could occur.
- Vibrations could occur when the T-slot cutter diameter increases; use Figure 1 as the starting point.
- If chattering is a concern, adopt the Figure 2 solution.

Cast Iron

- Fewer problems with chip evacuation, and reduced cutting forces enable deeper vertical slots as shown in Figures 2 and 3.
- Air blast is recommended to disperse the chips; this can be used for steel and cast iron.

Cutting Data Table • Slotting

	material type	catalog number	cutting conditions vc (m/min)	feed per tooth (mm)	Vs*
P	carbon steel/ alloy steel	KTMS21S25SD06H	120	0,10	Figure 1
		KTMS25S25SD06H	120	0,10	Figure 1
		KTMS32S32SD08H	100	0,10	Figure 1
		KTMS40S32SD12H	80	0,15	Figure 2
		KTMS50S32SD12H	not recommended due to frequent chattering		
K	cast iron	KTMS21S25SD06H	120	0,12	Figure 1, 2, 3
		KTMS25S25SD06H	120	0,12	Figure 1, 2, 3
		KTMS32S32SD08H	120	0,12	Figure 1, 2, 3
		KTMS40S32SD12H	120	0,15	Figure 2,3
		KTMS50S32SD12H	120	0,15	Figure 3

* Vs = Vertical Slot Preparation for T-slot.

Side Slot Machining

side slot dimension / catalog number	(unit: mm) W -0.1 / -0. (mm)	D max (mm)
KTMS21S25SD06H	9	4,4
KTMS25S25SD06H	11	5,4
KTMS32S32SD08H	14	6,9
KTMS40S32SD12H	18	8,9
KTMS50S32SD12H	22	10,9

NOTE: KTMS T-slot is available to side slot as per drawing.

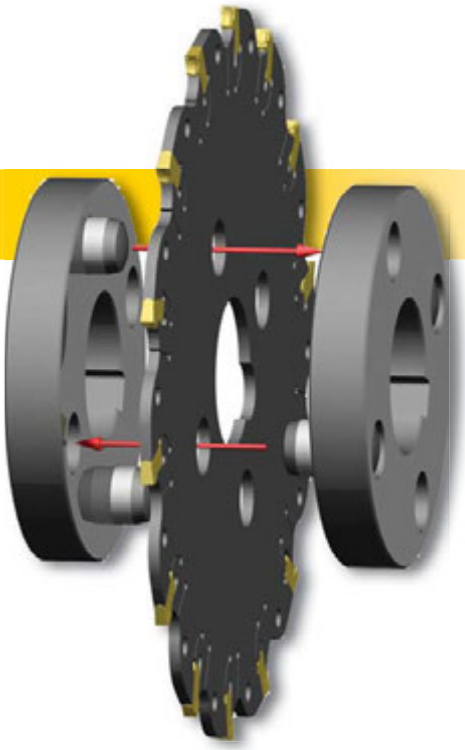
Cutting Data Table • Side Machining

	material type	catalog number	cutting conditions vc (m/min)	n (RPM)	feed per tooth (mm)
P	carbon steel/ alloy steel	KTMS21S25SD06H	120	1820	0,10
		KTMS25S25SD06H	120	1530	0,10
		KTMS32S32SD08H	120	1190	0,10
		KTMS40S32SD12H	120	960	0,10
		KTMS50S32SD12H	120	760	0,10
K	cast iron	KTMS21S25SD06H	150	2270	0,12
		KTMS25S25SD06H	150	1910	0,12
		KTMS32S32SD08H	150	1490	0,12
		KTMS40S32SD12H	150	1190	0,15
		KTMS50S32SD12H	150	960	0,15

KVNS™ Slotting Cutter

Primary Application

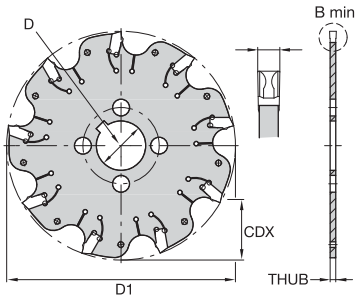
The KVNS slotting cutter enables diameters from 2.50–10" and insert widths from .063–.245". It is a perfect solution for small groove widths, grades, and geometries and suits most materials. Drive rings and support rings are available; use these items to get the maximum support for the cutter body.

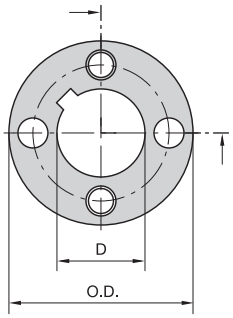


Features and Benefits

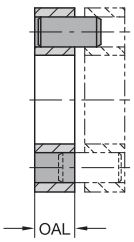
- Slot widths from .063–.245".
- Grades and geometries to suit most workpiece materials.
- Self-clamping inserts.
- Positive chipforming inserts are standard.
- Self-clamping insert seat with fixed stop.
- Excellent for all flat-bottom slotting and cut-off operations.
- Two drive hubs required for each cutter body, except when using two drive supports.
- Drive rings and support rings available, must be ordered separately (in pairs).

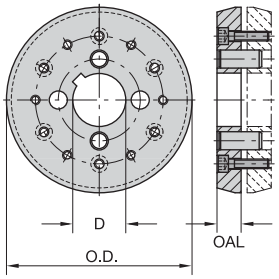
- .063–.245" slot width range.
- Positive chipforming inserts are standard.
- Self-clamping insert seat with fixed stop.
- Excellent for all flat-bottom slotting and cut-off operations.
- Two drive rings required for each cutter body, except when using two drive supports (must be ordered separately, in pairs).





Drive Ring





Support Ring



KVNS • Cutting Width .063"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247698	**KVNS02063OD**	2.500	.625	.063	.625	.051	5	5100	OD_1063__	**1247652**	<2.00
1247710	**KVNS03063OD**	3.000	.625	.063	.875	.051	7	4000	OD_1063__	**1247675**	<2.00
1247725	**KVNS04063OD**	4.000	1.000	.063	1.063	.051	9	3200	OD_1063__	**1247660**	<2.00
1247738	**KVNS05063OD**	5.000	1.250	.063	1.375	.051	11	2600	OD_1063__	**1247663**	<2.00

KVNS • Cutting Width .087"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247712	**KVNS03087OD**	3.000	.625	.089	.875	.071	7	4000	OD_2087__	1247675	<2.00
1247727	**KVNS04087OD**	4.000	1.000	.089	1.063	.071	9	3200	OD_2087__	1247660	<2.00
1247740	**KVNS05087OD**	5.000	1.250	.089	1.375	.071	11	2600	OD_2087__	1247663	<2.00
1247753	**KVNS06087OD** *	6.000	1.250	.089	1.438	.071	14	2000	OD_2087__	1247666	<2.00

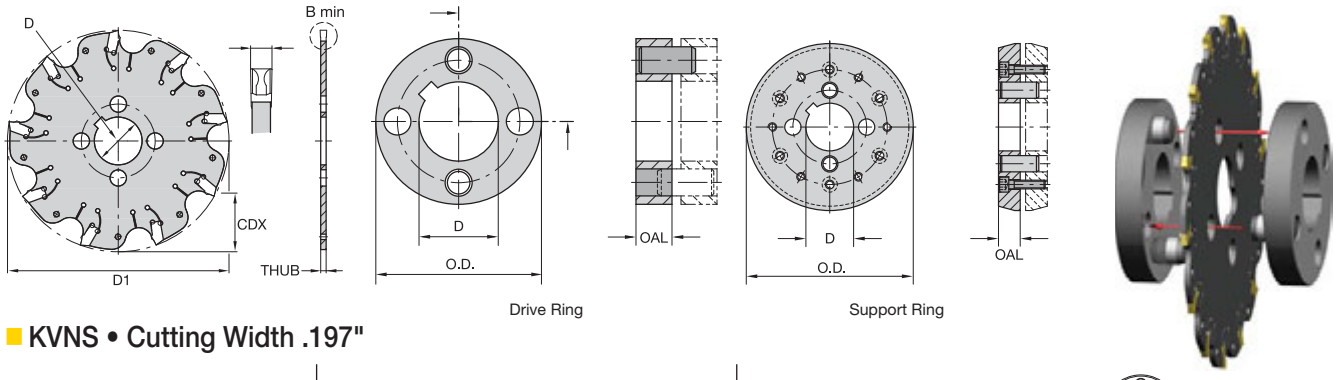
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

KVNS • Cutting Width .118"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247704	**KVNS02118OD**	2.500	.625	.126	.625	.095	4	5100	OD_3125_	**1247650**	<2.00
1247716	**KVNS03118OD**	3.000	.625	.126	.875	.095	6	4000	OD_3125_	**1247675**	<2.00
1247730	**KVNS04118OD**	4.000	1.000	.126	1.063	.095	9	3200	OD_3125_	**1247660**	<2.00
1247742	**KVNS05118OD**	5.000	1.250	.126	1.375	.095	11	2600	OD_3125_	**1247663**	<2.00
1247757	**KVNS06118OD**	6.000	1.250	.126	1.438	.095	14	2000	OD_3125_	**1247666**	<2.00
1247768	**KVNS08118OD**	8.000	2.000	.126	2.250	.095	19	1600	OD_3125_	**1247668**	<2.00
1247778	**KVNS10118OD**	10.000	2.000	.126	3.250	.095	24	1300	OD_3125_	**1247668**	<2.00

KVNS • Cutting Width .158"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247718	**KVNS03158OD**	3.000	.625	.164	.875	.134	6	4000	OD_4158__	1247675	<2.00
1247732	**KVNS04158OD**	4.000	1.000	.164	1.063	.134	9	3200	OD_4158__	1247660	<2.00
1247746	**KVNS05158OD**	5.000	1.250	.164	1.375	.134	11	2600	OD_4158__	1247663	<2.00



Drive Ring Support Ring

KVNS • Cutting Width .197"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247721	**KVNS03197OD** *	3.000	.625	.206	.875	.173	5	4000	OD_5197__	1247675	<2.00

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

KVNS • Cutting Width .236"

order number	catalog number	D1	D	B min	CDX	THUB	Z	max RPM	insert 1	drive ring	lbs
1247722	**KVNS03236OD**	3.000	.625	.245	.875	.213	5	4000	OD_6236__	**1247675**	<2.00
1247735	**KVNS04236OD**	4.000	1.000	.245	1.063	.213	8	3200	OD_6236__	**1247660**	<2.00
1247785	**KVNS102360D**	10.000	2.000	.245	3.250	.213	24	1300	OD_6236__	**1247668**	<2.00

NOTE: Insert wrench 170.183 (order number 1124601) must be ordered separately.

Drive Rings

order number	D1	O.D.	OAL	bore size	drive ring	lbs
1247650	2.500	1.250	.315	.625	**KAP1250632**	.07
1247652	2.500	1.250	.315	.625	**KAP1250634**	.08
1247675	3.000	1.250	.315	.625	**KAP1250764**	.11
1247660	4.000	1.875	.394	1.000	**KAP1871004**	.20
1247663	5.000	2.250	.394	1.250	**KAP2251254**	.26
1247666	6.000	3.125	.472	1.250	**KAP3121254**	.75
1247668	8.000	3.500	.472	2.000	**KAP3502004**	.75
1247668	10.000	3.500	.472	2.000	**KAP3502004**	.75

NOTE: KAP1250634 is for use with KVNS020630D.
KAP1250632 is for use with KVNS021180D.

Support Rings

order number	catalog number	D1	O.D.	OAL	clamp screw	Allen key	bore size	lbs
1247669	**KAP5502004**	8.000	5.500	.472	**125.616**	**170.005**	2.000	2.53
1247669	**KAP5502004**	10.000	5.500	.472	**125.616**	**170.005**	2.000	2.53

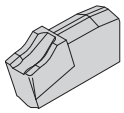
Spare Parts

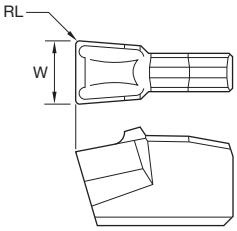
D1	support ring screw
8.000	**125.616**
10.000	**125.616**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
P3–P4	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
P5–P6	.S..GD	KC735M	**.S..GB**	**KCPK30**	.S..GB	KCPK30
M1–M2	.S..GD	KC735M	**.S..GD**	**KCPK30**	.S..GB	KCPK30
M3	.S..GD	KCPK30	**.S..GB**	**KCPK30**	.S..GB	KCPK30
K1–K2	.S..GD	KCPK30	**.S..GD**	**KCPK30**	.S..GB	KCPK30
K3	.S..GD	KCPK30	**.S..GD**	**KCPK30**	.S..GB	KCPK30
N1–N2	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
N3	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S1–S2	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S3	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
S4	.E..GD	KMF	**.E..GD**	**KMF**	.E..GD	KMF
H1	–	–	–	–	–	–

- Positive chipforming insert geometry.
- Very narrow slotting/slitting operations.





● first choice
○ alternate choice

P	○	●	
M	●	○	
K		○	
N			●
S	●		●
H			

.063"

catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG1063ISGD	.063	.006	.003	●	●	–
ODG1063ISGB	.063	.006	.003	●	●	–
ODC1063IEGD	.063	.006	.003	–	–	●

.087"

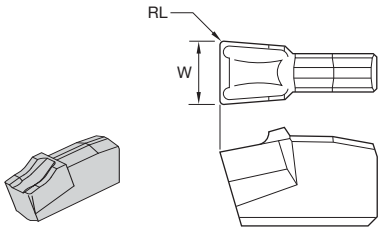
catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG2087ISGD	.087	.008	.003	●	●	–
ODG2087ISGB	.087	.008	.003	●	●	–
ODC2087IEGD	.087	.008	.003	–	–	●

.118"

catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG3125ISGD	.120	.008	.003	●	●	–
ODG3125ISGB	.120	.008	.003	●	●	–
ODC3125IEGD	.119	.008	.003	–	–	●

.158"

catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG4158ISGD	.160	.008	.003	●	●	–
ODG4158ISGB	.160	.008	.003	●	●	–
ODC4158IEGD	.159	.008	.003	–	–	●



● first choice
○ alternate choice

P		○	●
M		●	○
K			○
N			
S		●	
H			

.197"

catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG5197ISGB	.199	.012	.003	●	–	–

.236"

catalog number	W	RL	hm	KC735M	KCPK30	KMF
ODG6236ISGB	.238	.012	.003	●	●	–

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

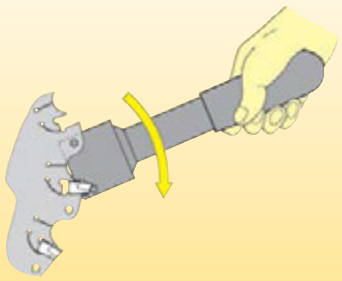
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..GD	.009	**.015**	.024	.007	**.011**	.017	.005	**.008**	.013	.004	**.007**	.011	.004	**.007**	.010	.E..GD
.S..GD	.009	**.017**	.026	.007	**.013**	.019	.005	**.009**	.014	.004	**.008**	.012	.004	**.008**	.011	.S..GD
.S..GB	.009	**.017**	.028	.007	**.013**	.020	.005	**.009**	.015	.004	**.008**	.013	.004	**.008**	.012	.S..GB

NOTE: Use "Light Machining" values as starting feed rate.
% = ae/Dc * 100 (ae = radial depth of cut, Dc = cutting diameter)
Please see pages X22–X37 for recommended starting speeds.

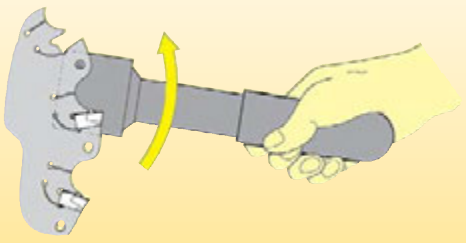
Slotting Cutters • Technical Information

Slot Milling

Secure clamping self-clamping insert seat for maximum machining safety



Using the assembly wrench:
Fitting the insert



Removing the insert

- Exact position of the insert guaranteed by the positive stop.
- Maximum possible insert repeatability with dual positive prism clamping.
- Powerful, secure clamping guarantees high peripheral speeds.

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SN Slotting Cutter

Primary Application

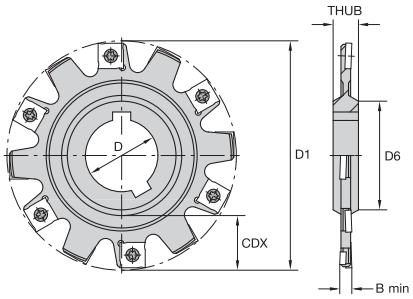
SN slotting cutters are perfect for deeper applications that require the cutting load to be shared from one insert to the other. Provides groove widths from .161–.187" and cutter diameters from 4–6" as well as an economical way to achieve balanced cutting.



Features and Benefits

- Cutters available in arbor mount.
- Inserts with four indexes.
- Staggered key ways in mounting bore, used for multiple ganged cutters.
- Slot width .161–.187".
- Three insert geometries available: -GP, -GE, and -T.
- Requires only one spare part.

- .161–.187" slotting width range.
- Four indexes per insert.
- Three chipformers available.
- Two keyways for staggered mounting.
- Requires only one spare part.





SN • Cutting Width .161"

order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert 1	lbs
1247681	**KS426SNH1102**	4.000	1.000	1.620	.161	1.120	.500	12	6	9530	SNHX1102T	<2.00
1247684	**KS526SNH1102**	5.000	1.250	1.880	.161	1.500	.500	14	7	8520	SNHX1102T	<2.00

SN • Cutting Width .187"

order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert 1	lbs
1247686	**KS33SNH1103**	3.000	1.000	1.620	.187	.620	.500	10	5	10000	SNHX1103T	<2.00
1247688	**KS43SNH1103**	4.000	1.000	1.620	.187	1.120	.500	12	6	8660	SNHX1103T	<2.00
1247691	**KS53SNH1103**	5.000	1.250	1.880	.187	1.500	.500	14	7	7745	SNHX1103T	<2.00
1247694	**KS63SNH1103**	6.000	1.250	1.880	.187	2.000	.500	18	9	7070	SNHX1103T	2.00

Spare Parts

D1	insert screw	in. lbs.	Torx driver
3.000	**192.530**	10	**DT7**
4.000	**192.530**	10	**DT7**
5.000	**192.530**	10	**DT7**
6.000	**192.530**	10	**DT7**

NOTE: Slot width tolerance is +/-.003" over standard insert.
Bottom slot angle is 2°.

Insert Selection Guide

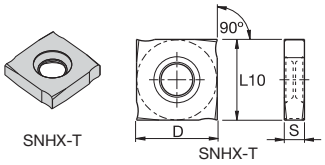
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
P3–P4	.T..GP	KCPK30	**.T..GP**	**KCPM40**	..T	KCPM40
P5–P6	.T..GP	KCPK30	**..T**	**KCPK30**	..T	KCPM40
M1–M2	.T..GP	KC725M	**.T..GP**	**KC725M**	..T	KC725M
M3	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
K1–K2	..T	KC520M	**..T**	**KC520M**	..T	KC520M
K3	.T..GP	KCPK30	**.T..GP**	**KCPK30**	..T	KCPK30
N1–N2	.F..GE	KC510M	**.F..GE**	**KC510M**	.T..GP	K110M
N3	.T..GP	K110M	**.T..GP**	**K110M**	.T..GP	K110M
S1–S2	.T..GP	KC725M	**.T..GP**	**KC725M**	..T	KC725M
S3	.T..GP	KCPM40	**.T..GP**	**KCPM40**	..T	KCPM40
S4	.T..GP	KC725M	**..T**	**KC725M**	..T	KC725M
H1	.F..GE	KC510M	–	–	–	–

Indexable Inserts • SNHX-T • SNHX-NGE

- Medium to heavy machining.
- With T-land geometry.
- Four cutting edges.

● first choice
○ alternate choice

		K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
P			●		●	●	●
M					●	○	○
K		○	●	●		○	
N		●	○				
S					●		
H							

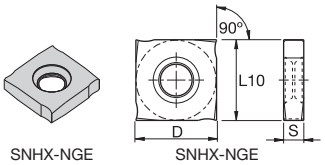


SNHX-T

catalog number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX1102T	.433	.091	.433	.006	4	–	–	–	●	–	●
SNHX1103T	.433	.106	.433	.006	4	–	–	–	●	●	●
SNHX1203T	.500	.126	.500	.006	4	–	–	–	●	–	●
SNHX1204T	.500	.157	.500	.004	4	–	–	–	●	–	–
SNHX12045T	.500	.177	.500	.004	4	–	–	–	●	–	–
SNHX1205T	.500	.213	.500	.004	4	–	–	–	●	–	–

NOTE: Inch cutter bodies for SNHX12* inserts are available upon request.

- Positive geometry for lighter machining.
- Four cutting edges.



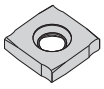
SNHX-NGE

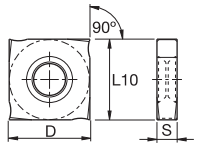
catalog number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX11T3PZFNGE	.433	.106	.433	.002	4	–	●	–	–	–	–
SNHX1203PZFNGE	.500	.126	.500	.002	4	–	●	–	–	–	–
SNHX12L5PZFNGE	.500	.213	.500	.002	4	●	●	–	–	–	–

NOTE: Inch cutter bodies for SNHX12* inserts are available upon request.

Slot Milling

- Four cutting edges.
- High-feed capabilities up to 55 HRC.


SNHX-NGP



SNHX-NGP

● first choice
○ alternate choice

		K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
P			●		●	●	●
M					●	○	○
K		○	●	●		○	
N		●	○				
S					●		
H							

SNHX-NGP

catalog number	D	S	L10	hm	cutting edges	K110M	KC510M	KC520M	KC725M	KCPK30	KCPM40
SNHX1102PZTNGP	.433	.091	.433	.006	4	●	–	–	●	●	●
SNHX11T3PZTNGP	.433	.106	.433	.006	4	–	–	–	●	–	●
SNHX1203PZTNGP	.500	.126	.500	.006	4	●	–	–	●	●	●
SNHX12L4PZTNGP	.500	.177	.500	.006	4	–	–	–	–	●	–
SNHX12L5PZTNGP	.500	.213	.500	.006	4	●	–	–	●	●	–

NOTE: Inch cutter bodies for SNHX12* inserts are available upon request.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..GE	.005	**.017**	.028	.004	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.F..GE
.T..GP	.009	**.018**	.027	.007	**.013**	.020	.005	**.010**	.015	.004	**.009**	.013	.004	**.008**	.012	.T..GP
..T	.009	**.022**	.032	.007	**.016**	.023	.005	**.012**	.017	.004	**.010**	.015	.004	**.009**	.014	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

LN Slotting Cutter

Primary Application

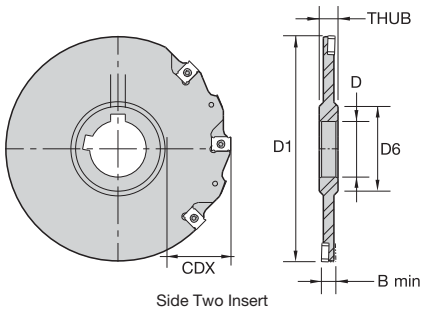
LN slotting cutters offer arbor and shell mill cutter options, groove widths from .250–.539", and cutter diameters from 3–8". Easy to adjust radially in .020" increments.



Features and Benefits

- Cutter available in arbor and shell mounts.
- Groove width .250–.500".
- Groove width can be increased by .020" or .040". Please consult the charts “Technical Information: Possible Insert Combinations”. NOTE: This involves changing the insert and insert screw.
- Easy width adjustment through insert thickness.
- Staggered internal keys.
- Positive chip grooves.
- Full side cutting.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Requires only one spare part.

- .250–.500" slot width range.
- Easy width adjustment through insert thickness.
- Full side cutting.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Two keyways for staggered mounting.
- Requires only one spare part.
- Base slot angle: 2°.
- Maximum slot width tolerance: +/- 0,001".



Side Two Insert



LN • Cutting Width .250"



order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	insert 1	lbs
1025930	KS34LNE1240	3.000	1.000	1.500	.250	.594	.500	8	4	9470	MS1281	TT15	35	LNE_1240___	.36
1025931	KS44LNE1240	4.000	1.250	1.880	.250	.904	.500	10	5	8200	MS1281	TT15	35	LNE_1240___	.66
1025895	KS54LNE1240	5.000	1.250	1.880	.250	1.404	.500	12	6	7300	MS1281	TT15	35	LNE_1240___	1.08
1025932	KS64LNE1240	6.000	1.500	2.250	.250	1.747	.500	16	8	6700	MS1281	TT15	35	LNE_1240___	1.54
1025933	KS84LNE1240	8.000	1.500	2.250	.250	2.719	.500	18	9	5800	MS1281	TT15	35	LNE_1240___	2.87

LN • Cutting Width .312"



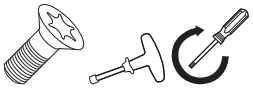
order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	insert 1	lbs
1025964	KS45LNE1245	4.000	1.250	1.880	.312	.935	.500	10	5	7400	MS1282	TT15	35	LNE_1245___	.81
1025896	KS55LNE1245	5.000	1.250	1.880	.312	1.435	.500	12	6	6600	MS1282	TT15	35	LNE_1245___	1.33
1025965	KS65LNE1245	6.000	1.500	2.250	.312	1.750	.500	16	8	6000	MS1282	TT15	35	LNE_1245___	1.93
1025897	KS85LNE1245	8.000	1.500	2.250	.312	2.750	.500	18	9	5200	MS1282	TT15	35	LNE_1245___	3.62

LN • Cutting Width .375"



order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	insert 1	lbs
1025966	KS46LNE1245	4.000	1.250	1.880	.375	.966	.500	9	3	7400	MS1282	TT15	35	LNE_1245___	.96
1025898	KS56LNE1245	5.000	1.250	1.880	.375	1.466	.500	12	4	6600	MS1282	TT15	35	LNE_1245___	1.57
1025967	KS66LNE1245	6.000	1.500	2.250	.375	1.809	.500	15	5	8000	MS1282	TT15	35	LNE_1245___	1.56
1025968	KS86LNE1245	8.000	1.500	2.250	.375	2.781	.500	18	6	5200	MS1282	TT15	35	LNE_1245___	1.56

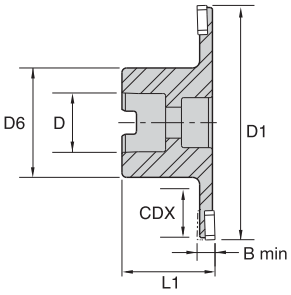
LN • Cutting Width .500"

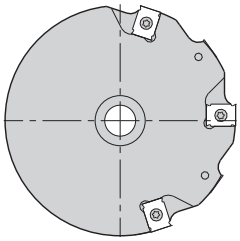


order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	insert 1	lbs
1025969	KS48LNE1255	4.000	1.250	1.880	.500	1.060	.500	9	3	4900	MS1284	TT15	35	LNE_1255___	1.23
1025899	KS58LNE1255	5.000	1.250	1.880	.500	1.560	.500	12	4	4400	MS1284	TT15	35	LNE_1255___	2.07
1025970	KS68LNE1255	6.000	1.500	2.250	.500	1.844	.500	15	5	4000	MS1284	TT15	35	LNE_1255___	3.04
1025971	KS88LNE1255	8.000	1.500	2.250	.500	2.875	.500	18	6	3500	MS1284	TT15	35	LNE_1255___	5.83

NOTE: Slot width tolerance is +/-.003" over standard insert.

- .250–.500" slot width range.
- Easy width adjustment through insert thickness.
- Full side cutting.
- Neutral and positive chip forming inserts are standard.
- Four insert cutting edges.
- Requires only one spare part.
- Base slot angle: 2°.
- Maximum slot width tolerance: +/- 0,001".







LN • Cutting Width .250"



order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	flat-head cap screw	socket-head cap screw	insert 1
1067765	**KS254BLNE1240**	2.500	.750	1.580	.250	.560	1.875	6	3	10400	**MS1281**	**TT15**	35	**S1903**	**–**	LNE_1240___
1025861	**KS44BLNE1240**	4.000	1.000	1.880	.250	.940	1.570	10	5	8200	**MS1281**	**TT15**	35	**–**	**S458**	LNE_1240___

LN • Cutting Width .312"



order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	flat-head cap screw	socket-head cap screw	insert 1
1067766	**KS255BLNE1245**	2.500	.750	1.580	.312	.560	1.875	6	3	9400	**MS1282**	**TT15**	35	**S1903**	**–**	LNE_1245___
1025862	**KS45BLNE1245**	4.000	1.000	1.880	.312	.942	1.570	10	5	7400	**MS1282**	**TT15**	35	**–**	**S458**	LNE_1245___

LN • Cutting Width .375"



order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	socket-head cap screw	insert 1
1025863	**KS46BLNE1245**	4.000	1.000	1.880	.375	.942	1.570	9	3	7400	**MS1282**	**TT15**	35	**S458**	LNE_1245___

LN • Cutting Width .500"



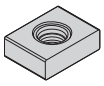
order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z U	max RPM	insert screw	Torx wrench	in. lbs.	socket-head cap screw	insert 1
1025894	**KS48BLNE1255**	4.000	1.000	1.880	.500	.940	2.000	9	3	4900	**MS1284**	**TT15**	35	**S458**	LNE_1255___

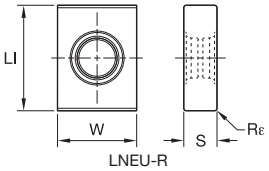
NOTE: Slot width tolerance is +/-.003" over standard insert.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	LNE..	KCPM40	**LNE..**	**KCPM40**	.S..GP	KCPM40
P3–P4	LNE..	KCPK30	**LNE..**	**KCPM40**	.S..GP	KCPM40
P5–P6	LNE..	KC725M	**.S..GP**	**KC725M**	.S..GP	KCPM40
M1–M2	LNE..	KC725M	**LNE..**	**KC725M**	.S..GP	KC725M
M3	LNE..	KC725M	**LNE..**	**KCPM40**	.S..GP	KCPM40
K1–K2	LNE..	KC520M	**LNE..**	**KCK15**	LNE..	KCK15
K3	LNE..	KC520M	**LNE..**	**KCK15**	LNE..	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	LNE..	KC725M	**LNE..**	**KC725M**	.S..GP	KC725M
S3	LNE..	KC725M	**LNE..**	**KCPM40**	.S..GP	KCPM40
S4	LNE..	KC725M	**.S..GP**	**KC725M**	.S..GP	KC725M
H1	**–**	**–**	–	–	–	–

- Light machining.
- Four cutting edges.


LNEU-R



LNEU-R

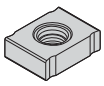
● first choice
○ alternate choice

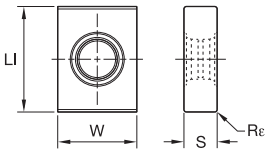
P			●		●	●
M			●		○	○
K	●			●	○	
N						
S			●			
H						

LNEU-R

catalog number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEU1235R03 4	.500	.375	.138	.012	.002	4	●	●	–	–	●
LNEU1240R03 4	.500	.375	.157	.012	.002	4	●	●	–	–	●
LNEU1245R04	.500	.375	.177	.016	.002	4	●	●	–	●	●
LNEU1250R04	.500	.375	.197	.016	.002	4	–	●	–	–	●
LNEU1255R04	.500	.375	.217	.016	.002	4	–	●	–	–	●
LNEU1260R04	.500	.375	.236	.016	.002	4	–	●	–	–	●
LNEU1240R08 4	.500	.375	.157	.031	.002	4	●	●	–	–	●
LNEU1245R08	.500	.375	.177	.031	.002	4	●	●	–	–	●
LNEU1250R08	.500	.375	.197	.031	.002	4	–	●	–	–	●
LNEU1255R08	.500	.375	.217	.031	.002	4	●	●	–	–	●
LNEU1240R16 4	.500	.375	.157	.062	.002	4	–	●	–	–	–
LNEU1245R16	.500	.375	.177	.062	.002	4	●	●	–	–	–
LNEU1255R16	.500	.375	.217	.062	.002	4	–	●	–	–	–
LNEU1245R32	.500	.375	.177	.125	.002	4	●	●	–	–	–
LNEU1255R32	.500	.375	.217	.125	.002	4	–	●	–	–	–

- Medium machining with chip groover.
- Four cutting edges.


LNEU-SGP



LNEU-SGP

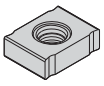
● first choice
○ alternate choice

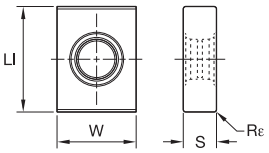
P			●		●	●
M			●		○	○
K		●		●	○	
N						
S			●			
H						

LNEU-SGP

catalog number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEU1235R03SGP 4	.500	.375	.138	.012	.004	4	–	●	–	–	–
LNEU1240R03SGP 4	.500	.375	.157	.012	.004	4	–	●	–	–	–
LNEU1245R04SGP	.500	.375	.177	.016	.004	4	–	●	–	–	–
LNEU1250R04SGP	.500	.375	.197	.016	.004	4	–	●	–	–	–
LNEU1245R08SGP	.500	.375	.177	.031	.004	4	–	●	–	–	●
LNEU1250R08SGP	.500	.375	.197	.031	.004	4	–	●	–	–	–
LNEU1245R16SGP	.500	.375	.177	.063	.004	4	–	●	–	–	–

- Very strong geometry for roughing application.
- Four cutting edges.


LNEQ

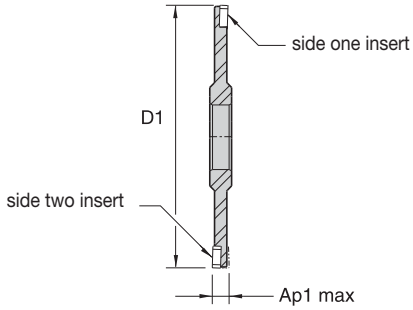


LNEQ

LNEQ

catalog number	LI	W	S	Rε	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40
LNEQ1235R03 4	.500	.375	.138	.012	.002	4	–	●	●	–	–
LNEQ1240R03 4	.500	.375	.157	.012	.002	4	–	●	–	●	–
LNEQ1245R04	.500	.375	.177	.016	.002	4	●	●	●	●	–
LNEQ1250R04	.500	.375	.197	.016	.002	4	–	–	●	–	–
LNEQ1255R04	.500	.375	.217	.016	.002	4	–	●	●	–	–
LNEQ1260R04	.500	.375	.236	.016	.002	4	–	●	●	–	●

- Utilizes wider inserts in standard cutter bodies.
- Cutting width of the unique LNE insert style for narrow slotting cutters can be varied by using an insert one size thicker.
- The width can be increased in .020" or .040" increments.
- Refer to the insert combination in the table “LN Slotting Cutter Widths” for insert and screw selection.



LN Slotting Cutter Widths: Adjust Width by Changing Inserts and Screws • Arbor Mount

cutter catalog number	D1	Ap1 max	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
KS34LNE	3.000	.250	.270	LNE1240	MS-1281	LNE1245	MS-1282
KS44LNE	4.000	.250	.270	LNE1240	MS-1281	LNE1245	MS-1282
KS54LNE	5.000	.250	.289	LNE1245	MS-1282	LNE1245	MS-1282
KS64LNE	6.000	.250	.289	LNE1245	MS-1282	LNE1245	MS-1282
KS84LNE	8.000	.250	.289	LNE1245	MS-1282	LNE1245	MS-1282
KS45LNE	4.000	.312	.332	LNE1245	MS-1282	LNE1250	MS-1283
KS55LNE	5.000	.312	.332	LNE1245	MS-1282	LNE1250	MS-1283
KS65LNE	6.000	.312	.351	LNE1250	MS-1283	LNE1250	MS-1283
KS85LNE	8.000	.312	.351	LNE1250	MS-1283	LNE1250	MS-1283
KS46LNE	4.000	.375	.395	LNE1245	MS-1282	LNE1250	MS-1283
KS56LNE	5.000	.375	.395	LNE1245	MS-1282	LNE1250	MS-1283
KS66LNE	6.000	.375	.414	LNE1250	MS-1283	LNE1250	MS-1283
KS86LNE	8.000	.375	.414	LNE1250	MS-1283	LNE1250	MS-1283
KS48LNE	4.000	.500	.520	LNE1255	MS-1284	LNE1260	MS-1285
KS58LNE	5.000	.500	.520	LNE1255	MS-1284	LNE1260	MS-1285
KS68LNE	6.000	.500	.539	LNE1260	MS-1285	LNE1260	MS-1285
KS88LNE	8.000	.500	.539	LNE1260	MS-1285	LNE1260	MS-1285

Example: Cutting Width of .289"

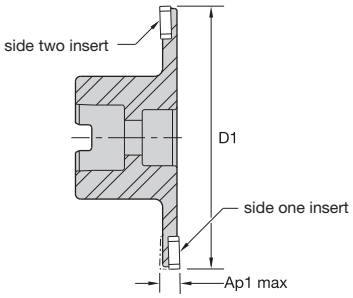
cutter catalog number	D1	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
KS34LNE	3.000	.289	LNE1245	MS-1282	LNE1245	MS-1282

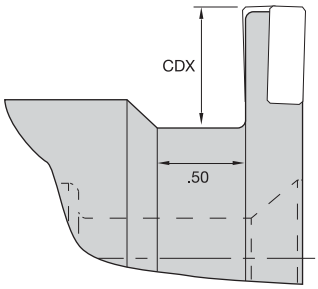
*Caution variation in cutting width range is limited to one size (thickness) greater than the standard insert thickness.

**When changing to wider insert thickness, use the necessary longer screw.

NOTE: When cutters have 3 rows of inserts, the above table only refers to the outer insert on both sides of the cutter. When using inserts that employ a radius of .094" or .125", the corner radius under the insert on the cutter body must be modified to a .10" radius or an optional .10" x 45° chamfer; see chart for detail.

- Utilizes wider inserts in standard cutter bodies.
- Cutting width of the unique LNE insert style for narrow slotting cutters can be varied by using an insert one size thicker.
- The width can be increased in .020" or .040" increments.
- Refer to the insert combination table below for insert selection.





LN Slotting Cutter Widths: Adjust Width by Changing Inserts and Screws • Shell Mill

cutter catalog number	D1	Ap1 max	Ap1 max (new)	side one insert*	screw**	side two insert*	screw**
KS254BLNE1240	2.500	.250	.270	LNE1240	MS-1281	LNE1245	MS-1282
KS44BLNE1240	4.000	.250	.289	LNE1245	MS-1282	LNE1245	MS-1282
KS255BLNE1245	2.500	.312	.332	LNE1245	MS-1282	LNE1250	MS-1283
KS45BLNE1245	4.000	.312	.351	LNE1250	MS-1283	LNE1250	MS-1283
KS46BLNE1245	4.000	.375	.395	LNE1245	MS-1282	LNE1250	MS-1283
KS46BLNE1245	4.000	.375	.414	LNE1250	MS-1283	LNE1250	MS-1283
KS48BLNE1255	4.000	.500	.520	LNE1255	MS-1284	LNE1260	MS-1285
KS48BLNE1255	4.000	.500	.539	LNE1260	MS-1285	LNE1260	MS-1285

*Caution variation in cutting width range limited to one size (thickness) greater than the standard insert thickness.
**When changing to wider insert thickness, use the necessary longer screw.
NOTE: When using inserts with a radius of .094" or .125", the corner radius under the insert on the cutter body must be modified to a .10" radius or an optional .10" x 45° chamfer.

Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
...	.007	**.019**	.027	.005	**.013**	.020	.004	**.010**	.015	.003	**.009**	.013	.003	**.008**	.012	...
.S..GP	.009	**.020**	.032	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the tedious method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**

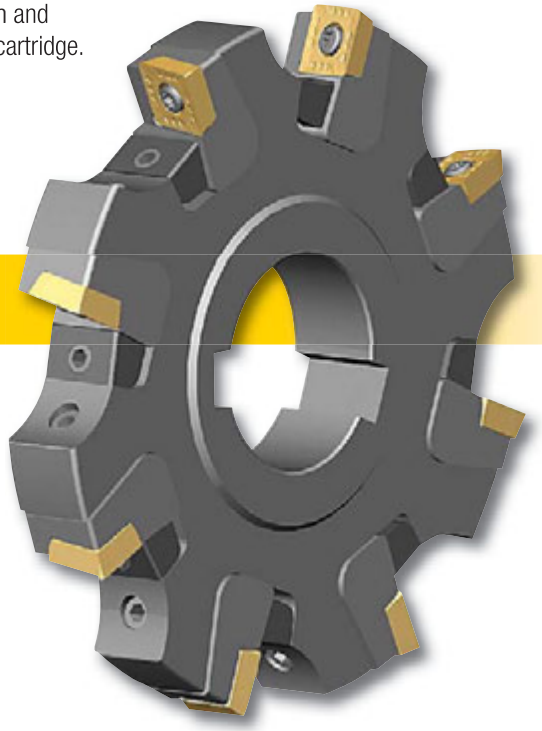


KSSM™ Slotting Cutter

Primary Application

Cutters available in fixed and adjustable groove widths:

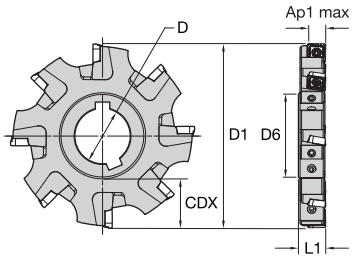
Cutters available in arbor and shell mounts, as well as in fixed and adjustable groove widths, with insert grades and geometries for most materials, KSSM fixed-width slotting cutters are a cost effective solution for the general engineering market. Very precise adjustments to achieve consistent widths are possible with the variable width and enable you to change the tool from right hand to left hand with a change of cartridge.



Features and Benefits

- Cutters available in arbor and shell mounts, as well as in fixed and adjustable groove widths.
- Maximum groove widths:
  - — Fixed cutters IC 10: .359" and .614".
  - — Fixed cutters 1/2" IC: .461" and .739".
  - — Adjustable cutters IC 10: .551–.709".
  - — Adjustable cutters 1/2" IC: .709–.917".
- Rapid adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Faceted inserts for superior surface finish.
- Cutter diameter range is 4–12".
- Insert corner radii from 0.016–0.125".

- Right-hand and left-hand cutters with .359" width of cut.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Insert radii available.
- Faceted inserts for superior surface finishes.





Arbor Mount • 10mm IC • Right Hand

order number	catalog number	D1	D	D6	B min	CDX	L1	Ap1 max	Z	Z S	max RPM	lbs
3330528	**100G10RP90SP10 ***	3.937	1.260	1.841	.359	1.035	.630	.359	10	10	17200	1.20
2629770	**KSSS400ASP10R625**	4.000	1.250	1.880	—	1.038	.625	.359	10	10	17100	1.22
3330531	**125H11RP90SP10 ***	4.921	1.575	2.156	.359	1.370	.630	.359	11	11	15400	1.89

NOTE: For superior surface finish, use right-hand inserts.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Arbor Mount • 10mm IC • Left Hand

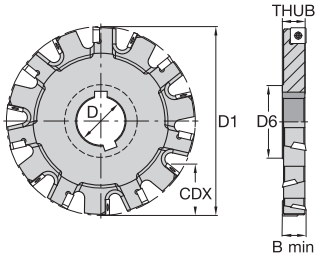
order number	catalog number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	lbs
2629769	**KSSS400ASP10L625**	4.000	1.250	1.880	1.038	.625	.359	10	10	17100	1.22
2629772	**KSSS500ASP10L625 ***	5.000	1.500	2.250	1.353	.625	.359	11	11	15300	1.98

NOTE: For superior surface finish, use left-hand inserts.
Insert radii ≥ .062" (1,6mm) has no facet.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
4.000	**MS2148**	17	**DT9IP**
5.000	**MS2148**	17	**DT9IP**

- Neutral slot width (B min) is .614" + .010".
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide selection of insert radii.
- Faceted inserts for superior surface finishes.





Arbor Mount • 10mm IC • Neutral (Full Slotting)

order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z S	max RPM	lbs
2629768	**KSSS400ASP10N625**	4.000	1.250	1.880	.614	1.042	.542	10	5	17100	1.05
2629794	**KSSS500ASP10N625**	5.000	1.500	2.250	.614	1.357	.542	12	6	15300	1.75
2629774	**KSSS600ASP10N625**	6.000	1.500	2.250	.614	1.857	.542	12	6	14000	2.78

NOTE: For superior surface finish, use right- and left-hand inserts.
Insert radii ≥.062" (1,6mm) has no facet.

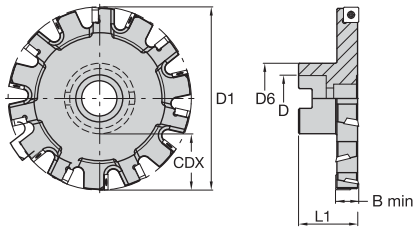
Spare Parts





D1	insert screw	in. lbs.	Torx Plus driver
4.000	**MS2148**	17	**DT9IP**
5.000	**MS2148**	17	**DT9IP**
6.000	**MS2148**	17	**DT9IP**

- Neutral slot width (B min) is .614" + .010".
- Neutral cutting.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Wide selection of insert radii.
- Faceted inserts for superior surface finishes.





Shell Mount • 10mm IC • Neutral (Full Slotting)

order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z S	max RPM	lbs
2629780	**KSSS400BSP10N625**	4.000	1.000	2.132	.614	.887	1.500	10	5	17100	2.12
2629781	**KSSS500BSP10N625**	5.000	1.250	2.880	.614	.995	1.750	12	6	15300	3.89
2629783	**KSSS800BSP10N625**	8.000	1.500	3.810	.614	2.030	2.000	14	7	12100	8.80

NOTE: For superior surface finish, use right- and left-hand inserts.
Insert radii ≥.062" (1,6mm) has no facet.

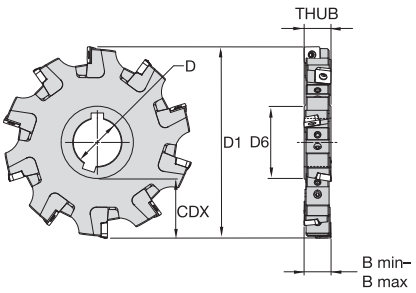
Spare Parts






D1	insert screw	in. lbs.	Torx Plus driver	socket-head cap screw
4.000	**MS2148**	17	**DT9IP**	**S2044**
5.000	**MS2148**	17	**DT9IP**	**S467**
8.000	**MS2148**	17	**DT9IP**	**–**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.

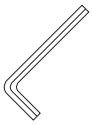




Arbor Mount • Slotting Cutter • .551–.630" Adjustment Range

order number	catalog number	D1	D	D6	B min	B max	CDX	L1	THUB	Z	Z S	max RPM	lbs
2268052	**KSSS400ASP10N551-630**	4.000	1.250	1.880	.551	.630	1.030	.548	.545	6	3	17100	1.17
2268640	**KSSS600ASP10N551-630**	6.000	1.500	2.250	.551	.630	1.845	.548	.545	10	5	14000	2.97
2268652	**KSSS800ASP10N551-630**	8.000	2.000	2.880	.551	.630	2.530	.548	.545	14	7	12100	5.53

Spare Parts

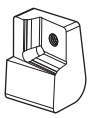
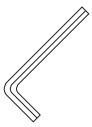
D1	 cartridge right-hand	 cartridge left-hand	 wedge	 cam pin wrench	 insert screw	 in. lbs.	 Torx Plus wrench	 cam pin	 wedge wrench	 wedge screw
4.000	**KSSC551-630R**	**KSSC551-630L**	**KSSW551-630**	**MW25**	**MS2148**	17	**TTP9**	**KSSCP551-709**	**THW3M**	**STCM32**
6.000	**KSSC551-630R**	**KSSC551-630L**	**KSSW551-630**	**MW25**	**MS2148**	17	**TTP9**	**KSSCP551-709**	**THW3M**	**STCM11**
8.000	**KSSC551-630R**	**KSSC551-630L**	**KSSW551-630**	**MW25**	**MS2148**	17	**TTP9**	**KSSCP551-709**	**THW3M**	**STCM11**

Arbor Mount • Slotting Cutter • .630–.709" Adjustment Range

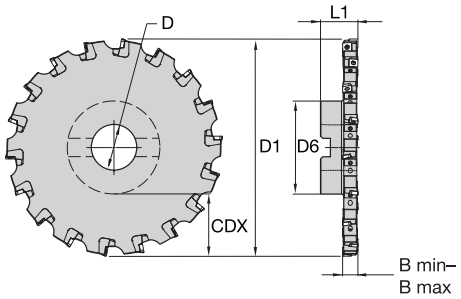
order number	catalog number	D1	D	D6	B min	B max	CDX	L1	THUB	Z	Z S	max RPM	lbs
2268634	**KSSS500ASP10N630-709 ***	5.000	1.500	2.250	.630	.709	1.345	.627	.624	8	4	15300	2.27
2268670	**KSSS1200ASP10N630-709 ***	12.000	2.000	2.880	.630	.709	4.530	.627	.624	20	10	9900	15.96

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts

D1	 cartridge right-hand	 cartridge left-hand	 wedge	 cam pin wrench	 insert screw	 in. lbs.	 Torx Plus wrench	 cam pin	 wedge wrench	 wedge screw
12.000	**KSSC630-709R**	**KSSC630-709L**	**KSSW630-709**	**MW25**	**MS2148**	17	**TTP9**	**KSSCP551-709**	**THW3M**	**STCM11**
5.000	**KSSC630-709R**	**KSSC630-709L**	**KSSW630-709**	**MW25**	**MS2148**	17	**TTP9**	**KSSCP551-709**	**THW3M**	**STCM11**

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Wiper insert facets for superior surface finishes.





Shell Mount • Slotting Cutting • .551–.630" Adjustment Range

order number	catalog number	D1	D	D6	B min	B max	CDX	L1	Z	Z S	max RPM	lbs
2268625	KSSS400BSP10N551-630	4.000	1.000	2.132	.551	.630	.872	2.072	6	3	17100	2.49

Spare Parts

D1	cartridge right-hand	cartridge left-hand	wedge	cam pin wrench	insert screw	in. lbs.	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
4.000	KSSC551-630R	KSSC551-630L	KSSW551-630	MW25	MS2148	17	TTP9	KSSCP551-709	THW3M	STCM11	S458

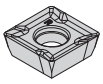
Insert Selection Guide

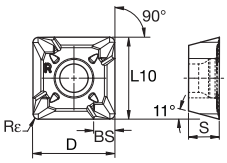
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPK30
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KC725M
S4	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts for KSSM™ SP.T10T3...

- Light-duty Insert.
- Four cutting edges.


SPCT-LD2


SPCT-LE



SPCT-LD2
SPCT-LE

● first choice
○ alternate choice

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
P				●		●	●		
M				●		○	○	○	
K			●		●	○	○		●
N		●							
S								●	
H									

SPCT-LD2

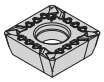
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPCT31251PPEL8LD2	.394	.156	.394	.106	.016	.002	4	–	–	●	–	–	–	–	–
SPCT31251PPER8LD2	.394	.156	.394	.106	.016	.002	4	–	–	●	–	–	–	–	–
SPCT3125PPEL8LD2	.394	.156	.394	.106	.031	.002	4	–	–	●	–	–	–	–	–
SPCT3125PPER8LD2	.394	.156	.394	.106	.031	.002	4	–	●	●	–	–	●	–	–
SPCT31253PPEL8LD2	.394	.156	.394	.106	.047	.002	4	–	–	●	–	–	–	–	–
SPCT31253PPER8LD2	.394	.156	.394	.106	.047	.002	4	–	–	●	–	–	–	–	–
SPCT31254ENLD2	.394	.156	.394	–	.063	.002	4	–	–	●	–	–	–	●	–
SPCT31255ENLD2	.394	.156	.394	–	.078	.002	4	–	–	●	–	–	–	–	–

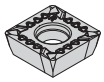
- Light-duty Insert.
- Four cutting edges.

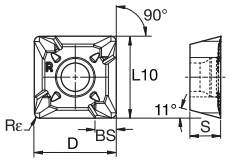
SPCT-LE

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPCT31251PPFL8LE	.394	.156	.394	.106	.016	.001	4	●	–	–	–	–	–	–	–
SPCT31251PPFR8LE	.394	.156	.394	.106	.016	.001	4	●	–	–	–	–	–	–	–
SPCT3125PPFL8LE	.394	.156	.394	.106	.031	.001	4	●	–	–	–	–	–	–	–
SPCT3125PPFR8LE	.394	.156	.394	.106	.031	.001	4	●	–	–	–	–	–	–	–
SPCT31253PPFR8LE	.394	.156	.394	.106	.047	.001	4	●	–	–	–	–	–	–	–
SPCT31255FNLE	.394	.156	.394	–	.078	.001	4	●	–	–	–	–	–	–	–

- Light-duty Insert.
- Four cutting edges.


SPET-GB2


SPPT-GB2



SPET-GB2
SPPT-GB2

● first choice
○ alternate choice

		KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
P				●		●	●		
M				●		○	○	○	
K			●		●	○	○		●
N		●							
S								●	
H									

SPET-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPET31251PPEL8GB2	.394	.156	.394	.106	.016	.003	4	–	–	●	●	●	–	–	–
SPET31251PPER8GB2	.394	.156	.394	.106	.016	.003	4	–	–	●	●	●	–	–	–
SPET3125PPEL8GB2	.394	.156	.394	.106	.031	.003	4	–	●	●	●	●	–	–	–
SPET3125PPER8GB2	.394	.156	.394	.106	.031	.003	4	–	●	●	●	●	●	–	–
SPET3125PPSL8GB2	.394	.156	.394	.106	.031	.005	4	–	–	●	–	●	–	–	–
SPET3125PPSR8GB2	.394	.156	.394	.106	.031	.005	4	–	●	●	●	●	–	–	–

SPPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KTPK20
SPPT3125PPER8GB2	.394	.156	.394	.106	.031	.003	4	–	–	–	●	●	–	–	–
SPPT3125PPSR8GB2	.394	.156	.394	.106	.031	.005	4	–	–	–	●	●	–	–	●

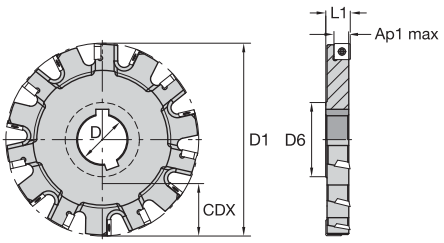
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.005	**.017**	.028	.003	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.F..LE
.F..LD	.005	**.017**	.028	.003	**.012**	.020	.003	**.009**	.015	.002	**.008**	.013	.002	**.007**	.012	.F..LD
.E..LD2	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD2
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..GB2	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB2
.S..GB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB
.S..GB2	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB2
.S..GN	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Right- and left-hand cutters available.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Faceted inserts for superior surface finishes.





Arbor Mount • 1/2" IC • Right Hand

order number	catalog number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	lbs
2618969	**KSSS600ASD43R750**	6.000	1.500	2.250	1.851	.750	.461	12	12	9400	3.73
2629787	**KSSS800ASD43R750**	8.000	2.000	2.880	2.536	.750	.461	14	14	8150	6.86
2629790	**KSSS1000ASD43R750 ***	10.000	2.000	2.880	3.536	.750	.461	16	16	7250	11.44

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Arbor Mount • 1/2" IC • Left Hand

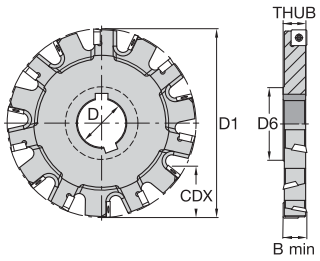
order number	catalog number	D1	D	D6	CDX	L1	Ap1 max	Z	Z S	max RPM	lbs
2629784	**KSSS600ASD43L750**	6.000	1.500	2.250	1.851	.750	.461	12	12	9400	3.73
2629786	**KSSS800ASD43L750**	8.000	2.000	2.880	2.536	.750	.461	14	14	8150	6.86

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
6.000	**MS2078**	35	**DT15IP**
8.000	**MS2078**	35	**DT15IP**
10.000	**MS2078**	35	**DT15IP**

NOTE: For superior surface finish, use right- and left-hand inserts.

- Neutral slot width (B min) is .739" + .010" wide.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Faceted inserts for superior surface finishes.





Arbor Mount • 1/2" IC • Neutral (Full Slotting)

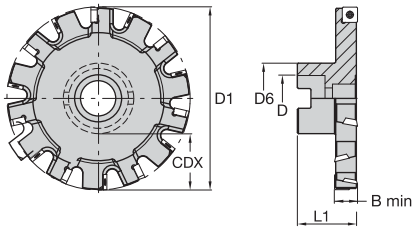
order number	catalog number	D1	D	D6	B min	CDX	THUB	Z	Z S	max RPM	lbs
2618967	**KSSS600ASD43N750**	6.000	1.500	2.250	.744	1.857	.666	14	7	9400	3.49
2629785	**KSSS800ASD43N750**	8.000	2.000	2.880	.739	2.542	.666	18	9	8150	6.58
2629788	**KSSS1000ASD43N750**	10.000	2.000	2.880	.739	3.542	.666	22	11	7250	11.02

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
6.000	**MS2078**	35	**DT15IP**
8.000	**MS2078**	35	**DT15IP**
10.000	**MS2078**	35	**DT15IP**

NOTE: For superior surface finish, use right-hand and left-hand inserts.

- Neutral slot width (B min) is .739" + .010" wide.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Faceted inserts for superior surface finishes.





Shell Mount • 1/2" IC • Neutral (Full Slotting)

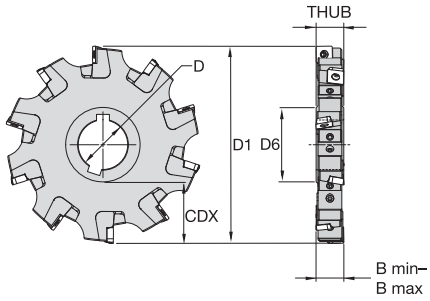
order number	catalog number	D1	D	D6	B min	CDX	L1	Z	Z S	max RPM	lbs
2629791	**KSSS600BSD43N750**	6.000	1.500	3.810	.739	1.029	2.000	14	7	9400	6.28
2629792	**KSSS800BSD43N750**	8.000	1.500	3.810	.739	2.029	2.000	18	9	8150	9.90

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
6.000	**MS2078**	35	**DT15IP**
8.000	**MS2078**	35	**DT15IP**

NOTE: For superior surface finish, use right-hand and left-hand inserts.

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.





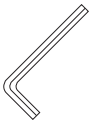
Arbor Mount • Slotting Cutter • .709–.813" Adjustment Range

order number	catalog number	D1	D	D6	B min	B max	CDX	THUB	Z	Z S	max RPM	lbs
2268676	KSSS500ASD43N709-813	5.000	1.500	2.250	.709	.813	1.331	.716	8	4	10300	2.33
2268688	KSSS600ASD43N709-813 *	6.000	1.500	2.250	.709	.813	1.831	.716	10	5	9400	3.62
2268712	KSSS1000ASD43N709-813	10.000	2.000	2.880	.709	.813	3.516	.716	16	8	7250	11.51
2268724	KSSS1200ASD43N709-813	12.000	2.000	2.880	.709	.813	4.516	.716	18	9	6650	17.30

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts









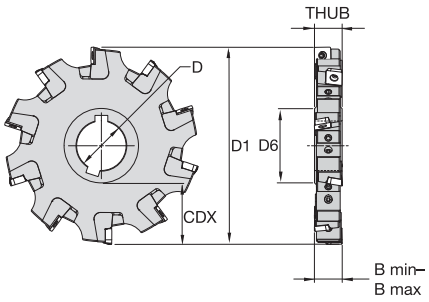
D1	cartridge right-hand	cartridge left-hand	wedge	cam pin wrench	insert screw	in. lbs.	Torx Plus wrench	cam pin	wedge wrench	wedge screw
5.000	KSSC709-813R	KSSC709-813L	KSSW709-813	MW3	MS2077	35	TTP15	KSSCP709-917	THW3M	STCM11
6.000	KSSC709-813R	KSSC709-813L	KSSW709-813	MW3	MS2077	35	TTP15	KSSCP709-917	THW3M	STCM11
10.000	KSSC709-813R	KSSC709-813L	KSSW709-813	MW3	MS2077	35	TTP15	KSSCP709-917	THW3M	STCM11
12.000	KSSC709-813R	KSSC709-813L	KSSW709-813	MW3	MS2077	35	TTP15	KSSCP709-917	THW3M	STCM11

Cartridges • Larger Insert Radii

order number	catalog number
3663324	KSSC709813RX
3663325	KSSC709813LX

NOTE: Use left- or right-hand cartridges for neutral cutters. Fits all larger radii inserts.

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Two keyways for staggered mounting.
- Wiper insert facets for superior surface finishes.





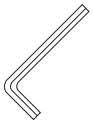
Arbor Mount • Slotting Cutter • .813–.917" Adjustment Range

order number	catalog number	D1	D	D6	B min	B max	CDX	THUB	Z	Z S	max RPM	lbs
2268694	**KSSS600ASD43N813-917**	6.000	1.500	2.250	.813	.917	1.831	.820	10	5	9400	4.23
2268706	**KSSS800ASD43N813-917 ***	8.000	2.000	2.880	.813	.917	2.516	.820	14	7	8150	7.99
2268730	**KSSS1200ASD43N813-917 ***	12.000	2.000	2.880	.813	.917	4.516	.820	18	9	6650	20.20

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts









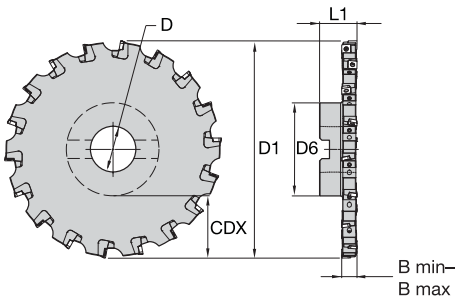
D1	cartridge right-hand	cartridge left-hand	wedge	cam pin wrench	insert screw	in. lbs.	Torx Plus wrench	cam pin	wedge wrench	wedge screw
6.000	**KSSC813-917R**	**KSSC813-917L**	**KSSW813-917**	**MW3**	**MS2077**	35	**TTP15**	**KSSCP709-917**	**THW3M**	**STCM11**
8.000	**KSSC813-917R**	**KSSC813-917L**	**KSSW813-917**	**MW3**	**MS2077**	35	**TTP15**	**KSSCP709-917**	**THW3M**	**STCM11**
12.000	**KSSC813-917R**	**KSSC813-917L**	**KSSW813-917**	**MW3**	**MS2077**	35	**TTP15**	**KSSCP709-917**	**THW3M**	**STCM11**

Cartridges • Larger Insert Radii

order number	catalog number
3663326	**KSSC813917RX**
3663327	**KSSC813917LX**

NOTE: Use left- or right-hand cartridges for neutral cutters. Fits all larger radii inserts.

- Rapid adjustment and setting via unique cam adjustment mechanism.
- Large selection of insert geometries and grades to cut most workpiece materials.
- Four insert cutting edges.
- Large selection of insert radii.
- Wiper insert facets for superior surface finishes.

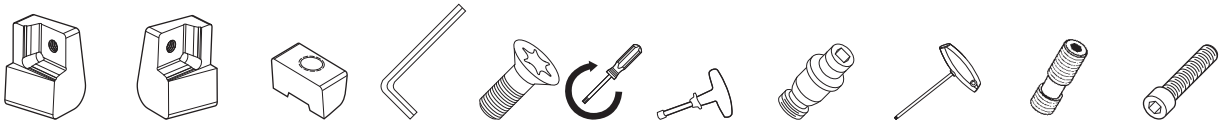




Shell Mount • Slotting Cutting • .709–.813" Adjustment Range

order number	catalog number	D1	D	D6	B min	B max	CDX	L1	Z	Z S	max RPM	lbs
2268679	**KSSS500BSD43N709-813**	5.000	1.250	2.880	.709	.813	.997	2.093	8	4	10300	4.55
2268727	**KSSS1200BSD43N709-813**	12.000	2.500	5.250	.709	.813	3.312	2.093	18	9	6650	19.83

Spare Parts



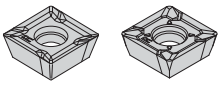
D1	cartridge right-hand	cartridge left-hand	wedge	cam pin wrench	insert screw	in. lbs.	Torx Plus wrench	cam pin	wedge wrench	wedge screw	socket-head cap screw
5.000	**KSSC709-813R**	**KSSC709-813L**	**KSSW709-813**	**MW3**	**MS2077**	35	**TTP15**	**KSSCP709-917**	**THW3M**	**KSSW709-813**	**S467**
12.000	**KSSC709-813R**	**KSSC709-813L**	**KSSW709-813**	**MW3**	**MS2077**	35	**TTP15**	**KSSCP709-917**	**THW3M**	**KSSW709-813**	**—**

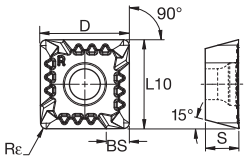
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
P3–P4	.E..LD2	KCPM40	**.E..GB2**	**KCPK30**	.S..GB2	KCPK30
P5–P6	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
M1–M2	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
M3	.E..LD2	KCPM40	**.E..GB2**	**KCPM40**	.S..GB2	KCPM40
K1–K2	.E..LD2	KC520M	**.E..GB2**	**KCK15**	.S..GB2	KCK15
K3	.E..LD2	KC520M	**.E..GB2**	**KC520M**	.S..GB2	KC520M
N1–N2	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
N3	.F..LE	KC410M	**.F..LE**	**KC410M**	.F..LE	KC410M
S1–S2	.E..LD2	KC725M	**.E..GB2**	**KC725M**	.S..GB2	KC725M
S3	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
S4	.E..LD2	KCSM40	**.E..GB2**	**KCSM40**	.S..GB2	KCSM40
H1	–	–	**–**	**–**	–	–

Indexable Inserts • KSSM™ SD.T1204...

- Light-duty Insert.
- Four cutting edges.


SDCT-LE SDCT-LD2



SDCT-LE
SDCT-LD2

● first choice
○ alternate choice

		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										

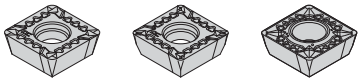
SDCT-LE (Ground) 20° Rake Face

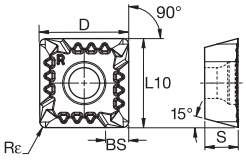
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDCT431PDFL8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–
SDCT431PDFR8LE	.500	.188	.500	.106	.016	.001	4	●	–	–	–	–	–	–	–	–
SDCT43PDFL8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–
SDCT43PDFR8LE	.500	.188	.500	.106	.031	.001	4	●	–	–	–	–	–	–	–	–
SDCT433PDFL8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–
SDCT433PDFR8LE	.500	.188	.500	.106	.047	.001	4	●	–	–	–	–	–	–	–	–
SDCT434FNLE	.500	.188	.500	–	.063	.001	4	●	–	–	–	–	–	–	–	–
SDCT435FNLE	.500	.188	.500	–	.078	.001	4	●	–	–	–	–	–	–	–	–
SDCT436FNLE	.500	.188	.500	–	.094	.001	4	●	–	–	–	–	–	–	–	–
SDCT438FNLE	.500	.188	.500	–	.125	.001	4	●	–	–	–	–	–	–	–	–

SDCT-LD2 (Ground) 15° Rake Face

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDCT431PDEL8LD2	.500	.188	.500	.106	.016	.002	4	–	–	–	●	–	–	–	–	–
SDCT431PDER8LD2	.500	.188	.500	.115	.016	.002	4	–	–	–	●	–	–	–	–	–
SDCT43PDEL8LD2	.500	.188	.500	.130	.031	.002	4	–	–	–	●	–	–	–	–	–
SDCT43PDER8LD2	.500	.188	.500	.130	.031	.002	4	–	●	–	●	–	–	●	–	●
SDCT433PDEL8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	–
SDCT433PDER8LD2	.500	.188	.500	.120	.047	.002	4	–	–	–	●	–	–	–	–	–
SDCT434ENLD2	.500	.188	.500	–	.063	.002	4	–	–	–	●	–	–	–	–	●
SDCT435ENLD2	.500	.188	.500	–	.078	.002	4	–	–	–	●	–	–	–	–	–
SDCT436ENLD2	.500	.188	.500	–	.094	.002	4	–	–	–	●	–	–	–	–	–
SDCT438ENLD2	.500	.188	.500	–	.125	.002	4	–	–	●	●	–	–	–	–	–
SDCT4316ENLD2	.500	.188	.500	–	.250	.002	2	–	–	–	●	–	–	–	–	●

- Heavy machining.
- Four cutting edges.


SDET-GB2 SDPT-GB2 SDET-GB



SDET-GB2
SDPT-GB2
SDET-GB

● first choice
○ alternate choice

P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N	●								
S			●	●				●	●
H									

SDET-GB (Ground) 5° Rake Face

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDET43PDER8GB	.500	.188	.500	.101	.031	.003	4	–	●	–	–	–	–	–	–	●
SDET43PDSR8GB	.500	.188	.500	.101	.031	.006	4	–	–	–	●	–	●	●	●	●
SDET433PDER8GB	.500	.188	.500	.086	.047	.003	4	–	–	–	●	–	–	●	–	●
SDET433PDSR8GB	.500	.188	.500	.085	.047	.006	4	–	–	–	●	–	–	–	–	●
SDET434ENGB	.500	.188	.500	–	.062	.003	4	–	–	–	–	–	–	–	–	●
SDET434SNGB	.500	.188	.500	–	.062	.006	4	–	–	–	●	–	–	–	–	●
SDET436ENGB	.500	.188	.500	–	.094	.003	4	–	–	–	●	–	–	–	–	●
SDET436SNGB	.500	.188	.500	–	.094	.006	4	–	–	–	●	–	–	–	–	●
SDET438ENGB	.500	.188	.500	–	.125	.003	4	–	–	–	●	–	–	–	–	●
SDET438SNGB	.500	.188	.500	–	.125	.006	4	–	–	–	–	–	–	–	–	●
SDET4312ENGB	.500	.188	.500	–	.188	.003	2	–	–	–	●	–	–	–	–	●
SDET4312SNGB	.500	.188	.500	–	.188	.006	2	–	–	–	●	–	–	–	–	●
SDET4316SNGB	.500	.188	.500	–	.250	.006	2	–	–	–	●	–	●	–	●	●
SDET4316ENGB	.500	.188	.500	–	.250	.003	2	–	–	–	●	–	–	–	–	●

SDET-GB2 (Ground) 5° Rake Face

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDET43PDEL8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	–	–	–
SDET43PDER8GB2	.500	.188	.500	.130	.031	.003	4	–	●	–	●	●	●	●	–	●
SDET43PDSL8GB2	.500	.188	.500	.130	.031	.005	4	–	–	–	●	–	●	–	–	–
SDET43PDSR8GB2	.500	.188	.500	.130	.031	.005	4	–	●	–	●	●	●	●	–	–
SDET433PDEL8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	–	–	–	–
SDET433PDER8GB2	.500	.188	.500	.120	.047	.003	4	–	●	–	●	●	●	●	–	–
SDET434SNGB2	.500	.188	.500	–	.063	.005	4	–	●	–	●	●	●	–	–	–
SDET435SNGB2	.500	.188	.500	–	.078	.005	4	–	●	–	●	●	●	●	–	–
SDET436SNGB2	.500	.188	.500	–	.094	.005	4	–	–	–	●	●	●	–	–	–
SDET438XENGB2	.500	.188	.500	–	.125	.003	2	–	–	–	●	–	–	–	–	–
SDET438SNGB2	.500	.188	.500	–	.125	.005	4	–	●	–	●	●	●	–	–	–
SDET4316SNGB2	.500	.188	.500	–	.250	.005	2	–	–	–	–	–	●	–	–	–

SDPT-GB2

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
SDPT43PDER8GB2	.500	.188	.500	.106	.031	.003	4	–	–	–	●	●	●	●	–	●
SDPT43PDSR8GB2	.500	.188	.500	.106	.031	.005	4	–	–	–	●	●	●	●	–	●

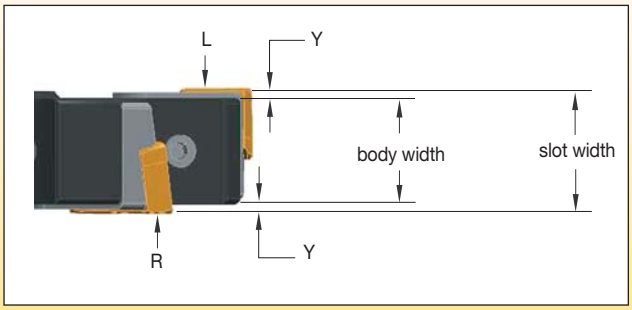
Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LE	.005	**.017**	.030	.003	**.012**	.021	.003	**.009**	.016	.002	**.008**	.014	.002	**.007**	.013	.F..LE
.E..LD	.007	**.019**	.032	.005	**.013**	.023	.004	**.010**	.017	.003	**.009**	.015	.003	**.008**	.014	.E..LD
.E..LD2	.005	**.018**	.032	.004	**.013**	.023	.003	**.010**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LD2
.E..GB	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB
.E..GB2	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.E..GB2
.S..GB	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB
.S..GB2	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GB2
.S..GN	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..GN

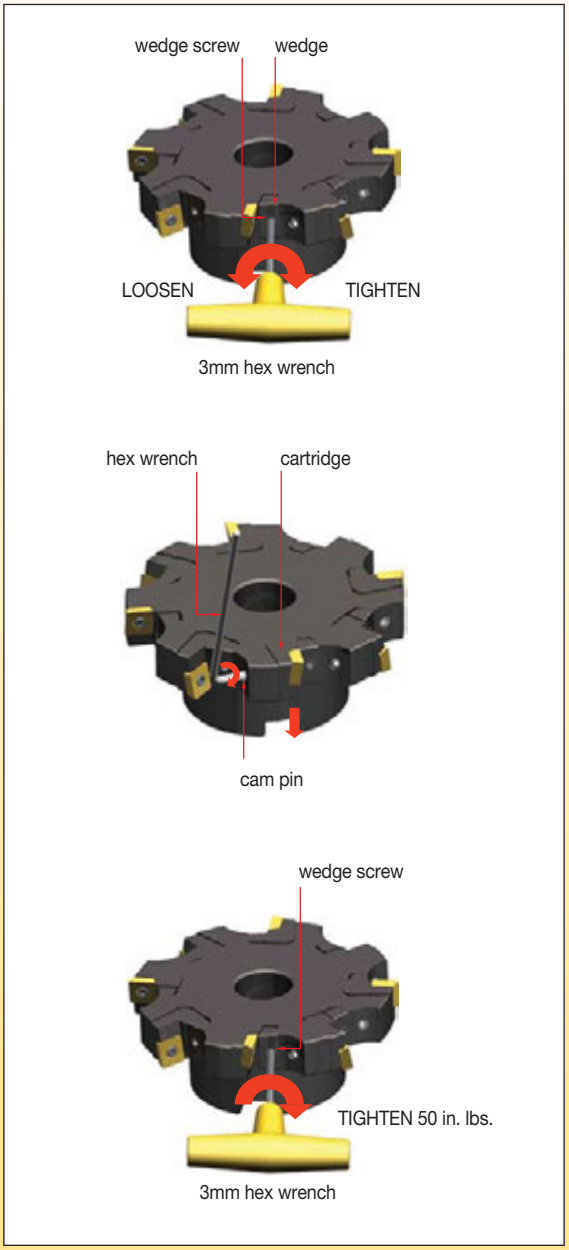
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

KSSM Slot Width Adjustment Instructions

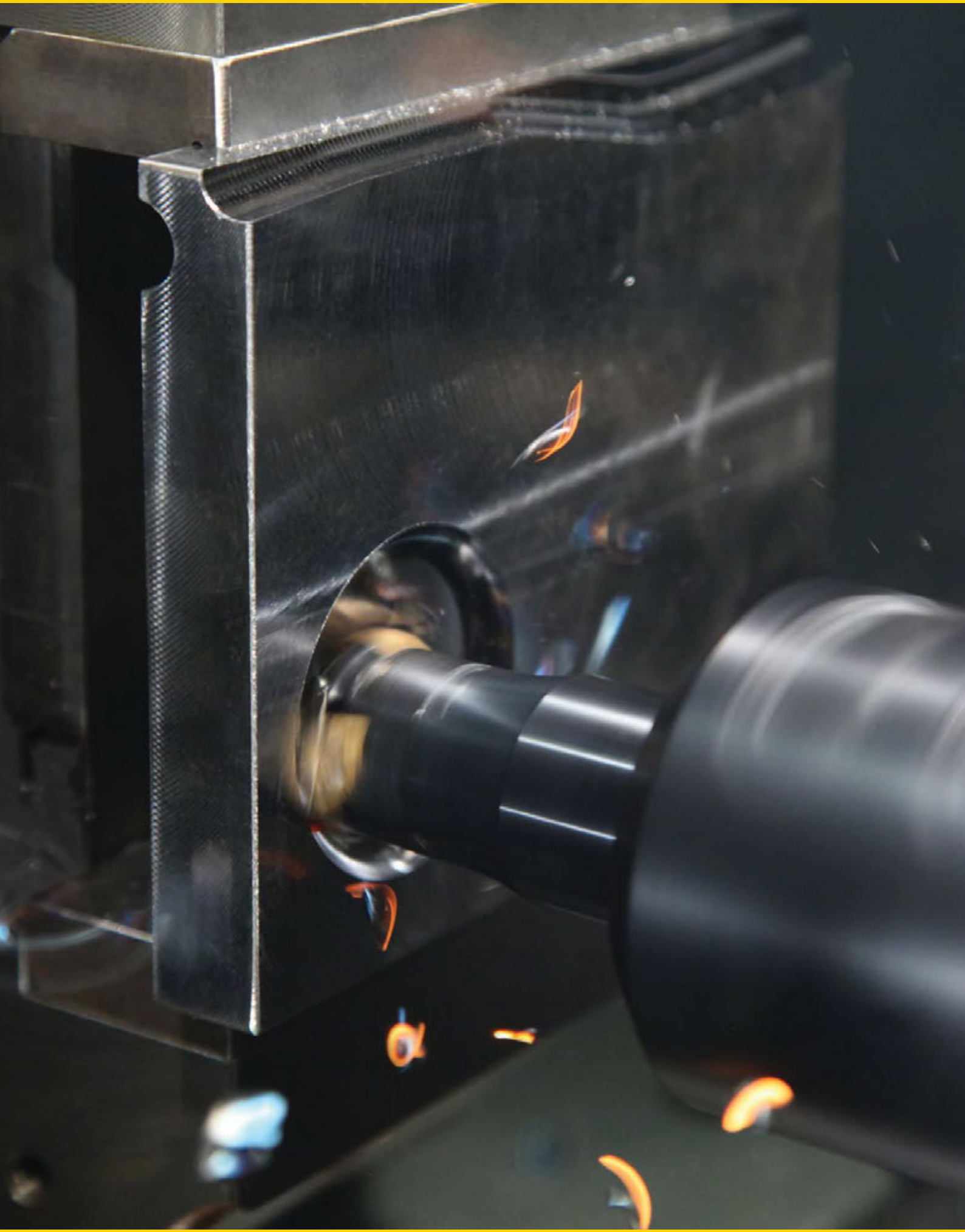


1. Measure body width at pocket 1 (per stamp on tool body) behind cartridge.
2. Zero tool presetter at pocket 1 behind cartridge.
3. Move presetter over the insert and set distance Y. Y= (Desired Slot Width-Body Width)/2
4. Zero over insert at starting pocket (pocket 1).
5. Adjust remaining cartridges on the same side.
6. Return to starting pocket and start with step 2 for opposite side of cutter.

KSSM Cartridge Adjustment Instructions



1. Insert 3mm hex wrench into STCM Screw.
2. Rotate 3mm hex wrench counter-clockwise to loosen wedge.
3. Rotate 3mm hex wrench clockwise to lightly tighten STCM screw to approximately 9 in. lbs., so the wedge is touching the cartridge and cutter body. This creates some slight resistance against the cartridge during the adjustment.
4. Insert hex wrench into cam pin behind cartridge.
5. Rotate wrench to adjust cartridge to desired position.
6. For best accuracy, back cam pin off, so you can feel it is not touching the sides of the slot in the back of the cartridge.
7. Remove wrench from cam pin.
8. Insert 3mm hex wrench into STCM screw.
9. Tighten STCM screw to 55 in. lbs. prior to using the cutter. Kennametal torque wrench KTW45 or alternate torque wrench should be used.
10. Double check cartridge position to assure no movement.



Indexable Milling • Copy Milling

Stellram 7792VX • High-Feed Series V2–V32

KenFeed 2X • Double-Sided High-Feed Milling Cutters V34–V41

Rodeka • Double-Sided Round Inserts V42–V64

Rodeka 10 ..... V44–V50

Rodeka 12 ..... V51–V57

Rodeka 16 ..... V58–V60

Rodeka 12X V61–V64

KSRM • Round Inserts, Specially Developed for Titanium and Stainless Steel V66–V94

Stellram 7713VR • Round Inserts V96–V108

Stellram 7713VR10 ..... V97–V101

Stellram 7713VR12 ..... V102–V108

Stellram 5505VX V110–V118

KDMB and KDMT V120–V137

Z-Axis V138–V145

KCRA • Double-Sided Ceramic Round Inserts V146–V152

KIPR V154–V159

Stellram® 7792 High-Feed Series

Indexable Milling

The 7792 cutter series has been designed for high-feed milling applications with superior surface generation. 7792VX cutters are designed for a wide range of applications, including facing, pocketing, ramping, helical interpolation, and plunging. They are capable of machining all materials, including steel, stainless steel, cast iron, and high-temperature and aluminum alloys.



Features and Benefits

- The 7792VX high-feed cutters are the best solution for reducing cycle times or removing the maximum amount of material in the shortest time.
- New ultra-fine pitch cutters further increase metal removal rates, especially in high-temp alloys.
- The unique design and insert positioning help to achieve up to 5x higher feed rates than other cutters on the market.
- When used in long (extended) toolholders, 7792VX cutters absorb vibrations and greatly reduce instability and tool deflection.
- Integrated wiper facet for improved surface finish: 16 Ra (1,6µ) when used at <0.020 in/z.



7792VXP06:
Maximum ap = 0.035"
Diameter Range = 0.625–1.250"

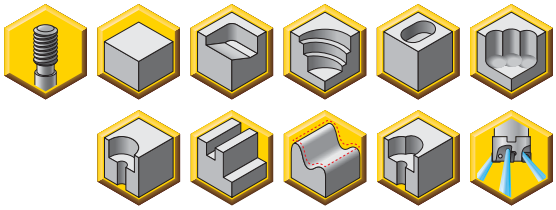
7792VXD09:
Maximum ap = 0.059"
Diameter Range = 1.000–2.000"

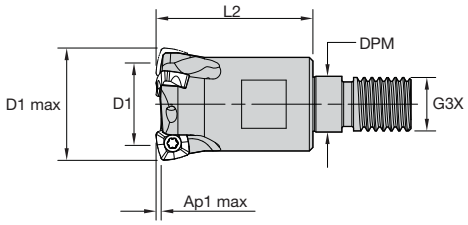
7792VXD12:
Maximum ap = 0.098"
Diameter Range = 1.250–6.300"

7792VXE16:
Maximum ap = 0.138"
Diameter Range = 2.000–6.000"

NOTE: Larger diameter shell mill fixation cutters with interchangeable cartridges are available.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXP06 Modular Head • Screw-On

order number	catalog number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5661213	A7792VXP06SA.625Z2R1	.625	.255	1.000	M8	.335	.035	2
5660060	A7792VXP06SA.75Z2R1.4	.750	.380	1.377	M10	.413	.035	2
5661214	A7792VXP06SA.75Z3R1.4	.750	.380	1.377	M10	.413	.035	3
5667958	A7792VXP06SA1.0Z3R1.4	1.000	.630	1.377	M12	.492	.035	3
5661215	A7792VXP06SA1.0Z4R1.4	1.000	.630	1.377	M12	.492	.035	4
5681114	A7792VXP06SA1.25Z5R2	1.250	.880	1.693	M16	.669	.035	5

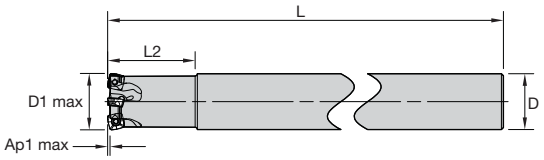
Spare Parts

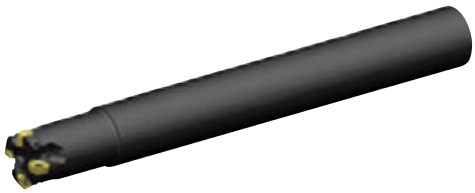
catalog number	insert screw	in. lbs.	Torx driver
A7792VXP06SA.625Z2R1	FP2506T	7.1	TP7
A7792VXP06SA.75Z2R1.4	FP2506T	7.1	TP7
A7792VXP06SA.75Z3R1.4	FP2506T	7.1	TP7
A7792VXP06SA1.0Z3R1.4	FP2507T	7.1	TP7
A7792VXP06SA1.0Z4R1.4	FP2507T	7.1	TP7
A7792VXP06SA1.25Z5R2	FP2507T	7.1	TP7

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXP06 Cylindrical Shank

order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5667588	C7792VXP06CA.62Z2R5.5	.625	.625	7.402	.980	.035	2
5658507	C7792VXP06CA.75Z3R6.1	.750	.750	7.874	1.259	.035	3
5661212	C7792VXP06CA1.0Z4R6.1	1.000	1.000	8.344	1.575	.035	4
5681117	C7792VXP06CA1.25Z5R8	1.250	1.250	9.761	1.575	.035	5

Spare Parts

catalog number	insert screw	in. lbs.	Torx driver
C7792VXP06CA.62Z2R5.5	FP2506T	7.1	TP7
C7792VXP06CA.75Z3R6.1	FP2506T	7.1	TP7
C7792VXP06CA1.0Z4R6.1	FP2507T	7.1	TP7
C7792VXP06CA1.25Z5R8	FP2507T	7.1	TP7

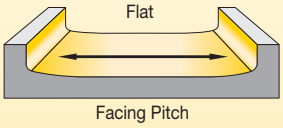
NOTE: For further application recommendation, please see technical information on pages V30–V32.

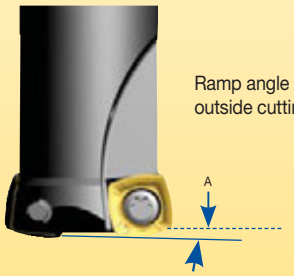
Technical Information (in)

		dimension						
order number	catalog number	facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	max RPM
5667588	C7792VXP06CA.62Z2R5.5	6.090	8.20	0.850	1.170	0.024	0.118	65,000
5658507	C7792VXP06CA.75Z3R6.1	3.860	6.74	1.100	1.420	0.024	0.118	57,000
5661212	C7792VXP06CA1.0Z4R6.1	2.110	4.34	1.600	1.920	0.024	0.118	49,000
5681117	C7792VXP06CA1.25Z5R8	1.430	2.69	2.100	2.420	0.024	0.118	41,500
5661213	A7792VXP06SA.625Z2R1	6.090	8.20	0.850	1.170	0.024	0.118	65,000
5660060	A7792VXP06SA.75Z2R1.4	3.860	6.74	1.100	1.420	0.024	0.118	57,000
5661214	A7792VXP06SA.75Z3R1.4	3.860	6.74	1.100	1.420	0.024	0.118	57,000
5667958	A7792VXP06SA1.0Z3R1.4	2.110	4.34	1.600	1.920	0.024	0.118	49,000
5661215	A7792VXP06SA1.0Z4R1.4	2.110	4.34	1.600	1.920	0.024	0.118	49,000
5681114	A7792VXP06SA1.25Z5R2	1.430	2.69	2.100	2.420	0.024	0.118	41,500


Helical Interpolation


Plunging





Ramp angle A uses one outside cutting edge only.

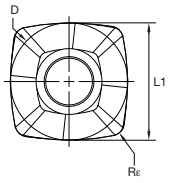
A = max ramp angle utilizing full-face contact.

Inserts

Insert Selection Guide • IC 06

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	...D41	SC6525	**...D41**	**SC6525**	...D41	X400
P3–P4	…D	KC522M	**…D**	**KC522M**	…D	KCPM40
P5–P6	...D41	SP6519	**...D41**	**X500**	...D41	X500
M1–M2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	…D	KC510M	**…D**	**KCPK30**	…D	KCPK30
K3	…D	KC510M	**…D**	**KCPK30**	…D	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S4	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
H1	…D	KC510M	**…D**	**KC510M**	…D	KCPM40


XPLT06-D41



XPLT06-D41

● first choice
○ alternate choice

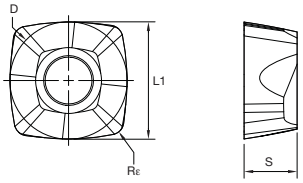
		KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
P		○	○	●	●	○	●	○	●	○
M			●	○	○	●		●		●
K		●	○	○			●	○		
N		○								
S			●			●		●		●
H									○	

XPLT06-D41 • First choice for machining stainless steel and high-temp alloys

catalog number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPLT060308ERD41	.276	.276	.125	.031	.002	.054	–	–	–	–	–	●	●	●	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XPPT-D41

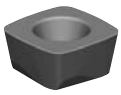


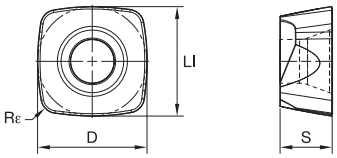
XPPT-D41

XPPT-D41 • Precision pressed insert. General purpose in soft steels, stainless steels, and high-temp alloys.

catalog number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPPT060308ERD41	.276	.276	.125	.031	.002	.054	–	–	–	–	●	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XPPW-06-D



XPPW-06-D

XPPW-06-D • Precision pressed insert; improved cost per edge. Reinforced geometry. Particularly suitable for high strength steels, hardened materials, and cast iron.

catalog number	D	LI	S	Rε	hm	RT	KC510M	KC522M	KCPK30	KCPM40	KCSM40	SC6525	SP6519	X400	X500
XPPW060310SRD	.276	.276	.125	.039	.006	.061	●	●	●	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining

At .035 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.015	**.043**	.076	.011	**.029**	.050	.008	**.022**	.036	.007	**.019**	.031	.006	**.017**	.028	.E..D41
.S..D	.027	**.058**	.093	.019	**.039**	.059	.014	**.028**	.042	.012	**.024**	.036	.011	**.022**	.033	.S..D

At .025 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.018	**.051**	.094	.013	**.035**	.059	.009	**.025**	.042	.008	**.022**	.037	.007	**.020**	.033	.E..D41
.S..D	.032	**.070**	.118	.023	**.046**	.071	.017	**.033**	.050	.014	**.029**	.043	.013	**.026**	.039	.S..D

At .020 Axial Depth of Cut (ap)

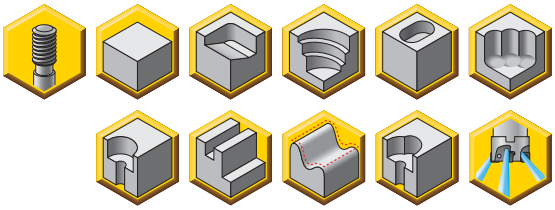
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.020	**.058**	.109	.014	**.039**	.067	.010	**.028**	.047	.009	**.025**	.041	.008	**.022**	.037	.E..D41
.S..D	.036	**.080**	.141	.025	**.052**	.080	.019	**.037**	.056	.016	**.032**	.048	.015	**.029**	.043	.S..D

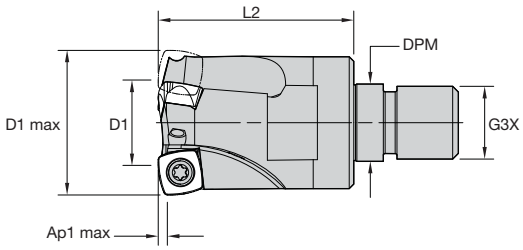
Feed Rate Guide • Plunging • IC 06 • fz [in/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max .118" insert engagement (ae radial engagement)			Insert Geometry
.E..D41	.002	**.006**	.010	.E..D41
.S..D	.004	**.008**	.012	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V30.
Use "Light Machining" values as starting feed rate
Please see pages X22–X37 for recommended starting speeds.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXD09 Modular Head • Screw-On

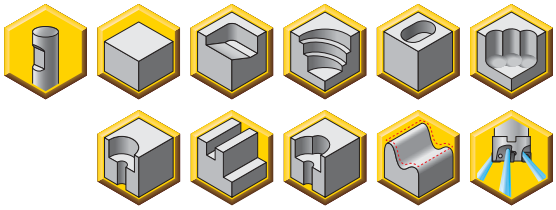
order number	catalog number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5659840	A7792VXD09SA1.0Z2R1.4	1.000	.487	1.378	M12	.492	.059	2
5660449	A7792VXD09SA1.25Z3R2	1.250	.738	1.692	M16	.669	.059	3

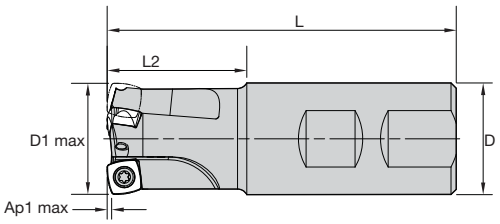
Spare Parts

catalog number	insert screw	in. lbs.	Torx driver
A7792VXD09SA1.0Z2R1.4	F3508T	18.6	T15
A7792VXD09SA1.25Z3R2	F3510T	18.6	T15

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Weldon® Shank

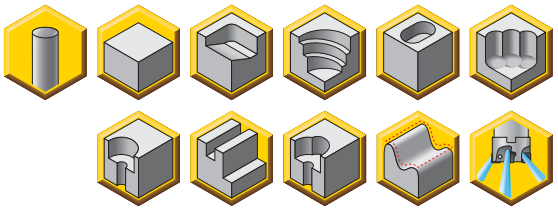
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5658075	**C7792VXD09WA1.00Z2R**	1.000	1.000	3.856	1.575	.059	2
5666067	**C7792VXD09WA1.25Z3R**	1.250	1.250	3.855	1.574	.059	3

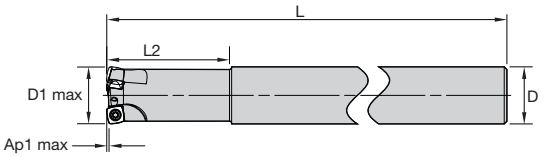
Spare Parts

catalog number	 insert screw	 in. lbs.	 Torx driver
C7792VXD09WA1.00Z2R	**F3508T**	18.6	**T15**
C7792VXD09WA1.25Z3R	**F3510T**	18.6	**T15**

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Cylindrical Shank

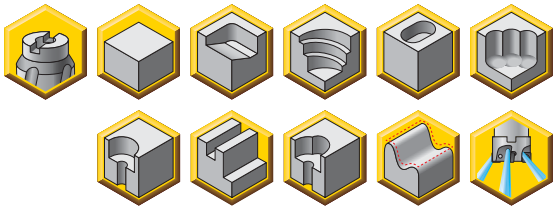
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5667564	C7792VXD09CA1.00Z2R2	1.000	1.000	7.874	1.969	.059	2
6025590	C7792VXD09CA1.00Z3R2	1.000	1.000	8.000	2.000	.059	3
5659948	C7792VXD09CA1.25Z3R3	1.250	1.250	9.843	2.756	.059	3
6025611	C7792VXD09CA1.25Z4R3	1.251	1.250	10.000	3.000	.059	4

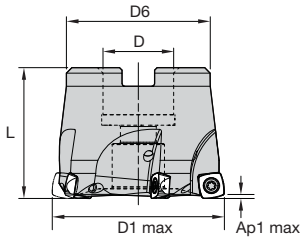
Spare Parts

catalog number	 insert screw	 in. lbs.	 Torx driver
C7792VXD09CA1.00Z2R2	F3508T	18.6	T15
C7792VXD09CA1.00Z3R2	F3508T	18.6	T15
C7792VXD09CA1.25Z3R3	F3510T	18.6	T15
C7792VXD09CA1.25Z4R3	F3510T	18.6	T15

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD09 Shell Mill

order number	catalog number	D1 max	D	D6	L	Ap1 max	Z U
5656731	C7792VXD09-A1.50Z4R	1.500	.500	1.339	1.260	.059	4
5658170	C7792VXD09-A1.50Z5R	1.500	.500	1.339	1.260	.059	5
5667832	C7792VXD09-A2.00Z5R	2.000	.750	1.811	1.575	.059	5
5665795	C7792VXD09-A2.00Z6R	2.000	.750	1.811	1.575	.059	6
6025612	C7792VXD09-A2.00Z7R	2.000	.750	1.772	1.575	.059	7

Spare Parts

catalog number	 insert screw	 in. lbs.	 Torx driver	 mounting screw
C7792VXD09-A1.50Z4R	F3510T	18.6	T15	#1/4-28X3/4SHCSA
C7792VXD09-A1.50Z5R	F3510T	18.6	T15	#1/4-28X3/4SHCSA
C7792VXD09-A2.00Z5R	F3510T	18.6	T15	#3/8-24X1SHCSA
C7792VXD09-A2.00Z6R	F3510T	18.6	T15	#3/8-24X1SHCSA
C7792VXD09-A2.00Z7R	F3510T	18.6	TB15	#3/8-24X1SHCSA

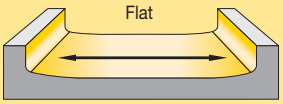
NOTE: For further application recommendation, please see technical information on pages V30–V32.

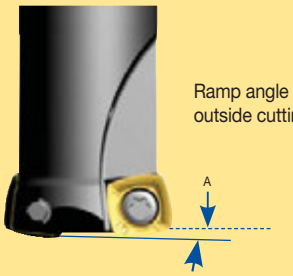
Technical Information (in)

order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5658075	C7792VXD09WA1.00Z2R	0.478	2.70	1.370	1.920	0.039	0.236	48,000
5666067	C7792VXD09WA1.25Z3R	0.728	1.50	1.870	2.420	0.039	0.236	40,500
5667564	C7792VXD09CA1.00Z2R2	0.478	2.70	1.370	1.920	0.039	0.236	48,000
6025590	C7792VXD09CA1.00Z3R2	0.478	2.70	1.370	1.920	0.039	0.236	48,000
5659948	C7792VXD09CA1.25Z3R3	0.728	1.50	1.870	2.420	0.039	0.236	40,500
6025611	C7792VXD09CA1.25Z4R3	0.728	1.50	1.870	2.420	0.039	0.236	40,500
5656731	C7792VXD09-A1.50Z4R	0.980	1.10	2.370	2.920	0.039	0.236	36,000
5658170	C7792VXD09-A1.50Z5R	0.980	1.10	2.370	2.920	0.039	0.236	36,000
5667832	C7792VXD09-A2.00Z5R	1.478	0.70	3.370	3.920	0.039	0.236	30,000
5665795	C7792VXD09-A2.00Z6R	1.478	0.70	3.370	3.920	0.039	0.236	30,000
6025612	C7792VXD09-A2.00Z7R	1.478	0.70	3.370	3.920	0.039	0.236	30,000
5659840	A7792VXD09SA1.0Z2R1.4	0.480	2.70	1.370	1.920	0.039	0.236	48,000
5660449	A7792VXD09SA1.25Z3R2	0.730	1.50	1.870	2.420	0.039	0.236	40,500


Helical Interpolation


Plunging





Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilizing full face contact.

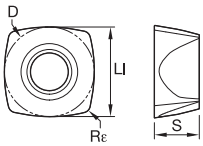
Insert Selection Guide • IC 09

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	…GP	KC522M	**…GP**	**KCPM40**	…GP	KCPM40
P3–P4	…GP	KC522M	**…D**	**KC522M**	…D	KCPM40
P5–P6	...D411	SP6519	**...D411**	**X500**	...D41	X500
M1–M2	...D411	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D411	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	…D	KCK15	**…D**	**KCK15**	…D	KCPK30
K3	…D	KCPK30	**…D**	**KCPK30**	…D	KCPK30
N1–N2	...D721	GH2	**...D721**	**GH2**	...D721	GH2
N3	...D721	GH2	**...D721**	**GH2**	...D721	GH2
S1–S2	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
S3	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
S4	...D411	SP6519	**...D411**	**KCSM40**	...D41	KCSM40
H1	…D	KC510M	**…D**	**KC510M**	…D	KCPM40

Milling Inserts



XDLT09-D721



XDLT09-D721

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

XDLT09-D721 • First choice for non-ferrous alloys

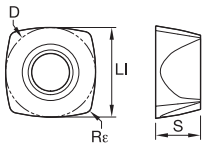
catalog number	D	LI	S	Rε	hm	RT
XDLT090408ERD721	.375	.375	.187	.031	.002	.079

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- First choice for machining stainless steel and high-temp alloys.



XDLT09-D41



XDLT09-D41

XDLT09-D41 • General purpose in soft steels. Best fit for face milling, slotting operation

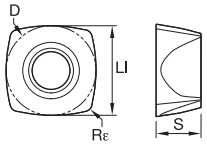
catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090408ERD41	.375	.375	.187	.031	.002	.079	–	–	–	–	–	–	–	–	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Copy Milling

- First choice for machining stainless steel and high-temp alloys.


XDPT09...D41



XDPT09...D41

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

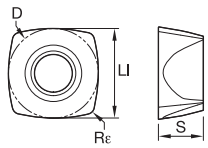
XDPT09-D41 • Precision pressed. General purpose in soft steels. Best fit for face milling, slotting operation

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT090408ERD41	.375	.375	.187	.031	.002	.079	–	–	–	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Geometry similar to D41, but with higher corner nose protection for heavier applications.


XDLT09...D411



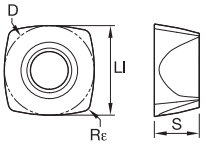
XDLT09...D411

XDLT09-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090412ERD411	.375	.375	.187	.047	.002	.089	–	–	–	–	–	–	–	–	–	–	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPT-D411



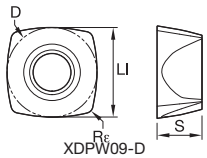
XDPT-D411

XDPT-D411 • Precision pressed. General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT090412ERD411	.375	.375	.187	.047	.002	.089	–	–	–	–	–	–	–	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPW09-D



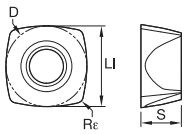
XDPW09-D

XDPW09-D • Precision pressed. First choice for roughing alloyed steel and cast iron

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPW090412SRD	.375	.375	.187	.047	.004	.089	–	●	●	–	●	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDLW09-D



XDLW09-D

● first choice
○ alternate choice

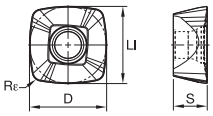
		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

■ XDLW09-D • First choice for roughing alloyed steel and cast iron

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLW090408SRD	.375	.375	.187	.031	.004	.079	–	–	–	–	–	–	–	–	●	●	–	●	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPT09-GP



XDPT09-GP

■ XDPT09-GP • Precision pressed. General use on alloyed steels. Good balance across all machining situations.

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT090412SRGP	.375	.375	.187	.047	.009	.026	–	–	●	●	–	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds • High-Feed and Plunging Applications • fz [in/tooth]

■ Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining

At .060 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.012	**.038**	.067	.009	**.027**	.047	.006	**.020**	.034	.006	**.018**	.030	.005	**.016**	.027	.E..D721
.E..D41	.015	**.044**	.067	.011	**.031**	.047	.008	**.023**	.034	.007	**.020**	.030	.006	**.018**	.027	.E..D41
.E..D411	.015	**.044**	.067	.011	**.031**	.047	.008	**.023**	.034	.007	**.020**	.030	.006	**.018**	.027	.E..D411
.S..D	.021	**.048**	.079	.015	**.034**	.055	.011	**.025**	.040	.010	**.022**	.035	.009	**.020**	.032	.S..D
.S..GP	.021	**.048**	.079	.015	**.034**	.054	.011	**.025**	.040	.010	**.022**	.035	.009	**.020**	.032	.S..GP

At .040 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.015	**.047**	.083	.010	**.033**	.057	.008	**.024**	.042	.007	**.021**	.036	.006	**.019**	.033	.E..D721
.E..D41	.018	**.053**	.083	.013	**.038**	.057	.010	**.028**	.042	.009	**.024**	.036	.008	**.022**	.033	.E..D41
.E..D411	.018	**.053**	.083	.013	**.038**	.057	.010	**.028**	.042	.009	**.024**	.036	.008	**.022**	.033	.E..D411
.S..D	.026	**.059**	.098	.019	**.041**	.067	.014	**.031**	.049	.012	**.027**	.042	.011	**.024**	.039	.S..D
.S..GP	.026	**.058**	.097	.019	**.041**	.067	.014	**.030**	.049	.012	**.026**	.042	.011	**.024**	.038	.S..GP

At .030 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.017	**.054**	.097	.012	**.038**	.066	.009	**.028**	.048	.008	**.024**	.042	.007	**.022**	.038	.E..D721
.E..D41	.021	**.062**	.097	.015	**.043**	.066	.011	**.032**	.048	.010	**.028**	.042	.009	**.025**	.038	.E..D41
.E..D411	.021	**.062**	.097	.015	**.043**	.066	.011	**.032**	.048	.010	**.028**	.042	.009	**.025**	.038	.E..D411
.S..D	.030	**.069**	.115	.021	**.048**	.078	.016	**.035**	.056	.014	**.031**	.049	.013	**.028**	.044	.S..D
.S..GP	.030	**.068**	.114	.021	**.047**	.077	.016	**.035**	.056	.014	**.030**	.048	.013	**.028**	.044	.S..GP

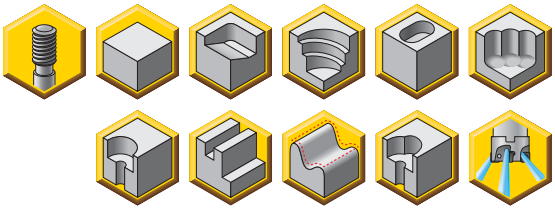
■ Feed Rate Guide • Plunging • IC 09 • fz [in/tooth]

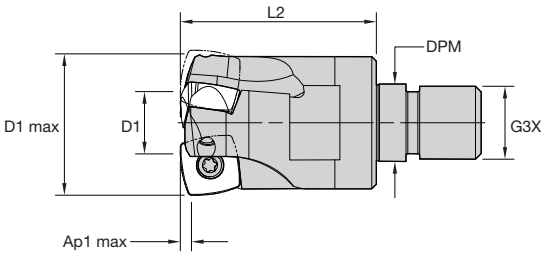
Insert Geometry	Programmed Feed per Tooth (fz) Max .236" insert engagement (ae radial engagement)			Insert Geometry
.E..D721	.002	**.007**	.012	.E..D721
.E..D41	.003	**.008**	.012	.E..D41
.E..D411	.003	**.008**	.012	.E..D411
.S..D	.004	**.009**	.014	.S..D
.S..GP	.004	**.009**	.014	.S..GP

NOTE: For further details about using the 7792VX series in plunging operations, please see page V30.
Use "Light Machining" values as starting feed rate
Please see pages X22–X37 for recommended starting speeds.

Copy Milling

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.
- Screw-on cutters provide better rigidity and stability when used with small spindels: BT30, BT40, DV40, HSK50, HSK63, etc.
- Screw-on cutters can be less expensive when compared to cylindrical shank cutters due to their higher flexibility through multiple holder combinations.







7792VXD12 Modular Head • Screw-On

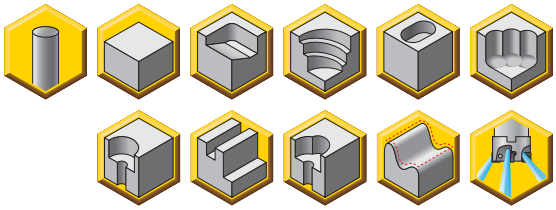
order number	catalog number	D1 max	D1	L2	G3X	DPM	Ap1 max	Z U
5659929	A7792VXD12SA1.25Z2R2	1.250	.520	1.693	M16	.669	.098	2
5667487	A7792VXD12SA1.5Z3R1.7	1.500	.785	1.750	M16	.669	.098	3

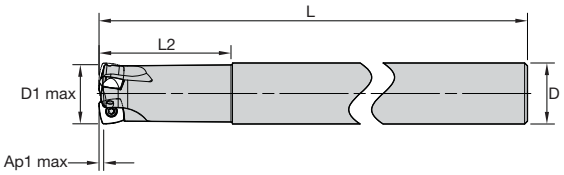
Spare Parts

catalog number	insert screw	in. lbs.	Torx driver
A7792VXD12SA1.25Z2R2	D4010T	27.4	T15
A7792VXD12SA1.5Z3R1.7	D4010T	27.4	T15

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD12 Cylindrical Shank

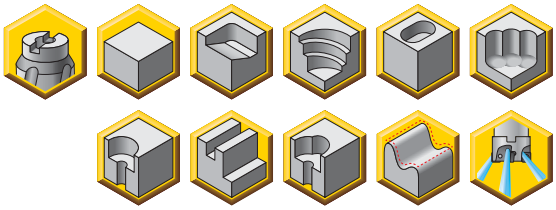
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5666596	C7792VXD12CA1.25Z2R3	1.250	1.250	9.843	2.756	.098	2
6025588	C7792VXD12CA1.25Z3R3	1.250	1.250	10.000	3.000	.098	3
5665832	C7792VXD12CA1.2/1.5Z3	1.500	1.250	9.843	2.755	.098	3
6025589	C7792VXD12CA1.50Z4R3	1.500	1.500	10.000	3.000	.098	4

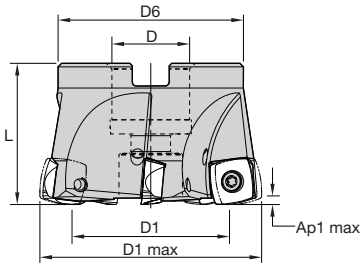
Spare Parts

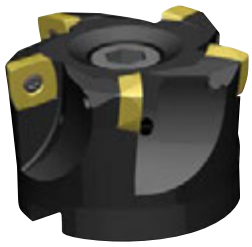
catalog number	 insert screw	 in. lbs.	 Torx driver
C7792VXD12CA1.25Z2R3	D4010T	27.4	T15
C7792VXD12CA1.25Z3R3	D4010T	27.4	T15
C7792VXD12CA1.2/1.5Z3	D4010T	27.4	T15
C7792VXD12CA1.50Z4R3	D4010T	27.4	T15

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXD12 Shell Mill • Coarse, Medium, and Fine Pitch

order number	catalog number	D1 max	D	D6	L	Ap1 max	Z U
6025581	C7792VXD12-A1.50Z4R	1.500	.750	1.417	1.575	.098	4
5657237	C7792VXD12-A2.00Z3R	2.000	.750	1.811	1.575	.098	3
5667404	C7792VXD12-A2.00Z4R	2.000	.750	1.772	1.575	.098	4
5656382	C7792VXD12-A2.00Z5R	2.000	.750	1.811	1.575	.098	5
6025582	C7792VXD12-A2.00Z6R	2.000	.750	1.772	1.575	.098	6
5667809	C7792VXD12-A2.50Z4R	2.500	1.000	1.969	1.575	.098	4
5656732	C7792VXD12-A2.50Z5R	2.500	1.000	1.969	1.575	.098	5
6025583	C7792VXD12-A2.50Z7R	2.500	1.000	2.087	1.575	.098	7
5665708	C7792VXD12-A3.00Z5R	3.000	1.000	2.087	1.969	.098	5
5656919	C7792VXD12-A3.00Z8R	3.000	1.000	1.969	1.969	.098	8
6025584	C7792VXD12-A3.00Z9R	3.000	1.000	2.087	1.969	.098	9
5667833	C7792VXD12-A4.00Z6R	4.000	1.250	2.559	1.969	.098	6
5656378	C7792VXD12-A4.00Z9R	4.000	1.250	2.559	1.969	.098	9
6025585	C7792VXD12-A4.00Z11R	4.000	1.250	2.559	1.969	.098	11
5667476	C7792VXD12-A5.00Z8R	5.000	1.500	3.244	2.480	.098	8
5658171	C7792VXD12-A5.00Z11R	5.000	1.500	3.244	2.480	.098	11
6025586	C7792VXD12-A5.00Z13R	5.000	1.500	3.189	2.480	.098	13
5656915	C7792VXD12-6.00Z12R	6.000	1.500	3.953	2.480	.098	12
6025587	C7792VXD12-6.00Z15R	6.000	1.500	4.323	2.480	.098	15
5659736	C7792VXD12-6.30Z8R	6.300	1.500	3.945	2.480	.098	8

NOTE: No through coolant for cutters where D1 max = 6.00".

Spare Parts

catalog number	insert screw	in. lbs.	Torx driver	mounting screw	mounting screw
C7792VXD12-A1.50Z4R	D4010T	27.4	T15	–	KLSS0714C
C7792VXD12-A2.00Z3R	D4012T	27.4	T15	#3/8-24X1SHCSA	–
C7792VXD12-A2.00Z4R	D4012T	27.4	T15	#3/8-24X1SHCSA	–
C7792VXD12-A2.00Z5R	D4010T	27.4	T15	#3/8-24X1SHCSA	–
C7792VXD12-A2.00Z6R	D4010T	27.4	TB15	#3/8-24X1SHCSA	–
C7792VXD12-A2.50Z4R	D4012T	27.4	T15	#1/2-20X1-1/4 LHCSA	–
C7792VXD12-A2.50Z5R	D4012T	27.4	T15	#1/2-20X1-1/4 LHCSA	–
C7792VXD12-A2.50Z7R	D4012T	27.4	TB15	#1/2-20X1-1/4 LHCSA	–
C7792VXD12-A3.00Z5R	D4012T	27.4	T15	#1/2-20X1-1/4SHCSA	–
C7792VXD12-A3.00Z8R	D4012T	27.4	T15	#1/2-20X1-1/4SHCSA	–
C7792VXD12-A3.00Z9R	D4012T	27.4	TB15	#1/2-20X1-1/4SHCSA	–
C7792VXD12-A4.00Z6R	D4012T	27.4	T15	#5/8-18X1-1/2SHCSA	–
C7792VXD12-A4.00Z9R	D4012T	27.4	T15	#5/8-18X1-1/2SHCSA	–
C7792VXD12-A4.00Z11R	D4012T	27.4	TB15	#5/8-18X1-1/2SHCSA	–
C7792VXD12-A5.00Z8R	D4012T	27.4	T15	#3/4-16X1-3/4SHCSA	–
C7792VXD12-A5.00Z11R	D4012T	27.4	T15	#3/4-16X1-3/4SHCSA	–
C7792VXD12-A5.00Z13R	D4012T	27.4	TB15	#3/4-16X1-3/4SHCSA	–
C7792VXD12-6.00Z12R	D4012T	27.4	T15	–	–
C7792VXD12-6.00Z15R	D4010T	27.4	TB15	–	–
C7792VXD12-6.30Z8R	D4012T	27.4	T15	–	–

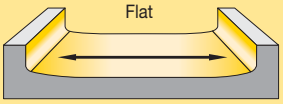
NOTE: For further application recommendation, please see technical information on pages V30–V32.

Technical Information (in)

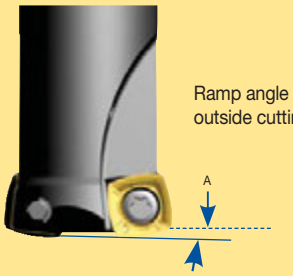
order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5666596	C7792VXD12CA1.25Z2R3	0.526	1.85	1.630	2.420	0.070	0.354	31,500
5665832	C7792VXD12CA1.2/1.5Z3	0.770	0.95	2.130	2.920	0.070	0.354	27,500
6025581	C7792VXD12-A1.50Z4R	0.770	0.95	2.130	2.920	0.070	0.354	27,500
5657237	C7792VXD12-A2.00Z3R	1.276	0.90	3.130	3.920	0.070	0.354	22,500
5667404	C7792VXD12-A2.00Z4R	1.276	0.90	3.130	3.920	0.070	0.354	22,500
5656382	C7792VXD12-A2.00Z5R	1.276	0.90	3.370	3.920	0.070	0.354	22,500
6025582	C7792VXD12-A2.00Z6R	1.276	0.90	3.130	3.920	0.070	0.354	22,500
5667809	C7792VXD12-A2.50Z4R	1.776	0.60	4.130	4.920	0.070	0.354	22,500
5656732	C7792VXD12-A2.50Z5R	1.776	0.60	4.130	4.920	0.070	0.354	22,500
6025583	C7792VXD12-A2.50Z7R	1.776	0.60	4.130	4.920	0.070	0.354	19,500
5665708	C7792VXD12-A3.00Z5R	2.276	0.45	5.130	5.920	0.070	0.354	17,500
5656919	C7792VXD12-A3.00Z8R	2.276	0.45	5.130	5.920	0.070	0.354	17,500
6025584	C7792VXD12-A3.00Z9R	2.276	0.45	5.130	5.920	0.070	0.354	17,500
5667833	C7792VXD12-A4.00Z6R	3.270	0.31	7.130	7.920	0.070	0.354	14,500
5656378	C7792VXD12-A4.00Z9R	3.270	0.31	7.130	7.920	0.070	0.354	14,500
6025585	C7792VXD12-A4.00Z11R	3.270	0.31	7.130	7.920	0.070	0.354	14,500
5667476	C7792VXD12-A5.00Z8R	4.270	0.24	9.130	9.920	0.070	0.354	13,000
5658171	C7792VXD12-A5.00Z11R	4.270	0.24	9.130	9.920	0.070	0.354	13,000
6025586	C7792VXD12-A5.00Z13R	4.270	0.24	9.130	9.920	0.070	0.354	13,000
5656915	C7792VXD12-6.00Z12R	5.270	0.19	11.130	11.920	0.070	0.354	11,500
6025587	C7792VXD12-6.00Z15R	5.270	0.19	11.130	11.920	0.070	0.354	11,500
5659736	C7792VXD12-6.30Z8R	5.570	0.18	11.130	11.920	0.070	0.354	11,000
5659929	A7792VXD12SA1.25Z2R2	0.520	2.60	1.630	2.420	0.070	0.354	31,500
6025588	C7792VXD12CA1.25Z3R3	0.520	2.60	1.630	2.420	0.070	0.354	31,500
5667487	A7792VXD12SA1.5Z3R1.7	0.770	1.60	2.130	2.920	0.070	0.354	27,500
6025589	C7792VXD12CA1.50Z4R3	0.770	1.60	2.130	2.920	0.070	0.354	27,500


Helical Interpolation


Plunging



Facing Pitch



Ramp angle A uses one outside cutting edge only.

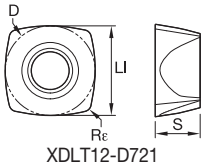
A = max ramp angle utilizing full face contact.

Insert Selection Guide • IC 12

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	…GP	KC522M	…GP	KCPM40	…GP	KCPM40
P3–P4	…GP	KC522M	…D	KC522M	…D	KCPM40
P5–P6	...D411	SP6519	...D411	X500	...D41	X500
M1–M2	...D411	SP6519	...D41	KCSM40	...D41	KCSM40
M3	...D411	SP6519	...D41	KCSM40	...D41	KCSM40
K1–K2	…D	KCK15	…D	KCK15	…D	KCPK30
K3	…D	KCPK30	…D	KCPK30	…D	KCPK30
N1–N2	...D721	GH2	...D721	GH2	...D721	GH2
N3	...D721	GH2	...D721	GH2	...D721	GH2
S1–S2	...D411	SP6519	...D411	KCSM40	...D41	KCSM40
S3	...D411	SP6519	...D411	KCSM40	...D41	KCSM40
S4	...D411	SP6519	...D411	KCSM40	...D41	KCSM40
H1	…D	KC510M	…D	KC510M	…D	KCPM40



XDLT12-D721



XDLT12-D721

● first choice
○ alternate choice

P			○	○	●		●	●	○		●	○	●	○
M					●	●		○	○	●			●		●
K		○	●	○		●	○				●	●	○		
N		●	○												
S					●	●				●			●		●
H														○	

XDLT12-D721 • First choice for non-ferrous alloys

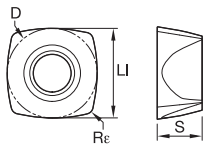
catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120508ERD721	.500	.500	.219	.031	.002	.098	●	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Positive geometry for lower cutting forces; first choice for machining stainless steel and high-temp alloys.



XDLT12-D41



XDLT12-D41

XDLT12-D41 • General purpose in soft steels. Best fit for face milling, slotting operation

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120508ERD41	.500	.500	.219	.031	.002	.098	–	–	–	–	–	–	–	●	–	●	●	–	●

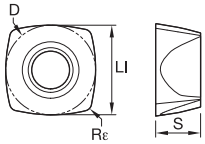
NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- First choice for machining stainless steel and high-temp alloys.

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M					●	●		○	○	●			●		●
K		○	●	○			●	○			●	●	○		
N		●	○												
S					●	●				●			●		●
H														○	


XDPT12-D41



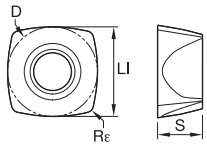
XDPT12-D41

XDPT12-D41 • Precision-pressed insert; improved cost per edge. General purpose in soft steels. Best fit for face milling, slotting operation

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120508ERD41	.500	.500	.219	.031	.002	.098	–	–	–	–	–	–	–	●	–	●	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XDPT12-D411



XDPT12-D411

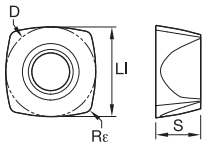
XDPT12-D411 • Precision pressed. General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs.

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120512ERD411	.500	.500	.219	.047	.002	.107	–	–	–	–	–	–	–	●	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Geometry similar to D41, but with higher corner nose protection for heavier applications.


XDLT12-D411



XDLT12-D411

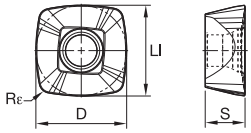
XDLT12-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT120512ERD411	.500	.500	.219	.047	.002	.107	–	–	–	–	–	–	–	●	–	–	●	–	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDPT12-GP



XDPT12-GP

● first choice
○ alternate choice

		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P			○	○	●		●	●	○		●	○	●	○
M				●	●		○	○	●			●		●
K		○	●	○		●	○			●	●	○		
N		●	○											
S				●	●				●			●		●
H													○	

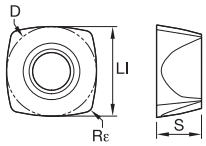
XDPT12-GP • Precision-pressed insert; improved cost per edge. General use on alloyed steels. Good balance across all machining situations

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPT120515SRGP	.500	.500	.219	.059	.009	.109	–	–	●	●	–	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDLW12-D



XDLW12-D

XDLW12-D • First choice for roughing alloyed steel and cast iron

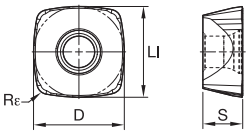
catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLW120508SRD	.500	.500	.219	.031	.010	.098	–	–	–	–	–	–	–	–	●	–	–	●	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Particularly suitable for high strength steels, hardened materials, and cast iron.



XDPW12-D



XDPW12-D

XDPW12-D • Precision Pressed with Reinforced Geometry • First Choice for Hardened Materials and Cast Iron

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDPW120515SRD	.500	.500	.219	.058	.010	.109	–	●	●	–	●	●	●	–	–	–	–	–	–

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining

At .100 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.011	**.041**	.066	.008	**.029**	.047	.006	**.022**	.035	.005	**.019**	.030	.005	**.017**	.028	.E..D721
.E..D41	.014	**.046**	.072	.010	**.033**	.051	.008	**.024**	.038	.007	**.021**	.033	.006	**.019**	.030	.E..D41
.E..D411	.014	**.046**	.072	.010	**.033**	.051	.008	**.024**	.038	.007	**.021**	.033	.006	**.019**	.030	.E..D411
.S..GP	.020	**.051**	.077	.015	**.036**	.055	.011	**.027**	.041	.009	**.024**	.035	.009	**.022**	.032	.S..GP
.S..D	.020	**.051**	.077	.015	**.036**	.055	.011	**.027**	.041	.009	**.024**	.036	.009	**.022**	.032	.S..D

At .070 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.013	**.048**	.078	.010	**.035**	.056	.007	**.026**	.041	.006	**.022**	.036	.006	**.021**	.033	.E..D721
.E..D41	.017	**.054**	.086	.012	**.039**	.061	.009	**.029**	.045	.008	**.025**	.039	.007	**.023**	.036	.E..D41
.E..D411	.017	**.054**	.086	.012	**.039**	.061	.009	**.029**	.045	.008	**.025**	.039	.007	**.023**	.036	.E..D411
.S..GP	.024	**.061**	.092	.017	**.043**	.065	.013	**.032**	.048	.011	**.028**	.042	.010	**.026**	.038	.S..GP
.S..D	.024	**.061**	.092	.017	**.043**	.065	.013	**.032**	.048	.011	**.028**	.042	.010	**.026**	.038	.S..D

At .055 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D721	.015	**.054**	.088	.011	**.039**	.063	.008	**.029**	.046	.007	**.025**	.040	.007	**.023**	.037	.E..D721
.E..D41	.019	**.061**	.097	.014	**.044**	.069	.010	**.033**	.051	.009	**.028**	.044	.008	**.026**	.040	.E..D41
.E..D411	.019	**.061**	.097	.014	**.044**	.069	.010	**.033**	.051	.009	**.028**	.044	.008	**.026**	.040	.E..D411
.S..GP	.027	**.068**	.104	.019	**.049**	.073	.014	**.036**	.054	.013	**.031**	.047	.012	**.029**	.043	.S..GP
.S..D	.027	**.068**	.104	.019	**.049**	.074	.014	**.036**	.054	.013	**.031**	.047	.012	**.029**	.043	.S..D

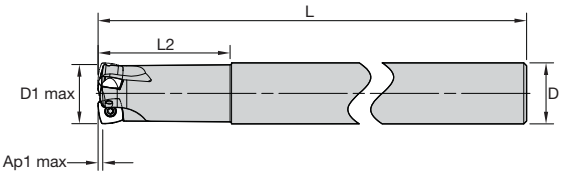
Feed Rate Guide • Plunging • IC 12 • fz [in/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max .354" insert engagement (ae radial engagement)			Insert Geometry
.E..D721	.002	**.008**	.013	.E..D721
.E..D41	.003	**.009**	.014	.E..D41
.E..D411	.003	**.009**	.014	.E..D411
.S..GP	.004	**.010**	.015	.S..GP
.S..D	.004	**.010**	.015	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V30.
Use "Light Machining" values as starting feed rate
Please see pages X22–X37 for recommended starting speeds.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXE16 Cylindrical Shank

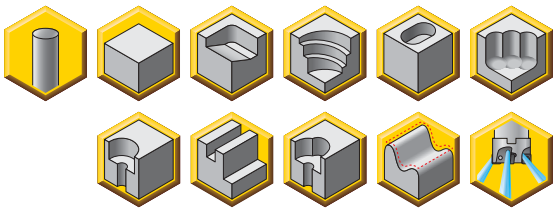
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5659564	C7792VXE16CA1.50Z2R4	1.500	1.500	6.703	4.016	.138	2
5666415	C7792VXE16CA2.00Z3R4	2.000	1.500	6.703	4.016	.138	3

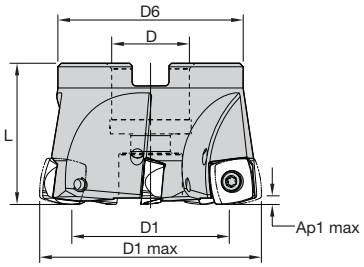
Spare Parts

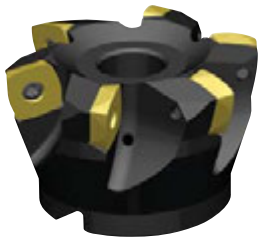
catalog number	 insert screw	 in. lbs.	 Torx driver
C7792VXE16CA1.50Z2R4	DP5013T	54.0	TP20
C7792VXE16CA2.00Z3R4	DP5013T	53.9	TP20

NOTE: For further application recommendation, please see technical information on pages V30–V32.

- Ultra-fine pitch cutters available to increase material removal rates, especially on high-temp alloys.
- Positive design to support lower cutting forces and long overhang usage.
- Ramping and plunge milling capabilities.







7792VXE16 Shell Mill

order number	catalog number	D1 max	D	D6	L	Ap1 max	Z U
6025564	C7792VXE16-A2.00Z4R	2.000	.750	1.772	1.772	.138	4
5665812	C7792VXE16-A2.50Z5R	2.500	1.000	2.055	1.575	.138	5
6025565	C7792VXE16-A2.50Z6R	2.500	1.000	1.969	1.575	.138	6
5661029	C7792VXE16-A3.00Z6R	3.000	1.000	2.087	1.969	.138	6
6025566	C7792VXE16-A3.00Z7R	3.000	1.000	1.969	1.969	.138	7
6160743	C7792VXE16-A1.5/4.00Z7R	4.000	1.500	3.189	2.480	.138	7
5667941	C7792VXE16-A4.00Z8R	4.000	1.250	2.559	1.969	.138	8
6160744	C7792VXE16-A1.5/4.00Z9R	4.000	1.500	3.189	2.480	.138	9
6025567	C7792VXE16-A4.00Z9R	4.000	1.250	2.559	1.969	.138	9
5661030	C7792VXE16-A5.00Z10R	5.000	1.500	3.307	2.480	.138	10
6025568	C7792VXE16-A5.00Z11R	5.000	1.500	3.189	2.480	.138	11
5667570	C7792VXE16-6.00Z12R	6.000	1.500	4.291	2.480	.138	12
6025569	C7792VXE16-6.00Z13R	6.000	1.500	4.323	2.480	.138	13

NOTE: No through coolant for cutters where D1 max = 6.00".

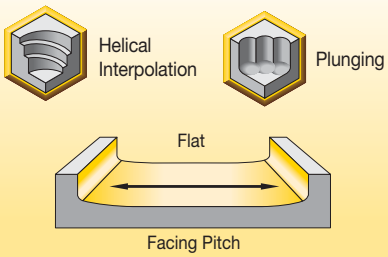
Spare Parts

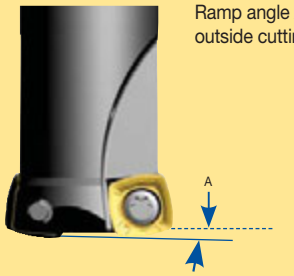
catalog number	insert screw	in. lbs.	Torx driver	mounting screw	mounting screw
C7792VXE16-A2.00Z4R	DP5013T	54.0	TP20	–	KLSS0714C
C7792VXE16-A2.50Z5R	DP5013T	54.0	TP20	#1/2-20X1-1/4 LHCSA	–
C7792VXE16-A2.50Z6R	DP5013T	54.0	TB20	#1/2-20X1-1/4 LHCSA	–
C7792VXE16-A3.00Z6R	DP5013T	54.0	TP20	#1/2-20X1-1/4SHCSA	–
C7792VXE16-A3.00Z7R	DP5013T	54.0	TB20	#1/2-20X1-1/4SHCSA	–
C7792VXE16-A1.5/4.00Z7R	DP5013T	54.0	TP20	#3/4-16X1-3/4SHCSA	–
C7792VXE16-A4.00Z8R	DP5013T	54.0	TP20	#5/8-18X1-1/2SHCSA	–
C7792VXE16-A1.5/4.00Z9R	DP5013T	54.0	TB20	#3/4-16X1-3/4SHCSA	–
C7792VXE16-A4.00Z9R	DP5013T	54.0	TB20	#5/8-18X1-1/2SHCSA	–
C7792VXE16-A5.00Z10R	DP5013T	67.3	TP20	#3/4-16X1-3/4SHCSA	–
C7792VXE16-A5.00Z11R	DP5013T	54.0	TB20	#3/4-16X1-3/4SHCSA	–
C7792VXE16-6.00Z12R	DP5013T	54.0	TP20	–	–
C7792VXE16-6.00Z13R	DP5013T	54.0	TB20	–	–

NOTE: For further application recommendation, please see technical information on pages V30–V32.

Technical Information (in)

order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/ linear	a_e max plunging	
5666415	C7792VXE16CA2.0Z3R4	1.05	2.85	3	4	0.098	0.512	27,000
6025564	C7792VXE16-A2.00Z4R	1.05	2.85	3	4	0.098	0.512	27,000
5665812	C7792VXE16-A2.5Z5R	1.46	1.00	4	5	0.098	0.512	22,000
6025565	C7792VXE16-A2.50Z6R	1.56	0.86	3.82	5	0.098	0.512	27,500
5661029	C7792VXE16-A3.00Z6R	1.96	0.65	5	6	0.098	0.512	19,500
6025566	C7792VXE16-A3.00Z7R	2.06	0.58	5	6	0.098	0.512	27,500
5667941	C7792VXE16-A4.00Z8R	2.96	0.51	7	8	0.098	0.512	16,500
6025567	C7792VXE16-A4.00Z9R	3.06	0.42	7	8	0.098	0.512	27,500
5661030	C7792VXE16-A5.00Z10R	3.96	0.37	8.82	9.92	0.098	0.512	14,500
6025568	C7792VXE16-A5.00Z11R	4.06	0.32	8.82	9.92	0.098	0.512	27,500
5667570	C7792VXE16-6.00Z12R	4.96	0.27	10.82	11.92	0.098	0.512	13,000
6025569	C7792VXE16-6.00Z13R	5.06	0.23	10.82	11.92	0.098	0.512	27,500





Ramp angle A uses one outside cutting edge only.

A = max ramp angle utilizing full-face contact.

Insert Selection Guide • IC 16

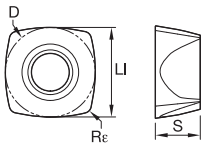
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	...D41	SC6525	**...D41**	**KCPM40**	...D41	KCPM40
P3–P4	...D41	SC6525	**...D**	**KCPM40**	...D	KCPM40
P5–P6	...D41	SP6519	**...D41**	**KCPM40**	...D41	KCPM40
M1–M2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
M3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
K1–K2	...D	KCK15	**...D**	**KCK15**	...D	KCPK30
K3	...D	KCPK30	**...D**	**KCPK30**	...D	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S3	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
S4	...D41	SP6519	**...D41**	**KCSM40**	...D41	KCSM40
H1	...D	KCPM40	**...D**	**KCPM40**	...D	KCPM40

- First choice for machining stainless steel and high-temp alloys.

● first choice
○ alternate choice

		KC522M	KCK15	KCPK30	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P		○		●	●	○		●	○	●	○
M		●		○	○	●			●		●
K		○	●	○			●	●	○		
N											
S		●				●			●		●
H										○	


XELT16-D41



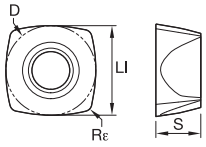
XELT16-D41

XELT16-D41 • Best fit for face milling and slotting operation. General purpose in soft steels.

catalog number	D	LI	S	Rε	hm	RT
XELT160512ERD41	.661	.661	.219	.047	.002	.165

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XEPT-D41



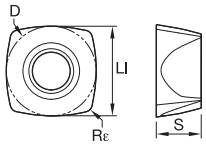
XEPT-D41

XEPT16-D41 • Precision pressed insert • Best fit for face milling and slotting operation. General purpose in soft steels.

catalog number	D	LI	S	Rε	hm	RT
XEPT160512ERD41	.661	.661	.219	.047	.002	.165
XEPT160516ERD41	.661	.661	.219	.063	.002	.175

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XEPW16-D



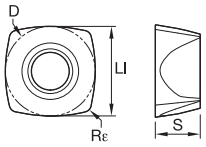
XEPW16-D

XEPW16-D • Precision pressed insert. First Choice for machining steel and cast iron

catalog number	D	LI	S	Rε	hm	RT
XEPW160520SRD	.661	.661	.219	.079	.005	.187

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.


XELW16-D



XELW16-D

XELW16-D • First Choice for Machining Steel and Cast Iron

catalog number	D	LI	S	Rε	hm	RT
XELW160512SRD	.661	.661	.219	.047	.005	.165

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining

At .140 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.012	**.039**	.066	.009	**.028**	.047	.007	**.021**	.035	.006	**.018**	.030	.005	**.017**	.028	.E..D41
.S..D	.017	**.043**	.070	.012	**.031**	.050	.009	**.023**	.037	.008	**.020**	.032	.007	**.019**	.030	.S..D

At .100 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.014	**.046**	.077	.010	**.033**	.055	.008	**.024**	.041	.007	**.021**	.036	.006	**.019**	.032	.E..D41
.S..D	.020	**.051**	.083	.015	**.036**	.059	.011	**.027**	.044	.009	**.024**	.038	.009	**.022**	.035	.S..D

At .080 Axial Depth of Cut (ap)

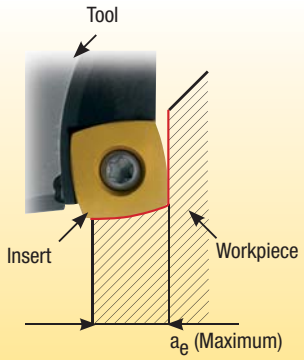
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..D41	.016	**.051**	.086	.011	**.036**	.061	.009	**.027**	.045	.007	**.024**	.039	.007	**.022**	.036	.E..D41
.S..D	.022	**.057**	.092	.016	**.041**	.065	.012	**.030**	.048	.011	**.026**	.042	.010	**.024**	.039	.S..D

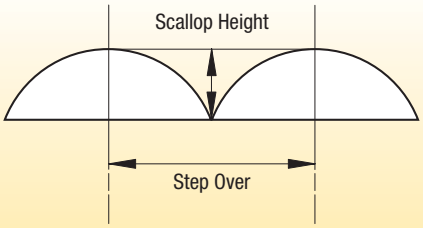
Feed Rate Guide • Plunging • IC 16 • fz [in/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max .512" insert engagement (ae radial engagement)			Insert Geometry
.E..D41	.003	**.009**	.015	.E..D41
.S..D	.004	**.010**	.016	.S..D

NOTE: For further details about using the 7792VX series in plunging operations, please see page V30.
Use “Light Machining” values as starting feed rate
Please see pages X22–X37 for recommended starting speeds.

Plunging





The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

The scallop height is calculated in relation to the step over.

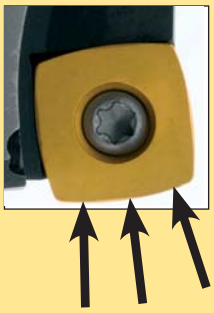
The maximum radial engagement is directly in relation to insert cutting edge length.

For insert type:
XP…06 the ae max is .118"
XD…09 the ae max is .236"
XD…12 the ae max is .354"
XE…16 the ae max is .512"

The advantages of face milling and producing cavities with the Stellram® high-feed face mill are numerous.
The unique design of the insert, approach angle, and the cutter body ensure the cutting forces are predominantly directed in the axial direction. The example shown with a round insert tool shows complex forces which result in high levels of vibration and damage to the cutting edge.

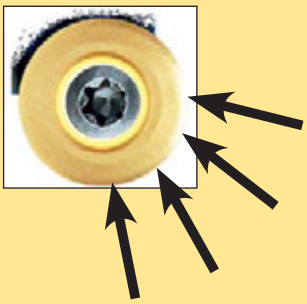
7792VX

- Cutting forces predominantly axial.
- Relationship between cutting edge and workpiece is at its most stable.
- Results in high feed rates and consistent tool life.



Round Insert Tools

- Tangential forces act around the radius.
- Leads to vibration and damage of the cutting edge.
- Leads to reduced feed and lower productivity.



The 7792VX machines with a constant volume of chip throughout all aspects of producing cavities and produces a side wall that is close to profile.

7792VX

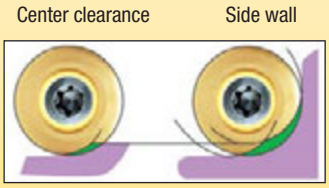
- Constant cutting section (chip volume) irrespective of position in cavity.
- Producing a close to profile side wall.
- Near-square side walls possible.



Round insert tools have increasing chip volume through the process.

Round insert

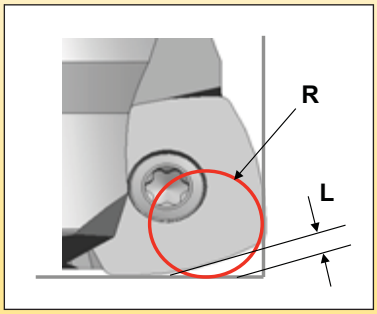
- Greater surface contact.
- Increased chip section for side wall machining.
- Vibration in corners.
- Undulating side wall cusps.



CNC Program • Corner Radius Definition

The use of common CAD/CAM systems requires a round insert dimension to be known for cavity machining. This is available with 7792VX cutters as shown below and in the reference table.

For finish pass applications:
Wiper facet for finishing use max. feed 0.031"

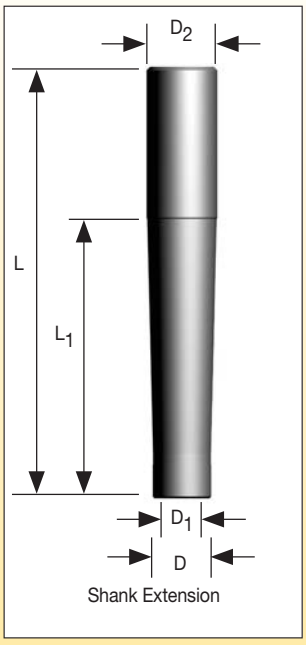


Programming Data (inch)			
Insert corner nose size (IC)	Rε	R	L
06	0.750	1.100	1.420
09	0.031	0.079	0.028
	0.047	0.089	0.026
12	0.031	0.098	0.040
	0.047	0.107	0.038
16	0.047	0.164	0.057

Cylindrical Shank Extensions for Modular Heads

order number	catalog number	dimension					
			ramping angle		helical hole		
		L	L1	D_2	D	D1	M
5673704	**M-13-M8-CA.625-3.543**	3.543	1.600	0.625	0.512	0.335	M8
5673705	**M-13-M8-CA.625-4.331**	4.331	2.500	0.625	0.512	0.335	M8
5672469	**M-13-M8-CA.625-5.118**	5.118	3.000	0.625	0.512	0.335	M8
5672833	**M-13-M8-CA.625-6.693**	6.693	4.750	0.625	0.512	0.335	M8
5672470	**M-18-M10-CA.750-4.331**	4.331	2.500	0.750	0.709	0.413	M10
5672834	**M-18-M10-CA.750-5.118**	5.118	3.000	0.750	0.709	0.413	M10
5672990	**M-18-M10-CA.750-6.693**	6.693	4.750	0.750	0.709	0.413	M10
5672835	**M-21-M12-CA1-5.157**	5.157	3.000	1.000	0.827	0.492	M12
5672991	**M-21-M12-CA1-6.142**	6.142	4.000	1.000	0.827	0.492	M12
5673353	**M-21-M12-CA1-7.126**	7.126	5.000	1.000	0.827	0.492	M12
5673588	**M-21-M12-CA1-8.110**	8.110	6.000	1.000	0.827	0.492	M12
5672471	**M-21-M12-CA1-9.094**	9.094	7.000	1.000	0.827	0.492	M12
5672992	**M-29-M16-CA1.25-6.3**	6.300	4.000	1.250	1.141	0.669	M16
5672836	**M-29-M16-CA1.25-8.27**	8.268	6.000	1.250	1.141	0.669	M16
5672993	**M-29-M16-CA1.25-10.2**	10.236	8.000	1.250	1.141	0.669	M16
5673706	**M-29-M16-CA1.25-12.2**	12.205	10.000	1.250	1.141	0.669	M16

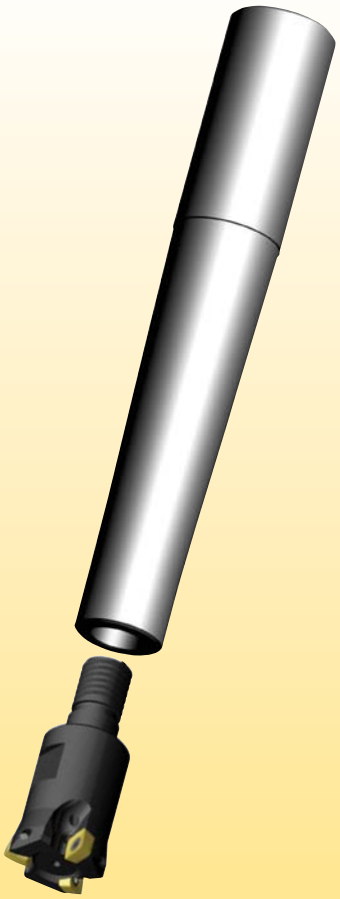
NOTE: Order example with cylindrical shank: M-13-M8-CA.625-3.543.



Shank Extension

Cylindrical shank extensions can be used with all modular heads found in several product family series within this catalog.

These extensions have the industry standard of metric threads.



Technical Advice

M	Modular adapter
13	Diameter in front of the modular shank (D) = 0.512" (13mm)
M8	Metric Thread (M)
CA.625	Cylindrical shank diameter 0.625" with through coolant
3.543	Total length of the body in Inches

NOVO KNOWS SEARCH

Searching for a tool has been enhanced by Advise and Select functions from NOVO™ applications — saving you time and money.

ADVISE

Uses a rules-based approach to provide cutting tool recommendations:

- Define Machining Feature (face milling, slotting, blind hole, etc.)
- Apply Constraint Requirements (geometric, material, tolerance, etc.)
- Set Machining Sequence (single or multi-step operations, rough then finish, etc.)
- Receive Ranked Results

SELECT

A method of selecting cutting tools from a tree structure via a hierarchy or parametric search:

- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit with your solution.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**

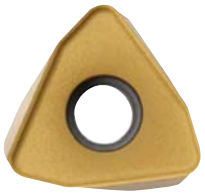
KenFeed™ 2X Series

Primary Application

KenFeed 2X is a double-sided trigon with six cutting edges engineered to provide superior metal removal and productivity through high feed rates in roughing operations. Smaller depths of cut at extremely high feed rates result in lower cutting forces, reducing vibrations and increasing process reliability.

Features and Benefits

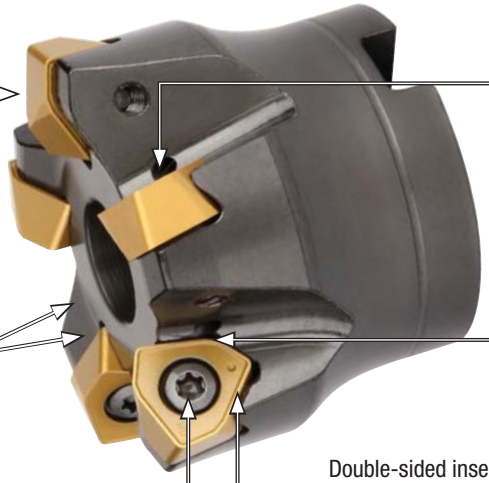
- Six cutting edges per insert. Double-sided solution with unique design.
- Two different topography styles cover any type of material, component, and application.
- KenFeed 2X inserts are specially suitable for long, deep applications, up to 10 x L/D ratio.



9mm IC Insert WOEJ094....
Up to 0.059" Ap max.
Diameter 1.000–3.000"

The ultimate and innovative concept for applying the latest high-feed milling strategies.





Strong design with a thick insert provides outstanding reliability.

Screw-on, end mill, and shell mill cutters with internal coolant.

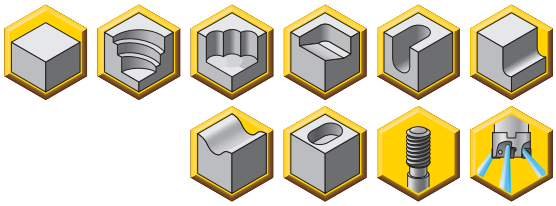
Platform designed for pocketing, ramping, and helical interpolations.

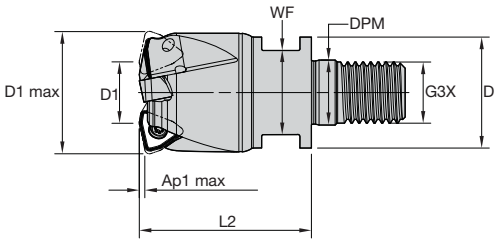
Just two topographies to cover all applications with easy selection.

Double-sided insert with six cutting edges for better cost-per-edge position with full usage.

No need for additional clamping device. Screw provides easy handling.

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 0,1 IPT.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.







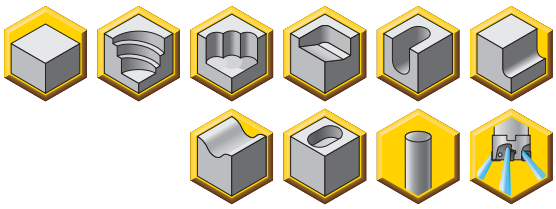
Screw-On End Mills

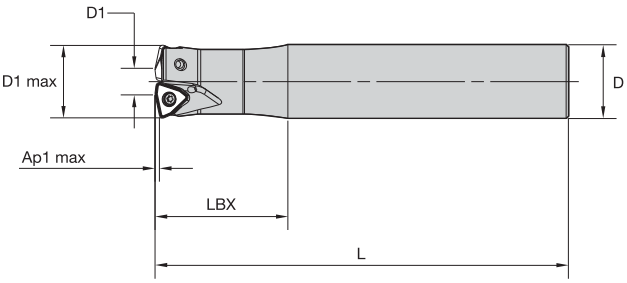
order number	catalog number	D1 max	D1	D	DPM	WF (mm)	G3X	L2	Ap1 max	Z	lbs	max RPM	insert 1
4109575	**KF2X100W0902M12L138**	1.000	.350	.827	.492	17	M12	1.380	.059	2	.20	36600	**WOEJ090512__**
4109577	**KF2X125W0903M16L169**	1.250	.622	1.142	.669	22	M16	1.690	.059	3	.45	31000	**WOEJ090512__**
4109579	**KF2X150W0904M16L169**	1.500	.869	1.142	.669	22	M16	1.691	.059	4	.51	27400	**WOEJ090512__**

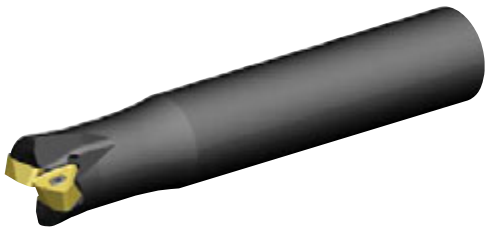
Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2219**	16	**DT9IP**
1.250	**MS2219**	16	**DT9IP**
1.500	**MS2219**	16	**DT9IP**

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 0,1 IPT.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.







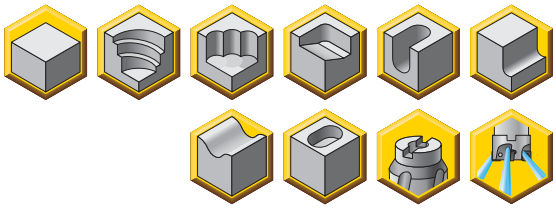
End Mills

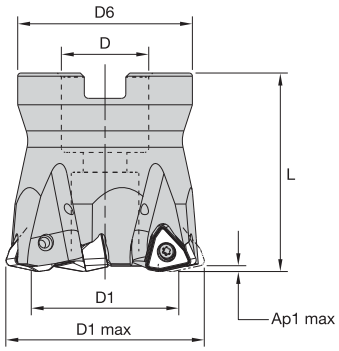
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max RPM	insert 1	lbs
4109580	**KF2X100W0902C100L600**	1.000	.350	1.000	6.000	1.780	.059	2	36600	WOEJ090512__	1.15
4109581	**KF2X100W0902C100L800**	1.000	.350	1.000	8.000	1.780	.059	2	36600	WOEJ090512__	1.58
4109582	**KF2X125W0903C125L600**	1.250	.619	1.250	6.000	1.690	.059	3	31000	WOEJ090512__	1.84
4109593	**KF2X125W0903C125L800**	1.250	.622	1.250	8.000	1.690	.059	3	31000	WOEJ090512__	2.53
4109594	**KF2X150W0903C125L600**	1.500	.869	1.250	6.000	1.691	.059	3	27400	WOEJ090512__	1.94
4109595	**KF2X150W0903C125L800**	1.500	.869	1.250	8.000	1.691	.059	3	27400	WOEJ090512__	2.61

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**MS2219**	15	**DT9IP**
1.250	**MS2219**	15	**DT9IP**
1.500	**MS2219**	15	**DT9IP**

- Dramatically improves MRR using the latest milling strategies.
- Engineered to run up to 0,1 IPT.
- Ideal for pocketing, ramping, and helical interpolations. Z-plunge capabilities.
- First choice for deep cavities or from 3 x D.







Face Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max RPM	insert 1	lbs
4109596	**KF2X150W0904S050L157**	1.500	.869	.500	1.417	1.571	.059	4	27400	WOEJ090512__	.40
4109597	**KF2X200W0905S075L157**	2.000	1.366	.750	1.772	1.575	.059	5	22900	WOEJ090512__	.71
4109598	**KF2X200W0906S075L157**	2.000	1.366	.750	1.732	1.570	.059	6	22900	WOEJ090512__	.69
4109599	**KF2X250W0906S075L175**	2.500	1.864	.750	1.732	1.750	.059	6	20000	WOEJ090512__	1.16
4109600	**KF2X300W0907S100L175**	3.000	2.362	1.000	2.189	1.750	.059	7	18000	WOEJ090512__	1.77

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver	socket-head cap screw
1.500	**MS2219**	15.00	**DT9IP**	**S424**
2.000	**MS2219**	15.00	**DT9IP**	**S445**
2.500	**MS2219**	15.00	**DT9IP**	**S445**
3.000	**MS2219**	15.00	**DT9IP**	**S458**

Insert Selection Guide

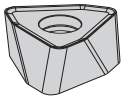
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P5–P6	.S..GD	KCPK30	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.S..GD	KC522M	**.S..GD**	**KC725M**	.S..HD	KC725M
M3	.S..GD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
K1–K2	.S..HD	KCK15	**.S..HD**	**KCK15**	.S..HD	KCK15
K3	.S..GD	KCPK30	**.S..HD**	**KCK15**	.S..HD	KCPK30
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GD	KC522M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.S..GD	KC725M	**.S..GD**	**KCPM40**	.S..HD	KCPM40
S4	.S..GD	KC522M	**.S..HD**	**KC522M**	.S..HD	KC725M
H1	–	–	**–**	**–**	–	–

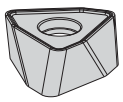
Indexable Inserts • WOEJ09...

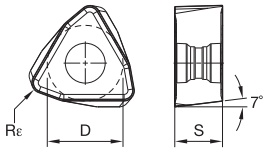
- Double-sided insert with six cutting edges.
- Unique and strong insert design that enables high-feed conditions, up to 0.1 IPT.
- -GD provides lower cutting forces; first choice for soft materials.

● first choice
○ alternate choice

		KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
P			○	●		●	●	
M			●	●		○	○	○
K		●	○		●	○		
N								
S			●	●				●
H			○					


WOEJ-GD


WOEJ-HD



WOEJ-GD
WOEJ-HD

WOEJ-GD

catalog number	D	S	Rε	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
WOEJ090512SRGD	.350	.213	.048	6	–	●	●	–	●	●	●

- Double-sided insert with six cutting edges.
- Unique and strong insert design that enables high-feed conditions, up to 0,1 IPT.
- -HD geometry is the first choice for steels, high-strength steels, and cast iron.

WOEJ-HD

catalog number	D	S	Rε	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
WOEJ090512SRHD	.351	.215	.048	6	–	●	●	–	●	●	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.S..GD	.045	**.089**	.141	.032	**.063**	.098	.024	**.047**	.072	.021	**.040**	.063	.019	**.037**	.057	.S..GD
.S..HD	.045	**.109**	.168	.032	**.077**	.116	.024	**.057**	.085	.021	**.049**	.074	.019	**.045**	.067	.S..HD

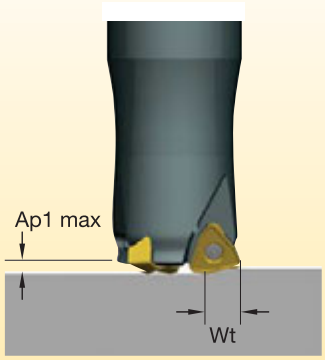
Feed Rate Guide • Plunging • IC09 • fz [in/tooth]

Insert Geometry	Programmed Feed per Tooth (fz) Max .118" insert engagement (ae radial engagement)			Insert Geometry
.S..GD	.004	**.008**	.012	.S..GD
.S..HD	.004	**.009**	.014	.S..HD

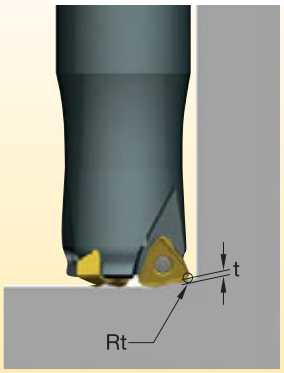
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

General Programming Information for Applying KenFeed 2X • IC 09

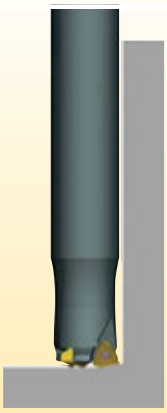
Rt	Wt	t
.110	.312	.045



Small Ap1 values and higher feed rates generate lower cutting forces versus traditional milling strategies.

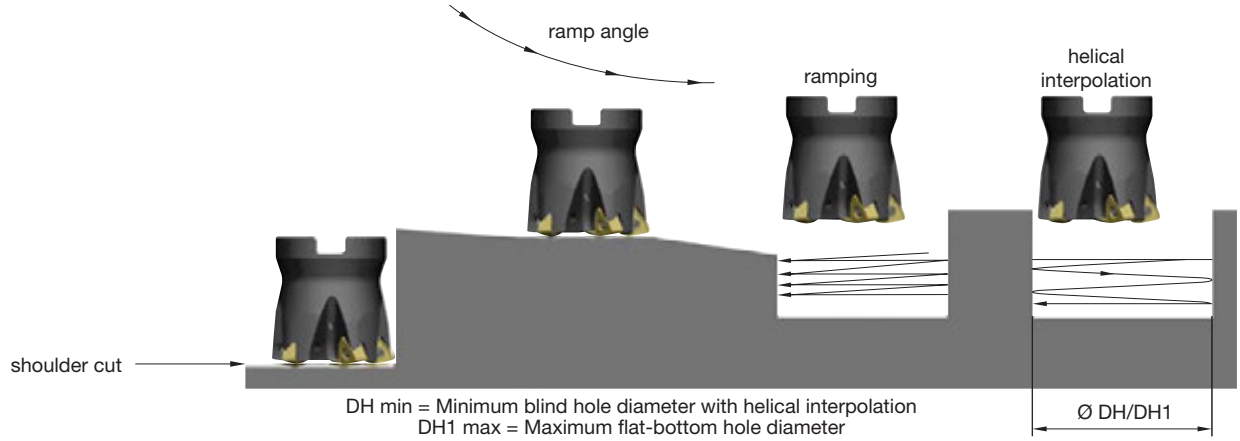


For CAM programming, the loads can be programmed as a toroidal tool type by using the Rt value as the insert radius.



Recommended when long overhang is necessary due to lower radial forces. Maximum L/D ratio of 10 x D.

Maximum Linear Ramping and Helical Interpolation from Solid • Inch



cutter type	catalog number	recommended ramping angle (for continuous ramping process)	max ramp angle when Ap max (not for continuous ramping process)	max ramp angle for 360° helical interpolation	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter (no flat bottom)
Screw-On	**KF2X100W0902M12L138**	3.5°	5.2°	3.1°	1.291	1.35	2.0
	KF2X125W0902M16L169	1.9°	2.8°	1.7°	1.813	1.87	2.5
	KF2X125W0903M16L169	1.9°	2.8°	1.7°	1.813	1.87	2.5
	KF2X150W0903M16L169	1.4°	2.1°	1.2°	2.310	2.37	3.0
	KF2X150W0904M16L169	1.4°	2.1°	1.2°	2.310	2.37	3.0
End Mills	**KF2X100W0902C100L600**	3.5°	5.2°	3.1°	1.291	1.35	2.0
	KF2X100W0902C100L800	3.5°	5.2°	3.1°	1.291	1.35	2.0
	KF2X125W0903C125L600	1.9°	2.8°	1.7°	1.813	1.87	2.5
	KF2X125W0903C125L800	1.9°	2.8°	1.7°	1.813	1.87	2.5
	KF2X150W0903C125L600	1.4°	2.1°	1.2°	2.310	2.37	3.0
	KF2X150W0903C125L800	1.4°	2.1°	1.2°	2.310	2.37	3.0
Face Mills	**KF2X150W0904S050L157**	1.4°	2.1°	1.2°	2.310	2.37	3.0
	KF2X200W0905S075L157	1.0°	1.4°	0.8°	3.307	3.37	4.0
	KF2X200W0906S075L157	1.0°	1.4°	0.8°	3.307	3.37	4.0
	KF2X250W0906S075L175	0.7°	1.1°	0.6°	4.305	4.36	5.0
	KF2X300W0907S100L175	0.6°	1.0°	0.5°	5.303	5.36	6.0
	KF2X300W0907S125L200	0.6°	1.0°	0.5°	5.303	5.36	6.0

Rodeka™ Inserts

The New Round Insert Generation

Primary Application

Kennametal introduces a revolutionary double-sided round milling insert capable of running in multiple types of milling operations and workpiece materials. The Rodeka series provides the latest double-sided insert technology to boost your productivity with the most efficient cost per edge.

Features and Benefits

Rodeka Double-Sided Round Inserts

- Three insert sizes: 10, 12, and 16mm.
- Innovative, cutting-edge design increases tool life and reduces cutting forces.
- Rodeka 12X series is a tailor-made solution for turbine blade machining.



Rodeka 10
10mm IC insert
8 cutting edges



Rodeka 12X
12mm IC insert
8 cutting edges

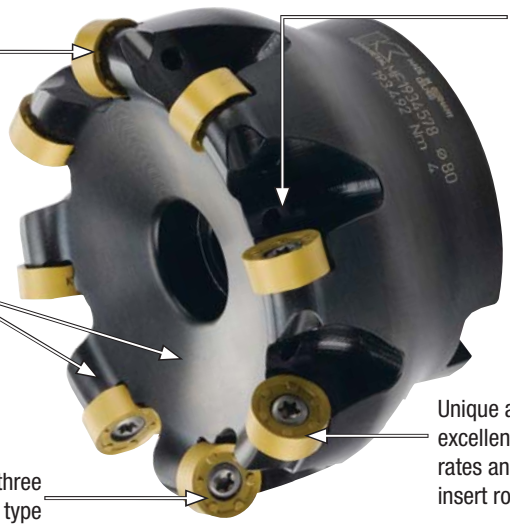


Rodeka 12
12mm IC insert
12 cutting edges



Rodeka 16
16mm IC insert
12 cutting edges





Double-sided insert with up to 12 cutting edges for a more productive cutting process.

Screw-on, end mill, and shell mill cutters with internal coolant.

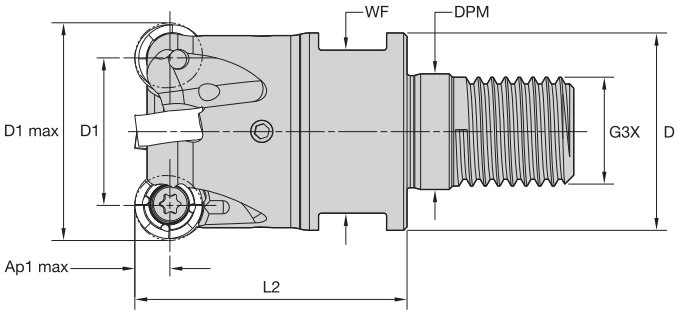
Higher clearance in bodies to permit pocketing, profiling, and 5-axis machining.

Unique anti-rotation feature for excellent stability with higher feed rates and cutting forces. User-friendly insert rotation.

Three different insert sizes and three topography styles per size cover any type of material, component, and application.

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







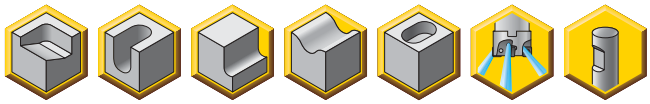
Screw-On End Mills

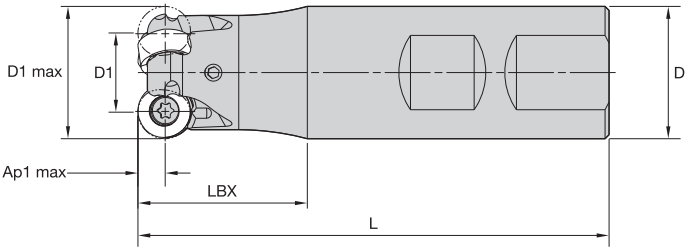
order number	catalog number	D1 max	D1	D	WF (mm)	G3X	DPM	L2	Ap1 max	Z	max ramp angle	lbs	max RPM	insert 1
5154366	**KDR100R1003M12L125**	1.00	.606	.827	17	M12	.490	1.250	.200	3	.6°	.17	54200	RN_J10T3M0_N__

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.000	**191.848**	18	**170.025**

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.







Weldon End Mills

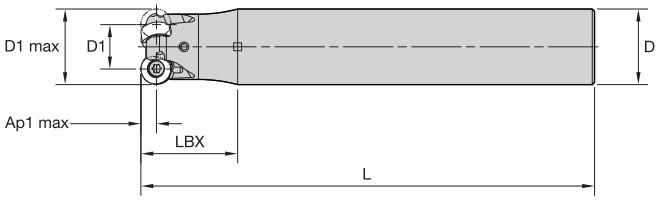
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5154400	**KDR100R1003W100L200**	1.000	.606	1.000	4.280	2.000	.200	3	.6°	54200	RN_J10T3M0_N__	.74

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.000	**191.848**	18	**170.025**

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







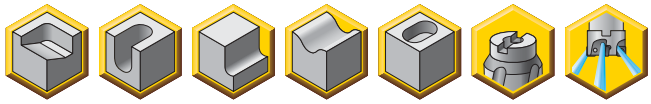
Cylindrical End Mills

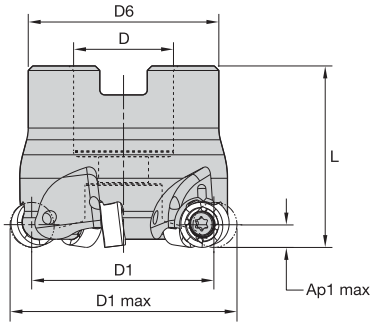
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	lbs	max RPM	insert 1
5154402	**KDR100R1003C100L600**	1.000	.606	1.000	6.000	1.500	.200	3	.6°	1.15	54200	RN_J10T3M0_N__

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.000	**191.848**	18	**170.025**

- Double-sided round insert with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5154406	**KDR150R1005S050L157**	1.500	1.106	.500	1.300	1.570	.200	5	.4°	44300	RN_J10T3M0_N__	.43
5154408	**KDR200R1006S075L200**	2.000	1.606	.750	1.654	2.000	.200	6	.3°	38300	RN_J10T3M0_N__	1.02

Spare Parts

D1 max	 insert screw	 in. lbs.	 socket-head cap screw	 Torx Plus driver
1.500	**191.848**	18	**S422**	**–**
2.000	**191.848**	18	**S445**	**170.025**

Insert Selection Guide

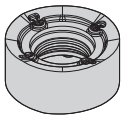
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJ	KC725M	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.S..GD	KCPK30	**.S..HD**	**KCPK30**	.S..HD	KCPM40
P5–P6	.E..LDJ	KC725M	**.S..GDJ**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LDJ	KC522M	**.E..LDJ**	**KCSM40**	.S..GDJ	KC522M
M3	.E..LDJ	KCSM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KC520M**	.S..HD	KCK15
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCPK30
N1–N2	.F..LDJ	KC422M	**.F..LDJ**	**KC422M**	.S..GD	KC510M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LDJ	KC725M	**.S..GDJ**	**KC725M**	.S..HD	KC725M
S3	.E..LDJ	KCSM40	**.S..GD**	**KCPM40**	.S..HD	KCPM40
S4	.E..LDJ	KC522M	**.E..LDJ**	**KCSM40**	.S..GDJ	KC522M
H1	.S..GD	KC510M	**.S..GD**	**KC510M**	–	–

Indexable Inserts RN.J10..

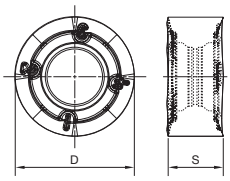
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.

● first choice
○ alternate choice

		KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○		○	●		●	●		○
M					●	●		○	○	○	●
K			●	●	○		●	○			
N		●	○								
S					●	●				●	●
H											



RNGJ10-LD



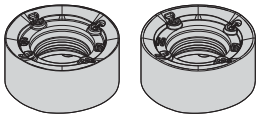
RNGJ10-LD

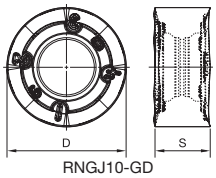
RNGJ10-LD

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0ELDJ	.394	.187	.002	8	–	–	–	–	●	–	–	–	–	●
RNGJ10T3M0FLDJ	.394	.187	.002	8	●	–	–	–	–	–	–	–	–	–

Copy Milling

- -GD geometry is for general use in steel and stainless steel.


RNGJ10-GD RNPJ10-HD



RNGJ10-GD

● first choice
○ alternate choice

P		○		○	●		●	●		○
M					●	●		○	○	○	●
K			●	●	○		●	○			
N	●	○									
S					●	●				●	●
H											

RNGJ10-GD

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0SGDJ	.394	.187	.003	8	–	–	–	–	–	–	–	–	●	–

RNGJ10-GDJ

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ10T3M0SGDJ	.394	.187	.003	8	–	–	–	–	●	–	–	–	–	–

RNPJ10-GD

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ10T3M0SGD	.394	.188	.003	8	–	–	–	●	–	–	●	●	–	–

- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.

RNPJ10-HD

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ10T3M0SHD	.394	.188	.007	8	–	–	–	–	●	●	●	●	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .200 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.016**	.028	.004	**.011**	.020	.003	**.008**	.015	.002	**.007**	.013	.002	**.007**	.012	.F..LDJ
.E..LDJ	.005	**.017**	.030	.004	**.013**	.021	.003	**.009**	.016	.002	**.008**	.014	.002	**.008**	.013	.E..LDJ
.E..LD	.005	**.017**	.030	.004	**.013**	.021	.003	**.009**	.016	.002	**.008**	.014	.002	**.008**	.013	.E..LD
.S..GDJ	.009	**.021**	.032	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..GDJ
.S..GD	.009	**.021**	.032	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..GD
.S..HD	.009	**.021**	.033	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..HD

At .070 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.006	**.021**	.037	.005	**.015**	.027	.003	**.011**	.020	.003	**.010**	.017	.003	**.009**	.016	.F..LDJ
.E..LDJ	.006	**.023**	.040	.005	**.016**	.028	.003	**.012**	.021	.003	**.011**	.018	.003	**.010**	.017	.E..LDJ
.E..LD	.006	**.023**	.040	.005	**.016**	.028	.003	**.012**	.021	.003	**.011**	.018	.003	**.010**	.017	.E..LD
.S..GDJ	.012	**.027**	.043	.009	**.019**	.030	.007	**.014**	.022	.006	**.013**	.019	.005	**.012**	.018	.S..GDJ
.S..GD	.012	**.027**	.043	.009	**.019**	.030	.007	**.014**	.022	.006	**.013**	.019	.005	**.012**	.018	.S..GD
.S..HD	.012	**.028**	.043	.009	**.020**	.031	.007	**.015**	.023	.006	**.013**	.020	.005	**.012**	.018	.S..HD

At .040 Axial Depth of Cut (ap)

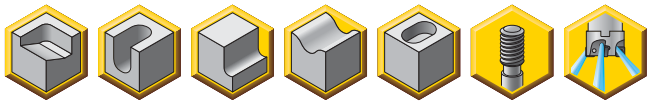
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.008	**.026**	.048	.006	**.019**	.034	.004	**.014**	.025	.004	**.012**	.022	.004	**.011**	.020	.F..LDJ
.E..LDJ	.008	**.029**	.051	.006	**.021**	.036	.004	**.016**	.027	.004	**.014**	.023	.004	**.012**	.021	.E..LDJ
.E..LD	.008	**.029**	.051	.006	**.021**	.036	.004	**.016**	.027	.004	**.014**	.023	.004	**.012**	.021	.E..LD
.S..GDJ	.015	**.035**	.054	.011	**.025**	.038	.008	**.018**	.028	.007	**.016**	.025	.007	**.015**	.023	.S..GDJ
.S..GD	.015	**.035**	.054	.011	**.025**	.038	.008	**.018**	.028	.007	**.016**	.025	.007	**.015**	.023	.S..GD
.S..HD	.015	**.035**	.055	.011	**.025**	.039	.008	**.019**	.029	.007	**.016**	.025	.007	**.015**	.023	.S..HD

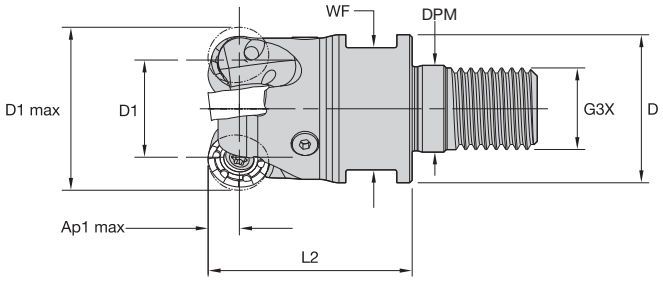
At .020 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.011	**.037**	.067	.008	**.026**	.047	.006	**.019**	.034	.005	**.017**	.030	.005	**.015**	.027	.F..LDJ
.E..LDJ	.011	**.041**	.072	.008	**.029**	.050	.006	**.021**	.037	.005	**.019**	.032	.005	**.017**	.029	.E..LDJ
.E..LD	.011	**.041**	.072	.008	**.029**	.050	.006	**.021**	.037	.005	**.019**	.032	.005	**.017**	.029	.E..LD
.S..GDJ	.021	**.048**	.077	.015	**.034**	.053	.011	**.025**	.039	.010	**.022**	.034	.009	**.020**	.031	.S..GDJ
.S..GD	.021	**.048**	.077	.015	**.034**	.053	.011	**.025**	.039	.010	**.022**	.034	.009	**.020**	.031	.S..GD
.S..HD	.021	**.049**	.078	.015	**.035**	.054	.011	**.026**	.040	.010	**.022**	.034	.009	**.020**	.031	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Double-sided round insert with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Screw-On End Mills

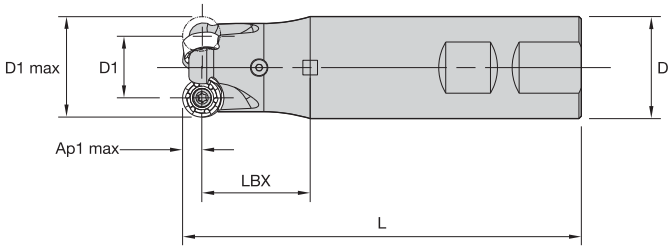
order number	catalog number	D1 max	D1	D	WF (mm)	G3X	DPM	L2	Ap1 max	Z	max ramp angle	lbs	max RPM	insert 1
4178116	**KDR150R1204M16L150**	1.50	1.028	1.142	24	M16	.670	1.50	.117	4	.5°	.42	35890	RN_J1204M0__

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.500	**193.492**	35	**170.025**

- Double-sided round insert with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing, profiling, ramping, and helical interpolation capabilities.







Weldon End Mills

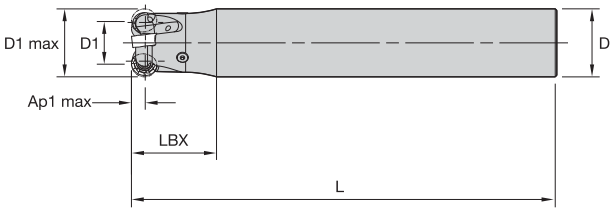
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4178119	**KDR125R1202W100L200**	1.250	.778	1.000	4.280	2.000	.117	2	1.0°	39310	RN_J1204M0__	.85

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.250	**193.492**	35	**170.025**

- Double-sided round insert with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Cylindrical End Mills

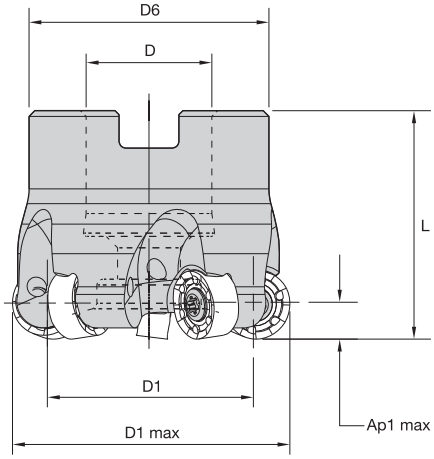
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4178120	**KDR125R1202C125L900**	1.250	.778	1.250	9.000	1.500	.117	2	.9°	39310	RN_J1204M0__	2.79

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.250	**193.492**	35	**170.025**

- Double-sided round insert with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4178122	**KDR150R1204S050L157**	1.500	1.028	.500	1.300	1.570	.117	4	.5°	35890	RN_J1204M0__	.39
4178123	**KDR200R1204S075L200**	2.000	1.528	.750	1.750	2.000	.117	4	.4°	31080	RN_J1204M0__	1.00
4178124	**KDR200R1205S075L200**	2.000	1.528	.750	1.750	2.000	.117	5	.4°	31080	RN_J1204M0__	.96
4178125	**KDR250R1207S075L200**	2.500	2.028	.750	1.750	2.000	.117	7	.3°	27800	RN_J1204M0__	1.41
4178126	**KDR300R1208S100L200**	3.000	2.528	1.000	2.189	2.000	.117	8	.2°	25370	RN_J1204M0__	2.01
5360215	**KDR300R1208S125L200**	3.000	2.528	1.250	2.875	2.000	.117	8	.5°	25370	RN_J1204M0__	2.60

Spare Parts

order number	D1 max	 insert screw	 in. lbs.	 socket-head cap screw	 socket-head cap screw with coolant groove	 low head cap screw with coolant groove	 wrench
4178122	1.500	**193.492**	35	**S422**	**S422CG**	**–**	**170.025**
4178123	2.000	**193.492**	35	**S445**	**S445CG**	**–**	**170.025**
4178124	2.000	**193.492**	35	**S445**	**S445CG**	**–**	**170.025**
4178125	2.500	**193.492**	35	**S445**	**S445CG**	**–**	**170.025**
4178126	3.000	**193.492**	35	**S458**	**S458CG**	**–**	**170.025**
5360215	3.000	**193.492**	35	**S467**	**–**	**S2172CG**	**170.025**

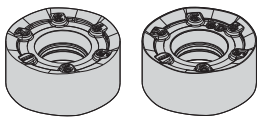
Insert Selection Guide

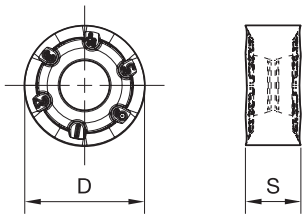
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LD	KCPK30	**.S..GD**	**KCPM40**	.S..HD	KCPM40
P3–P4	.E..LD	KCPK30	**.S..GD**	**KCPK30**	.S..HD	KCPM40
P5–P6	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
M1–M2	.E..LD	KC522M	**.S..GDJ**	**KCSM40**	.S..HD	KC725M
M3	.S..GD	KCPM40	**.S..GDJ**	**KCSM40**	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCK15
K3	.S..HD	KC520M	**.S..HD**	**KCK15**	.S..HD	KCK15
N1–N2	.F..LDJ	KC422M	**.F..LDJ**	**KC422M**	.S..GD	KC510M
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LD	KC725M	**.S..GD**	**KC725M**	.S..HD	KC725M
S3	.S..GD	KCPM40	**.S..GDJ**	**KCSM40**	.S..HD	KCPM40
S4	.S..GD	KC522M	**.S..GDJ**	**KCSM40**	.S..HD	KC725M
H1	.S..GD	KC510M	**.S..GD**	**KC510M**	–	–

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and for stainless steel.

● first choice
○ alternate choice

	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N	●								
S			●	●				●	●
H									


RNGJ12-LD RNGJ12-GD



RNGJ12-LD
RNGJ12-GD

RNGJ12-LD

catalog number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0ELD	.472	.187	.002	12	–	–	●	●	–	●	–	–	–
RNGJ1204M0ELDJ	.472	.187	.002	12	–	–	–	–	–	–	–	●	–
RNGJ1204M0FLDJ	.472	.187	.002	12	●	–	–	–	–	–	–	–	–

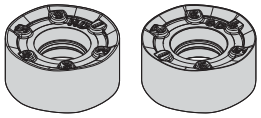
RNGJ12-GD

catalog number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0SGD	.472	.187	.003	12	–	–	●	●	–	●	–	–	–
RNGJ1204M0SGDJ	.472	.187	.003	12	–	–	–	–	–	–	–	–	●

- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.
- -GD geometry is for general use in steel and for stainless steel.

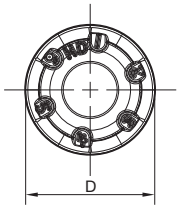
● first choice
○ alternate choice

P				○	●		●	●		○
M				●	●		○	○	○	●
K			●	○		●	○			
N		●								
S				●	●				●	●
H										



RNGJ12-HD
RNPJ12-HD

RNPJ12-GD



RNGJ12-HD
RNPJ12-HD



RNGJ12-HD

catalog number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1204M0SHD	.472	.187	.007	12	–	–	–	●	–	●	–	–	–

RNPJ12-GD

catalog number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1204M0SGD	.472	.187	.003	12	–	–	●	●	–	●	●	–	–

RNPJ12-HD

catalog number	D	S	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1204M0SHD	.472	.187	.007	12	–	–	–	●	–	●	●	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .240 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.005	**.016**	.030	.004	**.011**	.021	.003	**.008**	.016	.002	**.007**	.014	.002	**.007**	.013	.F..LDJ
.E..LDJ	.005	**.017**	.032	.004	**.013**	.023	.003	**.009**	.017	.002	**.008**	.015	.002	**.008**	.014	.E..LDJ
.E..LD	.005	**.017**	.032	.004	**.013**	.023	.003	**.009**	.017	.002	**.008**	.015	.002	**.008**	.014	.E..LD
.S..GDJ	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..GDJ
.S..GD	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..GD
.S..HD	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..HD

At .080 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.007	**.021**	.040	.005	**.015**	.029	.004	**.011**	.021	.003	**.010**	.019	.003	**.009**	.017	.F..LDJ
.E..LDJ	.007	**.023**	.043	.005	**.017**	.030	.004	**.013**	.023	.003	**.011**	.020	.003	**.010**	.018	.E..LDJ
.E..LD	.007	**.023**	.043	.005	**.017**	.030	.004	**.013**	.023	.003	**.011**	.020	.003	**.010**	.018	.E..LD
.S..GDJ	.012	**.031**	.048	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..GDJ
.S..GD	.012	**.031**	.048	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..GD
.S..HD	.012	**.031**	.048	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..HD

At .050 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.008	**.026**	.049	.006	**.018**	.035	.004	**.014**	.026	.004	**.012**	.023	.003	**.011**	.021	.F..LDJ
.E..LDJ	.008	**.029**	.052	.006	**.020**	.037	.004	**.015**	.028	.004	**.013**	.024	.003	**.012**	.022	.E..LDJ
.E..LD	.008	**.029**	.052	.006	**.020**	.037	.004	**.015**	.028	.004	**.013**	.024	.003	**.012**	.022	.E..LD
.S..GDJ	.015	**.038**	.059	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..GDJ
.S..GD	.015	**.038**	.059	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..GD
.S..HD	.015	**.038**	.059	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..HD

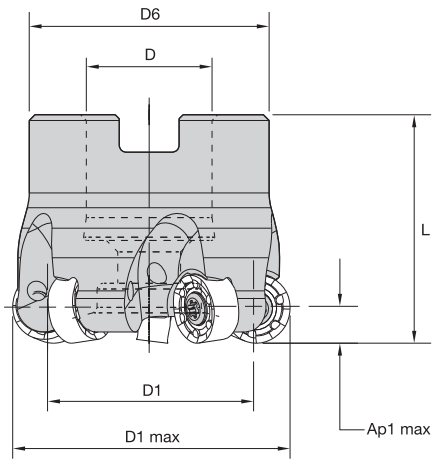
At .030 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.F..LDJ	.010	**.033**	.063	.007	**.023**	.044	.005	**.017**	.033	.005	**.015**	.029	.004	**.014**	.026	.F..LDJ
.E..LDJ	.010	**.036**	.067	.007	**.026**	.047	.005	**.019**	.035	.005	**.017**	.030	.004	**.015**	.028	.E..LDJ
.E..LD	.010	**.036**	.067	.007	**.026**	.047	.005	**.019**	.035	.005	**.017**	.030	.004	**.015**	.028	.E..LD
.S..GDJ	.019	**.049**	.075	.014	**.035**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..GDJ
.S..GD	.019	**.049**	.075	.014	**.035**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..GD
.S..HD	.019	**.049**	.075	.014	**.035**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Double-sided round insert with 12 indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Pocketing and profiling capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5154910	**KDR200R1604S075L200**	2.000	1.370	.750	1.752	2.000	.156	4	.5°	26400	RN_J1605M0__	.93
5154913	**KDR300R1607S100L200**	3.000	2.370	1.000	2.189	2.000	.156	7	.3°	20100	RN_J1605M0__	1.92
5360214	**KDR300R1607S125L200**	3.000	2.370	1.250	2.875	2.000	.156	7	.5°	20100	RN_J1605M0__	2.33
5154914	**KDR400R1606S150L200**	4.000	3.370	1.500	3.812	2.000	.156	6	.4°	16800	RNGJ1605M0__	3.99
5154915	**KDR400R1608S150L200**	4.000	3.370	1.500	3.812	2.000	.156	8	.4°	16800	RNGJ1605M0__	4.04
5154916	**KDR500R1608S150L200**	5.000	4.370	1.500	3.380	2.000	.156	8	.2°	14800	RN_J1605M0__	5.08

Spare Parts

D1 max	 insert screw	 in. lbs.	 socket-head cap screw	 wrench	 coolant screw assembly
2.000	**192.932**	35	**S446**	**170.026**	**–**
3.000	**192.932**	35	**S458**	**170.026**	**–**
3.000	**MS2260**	35	**S467**	**170.026**	**S2172CG**
4.000	**MS2260**	35	**–**	**170.026**	**–**
5.000	**MS2260**	35	**–**	**170.026**	**–**

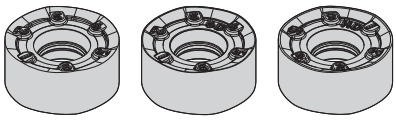
Insert Selection Guide

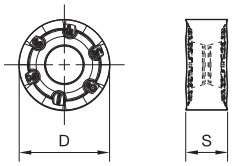
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJ	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
P3–P4	.E..LDJ	KC522M	.S..GD	KCPK30	.S..HD	KCPM40
P5–P6	.E..LDJ	KC725M	.S..GD	KC725M	.S..HD	KC725M
M1–M2	.E..LDJ	KC522M	.S..HD	KC725M	.S..GD	KCSM40
M3	.E..LDJ	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
K1–K2	.S..HD	KC520M	.S..HD	KC520M	.S..HD	KCK15
K3	.S..GD	KCPK30	.S..HD	KC520M	.S..HD	KCK15
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..LDJ	KC725M	.S..GD	KCSM40	.S..HD	KC725M
S3	.E..LDJ	KC725M	.S..GD	KCSM40	.S..HD	KCPM40
S4	.E..LDJ	KC522M	.S..GD	KCSM40	.S..HD	KC725M
H1	–	–	–	–	–	–

- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is for general use in steel and stainless steel.
- -HD geometry is the first choice for heavy machining high-strength steel and cast iron.

● first choice
○ alternate choice

		KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●		●	●		○
M			●	●		○	○	○	●
K		●	○		●	○			
N									
S			●	●				●	●
H									


RNGJ16-LD RNPJ16-GD RNPJ16-HD



RNGJ16-LD

RNGJ16-LD

catalog number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNGJ1605M0ELDJ	.630	.217	.002	12	–	●	●	–	–	–	–	–

RNPJ16-GD

catalog number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1605M0SGD	.630	.217	.003	12	–	●	●	–	●	●	–	●

RNPJ16-HD

catalog number	D	S	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
RNPJ1605M0SHD	.630	.217	.009	12	●	–	●	●	●	●	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .320 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	.005	**.017**	.031	.004	**.013**	.023	.003	**.009**	.017	.002	**.008**	.015	.002	**.008**	.014	.E..LDJ
.E..LD	.005	**.017**	.031	.004	**.013**	.023	.003	**.009**	.017	.002	**.008**	.015	.002	**.008**	.014	.E..LD
.S..GD	.009	**.020**	.035	.007	**.014**	.025	.005	**.011**	.019	.004	**.009**	.016	.004	**.009**	.015	.S..GD
.S..HD	.009	**.023**	.037	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..HD

At .100 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	.007	**.024**	.043	.005	**.017**	.031	.004	**.013**	.023	.003	**.011**	.020	.003	**.010**	.018	.E..LDJ
.E..LD	.007	**.024**	.043	.005	**.017**	.031	.004	**.013**	.023	.003	**.011**	.020	.003	**.010**	.018	.E..LD
.S..GD	.013	**.027**	.048	.009	**.019**	.034	.007	**.015**	.026	.006	**.013**	.022	.005	**.012**	.020	.S..GD
.S..HD	.013	**.032**	.051	.009	**.023**	.037	.007	**.017**	.027	.006	**.015**	.024	.005	**.014**	.022	.S..HD

At .060 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	.008	**.030**	.054	.006	**.021**	.039	.005	**.016**	.029	.004	**.014**	.025	.004	**.013**	.023	.E..LDJ
.E..LD	.008	**.030**	.054	.006	**.021**	.039	.005	**.016**	.029	.004	**.014**	.025	.004	**.013**	.023	.E..LD
.S..GD	.016	**.034**	.060	.011	**.024**	.043	.009	**.018**	.032	.007	**.016**	.028	.007	**.014**	.025	.S..GD
.S..HD	.016	**.040**	.064	.011	**.029**	.046	.009	**.021**	.034	.007	**.019**	.030	.007	**.017**	.027	.S..HD

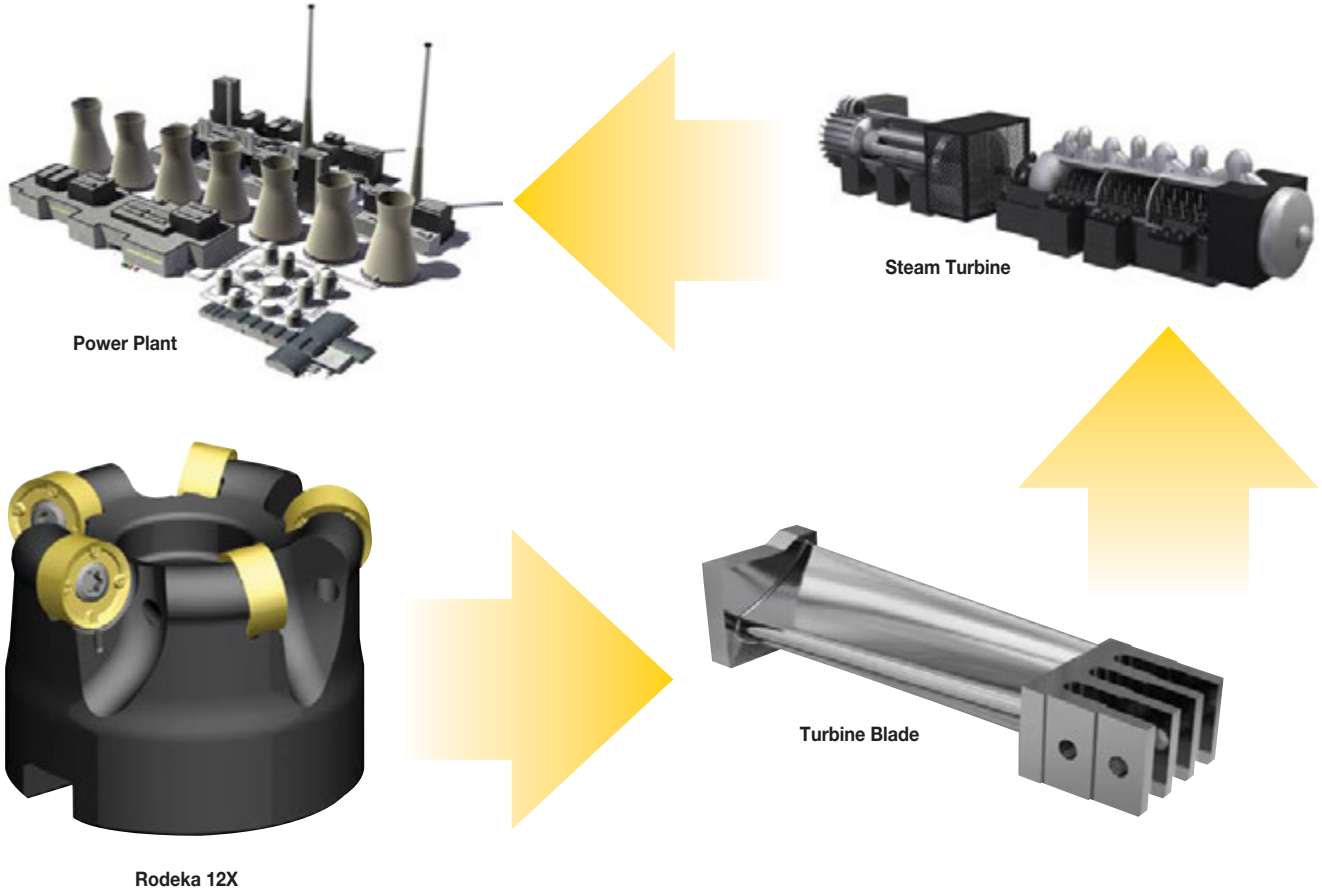
At .040 Axial Depth of Cut (ap)

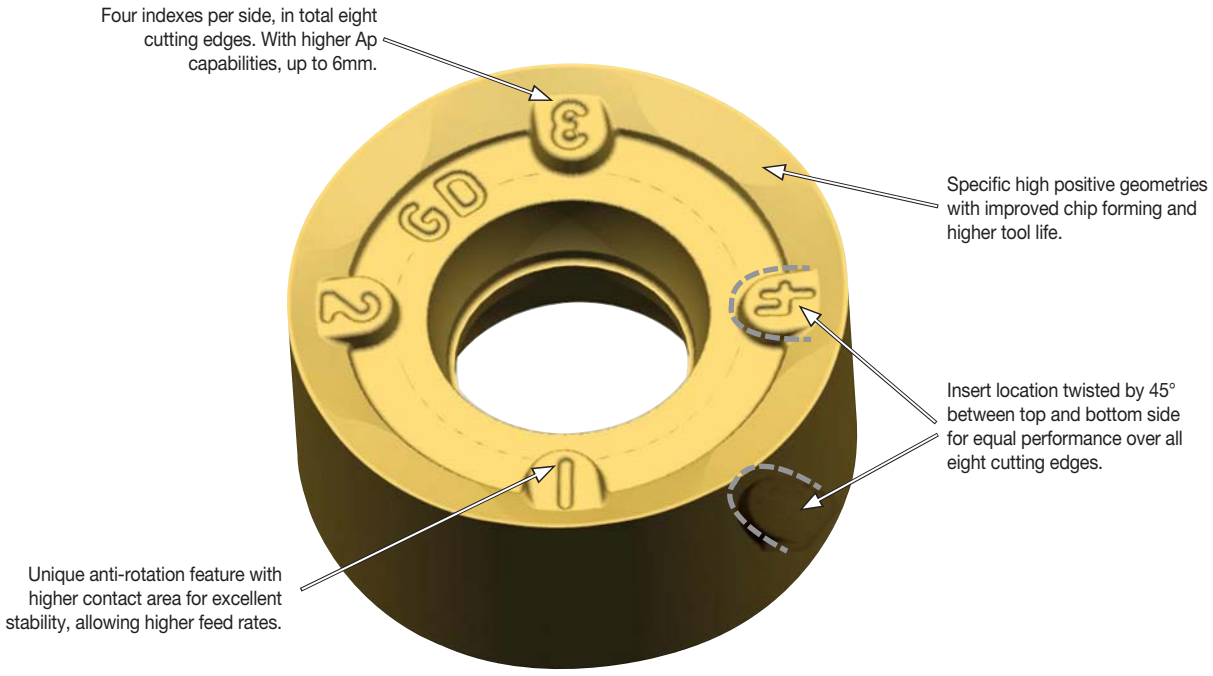
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJ	.010	**.036**	.066	.007	**.026**	.047	.005	**.019**	.035	.005	**.017**	.030	.004	**.015**	.028	.E..LDJ
.E..LD	.010	**.036**	.066	.007	**.026**	.047	.005	**.019**	.035	.005	**.017**	.030	.004	**.015**	.028	.E..LD
.S..GD	.019	**.041**	.073	.014	**.029**	.052	.010	**.022**	.039	.009	**.019**	.034	.008	**.017**	.031	.S..GD
.S..HD	.019	**.048**	.078	.014	**.034**	.056	.010	**.026**	.041	.009	**.022**	.036	.008	**.021**	.033	.S..HD

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Rodeka 12X Turbine Blade Version

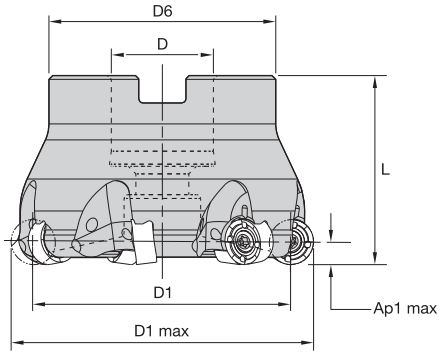
Revolutionary double-sided round insert engineered for turbine blade machining. Special geometries, insert styles, and dedicated cutter bodies have been developed to serve this demanding application.





- Double-sided round inserts with eight indexable positions.
- Anti-rotation features enable higher cutting data and extra stability.
- Engineered for turbine blade machining.







Shell Mills • Inch

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5104420	**KDR40Z04S16RN12X**	1.575	1.102	.630	1.496	1.575	.236	4	.5°	35020	RN_J1204M0___	.51
5104421	**KDR50Z05S22RN12X**	1.970	1.496	.866	1.650	1.570	.236	5	.7°	31330	RN_J1204M0___	.67
5104424	**KDR63Z06S22RN12X**	2.480	2.008	.866	1.930	1.570	.236	6	.5°	27910	RN_J1204M0___	1.06
5104426	**KDR80Z07S27RN12X**	3.150	2.677	1.063	2.360	1.970	.236	7	.3°	24760	RN_J1204M0___	2.31

Spare Parts

D1 max	insert screw	in. lbs.	socket-head cap screw	socket-head cap screw with coolant groove	wrench
1.575	**193.492**	35	**–**	**MS1294CG**	**170.025**
1.970	**193.492**	35	**–**	**MS1234CG**	**170.025**
2.480	**193.492**	35	**–**	**MS1234CG**	**170.025**
3.150	**193.492**	35	**MS2038**	**MS2038CG**	**170.025**

NOTE: Socket-head cap screws with coolant groove need to be purchased separately.

Insert Selection Guide

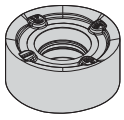
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
P3–P4	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC522M
P5–P6	.E..LDJX	KC725M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
M1–M2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC522M
M3	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
K1–K2	–	–	**–**	**–**	–	–
K3	–	–	**–**	**–**	–	–
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LDJX	KC522M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
S3	.E..LDJX	KC725M	**.E..LDJX**	**KC725M**	.S..GDJX	KC725M
S4	.E..LDJX	KC522M	**.S..GDJX**	**KC522M**	.S..GDJX	KC725M
H1	–	–	**–**	**–**	–	–

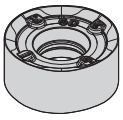
Indexable Inserts

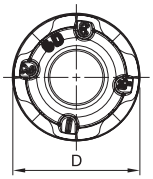
- -LD geometry is for general use on blades from a solid block.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.
- -GD geometry is the first choice for forged blades.
- -GD geometry is for general use in steel and stainless steel.

● first choice
○ alternate choice

	KC522M	KC725M	KCSM30
P	○	●	
M	●	●	○
K	○		
N			
S	●	●	●
H	○		


RNGJ12-LDX


RNGJ12-GDX



RNGJ12-GDX

RNGJ12-LDX

catalog number	D	S	hm	cutting edges	KC522M	KC725M	KCSM30
RNGJ1204M0ENLDJX	.472	.187	.001	8	●	–	–

RNGJ12-GDX

catalog number	D	S	hm	cutting edges	KC522M	KC725M	KCSM30
RNGJ1204M0SNGDJX	.472	.187	.003	8	–	●	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .240 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	.005	**.019**	.034	.003	**.014**	.024	.003	**.011**	.018	.002	**.009**	.016	.002	**.008**	.014	.E..LDJX
.S..GDJX	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..GDJX

At .080 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	.006	**.026**	.045	.004	**.019**	.032	.003	**.014**	.024	.003	**.012**	.021	.003	**.011**	.019	.E..LDJX
.S..GDJX	.012	**.031**	.047	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..GDJX

At .050 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	.007	**.032**	.055	.005	**.023**	.039	.004	**.017**	.029	.004	**.015**	.026	.003	**.014**	.023	.E..LDJX
.S..GDJX	.015	**.038**	.057	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..GDJX

At .030 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LDJX	.009	**.040**	.070	.007	**.029**	.050	.005	**.022**	.037	.004	**.019**	.032	.004	**.017**	.030	.E..LDJX
.S..GDJX	.019	**.048**	.073	.014	**.034**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..GDJX

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

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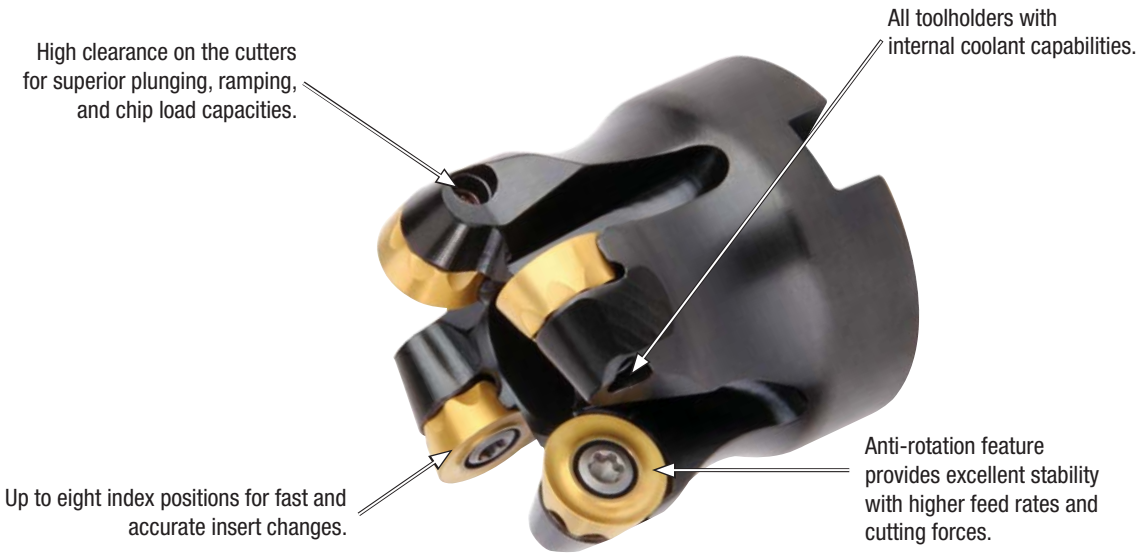
Specially developed for machining titanium and stainless steel. KSRM platform enables you to pocket, profile, ramp, and plunge with consistent performance and outstanding metal removal rates with the lowest cutting forces.

Features and Benefits

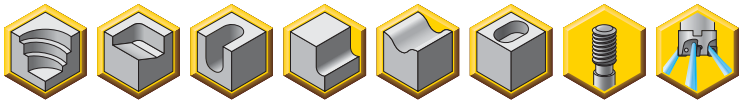
- Up to eight cutting edges per insert.
- Anti-rotation feature achieves excellent stability.
- Engineered to provide longer tool life in titanium and stainless steel.
- Roughing and semi-finishing operations with lower cutting forces.

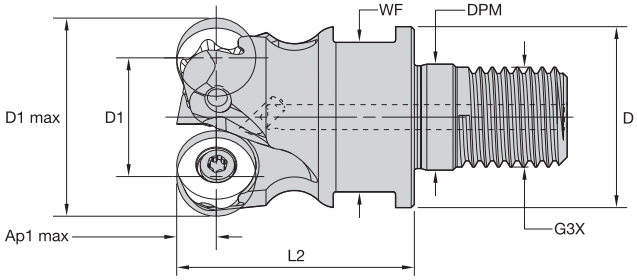





High clearance on the cutters for superior plunging, ramping, and chip load capacities.
All toolholders with internal coolant capabilities.
Up to eight index positions for fast and accurate insert changes.
Anti-rotation feature provides excellent stability with higher feed rates and cutting forces.

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.





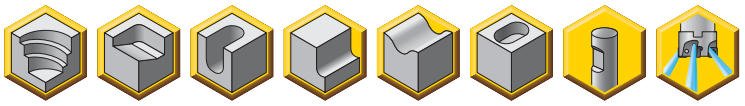


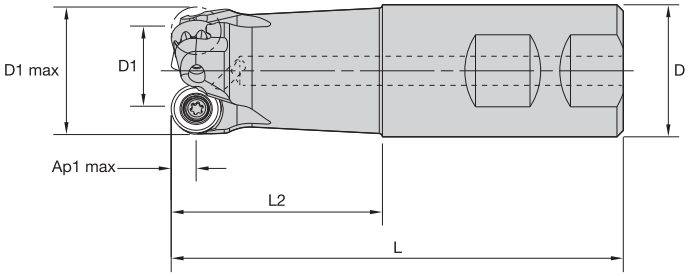
Screw-On End Mills

order number	catalog number	D1 max	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	max ramp angle	max RPM	lbs	insert 1
4042688	**BMD125R1203M16L150**	1.250	.778	1.142	.670	M16	1.500	22	.236	3	5.7°	43500	.35	RP..T1204M0..
4042690	**BMD150R1204M16L150**	1.500	1.028	1.142	.670	M16	1.500	22	.236	4	9.2°	39700	.41	RP..T1204M0..

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.250	**MS2077**	20	**DT15IP**
1.500	**MS2077**	20	**DT15IP**







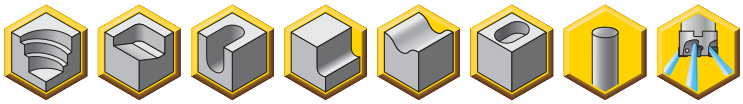
Weldon End Mills

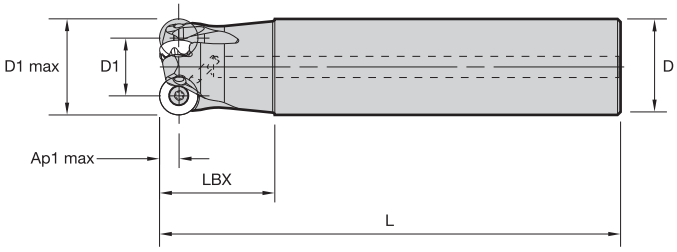
order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4042691	**BMD125R1203W125L200**	1.250	.778	1.250	4.280	2.000	.236	3	5.7°	43500	RP..T1204M0..	1.17
3891915	**BMD150R1204W150L200**	1.500	1.028	1.500	4.690	2.000	.236	4	9.2°	39700	RP..T1204M0..	1.94

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.250	**MS2077**	20	**DT15IP**
1.500	**MS2077**	20	**DT15IP**

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







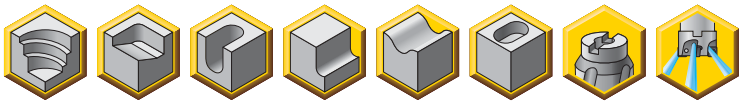
Cylindrical End Mills

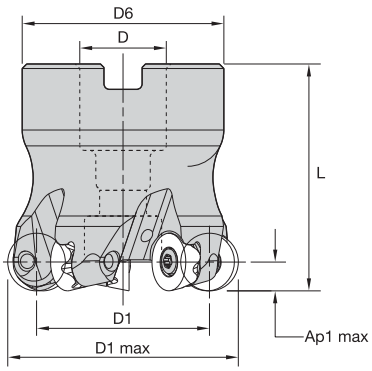
order number	catalog number	D1 max	D1	D	L	L2	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4042692	**BMD125R1203C125L700**	1.250	.778	1.250	7.000	1.575	1.575	.236	3	5.7°	43500	RP..T1204M0..	2.11
4042713	**BMD150R1203C125L800**	1.500	1.028	1.250	8.000	1.575	1.575	.236	3	9.8°	39700	RP..T1204M0..	2.54

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver
1.250	**MS2077**	20	**DT15IP**
1.500	**MS2077**	20	**DT15IP**

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
3891882	**BMD150R1204S050L158**	1.500	1.028	.500	1.440	1.575	.236	4	9.2°	39700	RP..T1204M0#	.47
4042714	**BMD200R1203S075L200**	2.000	1.528	.750	1.752	2.000	.236	3	10.5°	34400	RP..T1204M0#	1.02
4042715	**BMD200R1205S075L200**	2.000	1.528	.750	1.752	2.000	.236	5	7.7°	34400	RP..T1204M0#	1.01
4042716	**BMD250R1207S100L200**	2.500	2.028	1.000	2.190	2.000	.236	7	4.1°	30800	RP..T1204M0#	1.61
3885499	**BMD300R1206S100L200**	3.000	2.528	1.000	2.752	2.000	.236	6	5.7°	28100	RP..T1204M0#	2.54
4042717	**BMD300R1208S100L200**	3.000	2.528	1.000	2.752	2.000	.236	8	3.5°	28100	RP..T1204M0#	2.57
4042718	**BMD400R1207S125L200**	4.000	3.528	1.250	2.878	2.000	.236	7	3.3°	23800	RP..T1204M0#	3.23
4002349	**BMD400R1209S125L200**	4.000	3.528	1.250	2.878	2.000	.236	9	3.0°	23800	RP..T1204M0#	3.20

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx Plus driver	 socket-head cap screw	 socket-head cap screw with coolant groove	 coolant lock screw assembly
1.500	**MS2077**	20	**DT15IP**	**S424**	**S422CG**	**—**
2.000	**MS2077**	20	**DT15IP**	**S446**	**S446CG**	**—**
2.500	**MS2077**	20	**DT15IP**	**S459**	**S459CG**	**—**
3.000	**MS2077**	20	**DT15IP**	**S459**	**S459CG**	**—**
4.000	**MS2077**	20	**DT15IP**	**—**	**—**	**S2162C**

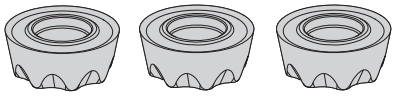
NOTE: Socket-head cap screw with coolant groove must be ordered separately.

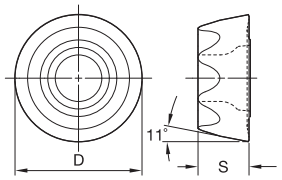
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
P3–P4	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
P5–P6	.S..GEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
M1–M2	.E..LEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
M3	.S..GE	KCPK30	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
K1–K2	–	–	**–**	**–**	–	–
K3	.E..LE	KCPK30	**.S..GE**	**KCPK30**	.S..GP	KCPK30
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	–	–	**–**	**–**	–	–
S1–S2	.S..GEJ	KC725M	**.S..GDX**	**KC725M**	.S..GP	KC725M
S3	.S..GEJ	KC725M	**.S..GDX**	**KCPM40**	.S..GP	KCPM40
S4	.S..GEJ	KC522M	**.S..GDX**	**KC725M**	.S..GP	KC725M
H1	–	–	**–**	**–**	–	–

Indexable Inserts

- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edges.
- -SGEJ geometry for general purpose in roughing operations.





RPET-LEJ

● first choice
○ alternate choice

	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P		○	●	●	●		○
M		●	●	○	●	○	●
K		○		○			
N	●						
S		●	●		○	●	●
H							

RPET-LEJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1204M0ELEJ	.472	.188	.002	8	●	●	●	–	–	●	–

RPET-LE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1204M0ELE	.472	.188	.002	8	–	–	●	●	–	–	–

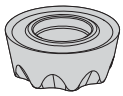
RPET-GEJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1204M0SGEJ	.472	.188	.005	8	–	●	●	–	–	●	–

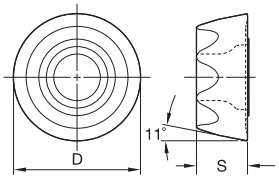
- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edges.
- -SGEJ geometry for general purpose in roughing operations.

● first choice
○ alternate choice

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								



RPET-GE

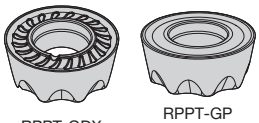


RPET-GE

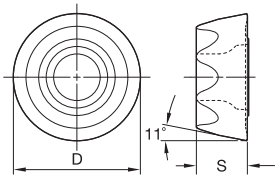
RPET-GE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1204M0SGE	.472	.188	.005	8	–	–	–	●	–	–	–

- -GP geometry for roughing operations, especially in steel.
- -SGDX is the first choice for martensitic stainless steel and turbine blade applications.



RPPT-GDX RPPT-GP



RPPT-GDX
RPPT-GP

RPPT-GDX

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1204M0SGDX	.472	.187	.007	8	–	–	●	–	●	–	–

RPPT-GP

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1204M0SGP	.472	.188	.005	8	–	–	●	●	●	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .240 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.007	**.019**	.030	.005	**.013**	.021	.004	**.010**	.016	.003	**.009**	.014	.003	**.008**	.013	.E..LEJ
.E..LE	.007	**.019**	.030	.005	**.013**	.021	.004	**.010**	.016	.003	**.009**	.014	.003	**.008**	.013	.E..LE
.S..GEJ	.009	**.021**	.033	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..GEJ
.S..GE	.009	**.021**	.033	.007	**.015**	.023	.005	**.011**	.017	.004	**.010**	.015	.004	**.009**	.014	.S..GE
.S..GDX	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..GDX
.S..GP	.009	**.023**	.035	.007	**.017**	.025	.005	**.013**	.019	.004	**.011**	.016	.004	**.010**	.015	.S..GP

At .080 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.009	**.025**	.040	.006	**.018**	.028	.005	**.013**	.021	.004	**.012**	.018	.004	**.011**	.017	.E..LEJ
.E..LE	.009	**.025**	.040	.006	**.018**	.028	.005	**.013**	.021	.004	**.012**	.018	.004	**.011**	.017	.E..LE
.S..GEJ	.012	**.028**	.044	.009	**.020**	.031	.007	**.015**	.023	.006	**.013**	.020	.005	**.012**	.019	.S..GEJ
.S..GE	.012	**.028**	.044	.009	**.020**	.031	.007	**.015**	.023	.006	**.013**	.020	.005	**.012**	.019	.S..GE
.S..GDX	.012	**.031**	.048	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..GDX
.S..GP	.012	**.031**	.048	.009	**.022**	.034	.007	**.017**	.025	.006	**.015**	.022	.005	**.013**	.020	.S..GP

At .050 Axial Depth of Cut (ap)

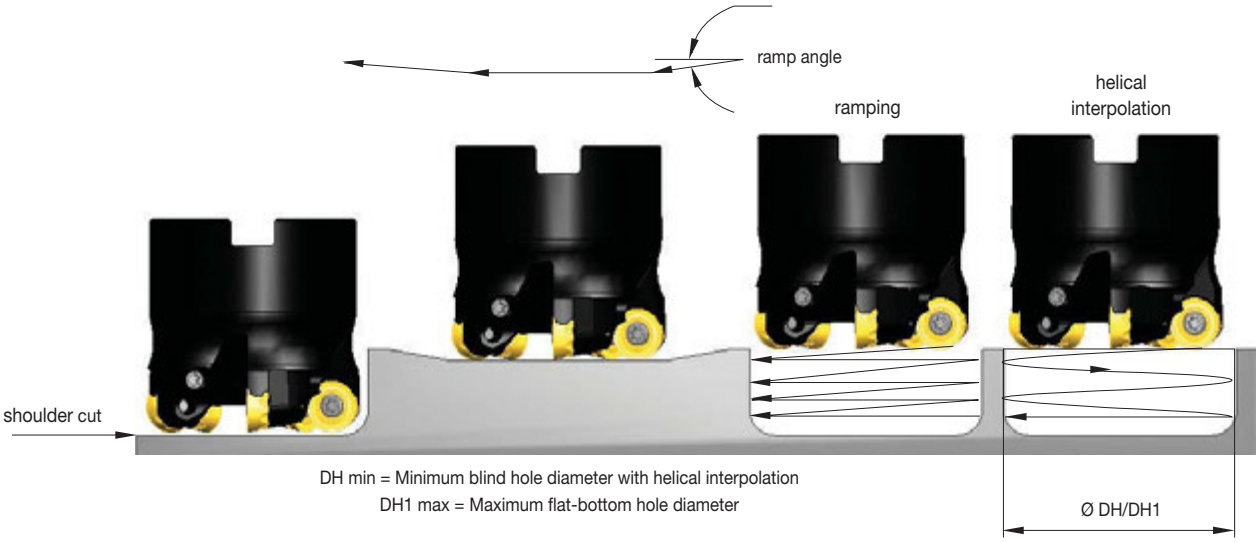
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.011	**.031**	.049	.008	**.022**	.035	.006	**.016**	.026	.005	**.014**	.022	.005	**.013**	.020	.E..LEJ
.E..LE	.011	**.031**	.049	.008	**.022**	.035	.006	**.016**	.026	.005	**.014**	.022	.005	**.013**	.020	.E..LE
.S..GEJ	.015	**.034**	.054	.011	**.025**	.038	.008	**.018**	.028	.007	**.016**	.025	.007	**.015**	.023	.S..GEJ
.S..GE	.015	**.034**	.054	.011	**.025**	.038	.008	**.018**	.028	.007	**.016**	.025	.007	**.015**	.023	.S..GE
.S..GDX	.015	**.038**	.059	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..GDX
.S..GP	.015	**.038**	.059	.011	**.027**	.041	.008	**.020**	.031	.007	**.018**	.027	.007	**.016**	.024	.S..GP

At .030 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.013	**.039**	.062	.010	**.028**	.044	.007	**.021**	.032	.006	**.018**	.028	.006	**.016**	.026	.E..LEJ
.E..LE	.013	**.039**	.062	.010	**.028**	.044	.007	**.021**	.032	.006	**.018**	.028	.006	**.016**	.026	.E..LE
.S..GEJ	.019	**.044**	.069	.014	**.031**	.049	.010	**.023**	.036	.009	**.020**	.031	.008	**.018**	.029	.S..GEJ
.S..GE	.019	**.044**	.069	.014	**.031**	.049	.010	**.023**	.036	.009	**.020**	.031	.008	**.018**	.029	.S..GE
.S..GDX	.019	**.049**	.075	.014	**.035**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..GDX
.S..GP	.019	**.049**	.075	.014	**.035**	.052	.010	**.026**	.039	.009	**.022**	.034	.008	**.021**	.031	.S..GP

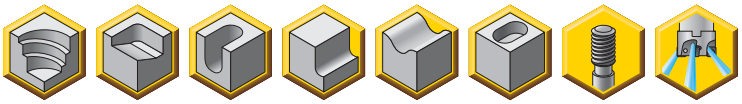
NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

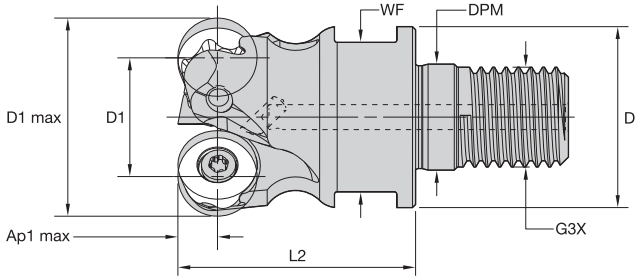
Maximum Linear Ramping and Helical Interpolation from Solid



catalog number	max ramp angle	max plunging depth	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter (no flat bottom)
BMD125R1203M16L150	5.7°	0.061	1.719	2.028	2.5
BMD150R1204M16L150	9.2°	0.130	2.112	2.528	3.0
BMD125R1203W125L200	5.7°	0.061	1.719	2.028	2.5
BMD150R1204W150L200	9.2°	0.130	2.112	2.528	3.0
BMD125R1203C125L700	5.7°	0.061	1.719	2.028	2.5
BMD150R1203C125L800	9.8°	0.138	2.104	2.528	3.0
BMD150R1204S050L158	9.2°	0.130	2.112	2.528	3.0
BMD200R1203S075L200	10.5°	0.236	3.058	3.528	4.0
BMD200R1205S075L200	7.7°	0.173	3.074	3.528	4.0
BMD250R1207S100L200	4.1°	0.130	4.114	4.528	5.0
BMD300R1206S100L200	5.7°	0.228	5.048	5.528	6.0
BMD300R1208S100L200	3.5°	0.138	5.078	5.528	6.0
BMD400R1207S125L200	3.3°	0.189	7.068	7.528	8.0
BMD400R1209S125L200	3.0°	0.173	7.525	7.528	8.0

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







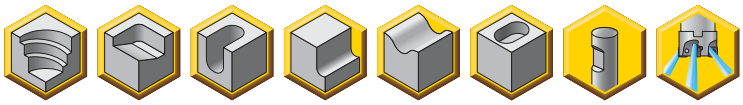
Screw-On End Mills

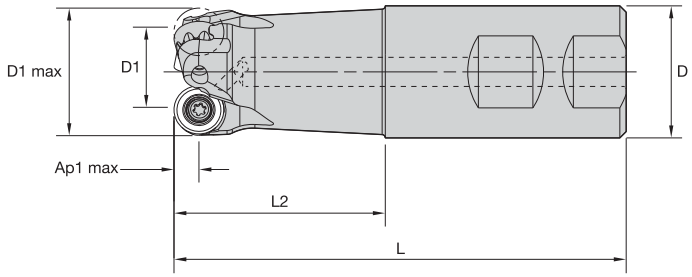
order number	catalog number	D1 max	D1	D	DPM	G3X	L2	WF (mm)	Ap1 max	Z	max ramp angle	max RPM	lbs	insert 1
4043037	BMD150R1603M16	1.500	.870	1.142	.670	M16	1.500	22	.315	3	9.9°	28000	.35	RP..T1605M0..

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.500	MS-2071	35	DT15IP

Weldon® End Mills







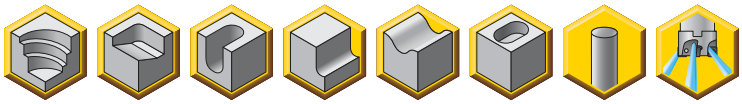
Weldon End Mills

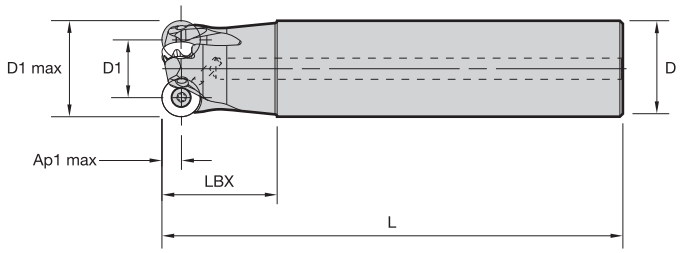
order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z	lbs	max ramp angle	max RPM	insert 1
4043038	BMD150R1603W125L200	1.500	.870	1.250	4.280	2.000	.315	3	1.24	9.9°	28000	RP..T1605M0..

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.500	MS-2071	35	DT15IP

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







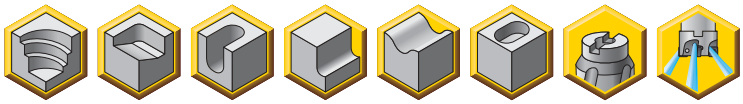
Cylindrical End Mills

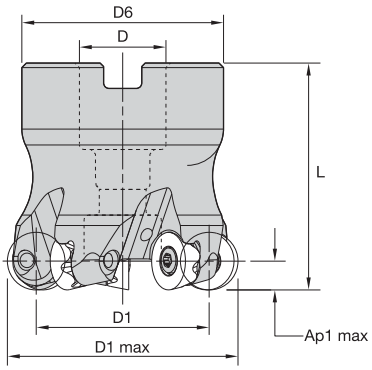
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4043039	BMD150R1602C125L800	1.500	.870	1.250	8.000	1.500	.315	2	11.1°	28000	RP..T1605M0..	2.48

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.500	MS-2071	35	DT15IP

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature eight indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
4043040	BMD200R1603S075L200	2.000	1.370	.750	1.752	2.000	.315	3	11.7°	24200	RP..T1605M0…	.82
4043041	BMD200R1604S075L200	2.000	1.370	.750	1.752	2.000	.315	4	9.7°	24200	RP..T1605M0..	.83
4043042	BMD250R1605S100L200	2.500	1.870	1.000	2.189	2.000	.315	5	11.7°	21700	RP..T1605M0..	1.43
4043053	BMD300R1605S100L200	3.000	2.370	1.000	2.750	2.000	.315	5	8.8°	19800	RP..T1605M0..	2.37
3997748	BMD300R1607S100L200	3.000	2.370	1.000	2.750	2.000	.315	7	6.8°	19800	RP..T1605M0..	2.38
4043054	BMD400R1608S125L200	4.000	3.370	1.250	2.875	2.000	.315	8	4.6°	16600	RP..T1605M0..	2.79
4043056	BMD600R1610S150L250	6.000	5.370	1.500	3.811	2.500	.315	10	3.4°	13100	RP..T1605M0..	7.86

Spare Parts

D1 max	insert screw	in. lbs.	socket-head cap screw	socket-head cap screw with coolant groove	coolant lock screw assembly	T-handle hex wrench	Torx Plus driver
2.000	MS-2071	35	S446	S446CG	–	–	DT15IP
2.500	MS-2071	35	S459	–	–	–	DT15IP
3.000	MS-2071	35	S459	–	–	–	DT15IP
4.000	MS-2071	35	–	–	S2162C	THW2M	DT15IP
6.000	MS-2071	35	–	–	S2163C	THW2M	DT15IP

NOTE: Socket head cap screw with coolant groove must be ordered separately.

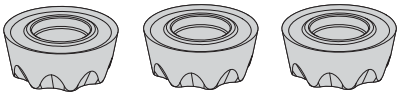
Insert Selection Guide

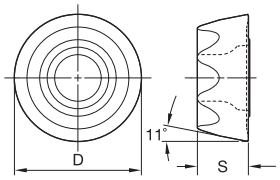
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LE	KCPK30	.S..GE	KCPK30	.S..HP	KCPM40
P3–P4	.E..LE	KCPK30	.S..GE	KCPK30	.S..HP	KCPM40
P5–P6	.E..LEJ	KC725M	.S..GEJ	KC725M	.S..HP	KC725M
M1–M2	.E..LEJ	KC522M	.S..GEJ	KC522M	.S..HP	KC725M
M3	.E..LEJ	KC725M	.S..GEJ	KC725M	.S..HP	KCPM40
K1–K2	–	–	–	–	–	–
K3	.E..LE	KCPK30	.S..GE	KCPK30	.S..HP	KCPK30
N1–N2	.E..LEJ	KC422M	.E..LEJ	KC422M	.E..LEJ	KC422M
N3	–	–	–	–	–	–
S1–S2	.E..LEJ	KC725M	.S..GEJ	KC725M	.S..HP	KC725M
S3	.E..LEJ	KC725M	.S..GEJ	KC725M	.S..HP	KCPM40
S4	.E..LEJ	KC522M	.S..GEJ	KC522M	.S..HP	KC725M
H1	–	–	–	–	–	–

Indexable Inserts

- -SGEJ and -ELEJ are the first choice for titanium machining.
- -ELEJ is the first choice for lower cutting forces to avoid built-up edge.
- -SGEJ geometry for general purpose in roughing operations.

● first choice
○ alternate choice


RPET-LEJ RPET-GEJ RPET-GE RPET-LE



RPET-GEJ

beyond

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								

RPET-LEJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0ELEJ	.630	.219	.001	8	–	–	●	–	–	–	–

RPET-LE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0ELE	.630	.219	.001	8	–	–	–	●	–	–	–

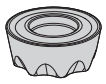
RPET-GEJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0SGEJ	.630	.219	.005	8	–	●	●	–	–	●	–

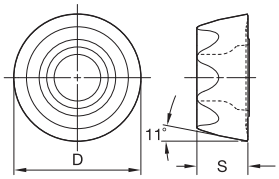
RPET-GE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET1605M0SGE	.630	.219	.005	8	–	–	–	●	–	–	–

- HP geometry for roughing operations, especially in steel.



RPPT-HP



RPPT-HP

● first choice
○ alternate choice

beyond

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P		○	●	●	●		○
M		●	●	○	●	○	●
K		○		○			
N		●					
S		●	●		○	●	●
H							

RPPT-HP

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT1605M0SHP	.630	.219	.007	8	–	–	●	●	●	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .320 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.005	**.020**	.032	.003	**.014**	.023	.003	**.011**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LEJ
.E..LE	.005	**.020**	.032	.003	**.014**	.023	.003	**.011**	.017	.002	**.009**	.015	.002	**.008**	.014	.E..LE
.S..GEJ	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.S..GEJ
.S..GE	.009	**.021**	.035	.007	**.015**	.025	.005	**.011**	.019	.004	**.010**	.016	.004	**.009**	.015	.S..GE
.S..HP	.009	**.023**	.038	.007	**.017**	.027	.005	**.013**	.020	.004	**.011**	.017	.004	**.010**	.016	.S..HP

At .100 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.006	**.027**	.045	.005	**.019**	.032	.003	**.014**	.024	.003	**.013**	.021	.003	**.011**	.019	.E..LEJ
.E..LE	.006	**.027**	.045	.005	**.019**	.032	.003	**.014**	.024	.003	**.013**	.021	.003	**.011**	.019	.E..LE
.S..GEJ	.013	**.029**	.048	.009	**.021**	.034	.007	**.015**	.025	.006	**.013**	.022	.005	**.012**	.020	.S..GEJ
.S..GE	.013	**.029**	.048	.009	**.021**	.034	.007	**.015**	.025	.006	**.013**	.022	.005	**.012**	.020	.S..GE
.S..HP	.013	**.032**	.052	.009	**.023**	.037	.007	**.017**	.027	.006	**.015**	.024	.005	**.014**	.022	.S..HP

At .060 Axial Depth of Cut (ap)

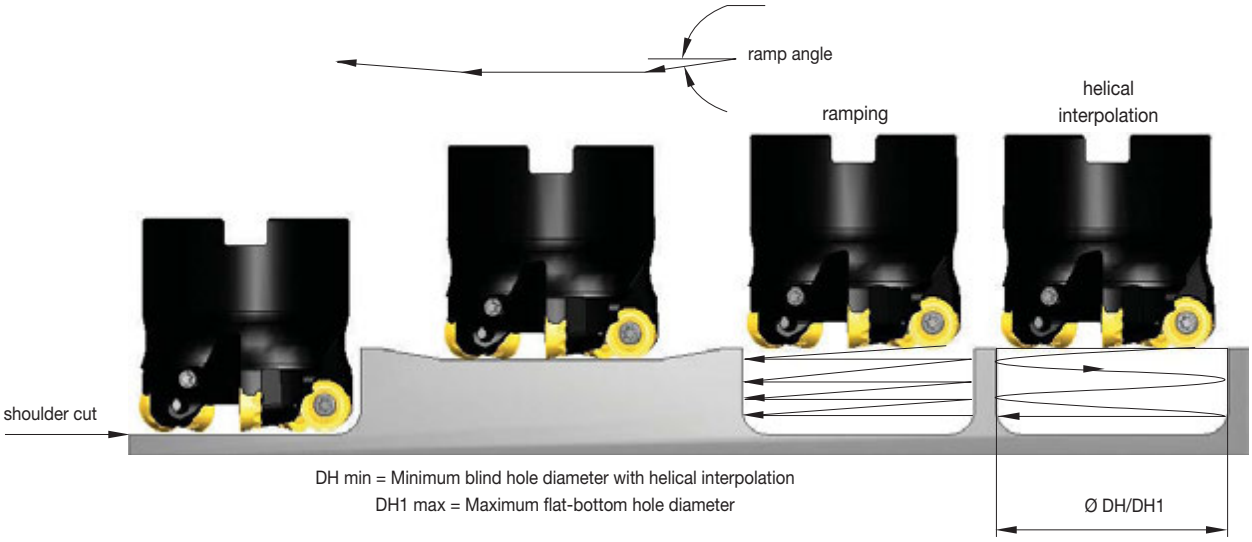
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.008	**.034**	.056	.006	**.024**	.040	.004	**.018**	.030	.004	**.016**	.026	.003	**.014**	.024	.E..LEJ
.E..LE	.008	**.034**	.056	.006	**.024**	.040	.004	**.018**	.030	.004	**.016**	.026	.003	**.014**	.024	.E..LE
.S..GEJ	.016	**.036**	.060	.011	**.026**	.043	.009	**.019**	.032	.007	**.017**	.028	.007	**.015**	.025	.S..GEJ
.S..GE	.016	**.036**	.060	.011	**.026**	.043	.009	**.019**	.032	.007	**.017**	.028	.007	**.015**	.025	.S..GE
.S..HP	.016	**.040**	.065	.011	**.029**	.046	.009	**.021**	.034	.007	**.019**	.030	.007	**.017**	.027	.S..HP

At .040 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
.E..LEJ	.009	**.041**	.068	.007	**.029**	.048	.005	**.022**	.036	.004	**.019**	.031	.004	**.017**	.028	.E..LEJ
.E..LE	.009	**.041**	.068	.007	**.029**	.048	.005	**.022**	.036	.004	**.019**	.031	.004	**.017**	.028	.E..LE
.S..GEJ	.019	**.044**	.073	.014	**.031**	.052	.010	**.023**	.038	.009	**.020**	.033	.008	**.018**	.030	.S..GEJ
.S..GE	.019	**.044**	.073	.014	**.031**	.052	.010	**.023**	.038	.009	**.020**	.033	.008	**.018**	.030	.S..GE
.S..HP	.019	**.049**	.079	.014	**.035**	.056	.010	**.026**	.041	.009	**.022**	.036	.008	**.021**	.033	.S..HP

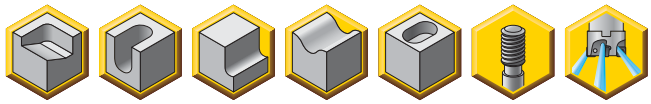
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

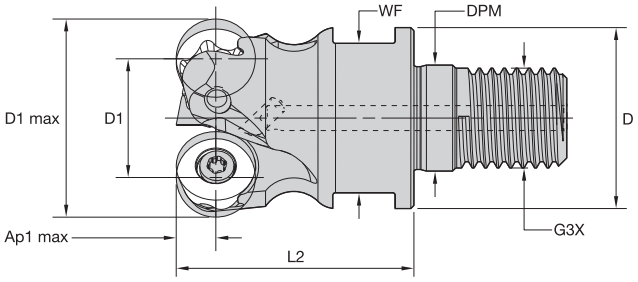
Maximum Linear Ramping and Helical Interpolation from Solid



catalog number	max ramp angle	max plunging depth	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	max diameter (no flat bottom)
BMD150R1603M16L150	9.9°	.106	1.904	2.37	3.0
BMD150R1603W125L200	9.9°	.106	1.904	2.37	3.0
BMD150R1602C125L800	11.0°	.117	1.888	2.37	3.0
BMD200R1603S075L200	11.7°	.217	2.776	3.37	4.0
BMD200R1604S075L200	9.7°	.181	2.810	3.37	4.0
BMD250R1605S100L200	11.7°	.315	3.744	4.37	5.0
BMD300R1605S100L200	8.8°	.315	4.738	5.37	6.0
BMD300R1607S100L200	6.8°	.245	4.768	5.37	6.0
BMD400R1608S125L200	4.6°	.245	6.762	7.37	8.0
BMD500R1609S150L250	4.2°	.295	8.744	9.37	10.0
BMD600R1610S150L250	3.4°	.295	10.744	11.37	12.0

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature six indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Screw-On End Mills

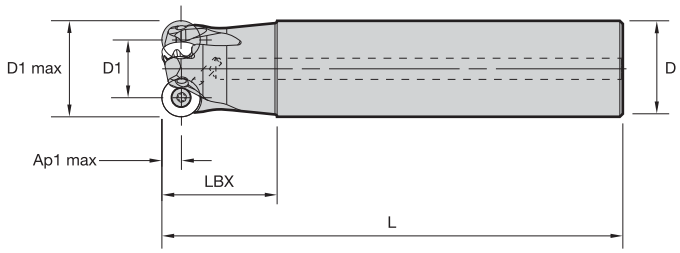
order number	catalog number	D1 max	D1	D	DPM	WF (mm)	G3X	L2	Ap1 max	Z	max ramp angle	max RPM	lbs	insert 1
5175033	**KSRM125R4303M16L150**	1.250	.750	1.142	.670	24	M16	1.500	.250	3	5.3°	44600	.36	RP_T43___
5175034	**KSRM150R4304M16L150**	1.500	1.000	1.142	.670	24	M16	1.500	.250	4	4.7°	38600	.38	RP_T43___

Spare Parts

D1 max	insert screw	in. lbs.
1.250	**MS2085**	35
1.500	**MS2085**	35

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature six indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Cylindrical End Mills

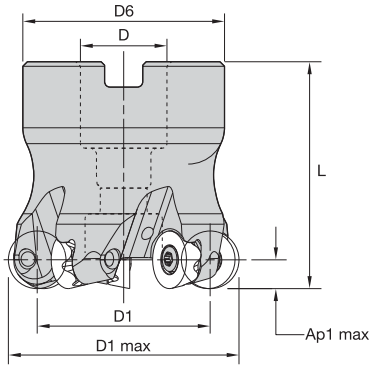
order number	catalog number	D1 max	D1	D	L	LBX	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5175035	**KSRM125R4302C125L600**	1.250	.750	1.250	6.000	1.500	.250	2	6.0°	44600	RP_T43____	1.77
5175037	**KSRM125R4303C125L1000**	1.250	.750	1.250	10.000	1.500	.250	3	5.3°	44600	RP_T43____	3.10
5175038	**KSRM150R4304C125L600**	1.500	1.000	1.250	6.000	1.500	.250	4	4.7°	38600	RP_T43____	1.85
5175039	**KSRM150R4304C125L1000**	1.500	1.000	1.250	10.000	1.500	.250	4	4.7°	38600	RP_T43____	3.17

Spare Parts

D1 max	insert screw	in. lbs.	Torx Plus driver
1.250	**MS2085**	35	**DT15IP**
1.500	**MS2085**	35	**DT15IP**

- Engineered for titanium and stainless steel machining.
- Anti-rotation components feature six indexable positions.
- Pocketing, ramping, plunging, and helical interpolation capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
5302954	**KSRM200R4303S075L197**	2.000	1.500	.750	1.750	1.969	.250	3	11.5°	31500	RP_T43___	.89
5175380	**KSRM200R4305S075L197**	2.000	1.500	.750	1.750	1.969	.250	5	11.4°	31500	RP_T43___	.92
5302955	**KSRM250R4304S075L197**	2.500	2.000	.750	1.750	1.969	.250	4	8.2°	27300	RP_T43___	1.14
5175381	**KSRM250R4306S075L197**	2.500	2.000	.750	1.750	1.969	.250	6	8.2°	27300	RP_T43___	1.16
5302956	**KSRM300R4305S100L197**	3.000	2.500	1.000	2.750	1.969	.250	5	6.4°	24400	RP_T43___	2.46
5175382	**KSRM300R4307S100L197**	3.000	2.500	1.000	2.750	1.969	.250	7	6.4°	24400	RP_T43___	2.48

Spare Parts

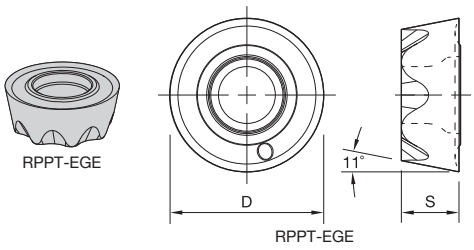
D1 max	 insert screw	 in. lbs.	 socket-head cap screw	 Torx Plus driver
2.000	**MS2085**	35	**S446**	**DT15IP**
2.500	**MS2085**	35	**S446**	**DT15IP**
3.000	**MS2085**	35	**S459**	**DT15IP**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LEJ	KC725M	**.E..GE**	**KC725M**	.S..GE	KCPK30
P3–P4	.E..LEJ	KC725M	**.S..GE**	**KCPK30**	–	–
P5–P6	.E..GE	KCPK30	**.S..GE**	**KCPK30**	–	–
M1–M2	.E..LEJ	KC725M	**.E..LEJ**	**KC725M**	.S..GE	KC725M
M3	.S..GEJ	KC725M	**.E..GE**	**KC725M**	.S..GE	KCPK30
K1–K2	–	–	**.S..GE**	**KCPK30**	–	–
K3	–	–	**.S..GE**	**KCPK30**	–	–
N1–N2	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
N3	.E..LEJ	KC422M	**.E..LEJ**	**KC422M**	.E..LEJ	KC422M
S1–S2	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..GE	KC725M
S3	.E..LEJ	KC725M	**.S..GEJ**	**KC725M**	.S..GE	KC725M
S4	.E..LEJ	KC725M	**.E..GE**	**KC725M**	.S..GE	KC725M
H1	–	–	**.S..GE**	**KC522M**	–	–

Indexable Inserts

- -EGE is the first choice for titanium machining.



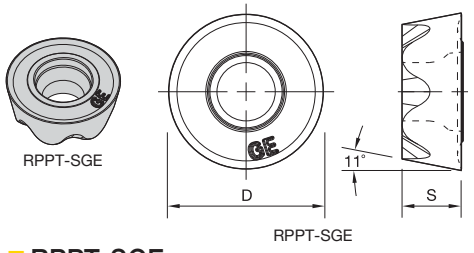
● first choice
○ alternate choice

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								

RPPT-EGE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT43EGE	.500	.188	.003	6	–	–	●	●	–	–	–

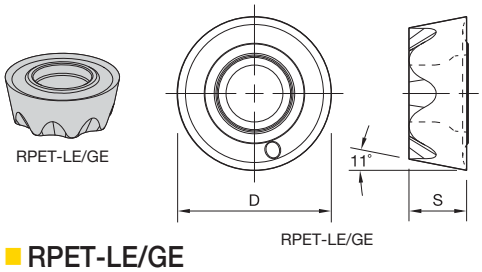
- -SGE geometry for general purpose in roughing operations in steel.



RPPT-SGE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPPT43SGE	.500	.188	.005	6	–	–	●	●	–	–	–

- ELEJ is the first choice for lower cutting forces to avoid built-up edges.



● first choice
○ alternate choice

		KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								

RPET-LE/GE

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RPET43SGEJ	.500	.188	.005	6	–	–	●	–	–	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LEJ	.003	**.005**	.007	.003	**.004**	.005	.002	**.003**	.005	.002	**.003**	.004	.002	**.003**	.004	.E..LEJ
.E..GE	.006	**.010**	.015	.004	**.008**	.011	.004	**.007**	.010	.004	**.006**	.009	.004	**.006**	.009	.E..GE
.S..GEJ	.007	**.017**	.023	.005	**.013**	.017	.004	**.011**	.015	.004	**.010**	.014	.004	**.010**	.014	.S..GEJ
.S..GE	.007	**.017**	.023	.005	**.013**	.017	.004	**.011**	.015	.004	**.010**	.014	.004	**.010**	.014	.S..GE

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LEJ	.004	**.006**	.008	.003	**.004**	.006	.003	**.004**	.005	.002	**.003**	.005	.002	**.003**	.005	.E..LEJ
.E..GE	.007	**.012**	.017	.005	**.009**	.013	.004	**.008**	.011	.004	**.007**	.010	.004	**.007**	.010	.E..GE
.S..GEJ	.008	**.020**	.027	.006	**.015**	.020	.005	**.013**	.017	.005	**.012**	.016	.005	**.012**	.016	.S..GEJ
.S..GE	.008	**.020**	.027	.006	**.015**	.020	.005	**.013**	.017	.005	**.012**	.016	.005	**.012**	.016	.S..GE

At .063 Axial Depth of Cut (ap)

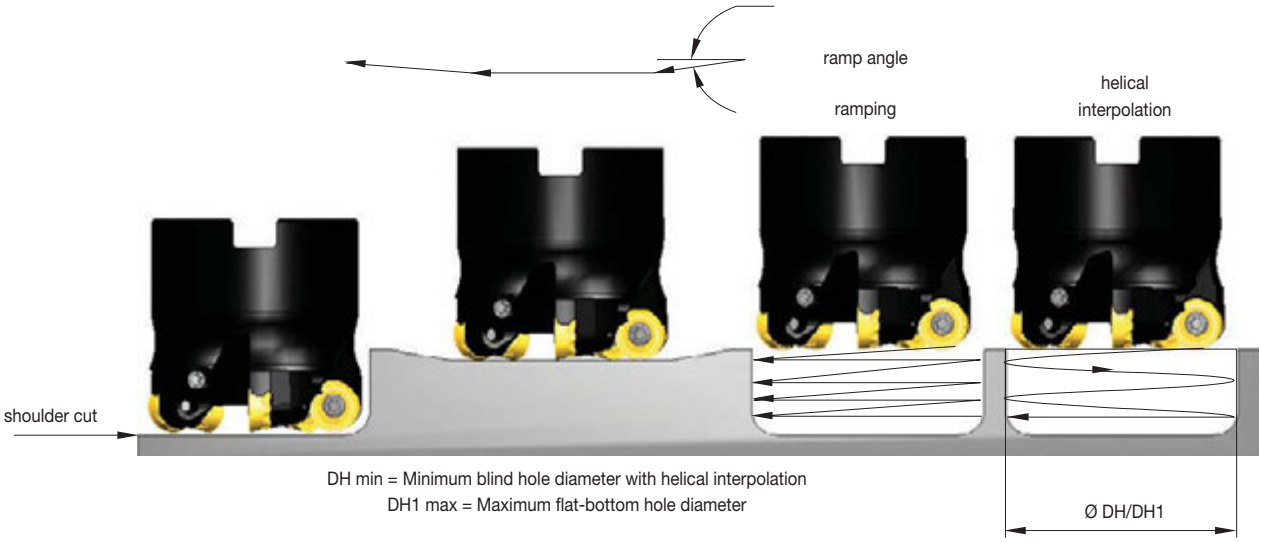
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LEJ	.005	**.007**	.011	.004	**.005**	.008	.003	**.005**	.007	.003	**.004**	.006	.003	**.004**	.006	.E..LEJ
.E..GE	.009	**.015**	.023	.007	**.011**	.017	.006	**.010**	.014	.005	**.009**	.014	.005	**.009**	.013	.E..GE
.S..GEJ	.010	**.026**	.035	.008	**.019**	.026	.007	**.017**	.022	.006	**.015**	.021	.006	**.015**	.020	.S..GEJ
.S..GE	.010	**.026**	.035	.008	**.019**	.026	.007	**.017**	.022	.006	**.015**	.021	.006	**.015**	.020	.S..GE

At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LEJ	.007	**.010**	.015	.005	**.007**	.011	.005	**.006**	.009	.004	**.006**	.009	.004	**.006**	.009	.E..LEJ
.E..GE	.012	**.021**	.031	.009	**.016**	.023	.008	**.014**	.020	.007	**.013**	.018	.007	**.012**	.018	.E..GE
.S..GEJ	.014	**.036**	.049	.010	**.026**	.035	.009	**.023**	.031	.008	**.021**	.028	.008	**.021**	.028	.S..GEJ
.S..GE	.014	**.036**	.049	.010	**.026**	.035	.009	**.023**	.031	.008	**.021**	.028	.008	**.021**	.028	.S..GE

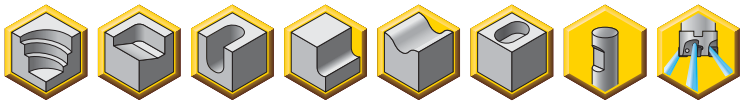
NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

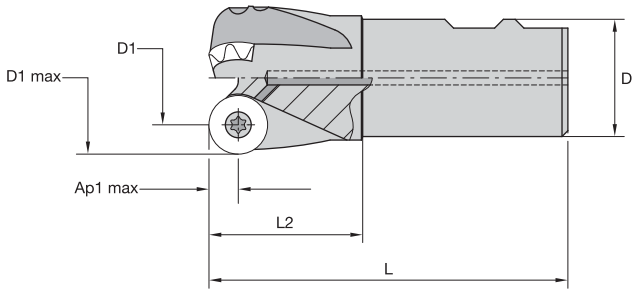
Maximum Linear Ramping and Helical Interpolation from Solid



catalog number	Maximum Ramp Angle (ra) when hx = .01" and ae > ae1	Maximum Ramp Depth (ap) per pass when ae > ae1	Maximum Ramp Depth (ap) per pass when hx = .01" and ae < ae1	ae1	Maximum Plunge Depth (ap) when hx = .01" and ae > ae2	ae2	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	Maximum Hole Diameter (No Flat Bottom)
KSRM125R4303C125L600	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302C125L600	5.95°	.061	.250	.413	.250	.500	1.674	2.001	2.500
KSRM125R4303C125L1000	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302C125L1000	5.95°	.061	.250	.413	.250	.500	1.674	2.001	2.500
KSRM150R4304C125L600	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303C125L600	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM150R4304C125L1000	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303C125L1000	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM125R4303M16L150	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302M16L150	6.43°	.065	.250	.418	.250	.500	1.665	2.001	2.500
KSRM150R4304M16L150	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303M16L150	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM200R4305S075L197	11.43°	.250	.250	.499	.250	.500	3.001	3.501	4.000
KSRM200R4303S075L197	11.45°	.250	.250	.499	.250	.500	3.001	3.501	4.000
KSRM250R4306S075L197	8.16°	.250	.250	.500	.250	.500	4.001	4.500	5.000
KSRM250R4304S075L197	8.16°	.250	.250	.500	.250	.500	4.001	4.500	5.000
KSRM300R4307S100L197	6.35°	.250	.250	.500	.250	.500	5.001	5.500	6.000
KSRM300R4305S100L197	6.35°	.250	.250	.500	.250	.500	5.001	5.500	6.000

- Engineered for roughing with large depths of cut through positive geometries.
- Anti-rotation feature with six indexable positions.
- Excellent for long overhangs.







Weldon • End Mills

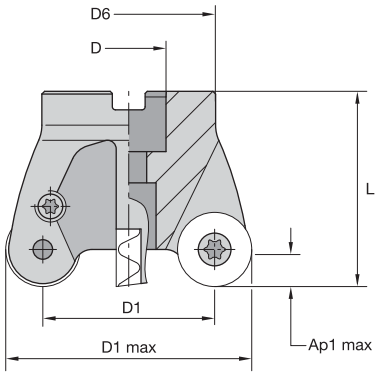
order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
2610667	**BMD200R6403W150L200**	2.000	1.250	1.500	4.690	2.000	.375	3	.6°	29000	RCG_64___	2.15

Spare Parts

D1 max	insert screw	in. lbs.	anti-rotation screw	Torx wrench
2.000	**MS1162**	45	**S2160**	**TT25**

- Engineered for roughing with large depths of cut through positive geometry inserts.
- Anti-rotation feature with six indexable positions.
- Excellent for long overhangs.
- High coolant pressure capabilities.







Shell Mills

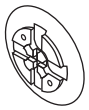
order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
2610668	**BMD250R6404S075L200**	2.500	1.750	.750	1.750	2.000	.375	4	.6°	26000	RCG_64___	1.16
2610670	**BMD300R6405S100L200**	3.000	2.250	1.000	2.190	2.000	.375	5	.7°	22000	RCG_64___	1.78
2610672	**BMD400R6405S125L200**	4.000	3.250	1.250	2.875	2.000	.375	5	.7°	18000	RCG_64___	3.17
2610683	**BMD400R6406S125L200**	4.000	3.250	1.250	2.875	2.000	.375	6	.6°	18000	RCG_64___	3.15
2610684	**BMD500R6406S150L250**	5.000	4.250	1.500	3.810	2.500	.375	6	.8°	15000	RCG_64___	7.08
2610685	**BMD500R6408S150L250**	5.000	4.250	1.500	3.810	2.500	.375	8	.7°	15000	RCG_64___	7.07
2610686	**BMD600R6407S150L250**	6.000	5.250	1.500	3.810	2.500	.375	7	.7°	14000	RCG_64___	9.48
2610687	**BMD600R6408S150L250**	6.000	5.250	1.500	3.810	2.500	.375	8	.7°	14000	RCG_64___	9.52
2610688	**BMD800R6409S250L250**	8.000	7.250	2.500	5.000	2.500	.375	9	.6°	12500	RCG_64___	13.08
5971566	**BMD800R6409S250L250HP** *	8.000	7.252	2.500	6.000	2.500	.375	9	.6°	12500	RCG_64___	14.85

NOTE: For high pressure coolant applications (>30 bar/>435 PSI) with cutter diameter 8", use items marked with "HP" in the catalog number.
They are available as per request. Please ask your local sales contact for further information.
*Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Spare Parts





order number	D1 max	insert screw	in. lbs.	Torx wrench	coolant lock screw assembly	socket-head cap screw with coolant groove	coolant cap assembly
2610668	2.500	**MS1162**	45	**TT25**	**–**	**S445CG**	**–**
2610670	3.000	**MS1162**	45	**TT25**	**–**	**S458CG**	**–**
2610672	4.000	**MS1162**	45	**TT25**	**S2162C**	**–**	**–**
2610683	4.000	**MS1162**	45	**TT25**	**S2162C**	**–**	**–**
2610684	5.000	**MS1162**	45	**TT25**	**S2163C**	**–**	**–**
2610685	5.000	**MS1162**	45	**TT25**	**S2163C**	**–**	**–**
2610686	6.000	**MS1162**	45	**TT25**	**S2163C**	**–**	**–**
2610687	6.000	**MS1162**	45	**TT25**	**S2163C**	**–**	**–**
2610688	8.000	**MS1162**	45	**TT25**	**–**	**–**	**MCC080001**
5971566	8.000	**MS1162**	45	**TT25**	**–**	**–**	**MCC0800HP**

NOTE: For coolant shower plate assembly use only low pressure coolant.
Use high pressure coolant cap assembly only in combination with high pressure cutters.
Wrench adapter is not included and needs to be purchased separately.

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LF	KC725M	.S..GF	KC725M	.S..HF	KC725M
P3–P4	.E..LF	KC522M	.S..GF	KC725M	.S..HF	KCPK30
P5–P6	.E..LF	KC522M	.S..HF	KCPK30	.S..HF	KCPK30
M1–M2	.E..LF	KC725M	.S..GF	KC725M	.S..HF	KC725M
M3	.E..LF	KCPK30	.S..GF	KC725M	.S..HF	KCPK30
K1–K2	–	–	.S..HF	KCPK30	–	–
K3	–	–	.S..HF	KCPK30	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.E..LF	KC725M	.S..GF	KC725M	.S..HF	KC725M
S3	.E..LF	KC725M	.S..GF	KC725M	.S..HF	KC725M
S4	.E..LF	KC725M	.S..GF	KC725M	.S..HF	KC725M
H1	–	–	–	–	–	–

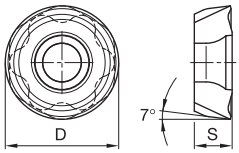
- -ELF is the first choice for lower cutting forces to avoid built-up edge.
- -SGF geometry for general purpose in roughing applications.
- -SHF is the first choice for heavy-duty applications.

● first choice
○ alternate choice

P			○	●	●	●		○
M			●	●	○	●	○	●
K			○		○			
N		●						
S			●	●		○	●	●
H								



RCGT-LF
RCGT-HF
RCGT-GF



RCGT-LF
RCGT-HF
RCGT-GF

RCGT-LF/LFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT64ELFJ	.750	.250	.002	6	–	–	–	–	–	●	–
RCGT64ELF	.750	.250	.002	6	–	–	●	●	–	–	●

RCGT-HF/-HFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT64SHFJ	.750	.250	.010	6	–	–	–	–	●	–	–
RCGT64SHF	.750	.250	.010	6	–	–	●	●	–	–	●

RCGT-GF

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT64SGFJ	.750	.250	.004	6	–	–	–	–	●	–	–
RCGT64SGF	.750	.250	.004	6	–	●	●	–	–	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .375 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.004	**.007**	.013	.003	**.005**	.009	.002	**.004**	.008	.002	**.004**	.008	.002	**.004**	.008	.E..LF
.S..GF	.007	**.017**	.028	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.004	**.010**	.016	.S..GF
.S..HF	.007	**.017**	.028	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.004	**.010**	.016	.S..HF

At .188 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.004	**.008**	.015	.003	**.006**	.011	.003	**.005**	.009	.003	**.005**	.009	.002	**.005**	.009	.E..LF
.S..GF	.008	**.020**	.032	.006	**.015**	.023	.005	**.013**	.020	.005	**.012**	.019	.005	**.012**	.018	.S..GF
.S..HF	.008	**.020**	.032	.006	**.015**	.023	.005	**.013**	.020	.005	**.012**	.019	.005	**.012**	.018	.S..HF

At .094 Axial Depth of Cut (ap)

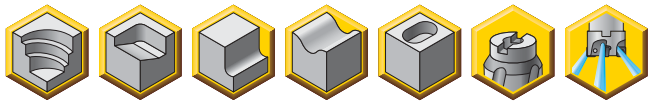
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.005	**.010**	.019	.004	**.008**	.014	.004	**.007**	.012	.003	**.006**	.012	.003	**.006**	.011	.E..LF
.S..GF	.010	**.026**	.042	.008	**.019**	.031	.007	**.017**	.027	.006	**.015**	.025	.006	**.015**	.024	.S..GF
.S..HF	.010	**.026**	.042	.008	**.019**	.031	.007	**.017**	.027	.006	**.015**	.025	.006	**.015**	.024	.S..HF

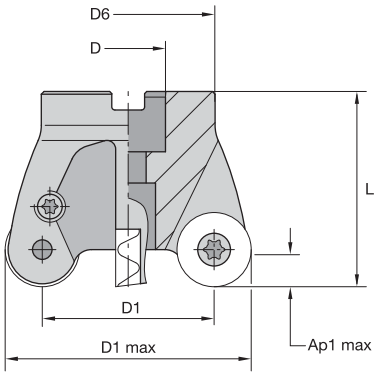
At .047 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.007	**.014**	.027	.005	**.011**	.020	.005	**.009**	.017	.004	**.009**	.016	.004	**.008**	.015	.E..LF
.S..GF	.014	**.036**	.059	.010	**.026**	.042	.009	**.023**	.036	.008	**.021**	.034	.008	**.021**	.033	.S..GF
.S..HF	.014	**.036**	.059	.010	**.026**	.042	.009	**.023**	.036	.008	**.021**	.034	.008	**.021**	.033	.S..HF

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Engineered for roughing with large depths of cut through positive geometry inserts.
- Anti-rotation feature with six indexable positions.
- Excellent for long overhangs.
- High coolant pressure capabilities.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
2610689	BMD300R8603S075L200	3.000	2.000	.750	1.750	2.000	.500	3	.9°	15500	RCGT86___	1.22
2610691	BMD400R8605S125L250	4.000	3.000	1.250	2.875	2.500	.500	5	.8°	12000	RCGT86___	4.01
2610697	BMD500R8606S150L250	5.000	4.000	1.500	3.810	2.500	.500	6	.8°	9000	RCGT86___	6.62
2610694	BMD600R8607S150L250	6.000	5.000	1.500	3.810	2.500	.500	7	.8°	8800	RCGT86___	8.63
2610696	BMD800R8608S250L250	8.000	7.000	2.500	5.000	2.500	.500	8	.7°	8500	RCGT86___	11.81
5971567	BMD800R8608S250L250HP	8.000	7.000	2.500	6.000	2.500	.500	8	.7°	8500	RCGT86___	14.00

NOTE: For high pressure coolant applications (>30 bar/>435 PSI) with cutter diameter 8", use items marked with "HP" in the catalog number. They are available as per request. Please ask your local sales contact for further information.

Spare Parts



order number	D1 max	insert screw	in. lbs.	Torx wrench	anti-rotation screw	coolant lock screw assembly	coolant cap assembly	socket-head cap screw with coolant groove	high pressure coolant cap assembly	wrench adapter
2610689	3.000	MS1162	45	TT25	S2160	–	–	S445CG	–	–
2610691	4.000	MS1162	45	TT25	S2160	S2164C	–	–	–	–
2610697	5.000	MS1162	45	TT25	S2160	S2163C	–	–	–	–
2610694	6.000	MS1162	45	TT25	S2160	S2163C	–	–	–	–
2610696	8.000	MS1162	45	TT25	S2160	–	MCC080001	–	–	–
5971567	8.000	MS1162	45	TT25	S2160	–	–	–	MCC0800HP	SDSW66

NOTE: For coolant shower plate assembly use only low pressure coolant.
Use high pressure coolant cap assembly only in combination with high pressure cutters.
Wrench adapter is not included and needs to be purchased separately.

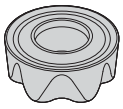
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
P3–P4	.S..GF	KC522M	**.S..GF**	**KC725M**	.S..HF	KCPK30
P5–P6	.S..GF	KC522M	**.S..HF**	**KCPK30**	.S..HF	KCPK30
M1–M2	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
M3	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KCPK30
K1–K2	–	–	**.S..HF**	**KCPK30**	–	–
K3	–	–	**.S..HF**	**KCPK30**	–	–
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
S3	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
S4	.E..LF	KC725M	**.S..GF**	**KC725M**	.S..HF	KC725M
H1	–	–	**–**	**–**	–	–

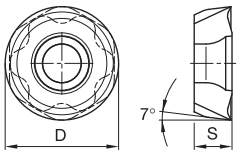
Indexable Inserts

- -ELF is the first choice for lower cutting forces to avoid built-up edge.
- -SGF geometry for general purpose in roughing applications.
- -SHF is the first choice for heavy-duty applications.

● first choice
○ alternate choice



RCGT-LF
RCGT-GF
RCGT-HF



RCGT-LF
RCGT-GF
RCGT-HF

RCGT-LF/-LFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
P						○	●	●	●		○
M						●	●	○	●	○	●
K						○		○			
N					●						
S						●	●		○	●	●
H											
RCGT86ELF	1.000	.375	.002	6	–	–	●	●	–	–	●

RCGT-GF

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT86SGFJ	1.000	.375	.004	6	–	–	–	–	●	–	–
RCGT86SGF	1.000	.375	.004	6	–	●	●	–	–	–	–

RCGT-HF/-HFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCPK30	KCPM40	KCSM30	KCSM40
RCGT86SHFJ	1.000	.375	.010	6	–	–	–	–	●	–	–
RCGT86SHF	1.000	.375	.010	6	–	–	●	●	–	–	●

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .500 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.004	**.007**	.013	.003	**.005**	.009	.002	**.004**	.008	.002	**.004**	.008	.002	**.004**	.008	.E..LF
.S..GF	.007	**.017**	.028	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.004	**.010**	.016	.S..GF
.S..HF	.007	**.017**	.028	.005	**.013**	.020	.004	**.011**	.018	.004	**.010**	.016	.004	**.010**	.016	.S..HF

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.004	**.008**	.015	.003	**.006**	.011	.003	**.005**	.009	.003	**.005**	.009	.002	**.005**	.009	.E..LF
.S..GF	.008	**.020**	.032	.006	**.015**	.023	.005	**.013**	.020	.005	**.012**	.019	.005	**.012**	.018	.S..GF
.S..HF	.008	**.020**	.032	.006	**.015**	.023	.005	**.013**	.020	.005	**.012**	.019	.005	**.012**	.018	.S..HF

At .125 Axial Depth of Cut (ap)

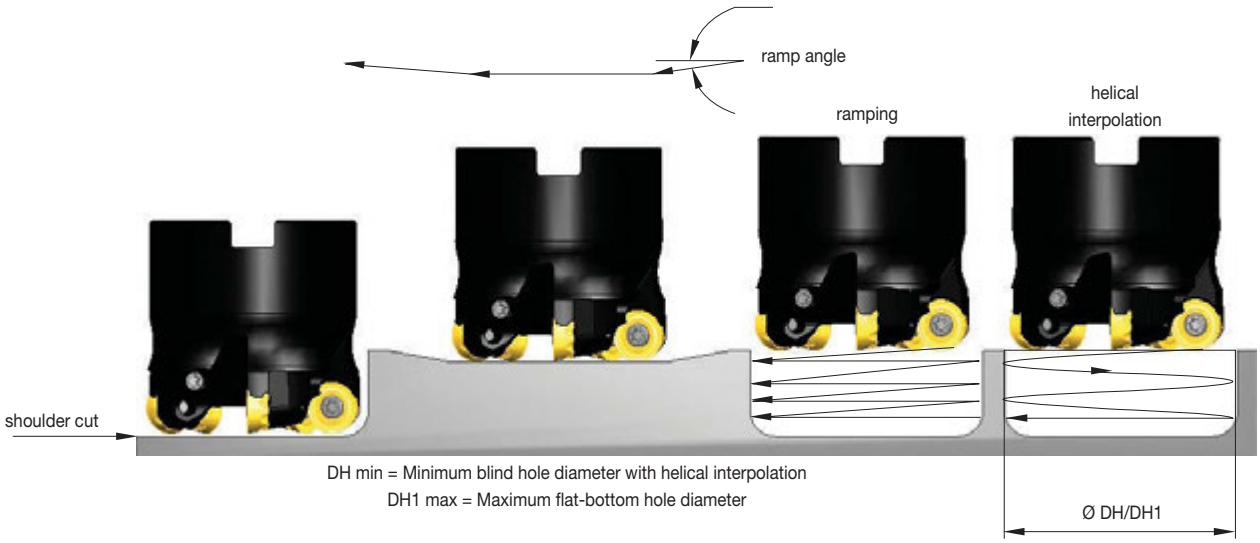
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.005	**.010**	.019	.004	**.008**	.014	.004	**.007**	.012	.003	**.006**	.012	.003	**.006**	.011	.E..LF
.S..GF	.010	**.026**	.042	.008	**.019**	.031	.007	**.017**	.027	.006	**.015**	.025	.006	**.015**	.024	.S..GF
.S..HF	.010	**.026**	.042	.008	**.019**	.031	.007	**.017**	.027	.006	**.015**	.025	.006	**.015**	.024	.S..HF

At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LF	.007	**.014**	.027	.005	**.011**	.020	.005	**.009**	.017	.004	**.009**	.016	.004	**.008**	.015	.E..LF
.S..GF	.014	**.036**	.059	.010	**.026**	.042	.009	**.023**	.036	.008	**.021**	.034	.008	**.021**	.033	.S..GF
.S..HF	.014	**.036**	.059	.010	**.026**	.042	.009	**.023**	.036	.008	**.021**	.034	.008	**.021**	.033	.S..HF

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Maximum Linear Ramping and Helical Interpolation from Solid



catalog number	Maximum Ramp Angle (ra) when hx = .01" and ae > ae1	Maximum Ramp Depth (ap) per pass when ae > ae1	Maximum Ramp Depth (ap) per pass when hx = .01" and ae < ae1	ae1	Maximum Plunge Depth (ap) when hx = .01" and ae > ae2	ae2	min hole diameter (DH min)	max flat-bottom hole diameter (DH1 max)	Maximum Hole Diameter (No Flat Bottom)
KSRM125R4303C125L600	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302C125L600	5.95°	.061	.250	.413	.250	.500	1.674	2.001	2.500
KSRM125R4303C125L1000	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302C125L1000	5.95°	.061	.250	.413	.250	.500	1.674	2.001	2.500
KSRM150R4304C125L600	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303C125L600	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM150R4304C125L1000	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303C125L1000	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM125R4303M16L150	5.30°	.055	.250	.406	.250	.500	1.688	2.001	2.500
KSRM125R4302M16L150	6.43°	.065	.250	.418	.250	.500	1.665	2.001	2.500
KSRM150R4304M16L150	4.74°	.069	.250	.421	.250	.500	2.157	2.502	3.000
KSRM150R4303M16L150	5.31°	.077	.250	.429	.250	.500	2.142	2.502	3.000
KSRM200R4305S075L197	11.43°	.250	.250	.499	.250	.500	3.001	3.501	4.000
KSRM200R4303S075L197	11.45°	.250	.250	.499	.250	.500	3.001	3.501	4.000
KSRM250R4306S075L197	8.16°	.250	.250	.500	.250	.500	4.001	4.500	5.000
KSRM250R4304S075L197	8.16°	.250	.250	.500	.250	.500	4.001	4.500	5.000
KSRM300R4307S100L197	6.35°	.250	.250	.500	.250	.500	5.001	5.500	6.000
KSRM300R4305S100L197	6.35°	.250	.250	.500	.250	.500	5.001	5.500	6.000

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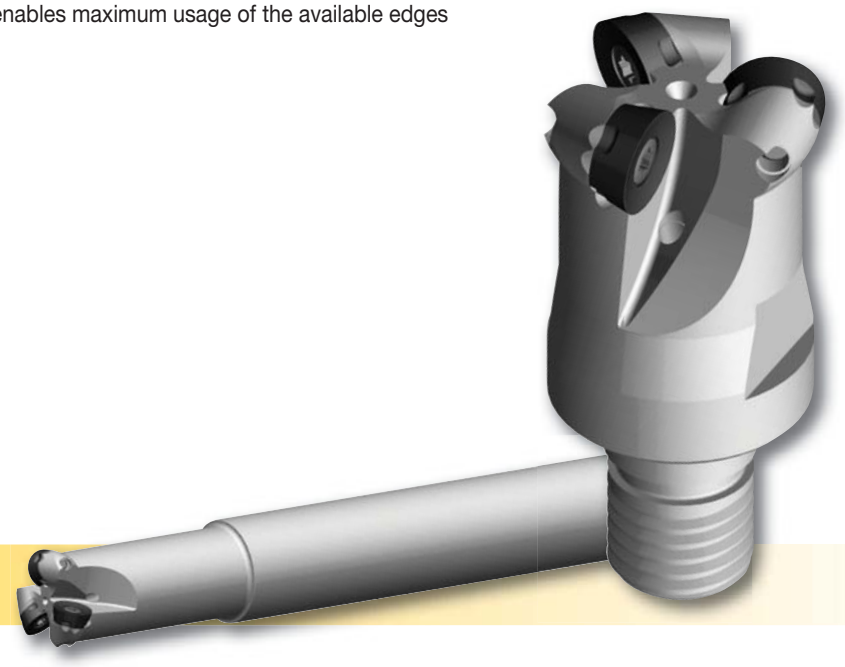
7713VR Series

Round Insert Milling Cutter with Indexation

The 7713VR is our newest round insert cutter series. Designed with a new silver-satin surface treatment that reduces body degradation during high-performance applications and enhances body tool life. This cutter series has an anti-rotation design that ensures a precise number of indexes per insert. This enables maximum usage of the available edges for roughing applications.



Features and Benefits

This unique patented pocket system prevents the inserts from rotating in the pocket during heavy-feed machining and unstable conditions. The 7713VR cutter is excellent for roughing and semi-finishing of all materials, especially stainless steel and high-temperature alloys, as well as for steel, tool steel, and aluminum alloys.

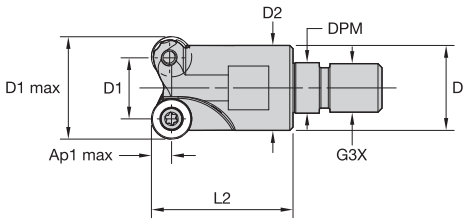


7713VR10:
Maximum ap = .197"
Diameter Range = 1–2.50"

7713VR12:
Maximum ap = .236"
Diameter Range = 1–3"

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Screw-On End Mills

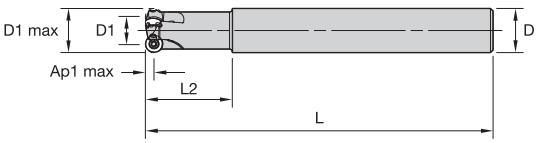
order number	catalog number	D1 max	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5673043	A7713VR10SA1.25Z4R1.7	1.250	.857	1.142	1.211	1.693	M16	.669	.197	4

Spare Parts

D1 max	insert screw	in. lbs.	Torx driver
1.250	D4008T	27	TB15

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Cylindrical End Mills

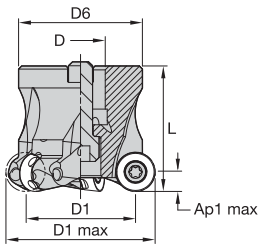
order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z
5672803	C7713VR10CA1.00Z3R2.0	1.000	.607	1.000	7.874	1.970	.197	3
5672804	C7713VR10CA1.25Z4R2.7	1.250	.856	1.250	9.842	2.756	.197	4

Spare Parts

D1 max	insert screw	in. lbs.	Torx driver
1.000	D4007T	27	TB15
1.250	D4008T	27	TB15

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z
5673597	**C7713VR10-A1.50Z05R**	1.500	1.107	.500	1.244	1.260	.197	5
5672805	**C7713VR10-A2.00Z7R**	2.000	1.606	.750	1.638	1.575	.197	7
5673042	**C7713VR10-A2.50Z8R**	2.500	2.107	.750	1.835	1.570	.197	8

Spare Parts



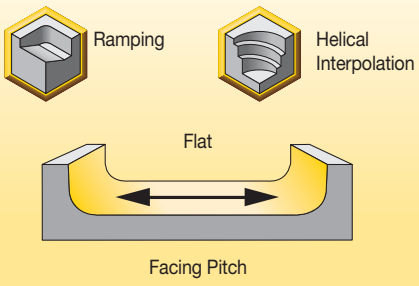



D1 max	insert screw	in. lbs.	Torx driver	socket-head cap screw
1.500	**D4008T**	27	**TB15**	**#1/4-28X3/4SHCSA**
2.000	**D4008T**	27	**TB15**	**#3/8-24X1SHCSA**
2.500	**D4008T**	27	**TB15**	**#3/8-24X1SHCSA**

Technical Information

Technical Information (in)

order number	catalog number	dimension					max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/linear	
5672803	**C7713VR10CA1.00Z3R2.0**	0.607	11.70	1.291	1.921	0.130	64,500
5672804	**C7713VR10CA1.25Z4R2.7**	0.857	5.70	1.791	2.421	0.130	53,500
5673597	**C7713VR10-A1.50Z05R**	1.107	7.75	2.291	2.921	0.130	47,000
5672805	**C7713VR10-A2.00Z7R**	1.607	5.10	3.291	3.921	0.130	39,500
5673042	**C7713VR10-A2.50Z8R**	2.107	3.70	4.291	4.921	0.130	34,000
5673043	**A7713VR10SA1.25Z4R1.7**	0.857	5.70	1.791	2.421	0.130	53,500



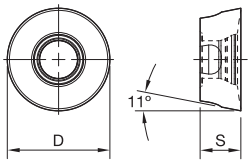
Insert Selection Guide • IC 10

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	422-X8	SP6519	**432-X5**	**SC6525**	422-X4	SP6519
P3–P4	422-X8	SP6519	**432-X5**	**SP6519**	422-X4	SP6519
P5–P6	422-X8	SP6519	**T-X4**	**SP6519**	T-X4	X500
M1–M2	422-X8	SP6519	**432-X5**	**SC6525**	422-X4	SP6519
M3	422-X8	X700	**432-X5**	**SP6519**	422-X4	X500
K1–K2	422-X8	SP6519	**432-X5**	**SC6525**	T-X4	SP6519
K3	422-X8	SP6519	**432-X5**	**SC6525**	T-X4	SP6519
N1–N2	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
N3	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
S1–S2	422-X8	X700	**432-X5**	**X500**	422-X4	X500
S3	422-X8	X700	**432-X5**	**X500**	422-X4	X500
S4	422-X8	X700	**432-X5**	**X500**	422-X4	X500
H1	–	–	–	–	–	–

- Four indexation positions:
  - — Ap max: .197" (5mm)
  - — Ap recommended: ≤.098" (2,5mm)



RPEX10-701 RPHT10-421 RPHT10-422 RPHT10-422-X8



● first choice
○ alternate choice

P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			

RPEX10-701-X4 • Precision Ground • 4 Indexes • First Choice for Roughing Non-Ferrous Alloys and Finishing High-Temp Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPEX10T3M0F701X4	.394	.156	.001	4	●	–	–	–	●	–	–	–

RPHT10-421-X4 • Precision Ground • 4 Indexes

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E421X4	.394	.156	.002	4	–	–	–	–	–	–	●	●

RPHT10-422-X4 • Precision Ground • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E422X4	.394	.156	.001	4	–	–	–	–	–	●	●	●

RPHT10-422-X8 • Precision Ground • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

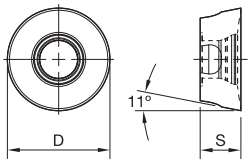
catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0E422X8	.394	.156	.001	8	–	–	–	–	–	●	●	●


RPHT10-TX4


RPMT10-41-X4


RPMW10-T-X4


RPPT10-432-X5



● first choice
○ alternate choice

		GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
P			●	●	●	○	○	○	
M			●			●	●	●	●
K	○		●	●	●	○			
N	●								
S		○				●	●	●	●
H				○		○			

RPHT10-TX4 • Precision Ground • 4 Indexes • General Purpose for Roughing

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT10T3M0TX4	.394	.156	.003	4	–	–	–	–	–	●	●	–

RPMT10-41-X4 • 4 Indexes • For Finishing Alloy Steel and Iron

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMT10T3M0E41X4	.394	.156	.002	4	–	–	●	–	–	●	●	–

RPMW10-T-X4 • 4 Indexes • General Purpose for Roughing

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMW10T3M0TX4	.394	.156	.005	4	–	–	–	–	–	–	●	–

RPPT10-432-X5 • Precision Pressed • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT10T3M0E432X5	.394	.156	.001	5	–	–	–	●	–	●	●	●

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .197 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701–X4	.005	**.009**	.013	.003	**.007**	.009	.002	**.005**	.007	.002	**.004**	.006	.002	**.004**	.006	701–X4
422–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	422–X8
432–X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432–X5
422–X4	.005	**.012**	.023	.003	**.008**	.016	.002	**.006**	.012	.002	**.006**	.010	.002	**.005**	.010	422–X4
T–X4	.009	**.015**	.025	.007	**.011**	.018	.005	**.008**	.013	.004	**.007**	.011	.004	**.007**	.011	T–X4

At .098 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701–X4	.005	**.011**	.015	.004	**.008**	.011	.003	**.006**	.008	.002	**.005**	.007	.002	**.005**	.006	701–X4
422–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	422–X8
432–X5	.005	**.014**	.026	.004	**.010**	.019	.003	**.007**	.014	.002	**.006**	.012	.002	**.006**	.011	432–X5
422–X4	.005	**.014**	.026	.004	**.010**	.019	.003	**.007**	.014	.002	**.006**	.012	.002	**.006**	.011	422–X4
T–X4	.011	**.018**	.029	.008	**.013**	.020	.006	**.010**	.015	.005	**.008**	.013	.005	**.008**	.012	T–X4

At .079 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701–X4	.006	**.012**	.016	.004	**.008**	.012	.003	**.006**	.009	.003	**.005**	.008	.002	**.005**	.007	701–X4
422–X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	422–X8
432–X5	.006	**.015**	.029	.004	**.011**	.020	.003	**.008**	.015	.003	**.007**	.013	.002	**.006**	.012	432–X5
422–X4	.006	**.015**	.029	.004	**.011**	.020	.003	**.008**	.015	.003	**.007**	.013	.002	**.006**	.012	422–X4
T–X4	.011	**.019**	.031	.008	**.014**	.022	.006	**.010**	.016	.005	**.009**	.014	.005	**.008**	.013	T–X4

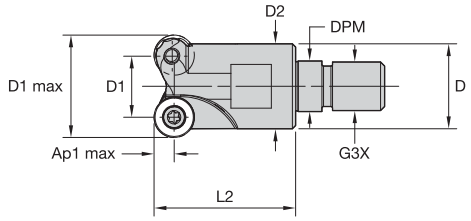
At .059 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	.006	**.013**	.018	.005	**.009**	.013	.003	**.007**	.010	.003	**.006**	.008	.003	**.006**	.008	701-X4
422-X8	.006	**.017**	.032	.005	**.012**	.023	.003	**.009**	.017	.003	**.008**	.015	.003	**.007**	.013	422-X8
432-X5	.006	**.017**	.032	.005	**.012**	.023	.003	**.009**	.017	.003	**.008**	.015	.003	**.007**	.013	432-X5
422-X4	.006	**.017**	.032	.005	**.012**	.023	.003	**.009**	.017	.003	**.008**	.015	.003	**.007**	.013	422-X4
T-X4	.013	**.022**	.035	.009	**.016**	.025	.007	**.012**	.018	.006	**.010**	.016	.006	**.009**	.015	T-X4

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







7713VR12 Modular Head Screw-On

order number	catalog number	D1 max	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5672624	**A7713VR12SA1.00Z2R1.4**	1.000	.528	.827	.967	1.378	M12	.492	.236	2
5672810	**A7713VR12SA1.25Z3R1.7**	1.250	.778	1.142	1.201	1.692	M16	.669	.236	3
5673767	**A7713VR12SA1.50Z4R1.7**	1.500	1.028	1.142	1.455	1.693	M16	.669	.236	4
5673598	**A7713VR12SA1.50Z5R1.7**	1.500	1.028	1.142	1.455	1.692	M16	.669	.236	5

Spare Parts

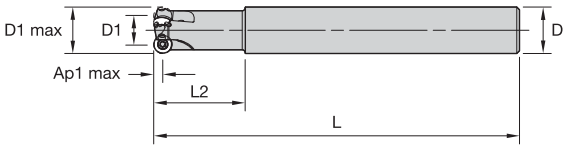




D1 max	insert screw	in. lbs.	Torx driver
1.000	**D4008T**	27	**T15**
1.250	**D4008T**	27	**T15**
1.500	**D4008T**	27	**T15**
1.500	**D4008T**	27	**TB15**

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







7713VR12 Cylindrical Shank

order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z
5672623	**C7713VR12CA1.00Z2R2.0**	1.000	.528	1.000	7.874	1.969	.236	2
5673499	**C7713VR12CA1.25Z3R2.7**	1.250	.778	1.250	9.842	2.755	.236	3

Spare Parts

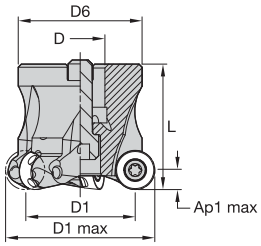




D1 max	insert screw	in. lbs.	Torx driver
1.000	**D4008T**	27	**T15**
1.250	**D4008T**	27	**T15**

- Turbine blade machining and copy/contour milling applications.
- Patented locking system prevents insert rotation during heavy machining.
- Positive flute design for excellent chip evacuation.







7713VR12 Shell Mill

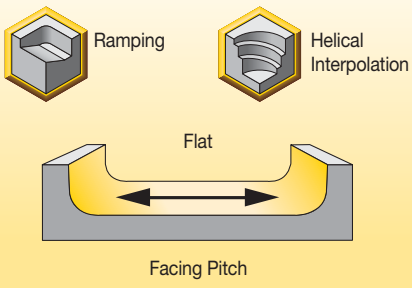
order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z
5673826	C7713VR12-A1.50Z4R	1.500	1.028	.500	1.323	1.574	.236	4
5673766	C7713VR12-A1.50Z5R	1.500	1.029	.500	1.323	1.575	.235	5
5672808	C7713VR12-A2.00Z5R	2.000	1.528	.750	1.835	1.574	.236	5
5673044	C7713VR12-A2.00Z4R	2.000	1.528	.750	1.835	1.575	.236	4
5673045	C7713VR12-A2.00Z6R	2.000	1.528	.750	1.835	1.575	.236	6
5673827	C7713VR12-A2.50Z6R	2.500	2.028	.750	2.031	1.986	.236	6
5673046	C7713VR12-A2.50Z7R	2.500	2.028	.750	2.031	1.986	.236	7
5672809	C7713VR12-A3.00Z8R	3.000	2.528	1.000	2.032	1.969	.236	8

Spare Parts

D1 max	 insert screw	 in. lbs.	 Torx driver	 socket-head cap screw
1.500	D4010T	27	T15	#1/4-28X3/4SHCSA
1.500	D4008T	27	TB15	#1/4-28X3/4SHCSA
2.000	D4010T	27	T15	#3/8-24X1SHCSA
2.500	D4010T	27	T15	#3/8-24X1SHCSA
3.000	D4010T	27	T15	#1/2-20X1-1/4SHCSA

Technical Information (in)

order number	catalog number	dimension					max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/linear	
5672623	C7713VR12CA1.00Z2R2.0	0.528	9.50	1.134	1.921	0.160	49,000
5673499	C7713VR12CA1.25Z3R2.7	0.778	12.40	1.634	2.421	0.160	40,500
5673766	C7713VR12-A1.50Z5R	1.028	8.60	2.134	2.921	0.160	35,000
5673044	C7713VR12-A2.00Z4R	1.528	5.50	3.134	3.921	0.160	28,500
5672808	C7713VR12-A2.00Z5R	1.528	5.50	3.134	3.921	0.160	28,500
5673045	C7713VR12-A2.00Z6R	1.528	5.50	3.134	3.921	0.160	28,500
5673827	C7713VR12-A2.50Z6R	2.028	3.90	4.134	4.921	0.160	25,000
5673046	C7713VR12-A2.50Z7R	2.028	3.90	4.134	4.921	0.160	25,000
5672809	C7713VR12-A3.00Z8R	2.528	2.95	5.134	5.921	0.160	22,500
5672624	A7713VR12SA1.00Z2R1.4	0.528	9.50	1.134	1.921	0.160	49,000
5672810	A7713VR12SA1.25Z3R1.7	0.778	12.40	1.634	2.421	0.160	40,500
5673598	A7713VR12SA1.50Z5R1.7	1.028	8.60	2.134	2.921	0.160	35,000



Insert Selection Guide • IC 12

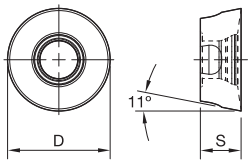
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄———	———►	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	442-X8	SC6525	**432-X5**	**SC6525**	GD-X5	KCM40
P3–P4	432-X8	SP6519	**432-X5**	**SP6519**	GD-X5	KCM40
P5–P6	432-X8	SP6519	**T-X4**	**SP6519**	T-X4	X500
M1–M2	442-X8	SC6525	**432-X5**	**SC6525**	GD-X5	KCM40
M3	432-X8	SP6519	**GD-X5**	**KCM40**	442-X4	X500
K1–K2	T-X4	MP91M	**T-X4**	**MP91M**	T-X4	MP91M
K3	T-X4	MP91M	**T-X4**	**MP91M**	T-X4	MP91M
N1–N2	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
N3	701-X4	GH1	**701-X4**	**GH1**	701-X4	GH1
S1–S2	442-X5	SP6519	**GD-X5**	**KCM40**	442-X4	X500
S3	442-X5	SP6519	**GD-X5**	**KCM40**	442-X4	X500
S4	442-X5	SP6519	**442-X5**	**X500**	442-X4	X500
H1	–	–	**T-X4**	**MP91M**	–	–

Indexable Inserts IC 12

- Four indexation positions:
  - — Ap max: .236" (6mm)
  - — Ap recommended: ≤.137" (3,5mm)
- Five indexation positions:
  - — Ap max: .157" (4mm)
  - — Ap recommended: ≤.098" (2,5mm)
- Eight indexation positions:
  - — Ap max: .118" (3mm)
  - — Ap recommended: ≤.059" (1,5mm)

● first choice
○ alternate choice


RPEX12-701-X4 RPHT12-421-X4 RPMT12-41-X4 RPHT12-442-X5



RPEX12-701-X4 • Precision Ground • 4 Indexes • For Roughing Non-Ferrous Alloys and Finishing High-Temp Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPEX1204M0F701X4	.472	.187	.001	4	●	–	–	–	–	–	–	–
RPEX1204M0E701X4	.472	.187	.002	4	–	–	–	–	–	–	●	–

RPHT12-421-X4 • Precision Ground • 4 Indexes

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E421X4	.472	.187	.002	4	–	–	–	–	–	–	●	–

RPMT12-41-X4 • 4 Indexes • For Finishing Alloy Steel and Iron

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMT1204M0E41X4	.472	.187	.002	4	–	–	●	–	–	●	●	–

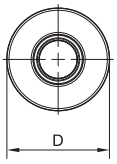
RPHT12-442-X5 • Precision Ground • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X5	.472	.187	.002	5	–	–	–	●	–	●	●	●


RPHT12-442-X8

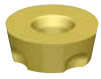

RPHT12-SGD-X5


RPHT12-SGD-X8




RPHT12-422-X4


RPHT12-T-X4


RPMW12-T-X4

● first choice
○ alternate choice

		GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			

RPHT12-442-X8 • Precision Ground • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X8	.472	.187	.002	8	–	–	–	●	–	–	–	–

RPHT12-SGD-X5 • Precision Ground • 5 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0SGDX5	.472	.188	.002	5	–	●	–	–	–	–	–	–

RPHT12-SGD-X8 • Precision Ground • 8 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0SGDX8	.472	.188	.002	8	–	●	–	–	–	–	–	–

RPHT12-442-X4 • Precision Ground • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0E442X4	.472	.188	.002	4	–	–	–	–	–	●	●	●

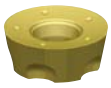
RPHT12-T-X4 • Precision Ground • 4 Indexes • General Purpose for Roughing

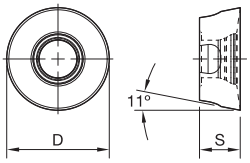
catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPHT1204M0TX4	.472	.187	.004	4	–	–	–	–	–	●	●	●

RPMW12-T-X4 • 4 Indexes • General Purpose for Roughing

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPMW1204M0TX4	.472	.187	.005	4	–	–	●	–	–	●	●	–


RPPT12-
432-X4


RPPT12-
432-X5




RPPT12-
432-X8


RPPT12-
SGD-X5

● first choice
○ alternate choice

P			●	●	●	○	○	○	
M			●			●	●	●	●
K		○		●	●	●	○		
N		●							
S			○			●	●	●	●
H				○		○			

RPPT12-432-X4 • Precision Pressed • 4 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X4	.472	.188	.002	4	–	–	–	●	–	–	●	●

RPPT12-432-X5 • Precision Pressed • 5 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X5	.472	.188	.002	5	–	–	–	●	–	●	●	●

RPPT12-432-X8 • Precision Pressed • 8 Indexes • For Machining Stainless Steel and Heat-Resistant Alloys

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0E432X8	.472	.188	.002	8	–	–	–	–	–	●	●	●

RPPT12-SGD-X4, X5, X8 • Precision Pressed • 4, 5, or 8 Indexes • For Stainless Steel and Heat-Resistant Alloys in Tougher Conditions

catalog number	D	S	hm	cutting edges	GH1	KCM40	MP91M	SC6525	SP4019	SP6519	X500	X700
RPPT1204M0SGDX4	.472	.187	.002	4	–	●	–	–	–	–	–	–
RPPT1204M0SGDX5	.472	.188	.002	5	–	●	–	–	–	–	–	–
RPPT1204M0SGDX8	.472	.188	.002	8	–	●	–	–	–	–	–	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .236 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	.005	**.008**	.011	.003	**.006**	.008	.002	**.004**	.006	.002	**.004**	.005	.002	**.004**	.005	701-X4
432-X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432-X5
432-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432-X8
442-X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442-X5
442-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442-X8
442-X4	.007	**.021**	.037	.005	**.015**	.027	.004	**.011**	.020	.003	**.010**	.017	.003	**.009**	.016	442-X4
GD-X5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD-X5
GD-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD-X8
T-X4	.009	**.023**	.037	.007	**.017**	.027	.005	**.012**	.020	.004	**.011**	.017	.004	**.010**	.016	T-X4

At .118 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	.005	**.009**	.013	.004	**.007**	.009	.003	**.005**	.007	.002	**.004**	.006	.002	**.004**	.005	701-X4
432-X5	.006	**.019**	.037	.005	**.014**	.027	.003	**.010**	.020	.003	**.009**	.017	.003	**.008**	.016	432-X5
432-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432-X8
442-X5	.006	**.019**	.037	.005	**.014**	.027	.003	**.010**	.020	.003	**.009**	.017	.003	**.008**	.016	442-X5
442-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442-X8
442-X4	.008	**.024**	.043	.006	**.017**	.031	.004	**.013**	.023	.004	**.011**	.020	.003	**.010**	.018	442-X4
GD-X5	.006	**.022**	.040	.005	**.016**	.028	.003	**.012**	.021	.003	**.010**	.018	.003	**.009**	.017	GD-X5
GD-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD-X8
T-X4	.011	**.027**	.043	.008	**.019**	.031	.006	**.014**	.023	.005	**.012**	.020	.005	**.011**	.018	T-X4

At .098 Axial Depth of Cut (ap)

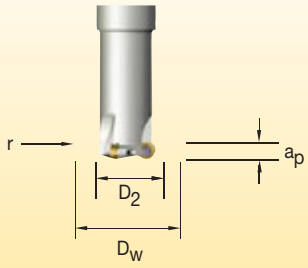
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	.006	**.010**	.014	.004	**.007**	.010	.003	**.005**	.007	.003	**.005**	.006	.002	**.004**	.006	701-X4
432-X5	.007	**.021**	.040	.005	**.015**	.028	.004	**.011**	.021	.003	**.010**	.018	.003	**.009**	.017	432-X5
432-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	432-X8
442-X5	.007	**.021**	.040	.005	**.015**	.028	.004	**.011**	.021	.003	**.010**	.018	.003	**.009**	.017	442-X5
442-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	442-X8
442-X4	.009	**.026**	.046	.006	**.019**	.033	.005	**.014**	.024	.004	**.012**	.021	.004	**.011**	.019	442-X4
GD-X5	.007	**.023**	.042	.005	**.017**	.030	.004	**.012**	.022	.003	**.011**	.019	.003	**.010**	.018	GD-X5
GD-X8	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	GD-X8
T-X4	.011	**.029**	.046	.008	**.020**	.033	.006	**.015**	.024	.005	**.013**	.021	.005	**.012**	.019	T-X4

At .059 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
701-X4	.007	**.012**	.017	.005	**.009**	.012	.004	**.007**	.009	.003	**.006**	.008	.003	**.005**	.007	701-X4
432-X5	.008	**.026**	.049	.006	**.018**	.035	.005	**.014**	.026	.004	**.012**	.022	.004	**.011**	.021	432-X5
432-X8	.008	**.026**	.049	.006	**.018**	.035	.005	**.014**	.026	.004	**.012**	.022	.004	**.011**	.021	432-X8
442-X5	.008	**.026**	.049	.006	**.018**	.035	.005	**.014**	.026	.004	**.012**	.022	.004	**.011**	.021	442-X5
442-X8	.008	**.026**	.049	.006	**.018**	.035	.005	**.014**	.026	.004	**.012**	.022	.004	**.011**	.021	442-X8
442-X4	.011	**.032**	.058	.008	**.023**	.041	.006	**.017**	.030	.005	**.015**	.026	.005	**.014**	.024	442-X4
GD-X5	.008	**.028**	.053	.006	**.020**	.037	.005	**.015**	.027	.004	**.013**	.024	.004	**.012**	.022	GD-X5
GD-X8	.008	**.028**	.053	.006	**.020**	.037	.005	**.015**	.027	.004	**.013**	.024	.004	**.012**	.022	GD-X8
T-X4	.014	**.035**	.058	.010	**.025**	.041	.007	**.019**	.030	.006	**.016**	.026	.006	**.015**	.024	T-X4

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

7713VR Technical Information



Working Diameter:

Formula to evaluate the correct working diameter based on axial depth of cut (a_p).

$$D_W = D_2 + 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:

D_W = Working diameter
D_2 = Diameter of cutter insert center to center
r = Insert radius
a_p = Axial depth of cut

where:

f_z = Feed per tooth
hm = Average chip thickness
r = Insert radius
a_e = Radial depth of cut
a_p = Axial depth of cut

Formula to find programmed feed rate based on radial engagement and axial depth of cut.

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Formula to calculate the average chip thickness h_m in relation with radial engagement and depth of cut.

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

Simplified formulas to evaluate h_m and f_z based on radial engagement or depth of cut.

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

h_m = Average chip thickness
a_p = Depth of cut
f_z = Feed per tooth
d = Insert diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Calculation of the average chip thickness in relation with the a_e (Radial Engagement) if a_e is less than 50% of diameter

Formula: Program Feed Rate (f_z)

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

h_m = Average chip thickness
a_e = Radial engagement
f_z = Feed per tooth
d = Cutter diameter

Formula: Average Chip Thickness (h_m)

$$h_m = f_z \times \sqrt{\frac{d}{a_p}}$$



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Program, you will receive:

- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

Program is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

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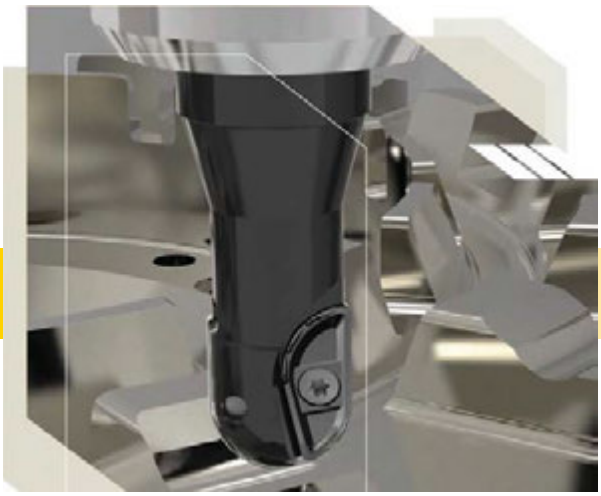
5505VX Series



Copy/3D



Contour Milling

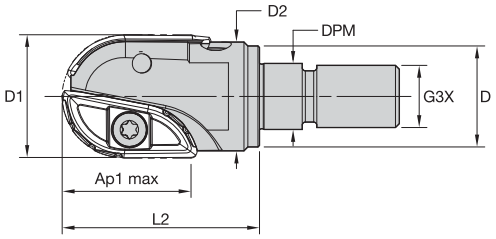


Ball Nose Contour Milling Cutter

- The 5505VX ball nose cutters have a reinforced design feature, which delivers a high volume of chip removal.
- The chipbreaker geometry provides excellent chip control and evacuation during machining and prevents edge build-up.
- 5505VX roughing ball nose cutters are ideal for roughing and semi-finishing profiles and complex contours.
- One grade and one geometry are qualified to machine steel, alloyed steel, stainless steel, high-temperature alloys, and cast iron.

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimized inventory.







Screw-On End Mills

order number	catalog number	D1	D	D2	L2	G3X	DPM	Ap1 max	Z
5673710	**A5505VX05SA.625R1.00**	.625	.512	.585	1.000	M8	.335	.630	2
5673603	**A5505VX06SA.750R1.377**	.750	.709	.705	1.378	M10	.413	.750	2
5673624	**A5505VX08SA1.00R1.575**	1.000	.827	.907	1.575	M12	.492	.992	2
5672841	**A5505VX10SA1.25R1.968**	1.250	1.141	1.147	1.969	M16	.669	1.250	2

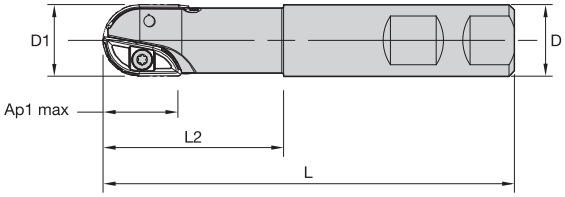
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver	 Torx driver
.625	**FP3006T**	12.4	**TP8**	**–**
.750	**FP3007T**	12.4	**TP8**	**–**
1.000	**D4010T**	12.9	**–**	**T15**
1.250	**D5013T**	54.0	**–**	**T20**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimized inventory.







Weldon® End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z
5673595	**C5505VX08WA1.00R2.37**	1.000	1.000	4.650	2.370	.992	2
5672838	**C5505VX10WA1.25R3.00**	1.250	1.250	5.280	3.000	1.250	2
5673709	**C5505VX10WA1.25R4.00**	1.250	1.250	6.280	4.000	1.276	2
5672839	**C5505VX12WA1.50R4.00**	1.500	1.500	6.680	3.990	1.500	2
5673110	**C5505VX12WA1.50R6.00**	1.500	1.500	8.684	5.997	1.511	2
5672840	**C5505VX16WA2.00R4.00**	2.000	1.500	6.687	4.000	2.019	2
5673111	**C5505VX16WA2.00R6.00**	2.000	2.000	9.328	6.079	2.000	2

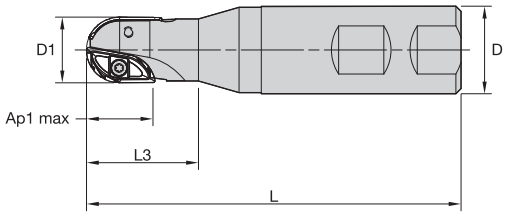
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 in. lbs.	 Torx driver
1.000	**D4010T**	12.9	**T15**
1.250	**D5013T**	54.0	**T20**
1.500	**D6014T**	62.0	**T20**
2.000	**D6018S**	146.0	**—**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimized inventory.







Weldon® End Mills Flat

order number	catalog number	D1	D	L	L3	Ap1 max	Z
5673296	**C5505VX06WA.750R2.00**	.750	1.000	4.280	1.260	.760	2

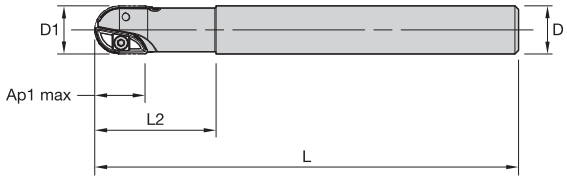
NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver
.750	**F3006T**	16.0	**TP8**

- Rough to semi-finish profiling and contour milling.
- Helical insert design for increased speeds and feeds.
- One insert geometry covers most materials for optimized inventory.







Cylindrical End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z
5673633	**C5505VX05CA.62R1.6**	.625	.625	5.500	1.575	.630	2
5672846	**C5505VX05CA.75/.62R1**	.625	.750	7.000	1.575	.654	2
5672847	**C5505VX06CA.75R1.7**	.750	.750	5.000	2.000	.654	2
5673786	**C5505VX06CA1/.75R1.5**	.750	1.000	8.000	1.969	.760	2
5672848	**C5505VX08CA1.00R2.2**	1.000	1.000	10.000	2.165	1.000	2
5673142	**C5505VX10CA1.25R2.2**	1.250	1.250	10.000	2.559	1.276	2

NOTE: **Products available by April 1st, 2018.**

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver
.625	**FP3006T**	12.4	**TP8**
.750	**FP3007T**	16.0	**TP8**
1.000	**D4010T**	27.4	**TP15**
1.250	**D5013T**	53.1	**–**

Technical Information

Technical Information (in)

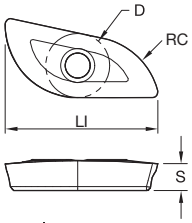
order number	catalog number	dimension					max RPM
		facing pitch	ramping angle	helical hole min–max		ap max helical/linear	
5673296	**C5505VX06WA.750R2.00**	–	85	–	–	–	37,250
5673595	**C5505VX08WA1.00R2.37**	–	85	–	–	–	30,250
5672658	**C5505VX08WA1.00R3.55 032344**	–	85	–	–	–	30,250
5672838	**C5505VX10WA1.25R3.00**	–	85	–	–	–	23,500
5673709	**C5505VX10WA1.25R4.00**	–	85	–	–	–	23,500
5672839	**C5505VX12WA1.50R4.00**	–	85	–	–	–	19,000
5673110	**C5505VX12WA1.50R6.00**	–	85	–	–	–	19,000
5672840	**C5505VX16WA2.00R4.00**	–	85	–	–	–	16,750
5673111	**C5505VX16WA2.00R6.00**	–	85	–	–	–	16,750
5673633	**C5505VX05CA.62R1.6**	–	85	–	–	–	54,250
5672846	**C5505VX05CA.75/.62R1**	–	85	–	–	–	54,250
5672847	**C5505VX06CA.75R1.7**	–	85	–	–	–	37,250
5673786	**C5505VX06CA1/.75R1.5**	–	85	–	–	–	37,250
5672848	**C5505VX08CA1.00R2.2**	–	85	–	–	–	30,250
5673142	**C5505VX10CA1.25R2.2**	–	85	–	–	–	23,500
5673710	**A5505VX05SA.625R1.00**	–	85	–	–	–	54,250
5673603	**A5505VX06SA.750R1.377**	–	85	–	–	–	37,250
5673624	**A5505VX08SA1.00R1.575**	–	85	–	–	–	30,250
5672841	**A5505VX10SA1.25R1.968**	–	85	–	–	–	23,500


Ramping

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		◄——►		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
P3–P4	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
P5–P6	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
M1–M2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
M3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
K1–K2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
K3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
N1–N2	–	–	**–**	**–**	–	–
N3	–	–	**–**	**–**	–	–
S1–S2	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
S3	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
S4	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519
H1	R-F	SP6519	**R-F**	**SP6519**	R-F	SP6519


XPNT-F



● first choice
○ alternate choice

P	○
M	●
K	○
N	
S	●
H	

XPNT-F

catalog number	D	LI	S	RC	hm	SP6519
XPNT050522RF	.291	.685	.125	.312	.002	●
XPNT06062515RF	.336	.783	.156	.375	.002	●
XPNT080832RF	.433	1.023	.187	.500	.002	●
XPNT101043RF	.555	1.315	.249	.625	.002	●
XPNT121254RF	.669	1.575	.312	.750	.002	●
XPNT161654RF	.875	2.081	.336	1.000	.002	●

Very Important



Please do not remove this screw. The screw is glued into the body to keep the inserts in the correct position.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .315 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.008**	.014	.003	**.006**	.010	.002	**.004**	.007	.002	**.004**	.006	.002	**.004**	.006	R-F

At .157 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.009**	.016	.003	**.007**	.011	.002	**.005**	.009	.002	**.004**	.007	.002	**.004**	.007	R-F

At .079 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.012**	.021	.004	**.009**	.015	.003	**.007**	.011	.003	**.006**	.010	.002	**.005**	.009	R-F

At .039 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.017**	.028	.006	**.012**	.020	.004	**.009**	.015	.004	**.008**	.013	.003	**.007**	.012	R-F

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5505VX • 20mm • Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .394 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.010**	.016	.003	**.007**	.011	.002	**.006**	.008	.002	**.005**	.007	.002	**.004**	.007	R-F

At .197 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.012**	.018	.003	**.009**	.013	.002	**.006**	.010	.002	**.006**	.008	.002	**.005**	.008	R-F

At .098 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.016**	.024	.004	**.011**	.017	.003	**.008**	.013	.003	**.007**	.011	.002	**.007**	.010	R-F

At .049 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.021**	.032	.006	**.015**	.023	.004	**.012**	.017	.004	**.010**	.015	.003	**.009**	.014	R-F

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .492 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.011**	.019	.003	**.008**	.013	.002	**.006**	.010	.002	**.005**	.009	.002	**.005**	.008	R-F

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.013**	.021	.003	**.010**	.015	.002	**.007**	.012	.002	**.006**	.010	.002	**.006**	.009	R-F

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.017**	.028	.004	**.012**	.020	.003	**.009**	.015	.003	**.008**	.013	.002	**.007**	.012	R-F

At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.024**	.038	.005	**.017**	.028	.004	**.013**	.021	.004	**.011**	.018	.003	**.010**	.016	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .630 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.011**	.019	.003	**.008**	.013	.002	**.006**	.010	.002	**.005**	.009	.002	**.005**	.008	R-F

At .315 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.013**	.021	.003	**.010**	.015	.002	**.007**	.012	.002	**.006**	.010	.002	**.006**	.009	R-F

At .157 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.017**	.028	.004	**.013**	.020	.003	**.009**	.015	.003	**.008**	.013	.002	**.007**	.012	R-F

At .079 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.024**	.039	.006	**.017**	.028	.004	**.013**	.021	.004	**.011**	.018	.003	**.010**	.017	R-F

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .787 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.013**	.022	.003	**.009**	.016	.002	**.007**	.012	.002	**.006**	.010	.002	**.005**	.010	R-F

At .394 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.015**	.026	.003	**.010**	.019	.002	**.008**	.014	.002	**.007**	.012	.002	**.006**	.011	R-F

At .197 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.019**	.034	.004	**.014**	.024	.003	**.010**	.018	.003	**.009**	.016	.002	**.008**	.015	R-F

At .098 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.026**	.047	.006	**.019**	.033	.004	**.014**	.025	.004	**.012**	.022	.003	**.011**	.020	R-F

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

5505VX • 50mm • Recommended Starting Feeds

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .984 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.015**	.025	.003	**.011**	.018	.002	**.008**	.014	.002	**.007**	.012	.002	**.006**	.011	R-F

At .500 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.004	**.017**	.029	.003	**.012**	.021	.002	**.009**	.016	.002	**.008**	.014	.002	**.007**	.012	R-F

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.006	**.022**	.038	.004	**.016**	.027	.003	**.012**	.020	.003	**.010**	.018	.002	**.010**	.016	R-F

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40–100%			
R-F	.008	**.031**	.052	.005	**.022**	.038	.004	**.016**	.028	.004	**.014**	.024	.003	**.013**	.022	R-F

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Service and Support

Customer Application Support (CAS)

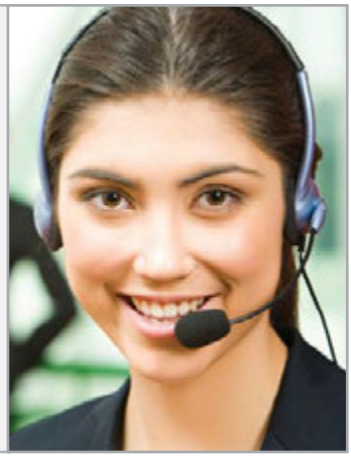
Get Fast and Reliable Answers to Your Toughest Metalcutting Problems

Our Customer Application Support (CAS) Team is the metalworking industry's leading help desk resource for tooling application solutions and problem resolution.

Easy Access to Proven Metalworking Expertise!

Kennametal Customer Application Engineers assist customers and engineering groups throughout the world with expert tool selection and application recommendations for the entire range of Kennametal tooling.

SERVICE LEVEL EXCELLENCE	Fast telephone response. Quick technical solutions. Efficient case management.
SERVICES	Operating parameters. Process optimization. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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China	Chinese	400 889 2238	k-cn.techsupport@kennametal.com
Denmark	English	808 89298	na.techsupport@kennametal.com
Finland	English	0800 919412	na.techsupport@kennametal.com
France	French	080 5540 367	eu.techsupport@kennametal.com
Germany	German	0800 0006651	eu.techsupport@kennametal.com
India	English	1 800 103 5227	in.techsupport@kennametal.com
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Italy	Italian	800 916561	eu.techsupport@kennametal.com
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Mexico	Spanish	1800 253 0758	na.techsupport@kennametal.com
Netherlands	English	0800 0201 130	eu.techsupport@kennametal.com
New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
Norway	English	800 10080	na.techsupport@kennametal.com
Poland	Polish	0080 04411887	eu.techsupport@kennametal.com
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Russia (cell phone)	Russian	+7 8005556394	eu.techsupport@kennametal.com
Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
South Africa	English	0800 981643	na.techsupport@kennametal.com
Sweden	English	020799246	na.techsupport@kennametal.com
Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
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Numbers shown only serve the originating country listed.

KDMB™ • KDMT™

Indexable Copy Insert Platform

Primary Application

Ball nose and toroidal styles for roughing and finishing operations. Engineered with the ultimate technologies and supported with a wide range of diameters and insert styles to provide exceptional performance and productivity. The new high-feed insert style provides the highest metal removal rates for roughing applications.



Features and Benefits

Longer Tool Life and Improved Geometries

- Longer tool life for finishing operations, up to 63 HRC.
- High-accuracy inserts and holders: overall runout .0004".
- Improved geometries for roughing and finishing operations.
- Smaller diameters from .25" to replace SCEM, setting a more productive machining process.

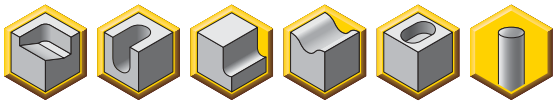
Superior Productivity

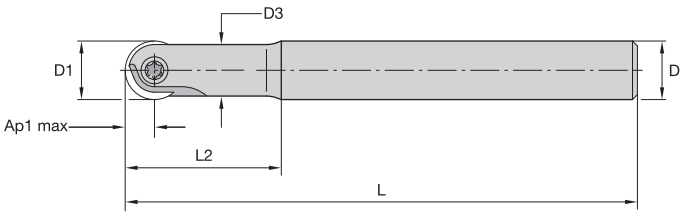
- Achieve better surface quality with the new helical geometry.
- New ultra-grain grade for outstanding tool life.
- Diameters .250" and .312" are a natural replacement for SEM tools.
- Better cost per edge.

Usability and Flexibility

- Wide diameter range enables use in a wide range of machining conditions.
- Many workpiece materials are possible — from hardened steel to aluminum.
- Large holder style offering: screw-on, cylindrical, and tapered steel and carbide holders.

- Cutting diameter ranges from .375–1.250".
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and fi nishing operations.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







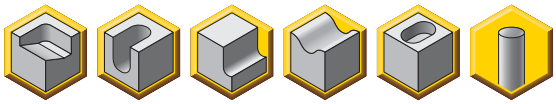
Necked End Mills • Cylindrical Shank • Steel

order number	catalog number	D1	D	D3	L	L2	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1	lbs
2877812	KDMB0375R354A038SN	.375	.500	.335	3.543	1.378	.188	1	2	No	3.0°	40000	KDMB0375..	.07
2878434	KDMB0500R512A050SN	.500	.500	.413	5.120	1.260	.250	1	2	No	3.0°	40000	KDMB0500..	.22
2878433	KDMB0500R591A050SN	.500	.500	.413	5.906	1.810	.250	1	2	No	3.0°	40000	KDMB0500..	.22
2878435	KDMB0625R551A063SN	.625	.625	.551	5.512	1.420	.313	1	2	No	3.0°	40000	KDMB0625..	.44
2878436	KDMB0625R630A063SN	.625	.625	.551	6.299	2.090	.313	1	2	No	3.0°	40000	KDMB0625..	.44
2878437	KDMB0750R630A075SN	.750	.750	.709	6.281	1.753	.375	1	2	No	3.0°	40000	KDMB0750..	.88
2878438	KDMB0750R689A075SN	.750	.750	.709	6.890	2.362	.375	1	2	No	3.0°	40000	KDMB0750..	.88
2878439	KDMB0750R827A075SN	.750	.750	.709	8.268	2.360	.375	1	2	No	3.0°	40000	KDMB0750..	.99
2878440	KDMB1000R630A100SN	1.000	1.000	.882	6.299	1.770	.500	1	2	No	3.0°	40000	KDMB1000..	1.32
2878441	KDMB1000R748A100SN	1.000	1.000	.882	7.480	2.760	.500	1	2	No	3.0°	40000	KDMB1000..	1.54
2878442	KDMB1250R689A125SN	1.250	1.250	1.126	6.890	2.205	.625	1	2	No	3.0°	40000	KDMB1250..	2.20
2878443	KDMB1250R827A125SN	1.250	1.250	1.126	8.268	3.150	.625	1	2	No	3.0°	40000	KDMB1250..	2.57

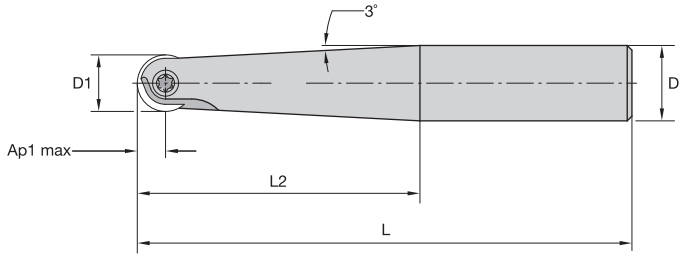
Spare Parts

D1	 insert screw	 in. lbs.	 Torx wrench
.375	193.394	27	KT15
.500	193.393	35	KT20
.625	193.392	44	KT20
.750	193.391	53	KT20
1.000	193.390	58	KT30
1.250	193.389	58	KT30

- Available diameters: .312–1.250".
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and finishing operations.
- Tapered version ideal for 5-axis applications.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







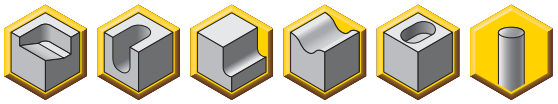
Tapered End Mills • Cylindrical Shank • Steel

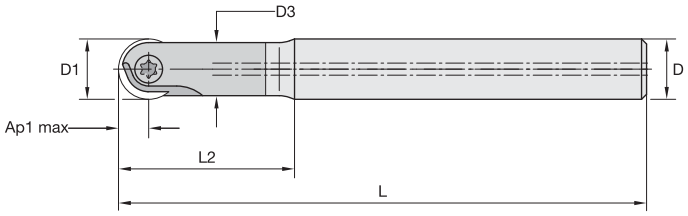
order number	catalog number	D1	D	L	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1	lbs
2878444	**KDMB0312R551A031ST**	.312	.500	5.510	1.970	.156	1	2	3.0°	40000	KDMB0312..	.25
2878445	**KDMB0375R591A038ST**	.375	.500	5.910	1.380	.188	1	2	3.0°	40000	KDMB0375..	.29
2878446	**KDMB0500R630A050ST**	.500	.625	6.300	2.360	.250	1	2	3.0°	40000	KDMB0500..	.47
2878448	**KDMB0750R748A075ST**	.750	1.000	7.480	3.150	.375	1	2	3.0°	40000	KDMB0750..	1.41
2878449	**KDMB1000R827A100ST**	1.000	1.250	8.270	3.940	.500	1	2	3.0°	30000	KDMB1000..	2.52
2878450	**KDMB1250R945A125ST**	1.250	1.500	9.450	4.840	.625	1	2	3.0°	40000	KDMB1250..	3.82

Spare Parts

D1	 insert screw	 in. lbs.	 Torx wrench
.312	**193.395**	18	**KT8**
.375	**193.394**	27	**KT15**
.500	**193.393**	35	**KT20**
.750	**193.391**	53	**KT20**
1.000	**193.390**	58	**KT30**
1.250	**193.389**	58	**KT30**

- Available diameters: .250–1.250".
- Ball nose finishers for 3D milling applications.
- Suitable for roughing and finishing operations.
- High precision and runout accuracy.
- Can be used with heat shrink technology, h6 shank tolerance.







Necked End Mills • Cylindrical Shank • Carbide

order number	catalog number	D1	D	D3	L	L2	Ap1 max	Z	Z U	coolant supply	max ramp angle	max RPM	insert 1	lbs
4177170	**KDMB025R394A025HN**	.250	.250	.211	3.937	1.575	.125	1	2	No	3.0°	40000	KDMB0250..	.11
4177171	**KDMB025R591A025HN**	.250	.250	.211	5.906	2.756	.125	1	2	No	3.0°	40000	KDMB0250..	.11
4177172	**KDMB025R788A025HN**	.250	.250	.211	7.874	3.937	.125	1	2	No	3.0°	40000	KDMB0250..	.11
4177167	**KDMB025R394A038HN**	.250	.375	.213	3.937	1.599	.125	1	2	No	3.0°	40000	KDMB0250..	.11
4177169	**KDMB0312R591A038HN**	.312	.375	.276	5.906	1.623	.156	1	2	No	3.0°	40000	KDMB0312..	.22
2879403	**KDMB0375R472A038HNC**	.375	.375	.350	4.730	1.310	.375	1	2	Yes	3.0°	30000	KDMB0375..	.23
2879404	**KDMB0375R591A038HNC**	.375	.375	.350	5.910	1.900	.188	1	2	Yes	3.0°	30000	KDMB0375..	.28
2879405	**KDMB0500R472A050HNC**	.500	.500	.420	4.730	1.392	.188	1	2	Yes	3.0°	40000	KDMB0500..	.39
2879406	**KDMB0500R630A050HNC**	.500	.500	.420	6.300	1.982	.313	1	2	Yes	3.0°	40000	KDMB0500..	.53
2879408	**KDMB0625R689A063HNC**	.625	.625	.560	6.890	2.163	.250	1	2	Yes	3.0°	40000	KDMB0625..	.87
2879409	**KDMB0750R551A075HNC**	.750	.750	.710	5.520	1.950	.250	1	2	Yes	3.0°	40000	KDMB0750..	1.04
2879410	**KDMB0750R827A075HNC**	.750	.750	.710	8.270	2.362	.500	1	2	Yes	3.0°	40000	KDMB0750..	.96
2879411	**KDMB1000R630A100HNC**	1.000	1.000	.890	6.307	2.370	.375	1	2	Yes	3.0°	30000	KDMB1000..	2.01
2879412	**KDMB1000R906A100HNC**	1.000	1.000	.890	8.270	3.539	.500	1	2	Yes	3.0°	30000	KDMB1000..	2.01

Spare Parts

D1	 insert screw	 in. lbs.	 Torx wrench
.250	**MS2236**	18	**KT6**
.312	**193.395**	18	**KT8**
.375	**193.394**	27	**KT15**
.500	**193.393**	35	**KT20**
.625	**193.392**	44	**KT20**
.750	**193.391**	53	**KT20**
1.000	**193.390**	58	**KT30**

Insert Selection Guide

KDMB Ball Nose Platform • .250"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
P3–P4	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
P5–P6	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
M1–M2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
M3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K1–K2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	–	–	**.E..GP**	**KC515M**	–	–
H1	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–

KDMB Ball Nose Platform • .312"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
M1–M2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
M3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K1–K2	.E..GP	KC515M	**–**	**–**	–	–
K3	.E..GP	KC515M	**–**	**–**	–	–
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	–	–
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GP	KC515M

KDMB Ball Nose Platform • .375"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
M1–M2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
M3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K1–K2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	–	–
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GP	KC515M

KDMB Ball Nose Platform • .500"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GN	KC515M

KDMB Ball Nose Platform • .625"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GP	KC515M

KDMB Ball Nose Platform • .750"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GN	KC515M

Insert Selection Guide

KDMB Ball Nose Platform • 1.00"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷				toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..HC	KC530M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..HC	KC530M
M1–M2	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
M3	.E..GP	KC515M	**.E..HC**	**KC530M**	.E..HC	KC530M
K1–K2	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GP	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	.E..HC	KC530M
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GN	KC515M

KDMB Ball Nose Platform • 1.25"

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ⟷				toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GP	KC515M	**.E..GP**	**KC515M**	.E..GP	KC515M
P3–P4	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
P5–P6	.E..GP	KC505M	**.E..GP**	**KC515M**	.E..GP	KC515M
M1–M2	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
M3	.E..GP	KC515M	**.E..GP**	**KC515M**	–	–
K1–K2	.E..GP	KC515M	**–**	**–**	–	–
K3	.E..GP	KC515M	**–**	**–**	–	–
N1–N2	.E..LD	K115M	**.E..LD**	**K115M**	–	–
N3	.E..LD	K115M	**.E..LD**	**K115M**	–	–
S1–S2	–	–	**–**	**–**	–	–
S3	–	–	**–**	**–**	–	–
S4	.E..LD	K115M	**.E..GP**	**KC515M**	–	–
H1	.E..GP	KC505M	**.E..GP**	**KC505M**	.E..GP	KC515M

Insert Style

HC Geometry:

PSTS geometry with chipbreaker for roughing. Semi-finishing and rest material of steel, cast steel, and high-temperature alloys.



roughing, rest material

GP Geometry:

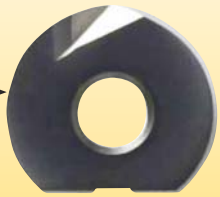
High-precision insert with helical geometry for semi-finishing and finishing of steel up to 63 HRC, cast steel, and high-temperature alloys.



semi-finishing, finishing

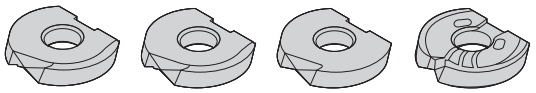
GN Geometry:

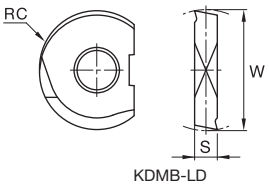
Geometry with extremely solid cutting edge for roughing cast steel, high-temperature alloys, and hardened steel up to 60 HRC.



finishing

• High-precision positive geometry.





● first choice
○ alternate choice

P		●	●	●
M		○	○	●
K		○	●	○
N	●			
S	○			○
H		●	○	○

KDMB-LD • High-Precision Positive Geometry • Non-Ferrous and Titanium

catalog number	W	S	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB0250M0ERLD	.250	.063	.125	.002	●	–	–	–
KDMB0312M0ERLD	.313	.079	.156	.002	●	–	–	–
KDMB0375M0ERLD	.375	.098	.188	.002	●	–	–	–
KDMB0500M0ERLD	.500	.098	.250	.002	●	–	–	–
KDMB0625M0ERLD	.625	.118	.313	.002	●	–	–	–
KDMB0750M0ERLD	.750	.118	.375	.002	●	–	–	–
KDMB1000M0ERLD	1.000	.158	.500	.002	●	–	–	–
KDMB1250M0ERLD	1.250	.197	.625	.002	●	–	–	–

• High-precision helical geometry.

KDMB-GP • High-Precision Helical Geometry and Lower Cutting Forces

catalog number	W	S	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB0250M0ERGP	.250	.063	.125	.002	–	–	●	–
KDMB0312M0ERGP	.312	.079	.156	.002	–	●	–	–
KDMB0375M0ERGP	.375	.098	.188	.002	–	●	●	–
KDMB0500M0ERGP	.500	.098	.250	.002	–	–	●	–
KDMB0500M0ERGP	.500	.098	.250	.002	–	●	–	–
KDMB0625M0ERGP	.625	.118	.313	.002	–	●	●	–
KDMB0750M0ERGP	.750	.118	.375	.002	–	●	●	–
KDMB1000M0ERGP	1.000	.158	.500	.002	–	●	●	–
KDMB1250M0ERGP	1.250	.197	.625	.002	–	●	●	–

• High-precision insert.

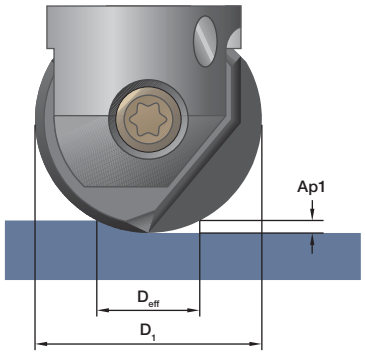
KDMB-GN • High Precision • Extremely Solid Cutting Edge

catalog number	W	S	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB0500M0ERGN	.500	.098	.250	.003	–	–	●	–
KDMB0750M0ERGN	.750	.118	.375	.003	–	–	●	–
KDMB1000M0ERGN	1.000	.158	.500	.003	–	–	●	–

• Pressed insert.

KDMB-HC • PSTS Insert Developed for Roughing and Rest Material Operations

catalog number	W	S	RC	hm	K115M	KC505M	KC515M	KC530M
KDMB0500M0ERHC	.500	.098	.250	.004	–	–	–	●
KDMB0625M0ERHC	.625	.118	.313	.004	–	–	–	●
KDMB0750M0ERHC	.750	.118	.375	.004	–	–	–	●
KDMB1000M0ERHC	1.000	.158	.500	.004	–	–	–	●



KDMB Ball Nose • .250"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.125	0.050	0.025	0.013
0.250	0.250	0.200	0.150	0.109

KDMB Ball Nose • .312"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.156	0.047	0.031	0.016
0.313	0.313	0.223	0.188	0.136

KDMB Ball Nose • .375"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.188	0.056	0.038	0.019
0.375	0.375	0.268	0.225	0.163

KDMB Ball Nose • .500"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.250	0.075	0.050	0.025
0.500	0.500	0.357	0.300	0.218

KDMB Ball Nose • .625"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.313	0.094	0.063	0.031
0.625	0.625	0.446	0.375	0.272

KDMB Ball Nose • .750"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.375	0.113	0.075	0.038
0.750	0.750	0.536	0.450	0.327

KDMB Ball Nose • 1.00"

D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.500	0.150	0.100	0.050
1.000	1.000	0.714	0.600	0.436

KDMB Ball Nose • 1.25"

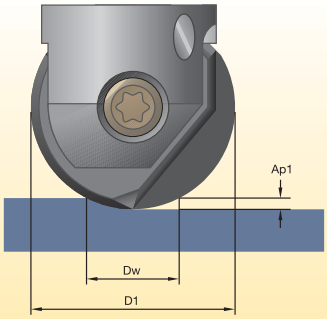
D1 max	Working Diameter (Dw) at Axial Depth of Cut (ap)			
	0.625	0.188	0.125	0.063
1.250	1.250	0.893	0.750	0.545

NOTE: Working diameter (Dw) or effective diameter has to be considered when calculating appropriate RPMs.

Calculating Working Diameter and Resulting Surface Speed

Case 1:

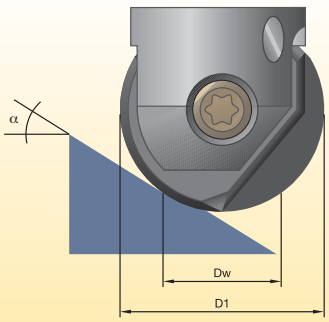
It is important to consider the effective diameter (Dw) when using light depths of cut in order to properly calculate RPM values. Use the following formula when machining flat surfaces or inclinations of 10° or less to find the Dw value. Then, use this for RPM calculations, as opposed to using the overall insert diameter (D1).



$$Dw = \sqrt{D1_2\text{-}(D1\text{-}2Ap1)_2}$$

Case 2:

When machining inclinations between 11° and 55° , further modification of vc is required. Apply factor “k” from the given formula to calculate the correct vc (vceff). This corrected value is then used to calculate the proper RPM for the tool.



$$k = \frac{1}{\sin [\alpha + \arccos (1\text{-}(2\ (Ap1/D1)))]}$$

$$vceff = vc \times k$$

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .250"

Light Machining	General Purpose	Heavy Machining

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP

At .050 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.006	**.008**	.015	.004	**.006**	.011	.004	**.005**	.010	.004	**.005**	.009	.004	**.005**	.009	.E..LD
.E..GP	.006	**.008**	.015	.004	**.006**	.011	.004	**.005**	.010	.004	**.005**	.009	.004	**.005**	.009	.E..GP

At .025 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP

At .013 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .312"

At .156 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP

At .047 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP

At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP

At .016 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .375"

Light Machining	General Purpose	Heavy Machining

At .188 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP

At .056 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP

At .038 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP

At .019 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .500"

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP
.E..GN	.007	**.010**	.018	.005	**.008**	.013	.004	**.007**	.011	.004	**.006**	.011	.004	**.006**	.011	.E..GN
.E..HC	.007	**.014**	.024	.005	**.010**	.018	.004	**.009**	.015	.004	**.008**	.014	.004	**.008**	.014	.E..HC

At .075 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP
.E..GN	.009	**.014**	.025	.007	**.011**	.019	.006	**.009**	.016	.006	**.009**	.015	.006	**.008**	.015	.E..GN
.E..HC	.009	**.019**	.034	.007	**.014**	.025	.006	**.012**	.021	.006	**.011**	.020	.006	**.011**	.020	.E..HC

At .050 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP
.E..GN	.011	**.017**	.030	.008	**.013**	.022	.007	**.011**	.019	.007	**.010**	.018	.007	**.010**	.018	.E..GN
.E..HC	.011	**.023**	.041	.008	**.017**	.030	.007	**.015**	.026	.007	**.014**	.024	.007	**.013**	.023	.E..HC

At .025 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP
.E..GN	.016	**.024**	.042	.012	**.017**	.031	.010	**.015**	.026	.009	**.014**	.025	.009	**.014**	.024	.E..GN
.E..HC	.016	**.032**	.057	.012	**.023**	.041	.010	**.020**	.035	.009	**.019**	.033	.009	**.018**	.032	.E..HC

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .625"

Light Machining	General Purpose	Heavy Machining

At .313 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP
.E..HC	.007	**.014**	.024	.005	**.010**	.018	.004	**.009**	.015	.004	**.008**	.014	.004	**.008**	.014	.E..HC

At .094 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP
.E..HC	.009	**.019**	.034	.007	**.014**	.025	.006	**.012**	.021	.006	**.011**	.020	.006	**.011**	.020	.E..HC

At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP
.E..HC	.011	**.023**	.041	.008	**.017**	.030	.007	**.015**	.026	.007	**.014**	.024	.007	**.013**	.023	.E..HC

At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP
.E..HC	.016	**.032**	.057	.012	**.023**	.041	.010	**.020**	.035	.009	**.019**	.033	.009	**.018**	.032	.E..HC

Recommended Starting Feeds [IPT] • Ball Nose Insert Size .750"

At .375 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP
.E..GN	.007	**.010**	.018	.005	**.008**	.013	.004	**.007**	.011	.004	**.006**	.011	.004	**.006**	.011	.E..GN
.E..HC	.007	**.014**	.024	.005	**.010**	.018	.004	**.009**	.015	.004	**.008**	.014	.004	**.008**	.014	.E..HC

At .113 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP
.E..GN	.009	**.014**	.025	.007	**.011**	.019	.006	**.009**	.016	.006	**.009**	.015	.006	**.008**	.015	.E..GN
.E..HC	.009	**.019**	.034	.007	**.014**	.025	.006	**.012**	.021	.006	**.011**	.020	.006	**.011**	.020	.E..HC

At .075 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP
.E..GN	.011	**.017**	.030	.008	**.013**	.022	.007	**.011**	.019	.007	**.010**	.018	.007	**.010**	.018	.E..GN
.E..HC	.011	**.023**	.041	.008	**.017**	.030	.007	**.015**	.026	.007	**.014**	.024	.007	**.013**	.023	.E..HC

At .038 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP
.E..GN	.016	**.024**	.042	.012	**.017**	.031	.010	**.015**	.026	.009	**.014**	.025	.009	**.014**	.024	.E..GN
.E..HC	.016	**.032**	.057	.012	**.023**	.041	.010	**.020**	.035	.009	**.019**	.033	.009	**.018**	.032	.E..HC

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT] • Ball Nose Insert Size 1.00"

Light Machining	General Purpose	Heavy Machining

At .500 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP
.E..GN	.007	**.010**	.018	.005	**.008**	.013	.004	**.007**	.011	.004	**.006**	.011	.004	**.006**	.011	.E..GN
.E..HC	.007	**.014**	.024	.005	**.010**	.018	.004	**.009**	.015	.004	**.008**	.014	.004	**.008**	.014	.E..HC

At .150 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP
.E..GN	.009	**.014**	.025	.007	**.011**	.019	.006	**.009**	.016	.006	**.009**	.015	.006	**.008**	.015	.E..GN
.E..HC	.009	**.019**	.034	.007	**.014**	.025	.006	**.012**	.021	.006	**.011**	.020	.006	**.011**	.020	.E..HC

At .100 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP
.E..GN	.011	**.017**	.030	.008	**.013**	.022	.007	**.011**	.019	.007	**.010**	.018	.007	**.010**	.018	.E..GN
.E..HC	.011	**.023**	.041	.008	**.017**	.030	.007	**.015**	.026	.007	**.014**	.024	.007	**.013**	.023	.E..HC

At .050 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP
.E..GN	.016	**.024**	.042	.012	**.017**	.031	.010	**.015**	.026	.009	**.014**	.025	.009	**.014**	.024	.E..GN
.E..HC	.016	**.032**	.057	.012	**.023**	.041	.010	**.020**	.035	.009	**.019**	.033	.009	**.018**	.032	.E..HC

Recommended Starting Feeds [IPT] • Ball Nose Insert Size 1.25"

At .625 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..LD
.E..GP	.005	**.007**	.012	.004	**.005**	.009	.003	**.004**	.008	.003	**.004**	.007	.003	**.004**	.007	.E..GP

At .188 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..LD
.E..GP	.007	**.009**	.017	.005	**.007**	.012	.004	**.006**	.011	.004	**.006**	.010	.004	**.006**	.010	.E..GP

At .125 Axial Depth of Cut (ap)

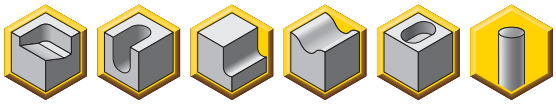
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..LD
.E..GP	.008	**.011**	.020	.006	**.008**	.015	.005	**.007**	.013	.005	**.007**	.012	.005	**.007**	.012	.E..GP

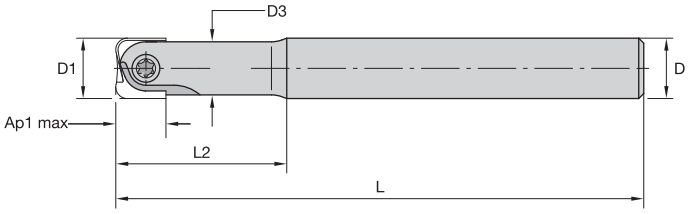
At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..LD	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..LD
.E..GP	.011	**.016**	.028	.008	**.012**	.020	.007	**.010**	.018	.007	**.009**	.016	.006	**.009**	.016	.E..GP

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X32–X37 for recommended starting speeds.

- Cutting diameter ranges from .500–1.000".
- High precision and runout accuracy.
- Can be used with the heat shrink technology, h6 shank tolerance.
- Suitable for roughing and finishing operations.
- Works with toroidal and high-feed inserts.







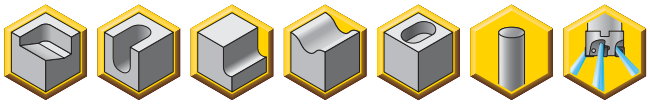
Necked End Mills • Cylindrical Shank • Steel

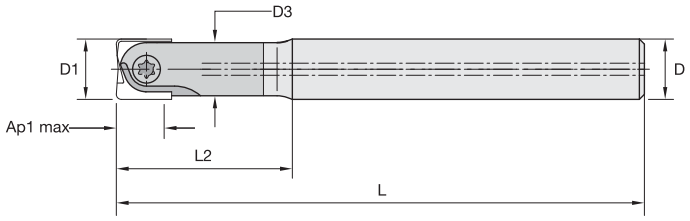
order number	catalog number	D1	D	D3	L	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1	lbs
2957828	**KDMT0500R512A050SN**	.500	.500	.420	5.120	1.339	.118	1	2	3.0°	40000	KDMT0500..	.22
2957829	**KDMT0500R591A050SN**	.500	.500	.420	5.909	1.890	.118	1	2	3.0°	40000	KDMT0500..	.22
2957831	**KDMT0625R630A063SN**	.625	.625	.560	6.300	2.165	.157	1	2	3.0°	40000	KDMT0625..	.44
2957832	**KDMT0750R630A075SN**	.750	.750	.710	6.300	1.850	.197	1	2	3.0°	40000	KDMT0750..	.88
2958143	**KDMT0750R827A075SN**	.750	.750	.710	8.270	2.362	.197	1	2	3.0°	40000	KDMT0750..	.88
2958144	**KDMT1000R630A100SN**	1.000	1.000	.890	6.300	1.850	.236	1	2	3.0°	40000	KDMT1000..	1.32
2958146	**KDMT1000R906A100SN**	1.000	1.000	.890	9.059	3.150	.236	1	2	3.0°	40000	KDMT1000..	1.76

Spare Parts

D1	 insert screw	 in. lbs.	 Torx wrench
.500	**193.393**	35	**KT20**
.625	**193.392**	44	**KT20**
.750	**193.391**	53	**KT20**
1.000	**193.390**	58	**KT30**

- Cutting diameter ranges from .500–1.000".
- High precision and runout accuracy.
- Can be used with the heat shrink technology, h6 shank tolerance.
- Suitable for roughing and finishing operations.
- Works with toroidal and high-feed inserts.







Necked End Mills • Carbide Shank with Through Coolant

order number	catalog number	D1	D	D3	L	L2	Ap1 max	Z	Z U	max ramp angle	max RPM	insert 1	lbs
2878733	**KDMT0500R630A050HNC**	.500	.500	.420	6.378	2.047	.118	1	2	3.0°	40000	KDMT0500..	.53
2878737	**KDMT0750R748A075HNC**	.750	.750	.710	7.559	3.032	.197	1	2	3.0°	40000	KDMT0750..	1.46

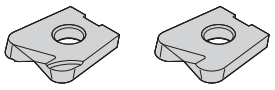
Spare Parts

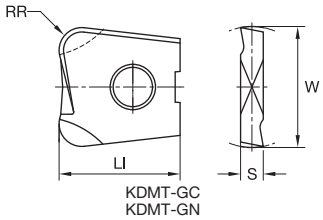
D1	insert screw	in. lbs.	Torx wrench
.500	**193.393**	35	**KT20**
.750	**193.391**	53	**KT20**

Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←	→	toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GC	KC515M	**.E..GC**	**KC515M**	.E..GN	KC515M
P3–P4	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
P5–P6	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
M1–M2	–	–	**.E..GN**	**KC515M**	–	–
M3	–	–	**.E..GN**	**KC515M**	–	–
K1–K2	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
K3	.E..GN	KC515M	**.E..GN**	**KC515M**	.E..GN	KC515M
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	–	–	–	–	–	–
S3	–	–	–	–	–	–
S4	–	–	–	–	–	–
H1	–	–	**.E..GN**	**KC515M**	–	–

Indexable Inserts • KDMT...





● first choice
○ alternate choice

P		●
M		○
K		●
N		
S		
H		●

KDMT-GC • High-Tolerance Helical Geometry • Finishing Lower Cutting Force

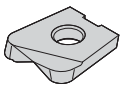
catalog number	LI	W	S	RR	hm	KC515M
KDMT05002ERGC	.550	.500	.098	.032	.003	●
KDMT05004ERGC	.550	.500	.098	.063	.003	●
KDMT07502ERGC	.700	.750	.118	.032	.003	●
KDMT10002ERGC	.925	1.000	.157	.032	.003	●
KDMT10004ERGC	.925	1.000	.157	.063	.003	●

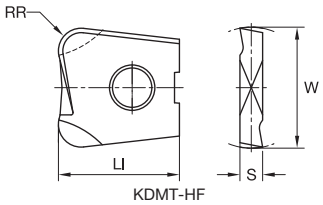
NOTE: Ap1 max is equal to RR
RT = Programming Radius

KDMT-GN • High-Precision Insert • Semi-Finishing and Finishing

catalog number	LI	W	S	RR	hm	KC515M
KDMT05002ERGN	.550	.500	.098	.032	.003	●
KDMT05004ERGN	.550	.500	.098	.063	.003	●
KDMT06254ERGN	.625	.625	.118	.063	.003	●
KDMT07502ERGN	.700	.750	.118	.032	.003	●
KDMT07504ERGN	.700	.750	.118	.063	.003	●

NOTE: Ap1 max is equal to RR.


KDMT-HF



KDMT-HF

● first choice
○ alternate choice

P		●
M		○
K		●
N		
S		
H		●

KDMT-HF • Geometry Developed for High-Feed Machining up to 55 HRC

catalog number	LI	W	S	RT	hm	KC515M
KDMT0750SRHF	.710	.750	.118	.080	.003	●

NOTE: RT = Programming Radius

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.E..GC	.007	**.010**	.014	.005	**.008**	.010	.004	**.007**	.009	.004	**.006**	.008	.004	**.006**	.008	.E..GC
.E..GN	.007	**.010**	.014	.005	**.008**	.010	.004	**.007**	.009	.004	**.006**	.008	.004	**.006**	.008	.E..GN

Recommended Starting Feeds [IPT] • KDMT High-Feed

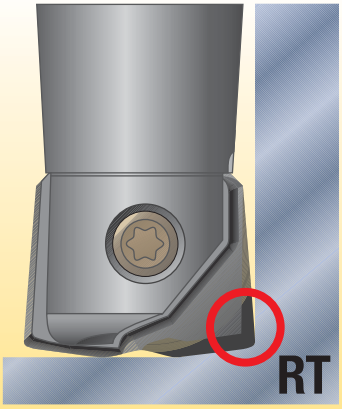
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.S..HF	.059	**.092**	.131	.042	**.064**	.086	.036	**.054**	.073	.034	**.050**	.067	.033	**.049**	.066	.S..HF

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Application Advice for KDMT-HF Insert Style

For CAM programming, the tools can be programmed as a toroidal tool type requiring the diameter and the RT values only.

insert type	inch			
	Ap max	diameter	RT	max fz
KDMT0500SRHF	0.025	0.500	0.045	0.050
KDMT0625SRHF	0.030	0.625	0.050	0.050
KDMT0750SRHF	0.040	0.750	0.080	0.050



Data for Face Milling, Pocketing, and Profiling Operations

Starting Values

tool diameter	Ø.500"	Ø.625"	Ø.750"
Ap max (mm)	0.024	0.031	0.039
fz recommended for 45 HRC (approximately)	0.020	0.022	0.026
fz recommended for 55 HRC (approximately)	0.016	0.020	0.022
fz recommended for general purpose	0.026	0.028	0.031

NOTE: Use two effective teeth for feed calculations.
For materials above 45 HRC, we recommend to adjust the Ae max to 55% of cutting diameter.
Steel shanks for roughing operations are recommended.

Proven Solutions:

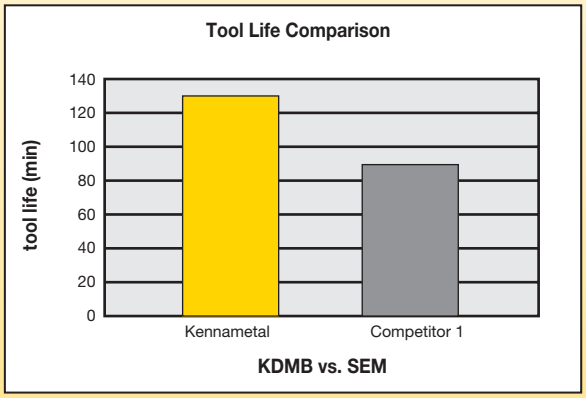
KDMB™ Indexable Milling Cutter vs. Solid Carbide End Mills

1.

Workpiece:
Forging die
Material:
X38 CrMoV 5 3 (1.2367)
Size:
154mm x 115mm x 80mm
Machine:
Vertical milling machine center

Kennametal
Tool: KDMB06R100A06HN
Insert: KDMB06M0ERGN KC505M
Competitor 1
Solid Carbide End Mill
Ø 6 R3





Cutting data:
vc = 825 SFM (250 m/min)
Ap = .099" (0,28mm)
ae = .052" (1,32mm)
fz = .0052" (0,131mm)

Superior Productivity:
Higher tool life and cost per piece

2.

Workpiece:
Pressing die component
Material:
1.2479 (D2)
Size:
410mm x 320mm x 210mm
Machine:
Vertical milling machine

Kennametal
Tool: KDMB06R100A06HN
Insert: KDMB06M0ERGP KC515M
Competitor 1
Solid Carbide End Mill
Ø 6 R3

Cost Performance Ratio:
Costs for diameter 6mm
MMC:
solid carbide end mill +
2 x regrinding
Reference: 100%
KMT:
3 x inserts +
3 x toolholder share:
Cost savings: 31.15%



Z-Axis Plunge Mill

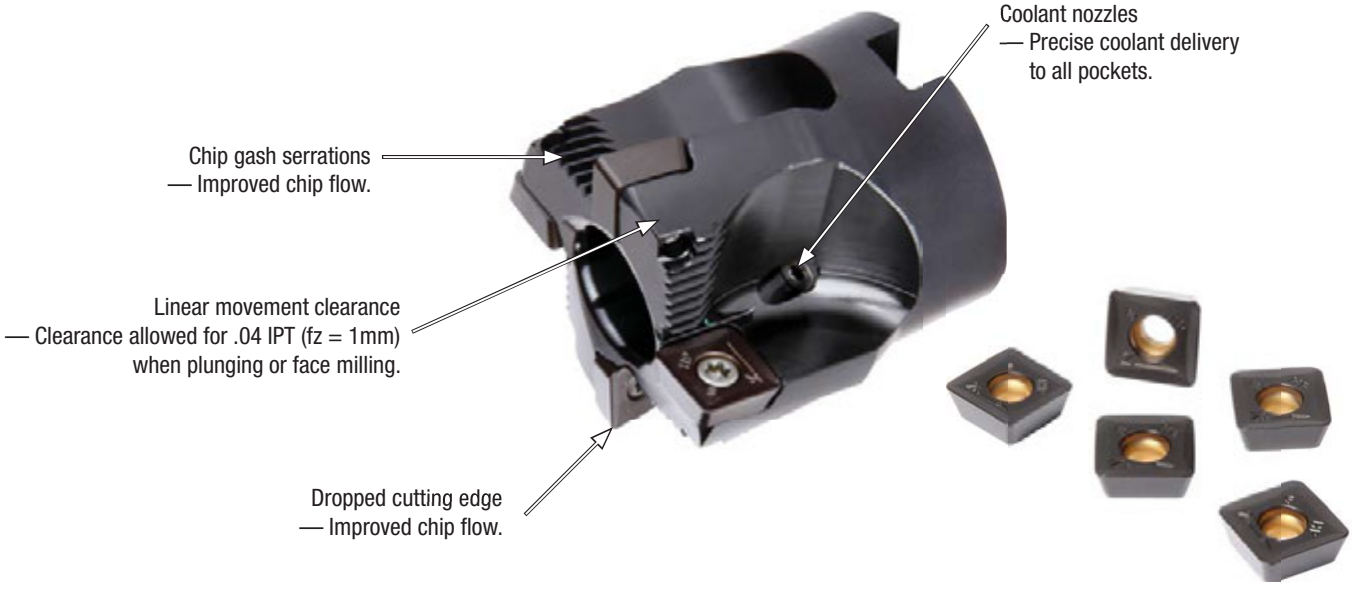
Primary Application

Specifically engineered to eliminate vibration and improve metal removal rates in roughing applications. Ideally suited for rough slotting applications in aerospace, general engineering, die and mold, and power generation.

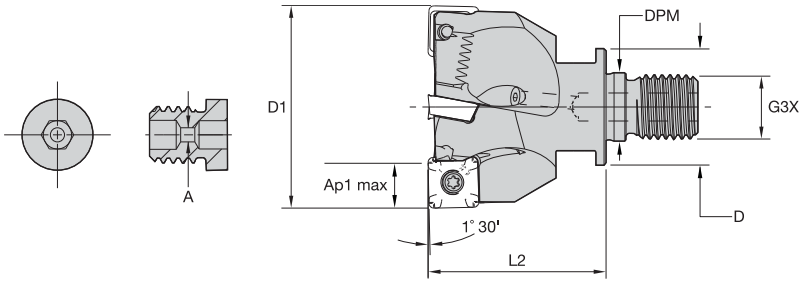
Features and Benefits

Platform Features

- Nine coolant nozzle sizes enable customized flow by machine tool.
- Unique design is unmatched for chip evacuation.
- Improved performance at a reduced cost per cutting edge.
- Positive geometry lowers cutting force and reduces power requirements, enabling higher feed rates.
- Improved chip control when slotting.
- Fast and easy insert indexing.



- Most stable cutting due to force directions.
- Excellent for long-reach applications.
- Extended tool life.
- Suitable for a wide variety of workpiece materials.
- Up to .433" stepover.
- Unique coolant delivery.
- Chip control when slotting.





Screw-On End Mills

order number	catalog number	D1	D	DPM	G3X	L2	Ap1 max	Z	max RPM	lbs	insert 1
3449167	**KTSZR125SD430CM16A02**	1.250	1.142	.669	M16	1.750	.433	2	25800	.33	SD_T43_PD_N__Z
3449168	**KTSZR150SD430CM16A03**	1.500	1.142	.669	M16	1.750	.433	3	23550	.40	SD_T43_PD_N__Z
3449169	**KTSZR200SD430CM16A04**	2.000	1.142	.669	M16	1.750	.433	4	20400	.62	SD_T43_PD_N__Z

Spare Parts

D1	insert screw	in. lbs.	Torx Plus driver	coolant nozzle screw	T-handle hex wrench
1.250	**MS2197**	35	**DT15IP**	**MS2191C20**	**THW2M**
1.500	**MS2197**	35	**DT15IP**	**MS2191C20**	**THW2M**
2.000	**MS2197**	35	**DT15IP**	**MS2191C20**	**THW2M**

Coolant Screw Detail

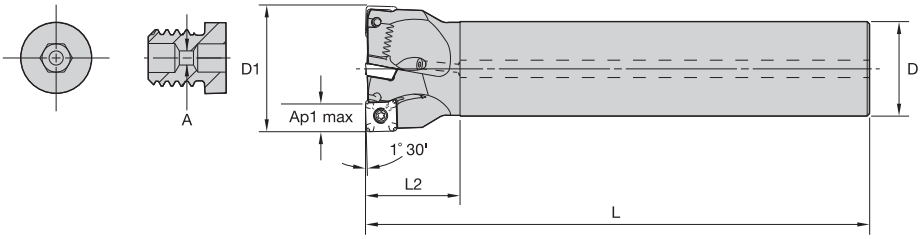
order number	catalog number	A
3400611	**MS2191C00**	—
3400612	**MS2191C06**	.024
3400613	**MS2191C08**	.032
3400616	**MS2191C12**	.047
3400617	**MS2191C14**	.055
3400618	**MS2191C16**	.063
3400619	**MS2191C18**	.071
3400620	**MS2191C20**	.079

Coolant Nozzle Key

order number	catalog number	drive size
1993552	**THW2M**	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a .047" (1,20mm) hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

- Most stable cutting due to force directions.
- Excellent for long reach applications.
- Extended tool life.
- Suitable for a wide variety of workpiece materials.
- Up to .433" stepover.
- Unique coolant delivery.
- Chip control when slotting.

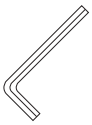




End Mills

order number	catalog number	D1	D	L	L2	Ap1 max	Z	max RPM	insert 1	lbs
3064601	**KISZR125SD430C4A02**	1.250	1.000	8.000	1.500	.433	2	25800	SD_T43_PD_N__Z	1.59
3107215	**KISZR150SD430C5A03**	1.500	1.250	8.000	1.500	.433	3	23550	SD_T43_PD_N__Z	2.47
3107216	**KISZR200SD430C6A04**	2.000	1.500	8.000	1.500	.433	4	20450	SD_T43_PD_N__Z	3.72

Spare Parts

D1	 insert screw	 in. lbs.	 Torx Plus driver	 T-handle hex wrench	 coolant nozzle screw
1.250	**MS2197**	35	**DT15IP**	**THW2M**	**MS2191C20**
1.500	**MS2197**	35	**DT15IP**	**THW2M**	**MS2191C20**
2.000	**MS2197**	35	**DT15IP**	**THW2M**	**MS2191C20**

Coolant Screw Detail

order number	catalog number	A
3400611	**MS2191C00**	—
3400612	**MS2191C06**	.024
3400613	**MS2191C08**	.032
3400616	**MS2191C12**	.047
3400617	**MS2191C14**	.055
3400618	**MS2191C16**	.063
3400619	**MS2191C18**	.071
3400620	**MS2191C20**	.079

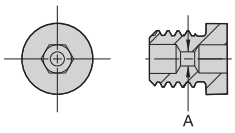
Coolant Nozzle Key

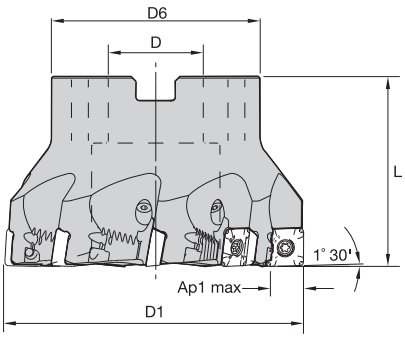
order number	catalog number	drive size
1993552	**THW2M**	2 MM

NOTE: Check the spare parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a .047" (1,20mm) hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

- Easy cutting.
- Four cutting edges.
- Consumes less power.
- Suitable for a wide variety of workpiece materials.
- Up to .433" stepover.
- Fast and easy insert indexing.
- Unique coolant delivery.
- Chip control when slotting.









Shell Mills

order number	catalog number	D1	D	D6	L	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
3054849	KSSZR200SD430C3A04	2.000	.750	1.664	1.750	.433	4	1.5°	20450	SD_T43_PD_N__Z	.66
3064755	KSSZR200SD430M3A05	2.000	.750	1.664	1.750	.433	5	1.5°	20450	SD_T43_PD_N__Z	.72
3448592	KSSZR250SD430C3A05	2.500	.750	1.664	1.750	.433	5	.6°	18290	SD_T43_PD_N__Z	.98
3448913	KSSZR250SD430M3A06	2.500	.750	1.664	1.750	.433	6	.6°	18290	SD_T43_PD_N__Z	1.03
3064493	KSSZR300SD430C4A05	3.000	1.000	2.190	2.000	.433	5	.7°	16700	SD_T43_PD_N__Z	1.94
3064902	KSSZR300SD430F4A07	3.000	1.000	2.190	2.000	.433	7	.7°	16700	SD_T43_PD_N__Z	1.97
3064602	KSSZR300SD430M4A06	3.000	1.000	2.190	2.000	.433	6	.7°	16700	SD_T43_PD_N__Z	1.96
3448914	KSSZR400SD430C5A07	4.000	1.250	2.880	2.500	.433	7	.5°	14460	SD_T43_PD_N__Z	4.23
3066674	KSSZR400SD430F5A09	4.000	1.250	2.880	2.500	.433	9	.5°	14460	SD_T43_PD_N__Z	4.41
3448915	KSSZR400SD430M5A08	4.000	1.250	2.880	2.500	.433	8	.5°	14460	SD_T43_PD_N__Z	4.34
3448916	KSSZR400SD430C6A07	4.000	1.500	3.375	2.500	.433	7	.5°	14460	SD_T43_PD_N__Z	4.51
3448918	KSSZR400SD430F6A09	4.000	1.500	3.375	2.500	.433	9	.5°	14460	SD_T43_PD_N__Z	4.72
3448917	KSSZR400SD430M6A08	4.000	1.500	3.375	2.500	.433	8	.5°	14460	SD_T43_PD_N__Z	4.64
3448920	KSSZR500SD430M6A09	5.000	1.500	3.810	2.500	.433	9	.5°	12940	SD_T43_PD_N__Z	7.40

Spare Parts

order number	D1	insert screw	in. lbs.	Torx Plus wrench	coolant nozzle screw	T-handle hex wrench	coolant lock screw assembly	socket-head cap screw with coolant groove
3054849	2.000	MS2197	35	DT15IP	MS2191C12	THW2M	–	S445CG
3064755	2.000	MS2197	35	DT15IP	–	THW2M	–	S445CG
3448592	2.500	MS2197	35	DT15IP	–	THW2M	–	S445CG
3448913	2.500	MS2197	35	DT15IP	–	THW2M	–	S445CG
3064493	3.000	MS2197	35	DT15IP	–	THW2M	–	S458CG
3064902	3.000	MS2197	35	DT15IP	MS2191C08	THW2M	–	S458CG
3064602	3.000	MS2197	35	DT15IP	–	THW2M	–	S458CG
3448914	4.000	MS2197	35	DT15IP	–	THW2M	S2162C	–
3448916	4.000	MS2197	35	DT15IP	–	THW2M	S2163C	–
3066674	4.000	MS2197	35	DT15IP	–	THW2M	S2162C	–
3448918	4.000	MS2197	35	DT15IP	–	THW2M	S2163C	–
3448915	4.000	MS2197	35	DT15IP	–	THW2M	S2162C	–
3448917	4.000	MS2197	35	DT15IP	–	THW2M	S2163C	–
3448920	5.000	MS2197	35	DT15IP	–	THW2M	S2163C	–

(continued)

(Shell Mills — continued)

Coolant Screw Detail

order number	catalog number	A
3400611	MS2191C00	—
3400612	MS2191C06	.024
3400613	MS2191C08	.032
3400616	MS2191C12	.047
3400617	MS2191C14	.055
3400618	MS2191C16	.063
3400619	MS2191C18	.071
3400620	MS2191C20	.079

Coolant Nozzle Key

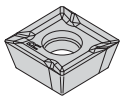
order number	catalog number	drive size
1993552	THW2M	2 MM

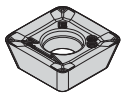
NOTE: Check the Spare Parts table for the coolant hole size that is incorporated in the cutters.
If you need an alternative, there are eight other variants to choose from to increase or decrease the pressure.
Example: MS2191C12 is a .047" (1,20mm) hole. All coolant nozzles are interchangeable with the original that is supplied with the cutter, which gives flexibility with coolant flow.

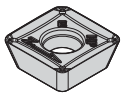
Inserts

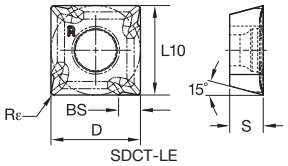
Insert Selection Guide

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		← →		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	.E..GDZ	KC725M	.S..GDZ	KC725M	.E..HPZ	KC725M
P3–P4	.S..GDZ	KCPK30	.E..HPZ	KCPK30	.S..HPZ	KCPK30
P5–P6	.S..GDZ	KCPK30	–	–	–	–
M1–M2	.E..GDZ	KC725M	.S..GDZ	KC725M	.E..HPZ	KC725M
M3	.S..GDZ	KCPK30	.E..HPZ	KCPK30	.S..HPZ	KCPK30
K1–K2	.E..GDZ	KCPK30	.S..GDZ	KCPK30	.E..HPZ	KCPK30
K3	.S..GDZ	KCPK30	.E..HPZ	KCPK30	.S..HPZ	KCPK30
N1–N2	.F..LE	KC410M	.F..LE	KC410M	.F..LE	KC410M
N3	.F..LE	KC410M	.F..LE	KC410M	.F..LE	KC410M
S1–S2	.E..GDZ	KC725M	.S..GDZ	KC725M	.E..HPZ	KC725M
S3	.S..GDZ	KC725M	.E..HPZ	KC725M	.S..HPZ	KC725M
S4	.E..HPZ	KC725M	.S..HPZ	KC725M	–	–
H1	–	–	–	–	–	–

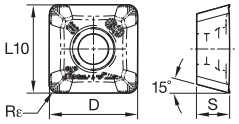

SDCT-LE


SDET-GDZ

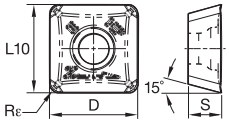

SDPT-HPZ



SDCT-LE



SDET-GDZ



SDPT-HPZ

● first choice
○ alternate choice

beyond

P			○		●		●	●	
M			●	●	●		○	○	○
K			○			●	○		
N		●							
S			●	●	●				●
H									

- High positive rake insert.

SDCT-LE

catalog number	D	L10	S	BS	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDCT431PDFL8LE	.500	.500	.188	.106	.016	.001	4	●	–	–	–	–	–	–	–
SDCT431PDFR8LE	.500	.500	.188	.106	.016	.001	4	●	–	–	–	–	–	–	–
SDCT433PDFL8LE	.500	.500	.188	.106	.047	.001	4	●	–	–	–	–	–	–	–
SDCT433PDFR8LE	.500	.500	.188	.106	.047	.001	4	●	–	–	–	–	–	–	–
SDCT434FNLE	.500	.500	.188	–	.063	.001	4	●	–	–	–	–	–	–	–
SDCT435FNLE	.500	.500	.188	–	.078	.001	4	●	–	–	–	–	–	–	–
SDCT436FNLE	.500	.500	.188	–	.094	.001	4	●	–	–	–	–	–	–	–
SDCT438FNLE	.500	.500	.188	–	.125	.001	4	●	–	–	–	–	–	–	–
SDCT43PDFL8LE	.500	.500	.188	.106	.031	.001	4	●	–	–	–	–	–	–	–
SDCT43PDFR8LE	.500	.500	.188	.106	.031	.001	4	●	–	–	–	–	–	–	–

- Precision ground insert.

SDET-GDZ

catalog number	D	L10	S	BS	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDET433PDENGDZ	.500	.500	.188	–	.047	.003	4	–	–	–	●	–	●	●	–
SDET433PDSNGDZ	.500	.500	.188	–	.047	.005	4	–	●	–	●	–	●	●	–

- Pressed to size insert.

SDPT-HPZ

catalog number	D	L10	S	BS	Rε	hm	cutting edges	KC410M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM40	KCSM30
SDPT433PDENHPZ	.500	.500	.188	–	.047	.003	4	–	–	–	●	–	●	●	–
SDPT433PDSNHPZ	.500	.500	.188	–	.047	.006	4	–	–	–	●	–	●	●	–

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.F..LE	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	.002	**.004**	.008	.F..LE
.E..GDZ	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	.004	**.010**	.016	.E..GDZ
.S..GDZ	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	.004	**.010**	.016	.S..GDZ
.E..HPZ	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	.004	**.010**	.016	.E..HPZ
.S..HPZ	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	.004	**.010**	.016	.S..HPZ

NOTE: Use "Light Machining" values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Z-Axis

Best Machining Practices

When finishing a workpiece, you sometimes have to use a Z-axis solution versus a conventional end mill solution to get the best results.

When the length-to-diameter ratio protrudes farther than 3:1, you will need to use a Z-axis solution. This is when the end mill starts to vibrate and the surface finish and noise are unacceptable.

When vibration occurs, the feed rates are compromised, which normally slows down the production of the workpiece.

Programming

At this point, there is very little software for this type of application on the market. We suggest that a simple macro is created for this type of application, which can be recalled and the “X” and “Y” movement changed.

The process can be repeated, so the cutter can be removed from the workpiece in the rapid (G00) movement. Tool life will be improved by not allowing the insert to rub on the retract path.

Slotting

There are several differing ways to machine a slot in a component using the Z-axis cutter solution.

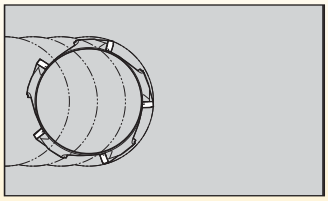


Figure 1

This shows the typical way of machining a slot. The movements are feeding down and straight back up (Z+) in the same axis and will have a negative impact on the insert radii (cutting edge) that could lead to premature failure of the nose radii. When looking at the component, it will show the rapid travel in the Z+ direction. This will highlight the spiral of the insert/cutter operating at a high feed. It looks similar to an oil groove spiraling upwards.

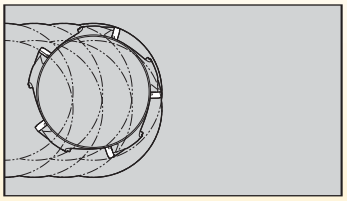


Figure 2

Using a cutter that is smaller than the slot width allows the insert/cutter to be removed from the material when (G00) rapid motion is retracting from the component. Because this type of cutter can be used across various types of machines, assume a 2.00" (50mm) diameter cutter is being used to machine a slot of 2.50" (63mm) wide on a vertical 3-axis machine.

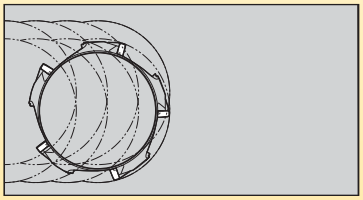


Figure 3

Align the cutter with the center of the slot on the component and define the stepover that’s required. Move the Y-axis into a position for the first cut, take the first pass to a depth in the Z-axis, and when it reaches the bottom of the slot, program a 2-axis move to retract the cutting edge for the workpiece.

The 2-axis move will move the Z-axis in a positive direction at 45° (.010") away from the component, and the Y-axis will move away from the workpiece by the same amount at the same angle. Now the cutter can be retracted from the component, and the insert will not rub on the retract move.

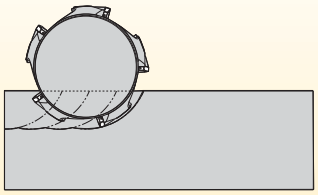
Move the cutter to the left of the slot to define the new position and make the cut. When reaching the base, a 3-axis move will need to be made. Again, the Z-axis will be in a positive direction at 45° (.010"), and the corresponding Y-axis will move away the same respective amount from the wall.

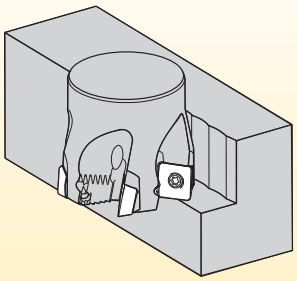
The insert/cutter has now moved away from the workpiece, and the rapid Z+ can take place. Repeat the process on the other side of the slot, remembering the X-axis move needs to be moving the other way.

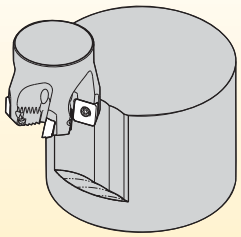
NOTE: When starting the process, it’s better to start at the center of the slot. After the slot has been defined, you no longer need to put the cutter on the center path. Passes from both sides create the slot width and enable clearance for the subsequent moves, so the insert/cutter can be moved away from the side walls of the material.

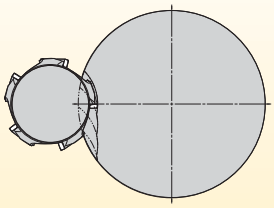
(continued)

Z-Axis *(continued)*









Linear Plunge Milling

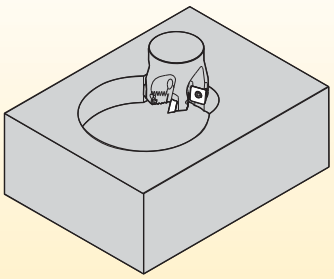
Entering the cutter along a parallel axis, the radial width of cut needs to be defined because the cutter might need to move away from the workpiece material.

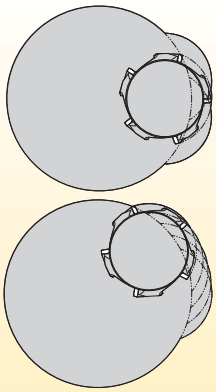
If the radial width of cut takes more than 60% of the cutter diameter, it is more difficult to remove the insert/cutter because the machine program wants to move the cutter upwards to (G00) Z+. When taking more than 60% of the cutter diameter, the material is enveloping the cutter and is difficult to remove because a cusp has been created.

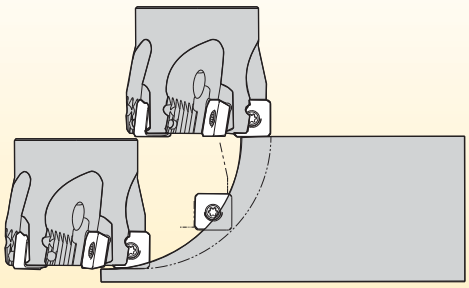
It is suggested to make the radial width of cut 50% of the cutter diameter to allow the insert/cutter to be removed without any problems.

External Profiling

This artwork represents the typical application for this type of process. Move into the cut and follow the external profile of the workpiece. When moving the cutter back to the start position, it's always advisable to move the insert from contacting the workpiece. This should be done with a 2- or 3-axis move (use .010") at 0,25mm. All axes moving in a Z+ direction will stop the rubbing in the retract move.







Internal Profiling

When taking the first pass of a depth, there is also a need to move the insert/cutter away from the material on the retract motion. Each of the passes that follow should adopt the same method on the retract move.

Follow the cutter path until the component has been finished.

Machining Around a Radii

This artwork shows the cutter taking a larger radial width of cut. When moving down in the Z-axis, the insert could start to take a larger radial width of cut. Typical application could be the manufacture of a turbine blade from a rectangular piece of material. Always remember that it's advisable to move the insert/cutter away from the material on the retract motion.

KCRA

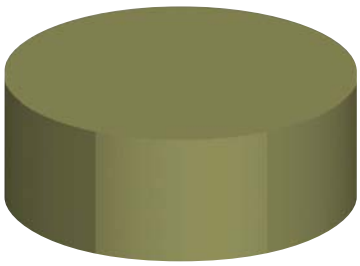
Double-Sided Ceramic Round Insert

KCRA is our newest (patent pending) indexable milling ceramic round platform specifically engineered to maximize productivity while machining high-temperature alloys. Featuring double-sided inserts with increased tooth density, KCRA provides the highest Metal Removal Rate (MRR) with the most effective machining.

Kennametal ceramics dramatically increase your productivity when machining Ni- and Co-based alloys.

Features and Benefits

- First choice for face and shoulder milling of high-temperature alloys.
- Higher metal removal rate due to fine-pitch cutters.
- Secure clamping system improves process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.



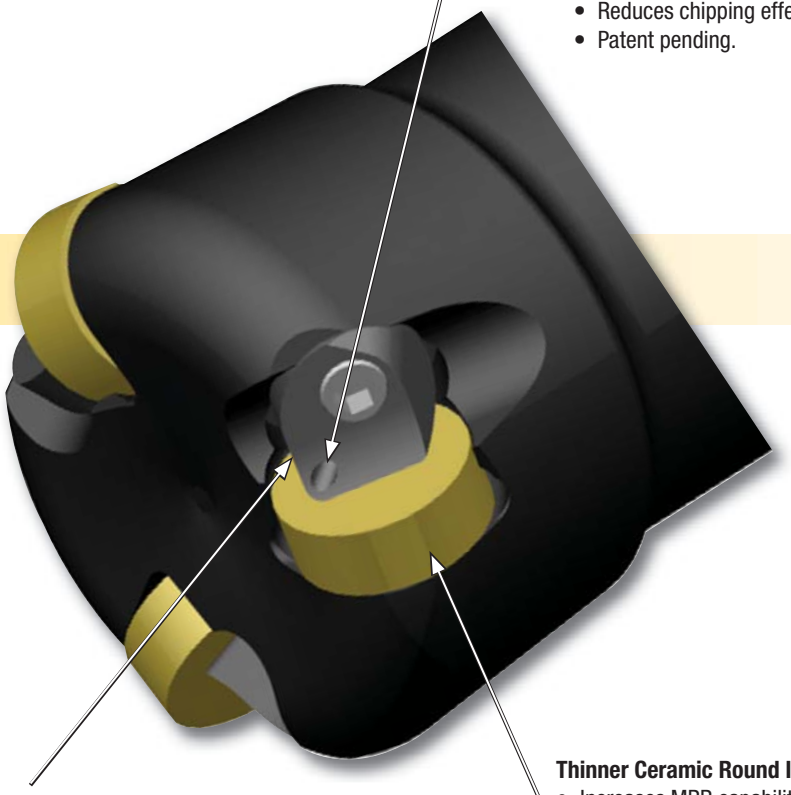
Flat-top geometry for roughing applications in Ni- and Co-based alloys.

-EGN
Lower cutting forces.

-TGN
Strongest cutting edge.

*Alternative for unstable situations.

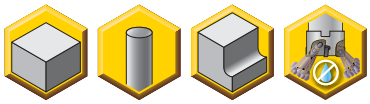
Unique Air Coolant Feature
- Improves chip flow.
- Reduces chipping effect on cutting edges.
- Patent pending.

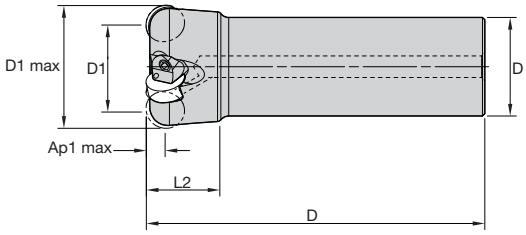


Secure Clamping System
- Improves stability.
- Increases process reliability.
- Facilitates insert change.

Thinner Ceramic Round Inserts
- Increases MRR capabilities.
- Reduces cutting forces.
- Improves cost per edge.

- First choice for face and shoulder milling high-temperature alloys.
- Higher material removal rate due to fine pitch cutters.
- Secure clamping system, improving process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.







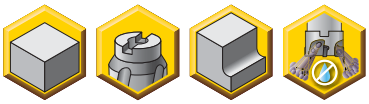
Cylindrical End Mills

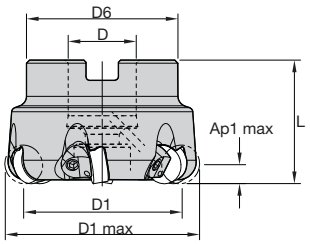
order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z	max RPM	lbs	insert 1
5703935	**KCRA150RN4303C125L400**	1.500	1.000	1.250	4.000	.934	.250	3	28700	1.32	RNGN120400

Spare Parts

D1 max	 clamp screw	 in. lbs.	 Torx driver	 wedge
1.500	**STCM25**	29	**MW25**	**KW1008**

- First choice for face and shoulder milling high-temperature alloys.
- Higher material removal rate due to fine pitch cutters.
- Secure clamping system, improving process stability and reliability.
- Effective air coolant feature. Better chip flow and increased insert tool life.







Shell Mills

order number	catalog number	D1 max	D1	D	D6	L	Ap1 max	Z	max RPM	lbs	insert 1
5703936	**KCRA200RN4304S075L175**	2.000	1.500	.750	1.654	1.750	.250	4	23400	.99	RNGN120400
5703937	**KCRA200RN4306S075L175**	2.000	1.500	.750	1.654	1.750	.250	6	23400	.94	RNGN120400
5703938	**KCRA250RN4306S075L175**	2.500	2.000	.750	1.750	1.750	.250	6	20300	1.41	RNGN120400
5703939	**KCRA250RN4309S075L175**	2.500	2.000	.750	1.750	1.750	.250	9	20300	1.34	RNGN120400
5704050	**KCRA300RN4308S100L200**	3.000	2.500	1.000	2.750	2.000	.250	8	18100	2.92	RNGN120400
5704051	**KCRA300RN4311S100L200**	3.000	2.500	1.000	2.750	2.000	.250	11	18100	2.82	RNGN120400

Spare Parts

D1 max	 socket-head cap screw	 clamp screw	 in. lbs.	 Torx driver	 wedge
2.000	**S446**	**STCM25**	29	**MW25**	**KW1008**
2.500	**S446**	**STCM25**	29	**MW25**	**KW1008**
3.000	**S459**	**STCM25**	29	**MW25**	**KW1008**

Insert Selection Guide

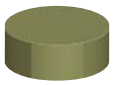
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		⟷		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	–	–	–	–	–	–
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	.EGN	KYS30	**.EGN**	**KYS30**	.TGN	KYS30
S3	.EGN	KYSP30	**.EGN**	**KYSP30**	.TGN	KYSP30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

Indexable Inserts

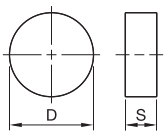
- -EGN geometry is the first choice for unstable situations and/or lower cutting forces.
- -TGN geometry has a stronger cutting edge.
- KYSP30 is the first choice for S3 group materials, Ni-based alloys.

● first choice
○ alternate choice

	KYS30	KYSP30
P		
M		
K		
N		
S	●	●
H		



RNGN1204



RNGN1204

RNGN43

catalog number	D	S	KYS30	KYSP30
RNGN43EGN	.500	.188	●	●
RNGN43TGN	.500	.188	●	●

NOTE: A — Use these tools with the appropriate equipment/machines. Machines have to be covered for safety reasons: Hot flowing chips and loud noises are involved, which is common during the milling process.
B — Use only air flow as coolant method.
C — Higher RPMs are involved; use balanced toolholder for higher tool life and safer operation.

Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	.003	**.004**	.005	.003	**.003**	.003	.002	**.002**	.003	.002	**.002**	.003	.002	**.002**	.003	.EGN
.TGN	.005	**.007**	.008	.004	**.005**	.006	.003	**.004**	.005	.003	**.004**	.005	.003	**.004**	.005	.TGN

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	.004	**.004**	.005	.003	**.003**	.004	.003	**.003**	.003	.002	**.003**	.003	.002	**.003**	.003	.EGN
.TGN	.006	**.008**	.009	.004	**.006**	.007	.004	**.005**	.006	.004	**.005**	.005	.003	**.005**	.005	.TGN

At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	.005	**.006**	.007	.004	**.004**	.005	.003	**.004**	.004	.003	**.003**	.004	.003	**.003**	.004	.EGN
.TGN	.008	**.010**	.012	.006	**.008**	.009	.005	**.007**	.008	.005	**.006**	.007	.005	**.006**	.007	.TGN

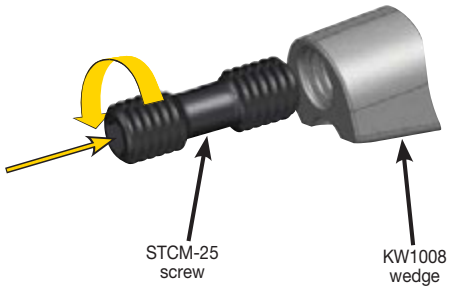
At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
.EGN	.007	**.008**	.009	.005	**.006**	.007	.005	**.005**	.006	.004	**.005**	.006	.004	**.005**	.006	.EGN
.TGN	.010	**.014**	.016	.008	**.010**	.012	.007	**.009**	.010	.006	**.008**	.010	.006	**.008**	.010	.TGN

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Insert Assembly Guide

Safety Notes					
					
Read all instructions carefully	Wear eye protection	Inspect and tighten fasteners regularly	Warning: Cutting hazard	Warning: Hot surfaces	Do not exceed maximum RPM

Assembly Instructions	
1 Assemble STCM-25 screw to KW1008 wedge, 1 to 1 1/2 turns.	**2** Wedge/screw assembly.
	
3 Install wedge/screw assembly into cutter body, but maintain assembly gap for installing insert.	**4** Slide insert, RNGN12... into pocket and torque wedge/insert assembly to 3,5 Nm (31 in/lbs). Repeat for each pocket.
	

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KIPR™

Ceramic Milling Cutters

Primary Application

The Kennametal ceramic milling platform has been specifically engineered to machine high-temperature alloys, PH series, stainless steel, and hardened materials. With excellent productivity through the massive reduction of machining time, Kennametal ceramics can run more than 10 times faster than comparable carbide grades.



Features and Benefits

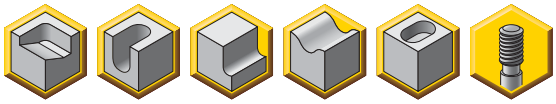
Unbeatable Productivity

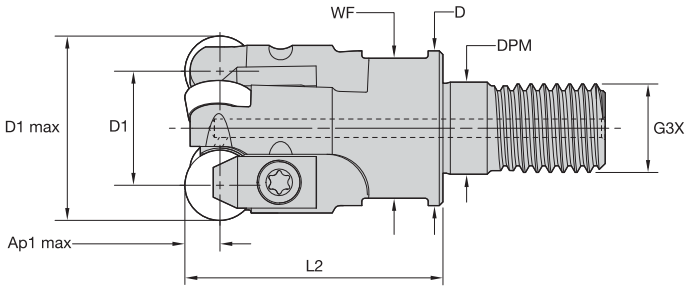
- Engineering to provide outstanding metal removal rates and productivity in nickel-based and/or cobalt-based alloys, stellites, stainless steel, and PH series through HSM.
- High axial and radial runout accuracy.
- Improved insert clearance and thickness tolerance to increase overall performance.
- New clamping system design provides higher spare part tool life and reliability and higher RPM.

Usability and Offering

- Three grades and three insert sizes available to cover a wide range of applications.
- Wide diameter range with end mills and Screw-On cutters from diameter 0.625".
- High clearance on the cutters for superior ramping capacities.
- Through-coolant option in all the cutters. Only for air use.

- For machining high-temp alloys, PH stainless, stainless steels, and hardened materials.
- Excellent productivity through massive reduction of machining time.
- Face milling, pocketing, and ramping capabilities.
- Through-body coolant delivery for internal air supply only.







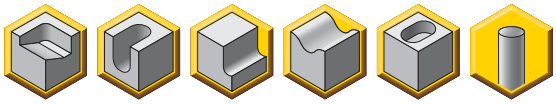
Screw-On End Mills

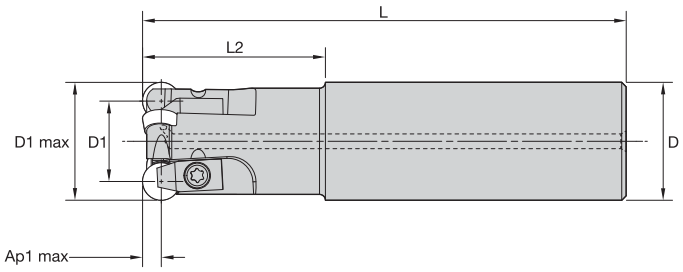
order number	catalog number	D1 max	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	max ramp angle	max RPM	lbs	insert 1
3760369	**KIPR100RP32M1203**	1.000	.625	.827	.492	M12	1.250	.709	.188	3	8.0°	20450	.17	RP_32_
3760370	**KIPR125RP43M1603**	1.250	.750	1.142	.669	M16	1.500	.866	.250	3	2.5°	21000	.32	RP_43_

Spare Parts

D1 max	clamp	clamp screw	in. lbs.	Torx driver	Torx Plus wrench
1.000	**KCI2**	**191.725**	31	**DT15**	**–**
1.250	**KCI3M**	**193.409**	53	**–**	**TTP20**

- For machining high-temp alloys, PH stainless, stainless steels, and hardened materials.
- Excellent productivity through massive reduction of machining time.
- Face milling, pocketing, and ramping capabilities.
- Through-body coolant delivery for internal air supply only.







Cylindrical End Mills

order number	catalog number	D1 max	D1	D	L	L2	Ap1 max	Z	max ramp angle	max RPM	insert 1	lbs
3759533	**KIPR062RP21229**	.625	.375	.625	2.950	1.021	.125	2	12.0°	37400	RP_2150_	.21
3759534	**KIPR075RP21332**	.750	.500	.750	3.200	1.192	.125	3	10.0°	34150	RP_2150_	.33
3759535	**KIPR100RP32438**	1.000	.625	1.000	3.800	1.556	.188	3	8.0°	20450	RP_32_	.70
1873486	**KIPR125RP43540**	1.250	.761	1.250	4.000	1.610	.249	3	4.3°	21000	RP_43_	1.09
1775726	**KIPR125RP43555**	1.250	.761	1.250	5.500	3.110	.249	3	4.3°	21000	RP_43_	1.54
1775728	**KIPR150RP43655**	1.500	1.009	1.500	5.500	3.500	.249	3	3.0°	19500	RP_43_	2.28

Spare Parts

D1 max	 clamp	 clamp screw	 in. lbs.	 Torx driver	 Torx Plus wrench
.625	**KCI1**	**191.924**	17	**DT9**	**–**
.750	**KCI1**	**191.924**	17	**DT9**	**–**
1.000	**KCI2**	**191.725**	31	**DT15**	**–**
1.250	**KCI3M**	**193.409**	55	**–**	**TTP20**
1.500	**KCI3M**	**193.409**	55	**–**	**TTP20**

Insert Selection Guide

RPG2150... High Temp

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ←				→ toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..E	KYS30
S3	..E	KYS30	**..E**	**KYS30**	..E	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

RPG32... High Temp

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ←				→ toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..T	KYS30
S3	..E	KYS30	**..T**	**KYS30**	..T	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

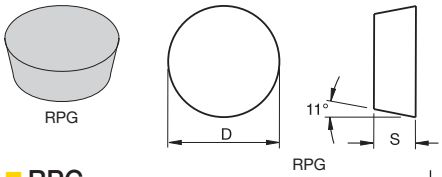
RPG43... High Temp

Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ←				→ toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1–P2	–	–	–	–	–	–
P3–P4	–	–	–	–	–	–
P5–P6	..E	KYSP30	**..E**	**KYSP30**	..E	KYSP30
M1–M2	–	–	–	–	–	–
M3	–	–	–	–	–	–
K1–K2	–	–	–	–	–	–
K3	–	–	–	–	–	–
N1–N2	–	–	–	–	–	–
N3	–	–	–	–	–	–
S1–S2	..E	KYS30	**..E**	**KYS30**	..T	KYS30
S3	..E	KYS30	**..T**	**KYS30**	..T	KYS30
S4	–	–	–	–	–	–
H1	–	–	–	–	–	–

- Two grades and three insert sizes with positive clearances for ramping.
- For machining high-temp alloys, PH stainless, stainless steels, and hardened materials.

● first choice
○ alternate choice

P	○	○
M		
K		
N		
S	●	●
H		



RPG

catalog number	D	S	KYS30	KYSP30
RPG2150E	.250	.094	●	●
RPG32E	.375	.125	●	●
RPG32T0420	.375	.125	●	–
RPG43E	.500	.188	●	●
RPG43T0420	.500	.188	●	–

NOTE: A — Use these tools with the appropriate equipment/machines. Machines have to be covered for safety reasons: Hot flowing chips and loud noise are involved, which is common during the milling process.
B — Use only air flow as coolant method.
C — Higher RPMs are involved; use balanced toolholder for higher tool life and safer operation.
D — Consider increasing the fz in hard machining when smaller Ap are applied.

Recommended Starting Feeds [IPT] RPG2150..

Light Machining	General Purpose	Heavy Machining

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.005**	.007	.004	**.004**	.005	.003	**.003**	.004	.003	**.003**	.004	.003	**.003**	.004	..E

At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.006**	.008	.004	**.004**	.006	.004	**.004**	.005	.003	**.004**	.005	.003	**.004**	.005	..E

At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.007	**.008**	.010	.005	**.006**	.008	.005	**.005**	.007	.004	**.005**	.006	.004	**.005**	.006	..E

At .016 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.010	**.011**	.014	.007	**.008**	.010	.006	**.007**	.009	.006	**.007**	.008	.006	**.006**	.008	..E

Recommended Starting Feeds [IPT] RPG32..

At .188 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.005**	.007	.004	**.004**	.005	.003	**.003**	.004	.003	**.003**	.004	.003	**.003**	.004	..E
..T	.007	**.008**	.010	.005	**.006**	.008	.004	**.005**	.007	.004	**.005**	.006	.004	**.005**	.006	..T

At .094 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.006**	.008	.004	**.004**	.006	.004	**.004**	.005	.003	**.004**	.005	.003	**.004**	.005	..E
..T	.008	**.009**	.012	.006	**.007**	.009	.005	**.006**	.008	.005	**.006**	.007	.005	**.006**	.007	..T

At .047 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.007	**.008**	.010	.005	**.006**	.008	.005	**.005**	.007	.004	**.005**	.006	.004	**.005**	.006	..E
..T	.010	**.012**	.015	.008	**.009**	.011	.007	**.008**	.010	.006	**.007**	.009	.006	**.007**	.009	..T

At .023 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.010	**.011**	.014	.007	**.008**	.010	.006	**.007**	.009	.006	**.007**	.008	.006	**.006**	.008	..E
..T	.014	**.017**	.021	.010	**.012**	.016	.009	**.011**	.014	.008	**.010**	.013	.008	**.010**	.012	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.

Recommended Starting Feeds [IPT] RPG43..

Light Machining	General Purpose	Heavy Machining

At .250 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.005**	.007	.004	**.004**	.005	.003	**.003**	.004	.003	**.003**	.004	.003	**.003**	.004	..E
..T	.007	**.010**	.011	.005	**.008**	.009	.004	**.007**	.007	.004	**.006**	.007	.004	**.006**	.007	..T

At .125 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.005	**.006**	.008	.004	**.004**	.006	.004	**.004**	.005	.003	**.004**	.005	.003	**.004**	.005	..E
..T	.008	**.012**	.013	.006	**.009**	.010	.005	**.008**	.009	.005	**.007**	.008	.005	**.007**	.008	..T

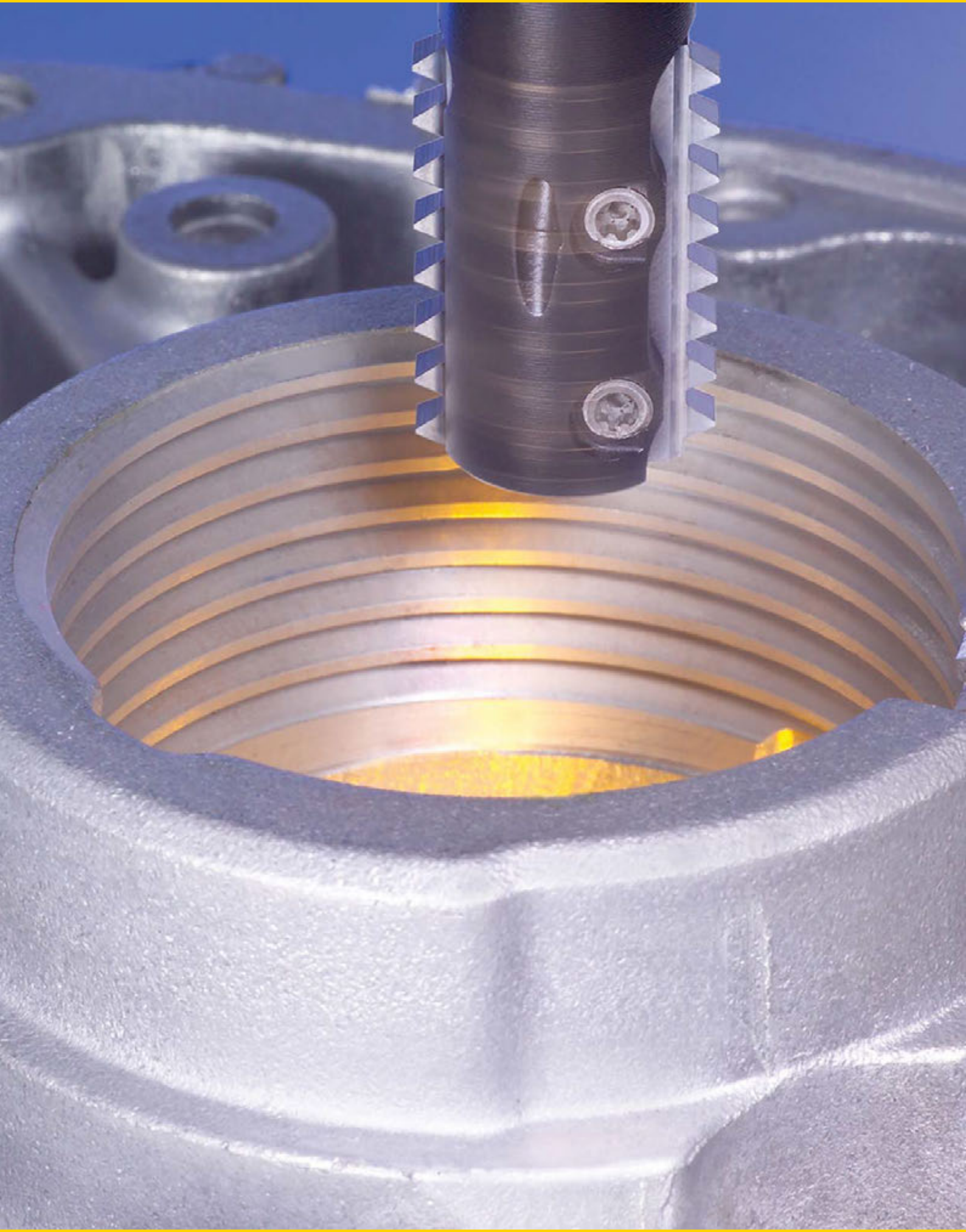
At .063 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.007	**.008**	.010	.005	**.006**	.008	.005	**.005**	.007	.004	**.005**	.006	.004	**.005**	.006	..E
..T	.010	**.016**	.017	.008	**.012**	.013	.007	**.010**	.011	.006	**.010**	.010	.006	**.009**	.010	..T

At .031 Axial Depth of Cut (ap)

Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	10%			20%			30%			40%			50–100%			
..E	.010	**.011**	.014	.007	**.008**	.010	.006	**.007**	.009	.006	**.007**	.008	.006	**.006**	.008	..E
..T	.014	**.022**	.024	.010	**.016**	.018	.009	**.014**	.015	.008	**.013**	.014	.008	**.013**	.014	..T

NOTE: Use “Light Machining” values as starting feed rate.
Please see pages X22–X37 for recommended starting speeds.



Indexable Milling • Indexable Thread Milling

TM Series **W2–W27**

TM24 ..... W4–W8

TM25 ..... W10–W16

TM40 ..... W17–W22

TM41 ..... W24–W27

KTMD U Series **W28–W37**

TMS • Thread Milling System **W38–W47**

Thread Milling • Application and Technical Information **W48–W55**

TM Series

The latest Kennametal indexable thread milling tools deliver longer tool life and higher productivity while offering a comprehensive range of thread styles and sizes:

- TM24 Series — Small-bore threading applications with one cutting edge per insert.
- TM25 Series — Standard threading applications with two cutting edges per insert.
- TM40 Series — Long-thread threading applications with two cutting edges per insert.
- TM41 Series — Large-pitch threading applications with two cutting edges per insert.

Features and Benefits

Cutter Body Offering

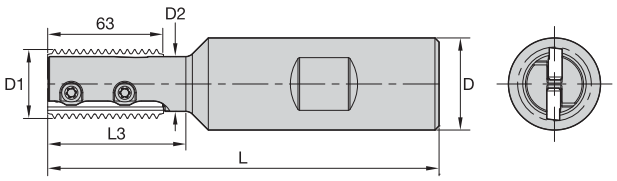
- Number of flutes:
  - TM24: 1–2 per body
  - TM25: 2–8 per body
  - TM40: 3–8 per body
  - TM41: 2–6 per body
- Short and long toolholders for multiple applications.
- Cutters available in parallel Weldon® and conical Weldon holders.
- Effective through coolant for each flute.
- Better chip evacuation.

Insert Offering

- Robust design.
- Inserts for ISO, UN, W, NPT, NPTF, and BSPT thread profiles.
- Pitch:
  - TM24: 32–10 TPI (0,50–2,50mm)
  - TM25: 20–8 TPI (1,00–3,00mm)
  - TM40: 32–10 TPI (1,00–3,00mm)
  - TM41: 8–4 TPI (3,00–6,00mm)
- Grades for most workpiece materials.
- Easy clamping systems.
- Fast indexing of inserts.



- .530–.630" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
5593154	**TM24D053L102Z1**	.530	.750	.420	3.270	1.020	1	**TM25INSERTSCREW**	**DT8IP**
5593155	**TM24D059L118Z1**	.590	.750	.470	3.390	1.180	1	**TM25INSERTSCREW**	**DT8IP**
5593156	**TM24D063L110Z2**	.630	.750	.490	3.310	1.100	2	**TM25INSERTSCREW**	**DT8IP**
5593157	**TM24D063L142Z1**	.630	.750	.460	3.630	1.420	1	**TM25INSERTSCREW**	**DT8IP**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Through coolant is recommended, especially when D2 > 0.7 x nominal thread diameter.

		Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM24D053L102Z1	.530	M16 x 2	M14.5 x 0.5; M15 x 0.75; M15 x 1; M15 x 1.25; M16 x 1.5; M16 x 1.75	–	11/16–12UN; 5/8–14UNS; 5/8–16UN; 5/8–18UNF; 5/8–20UN; 5/8–24UNEF; 5/8–28UN; 5/8–32YB	11/16–14; 3/4–12	3/8–19
TM24D059L118Z1	.590	M18 x 2.5	M16 x 0.5; M17 x 0.75; M17 x 1; M17 x 1.25; M17 x 1.5; M18 x 1.75; M18 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 1 1/16–16UN; 1 1/16–20UN; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D063L110Z2	.630	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 11/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D063L142Z1	.630	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 1 1/16–24UNEF; 1 1/16–28UN; 11/16–32UN	3/4–12	–



Side with identification marks



Always mount all inserts on the same side



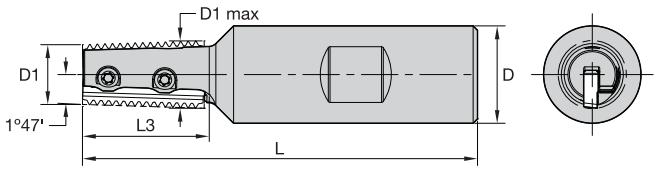
Always mount all inserts on the same side



To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM24 blank insert.

- .550" cutting diameter.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.



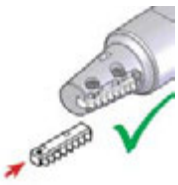


Thread Mill • Weldon Shank • Conical Threads

order number	catalog number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
5593158	TMT24D055L102Z1	.450	.550	.750	3.230	1.020	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

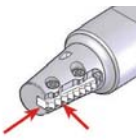
Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMT24D055L102Z1	.550	3/8–18	3/8–18	3/8–19



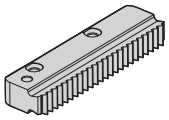
On Conical inserts, the identification mark must face up

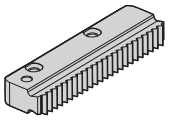


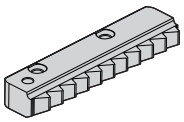
On Conical inserts, the identification mark must face up

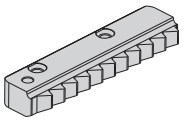


To mount insert correctly, push the insert toward the pocket walls


ISO Profiles

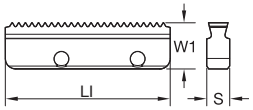

UN Profiles

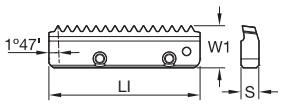

BSF and BSP Profiles


NPT Profiles

● first choice
○ alternate choice

		KC610M	KC635M
P		○	●
M			●
K		●	
N		●	
S		○	●
H		●	○





Conical Insert

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM24N050ISO	0,5	.945	.276	.118	49	●	●
TM24N075ISO	0,75	.945	.276	.118	33	●	●
TM24N100ISO	1,0	.945	.276	.118	24	●	●
TM24N150ISO	1,5	.945	.276	.118	16	●	●
TM24N125ISO	1,25	.945	.276	.118	20	●	●
TM24N175ISO	1,75	.945	.276	.118	14	●	●
TM24N200ISO	2,0	.945	.276	.118	12	●	●
TM24N250ISO	2,5	.945	.276	.118	10	●	●

UN Profiles • Internal

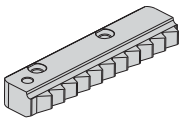
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24N10UN	10	.945	.276	.118	9	●	●
TM24N12UN	12	.945	.276	.118	11	●	●
TM24N14UN	14	.945	.276	.118	13	●	●
TM24N16UN	16	.945	.276	.118	15	●	●
TM24N18UN	18	.945	.276	.118	17	●	●
TM24N20UN	20	.945	.276	.118	19	●	●
TM24N24UN	24	.945	.276	.118	23	●	●
TM24N28UN	28	.945	.276	.118	27	●	●
TM24N32UN	32	.945	.276	.118	31	●	●

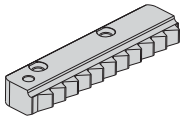
BSF and BSP Profiles • Internal and External

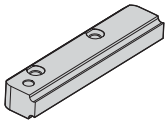
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN14BSF	14	.945	.276	.118	13	●	●
TM24EN19BSF	19	.984	.276	.118	18	●	●

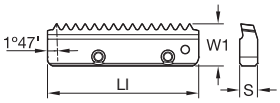
NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPT	18	.945	.276	.118	17	●	●

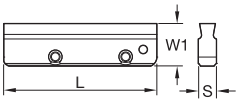

NPTF Profiles


BSPT Profiles


Blank Insert



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPTF	18	.945	.276	.118	17	●	●

BSPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN19BSPT	19	.945	.276	.118	18	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM24ENBLANK	.945	.276	.118

TM24 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

NOVO KNOWS CAD/CAM

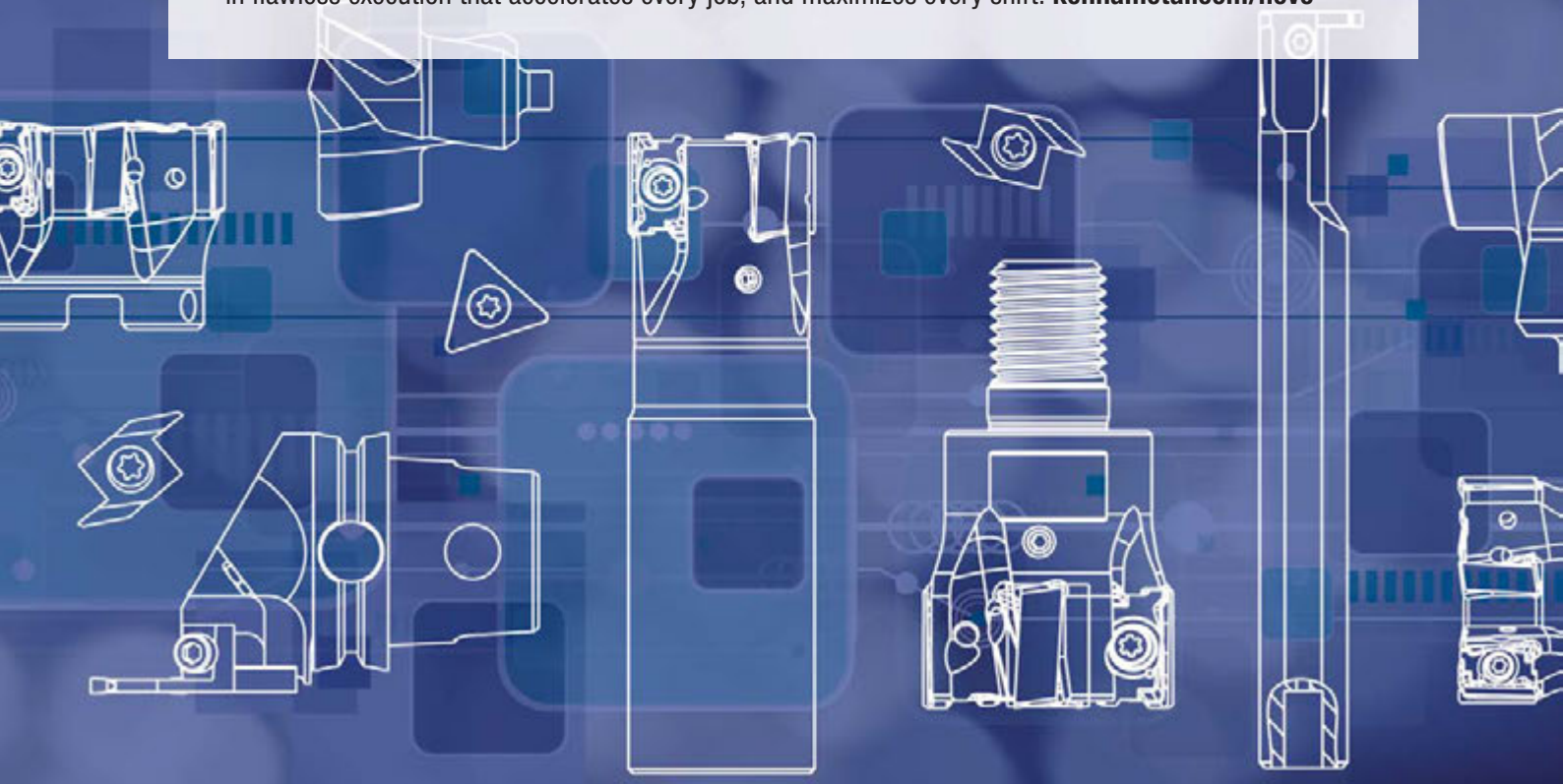
With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the outdated method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**



- .670–2.047" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
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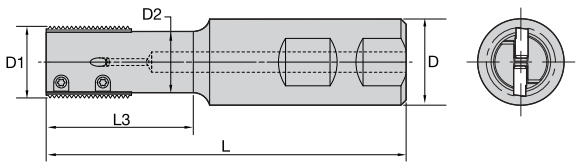
- Utilizes inserts with various profiles and pitches.



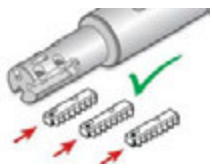


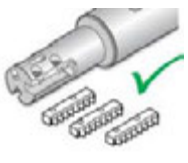
Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
3030845	TM25D17L26Z2	.669	.984	.551	3.347	1.024	2	TM25INSERTSCREW	DT8IP
3030846	TM25D17L36Z2	.669	.984	.551	3.740	1.417	2	TM25INSERTSCREW	DT8IP
3030848	TM25D20L37Z3	.807	.984	.649	3.780	1.457	3	TM25INSERTSCREW	DT8IP
3030849	TM25D20L44Z3	.807	.984	.649	4.055	1.732	3	TM25INSERTSCREW	DT8IP
3030850	TM25D22L43Z3	.866	.984	.709	4.016	1.693	3	TM25INSERTSCREW	DT8IP
3030852	TM25D22L55Z3	.866	.984	.709	4.488	2.165	3	TM25INSERTSCREW	DT8IP
3031703	TM25D30L55Z5	1.181	.984	1.024	4.528	2.165	5	TM25INSERTSCREW	DT8IP
3031705	TMC25D30L80Z4	1.181	.984	1.024	5.512	3.150	4	TM25INSERTSCREW	DT8IP
5593142	TMS25D36L34Z5	1.417	.630	1.498	1.319	—	5	TM25INSERTSCREW	DT8IP
5593143	TMS25D44L38Z6	1.732	.866	1.575	1.496	—	6	TM25INSERTSCREW	DT8IP
5593141	TMS25D52L40Z8	2.047	1.063	1.890	1.575	—	3	TM25INSERTSCREW	DT8IP

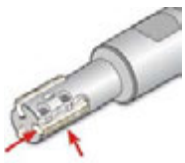
NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

			Thread Application per Toolholder min thread Ø			
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF
TM25D17L26Z2 TM25D17L36Z2	.669	M20 x 2.5	M19 x 1; M19 x 1.5; M20 x 2	–	7/8–10UNS; 13/16–12UN; 7/8–14UNF; 3/4–16UNF; 3/4–18UNS; 3/4–20UNEF	7/8–11; 7/8–12; 7/8–14; 7/8–16
TM25D20L37Z3 TM25D20L44Z3	.807	M24 x 3.0	M22 x 1.; M23 x 1.5; M23 x 2.; M23.5 x 2.5	1–8	15/16–9UN; 1.0–10UNS; 15/16–12UN; 1.0–14UNS; 15/16–16UN; 7/8–18UNS; 7/8–20UNEF	1–11; 1–12; 1.14; 1.16
TM25D22L43Z3 TM25D22L55Z3	.866	M27 x 3.0	M24 x 1.; M24 x 1.5; M25 x 2.; M25 x 2.5	–	11/16–8UN; 1.0–9UN; 1.0–10UNS; 1.0–12UNF; 1.0–14UNS; 1.0–16UN; 1.0–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16
TM25D30L55Z5 TMC25D30L80Z4	1.181	–	M32 x 1.; M32 x 1.5; M33 x 2.; M33 x 2.5; M34 x 3	–	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 1 5/16–12UN; 1 3/8–14UNS; 1 5/16–16UN; 1 5/16–18UNEF; 1 5/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16


Side with identification marks

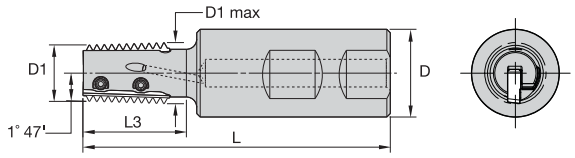

Side without identification marks


Always mount all inserts on the same side


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- .670–1.100" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





Thread Mill • Weldon Shank • Conical Threads

order number	catalog number	D1	D1 max	D	L	L3	Z	insert screw	in. lbs.	Torx Plus driver
3031708	TMT25D067L110Z2	.608	.670	1.000	3.500	1.100	2	TM25INSERTSCREW	35	DT8IP
3031712	TMT25D087L170Z3	.802	.870	1.000	4.090	1.700	3	TM25INSERTSCREW	35	DT8IP
3031715	TMT25D110L170Z4	1.039	1.100	1.000	4.060	1.700	4	TM25INSERTSCREW	35	DT8IP

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMT25D17L26Z2	.669	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11; 1 1/4–11; 1 1/2–11; 2–11
TMT25D22L43Z3	.866	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11; 1 1/4–11;1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11
TMT25D28L43Z4	1.102	1–11.5; 2–11.5	1–11.5; 2–11.5	1–11; 1 1/4–11; 1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11



On Conical inserts, the identification mark must face up



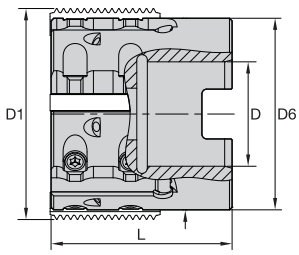
Side without identification marks

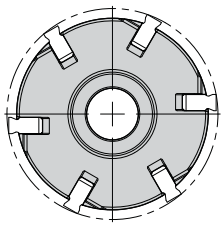


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 1.540–2.320" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





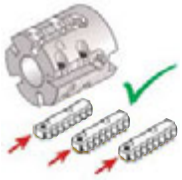


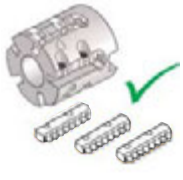
Thread Mill • Shell Mill • Parallel Threads

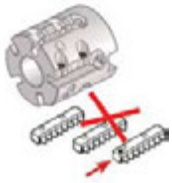
order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593147	**TMS25D154L126Z5**	1.540	.500	1.382	1.260	5	**TM25INSERTSCREW**	**DT8IP**	**MS5007**
5593146	**TMS25D193L138Z7**	1.930	.750	1.772	1.380	7	**TM25INSERTSCREW**	**DT8IP**	**MS5008**
5593145	**TMS25D232L158Z9**	2.320	1.000	2.169	1.580	9	**TM25INSERTSCREW**	**DT8IP**	**MS5006**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

	Thread Application per Toolholder min thread Ø				
toolholder	D1	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS25D154L126Z5	1.540	M42 x 1; M42 x 1.5; M45 x 2; M45 x 3	1 11/16–12UNF; 1 3/4–14UNS; 1 5/8–16UN; 1 5/8–18UNEF; 1 5/8–20UN	1 3/4–16; 1 3/4–12	1 1/2–11
TMS25D193L138Z7	1.930	M52 x 1; M55 x 1.5; M55 x 2; M55 x 3	2 1/8–12UN; 2 1/16–16UN; 2 1/8–20UN; 2 1/8–8UN; 2 1/4–10UNS; 2 1/4–14UNS; 2 1/4–18UNS	2 1/4–16; 2 1/4–12	1 3/4–11
TMS25D232L158Z9	2.320	M64 x 1; M64 x 1.5; M64 x 2; M65 x 3	2 1/2–18UN; 2 1/2–20UN; 2 1/2–8UN; 2 1/2–12UN; 2 1/2–10UN; 2 1/2–14UN; 2 1/2–16UN	2 1/2–16; 2 1/2–12	2 1/4–11


Side with identification marks

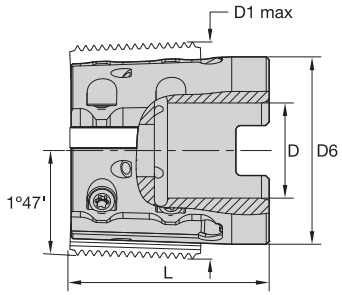

Side without identification marks

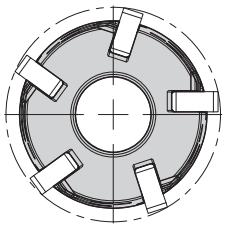

Always mount all inserts on the same side


To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 1.478" cutting diameter.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





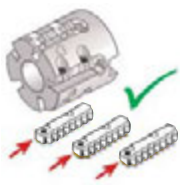


Thread Mill • Shell Mill • Conical Threads

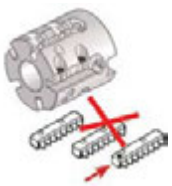
order number	catalog number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593148	TMST25D154L126Z5	1.538	.500	1.358	1.260	5	TM25INSERTSCREW	DT8IP	MS5007

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	D1	NPT	NPTF	BSPT
TMST25D154L126Z5	1.478	1 1/2–11.5; 2–11.5	1 1/2–11.5; 2–11.5	1 1/2–6 x 11



Side with identification marks



Always mount all inserts on the same side

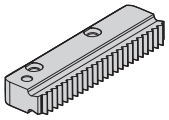


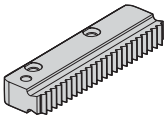
To mount insert correctly, push the insert toward the pocket walls*

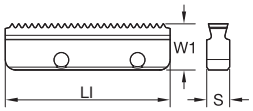
* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

NOTE: On conical inserts the identification mark must be face up.

• ISO metric screw thread style.


ISO Profiles


UN Profiles



● first choice
○ alternate choice

P		○	●
M			●
K		●	
N		●	
S		○	●
H		●	○

ISO Profiles • Internal

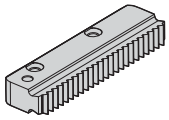
catalog number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM25N300ISO	3	.984	.300	.140	8	●	●
TM25N250ISO	2,5	.984	.300	.140	10	●	●
TM25N200ISO	2	.984	.300	.140	12	●	●
TM25N150ISO	1,5	.984	.300	.140	16	●	●
TM25N100ISO	1	.984	.300	.140	24	●	●

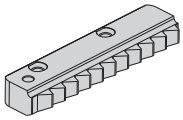
• Unified Thread Standard Style.

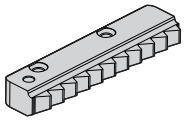
UN Profiles • Internal

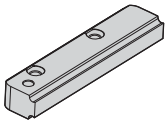
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25N8UN	8	.984	.300	.140	7	●	●
TM25N9UN	9	.984	.300	.140	8	●	●
TM25N10UN	10	.984	.300	.140	9	●	●
TM25N12UN	12	.984	.300	.140	11	●	●
TM25N14UN	14	.984	.300	.140	13	●	●
TM25N16UN	16	.984	.300	.140	15	●	●
TM25N18UN	18	.984	.300	.140	17	●	–
TM25N20UN	20	.984	.300	.140	19	●	●

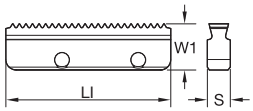
• British Standard Whitworth Thread Style.

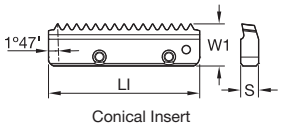

Whitworth Profiles


NPT Profiles

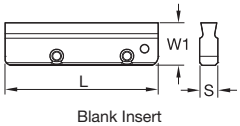

BSPT Profiles


Blank Insert





Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

Whitworth Profiles • Internal/External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11W	11	.984	.300	.140	10	●	●
TM25EN12W	12	.984	.300	.140	11	●	–
TM25EN14W	14	.984	.300	.140	13	●	●

• National Pipe Thread Taper Style.

NPT Profiles • Internal/External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN115NPT	11.5	.984	.300	.140	11	●	●
TM25EN14NPT	14	.984	.300	.140	11	●	●

• British Standard Pipe Standard Thread Style.

BSPT Profiles • Internal/External

catalog number	internal TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11BSPT	11.0	.984	.300	.140	10	●	–
TM25EN14BSPT	14.0	.984	.300	.140	11	●	–

Blank Insert Form • Internal/External

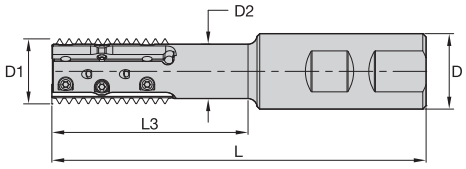
catalog number	L	W1	S
TM25BLANK	.988	.220	.140

TM25 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

- .870–1.180" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.



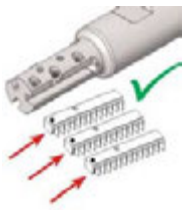


Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593191	TM40D087L169Z3	.870	1.000	.710	4.000	1.690	3	TM25INSERTSCREW	DT8IP	MS9000
5593192	TM40D087L256Z3	.870	1.000	.710	4.870	2.560	3	TM25INSERTSCREW	DT8IP	MS9000
5593193	TM40D118L215Z4	1.180	1.250	1.020	4.550	2.150	4	TM25INSERTSCREW	DT8IP	MS9000
5593194	TM40D118L315Z3	1.180	1.250	1.020	5.350	3.150	3	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM40D087L169Z3	.870	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D087L256Z3	.870	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D118L215Z4	1.180	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11
TM40D118L315Z3	1.180	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System

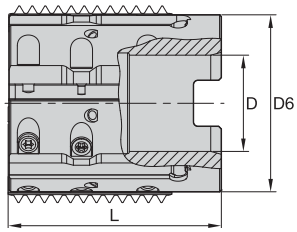
Step 1. Location Screw

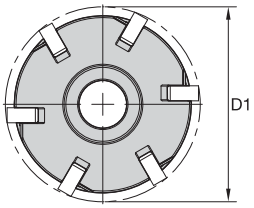


Step 2. Clamping Screw (2)



- 1.930–2.320" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





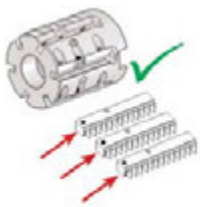


Thread Mill • Shell Mill • Parallel Threads

order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593195	**TMS40D193L197Z7**	1.930	.750	1.770	1.970	7	**TM25INSERTSCREW**	**DT8IP**	**MS5008**	**MS9000**
5593196	**TMS40D232L200Z9**	2.320	1.000	2.170	2.000	9	**TM25INSERTSCREW**	**DT8IP**	**MS5009**	**MS9000**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø					
toolholder	**D1**	**ISO (fine)**	**UN/UNF/UNEF/UNS**	**BSW**	**BSP(G)**
TMS40D193L197Z7	1.930	M52 x 1; M55 x 1.5; M55 x 2; M55 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2 1/4–12; 2 1/4–16	1 3/4–11
TMS40D232L200Z9	2.320	M64 x 1; M64 x 1.5; M64 x 2; M65 x 3	2 1/4–8UN; 2 1/4–10UN; 2 1/4–12UN; 2 1/4–14UN; 2–1/4–16UN; 2 1/4–18UN; 2 1/4–20UN	2 1/2–12; 2 1/2–16	2 1/4–11



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System!

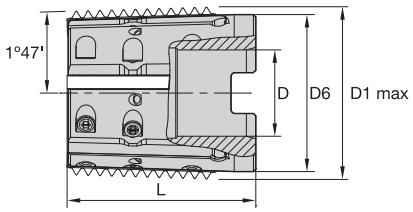
Step 1. Location Screw



Step 2. Clamping Screw (2)



- 1.930" cutting diameter.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.



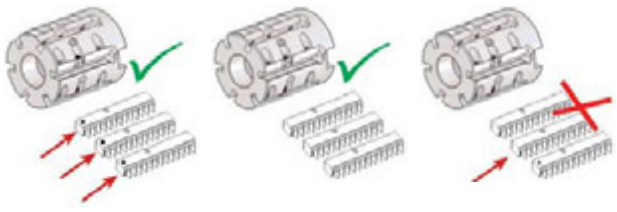


Thead Mill • Shell Mill • Conical Threads

order number	catalog number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593197	TMST40D193L197Z7	1.930	.750	1.770	1.970	7	TM25INSERTSCREW	DT8IP	MS5006	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMST40D193L197Z7	1.930	2 –11.5; 2 1/2–8 (and up)	2–11.5; 2 1/2–8; 3/8	2–6 x 11



Side with identification marks | Side without identification marks | Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

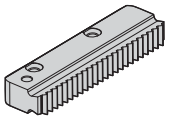
2 Step Clamping System!

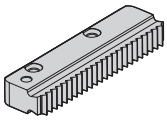
Step 1. Location Screw



Step 2. Clamping Screw (2)




ISO Profiles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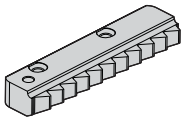
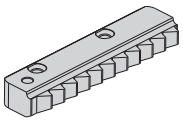
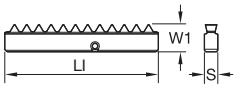
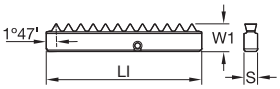

BSF and BSP Profiles


NPT Profiles

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○





Conical Inserts

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM40N100ISO	1,0	1.575	.278	.137	●	●
TM40N150ISO	1,5	1.575	.278	.137	●	●
TM40N200ISO	2,0	1.575	.278	.137	●	●
TM40N250ISO	2,5	1.575	.278	.137	●	–
TM40N300ISO	3,0	1.575	.278	.137	●	●

UN Profiles • Internal

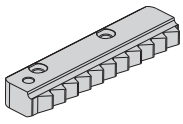
catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40N8UN	8	1.575	.278	.138	●	●
TM40N9UN	9	1.575	.278	.137	●	–
TM40N10UN	10	1.575	.278	.137	●	–
TM40N12UN	12	1.575	.278	.137	●	●
TM40N14UN	14	1.575	.278	.137	●	–
TM40N16UN	16	1.575	.278	.137	●	●
TM40N18UN	18	1.575	.278	.137	●	–
TM40N20UN	20	1.575	.278	.137	●	●

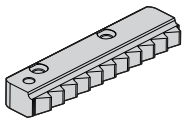
BSF and BSP Profiles • Internal and External

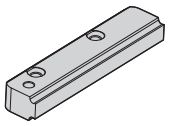
catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN11BSF	11	1.575	.278	.138	●	●
TM40EN12BSF	12	1.575	.278	.138	●	–
TM40EN14BSF	14	1.575	.278	.138	●	–
TM40EN16BSF	16	1.575	.278	.138	●	–

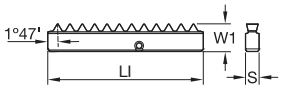
NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPT	8.0	1.575	.287	.138	●	●
TM40EN115NPT	11.5	1.575	.287	.138	●	–

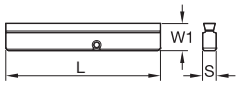

NPT Profiles


BSPT Profiles


Blank Insert



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPTF	8.0	1.575	.287	.138	●	●
TM40EN115NPTF	11.5	1.575	.287	.138	●	–

BSPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN011BSPT	11	1.575	.287	.138	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM40ENBLANK	1.575	.278	.137

TM40 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

By using the Kennametal Carbide Recycling Program, you will receive:

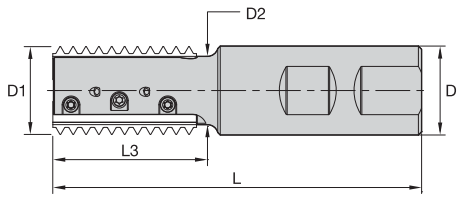
- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

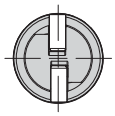
Program is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

KENNAMETAL®

kennametal.com

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.





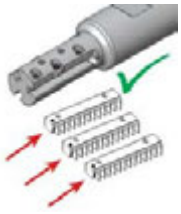


Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593177	TM41D083L177Z1	.835	1.000	.630	4.130	1.770	1	TM25INSERTSCREW	DT8IP	MS9000
5593178	TM41D097L169Z2	.970	1.000	.760	4.130	1.690	2	TM25INSERTSCREW	DT8IP	MS9000
5593179	TM41D118L256Z3	1.180	1.250	.953	5.000	2.560	3	TM25INSERTSCREW	DT8IP	MS9000
5593180	TM41D142L169Z5	1.420	1.250	1.110	4.130	1.690	5	TM25INSERTSCREW	DT8IP	MS9000
5593181	TM41D142L256Z4	1.420	1.250	1.110	4.980	2.560	4	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

		Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSW/BSF	NPT	NPTF
TM41D083L177Z1	.835	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D097L169Z2	.970	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D118L256Z3	1.180	M36 x 4; M42 x 4.5	M34 x 3; M34 x 3.5; M45 x 4	1 3/8–6	1 3/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 3/4–7BSF; 1 1/2–6BSW	–	–
TM41D142L169Z5	1.420	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8
TM41D142L256Z4	1.420	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

2 Step Clamping System!

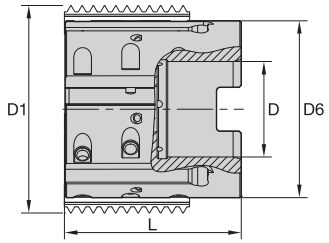
Step 1. Location Screw (2)

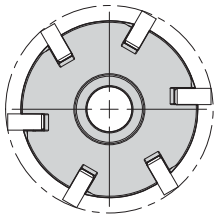


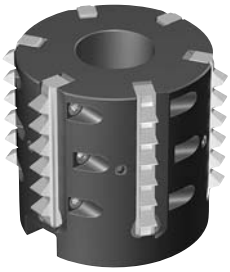
Step 2. Clamping Screw



- 2.090–2.480" cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.







Thread Mill • Shell Mill • Parallel Threads

order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593182	**TMS41D210L200Z5**	2.090	.750	1.770	2.000	5	**TM25INSERTSCREW**	**DT8IP**	**MS5008**	**MS9000**
5593183	**TMS41D250L200Z6**	2.480	1.000	2.170	2.000	6	**TM25INSERTSCREW**	**DT8IP**	**MS5009**	**MS9000**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	NPT	NPTF
TMS41D210L200Z5	2.090	M64 x 6	M58 x 4; M70 x 6	2 1/2–4	2 3/8–6UN; 2 3/8–8UN	2 3/8–8; 2 1/2–6	2 1/2–8	2 1/2–8
TMS41D250L200Z6	2.480	–	M68 x 4; M70 x 6	3–4	2 3/4–6UN; 2 3/4–8UN	2 3/4–8; 2 3/4–6	2 1/2–8	2 1/2–8



Side with identification marks

Side without identification marks

Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

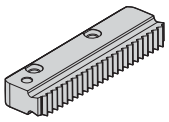
2 Step Clamping System

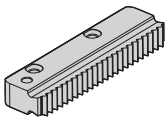
Step 1. Location Screw (2)

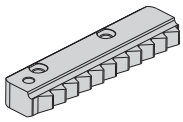


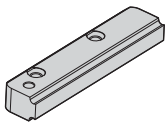
Step 2. Clamping Screw




ISO Profiles

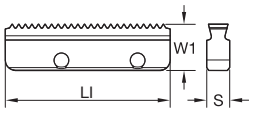

UN Profiles

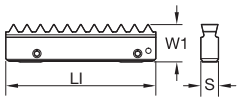

NPT Profiles


Blank Inserts

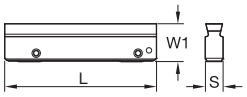
P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

● first choice
○ alternate choice





Conical Insert



Blank Inserts

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM41N300ISO	3,0	1.614	.392	.187	●	●
TM41N350ISO	3,5	1.614	.392	.187	●	●
TM41N400ISO	4,0	1.614	.392	.187	●	●
TM41N450ISO	4,5	1.614	.392	.187	●	●
TM41N500ISO	5,0	1.614	.392	.187	●	●
TM41N550ISO	5,5	1.614	.392	.187	●	●
TM41N600ISO	6,0	1.614	.392	.187	●	●

UN Profiles • Internal

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM41N4UN	4	1.614	.392	.187	●	●
TM41N45UN	4.5	1.614	.392	.187	●	●
TM41N5UN	5	1.614	.392	.187	●	●
TM41N6UN	6	1.614	.392	.187	●	●
TM41N7UN	7	1.614	.392	.187	●	●
TM41N8UN	8	1.614	.392	.187	●	●

NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM41EN8NPT	8	1.614	.392	.187	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM41ENBLANK	1.614	.392	.187

TM41 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

KTMD U Series

Primary Application

With a wide range of insert thread sizes and grades for most materials, KTMD U is a multiflute, single-point, high-productivity, and economical solution for milling threads in deep-hole applications.



Features and Benefits

Smooth Cutting Action

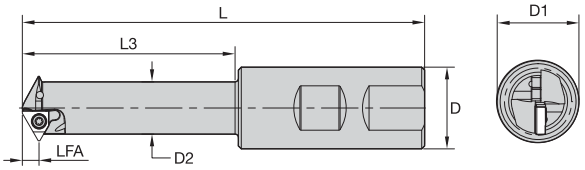
- Reduced load on the cutting edges due to single-point insert.
- Low cutting forces enable fast machining.
- Suitable for hard material applications.
- Wide range of applications, with partial profile insert (60°/55°).
- Pitch range 16–3 TPI (1,5–8mm).

Cost-Effective Solution

- Up to three cutting edges per insert.
- Very high feed per tooth.
- Fast machining.
- Multiflute — up to 7 cutting edges (inserts).

Comprehensive cutter bodies offering:

- Weldon®, steel, carbide, and shell mill cutters available.
- Long overhang capability.
- Through coolant capability.
- Diameter range 0.5–1.2" (2" with shell mills).
- Improved chip evacuation and cooling.

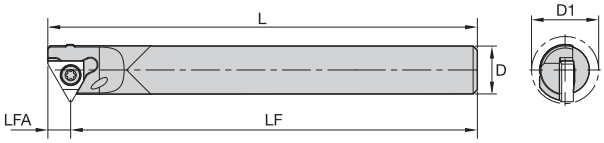




Thread Mill • U Style • Weldon® Shank • 1/4" IC

order number	catalog number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx driver
5593105	KTMDUWD058L157Z1	.580	.625	.420	3.760	1.780	.210	1	7970	KTMDUSCREW1	DT8
5593106	KTMDUWD081L236Z2	.810	1.000	.630	4.920	2.570	.210	2	6740	KTMDUSCREW1	DT8
5593107	KTMDUWD091L276Z2	.910	1.000	.700	5.380	2.960	.210	2	6380	KTMDUSCREW1	DT8
5593108	KTMDUWD102L315Z3	1.020	1.000	.800	5.790	3.360	.210	3	6000	KTMDUSCREW1	DT8
5593120	KTMDUWD122L374Z4	1.220	1.250	1.010	6.370	3.950	.210	4	5500	KTMDUSCREW1	DT8

Thread Application per Toolholder min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°	Trapez
KTMDUWD058L157Z1	.580	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4-10	5/8-32UN; 5/8-28UN; 5/8-27UNS; 11/16-24UN; 11/16-20UN; 11/16-16UN; 3/4-14UNS; 3/4-12UN	3/8-19; 1/2-14; 1-11	11/16-14; 3/4-12; 7/8-11; 3/4-10; 7/8-9; 1-8; 1 1/8-7	TR22 x 3; TR24 x 3
KTMDUWD081L236Z2	.810	M24 x 3.0; M30 x 3.5	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1–8; 1 1/8–7; 1 3/8–6	7/8–32UN; 7/8–28UN; 7/8–27UNS; 7/8–24UNS; 7/8–20UNEF; 1/18UNS; 15/16–16UN; 1–14UNS; 15/16–12UN; 1–10UNS	3/4–14; 1–11	1–26; 1–20; 1–16; 1–12; 1–10; 1 1/8–9; 1–8; 1 1/8–7	(TR26–TR60 x 3)
KTMDUWD091L276Z2	.910	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M24 x 0.75; M25 x 1.0; M25 x 1.25; M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8–7	1–32UN; 1–28UN; 1–27UNS; 1–24UNS; 1–20UNEF; 1–18UNS; 1–16UN; 1–14UNS; 1–12UNF; 1 1/8–10UNS; 1 1/8UN	3/4–14; 1–11	1–26; 1–20; 1–16; 1 1/16–12; 1 1/8–9; 1 1/8–7	–
KTMDUWD102L315Z3	1.020	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/4–7; 1 3/8–6	1 1/8–28UN; 1 1/8–24UNS; 1 1/8–20UN; 1 1/8–18UNEF; 1 1/8–16UN; 1 1/8–14UNS; 1 1/8–12UNF; 1 1/4–10UNS; 1 3/16–8UN	7/8–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/8–16; 1 3/8–12; 1 3/16–8; 1 1/4–7	–
KTMDUWD122L374Z4	1.220	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2–6	1 5/16–28UN; 1 3/8–24UNS; 1 5/16–20UN; 1 5/16–18UNEF; 1 5/16–16UN; 1 3/8–14UNS; 1 3/8–12UNF; 1 3/8–10UNS; 1 3/8–8UN	1 1/8–11	1 3/8–26; 1 3/8–20; 1 3/8–16; 1 3/8–12; 1 7/16–8	–

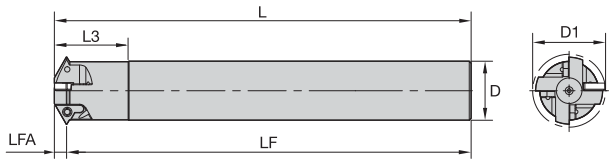




Thread Mill • U Style • Carbide Cylindrical Shank • 1/4" IC

order number	catalog number	D1	D	L	LF	LFA	Z	max RPM	insert screw	Torx driver
5593125	KTMDUCD058L236Z1	.600	.438	4.720	4.510	.210	1	7970	KTMDUSCREW1	DT8
5593126	KTMDUCD068L256Z2	.680	.563	5.350	5.140	.210	2	7380	KTMDUSCREW1	DT8
5593127	KTMDUCD081L315Z2	.810	.625	5.300	5.090	.210	2	6740	KTMDUSCREW1	DT8

		Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°	Trapez
KTMDUCD058L236Z1	.600	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4–10; 7/8–9; 1–8	5/8–32UN; 5/8–28UN; 5/8–27UNS; 11/16–28UNEF; 11/16–20UN; 11/16–16UN; 3/4–14UNS; 11/16–12UN	1/2–14; 1–11	11/16–26; 11/16–20; 11/16–16; 11/16–14; 3/4–12; 7/8–11; 3/4–10; 7/8–9	TR22 x 3; TR24 x3
KTMDUCD068L256Z2	.680	M20 x 2.5; M22 x 2.5	M21 x 2.0	7/8–9	7/8–10UNS; 13/16/12UN	–	–	–
KTMDUCD081L315Z2	.810	M24 x 3.0; M30 x 3.5	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1–8; 1 1/8–7; 1 3/8–6	7/8–32UN; 7/8–28UN; 7/8–27UNS; 7/8–24UNS; 7/8–20UNEF; 1–18UNS; 15–16UN; 1–14UNS; 15/16–12UN; 1–10UNS	3/4–14; 1–11	1–26; 1–20; 1–16; 1–12 ; 1–10; 1 1/8–9; 1–8; 1 1/8–7	(TR26–TR60) x 3

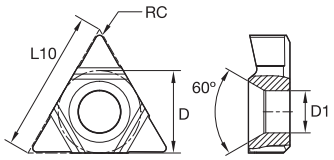


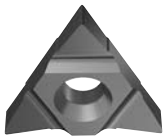


Thread Mill • U Style • Steel Cylindrical Shank • 1/4" IC

order number	catalog number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx driver
5593132	KTMDUED091L300Z2	.910	.625	5.600	3.210	5.390	.210	2	6340	KTMDUSCREW1	DT8
5593133	KTMDUED102L415Z3	1.020	.750	7.200	4.360	6.990	.210	3	6000	KTMDUSCREW1	DT8
5593135	KTMDUED122L452Z4	1.220	1.000	7.700	4.730	7.490	.210	4	5500	KTMDUSCREW1	DT8

Thread Application per Toolholder min thread Ø							
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°
KTMDUED091L300Z2	.910	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M25 x 0.75; M25 x 1.0; M25 x 1.25 M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8–7	1–32UN; 1–28UN; 1–27UN; 1–24UNS; 1–20UNEF; 1–18UNS; 1–16UN; 1–14UNS; 1 1/16–12UN; 1 1/8–10UNS; 1 1/8–8UN	3/4–14; 1–11	1–26; 1–20; 1 1/8–16; 1 1/8–12; 1 1/8–9; 1 1/8–7
KTMDUED102L415Z3	1.020	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/7–7; 1 3/8–6	1 1/8–28UN; 1 1/8–24UNS; 1 1/8–20UN; 1 1/8–18UNEF; 1 1/8–16UN; 1 1/8–14UNS; 1 1/8–16UN; 1 1/8–14UNS; 1 1/8–12UNF; 1 3/8–10UNS; 1 7/16–8UN	3/4–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/16–16; 1 3/16–12; 1 3/16–8; 1 1/4–7
KTMDUED122L452Z4	1.220	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2–6	1 5/16–28UN; 1 1/2–24UNS; 1 1/2–20UN; 1 1/2–18UNEF; 1 3/8–16UN: 1 3/8–14UNS; 1 3/8–12UNF; 1 3/8–10UNS; 1 7/16–8UN	1 1/8–11	15/16–26; 15–16–20; 1 3/8–16; 1 3/8–12; 1 7/16–8





● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

KTMD • 1/4" IC • Partial Profile 60°

catalog number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L0515N60	1	2	16	48	.128	.250	.433	.002	●	●
KTMDU11L2025N60	2	3	9	12	.103	.250	.433	.004	●	●
KTMDU11L1520N60	2	2	12	16	.128	.250	.433	.002	●	●
KTMDU11L2540N60	3	4	6	10	.128	.250	.433	.006	●	●
KTMDU11L2525N60	3	3	10	10	.082	.250	.433	.004	●	●

NOTE: KTMDU11L2525N60 can only be used with holder KTMDUCD17L065Z2.

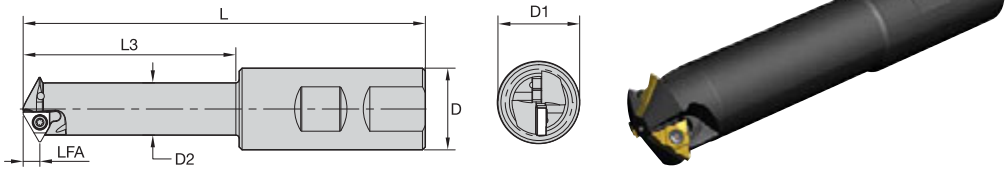
KTMD • 1/4" IC • Partial Profile 55°

catalog number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L1107N55	7	11	.128	.250	.433	.009	●	●
KTMDU11L1612N55	12	16	.128	.250	.433	.003	●	●
KTMDU11L4816N55	16	48	.128	.250	.433	.004	●	●

KTMD • 1/4" IC

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

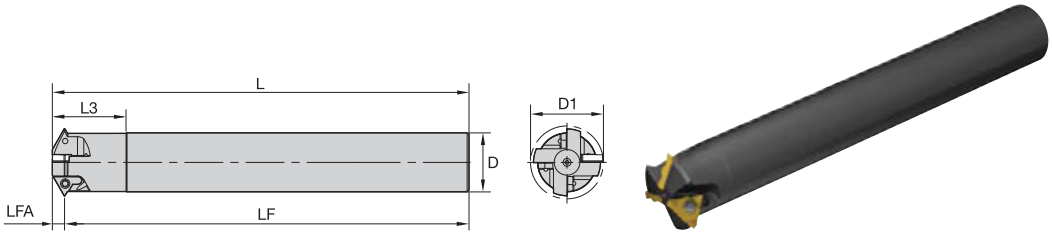
NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.



Thread Mill • U Style • Weldon® Shank • 3/8" IC

order number	catalog number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx Plus driver
5593109	KTMDUWD144L374Z3	1.440	1.250	1.140	6.450	4.060	.320	3	3680	KTMDUSCREW2	DT3IP
5593121	KTMDUWD165L472Z4	1.660	1.500	1.350	7.820	5.040	.320	4	3430	KTMDUSCREW2	DT3IP

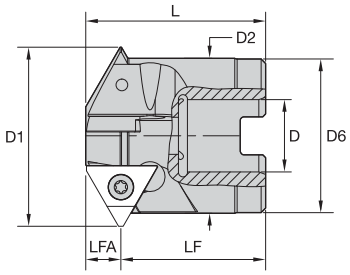
		Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	Partial 55°
KTMDUWD144L374Z3	1.440	M42 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M39 x 2.0; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4–5; 2–4.5; 2 1/2–4	1 9/16UN; 1 5/8UNS; 1 9/16–12UN; 1 5/8–10UNS; 1 5/8–8UN; 1 5/8–6UN	1 1/4–11	1 5/8–16; 1 5/8–12; 1 5/8–8; 2 1/4–6; 1 3/4–5
KTMDUWD165L472Z4	1.660	M48 x 5.0; M56 x 5.5; M64 x 6.0	M45 x 1.5; M45 x 2.0; M46 x 2.5; M48 x 3.0; M48 x 3.5; M48x4.0	2–4.5; 2 1/2–4	1 3/4–16UN; 1 3/4–14UNS; 1 13/16–12UN; 1 13/16–8UN; 1 15/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 1 7/8–6; 2–4.5

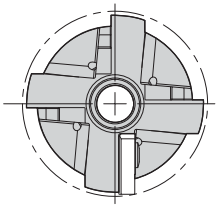


Thread Mill • U Style • Steel Cylindrical Shank • 3/8" IC

order number	catalog number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593134	KTMDUED144L512Z3	1.440	1.000	8.350	5.430	8.040	.310	3	3680	KTMDUSCREW2	DT3IP

		Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	Partial 55°
KTMDUED144L512Z3	1.4400	M42.5 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4–5; 2–4.5; 2 1/2–4	1 9/16–16UN; 1 5/8–14UNS; 1 9/16–12UN; 1 5/8–10UNS; 1 5/8–8UN; 1 5/8–6UN	1 1/4–11	1 5/8–16; 1 5/8–12; 1 5/8–8; 2 1/4–6; 1 3/4–5



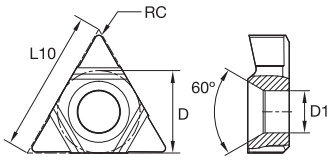


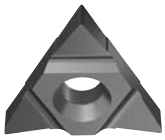


Thread Mill • U Style • Shell Mill • 3/8" IC

order number	catalog number	D1	D	D2	D6	L	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593139	**KTMDUSD169L158Z4**	1.653	.500	1.350	1.339	1.580	1.268	.310	4	3430	**KTMDUSCREW2**	**DT3IP**
5593140	**KTMDUSD209L158Z5**	2.046	.750	1.756	1.740	1.580	1.268	.299	5	3210	**KTMDUSCREW2**	**DT3IP**

		Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°
KTMDUSD169L158Z4	1.6530	M56 x 5.5; M64 x 6.0	M45 x 1.5; M48 x 2.0; M48 x 3.0; M48 x 4.0	2–4.5; 2 1/2–4	1 13/16–16UN; 1 7/8–14UNS; 1 13/16–12UN; 1 7/8–10UNS; 1 7/8–8UN; 1 15/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 2 1/8–6; 2–4.5; 2 1/4–4
KTMDUSD209L158Z5	2.0460	M64 x 6.0	M55 x 1.5; M56 x 2.0; M58 x 3.0; M58 x 4.0	2 1/2–4	2 1/4–16UN; 2 1/4–14UNS; 3 1/4–12UN; 2 1/4–10UNS; 2 1/4–8UN; 2 3/8–6UN	2–11	2 1/4–16; 2 1/4–12; 3/8–8; 2 3/8–6; 3–5; 3 1/2–4.5





● first choice
○ alternate choice

P		●	○
M		○	●
K		●	
N		●	
S			●
H		○	●

KTMD • 3/8" IC • Partial Profile 60°

catalog number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L1520N60	2	2	12	16	.152	.375	.630	.002	●	●
KTMDU16L2535N60	3	4	7	10	.152	.375	.630	.006	●	●
KTMDU16L4060N60	4	6	4	6	.152	.375	.630	.010	●	●

KTMD • 3/8" IC • Partial Profile 55°

catalog number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L0604N55	5	6	.152	.375	.630	.011	●	●
KTMDU16L1107N55	7	11	.152	.375	.630	.009	●	●
KTMDU16L1612N55	12	16	.152	.375	.630	.003	●	–

KTMD • 3/8" IC

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

TMS Series

Primary Application

The TMS series, a Kennametal Thread Milling System, is a versatile thread milling product with proven solutions. This tool is specially designed for internal and external threading on most types of workpiece materials. The cutter body utilizes inserts with various profiles and pitches.



Features and Benefits

Proven solution and versatile indexable thread milling product family.

Comprehensive Offering of Cutter Bodies

- Standard Weldon®, Mini Weldon, long-thread Weldon, conical shank, and double-sided Weldon cutters are available.
- One tool is used for both right- and left-hand threads.
- All cutters have through coolant capability.

Double-Sided Weldon Cutter Bodies

- Provides faster machining capabilities.
- Good surface finish.

Inserts:

- Insert grades for most workpiece materials.
- Inserts for ISO, UN, BSPT, and NPT thread profiles.
- Indexable inserts.
- Economical and cost effective.
- Versatile application.

Internal Threads • Insert and Holder Recommendations

thread	tap hole fl (in)	indexable insert	largest milling cutter
M11 x 0,75	.401	STN10075ISO-I	9X1R .. STN10M
M12	.398	STN10175ISO-I-C	9X1R015B20-STN10C
M12 x 1,00	.430	STN10100ISO-I	9X1R .. STN10M
M14	.466	STN11200ISO-I-C	11X1R .. STN11N
M16	.545	STN11200ISO-I-C	11X1R .. STN11N
M20	.681	STN16250ISO-I-C	15X1R020B16-STN16C
M20 x 1,50	.724	STN11150ISO-I	11X1R .. STN11N
M20 x 1,00	.745	STN11100ISO-I	11X1R .. STN11N
M24	.817	STN22300ISO-I-C	18X1R030B25-STN22C
M24 x 2,00	.860	STN16200ISO-I	17X1R022B16-STN16N
M24 x 1,50	.881	STN11150ISO-I	11X1R .. STN11N
M24 x 1,50	.881	STN16150ISO-I	17X1R022B16-STN16N
M27	.935	STN22300ISO-I-C	18X1R030B25-STN22C
M30	1.032	STN27350ISO-I-C	25X1R040B25-STN27C
M30 x 2,00	1.096	STN16200ISO-I	22X1R025B25-STN16L
M33	1.150	STN27350ISO-I-C	25X1R040B25-STN27C
M33 x 2,00	1.214	STN16200ISO-I	22X1R025B25-STN16L
M33 x 1,50	1.254	STN16150ISO-I	22X1R025B25-STN16L
M35 x 1,50	1.314	STN16150ISO-I	22X1R025B25-STN16L
M36 x 2,00	1.332	STN16200ISO-I	22X1R025B25-STN16L
M42 x 2,00	1.569	STN27200ISO-I	30X1R052B25-STN27N
M45 x 2,00	1.687	STN27200ISO-I	37X1R .. STN27N or L
M48 x 2,00	1.805	STN27200ISO-I	37X1R058B32-STN27N or L
M55 x 2,00	2.080	STN27200ISO-I	37X1R .. STN27N or L
M56 x 2,00	2.120	STN27200ISO-I	37X1R .. STN27N or L
M72 x 2,00	2.750	STN27200ISO-I	37X1R .. STN27N or L

Internal Threads • Insert and Holder Recommendations

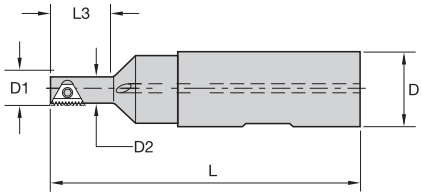
thread	tap hole fl (in)	indexable insert	largest milling cutter
9/16 - 18UNF	.502	STN1018UN-I	9X1R .. STN10M
5/8 - 24UNEF	.580	STN1124UN-I	11X1R .. STN11N
5/8 - 18UNF	.565	STN1118UN-I	11X1R .. STN11N
3/4 - 20UNEF	.696	STN1120UN-I	11X1R .. STN11N
3/4 - 16UNF	.682	STN1116UN-I	11X1R .. STN11N
7/8 - 14UNF	.798	STN1114UN-I	11X1R .. STN11N
1 - 16UN	.932	STN1616UN-I	18X1R030B25-STN22C
1 - 12UNF	.910	STN1612UN-I	17X1R .. STN16N
1 1/8 - 12UNF	1.035	STN1612UN-I	22X1R .. STN16L
1 1/4 - 12UNF	1.160	STN1612UN-I	22X1R .. STN16L
1 3/8 - 12UNF	1.285	STN1612UN-I	22X1R .. STN16L

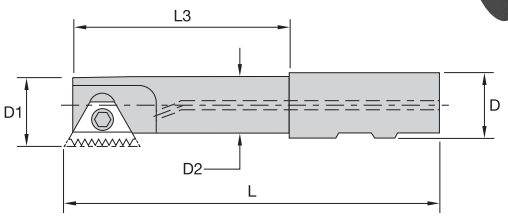
Whitworth Pipe Thread (Internal) to DIN 259

thread	tap hole fl (in)	indexable insert	largest milling cutter
R 5/8	.811	STN1614BSW	17X1R022B16-STN16N
R 3/4	.950	STN1614BSW	20X1R043B20-STN16N
R 7/8	1.098	STN1614BSW	22X1R025B25-STN16L
R 1	1.271	STN1611BSW	22X1R025B25-STN16L

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.







Thread Mill • Mini

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1132616	**9X1R012B12STN10M**	.354	.472	.268	2.717	.472	1	39935	STN10	**SN7T**	**DT7**
1191395	**9X1R017B20STN10M**	.354	.787	.280	3.307	.669	1	39935	STN10	**SN7T**	**DT7**

Thread Mill • Normal Shank • STN11

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1294964	**11X1R012B12STN11N**	.453	.472	.350	2.756	.472	1	36825	STN11	**SN2TPKG**	**DT8**
1130302	**11X1R020B20STN11N**	.453	.787	.350	3.347	.787	1	36825	STN11	**SN2TPKG**	**DT8**

Thread Mills • Normal Shank • STN16

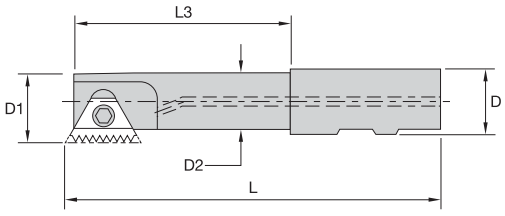
order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1130686	**17X1R022B16STN16N**	.669	.630	.535	3.543	.866	1	25750	STN16	**SN3TM**	**DT10**
1130740	**20X1R043B20STN16N**	.787	.787	.654	3.740	1.693	1	23330	STN16	**SN3TPKG**	**DT10**

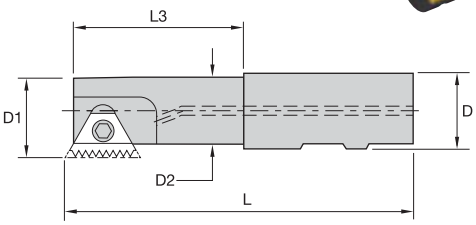
Thread Mills • Normal Shank • STN27

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1130969	**30X1R052B25STN27N**	1.181	.984	.945	4.331	2.047	1	12900	STN27	**SN5TM**	**TT25**
1131069	**37X1R058B32STN27N**	1.457	1.260	1.063	4.724	2.283	1	11600	STN27	**SN5TM**	**TT25**

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.







Thread Mills • Normal Shank • STN.38

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1178986	35X1R055B32STNB38N	1.378	1.260	1.221	4.528	2.165	1	11000	STNB38	SM7TPKG	TT30

Thread Mill • Long Shank • STN16

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1130837	22X1R025B25STN16L	.866	.984	.732	4.921	.984	1	22230	STN16	SN3TPKG	DT10

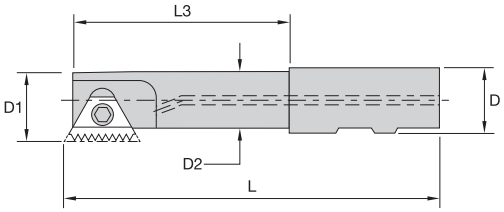
Thread Mill • Long Shank • STN27

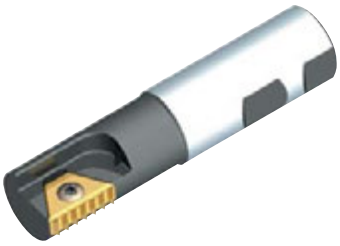
order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1130977	30X1R092B25STN27L	1.181	.984	.945	5.906	3.622	1	12900	STN27	SN5TM	TT25
1131086	37X1R098B32STN27L	1.457	1.260	1.221	6.299	3.858	1	11600	STN27	SN5TM	TT25

Thread Mill • Long Shank • STN38

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1566071	46X1R100B40STNB38L	1.811	1.575	1.496	6.693	3.937	1	10000	STNB38	SM7TPKG	TT30

- Thread milling system.



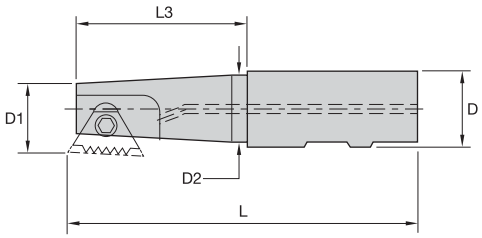


Thread Mill • Internal Coarse Pitch Thread

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176964	**15X1R020B16STN16C**	.610	.630	.480	3.583	–	1	26550	STN16___C
1176967	**25X1R040B25STN27C**	.984	.984	.748	3.858	1.575	1	22000	STN27___C

Spare Parts

D1	insert screw	Nm	Torx driver	Torx wrench
.610	**SN3TPKG**	2,3	**DT10**	–
.984	**SN5TM**	5,0	–	**TT25**





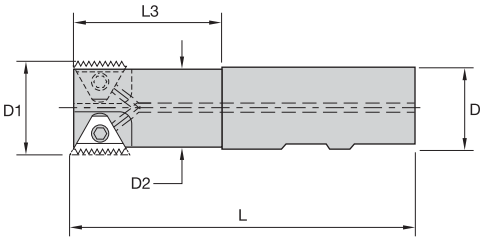
Thread Mill • Tapered Shank • Right Hand

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176970	**10X1R015B20STN11T**	.390	.787	.291	3.032	.610	1	36500	STN11
1132781	**15X1R022B16STN16T**	.610	.630	.492	3.150	.866	1	26550	STN16
1135826	**19X1R023B20STN16T**	.748	.787	.591	3.347	.906	1	24350	STN16

Spare Parts

D1	insert screw	Nm	Torx driver
.390	**SN2TPKG**	1,7	**DT8**
.610	**SN3TPKG**	2,3	**DT10**
.748	**SN3TM**	2,3	**DT10**

- Cutting diameter ranges from .670–1.654".
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.



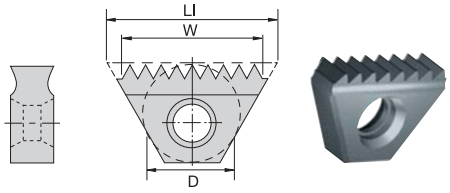


Thread Mill • Double Insert

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1280494	**K067TM2RW075STN11D**	.670	.750	.537	3.420	1.340	2	30275	STN11
1124019	**26X2R043B25STN16D**	1.024	.984	.886	3.937	1.693	2	20530	STN16
1280517	**K102TM2RW100STN16D**	1.024	1.000	.891	4.020	1.690	2	20530	STN16
1131118	**42X2R045B32STN27D**	1.654	1.260	1.417	4.724	1.772	2	10900	STN27
1280598	**K165TM2RW125STN27D**	1.654	1.250	1.417	4.650	1.770	2	10900	STN27

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 Torx wrench
.670	**SN2TPKG**	2,0	**DT8**	**–**
1.024	**SN3TPKG**	2,3	**DT10**	**–**
1.654	**SN5TM**	5,0	**–**	**TT25**



● first choice
○ alternate choice

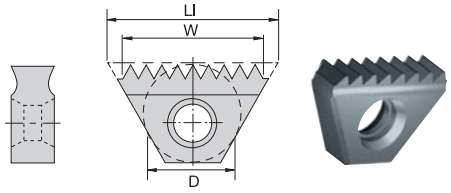
		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

Internal • UN Thread • Unified Thread Standard Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1612UNI	12	.375	.630	.580	7	–	–	●
STN1114UNI	14	.250	.430	.360	5	–	–	●
STN1614UNI	14	.375	.630	.570	8	–	–	●
STN1116UNI	16	.250	.430	.380	6	–	–	●
STN1616UNI	16	.375	.630	.560	9	●	–	–
STN1018UNI	18	.236	.410	.330	6	–	–	●
STN1118UNI	18	.250	.430	.390	7	–	–	●
STN1120UNI	20	.250	.430	.400	8	–	–	●
STN1020UNI	20	.236	.410	.350	7	–	–	●
STN1124UNI	24	.250	.430	.380	9	–	–	●
STN1624UNI	24	.375	.630	.580	14	–	–	●
STN1627UNI	27	.375	.630	.560	15	–	–	●
STN1632UNI	32	.375	.630	.590	9	–	–	●

External • UN Thread • Unified Thread Standard Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118UNE	18	1/4	.430	.390	7	–	–	●
STN1614UNE	14	3/8	.630	.570	8	–	–	●
STN1616UNE	16	3/8	.630	.560	9	–	–	●
STN1620UNE	20	3/8	.630	.550	11	–	–	●
STN1624UNE	24	3/8	.630	.580	14	–	–	●



● first choice
○ alternate choice

P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

Internal • ISO Thread • ISO Metric Screw Thread Style

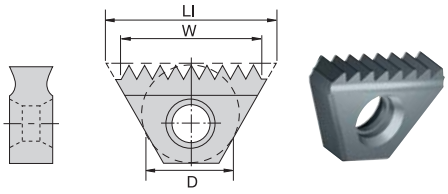
catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN10075ISOI	0,750	.236	.410	.380	13	–	–	●
STN10100ISOI	1,000	.236	.410	.350	9	–	●	●
STN10125ISOI	1,250	.236	.410	.340	7	–	–	●
STN10150ISOI	1,500	.236	.410	.350	6	–	–	●
STN11100ISOI	1,000	.250	.430	.390	10	–	–	●
STN11150ISOI	1,500	.250	.430	.410	7	–	–	●
STN16100ISOI	1,000	.375	.630	.590	15	–	–	●
STN16150ISOI	1,500	.375	.630	.590	10	–	–	●
STN16175ISOI	1,750	.375	.630	.550	8	–	–	●
STN16200ISOI	2,000	.375	.630	.550	7	–	–	●

External • ISO Thread • ISO Metric Screw Thread Style • Coarse

catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN22300ISOIC	3,000	.500	.870	.700	6	●	–	–
STN27350ISOIC	3,500	.625	1.060	.960	7	●	–	–

External • ISO Thread • ISO Metric Screw Thread Style

catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16150ISOE	1,500	.375	.630	.590	10	●	●	–
STN27200ISOE	2,000	.625	1.060	.940	12	●	–	–



● first choice
○ alternate choice

		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

BSW Thread • British Standard Whitworth Thread Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1119BSW	19	1/4	.430	.370	7	–	–	●
STN1614BSW	14	3/8	.630	.570	8	●	–	●
STN1612BSW	12	3/8	.630	.580	7	–	–	●
STN1611BSW	11	3/8	.630	.550	6	●	–	●
STN2711BSW	11	5/8	1.060	.910	10	–	–	●

NPS Thread • Nominal Pipe Size Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16115NPS	11.5	.375	.630	.520	6	–	–	●
STN1614NPS	14	.375	.630	.570	8	–	–	●

NPT Thread • National Pipe Thread Taper Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPT	18	.250	.430	.390	7	–	–	●
STN16115NPT	11.5	.375	.630	.520	6	–	–	●
STN1614NPT	14	.375	.630	.570	8	–	–	●

NPTF Thread • ISO Metric Screw Thread Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPTF	18	.250	.430	.390	7	–	–	●
STN16115NPTF	11.5	.375	.630	.520	6	–	–	●
STN1614NPTF	14	.375	.630	.570	8	–	–	●

NOTE: NPTF = Dry Seal
NPT and NPTF inserts possess right- and left-hand edges.
Must order left-hand bar for left-hand inserts.

STN Series

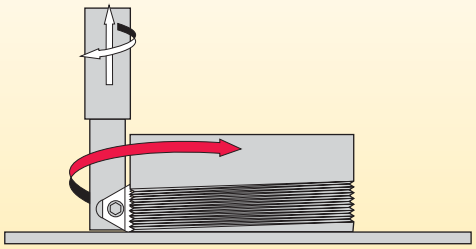
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

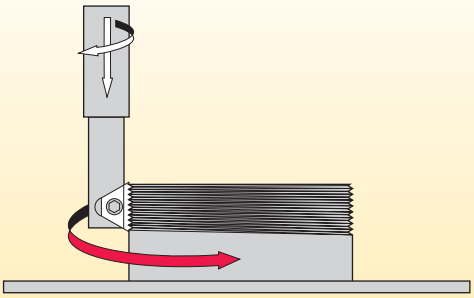
The Following Are a Few Thread Milling Methods (Work Directions)

NOTE: Climb milling results in lower cutting forces, better chip development, higher thread surface quality, and longer insert life. Therefore, it should be used whenever possible. But, in the case of some hardened materials or when milling certain difficult-to-machine exotic materials, conventional milling may be preferred.

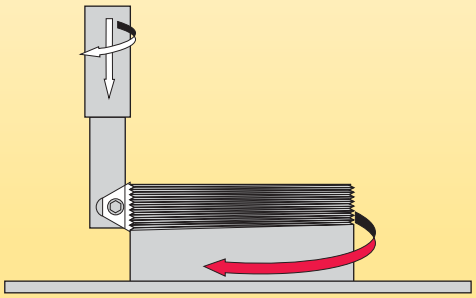
Methods of External Thread Milling



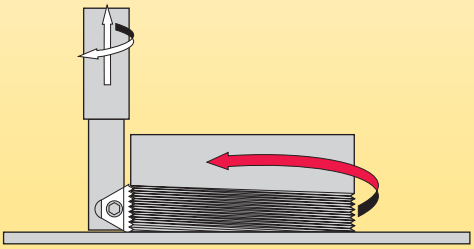
right-hand thread... conventional milling



left-hand thread... conventional milling

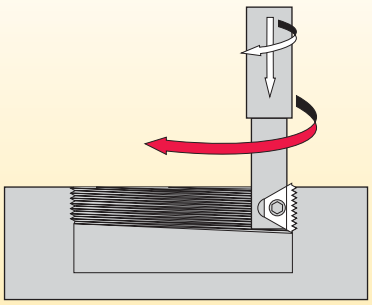


right-hand thread... climb milling

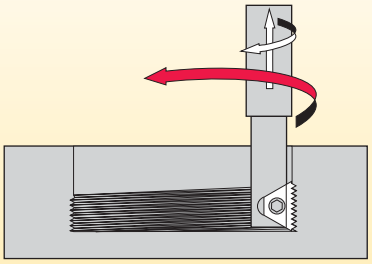


left-hand thread... climb milling

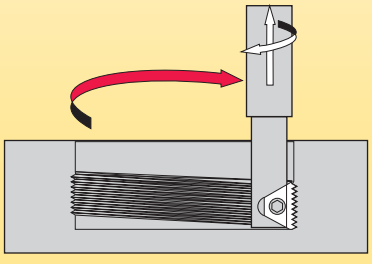
Methods of Internal Thread Milling



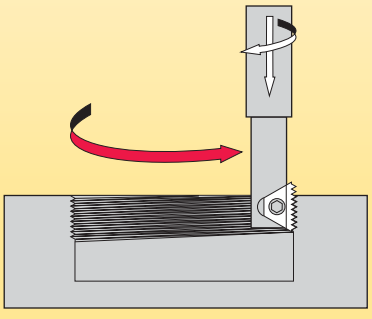
right-hand thread... conventional milling



left-hand thread... conventional milling



right-hand thread... climb milling



left-hand thread... climb milling

Application Guidelines

- All thread milling inserts are full profile or cresting type.
- Inserts are designed to mill full thread depth in one revolution or pass.
- When machining difficult materials, two passes may be desired. A 60% thread depth on the first pass and a 40% thread depth on the second pass is recommended.
- Thread relief grooves in blind holes are not necessary.
- Thread milling large parts requires considerably less horsepower compared to other threading methods.
- Thread milling produces short chips compared to stringy chips of other threading methods.
- One holder is suitable for many different thread pitches.
- PVD-coated inserts provide maximum tool life for a wide variety of materials.

Minimum Bore Diameters

UN-ISO-BSW

cutter	TPI	48	32	24	20	16	12	10	8	7	6	5.5	5	4.5	4.5	4	4
	pitch mm	0,5	0,75	1,0	1,25	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	–	6,0	–
	cutter diameter (D1)	minimum bore diameter (D) (inches)															
K035TM1RW050-STN10	.35	.374	.394	.421	.449												
K045TM1RW050-STN11N	.45	.472	.492	.520	.547	.571											
K049TM1RW037LT11S	.49	.512	.531	.559	.587	.610											
K061TM1RW062-STN16T	.61	.630	.650	.667	.705	.728	.768										
K067TM2RW075-STN11D	.67	.693	.717	.748	.772	.787	.827										
K075TM1RW075-STN16T	.75	.776	.803	.827	.850	.866	.906										
K079TM1RW075-STN16N	.79	.815	.843	.866	.890	.906	.945										
K087TM1RW100-STN16L	.87	.893	.921	.945	.969	.984	1.024										
K102TM2RW100-STN16D	1.02	1.051	1.079	1.102	1.130	1.154	1.193										
K118TM1RW100-STN27N	1.18	1.209	1.236	1.260	1.291	1.319	1.362	1.441	1.535	1.654	1.772	1.890					
K146TM1RW125-STN27N	1.46	1.496	1.520	1.555	1.591	1.614	1.654	1.732	1.830	1.929	2.047	2.185					
K165TM2RW125-STN27D	1.65	1.701	1.724	1.772	1.811	1.831	1.866	1.929	2.047	2.146	2.268	2.401					
–	1.38 (UN)	–	–	–	–	–	–	–	–	–	1.969	–	1.843	–	1.756	–	2.228
–	1.38 (ISO)	–	–	–	–	–	–	–	–	–	1.969	2.102	1.673	1.969	–	2.264	–
–	1.38 (BSW)	–	–	–	–	–	–	–	–	–	1.961	–	1.831	–	1.866	–	–

Cutting Data Recommendation

workpiece material	Cutting Speed — vc SFM	feed rate per revolution (inch)
	KC635M	
carbon steels <187 HB	300–700	.004–.008
carbon steels 187–220 HB	300–500	.004–.006
alloy steel 200–250 HB	200–425	.004–.006
alloy steel 250–325 HB	150–300	.004–.006
stainless steel, austenitic <210 HB	300–450	.004–.006
stainless steel, martensitic <321 HB	250–350	.002–.006
stainless steel, ferritic <245 HB	350–550	.002–.004
cast steel <140 HB	350–550	.002–.006
cast steel 220–302 HB	225–425	.002–.004
titanium alloys	200–400	.001–.003
high-temperature (nickel and iron base)	75–150	.001–.002
high-temperature (cobalt base)	50–100	.001–.002
cast iron	250–350	.002–.006
malleable iron	250–400	.001–.003

NOTE: Applications in this area may be machined with special inserts and cutter bodies. Quoted on request.

Understanding Thread Milling

In order to perform a thread milling operation, a milling machine with three-axis control, capable of helical interpolation, is required. Helical interpolation is a CNC function producing tool movement along a helical path. This helical travel combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (figure A) on the envelope of the cylinder combines a circular movement in the X and Y plane with a linear movement in the Z direction.

On most CNC systems, this function can be executed in two different ways:

- G02: helical interpolation in a clockwise direction
- G03: helical interpolation in a counterclockwise direction

The thread milling operation (figure B) consists of circular rotation of the tool about its own axis together with an orbiting motion along the bore or workpiece circumference.

During one such orbit, the tool will move vertically one pitch length. These movements, combined with the insert geometry, create the required thread form.

There are two acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

1. Along a tangential arc.
2. Along a tangential straight line.

NOTE: Climb milling is preferred.

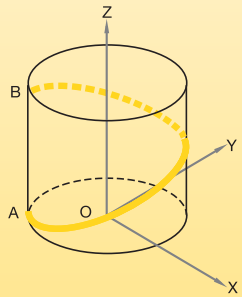
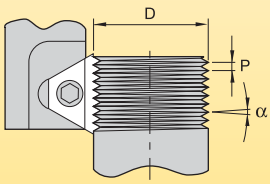


figure A



α - helix angle
D - external diameter
P - pitch

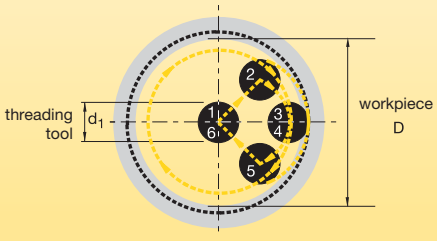
figure B

Tangential Approach (Arc)

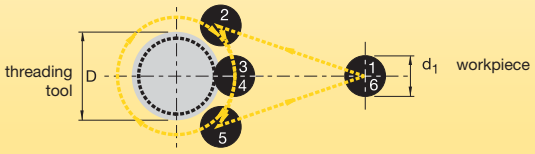
With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials.

Although it requires slightly more complex programming, this is the method recommended for machining the highest quality threads.

1–2:	rapid approach
2–3:	tool entry along tangential arc with simultaneous feed along Z-axis
3–4:	helical movement during one full orbit (360°)
4–5:	tool exit along tangential arc with continuing feed along the Z-axis
5–6:	rapid return



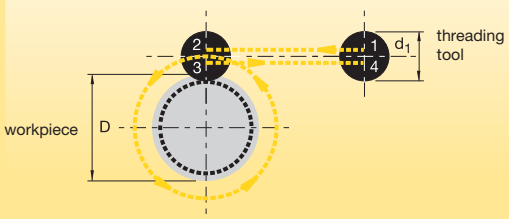
internal left-hand thread



external thread

Tangential Approach (Line)

This method is very simple and has all of the advantages of the tangential arc method. However, it is applicable only to external threads.



1–2:	radial entry with simultaneous feed along the Z-axis
2–3:	helical movement during one full orbit (360°)
3–4:	radial exit

Radial Approach

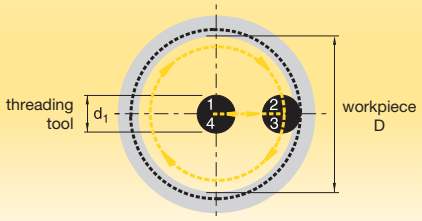
This radial approach is often considered the simplest. There are two characteristics worth noting about the radial approach:

a. A small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself.

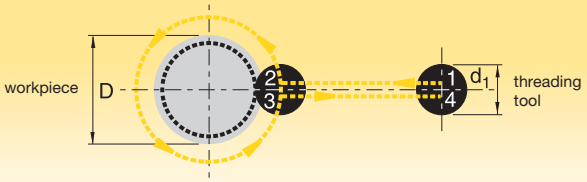
b. When using this method with very hard materials, there may be a tendency for the tool to vibrate as it approaches the full cutting depth.

1–2:	radial entry
2–3:	helical movement during one full orbit (360°)
3–4:	radial exit

NOTE: Radial feed during entry to the full profile depth should be only 1/3 of the subsequent circular feed.



internal thread



external thread

Calculation of Feed Rates at the Cutting Edge

The first step is to calculate the tool feed rate at the cutting edge:

$$F_1 = fz \times Z \times n$$

F_1 = tool feed rate at the cutting edge (in/min)
fz = inch per tooth (feed rate)
Z = number of effective inserts in cutter
n = rotational speed (spindle RPM)

The rotational speed (RPM) is calculated by the following formula:

$$RPM = \frac{12 \times SFM}{\pi \times d_1}$$

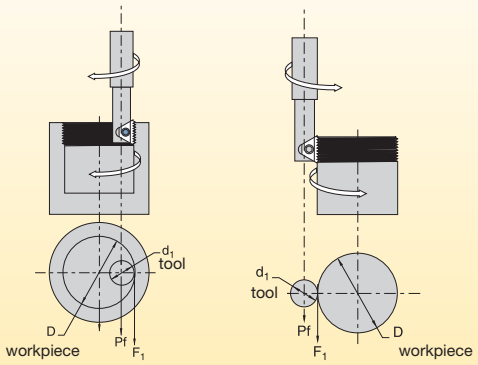
SFM = cutting speed, surface feet per minute
d_1 = cutter diameter, over insert
π = 3.1416

Calculation of Program Feed Rate

On most CNC machines, the feed rate required for programming is at the centerline of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and the centerline are identical. With circular tool movement this is not the case. The following equations define the relationship between feed rates at the tool centerline.

$$P_1 = F_1 + \frac{(F_1 \times d_1)}{D}$$

P_1 = program feed rate (in/min)
D = major diameter (external thread)
D = minor diameter (internal thread)
d_1 = cutting diameter, over insert



external thread internal thread

tool workpiece

Step-by-Step Thread Milling Example

thread: internal right hand 11/4 x 16 UN–2B–RH(21)

material: AISI 4140 (300 HB)

thread diameters: D (minimum bore dia.) = 1.182"

Do (nominal dia.) = 1.25"

thread length: .50"

For best thread quality, the cutter with the largest d1 (cutter diameter) should be used. This cutter diameter can be found in the table on page W49, as a function of pitch and minimum bore diameter "D". The result for the above example is that any cutter diameter 1.02" or smaller can be utilized.

A cutter with a smaller d1 will perform the thread milling operation in less time. The smaller d1 may result in less tool rigidity, so it should be used with caution on very tough materials.

Find the appropriate normal-length shank cutter diameter on pages W40–W43. Use the minimum bore diameter table below for reference.

pitch (TPI)	24	20	16	12
pitch mm	1,0	1,25	1,5	2,0
cutter dia. d_1	minimum bore diameter D			
.67	.748	.772	.787	.827
.75	.827	.850	.866	.906
.79	.866	.890	.906	.945

Figure B: cutter selected: K079TMIRW075STN16N
outer dimensions: d_1 = .79, R_t (radius of tool) = $d_1 \div 2$ = .395"

Choosing Insert Size

The insert IC is defined by the selected cutter (STN16).
Use the appropriate insert table on pages W44–W46.

insert IC	a inch (mm)	pitch (TPI)	internal thread catalog number	b inch thread length (in)	number of teeth	grade KC610M	grade KC620M	external thread catalog number	b inch thread length (in)	number of teeth	grade KC610M	grade KC620M	cutter type
		32	STN16 32UN-I	.59	19	□	□	STN16 32UN-E	.59	19	□	□	
		28	STN16 28UN-I	.57	16	■	■	STN16 28UN-E	.57	16	□	□	
		27	STN16 27UN-I	.56	15	□	■	STN16 27UN-E	.56	15	■	□	
		24	STN16 24UN-I	.55	14	□	□	STN16 24UN-E	.58	14	■	□	
3/8	.63 (16)	20	STN16 20UN-I	.55	11	■	■	STN16 20UN-E	.55	11	■	■	STN16
		18	STN16 18UN-I	.56	10	■	■	STN16 18UN-E	.56	10	■	■	
		16	STN16 16UN-I	.56	9	■	■	STN16 16UN-E	.56	9	■	■	
		14	STN16 14UN-I	.57	8	■	■	STN16 14UN-E	.57	8	■	■	
		13	STN16 13UN-I	.54	7	□	□	STN16 13UN-E	.54	7	□	□	
		12	STN16 12UN-I	.58	7	■	■	STN16 12UN-E	.58	7	■	■	□

insert selected: STN16 16UN-I

■ stock standard
□ non-stock standard

Step-by-Step Thread Milling Example

Calculate the feed rates:

First, find the RPM.

$$RPM = \frac{12 \times SFM}{\pi \times d_1} = \frac{12 \times 500}{3.14 \times .79} = 2418 \text{ RPM}$$

Next, calculate the feed rate at the insert cutting edge (F_1):

(using the chosen feed per tooth of .004.)

$$F_1 = IPT \times nt \times RPM = .004 \times 1 \times 2418 = 9.67 \text{ in/min}$$

Finally, calculate the feed rate at the cutter centerline (F_2):

$$F_2 = \frac{F_1 \times (D - d_1)}{D} = \frac{9.67 \times (1.182 - .79)}{1.182} = 3.207 \text{ in/min}$$

Select the thread milling method.

Climb milling (preferred) see page W48.

Calculate the radius of the tangential arc R_e:

$$R_e = \frac{(R_i - C_L)^2 + R_0^2}{2R_0} = \frac{(.591 - .02)^2 + .625^2}{2 \times .625}$$

$$R_e = .573333 \text{ in.}$$

Calculate the angle (β):

$$\beta = 90° + \arcsin \frac{R_0 - R_e}{R_e}$$

$$\beta = 90° + \arcsin \frac{.625 - .573333}{.57333}$$

$$\beta = 90° + 5.17° = 95.17° = 95° 10'$$

Calculate the movement along the Z-axis during the entry approach from point "A" to point "B" ($Z\alpha$).
(NOTE: P = pitch)

$$Z\alpha = P \text{ (in)} \times \frac{\alpha°}{360°} = \frac{.0625}{4} = .0156 \text{ in, because } \alpha = 90°$$

Calculate the "X" and "Y" values at the start of the entry approach.

$$X = 0Y = -R_i + C_L = -.591 + .02 = -.571 \text{ in.}$$

Define Z-axis location at the start of the entry approach.
(NOTE: L = length of thread)

$$Z = -(L + Z\alpha) = -(.50 + .0156) = -.5156 \text{ in.}$$

Define the starting point.

$X_a = 0$

$Y_a = 0$

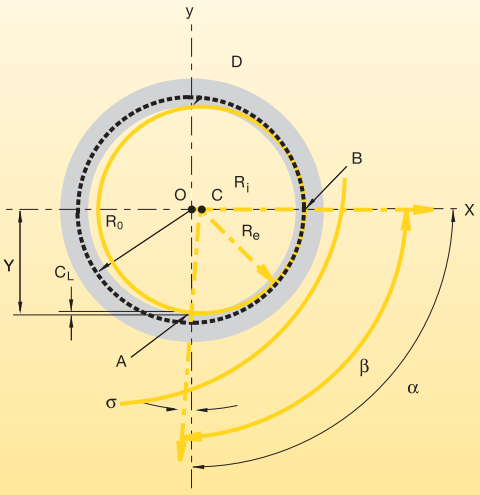
CNC Program (Fanuc 11M)

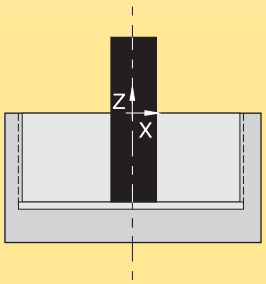
```
%
N10G90G00G57X0.000Y0.000
N20G43H10Z0.M3S2417
N30G91G00X0.Y0.Z–0.5156
N40G41D60X0.000Y–0.5710Z0.
N50G03X0.6250Y0.5710Z0.0156R0.5733F3.206
N60G03X0.Y0.Z0.0625I–0.625J0.
N70G03X–0.625Y0.5710Z0.0156R0.5733
N80G00G40X0.Y–0.5710Z0.
N90G49G57G00Z8.0M5
N100M30
%
```

$$R_i = \frac{D}{2} \qquad R_O = \frac{D_O}{2}$$

D = minor diameter **D_O = nominal diameter**

α 90°





Step-by-Step Thread Milling Example

Appendix A

Derivation of Formulas for Internal Thread Milling

R_e, β, and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_o}$$

Triangle OAC enables us to simply solve for R_e.
Note that OAC is a right angle triangle, and that:

$OA = R_i - C_L$
$CA = R_e$
$OC = R_o - R_e$

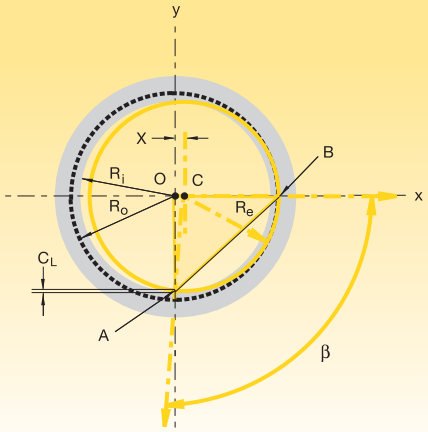
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_i - C_L)^2 + (R_o - R_e)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_0}$$



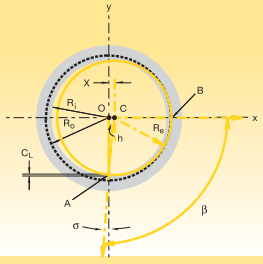
Find the angle β.

$\beta = 90° + \sigma$

$\sin \sigma = \frac{OC}{CA} = \frac{(R_o - R_e)}{R_e}$

$\sigma = \text{arc sin} \left(\frac{R_o - R_e}{R_e}\right)$

Therefore, $\beta = 90° + \text{arc sin} \left(\frac{R_o - R_e}{R_e}\right)$



Appendix B

Derivation of Formulas for External Thread Milling

R_e, β, and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$

Triangle OAC enables us to simply solve for R_e.
Note that OAC is a right angle triangle, and that:

$OA = R_o - C_L$
$CA = R_e$
$OC = R_e - R_i$

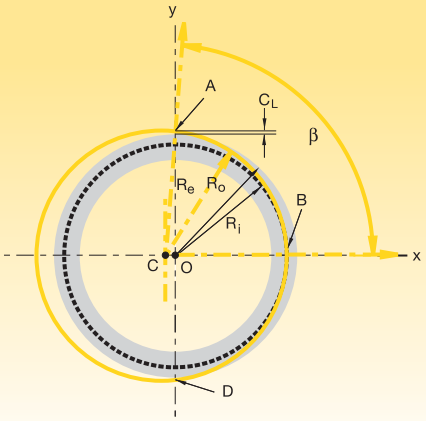
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_o - C_L)^2 + (R_e - R_i)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$

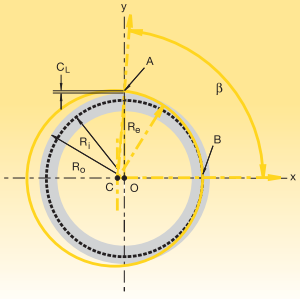


Find the angle β.

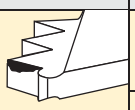
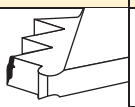
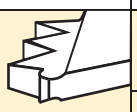
β can be easily found using the same triangle:

$\sin \beta = \frac{AO}{AC} = \frac{(R_o + C_L)}{R_e}$

$\beta = \text{arc sin} \left(\frac{R_o + C_L}{R_e}\right)$



Thread Mill Troubleshooting

problem	possible cause	solution
excessive insert flank wear 	• Cutting speed too high.	• Reduce cutting speed.
	• Chip is too thin.	• Increase feed rate.
	• Insufficient coolant.	• Increase coolant quantity/pressure.
chipping of cutting edge 	• Chip is too thick.	• Reduce feed rate. • Use the tangential arc method of entrance. • Increase RPM.
	• Vibration.	• Check rigidity.
material build-up on the cutting edge 	• Cutting speed too slow.	• Increase cutting speed.
	• Chip thickness too small.	• Increase feed rate.
chatter/vibration	• Feed rate is too high.	• Reduce the feed.
	• Profile is too deep (coarse pitch threads).	• Execute two passes, each with increased cutting depth. • Execute two passes, each cutting only half the thread length.
	• Thread length is too long.	• Execute two passes, each cutting only half of the thread length.
insufficient thread accuracy	• Tool deflection.	• Reduce feed rate. • Execute a zero cut.

Insert Tolerance Classes

thread designation	standard designation	tolerance class
UN	ANSI B 1.174	2A/2B
UNJ	MIL-S-8879A	3A/3B
ISO	R262 (DIN 13)	6g/6H
NPT	USAS B2.1 : 1968	standard NPT
NPTF	ANSI B 1.20.3-1976	standard
BSW	B.S. 84 : 1956, DIN 259, ISO 228/1 : 1982	medium class A
BSPT	B.S. 21 : 1985	standard BSPT
ACME	ANSI B1/5 : 1988	3G
PG	DIN 40430	standard
TR	DIN 103	7e/7H


ORIGIN
ABS/INC
OFF
ON

Indexable Milling • Technical Information • Recommended Starting Speeds

Overview Wrenches X2–X3

Technical Information X4–X20

Recommended Starting Speeds X22–X37

NOTE: Kennametal screw drivers, bits, torque wrenches, and bit drivers can be ordered separately, if needed.








drive size	1/4" bit 25mm length	order number	1/4" bit extended length	order number	screw driver	order number	Flag-Type Screw Driver	order number	Allen key	order number	T-Handle Screw Driver	order number
hex 1,5	–	–	–	–	170.270	**1126021**	–	–	170.000	**1138273**	–	–
hex 2,0	–	–	–	–	170.222	**1191006**	–	–	170.001	**1138280**	–	–
hex 2,5	170.179	**1138851**	–	–	170.224	**1138870**	–	–	170.002	**1138297**	–	–
hex 3,0	170.180	**1150198**	BTQSW3L90	**6205876**	170.225	**1138879**	–	–	170.003	**1138307**	THW3M	**2229285**
hex 3,5	–	–	–	–	–	–	–	–	–	–	THW35M	**1931555**
hex 3,5/Torx 15,0	–	–	–	–	–	–	FT1535	**1021609**	–	–	–	–
hex 4,0/Torx 15,0	–	–	–	–	–	–	FT154	**1021611**	–	–	–	–
hex 4,0	170.181	**1138857**	–	–	170.226	**1191007**	–	–	170.004	**1138315**	THW4M	**1931556**
hex 5,0	–	–	–	–	–	–	–	–	170.005	**1138323**	170.135	**1138748**
hex 6,0	–	–	–	–	–	–	–	–	170.006	**1138331**	170.136	**1138755**
hex 8,0	–	–	–	–	170.229	**1191010**	–	–	170.008	**1135984**	–	–
hex 9,0	–	–	–	–	–	–	–	–	170.009	**2272577**	–	–
hex 10,0	–	–	–	–	–	–	–	–	–	–	–	–
hex 12,0	–	–	–	–	–	–	–	–	–	–	–	–
hex 5/64	–	–	–	–	–	–	–	–	–	–	KW078	**1022575**
hex 3/32	–	–	–	–	–	–	–	–	–	–	KW093	**1022581**
hex 7/64	–	–	–	–	–	–	–	–	–	–	KW109	**1022537**
hex 1/8	–	–	–	–	–	–	–	–	–	–	–	–
hex 5/32	–	–	–	–	–	–	–	–	–	–	KW156	**1022565**
hex 3/16	–	–	–	–	–	–	–	–	–	–	KW187	**1022579**
hex 7/32	–	–	–	–	–	–	–	–	–	–	–	–
Torx 5	–	–	–	–	–	–	FT5	**1021589**	KT5	**1099677**	–	–
Torx 6	BT6	**1962981**	–	–	DT6	**1022463**	FT6	**1126361**	KT6	**1022691**	–	–
Torx 7	BT7	**1963853**	–	–	DT7	**1022485**	FT7	**1021591**	KT7	**1022693**	–	–
Torx 8	BT8	**1963855**	–	–	DT8	**1022487**	FT8	**1021593**	KT8	**1022695**	–	–
Torx 9	BT9	**1963854**	–	–	DT9	**1022489**	FT9	**1020533**	KT9	**1022697**	–	–
Torx 10	BT10	**1963856**	–	–	DT10	**1022491**	FT10	**1099651**	KT10	**1022699**	–	–
Torx 10/15	–	–	–	–	–	–	FT1015	**1099652**	–	–	–	–
Torx 15	170.182	**2261642**	170.177	**1138829**	DT15	**1022493**	FT15	**1021605**	KT15	**1022701**	TT15	**1022315**
Torx 15	–	–	BTQT15L90	**6205877**	–	–	–	–	–	–	–	–
Torx 20	170.176	**1138822**	BTQT20L90	**6205878**	–	–	FT20	**1021607**	KT20	**1022703**	TT20	**1022317**
Torx 25	–	–	170.259	**1994579**	–	–	–	–	KT25	**1022725**	TT25	**1022519**
Torx 25	–	–	BTQT25L90	**6205879**	–	–	–	–	–	–	–	–
Torx 27	170.256	**1984243**	170.257	**1985840**	–	–	–	–	KT27	**1022727**	–	–
Torx 30	–	–	–	–	–	–	–	–	KT30	**1099676**	TT30	**1022521**
Torx 40	–	–	–	–	–	–	–	–	–	–	–	–
Torx 45	–	–	–	–	–	–	–	–	KT45	**1018227**	–	–
Torx Plus 7	–	–	–	–	DT7IP	**3644073**	–	–	–	–	–	–
Torx Plus 8	–	–	–	–	DT8IP	**2388424**	–	–	K8IP	**2388488**	TTP8	**1931553**
Torx Plus 9	–	–	–	–	DT9IP	**2269913**	–	–	K9IP	**1985786**	TTP9	**1985792**
Torx Plus 10	–	–	–	–	DT10IP	**2388425**	–	–	K10IP	**2388489**	TTP10	**2504383**
Torx Plus 15	–	–	BTQTP15L90	**6205880**	DT15IP	**2269914**	–	–	K15IP	**1867353**	TTP15	**1931554**
Torx Plus 20	–	–	BTQTP20L90	**6205891**	DT20IP	**2388427**	–	–	K20IP	**2388491**	TTP20	**1994291**
Torx Plus 25	BT25IP	**2244316**	BTQTP25L90	**6205892**	DT25IP	**2269915**	–	–	K25IP	**2050113**	TTP25	**4064258**
Torx Plus 27	BT27IP	**2244317**	BTE27IP	**2244319**	–	–	–	–	K27IP	**1985787**	TTP27	**1985793**
Torx Plus 30	–	–	–	–	DT30IP	**2388426**	–	–	K30IP	**2388490**	–	–



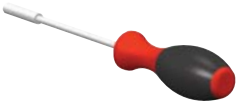

Torque-Controlled Wrenches • 5.3–47.8 in. lbs. (0,6–5,4 Nm)

Order Number	Catalog Number	Drive Size	Description
3641463	**DTQ0615**	–	Torque Control Wrench Handle 0.6–1.5 Nm
3641464	**DTQ1530**	–	Torque Control Wrench Handle 1.5–3.0 Nm
3641465	**DTQ3054**	–	Torque Control Wrench Handle 3.0–5.4 Nm
3641466	**BTQT6**	T6	Blade for screw driver
3641467	**BTQT7**	T7	Blade for screw driver
3641468	**BTQT8**	T8	Blade for screw driver
3641469	**BTQT9**	T9	Blade for screw driver
3641470	**BTQT10**	T10	Blade for screw driver
3641471	**BTQT15**	T15	Blade for screw driver
3641472	**BTQT20**	T20	Blade for screw driver
3641473	**BTQT25**	T25	Blade for screw driver
3641474	**BTQ6IP**	Torx Plus 6	Blade for screw driver
3641475	**BTQ7IP**	Torx Plus 7	Blade for screw driver
3641476	**BTQ8IP**	Torx Plus 8	Blade for screw driver
3641477	**BTQ9IP**	Torx Plus 9	Blade for screw driver
3641478	**BTQ10IP**	Torx Plus 10	Blade for screw driver
3641479	**BTQ15IP**	Torx Plus 15	Blade for screw driver
3641481	**BTQW3M**	hex 3mm	Blade for screw driver
3641480	**DTQCAP**	–	Cover Cap




Torque-Controlled Wrenches • 3.7–10.3 in. lbs. (5–14 Nm)

Order Number	Catalog Number	Drive Size	Description
6197561	**DTQ50140**	hex 1/4"	T-handle torque wrench, adjustable 5–14 Nm
6205876	**BTQSW3L90**	hex 3mm	Bit Hex 3mm L = 90mm
6205877	**BTQT15L90**	T15	Bit Torx 15 L = 90mm
6205878	**BTQT20L90**	T20	Bit Torx 20 L = 90mm
6205879	**BTQT25L90**	T25	Bit Torx 25 L = 90mm
6205880	**BTQTP15L90**	Torx Plus 15	Bit Torx Plus 15 L = 90mm
6205891	**BTQTP20L90**	Torx Plus 20	Bit Torx Plus 20 L = 90mm
6205892	**BTQTP25L90**	Torx Plus 25	Bit Torx Plus 25 L = 90mm



Bit Adapter

Order Number	Catalog Number	Drive Size	Description
1963869	**DRIVER**	hex 1/4"	Bit Adapter suitable for standard and extended length 1/4" drive bits

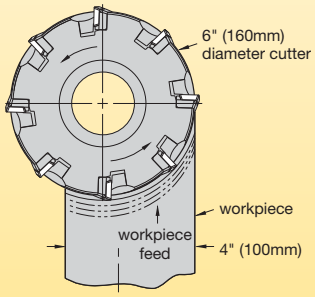
Workpiece dimensions determine the best face mill diameter to select.

Cutter-to-part width-of-cut ratio should be approximately 3:2 or 1 1/2 times the part width. For example, if the width of cut is 4" (100mm), choose a 6" (160mm) diameter cutter. If the width is extremely wide, select a cutter diameter that matches the spindle capacity and take multiple passes. For example, if the width of cut is 24" (610mm) and the machine has a standard #50 taper spindle, you should use an 8" (200mm) diameter cutter and take five passes, at slightly less than 5" (125mm) per pass, or four passes at 6" (160mm) per pass, depending on horsepower and rigidity.

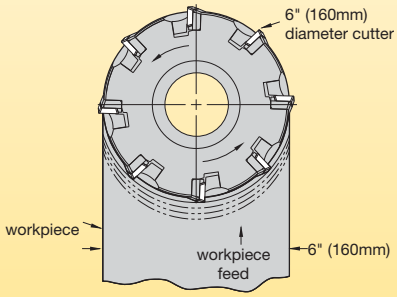
An undesirable situation is when the cutter diameter is about equal to the width of cut. The chip being formed at the entrance and exit of the cut will be very thin. The thin chips formed cannot carry away heat as well as thicker chips; therefore, the heat is transferred back into the insert causing premature edge failure. Work-hardening is also more likely to occur in the entry and exit area.

When the proper cutter diameter is not available, proper cutter positioning will provide positive results.

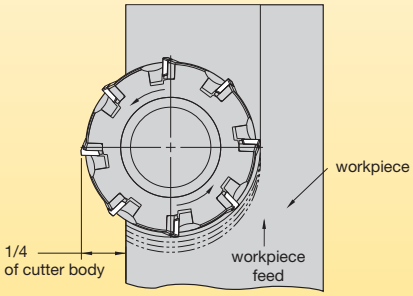
- Position cutter with approximately 1/4 of the cutter body outside the workpiece and make two passes.
- Produces negative angle of entry (desirable).
- Can result in longer tool life.



desirable



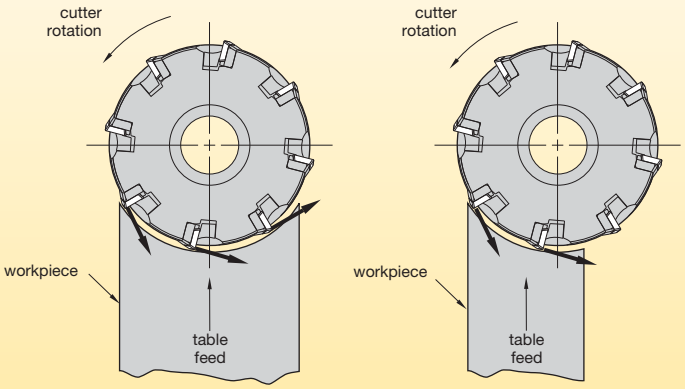
undesirable



cutter position

Cutter Positioning/Cutting Forces

The cutting forces are constantly changing as the inserts move through the cut. We should understand that in changing the position of the cutter in relation to the workpiece, we can re-direct the cutting forces. This is important to ensure a safe operation based on fixture design, workpiece design, and workpiece considerations.



Pitch, or density, refers to the number of inserts in a cutter. Cutters can be classified as having either coarse, medium, or fine pitch. When designing a cutter, the engineer must take the depth of cut and feed per tooth into consideration. He then must provide the necessary chip clearance in the body so that the chip can pass without restricting its formation. For this reason, cutters designed for heavy metal removal have maximum chip clearance. This, therefore, restricts the number of inserts in the cutter, making it a coarse pitch cutter.

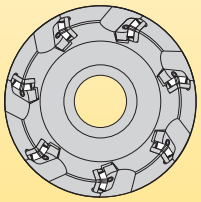
In medium pitch cutters, the chip clearance area in the body is usually slightly smaller than a coarse pitch cutter. And, in fine pitch cutters, the chip clearance is considerably less.

Coarse pitch is recommended for general purpose milling where adequate horsepower is available, and where maximum depth of cut is required.

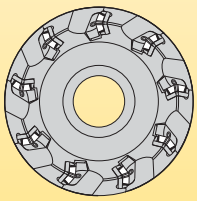
Medium pitch is recommended when moderate feed per insert is required, and where it is more advantageous to have more than one insert in the cut. Medium pitch also reduces entry shock and cutting pressure while maintaining feed rates.

Fine pitch is ideal when milling a severely interrupted surface such as a manifold block. Fine pitch cutters are capable of higher inch/mm per minute feed rates than medium or coarse pitch cutters. They also experience higher cutting forces and greater horsepower consumption than medium or coarse pitch cutters do.

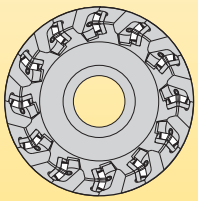
Differential pitch is a differential-pitch milling cutter with unequally spaced inserts. This configuration breaks up the harmonics that result from equally spaced inserts, greatly reducing the chance of vibration. Most cutters use this design regardless of the cutter pitch.



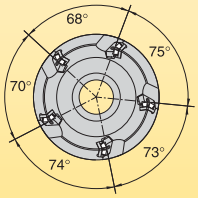
coarse pitch



medium pitch



fine pitch



differential pitch

Lead Angles/Cutting Forces on Workpiece and Fixturing

Cutting forces produced during the milling process are constantly changing as the insert moves through the cut. Understanding the relationship of these forces will help ensure safe operation by preventing workpiece movement during the cut. For example, fixture design and clamp positioning are determined by the cutting forces produced in milling. Equally important is an understanding of the effect lead angle has on cutting force direction, actual chip thickness, and tool life.

0° Lead Angle

Advantages:

- When 90° shoulder is required.
- Can be a problem solver on thin wall workpieces.

Disadvantages:

- Highest radial cutting forces.
- High entry shock load.
- Increased chance of bur on insert exit side of part.

15° and 20° Lead Angle

Advantages:

- For general milling applications and relatively rigid conditions.
- Good relation of insert size and maximum depth of cut.
- Reduced entry shock load.

Disadvantages:

- Higher radial forces can cause problems in weak machine/workpiece/fixture conditions.

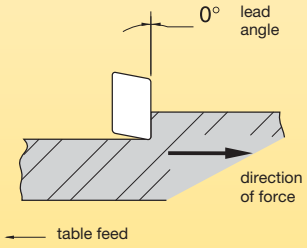
45° Lead Angle

Advantages:

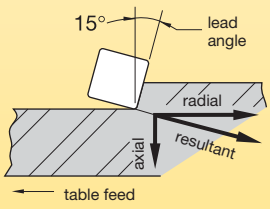
- Well-balanced axial and radial cutting forces.
- Less breakout on workpiece corner.
- Entry shock minimized.
- Less radial forces directed into spindle bearings.
- Higher feed rates possible.

Disadvantages:

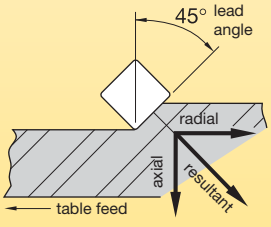
- Reduced maximum depth of cut due to lead angle.
- Larger body diameter can cause fixture clearance problems.



0° lead



15° and 20° lead



45° lead

(continued)

(continued)

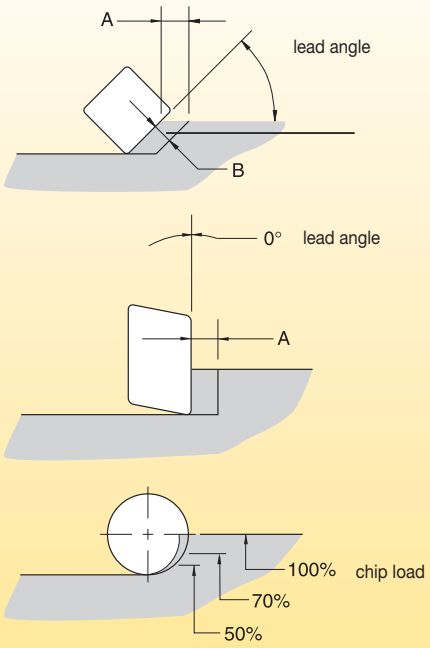
Lead Angle/Chip Thickness

Chip thickness is affected by lead angle. The greater the lead angle, the thinner the chip will be since it's distributed over a greater length of the cutting edge. To achieve greater productivity and problem-free milling, use a lead angle cutter whenever possible.

lead angle	feed per tooth	actual chip thickness "B"
0°	A	A
15°	A	.96 x A
20°	A	.94 x A
30°	A	.86 x A
45°	A	.707 x A

example:

0°	.010" (0,25mm)	.010" (0,25mm)
15°	.010" (0,25mm)	.0096" (0,25mm)
20°	.010" (0,25mm)	.0094" (0,24mm)
30°	.010" (0,25mm)	.0086" (0,22mm)
45°	.010" (0,25mm)	.0071" (0,18mm)



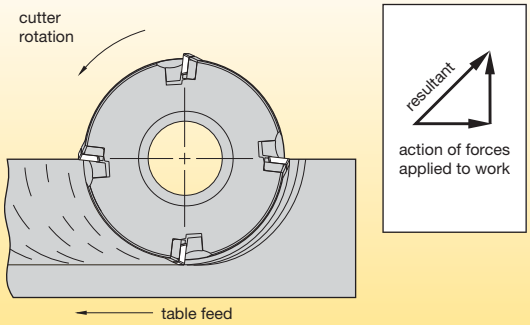
On round inserts, the chip load and lead angle vary with the depth of cut.

lead angle/chip thickness

Conventional Milling

For many years, it was common practice to mill against the direction of the feed due to the use of high-speed steel cutters and an absence of backlash-eliminating devices. The milling procedure became known as conventional, or up-milling.

In conventional milling, friction and rubbing occur as the insert enters into the cut, resulting in chip welding and heat dissipation into the insert and workpiece. Resultant forces in conventional milling are against the direction of the feed. Work-hardening is also likely to occur.

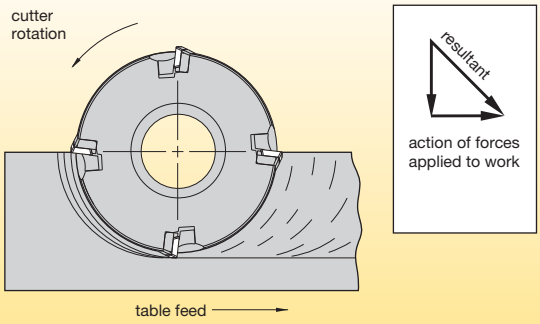


conventional milling

Climb Milling (preferred)

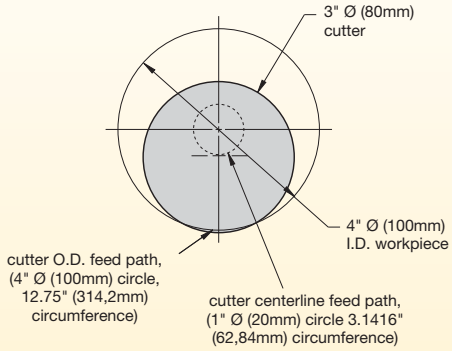
Climb milling is normally recommended. The insert enters the workpiece material with some chip load and produces a chip that thins as it exits the cut. This reduces the heat by dissipating it into the chip. Work-hardening is minimized.

Climb milling forces tend to push the workpiece toward the fixture and in the direction of the feed. Climb milling is preferred over conventional milling in most situations.



climb milling

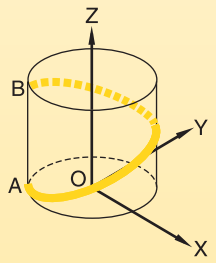
Circular Interpolation: Consists of a cutter rotating about its own axis while traveling in an orbiting motion about an I.D. or O.D. workpiece circumference without any vertical shift during the operation. This orbiting movement utilizes the "X" and "Y" axis.



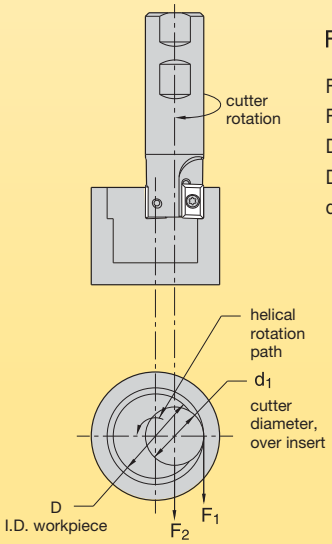
I.D. circular interpolation

Helical Interpolation: This application requires a milling machine with three-axis control capability. The operation consists of a cutter rotating about its own axis together in an orbiting motion about an ID or OD workpiece circumference in the "X" and "Y" plane. The circular movement about the "X" and "Y" plane, with a simultaneous linear movement in the Z-axis plane (which is perpendicular to the "X" and "Y" plane), creates the helical movement. For example, the path from point A to point B on the envelope of the cylinder combines a circular movement in the "X" and "Y" plane with a linear movement in the "Z" direction. On most CNC systems, this function can be executed in two different ways:

- GO2: helical interpolation in a clockwise direction.
- GO3: helical interpolation in a counterclockwise direction.



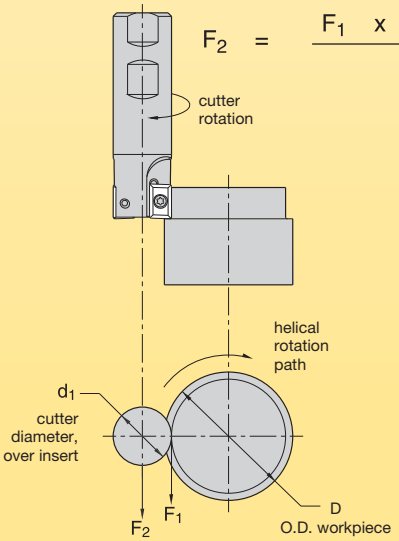
helical interpolation



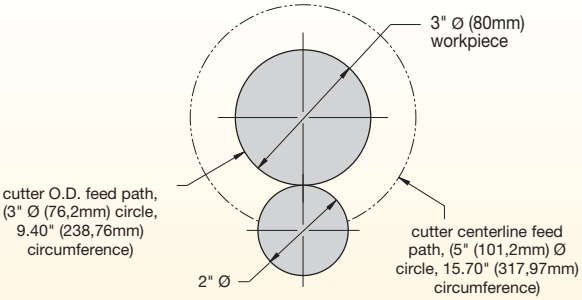
inside diameter (I.D.) helical interpolation

$$F_2 = \frac{F_1 \times (D - d_1)}{D}$$

F_1 = tool feed rate at the cutting edge (in./min.)
F_2 = tool centerline feed rate (in./min.)
D = O.D. workpiece diameter
D = I.D. workpiece diameter
d_1 = cutter diameter, over insert



outside diameter (O.D.) helical interpolation



O.D. circular interpolation

Calculation of Feed Rate for Circular and Helical Interpolation: On most CNC machines, the feed rate required for programming contour (circular or helical) milling is calculated based on the centerline of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and centerline are identical, but with circular tool movement, this is not the case.

Calculate Feed Rate at the Cutting Edge: First calculate the tool feed rate at the cutting edge with the following formula.

$F_1 = fz \times z \times n$

F_1 = tool feed rate at the cutting edge (in./min.)

f_z = inch per tooth (chip load)

z = number of effective inserts in the cutter

n = revolutions per minute

Calculation of the Feed Rate at the Tool Centerline: Use the following equations to define the relationship between feed rates at the cutting edge and at the tool centerline.

$$F_2 = \frac{F_1 \times (d_1 + D)}{D}$$

(continued)

(continued)

In I.D. contour applications, you will find the tool centerline feed is always less than the cutting edge feed rate.

Example for I.D.

D = 4" (100mm) I.D. workpiece

d_1 = 3" (80mm) cutter diameter

fz = .008 IPT (0,2 mm/tooth)

n = 637 RPM

z = 7 effective inserts

1. Calculate feed rate at the cutting edge.

$F_1 = f_2 \times z \times n$

F_1 = .008 x 7 x 637 = 35.7 in./min (0.2 x 7 x 637 = 892 mm/min)

2. Calculate feed rate at the tool centerline.

$$F_2 = \frac{F_1 \times (D - d_1)}{D}$$

$$F_2 = \frac{35.7 \times (4.0 - 3.0)}{4.0} = 8.9 \text{ in./min}$$

$$F_2 = \frac{892 \times (100 - 80)}{100} = 178 \text{ mm/min}$$

To have (F_1) 35.7 in/min (892 mm/min) at the cutting edge feed rate, we must program the machine tool for (F_2) 8.9 in/min (178 mm/min) at the tool centerline feed rate. This is a difference of approximately 75% less feed than the cutting edge feed rate (F_1).

In O.D. contour applications, you will find the tool centerline feed rate is always larger than the cutting edge feed rate.

Example for O.D.

D = 5" (125mm) O.D. workpiece

d_1 = 2" (50mm) cutter diameter

f_z = .008 IPT (0,2 mm/tooth)

n = 955 RPM

z = 5 effective teeth

1. Calculate feed rate at the cutting edge.

$F_1 = f_2 \times z \times n$

F_1 = .008 x 5 x 955 = 38.2 in./min (0.2 x 5 x 955 = 955 mm/min)

2. Calculate feed rate at the tool centerline.

$$F_2 = \frac{F_1 \times (d_1 + D)}{D}$$

$$F_2 = \frac{38.2 \times (2 + 5)}{5} = 53.5 \text{ in./min}$$

$$F_2 = \frac{955 \times (50 + 125)}{125} = 1{,}337 \text{ mm/min}$$

To have (F_1) 38.2 in/min (955 mm/min) at the cutting edge feed rate, we must program the machine tool for (F_2) 53.5in/min (1,337 mm/min) at the tool centerline feed rate. This translates to an increase of about 40% more feed rate than the cutting edge feed rate (F_1).

Large Surfaces

Interpolating with a smaller cutter may be faster than using a large diameter cutter. Also, keep the cutter in contact with the workpiece rather than exiting and re-entering.

Maximize Metal Removal Rate

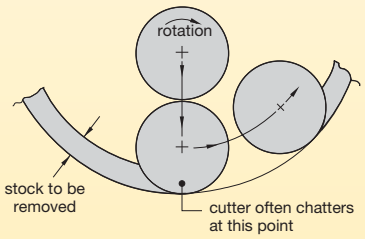
Concentrate on Metal Removal Rate (MRR), not just on higher SFM (cutting speeds). Increasing spindle speed without increasing chip load will not improve MRR. However, by doubling fz, MRR does increase and horsepower consumption only increases by approximately 50%.

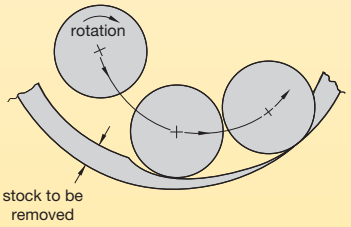
Preset

Use cutter preset areas for proper setting of cutters rather than indexing cutters at the machine, if possible.

Ramp In and Out

As shown below, ramping gradually into the cut will provide greater tool life. Also, by keeping the cutter constantly moving when entering and exiting the cut, dwell marks will be eliminated on the workpiece.

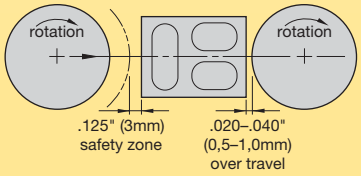




Safety and Over Travel

Program the milling cutter to rapid advance up to the part, within a range of .125" (3mm) before engaging the workpiece. This allows the machine to reach its proper operating parameters before actual chip making begins.

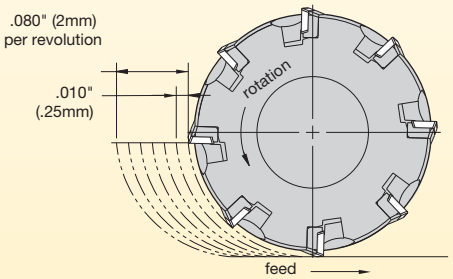
Rapid advance to the next cutting location, when the cutter is .020" (0,5mm) to .040" (1mm) past the edge of the part. If the spindle has built-in tilt or programmed runout, the cutter can be advanced to the next cutting location while the back half of the cutter is still over the finished milled surface.



to find	given	formula
Vc	D n	$Vc = \frac{\pi \times D \times n}{12}$
n	D Vc	$n = \frac{12 \times Vc}{\pi \times D}$
Vf	fz n z	**Vf = fz x z x n**
fz	z Vf n	$fz = \frac{Vf}{2 \times n}$

given	calculated
D = 6" cutter diameter Z = 8 teeth in cutter Vc = 600 SFM fz = .010 IPT	$n = \frac{12 \times 600}{3.1416 \times 6} = 382$ **Vf (IPM) = .010 x 8 x 382 = 30.6**

legend
Vc = surface feed per minute
n = revolutions per minute
D = cutter diameter
Vf = feed (inch per minute)
fz = inch per tooth (chip load)
z = number of effective teeth or inserts in cutter
π = 3.1416

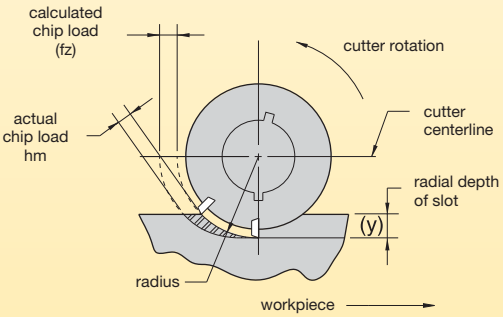


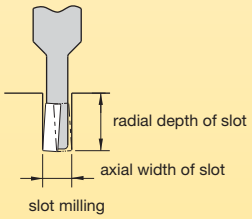
Slotting or Periphery Milling

True or actual chip load on the cutting edge of the insert is equal to the programmed chip load only when 50% or more of the cutter's diameter is engaged in the cut (lead angle not considered). Anything less than half the diameter of the cutter means that the actual chip load is reduced by some percentage. The smaller the radial depth of cut, the greater the decrease in actual chip load.

It's very important to maintain a chip load which is great enough to ensure heat dissipation and prevent work hardening. A sufficient chip load will also create stability between the cutter and the workpiece.

The formulas shown below are used to determine the programmed chip load, or feed rate necessary to obtain the desired load on the insert cutting edge as it enters the workpiece. These formulas should be applied whenever an arbor mounted slotting cutter is being used, or when less than half the diameter of a face mill or end mill is engaged in the cut. The lighter the radial depth of cut, the more important it becomes to apply these productivity formulas.





Productivity Formulas

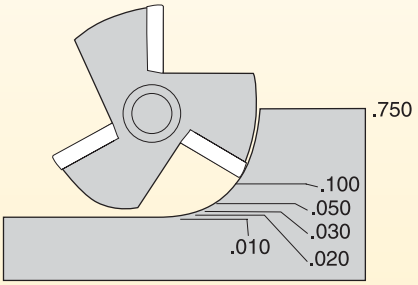
$$\text{chip load (fz)} = \frac{\left(\frac{\sqrt{(\text{dia.} - y) \times (y)}}{\text{radius}}\right) \times \left(\frac{vf}{n}\right)}{z}$$

or

$$F = \frac{n \times z \times fz}{\left(\frac{\sqrt{(\text{dia.} - y) \times (y)}}{\text{radius}}\right)}$$

Operations such as **periphery milling with a light radial depth of cut or slotting with an arbor mounted cutter** require a calculation for feed rate compensation to maintain the proper chip load on the insert edge at entry into the cut. The calculated chip load and actual chip load can be dramatically different, depending on the radial depth and the cutter diameter. For instance, the actual chip load on entry for a 3/4" diameter cutter taking a .010" radial depth cut is only 23% of the calculated chip load. It is not uncommon to encounter built-up edge, work-hardening, or chatter problems if the following formula is not applied. Minimal cutter runout is critical to obtaining an equal chip load on each flute of the cutter too. A side benefit to applying this formula is increased productivity as feed rates can increase dramatically.

radial depth of cut	actual chip load (IPT)	feed required (IPM) to maintain .004 IPT	increase
.750	.0040	5.5	0%
.100	.0020	11.5	109%
.050	.0014	15.3	178%
.030	.0011	19.6	256%
.020	.0009	23.9	335%
.010	.0006	33.8	515%



1.5" B end mill – 6 flutes
90 SFM 230 RPM
.004 IPT 5.5 IPM

Formulas — Horsepower

Metal Removal Rate

The Metal Removal Rate (MRR) calculation is a good basis for determining metalcutting efficiency.

MRR = doc x woc x F = cu. inches/min.

Horsepower Consumption

Milling cutters can consume significant amounts of horsepower. Very often it is the lack of horsepower that is the limiting factor when deciding on a particular operation. On applications where large diameter cutters or heavy stock removal is necessary, it's advantageous to first calculate the necessary horsepower requirements.

NOTE: Spindle efficiency "E" varies from 75 to 90%.

(E = .75 to .90)

A suitable formula for calculating horsepower (HP_c) at the cutter is:

$$HP_c = \frac{MRR}{K}$$

example:
width of cut . . . . 1.64"
depth of cut 200
feed . . . . . 19.5 IPM
4140 220 HB . . . . . "K" factor 1.56

MRR = .200 x 1.64 x 19.5 = 6.4 cu. in/mi

$$HPc = \frac{6.4}{1.56} = 4.1 \text{ HP at the cutter}$$

For horsepower at the motor (HP_m), use formula:

$$HPm = \frac{HPc}{E} \qquad HPm = \frac{4.1}{.8} = 5.1$$

In determining horsepower consumption, "K" factors must be used. The "K" factor is a power constant that represents the number of cubic inches of metal per minute that can be removed by one horsepower.

NOTE: "K" factors vary depending on the hardness of the material.

"K" Factors

workpiece material	hardness	"K" factor
steels, and wrought and cast irons (plain carbon alloy steels, and tool steels)	85–200	1.64
	201–253	1.56
	254–286	1.28
	287–327	1.10
	328–371	.88
	372–481	.69
	482–560	.59
	561–615	.54
precipitation hardening stainless steels	150–450	1.27–.42
cast irons (gray, ductile, and malleable)	150–175	2.27
	110–190	2.0
	176–200	1.89
	201–250	1.52
	251–300	1.27
	301–320	1.19
stainless steels, and wrought and cast irons (ferritic, austenitic, and martensitic)	135–275	1.54–.76
	286–421	.74–.50
titanium	250–375	1.33–.87
high-temperature alloys, nickel, cobalt base	200–360	.83–.48
iron base	180–320	.91–.53
nickel alloys	80–360	.91–.53
aluminum alloys	30–150 (500 kg)	6.25–3.33
magnesium alloys	40–90 (500 kg)	10.0–6.67
copper	150	3.33
copper alloys	100–150	3.33
	151–243	2.0

Over the past 50 years, Metal Removal Rates (MRR) and power constants have served as the conventional values used to calculate horsepower. Although this is a relatively common method of calculating horsepower, a more accurate method has been developed when milling with high shear cutters. This new approach utilizes the following information:

1. calculating tangential force (F_t)
2. ultimate material strength
3. cross-sectional area of the chip
4. number of inserts in the cut
5. machinability factor
6. tool wear factor
7. calculating torque
8. calculating horsepower at cutter
9. calculating horsepower at motor

Tangential Force, Torque, and Horsepower Calculations in Face Milling with High Shear Milling Cutters

1. Calculation of tangential force (ft. lbs.)

Calculation of tangential force is important since it produces torque at the spindle and accounts for the greatest portion of machining power at the cutting tool. Using this tangential force formula is a quick way to determine the approximate forces that fixtures, part wall sections, or spindle bearings will endure. Tangential force is calculated with the following formula:

$$F_t = S \times A \times Z_c \times C_m \times C_w \text{ (N)}$$

where: S = ultimate strength of the work material (psi)
A = cross-sectional area of the chip removed by the milling insert (in^2)
Z_c = number of inserts in cut
C_m = machinability factor
C_w = tool wear factor

2. Ultimate material strength (psi)

The approximate relationship between the ultimate material strength and hardness of the most commonly used work materials such as steels, irons (for example: gray cast iron), titanium alloys (Ti – 6Al – 4V), and aluminum alloys (2024, 5052) can be expressed by the empirical formula:

$$S = 500 \times HB \text{ (psi)}$$

Where HB = Brinell hardness numbers obtained, primarily, at the 3000-kgf load. When testing soft metals such as aluminum alloys, the 500-kgf load is used. Hardness obtained at the 500-kgf load should be converted into the hardness equivalent of the 3000-kgf load by using the load factor of 1.15.
For example, 130 HB at the 500-kgf load is equivalent to 150 HB at the 3000-kgf load (130 x 1.15 = 150). If hardness is given in Rockwell "B" or Rockwell "C" numbers, see the Material Listing Overview on pages Y210-Y211.

3. Cross-sectional area of the chip (A)

Cross-sectional area of the chip (Fig. 1) is defined by:

where: A = d f (in^2, or mm^2)
d = axial depth of cut (in, or mm)
fz = feed per tooth (in, or mm)

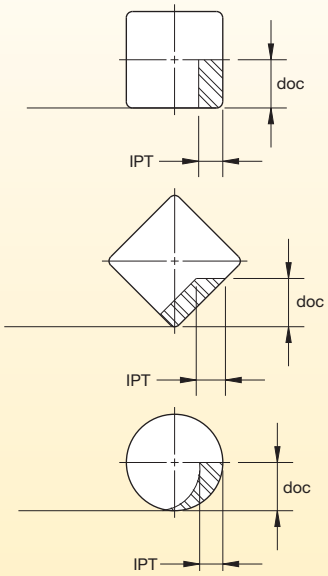


Figure 1: Cross-sectional area of the chip and insert's shape

4. Number of inserts in cut (Zc)

The number of inserts in the cut (simultaneously engaged with work material) depends on the number of inserts in the cutter "Z" and the engagement angle (α). This relationship is shown by the formula:

$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ}$$

The engagement angle depends on the width of cut "W" and cutter diameter "D". This angle is found from the geometry of figure 2 (formulas to calculate engagement angle and the number of inserts in the cut at any width of cut are given in the appendix on page X20.

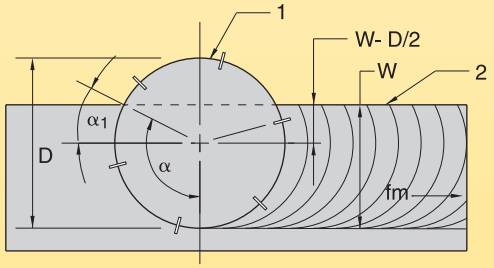


Figure 2: Schematic for calculating the number of inserts in cut

1 = milling cutter
2 = workpiece
α = engagement angle
α_1 = the angle between cutter centerline and cutter radius to the peripheral point of exit or entry
W = width of cut (woc)
D = cutter diameter
fm = workpiece feed motion

(continued)

(continued)

If the width of cut equals cutter diameter (W/D = 1.0), the engagement angle $\alpha = 180°$ and $Z_c = \frac{Z \times 180°}{360°} = 0.5Z$.

If the width of cut is equal to half of the cutter diameter (W/D = 0.5), the engagement angle $\alpha = 90°$ and $Z_c = \frac{Z \times 90°}{360°} = 0.25Z$.

The values of Z_c depending on the given W/D ratios, are shown in table 1.

Table 1

W/D	.88	.80	.75	.67	.56	.38	.33	.19	.125
Z_c	.38Z	.35Z	.33Z	.30Z	.27Z	.21Z	.20Z	.14Z	.12Z

5. Machinability factor (C_m)

Machinability factor is used to indicate degree of difficulty in machining various workpiece materials. Table 2 shows machinability factor values for some of the most common workpiece materials.

Table 2

workpiece material	C_m W/D≤.67	.67<W/D<1.0	W/D=1.0
carbon and alloy steels	1.0	1.15	1.3
stainless steel	2.0	2.15	2.3
gray cast iron	1.0	1.15	1.3
titanium alloys	1.0	1.20	1.4
aluminum alloys	1.0	1.05	1.1

The values of C_m are based on milling tests with a torque dynamometer at different cutting conditions. It has been found that machinability factor depends on type of work material and the ratio of radial width of cut to cutter diameter (W/D).

This ratio determines the uniformity of the chip thickness. When W/D = 1.0, the chip at the point of entry starts off at zero thickness. It increases to a maximum thickness at the centerline of the cutter, and thins off to zero again at the point of exit. This type of cut generates maximum friction at the cutting edge, and machinability factor reaches its maximum value. The optimal cutting conditions are obtained when W/D = 2/3 = .67. The thickness of the chip is practically uniform, the friction is minimal, and machinability factor decreases to its minimum value.

More extensive testing will determine machinability factors for a larger variety of work materials and improve the accuracy for calculating tangential force and power consumption.

6. Tool wear factor (C_w)

For milling with sharp cutting tools (short time operation), tool wear factor $C_w = 1.0$. For a longer operation (before the inserts are indexed), the following tool wear factors are considered:

- light face milling $C_w = 1.1$
- general face milling $C_w = 1.2$
- heavy-duty face milling $C_w = 1.3$

7. Calculation of torque (ft. lbs.)

The torque "T" generated by tangential force is calculated using the following formula:

$T = F_t \times D/2$ (in.-lb.)

where D = cutter diameter inch

8. Calculating horsepower (HP_c or HP_m)

The machining power at the cutter (sharp edges) is calculated by either of these two formulas:

$$HP_c = \frac{F_t \times SFM}{33{,}000}$$

or

$$HP_c = \frac{T \times RPM}{63{,}000}$$

where SFM = peripheral cutting speed (SFM)
RPM = spindle speed (RPM)
33,000 and 63,000 = conversion factors

9. The required power at the motor is calculated using the following formula (HP_m):

$$HP_m = \frac{HP_c}{E}$$

where E = machine tool efficiency factor (E = .75–.90)

NOTE: Spindle efficiency varies from 75–90%.

(continued)

(continued)

Example for Calculating Horsepower

given values:

milling cutter KSSISR – 492 – SE443 – 45 – 06:

effective diameter	D = 4.92".
number of inserts	Z = 6

workpiece material:
alloy steel AISI 4140
hardness 220 HB

machining conditions:

spindle speed	n = 349
cutting speed	Vc = 450
machine feed rate	F = 19.5
inch per tooth (chip load)	fz = .008"
axial depth of cut	doc = .200"
radial width of cut	woc = 1.64"
W/D ratio	W/D = .33

Step-By-Step Calculations

1. Calculating tangential force

1.1 ultimate strength of the workpiece material
S = 500 x HB = 500 x 220 = 110,000 psi

1.2 cross-sectional area of the chip
$A = doc \times IPT = .200 \times .008 = .0016\ in.^2$

1.3 number of inserts in cut:
width of cut-to-diameter ratio (w/d)
W/D = 1.64 / 4.92 = .33 (See Table 1, page X12).
Now use Z_c value shown in Table 1 under .33.
$Z_c = .20 \times Z = .20 \times 6 = 1.2$ inserts in cut.

NOTE: Z = number of inserts in cutter.

1.4 tangential force
$F_t = S \times A \times Z_c \times C_m \times C_w$
$F_t = 110{,}000 \times .0016 \times 1.2 \times 1.1 \times 1.1 = 256$ lbs.

NOTE: $C_m = 1.1$ and $C_w = 1.1$

2. Calculating torque at the cutter

$$T = (F_t \times D)/2 = \frac{256 \times 4.92}{2} = 630\ in.\text{-}lb.$$

3. Calculating horsepower

- At the cutter...reference formulas in paragraph 8 on page X12.

$$HP_c = \frac{F_t \times SFM}{33{,}000} = \frac{256 \times 450}{33{,}000} = 3.5\ hp$$

or

$$HP_c = \frac{T \times RPM}{63{,}000} = \frac{630 \times 349}{63{,}000} = 3.5\ hp$$

- At the motor...reference formula in paragraph 9 on page X12.
- Where E = machine tool efficiency factor (E = .75 to .90).

$$HP_m = \frac{HP_c}{E} = \frac{3.5}{.8} = 4.4\ hp$$

Surface finish may be an important specification on a machined part. Finishes produced by indexable insert cutters usually range from 0.80–3.2 (32–150) Ra. This broad range can be affected by several variables such as work material, machine rigidity, spindle alignment, fixturing, insert nose geometry, insert wear, cutting feed and speed, heat-generated chip welding, and chatter.

Good finishes will result when you use the right combination of cutter geometry, insert style, and cutting speeds and feeds for the material being milled. It is also important to have the part adequately fixtured, and the machine properly maintained.

Figure 1 illustrates that finer finishes can be obtained by using a larger corner radius, flat, or wiper on the insert. This tends to wipe out or reduce feed marks. In addition to the corner geometry of the insert, it is important to correctly set each insert relative to the other inserts. For example, if all of the inserts have the same corner geometry, and are set in the cutter body to a face height of approximately .001" (0,025mm) relative to each other, the finish produced will be better than if the inserts were set to within .003" (0,07mm).

Improved finishes can also be obtained by increasing speeds and reducing feeds. Be aware, however, that increased speed also increases cutting temperatures, and may reduce insert edge life.

Finish will not necessarily be the same on all areas of the milled surface. Figure 2 shows that the Ra finish will be lower on the area where the feed marks are close to each other, and higher where feed marks are farther apart.

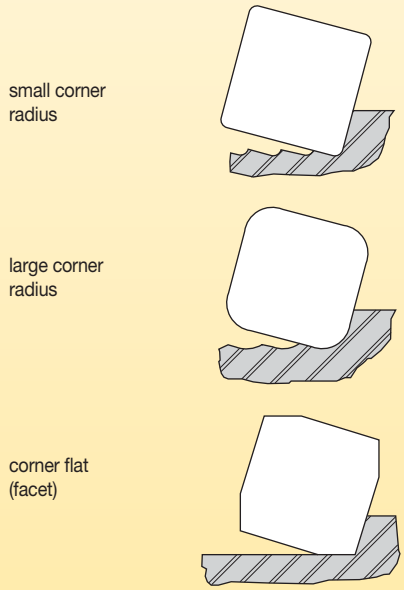


Figure 1: Larger insert corner radii or flats produce finer milling finishes.

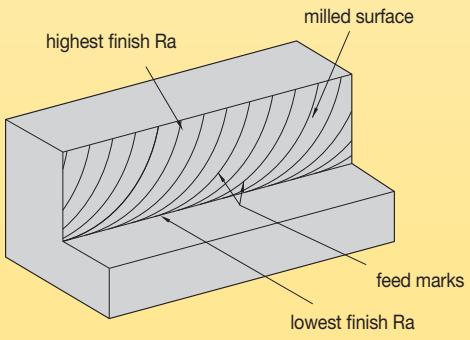


Figure 2: Quality of Ra finish corresponds to the distance between feed marks.

In figure 3, the Ra value will be lower near the outside diameter of the cut where the feed marks are at their closest, and higher at the center where the feed marks are farthest apart. Peaks produced are highest at the center of the cutter as it is positioned in the cut, and lowest at the outside diameter of the cutter, as illustrated below in figures 3 and 4.

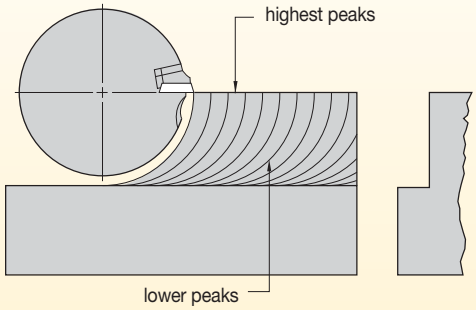


Figure 3: Ra finish is higher at the widest feed marks.

Both finish and flatness are affected by feed marks. A taper will be produced from the high peaks down to the low peaks.

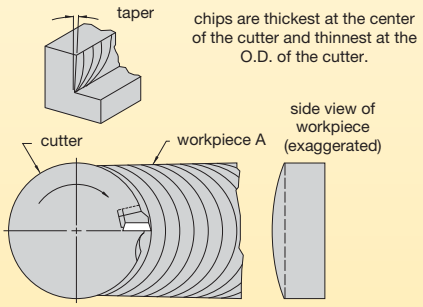


Figure 4: A taper is produced from the high peaks to the low ones.

Flatness also affects part tolerance. This effect is more predominant in side milling both sides of a part as shown in figure 5.

An obvious solution to obtaining a more consistent and improved surface finish with a minimum of taper is to reduce or flatten the peaks between feed marks. This can be done by introducing an insert with a corner configuration capable of wiping out or reducing these peaks. Shown in figure 5 is an exaggerated change in part width due to flatness and taper.

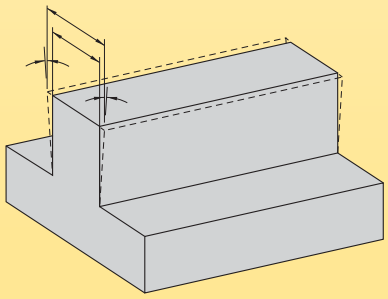


Figure 5: Flatness affects part tolerance more when milling both sides of a part.

(continued)

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Figures 6 and 7 compare the feed marks produced with a nose radius insert to those produced with a wiper insert. A wiper insert with a large radius for wiping out or reducing peaks (figure 7) has been effective in producing finishes below 3.2 (100) Ra. Figures 6 and 7 show the wiper insert is designed to "top off" the peaks of the feed marks. An improved surface finish, surface flatness, and reduced taper will result.

Wiper inserts are normally set at .001–.0015" (0,025–0,04mm) above the highest positioned insert in the cutter to ensure a good wiping action. Kennametal wiper inserts are typically designed to fit into any pocket in the cutter body. This means one or more wiper inserts can be used. Interchangeable wipers can be used to share the load on the periphery of the cut in feed per tooth.

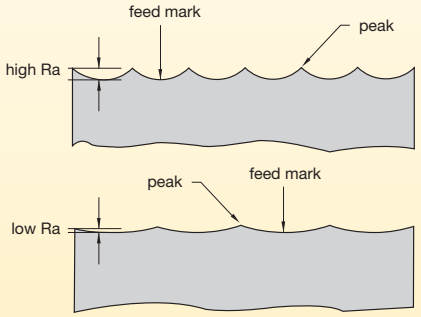


Figure 6: Peaks produced with a standard radii insert (top) compared to those produced with a large radius wiper insert (bottom).

Poor Surface Finish

cause	solution
cutter runout	Check for high insert, dirt in the pockets, or dirty spindle and cutter mounting face. Also, look for burrs on the cutter and damaged cutter pocket.
worn or chipped insert	Index insert.
feed per revolution exceeding flat on wiper	Reduce feed rate or install wiper with greater effective insert facet width.
wiper insert is set too high	Set the wiper insert .001–.0015" (0,025–0,04mm) above highest insert.
chatter	Check rigidity of machine and table fixturing. Check arbor and spindle, adjust feed rates, adjust RPM, or reduce cut width. Consider cutter with fewer pockets.

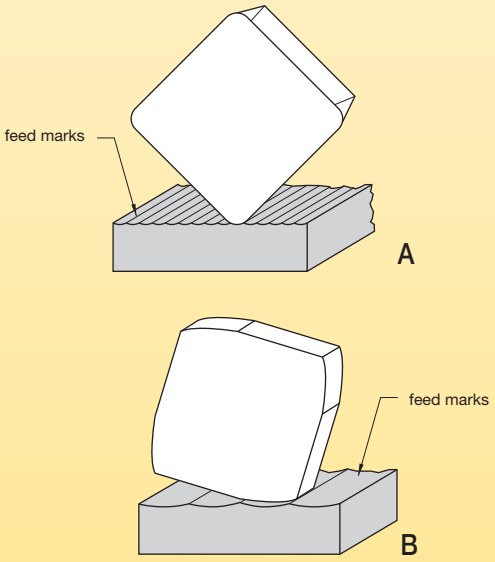


Figure 7: Feed marks produced with a nose radius insert (A) compared to marks produced with a wiper insert (B).

(continued)

(continued)

Measuring Finish Produced in a Milling Operation

Do not rely on your eye or fingernail to determine surface finish. Fingernails are about 25 times as thick as the stylus tip of a surface measuring instrument. They will skid across surface peaks, missing the valleys. Use a surface measuring instrument since the appearance of the surface finish may be deceiving. For example, reflected light on a uniformly milled surface pattern will look smoother than a random pattern. Also, a shiny surface will appear smoother than a dull surface.

Placement of the measuring device in a specific area on the milled surface will affect the reading. Also, a surface finish measured perpendicular to the feed direction is better than measuring parallel to the feed direction. This is usually the case regardless of workpiece condition and material (see figure 8).

Changing the cut-off width of the surface measuring instrument will affect the Ra value of the measurement.

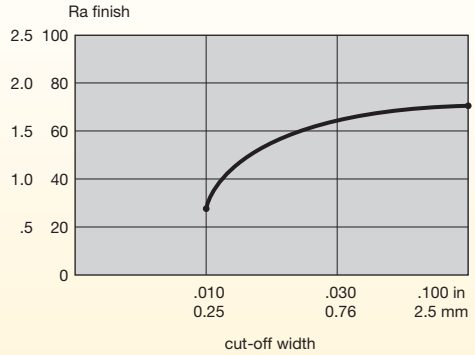


Figure 10: Finish quality is directly proportional to the cut-off width.

Surface Profile Record

Figure 9 shows the variation in roughness created by increasing the cut-off width on the instrument. The greater the cut-off, (see figure 9), the higher the Ra finish. For example, figure 10 illustrates that a .010" (0,25mm) cut-off width will produce a .6 (25) Ra finish; whereas, a .100" (0,76mm) cut-off width will produce a 2.0 (75) Ra finish.

Also, figure 10 demonstrates that most measuring devices are provided with .010" (0,25mm), .030" (0,76mm), and .100" (2,54mm) cut-offs. In most cases, the .030" (0,76mm) width cut-off is preferred.

Figure 11 shows the standard surface symbols specifying maximum and minimum roughness, waviness, and lay, which is the direction in which the measurement is taken.

Preferred Method

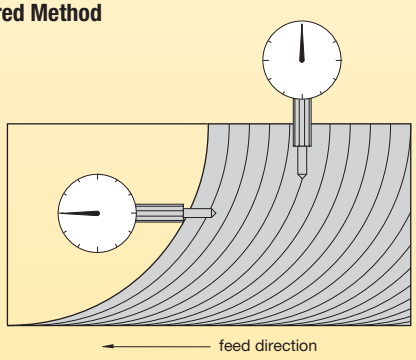


Figure 8: Measuring surface finish

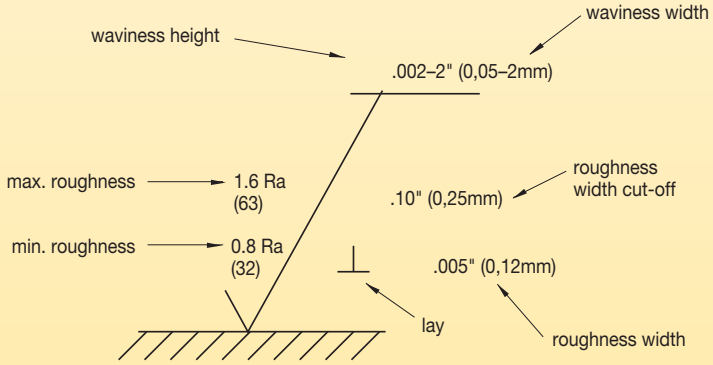


Figure 11: Standard surface symbols

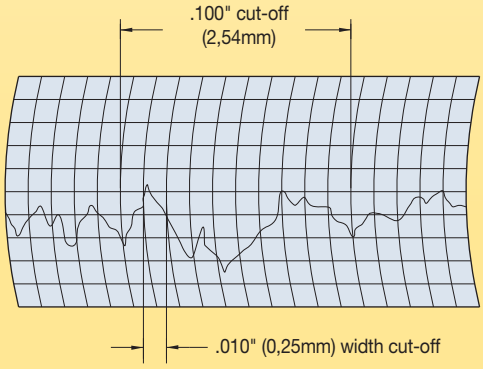


Figure 9: Increasing the cut-off width creates a variation in roughness.

Troubleshooting Introduction

Troubleshooting should be performed in a sequential method to identify and solve your milling problems. These problems can be recognized as premature insert edge failure, part appearance, machine noise or vibration, and the cutter's appearance. Successful troubleshooting requires that we correctly identify the problem, then take the necessary corrective action one step at a time. The five key areas of concern are:

1. cutting tool material (grade)
2. cutter/adapter
3. machine
4. workpiece
5. set-up/fixturing

This section will discuss possible causes and will recommend corrective actions for each of the five areas listed. Remember, if more than one step is taken concurrently, the real cause of the problem may never be discovered. Always perform one corrective measure at a time.

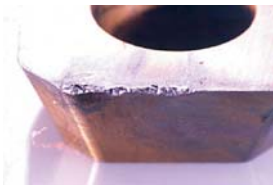
Edge Condition Problems and Solutions

Chipping:

Appears like normal flank wear to the untrained eye. Actually, normal flank wear lands have a fine, smooth wear pattern, while a land formed by chipping has a saw-toothed, uneven surface. If chipping is not detected soon enough, it may be perceived as depth-of-cut notching.

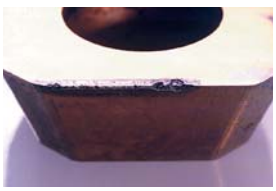
Chipping can also be caused by recutting of chips. A good example of this would be a slotting operation where chip clearance or chip gullet space does not allow the chips to evacuate cleanly. In this instance, packing of the chips also occurs.

In most cases, by changing to a stronger grade and/or to a different edge preparation such as a larger hone or T-land, or from a 90° (0°) cutter geometry to a lead angle cutter geometry, will resolve the problem.

problem	cause	solution
chipping 	• chatter	• Check system rigidity for proper part clamping. • Correct worn gibs/bearings. • Check for improper cutter mounting.
	• edge prep	• Use largest hone or T-land possible.
	• grade	• Use a tougher grade.
	• built-up edge	• Increase speed.
	• feed	• Reduce feed per tooth.
	• recutting chips	• Choose cutter geometry with correct pitch for chip clearance. • Use air blast or coolant to remove chips.

Depth-of-cut notching:

Appears when chipping or localized wear at the depth-of-cut line on the rake face and flank of the insert occurs. Notching is primarily caused by the condition of the workpiece material. Material conditions prone to depth-of-cut notch include: an abrasive workpiece skin of scale, abrasive properties of high-temperature alloys like Inconel®, a work-hardened outer layer resulting from a previous machining operation, or heat-treated material above 55 HRC.

problem	cause	solution
depth-of-cut notching 	• cutter geometry	• Change to a lead angle cutter.
	• grade	• Use a more wear-resistant grade of carbide.
	• feed	• Reduce feed per tooth.
	• speed	• Reduce speed.
	• edge-prep	• Use honed or T-land inserts.
	• programming	• Vary depth of cut on very abrasive materials.

Thermal cracks:

These cracks run perpendicular to the insert's cutting edge and are caused by the extreme temperature variations involved in milling. In one revolution of a milling cutter, the insert starts to cut and the temperature quickly rises as the insert enters the cut. The varying chip thickness also changes the temperature throughout the cut. When the insert comes out of the cut, air or coolant flow rapidly cools the insert before it re-enters the cut.

These temperature variations create heat stresses in the insert which can result in thermal cracks. To the untrained eye, advanced thermal cracking could appear as chipping.

problem	cause	solution
thermal cracks 	• speed and feed	• Reduce cutting edge temperature by reducing the cutting speed and possibly the feed per tooth.
	• coolant	• Shut off coolant.
	• grade	• Use coated grade designed for wet milling.

Built-up edge:

This condition involves the adhesion of layers of workpiece material to the top surface of the insert. Hardened pieces of the adhered material periodically break free, leaving an irregularly shaped depression along the cutting edge. This causes damage to the part and insert. Cutting forces also will be increased due to built-up edge.

problem	cause	solution
built-up edge 	• speed	• Increase SFM.
	• feed	• Increase feed per tooth.
	• coolant	• Use mist or flood coolant to avoid chips sticking to the insert when machining stainless steel and aluminum alloys.
	• grade	• Use sharp edge PVD inserts.
		• Higher speeds require diamond-tipped inserts or diamond-coated inserts on certain non-ferrous alloys.
	• edge-prep	• Use sharp edge, positive rake PVD inserts, or polished inserts.

Crater wear:

A relatively smooth, regular depression is produced on the insert's rake face. Crater wear occurs in two ways:

1. Material adhering to the insert's top surface is dislodged, carrying away minute fragments of the top surface of the insert.
2. Frictional heat builds up from the flow of chips over the top surface of the insert. Eventually, this heat buildup softens the insert behind the cutting edge and removes minute particles of the insert until a crater forms.

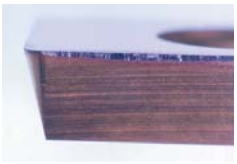
Crater wear is rarely encountered in milling, but can appear when machining certain steel and cast iron alloys. If crater wear becomes severe, there is a risk that the cutting edge will break, destroying the insert.

problem	cause	solution
crater wear 	• grade	• Use a more wear-resistant grade.
	• speed	• Reduce cutting speed.
	• edge-prep	• Use smaller T-land or increase feed to proper range for T-land.

Flank wear:

Uniform flank wear is the preferred method of insert failure because it can be predicted. Excessive flank wear increases cutting forces and contributes to poor surface finish. When wear occurs at an unacceptable rate or becomes unpredictable, the key elements that must be investigated are speed, feed, grade, and insert/cutter geometry.

NOTE: Inserts should be indexed for roughing applications when flank wear reaches .015–.020" (0,38–0,50mm). For finish applications, inserts should be indexed once flank wear reaches 0.01–0.015" (0,25–0,38mm), if not sooner.

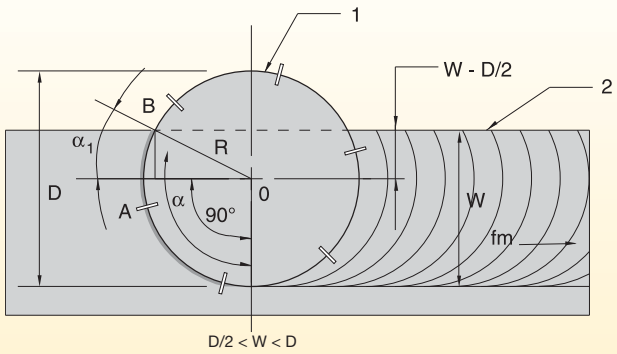
problem	cause	solution
flank wear 	• speed	• Check this area first. Recalculate SFM (Vc) to assure correctness. • Speed should be reduced without changing feed per tooth.
	• feed	• Increase feed per tooth (feed should be high enough to avoid the pure rubbing, which occurs with small chip thickness).
	• grade	• Use more wear-resistant grade. • Change to a coated grade if you are now using an uncoated grade.
	• insert geometry	• Inspect insert to determine if proper style is being used in the cutter.

Multiple factors:

When wear, chipping, thermal cracking, and breakage occur at once, the machine operator must look beyond the normal feed, speed, and depth-of-cut adjustments to find the root cause of the problem. Speed, feed, and depth-of-cut parameters should be re-examined for accuracy, but the system's rigidity should also be closely inspected for loose or worn parts as well.

problem	cause	solution
multiple factors 	• system rigidity	• Check system for loose cutter mounting. • Improve fixture and cutter rigidity. • Check for worn hardware or improper insert installation. • Reduce the gauge length of the cutter and arbor assembly.
	• feed	• Reduce feed rate to relieve cutting forces.
	• cutter geometry	• If possible, use a lead angle cutter to redirect cutting forces away from the insert nose.
	• insert/grade	• If possible, use a larger nose radius. • Use T-land insert. • Use a tougher grade of carbide.

Appendix • Engagement Angle and Number of Inserts in Cut

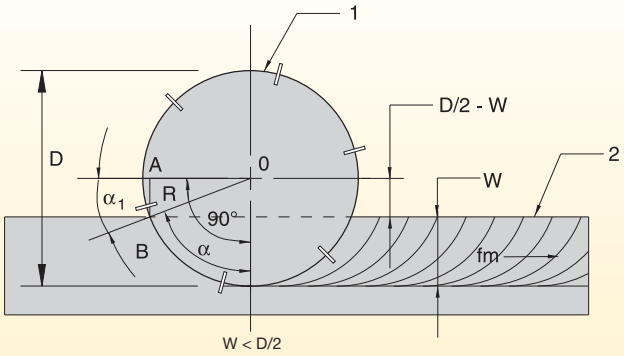


$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ} \qquad \alpha = 90^\circ + \alpha_1$$

$$\sin \alpha_1 = \frac{AB}{OB} = \frac{W - D/2}{D/2} = \frac{2(W - D/2)}{D} = \frac{2W - D}{D};$$

$$\alpha_1 = \arcsin \frac{2W - D}{D};$$

$$Z_c = \frac{Z\left(90^\circ + \arcsin \frac{2W - D}{D}\right)}{360^\circ}$$



$$Z_c = \frac{Z \times \alpha^\circ}{360^\circ} \qquad \alpha = 90^\circ - \alpha_1$$

$$\sin \alpha_1 = \frac{AB}{OB} = \frac{D/2 - W}{D/2} = \frac{2(D/2 - W)}{D} = \frac{D - 2W}{D};$$

$$\alpha_1 = \arcsin \frac{D - 2W}{D}$$

$$Z_c = \frac{Z\left(90^\circ - \arcsin \frac{D - 2W}{D}\right)}{360^\circ}$$

D = cutter diameter
W = width of cut (woc)
α = engagement angle
α_1 = angle between cutter centerline and cutter radius to the peripheral point of exit or entry
Z = number of inserts in cutter
Z_c = number of inserts in cut

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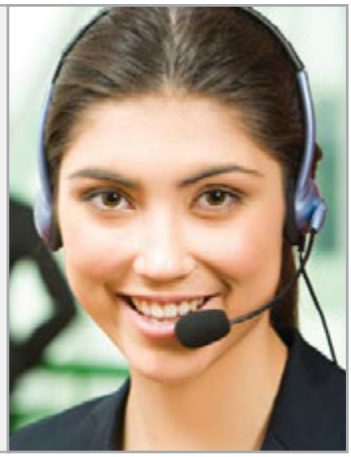
SERVICES	Operating parameters. Process optimization. Hardware support. Tooling selection. Troubleshooting.
BEST-IN-CLASS SUPPORT TOOLS AND TECHNOLOGY	Materials database. Application calculators. Tooling performance experts.



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New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
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UK	English	0800 032 8339	na.techsupport@kennametal.com
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USA	English	800 835 3668	na.techsupport@kennametal.com

Numbers shown only serve the originating country listed.

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		GH1			GH2			K110M			K115M			K313			KBK50			KC410M*		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	1150	**855**	525	985	**720**	475	510	**475**	460	720	**590**	475	755	**675**	590	3935	**2625**	1970	–	–	–
	2	970	**720**	475	855	**625**	410	460	**410**	395	590	**475**	360	–	–	–	3935	**2625**	1970	–	–	–
	3	785	**625**	460	720	**575**	395	395	**360**	310	360	**295**	230	–	–	–	3935	**2625**	1970	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M*			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	1085	**970**	855	–	–	–	1295	**1115**	1065	–	–	–
	2	–	–	–	–	–	–	–	–	–	1015	**900**	785	–	–	–	1085	**950**	785	–	–	–
	3	–	–	–	–	–	–	–	–	–	900	**785**	675	–	–	–	1000	**855**	690	–	–	–
	4	–	–	–	1180	**870**	705	970	**785**	675	785	**675**	525	–	–	–	885	**720**	590	–	–	–
	5	–	–	–	1180	**870**	705	–	–	–	675	**525**	410	–	–	–	720	**675**	590	–	–	–
	6	–	–	–	1150	**785**	625	–	–	–	525	**410**	360	–	–	–	655	**490**	395	–	–	–
M	1	–	–	–	–	–	–	–	–	–	1085	**900**	785	–	–	–	805	**705**	655	–	–	–
	2	–	–	–	–	–	–	–	–	–	900	**720**	525	–	–	–	720	**625**	510	–	–	–
	3	–	–	–	–	–	–	–	–	–	720	**590**	475	–	–	–	560	**475**	375	–	–	–
K	1	–	–	–	755	**675**	590	1165	**1050**	950	1445	**1085**	720	1065	**970**	855	900	**805**	720	1475	**1050**	755
	2	–	–	–	690	**605**	525	900	**805**	755	1085	**855**	590	820	**755**	690	705	**625**	590	1280	**805**	625
	3	–	–	–	460	**375**	295	770	**690**	625	475	**360**	230	690	**625**	575	590	**525**	475	985	**720**	510
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	870	**675**	560	625	**510**	360	560	**395**	310	–	–	–	475	**360**	280	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Technical Information

*Recommended for wet machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	870	**785**	705	900	**785**	675	1015	**900**	855	510	**475**	395	–	–	–	–	–	–	1790	**1560**	1460
	2	705	**625**	590	785	**675**	525	870	**755**	625	475	**425**	410	–	–	–	–	–	–	1100	**1000**	900
	3	625	**590**	560	675	**590**	525	785	**675**	560	425	**395**	360	–	–	–	–	–	–	1000	**900**	805
	4	560	**510**	475	590	**525**	475	705	**590**	475	395	**360**	310	–	–	–	–	–	–	755	**690**	625
	5	590	**560**	510	525	**475**	410	590	**525**	475	360	**310**	295	–	–	–	–	–	–	1015	**900**	820
	6	510	**475**	425	410	**360**	295	510	**395**	310	310	**295**	280	–	–	–	–	–	–	625	**525**	–
M	1	590	**560**	510	900	**720**	590	675	**590**	525	410	**360**	310	–	–	–	–	–	–	805	**720**	605
	2	510	**475**	425	590	**475**	410	605	**510**	425	375	**330**	295	–	–	–	–	–	–	720	**625**	560
	3	360	**310**	280	475	**410**	360	460	**395**	310	280	**230**	–	–	–	–	–	–	–	575	**510**	460
K	1	–	–	–	–	–	–	–	–	–	–	–	–	1655	**1510**	1345	1150	**1000**	855	1165	**1050**	950
	2	–	–	–	–	–	–	–	–	–	–	–	–	1310	**1165**	1085	900	**785**	690	920	**820**	755
	3	–	–	–	–	–	–	–	–	–	–	–	–	1100	**985**	900	755	**675**	575	770	**690**	625
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400*			KD1410*			KD1415*			KD1425*		
P	1	1165	**1015**	970	1460	**1265**	1180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	985	**855**	705	1200	**1065**	870	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	900	**770**	625	1115	**950**	770	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	805	**675**	525	985	**805**	655	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	675	**605**	525	805	**755**	655	675	**575**	475	–	–	–	–	–	–	–	–	–	–	–	–
	6	590	**460**	360	720	**560**	425	590	**425**	310	–	–	–	–	–	–	–	–	–	–	–	–
M	1	770	**675**	605	885	**785**	720	820	**675**	560	–	–	–	–	–	–	–	–	–	–	–	–
	2	690	**590**	490	805	**705**	575	705	**575**	475	–	–	–	–	–	–	–	–	–	–	–	–
	3	510	**460**	360	605	**525**	410	575	**425**	330	–	–	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	525	**395**	295	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		KTPK20			KY3500			KYS30			KYSP30			MP91M			SC3025			SC6525		
P	1	1445	**1180**	1000	–	–	–	–	–	–	–	–	–	1360	**970**	560	–	–	–	1460	**1000**	560
	2	885	**755**	625	–	–	–	–	–	–	–	–	–	1200	**855**	475	–	–	–	1280	**885**	475
	3	805	**675**	575	–	–	–	–	–	–	–	–	–	1065	**755**	410	–	–	–	1150	**785**	410
	4	590	**510**	425	–	–	–	–	–	–	–	–	–	805	**575**	310	–	–	–	820	**575**	310
	5	820	**690**	575	–	–	–	2985	**2395**	1790	2985	**2395**	1790	–	–	–	–	–	–	625	**475**	310
	6	510	**410**	–	–	–	–	2985	**2395**	1790	2985	**2395**	1790	–	–	–	–	–	–	560	**395**	230
M	1	950	**770**	655	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	785	**705**	560
	2	855	**720**	590	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	755	**625**	475
	3	625	**525**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	575	**510**	360
K	1	900	**770**	625	3165	**2870**	2560	–	–	–	–	–	–	1445	**1000**	575	1560	**1085**	590	1540	**1065**	575
	2	720	**590**	510	2495	**2245**	2085	–	–	–	–	–	–	1115	**785**	460	1310	**900**	475	1200	**820**	460
	3	590	**510**	410	–	–	–	–	–	–	–	–	–	1015	**720**	410	1085	**755**	410	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	2640	**2165**	1675	2640	**2165**	1675	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	2640	**2165**	1675	2640	**2165**	1675	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	3840	**3135**	2395	3840	**3135**	2395	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	410	**310**	195	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	375	**280**	165	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		SP4019			SP6519			X400			X500			X700		
P	1	1245	**900**	560	1165	**855**	510	1015	**755**	475	1065	**785**	510	–	–	–
	2	1085	**785**	475	1015	**755**	460	900	**675**	410	950	**705**	460	–	–	–
	3	970	**690**	410	900	**655**	395	785	**590**	375	820	**605**	395	–	–	–
	4	755	**525**	310	690	**490**	295	590	**425**	280	625	**475**	295	–	–	–
	5	590	**425**	280	560	**410**	280	–	–	–	510	**395**	280	525	**410**	280
	6	510	**360**	195	475	**330**	195	–	–	–	425	**310**	195	460	**330**	195
M	1	1100	**785**	475	1065	**770**	460	–	–	–	985	**720**	460	1015	**755**	460
	2	985	**705**	425	920	**675**	410	–	–	–	870	**625**	395	900	**675**	410
	3	785	**575**	360	770	**560**	330	–	–	–	705	**510**	310	755	**560**	330
K	1	1295	**950**	575	1165	**870**	560	–	–	–	1015	**870**	675	–	–	–
	2	1000	**720**	460	950	**690**	425	–	–	–	870	**705**	510	–	–	–
	3	920	**675**	410	870	**625**	395	–	–	–	675	**560**	395	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	395	**295**	195	–	–	–	375	**280**	180	–	–	–	–	–	–
	2	360	**260**	165	–	–	–	310	**230**	130	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Inch • Shoulder Milling, Slotting, and Thread Mills

Material Group		GH1			GH2			K110M			K115M			K313			KBK50			KC410M*		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	950	**705**	445	820	**605**	395	425	**395**	375	605	**490**	395	625	**560**	490	3280	**2180**	1640	–	–	–
	2	805	**605**	395	705	**525**	345	375	**345**	330	490	**395**	295	–	–	–	3280	**2180**	1640	–	–	–
	3	655	**525**	375	605	**475**	330	330	**295**	260	295	**245**	195	–	–	–	3280	**2180**	1640	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M*			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	900	**805**	705	–	–	–	1085	**935**	885	–	–	–
	2	–	–	–	–	–	–	–	–	–	855	**755**	655	–	–	–	900	**785**	655	–	–	–
	3	–	–	–	–	–	–	–	–	–	755	**655**	560	–	–	–	835	**705**	575	–	–	–
	4	–	–	–	985	**720**	590	805	**655**	560	655	**560**	445	–	–	–	740	**605**	490	–	–	–
	5	–	–	–	985	**720**	590	–	–	–	560	**445**	345	–	–	–	605	**560**	490	–	–	–
	6	–	–	–	950	**655**	525	–	–	–	445	**345**	295	–	–	–	540	**410**	330	–	–	–
M	1	–	–	–	–	–	–	–	–	–	900	**755**	655	–	–	–	675	**590**	540	–	–	–
	2	–	–	–	–	–	–	–	–	–	755	**605**	445	–	–	–	605	**525**	425	–	–	–
	3	–	–	–	–	–	–	–	–	–	605	**490**	395	–	–	–	460	**395**	310	–	–	–
K	1	–	–	–	625	**560**	490	970	**870**	785	1200	**900**	605	885	**805**	705	755	**675**	605	1230	**870**	625
	2	–	–	–	575	**510**	445	755	**675**	625	900	**705**	490	690	**625**	575	590	**525**	490	1065	**675**	525
	3	–	–	–	375	**310**	245	640	**575**	525	395	**295**	195	575	**525**	475	490	**445**	395	820	**605**	425
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	720	**560**	460	525	**425**	295	460	**330**	260	–	–	–	395	**295**	230	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Inch • Shoulder Milling, Slotting, and Thread Mills

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	720	**655**	590	755	**655**	560	855	**755**	705	425	**395**	330	–	–	–	–	–	–	1495	**1295**	1215
	2	590	**525**	490	655	**560**	445	720	**625**	525	395	**360**	345	–	–	–	–	–	–	920	**835**	755
	3	525	**490**	460	560	**490**	445	655	**560**	460	360	**330**	295	–	–	–	–	–	–	835	**755**	675
	4	460	**425**	395	490	**445**	395	590	**490**	395	330	**295**	260	–	–	–	–	–	–	625	**575**	525
	5	490	**460**	425	445	**395**	345	490	**445**	395	295	**260**	245	–	–	–	–	–	–	855	**755**	690
	6	425	**395**	360	345	**295**	245	425	**330**	260	260	**245**	230	–	–	–	–	–	–	525	**445**	–
M	1	490	**460**	425	755	**605**	490	560	**490**	445	345	**295**	260	–	–	–	–	–	–	675	**605**	510
	2	425	**395**	360	490	**395**	345	510	**425**	360	310	**280**	245	–	–	–	–	–	–	605	**525**	460
	3	295	**260**	230	395	**345**	295	375	**330**	260	230	**195**	–	–	–	–	–	–	–	475	**425**	375
K	1	–	–	–	–	–	–	–	–	–	–	–	–	1380	**1265**	1115	950	**835**	705	970	**870**	785
	2	–	–	–	–	–	–	–	–	–	–	–	–	1100	**970**	900	755	**655**	575	770	**690**	625
	3	–	–	–	–	–	–	–	–	–	–	–	–	920	**820**	755	625	**560**	475	640	**575**	525
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400*			KD1410*			KD1415*			KD1425*		
P	1	970	**855**	805	1215	**1050**	985	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	820	**705**	590	1000	**885**	720	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	755	**640**	525	935	**785**	640	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	675	**560**	445	820	**675**	540	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	560	**510**	445	675	**625**	540	560	**475**	395	–	–	–	–	–	–	–	–	–	–	–	–
	6	490	**375**	295	605	**460**	360	490	**360**	260	–	–	–	–	–	–	–	–	–	–	–	–
M	1	640	**560**	510	740	**655**	605	690	**560**	460	–	–	–	–	–	–	–	–	–	–	–	–
	2	575	**490**	410	675	**590**	475	590	**475**	395	–	–	–	–	–	–	–	–	–	–	–	–
	3	425	**375**	295	510	**445**	345	475	**360**	280	–	–	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	445	**330**	245	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Inch • Shoulder Milling, Slotting, and Thread Mills

Material Group		KTPK20			KY3500			KYS30			KYSP30			MP91M			SC3025			SC6525		
P	1	1200	**985**	835	–	–	–	–	–	–	–	–	–	1130	**805**	460	–	–	–	1215	**835**	460
	2	740	**625**	525	–	–	–	–	–	–	–	–	–	1000	**705**	395	–	–	–	1065	**740**	395
	3	675	**560**	475	–	–	–	–	–	–	–	–	–	885	**625**	345	–	–	–	950	**655**	345
	4	490	**425**	360	–	–	–	–	–	–	–	–	–	675	**475**	260	–	–	–	690	**475**	260
	5	690	**575**	475	–	–	–	2495	**2000**	1495	2495	**2000**	1495	–	–	–	–	–	–	525	**395**	260
	6	425	**345**	–	–	–	–	2495	**2000**	1495	2495	**2000**	1495	–	–	–	–	–	–	460	**330**	195
M	1	785	**640**	540	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	655	**590**	460
	2	705	**605**	490	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	625	**525**	395
	3	525	**445**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	475	**425**	295
K	1	755	**640**	525	2640	**2395**	2135	–	–	–	–	–	–	1200	**835**	475	1295	**900**	490	1280	**885**	475
	2	605	**490**	425	2085	**1870**	1740	–	–	–	–	–	–	935	**655**	375	1100	**755**	395	1000	**690**	375
	3	490	**425**	345	–	–	–	–	–	–	–	–	–	855	**605**	345	900	**625**	345	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	2200	**1805**	1395	2200	**1805**	1395	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	2200	**1805**	1395	2200	**1805**	1395	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	3200	**2610**	2000	3200	**2610**	2000	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	345	**260**	165	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	310	**230**	130	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		SP4019			SP6519			X400			X500			X700		
P	1	1035	**755**	460	970	**705**	425	855	**625**	395	885	**655**	425	–	–	–
	2	900	**655**	395	855	**625**	375	755	**560**	345	785	**590**	375	–	–	–
	3	805	**575**	345	755	**540**	330	655	**490**	310	690	**510**	330	–	–	–
	4	625	**445**	260	575	**410**	245	490	**360**	230	525	**395**	245	–	–	–
	5	490	**360**	230	460	**345**	230	–	–	–	425	**330**	230	445	**345**	230
	6	425	**295**	165	395	**280**	165	–	–	–	360	**260**	165	375	**280**	165
M	1	920	**655**	395	885	**640**	375	–	–	–	820	**605**	375	855	**625**	375
	2	820	**590**	360	770	**560**	345	–	–	–	720	**525**	330	755	**560**	345
	3	655	**475**	295	640	**460**	280	–	–	–	590	**425**	260	625	**460**	280
K	1	1085	**785**	475	970	**720**	460	–	–	–	855	**720**	560	–	–	–
	2	835	**605**	375	785	**575**	360	–	–	–	720	**590**	425	–	–	–
	3	770	**560**	345	720	**525**	330	–	–	–	560	**460**	330	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	330	**245**	165	–	–	–	310	**230**	150	–	–	–	–	–	–
	2	295	**215**	130	–	–	–	260	**195**	115	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for wet machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		GH1			GH2			K110M			K115M			K313			KBK50 *			KC410M		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	920	**685**	420	790	**575**	380	410	**380**	370	575	**470**	380	605	**540**	470	3150	**2100**	1575	–	–	–
	2	775	**575**	380	685	**500**	330	370	**330**	315	470	**380**	290	–	–	–	3150	**2100**	1575	–	–	–
	3	630	**500**	370	575	**460**	315	315	**290**	250	290	**235**	185	–	–	–	3150	**2100**	1575	–	–	–
N	1	3780	**2940**	1260	3780	**2980**	1260	1590	**1495**	1415	1155	**870**	575	2510	**2190**	1890	–	–	–	3830	**3400**	3135
	2	3780	**2940**	1260	3780	**2980**	1260	1290	**1155**	1010	775	**575**	470	–	–	–	–	–	–	3400	**3135**	2890
	3	2785	**2585**	930	2785	**2295**	930	1290	**1155**	1010	775	**575**	470	–	–	–	–	–	–	3400	**3135**	2890
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	235	**185**	145	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	870	**775**	685	–	–	–	1035	**890**	850	–	–	–
	2	–	–	–	–	–	–	–	–	–	810	**720**	630	–	–	–	870	**760**	630	–	–	–
	3	–	–	–	–	–	–	–	–	–	720	**630**	540	–	–	–	800	**685**	550	–	–	–
	4	–	–	–	945	**695**	565	775	**630**	540	630	**540**	420	–	–	–	710	**575**	470	–	–	–
	5	–	–	–	945	**695**	565	–	–	–	540	**420**	330	–	–	–	575	**540**	470	–	–	–
	6	–	–	–	920	**630**	500	–	–	–	420	**330**	290	–	–	–	525	**390**	315	–	–	–
M	1	–	–	–	–	–	–	–	–	–	870	**720**	630	–	–	–	645	**565**	525	–	–	–
	2	–	–	–	–	–	–	–	–	–	720	**575**	420	–	–	–	575	**500**	410	–	–	–
	3	–	–	–	–	–	–	–	–	–	575	**470**	380	–	–	–	450	**380**	300	–	–	–
K	1	–	–	–	605	**540**	470	930	**840**	760	1155	**870**	575	850	**775**	685	720	**645**	575	1180	**840**	605
	2	–	–	–	550	**485**	420	720	**645**	605	870	**685**	470	655	**605**	550	565	**500**	470	1025	**645**	500
	3	–	–	–	370	**300**	235	615	**550**	500	380	**290**	185	550	**500**	460	470	**420**	380	790	**575**	410
N	1	3385	**2980**	2755	–	–	–	2020	**1795**	1650	–	–	–	–	–	–	–	–	–	–	–	–
	2	2980	**2755**	2390	–	–	–	1825	**1680**	1550	–	–	–	–	–	–	–	–	–	–	–	–
	3	2980	**2755**	2390	–	–	–	1825	**1680**	1550	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	130	**105**	80	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	130	**105**	80	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	155	**130**	80	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	225	**155**	105	–	–	–
H	1	–	–	–	695	**540**	450	500	**410**	290	450	**315**	250	–	–	–	380	**290**	225	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

(continued)

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

(continued)

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	695	**630**	565	720	**630**	540	810	**720**	685	410	**380**	315	–	–	–	–	–	–	1430	**1250**	1170
	2	565	**500**	470	630	**540**	420	695	**605**	500	380	**340**	330	–	–	–	–	–	–	880	**800**	720
	3	500	**470**	450	540	**470**	420	630	**540**	450	340	**315**	290	–	–	–	–	–	–	800	**720**	645
	4	450	**410**	380	470	**420**	380	565	**470**	380	315	**290**	250	–	–	–	–	–	–	605	**550**	500
	5	470	**450**	410	420	**380**	330	470	**420**	380	290	**250**	235	–	–	–	–	–	–	810	**720**	655
	6	410	**380**	340	330	**290**	235	410	**315**	250	250	**235**	225	–	–	–	–	–	–	500	**420**	–
M	1	470	**450**	410	720	**575**	470	540	**470**	420	330	**290**	250	–	–	–	–	–	–	645	**575**	485
	2	410	**380**	340	470	**380**	330	485	**410**	340	300	**265**	235	–	–	–	–	–	–	575	**500**	450
	3	290	**250**	225	380	**330**	290	370	**315**	250	225	**185**	–	–	–	–	–	–	–	460	**410**	370
K	1	–	–	–	–	–	–	–	–	–	–	–	–	1325	**1210**	1075	920	**800**	685	930	**840**	760
	2	–	–	–	–	–	–	–	–	–	–	–	–	1050	**930**	870	720	**630**	550	735	**655**	605
	3	–	–	–	–	–	–	–	–	–	–	–	–	880	**790**	720	605	**540**	460	615	**550**	500
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	185	**170**	155	–	–	–	105	**90**	80	–	–	–	–	–	–	–	–	–	–	–	–
	2	185	**170**	155	–	–	–	105	**90**	80	–	–	–	–	–	–	–	–	–	–	–	–
	3	155	**145**	130	–	–	–	145	**105**	80	–	–	–	–	–	–	–	–	–	–	–	–
	4	185	**155**	130	210	**155**	145	170	**145**	90	–	–	–	–	–	–	–	–	–	210	**155**	105
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410			KD1415			KD1425		
P	1	930	**810**	775	1170	**1010**	945	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	790	**685**	565	960	**850**	695	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	720	**615**	500	890	**760**	615	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	645	**540**	420	790	**645**	525	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	540	**485**	420	645	**605**	525	540	**460**	380	–	–	–	–	–	–	–	–	–	–	–	–
	6	470	**370**	290	575	**450**	340	470	**340**	250	–	–	–	–	–	–	–	–	–	–	–	–
M	1	615	**540**	485	710	**630**	575	655	**540**	450	–	–	–	–	–	–	–	–	–	–	–	–
	2	550	**470**	390	645	**565**	460	565	**460**	380	–	–	–	–	–	–	–	–	–	–	–	–
	3	410	**370**	290	485	**420**	330	460	**340**	265	–	–	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	2390	**5195**	12810	12625	**11035**	9425	12625	**11035**	9425	2390	**5195**	12810
	2	–	–	–	–	–	–	–	–	–	2390	**5195**	12810	5040	**4710**	4410	5040	**4710**	4410	2390	**5195**	12810
	3	–	–	–	–	–	–	–	–	–	1210	**1600**	1865	5040	**4710**	4410	5040	**4710**	4410	1210	**1600**	1865
S	1	130	**105**	90	145	**130**	90	130	**105**	80	–	–	–	–	–	–	–	–	–	–	–	–
	2	130	**105**	90	145	**130**	90	130	**105**	80	–	–	–	–	–	–	–	–	–	–	–	–
	3	155	**130**	90	170	**145**	90	155	**130**	80	–	–	–	–	–	–	–	–	–	–	–	–
	4	210	**155**	105	225	**185**	130	185	**155**	90	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	420	**315**	235	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Inch • Face Milling, Contour Milling, Profiling, and Die & Mold

Material Group		KTPK20			KY3500			KYS30*			KYSP30*			SC3025			SC6525			SP4019		
P	1	1155	**945**	800	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	1170	**800**	450	995	**720**	450
	2	710	**605**	500	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	1025	**710**	380	870	**630**	380
	3	645	**540**	460	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	920	**630**	330	775	**550**	330
	4	470	**410**	340	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	655	**460**	250	605	**420**	250
	5	655	**550**	460	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	500	**380**	250	470	**340**	225
	6	410	**330**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	450	**315**	185	410	**290**	155
M	1	760	**615**	525	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	630	**565**	450	880	**630**	380
	2	685	**575**	470	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	605	**500**	380	790	**565**	340
	3	500	**420**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	460	**410**	290	630	**460**	290
K	1	720	**615**	500	2530	**2295**	2050	–	**–**	–	–	**–**	–	1250	**870**	470	1230	**850**	460	1035	**760**	460
	2	575	**470**	410	1995	**1795**	1670	–	**–**	–	–	**–**	–	1050	**720**	380	960	**655**	370	800	**575**	370
	3	470	**410**	330	–	**–**	–	–	**–**	–	–	**–**	–	870	**605**	330	–	**–**	–	735	**540**	330
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	9120	**5195**	1260
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	9120	**5195**	1260
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	7310	**4120**	930
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	195	**145**	80
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	155	**130**	80
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	185	**145**	80
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	265	**185**	120
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	315	**235**	155
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	290	**210**	130
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

Material Group		SP6519			X400			X500			X700		
P	1	930	**685**	410	810	**605**	380	850	**630**	410	–	**–**	–
	2	810	**605**	370	720	**540**	330	760	**565**	370	–	**–**	–
	3	720	**525**	315	630	**470**	300	655	**485**	315	–	**–**	–
	4	550	**390**	235	470	**340**	225	500	**380**	235	–	**–**	–
	5	450	**330**	225	–	**–**	–	410	**315**	225	420	**330**	225
	6	380	**265**	155	–	**–**	–	340	**250**	155	370	**265**	155
M	1	850	**615**	370	–	**–**	–	790	**575**	370	810	**605**	370
	2	735	**540**	330	–	**–**	–	695	**500**	315	720	**540**	330
	3	615	**450**	265	–	**–**	–	565	**410**	250	605	**450**	265
K	1	930	**695**	450	–	**–**	–	810	**695**	540	–	**–**	–
	2	760	**550**	340	–	**–**	–	695	**565**	410	–	**–**	–
	3	695	**500**	315	–	**–**	–	540	**450**	315	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	170	**130**	80	–	**–**	–	155	**105**	80	155	**130**	80
	2	155	**105**	65	–	**–**	–	145	**105**	65	145	**105**	65
	3	170	**130**	80	–	**–**	–	155	**130**	80	170	**130**	80
	4	250	**185**	120	–	**–**	–	235	**170**	105	235	**170**	120
H	1	–	**–**	–	300	**225**	145	–	**–**	–	–	**–**	–
	2	–	**–**	–	250	**185**	105	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Inch • Shoulder and Slotting Cutters, Thread Mills

Material Group		GH1			GH2			K110M			K115M			K313			KBK50 *			KC410M		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	760	**565**	355	655	**485**	315	340	**315**	300	485	**390**	315	500	**450**	390	2625	**1745**	1310	–	–	–
	2	645	**485**	315	565	**420**	275	300	**275**	265	390	**315**	235	–	–	–	2625	**1745**	1310	–	–	–
	3	525	**420**	300	485	**380**	265	265	**235**	210	235	**195**	155	–	–	–	2625	**1745**	1310	–	–	–
N	1	3150	**2455**	1050	3150	**2480**	1050	1325	**1250**	1180	960	**720**	485	2090	**1825**	1575	–	–	–	3190	**2835**	2610
	2	3150	**2455**	1050	3150	**2480**	1050	1075	**960**	840	645	**485**	390	–	–	–	–	–	–	2835	**2610**	2400
	3	2325	**2150**	775	2325	**1915**	775	1075	**960**	840	645	**485**	390	–	–	–	–	–	–	2835	**2610**	2400
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	195	**155**	120	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KC422M			KC505M			KC510M			KC515M			KC520M			KC522M			KC524M		
P	1	–	–	–	–	–	–	–	–	–	720	**645**	565	–	–	–	870	**750**	710	–	–	–
	2	–	–	–	–	–	–	–	–	–	685	**605**	525	–	–	–	720	**630**	525	–	–	–
	3	–	–	–	–	–	–	–	–	–	605	**525**	450	–	–	–	670	**565**	460	–	–	–
	4	–	–	–	790	**575**	470	645	**525**	450	525	**450**	355	–	–	–	590	**485**	390	–	–	–
	5	–	–	–	790	**575**	470	–	–	–	450	**355**	275	–	–	–	485	**450**	390	–	–	–
	6	–	–	–	760	**525**	420	–	–	–	355	**275**	235	–	–	–	430	**330**	265	–	–	–
M	1	–	–	–	–	–	–	–	–	–	720	**605**	525	–	–	–	540	**470**	430	–	–	–
	2	–	–	–	–	–	–	–	–	–	605	**485**	355	–	–	–	485	**420**	340	–	–	–
	3	–	–	–	–	–	–	–	–	–	485	**390**	315	–	–	–	370	**315**	250	–	–	–
K	1	–	–	–	500	**450**	390	775	**695**	630	960	**720**	485	710	**645**	565	605	**540**	485	985	**695**	500
	2	–	–	–	460	**410**	355	605	**540**	500	720	**565**	390	550	**500**	460	470	**420**	390	850	**540**	420
	3	–	–	–	300	**250**	195	510	**460**	420	315	**235**	155	460	**420**	380	390	**355**	315	655	**485**	340
N	1	2820	**2480**	2295	–	–	–	1680	**1495**	1380	–	–	–	–	–	–	–	–	–	–	–	–
	2	2480	**2295**	1995	–	–	–	1525	**1405**	1290	–	–	–	–	–	–	–	–	–	–	–	–
	3	2480	**2295**	1995	–	–	–	1525	**1405**	1290	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	105	**90**	65	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	105	**90**	65	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	130	**105**	65	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	185	**130**	90	–	–	–
H	1	–	–	–	575	**450**	370	420	**340**	235	370	**265**	210	–	–	–	315	**235**	185	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Inch • Shoulder and Slotting Cutters, Thread Mills

Material Group		KC525M			KC530M			KC725M			KC735M			KCK15			KCK20			KCPK30		
P	1	575	**525**	470	605	**525**	450	685	**605**	565	340	**315**	265	–	–	–	–	–	–	1195	**1035**	970
	2	470	**420**	390	525	**450**	355	575	**500**	420	315	**290**	275	–	–	–	–	–	–	735	**670**	605
	3	420	**390**	370	450	**390**	355	525	**450**	370	290	**265**	235	–	–	–	–	–	–	670	**605**	540
	4	370	**340**	315	390	**355**	315	470	**390**	315	265	**235**	210	–	–	–	–	–	–	500	**460**	420
	5	390	**370**	340	355	**315**	275	390	**355**	315	235	**210**	195	–	–	–	–	–	–	685	**605**	550
	6	340	**315**	290	275	**235**	195	340	**265**	210	210	**195**	185	–	–	–	–	–	–	420	**355**	–
M	1	390	**370**	340	605	**485**	390	450	**390**	355	275	**235**	210	–	–	–	–	–	–	540	**485**	410
	2	340	**315**	290	390	**315**	275	410	**340**	290	250	**225**	195	–	–	–	–	–	–	485	**420**	370
	3	235	**210**	185	315	**275**	235	300	**265**	210	185	**155**	–	–	–	–	–	–	–	380	**340**	300
K	1	–	–	–	–	–	–	–	–	–	–	–	–	1105	**1010**	890	760	**670**	565	775	**695**	630
	2	–	–	–	–	–	–	–	–	–	–	–	–	880	**775**	720	605	**525**	460	615	**550**	500
	3	–	–	–	–	–	–	–	–	–	–	–	–	735	**655**	605	500	**450**	380	510	**460**	420
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	155	**145**	130	–	–	–	90	**80**	65	–	–	–	–	–	–	–	–	–	–	–	–
	2	155	**145**	130	–	–	–	90	**80**	65	–	–	–	–	–	–	–	–	–	–	–	–
	3	130	**120**	105	–	–	–	120	**90**	65	–	–	–	–	–	–	–	–	–	–	–	–
	4	155	**130**	105	170	**130**	120	145	**120**	80	–	–	–	–	–	–	–	–	–	170	**130**	90
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Material Group		KCPM40			KCSM30			KCSM40			KD1400			KD1410			KD1415			KD1425		
P	1	775	**685**	645	970	**840**	790	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	655	**565**	470	800	**710**	575	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	605	**510**	420	750	**630**	510	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	540	**450**	355	655	**540**	430	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	450	**410**	355	540	**500**	430	450	**380**	315	–	–	–	–	–	–	–	–	–	–	–	–
	6	390	**300**	235	485	**370**	290	390	**290**	210	–	–	–	–	–	–	–	–	–	–	–	–
M	1	510	**450**	410	590	**525**	485	550	**450**	370	–	–	–	–	–	–	–	–	–	–	–	–
	2	460	**390**	330	540	**470**	380	470	**380**	315	–	–	–	–	–	–	–	–	–	–	–	–
	3	340	**300**	235	410	**355**	275	380	**290**	225	–	–	–	–	–	–	–	–	–	–	–	–
K	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
N	1	–	–	–	–	–	–	–	–	–	1995	**4330**	10670	10525	**9200**	7850	10525	**9200**	7850	1995	**4330**	10670
	2	–	–	–	–	–	–	–	–	–	1995	**4330**	10670	4200	**3925**	3675	4200	**3925**	3675	1995	**4330**	10670
	3	–	–	–	–	–	–	–	–	–	1010	**1340**	1550	4200	**3925**	3675	4200	**3925**	3675	1010	**1340**	1550
S	1	105	**90**	80	120	**105**	80	105	**90**	65	–	–	–	–	–	–	–	–	–	–	–	–
	2	105	**90**	80	120	**105**	80	105	**90**	65	–	–	–	–	–	–	–	–	–	–	–	–
	3	130	**105**	80	145	**120**	80	130	**105**	65	–	–	–	–	–	–	–	–	–	–	–	–
	4	170	**130**	90	185	**155**	105	155	**130**	80	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	355	**265**	195	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

(continued)

Inch • Shoulder and Slotting Cutters, Thread Mills

Material Group		KTPK20			KY3500 *			KYS30*			KYSP30*			SC3025			SC6525			SP4019		
P	1	960	**790**	670	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	970	**670**	370	830	**605**	370
	2	590	**500**	420	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	850	**590**	315	720	**525**	315
	3	540	**450**	380	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	760	**525**	275	645	**460**	275
	4	390	**340**	290	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	550	**380**	210	500	**355**	210
	5	550	**460**	380	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	420	**315**	210	390	**290**	185
	6	340	**275**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	370	**265**	155	340	**235**	130
M	1	630	**510**	430	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	525	**470**	370	735	**525**	315
	2	565	**485**	390	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	500	**420**	315	655	**470**	290
	3	420	**355**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	380	**340**	235	525	**380**	235
K	1	605	**510**	420	2110	**1915**	1710	–	**–**	–	–	**–**	–	1035	**720**	390	1025	**710**	380	870	**630**	380
	2	485	**390**	340	1670	**1495**	1390	–	**–**	–	–	**–**	–	880	**605**	315	800	**550**	300	670	**485**	300
	3	390	**340**	275	–	**–**	–	–	**–**	–	–	**–**	–	720	**500**	275	–	**–**	–	615	**450**	275
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	7600	**4330**	1050
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	7600	**4330**	1050
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	6090	**3440**	775
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	165	**120**	65
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	135	**105**	60
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	155	**120**	70
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	220	**155**	95
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	265	**195**	130
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	235	**170**	105
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

Material Group		SP6519			X400			X500			X700		
P	1	775	**565**	340	685	**500**	315	710	**525**	340	–	**–**	–
	2	685	**500**	300	605	**450**	275	630	**470**	300	–	**–**	–
	3	605	**430**	265	525	**390**	250	550	**410**	265	–	**–**	–
	4	460	**330**	195	390	**290**	185	420	**315**	195	–	**–**	–
	5	370	**275**	185	–	**–**	–	340	**265**	185	355	**275**	185
	6	315	**225**	130	–	**–**	–	290	**210**	130	300	**225**	130
M	1	710	**510**	300	–	**–**	–	655	**485**	300	685	**500**	300
	2	615	**450**	275	–	**–**	–	575	**420**	265	605	**450**	275
	3	510	**370**	225	–	**–**	–	470	**340**	210	500	**370**	225
K	1	775	**575**	370	–	**–**	–	685	**575**	450	–	**–**	–
	2	630	**460**	290	–	**–**	–	575	**470**	340	–	**–**	–
	3	575	**420**	265	–	**–**	–	450	**370**	265	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	145	**105**	60	–	**–**	–	125	**90**	60	135	**105**	60
	2	125	**90**	55	–	**–**	–	115	**90**	55	120	**90**	55
	3	145	**105**	65	–	**–**	–	130	**105**	65	140	**105**	65
	4	210	**155**	95	–	**–**	–	190	**145**	90	195	**145**	95
H	1	–	**–**	–	250	**185**	120	–	**–**	–	–	**–**	–
	2	–	**–**	–	210	**155**	90	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Inch • Extra Fine Pitch Cutters from Platforms Mill 16™, HexaCut™, KSSR™ • Dry Machining

Material Group		KC514M			KC524M			KCK15			KCK20			KCPK30			KY3500		
P	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
M	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K	1	900	**590**	425	1410	**1000**	720	1050	**690**	475	1050	**690**	475	920	**820**	755	3035	**2770**	2460
	2	705	**510**	360	1215	**785**	590	785	**575**	395	785	**575**	395	755	**675**	590	2395	**2165**	2000
	3	590	**425**	360	950	**705**	510	690	**475**	375	690	**475**	375	605	**560**	510	–	–	–
N	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
H	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

Inch • Extra Fine Pitch Cutters from Platforms Mill 16™, HexaCut™, KSSR™ • Wet Machining

Material Group		KC514M			KC524M			KCK15			KCK20			KCPK30			KY3500*		
P	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
M	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
K	1	720	**470**	340	1130	**800**	575	840	**550**	380	840	**550**	380	735	**655**	605	–	**–**	–
	2	565	**410**	290	970	**630**	470	630	**460**	315	630	**460**	315	605	**540**	470	–	**–**	–
	3	470	**340**	290	760	**565**	410	550	**380**	300	550	**380**	300	485	**450**	410	–	**–**	–
N	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
S	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–	–	**–**	–

*Recommended for dry machining only.

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

Inch • High Speed Cutting • Face Milling, Round Insert, Profiling, Chamfer, and Die & Mold

Material Group		GH1			GH2		
P	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–
M	1	–	–	–	–	–	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
K	1	920	**685**	420	790	**575**	380
	2	775	**575**	380	685	**500**	330
	3	630	**500**	370	575	**460**	315
N	1	9610	**5430**	1260	8650	**4960**	1260
	2	9610	**5430**	1260	8650	**4960**	1260
	3	7690	**4315**	930	6720	**3830**	930
S	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–

NOTE: FIRST choice starting speeds are in bold type.
As the average chip thickness increases, the speed should be decreased.

(continued)

Dry

Wet

Inch • High Speed Cutting • Shoulder and Slotting Cutters, Thread Mills

Material Group		GH1			GH2		
P	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
	5	–	**–**	–	–	**–**	–
	6	–	**–**	–	–	**–**	–
M	1	–	–	–	–	–	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
K	1	760	**565**	355	655	**485**	315
	2	645	**485**	315	565	**420**	275
	3	525	**420**	300	485	**380**	265
N	1	8005	**4530**	1050	7205	**4135**	1050
	2	8005	**4530**	1050	7205	**4135**	1050
	3	6405	**3595**	775	5605	**3190**	775
S	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–
	4	–	**–**	–	–	**–**	–
H	1	–	**–**	–	–	**–**	–
	2	–	**–**	–	–	**–**	–
	3	–	**–**	–	–	**–**	–

NOTE: FIRST choice starting speeds are in **bold** type.
As the average chip thickness increases, the speed should be decreased.

Dry

Wet

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1020807	KUAM27	B74, B115, B119, T91–92
1020809	KUAM28	B72, B115–119, B175–176, B186, B217, B220, B236–237, B254–255, B276–279, B395–397
1020811	KUAM30	B72, B115–119, B175–176, B186, B217, B220, B236–237, B254–255, B276–279, B395–397
1020813	KUAM31	B72–74, B94, B115–119, B140–142, B174, B186–187, B198, B245, B249–251, B276–279, B394, B397–398, C196, D41
1020835	KUAM32	B72–74, B94–95, B115–117, B119, B140–142, B186, B198, B249, B397
1020839	KUAM34	B217–223, B245, B276–278
1020841	KUAM35	B217, B220, B222–223
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XNGJ43ANENLD3W KCSM40	S12
XNGJ43ANFNLDJ3W KC410M	S11
XNGJ535ANFNLDJ3W KC410M	S21
XNGJ535ANSNGD3W KC725M	S21
XNGJ535ANSNGD3W KCK15	S21
XNGJ535ANSNGD3W KCPK30	S21
XNGJ535ANSNGD3W KCSM40	S21
XNXF43ZNENLDW KCK15	S90
XNXF43ZNENW KY3500	S90
XPLT060308ERD41 SC6525	V7
XPLT060308ERD41 SP6519	V7
XPLT060308ERD41 X400	V7
XPLT060308ERD41 X500	V7
XPNT050522RF SP6519	V115
XPNT06062515RF SP6519	V115
XPNT080832RF SP6519	V115
XPNT101043RF SP6519	V115
XPNT121254RF SP6519	V115
XPNT161654RF SP6519	V115
XPPT060308ERD41 KCSM40	V7
XPPW060310SRD KC510M	V7
XPPW060310SRD KC522M	V7
XPPW060310SRD KCPK30	V7
XPPW060310SRD KCPM40	V7
XRDA0375Y4CUC KCPM15	049
XRDA0375Y4CUE KCPM15	049
XRDA0500Y5CUB KCPM15	049
XRDA0500Y5CUC KCPM15	049
XRDA0500Y5CUE KCPM15	049
XRDA0625Y6CUC KCPM15	049
XRDA0625Y6CUE KCPM15	049
ZDET16M504FR721 GH1	T100
ZDET16M508FR721 GH1	T100
ZDET16M512FR721 GH1	T100
ZDET16M516FR721 GH1	T100
ZDET16M520FR721 GH1	T100
ZDET16M525ER721 GH1	T100
ZDET16M525FR721 GH1	T100
ZDET16M530ER721 GH1	T100
ZDET16M530FR721 GH1	T100
ZDET16M532FR721 GH1	T100
ZDET16M540ER721 GH1	T100
ZDET16M540FR721 GH1	T100
ZDET16M550FR721 GH1	T100
ZDET16M560FR721 GH1	T100
ZDET16M5PDFR721 GH1	T100

Index

For page references A–E, please see Volume I • Turning Tools Catalog.

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Turning Icons

 Shank: KM-TS™ (ISO 26622)	 Shank: KM4X™	 Shank: VDI Shank	 DIN Number 69880	 Through Coolant
 Through Coolant: 100 bar	 Through Coolant: 1500 psi	 Through Coolant: 80 bar	 Through Coolant: 1200 psi	 ISO: 26622
 ISO: 10889	 Turning	 Profiling	 Facing	 Face Grooving
 Chamfering	 Back Boring	 Threading	 Grooving	 Cut-Off
 I.D. Turning	 I.D. Chamfering	 I.D. Facing	 I.D. Grooving	 I.D. Face Grooving
 Deep Grooving	 I.D. Internal Threading			

Holemaking Icons

 Countersinking/ Stroke Chamfering	 Taper Drilling	 Counterboring	 Drilling	 Drilling: Inclined Entry
 Drilling: Inclined Exit	 Drilling: Exit Offset	 Drilling: Flat Bottom	 Drilling: Stacked Plates	 Drilling: Convex
 Drilling: Blind Hole	 Drilling: Concave	 Drilling: Chain	Drilling: Cross Hole	Drilling: Half Cylinder
Drilling: Corner Drilling 45°	Reaming: Through Hole	Reaming: Blind Hole	Reaming: Through Cross	Reaming: Blind and Cross Holes
Reaming: Interrupted Cut	Drilling Depth: 1 x D	Drilling Depth: 3 x D	Drilling Depth: 5 x D	Drilling Depth: 8 x D
Drilling Depth: 10 x D	Drilling Depth: 12 x D	Drilling Depth: 7 x D	Drilling Depth: 4 x D	Drilling Depth: 1.5 x D

(continued)

(Holemaking Icons — continued)

 Corner Style: Corner Chamfer	 Corner Style: Square End	 Shank: Cylindrical Plain	 Shank: Cylindrical Plain ≤h6	 Shank: Cylindrical Weldon®
 Shank: Cylindrical Whistle Notch	 Shank: Cylindrical Whistle Notch 2°	 Shank: Cylindrical with Flat	 SK Shank: Rübig	 Shank: SK BT JIS B 6339
 Shank: SK CAT(CV) ANSI B5.50	 Shank: SK DV DIN 69871	 Shank: Cylindrical Whistle Notch with Drive and Flange	 Shank: Cylindrical with Flat and Flange	 KM™ Shank
 Shank: HSK DIN 69893	 Shank: HSK DIN 69893 Form A	 Shank: KM-TS™ (ISO 26622)	 Shank: KM-XMZ	 Shank: ER
 Helix Angle: 0°	 Helix Angle: 15°	 Helix Angle: 30°	 Tip Angle: 118°	 Tip Angle: 130°
 Balance (G 6.3/25,000)	 Balance (G 6.3/10,000)	 Balance (G 6.3/6,000)	 Balance (G 16/20,000)	 DIN Number 6537
 DIN Number 6535	 DIN Number 69893	 DIN Number 69090-3	 Drilling: No Coolant	 Through Coolant: Radial: Drilling
 Through Coolant: Radial: Reaming	 Through Coolant: Radial: Indexable Drilling	 Flood Coolant: Drilling	 Through Coolant: MQL (Minimum Quantity Lubricant): Drilling	 Through Coolant: Axial: Drilling
Through Coolant: Axial: Reaming	Through Coolant: Coolant Entry AD	Through Coolant: Coolant Entry AD/B	Tool Dimensions: 2 Flute/2 Margin/ Coolant	Tool Dimensions: 2 Flute/2 Margin/ No Coolant
Tool Dimensions: 2 Flute/3 Margin/ Coolant	Tool Dimensions: 2 Flute/4 Margin/ Coolant	Tool Dimensions: 2 Flute/4 Margin/ No Coolant	Tool Dimensions: 2 Flute/4 Margin/ X/Coolant	Tool Dimensions: 3 Flute/3 Margin/ Coolant
Tool Dimensions: 3 Flute/3 Margin/ No Coolant	Tool Dimensions: Flute Configuration: 2	Tool Dimensions: Flute Configuration: 3	Tool Dimensions: Flute Configuration: 4	

Tapping Icons

Countersinking/ Stroke Chamfering	Drilling: Flat Bottom	Drilling: Blind	Tapping: Through Hole	Tapping: Blind Hole
Tapping: Pipe Thread	Threading: Through Hole	HSS: High-Speed Steel	HSS-E: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness	HSS-E-PM: High-Speed Steel with Cobalt Alloy for Materials with Higher Hardness (PM = Powder Metal Steel)
HM: (Carbide)	Drilling Depth: 2 x D	Chamfer Form (3–4)	Chamfer Form B (3.5–5.5)	Chamfer Form C (2–3)
Chamfer Form D (3.5–5)	Chamfer Form E (1.5–2)	Chamfer Form (3–5)	Chamfer Form (2.5–3.5)	Chamfer Form (1–2)
Tapping Helix Angle: 0°	Tapping Helix Angle: 10°	Tapping Helix Angle: 15°	Tapping Helix Angle: L15°	Tapping Helix Angle: 25°
Tapping Helix Angle: 42°	Tapping Helix Angle: 45°	Multipurpose Taps: Spiral Point	Tension/ Compression	DIN Number 371
DIN Number 374	DIN Number 376	DIN Number 5156	DIN Number 2174	DIN ANSI
Through Coolant: Radial: Tapping	Flood Coolant: Tapping	Through Coolant: Axial: Tapping	Manufacturer's Specs: ISO 2	Manufacturer's Specs: ISO 3
Manufacturer's Specs: JIS	Class of Fit: 2B	Class of Fit: 3B	Class of Fit: 6H	Class of Fit: 6HX
Class of Fit: 6G	Class of Fit: 2BX	Class of Fit: 3BX	Unified Fine Thread	Unified Course Thread
American Tapered Pipe Thread for Threads with Dryseal Material	American Tapered Pipe Thread for Threads without Dryseal Material	American National Standards Institute	American Standard Straight Pipe Thread	American Standard Straight Pipe Thread Dryseal
Whitworth Pipe Thread	Unified Course Thread: J Profile	Unified Fine Thread: J Profile	ISO Metric Coarse Thread	ISO Metric Fine Thread

Solid End Milling Icons

 Face Milling	 Plunge Milling	 Plunge Milling: Ball Nose	 Ramping: Blank	 Ramping: Up to 2°
 Ramping: Up to 3°	 Slotting: Ball Nose	 Slotting: Ball Nose with AP Dimension	 Slotting: Square End	 Slotting: Square End with AP Dimension
 Trochoidal Milling	 Trochoidal Milling: Ball Nose	 Side Milling/ Shoulder Milling: Ball Nose	 Side Milling/ Shoulder Milling: Ball Nose with AE/AP Dimensions	 Side Milling/ Shoulder Milling: Square End
 Side Milling/ Shoulder Milling: Square End with AE/AP Dimensions	 Side Milling/ Shoulder Milling: Eased Chamfer	 Side Milling/ Shoulder Milling: Eased Chamfer with AE/AP Dimensions	 Side Milling/ Shoulder Milling: Fine Finishing	 Side Milling/ Shoulder Milling: Fine Finishing with AE/AP Dimensions
 Side Milling/ Shoulder Milling: Finishing	 Side Milling/ Shoulder Milling: Finishing with AE/AP Dimensions	 Side Milling/ Shoulder Milling: Thin Wall Solid End Milling	 Side Milling/ Shoulder Milling: Radius	 Side Milling/ Shoulder Milling: Radius with AE/AP Dimensions
 3D Profiling	 3D Profiling with AE/AP Dimensions	 3D Profiling with Square End Mill	 Corner Style: Ball Nose	 Corner Style: Corner Chamfer
 Corner Style: Corner Radius	 Corner Style: Square End	 Corner Style: Torus	 Corner Style: Taper Ball Nose	 Shank: Cylindrical Plain
 Shank: Cylindrical Weldon®	 Shank: SK BT JIS B 6339	 Shank: HSK: CAT: Drawbar Thread: 5/8–11 UNC	 Shank: HSK A/ DIN69893	 Shank: Safe-Lock™ ≤h6
Shank: Safe-Lock™	Shank: PSC Shank	Duo-Lock™ Connection	Helix Angle: 0°	Helix Angle: 15°
Helix Angle: 20°	Helix Angle: 25°	Helix Angle: 30°	Helix Angle: 35°	Helix Angle: 37°
Helix Angle: 38°	Helix Angle: 40°	Helix Angle: 45°	Helix Angle: 50°	Helix Angle: 43°
Helix Angle: 36°	Helix Angle: 35°/38°	Helix Angle: 37°/39°	Balance (G 2.5/25,000)	Through Coolant

(continued)

(Solid End Milling Icons — continued)

Through Coolant: Axial: Solid End Mill	Tool Dimensions: Flute Configuration: X (Variable)	Tool Dimensions: Flute Configuration: 2	Tool Dimensions: Flute Configuration: 3	Tool Dimensions: Flute Configuration: 4
Tool Dimensions: Flute Configuration: 5	Tool Dimensions: Flute Configuration: 6	Tool Dimensions: Flute Configuration: 12	ISO 26622	

Indexable Milling Icons

Counterboring	Spiral Circular	Drilling	Face Milling	Helical Milling
Plunge Milling	Plunge Milling: Ball Nose	Ramping: Blank	Slotting: Ball Nose	Slotting: Side
Slotting: Side with AE/AP Dimensions	Slotting: Side Milling: Ball Nose	Slotting: Square End	Slotting: T	Slotting: T with AP Dimension
Side Milling/ Shoulder Milling: Ball Nose	Side Milling/ Shoulder Milling: Bottom Shouldering	Side Milling/ Shoulder Milling: Square End	Side Milling/ Shoulder Milling: Eased Chamfer	Slotting: Shoulder Profiling
Slotting: Shoulder	3D Profiling	3D Profiling with Square End Mill	PCD Tool	Pocketing
Shank: Cylindrical Plain	Shank: Cylindrical Weldon®	Shank: Cylindrical Weldon 2 Flat	Shank: Screw-On	SK Shank: R8
Shank: SK BT JIS B 6339	Shank: SK CAT(CV) ANSI B5.50	Shank: HSK DIN 69893	Shell Mill Shank	Milling: Through Coolant
Axial: Nozzle	Through Coolant: Pressurized Air Coolant: Radial: Indexable Milling			

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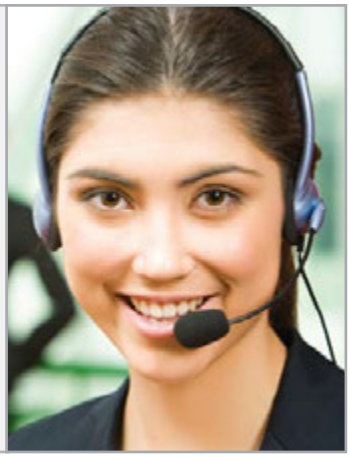

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P Steel
M Stainless Steel
K Cast Iron
N Non-Ferrous
S High-Temp Alloys
H Hardened Materials
C CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
M1	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21
M3	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
K1	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	60-40-18, 65-45-12, 80-55-06; SAE J434: D4018, D4512, D5506; ASTM A47: Grade 32510, 35018; SAE J158: Grade M3210, M4504, M5003, M5503, M7002; ASTMA842: Grade 250, 300, 350, 400, 450
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	ASTM A536:100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
N1	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
N7	Metal Matrix Composites (MMC)	–	–	–	–	C63000
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy™, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 25 (L605), Haynes 188, J-1570, Stellite, AiResist 213; Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	Astroloy™, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy, Monel®, K-500, MAR-M20, NIMONIC®, UDIMET®
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Pure: Ti 98.8, Ti 98.9,Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al
H1	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H2	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H3	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H4	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High-Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

P	Steel	N	Non-Ferrous	H	Hardened Materials
M	Stainless Steel	S	High-Temp Alloys	C	CFRP Materials
K	Cast Iron				

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Gray Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, ALMgSiPb
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAlSiCu4, GDAlSi10Mg
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AlSi17Cu4, G-AlSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	Lexan®, Hostalen™, Polystyrol, Makrolon®
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

P0 Workpiece Materials Listing • Steel • P0

P0 Low-Carbon Steels, Long Chipping *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1013	USt 34-1	–	–	G10130	–	–	–	1233	–	–	1.0055	–
1010	C 10	045 M 10	S 10 C	G10100	C 10	XC 10	C 10	–	–	–	1.0301	–
1008	DD 11 (StW 22)	HR 3	SPHD	–	DD 11	1 C	–	–	–	–	1.0332	–
1020	C 22	050 A 20	S 22 C	G10200	1 C 22	C 20	C 20	1450	–	–	1.0402	–
1025	C 25	070 M 26	S 22 C	G10250	1 C 25	C 25	C 25	–	–	–	1.0406	–
1012	B 500 H	–	S 12 C	G10120	B 500 B	XC 12	B 500 B	1332	–	–	1.0439	–
1018	C16.8	080 A 17	–	G10180	–	–	–	–	–	–	1.0453	–
1108	10 S 20	210 M 15	–	G 11080	10 S 20	10 F 1	CF 10 S 20	–	–	–	1.0721	–
1010	Ck 10	040 A 10	S 10 C	G10100	2 C 10	XC 10	C 10	1265	–	–	1.1121	–
1022	20 Mn 5	120 M 19	SMn 420	G 10220	20 Mn 5	20 M 5	G 22 Mn 3	–	–	–	1.1133	–
1015	Ck 15	080 M 15	S 15 C	G 10150	2 C 15	XC 15	C 15	1370	–	–	1.1141	–
1021	22 B 2	–	SWRCHB 220	G10210	C 22 BE 69	21 B 3	–	–	–	–	1.5508	–
–	PS 275 TM	S 275 M	–	–	S 275 M	S 275 M	S 275 M	–	–	–	1.8818	–
–	DI-MC 355 B	–	–	–	S 355 M	E 355	S 355 M	–	–	–	1.8823	–
–	DI-MC 420 B	S 420 M	–	–	S 420 M	E 420	S 420 M	–	–	–	1.8825	–
–	S 460 M	S 460 M	–	–	S 460 M	E460; S460M	S460M	–	–	–	1.8827	–
–	BTStE 355 TM	S 355 ML	–	–	S 355 ML	E 355	S 355 ML	–	–	–	1.8834	–
–	BTStE 420 TM	S 420 MI	–	–	S 420 ML	E 420	S 420 ML	–	–	–	1.8836	–
–	St E 320-3Z	–	–	–	S 320 GD + ZA	–	–	–	–	–	1.0250	–

P1 Workpiece Materials Listing • Steel • P1

P1 Low-Carbon Steels, Short Chipping, Free Machining *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	R St 34-2/ S 205 G2T	34/20CR	–	K02502	–	–	–	–	–	–	1.0034	–
–	St 33	HR 15	SS 330	K01400	–	A 33	Fe 320	–	–	–	1.0035	–
A 570 Gr. 33	USt 37-2	4360-40 B	SS 34	K 02502	S 235 JR G1	E 24-2	Fe 360 BFU	1311	–	–	1.0036	–
–	St 37-2	HS 37/23	STKR 400	K02702	S 235 JR	E 28-2	Fe 430 C	1412	–	–	1.0037	–
A 570 Gr. 36	R St 37-2/S235 JRG2	4260-40 C	SS 34	K 02502	S235 JR G 2	E 24-2 NE	Fe 360 BFN	1312	–	–	1.0038	–
–	S 235 JRH	S 235 JRH	–	–	S235JRH	E 24-2	S 235 JRH	–	–	–	1.0039	–
–	R St 42-1	–	–	K02507	–	–	–	–	–	–	1.0077	–
–	S235J2G3/Fe 360 D1	S 235 J 2 G 3	–	K01501	S 235 J2 G3	E 24-4	S 235 J2G3	1313	–	–	1.0161	–
–	C 10 Pb	–	–	–	C 10 GPb	–	–	–	–	–	1.0302	–
–	QSt 32-3	–	SWRCH6R	–	CB 4 FF KD	–	CB 4 F U	–	–	–	1.0303	–
–	St 35.8	–	STPT 38	K01201	–	–	–	–	–	–	1.0305	–
–	St 37-2	360	STKM 12 A	K02504	S 235 JR	E 24-2	Fe 360	1412	–	–	1.0308	–
–	C10D	–	SWRM 10	–	C 10 D	FM 10	C 10 D	–	–	–	1.0310	–
–	C12D	–	SWRM 12	–	C 12 D	–	C 12 D	–	–	–	1.0311	–
–	R St 15	FeP05	–	–	Fe P05	FeP05	FeP05	–	–	–	1.0312	–
–	D 6-2	0 1 5 A 03	SWRM 6	G10050	C 4 D	–	3 CD 5	–	–	–	1.0314	–
–	St 37.8	–	STB 35	–	–	–	Fe 37	–	–	–	1.0315	–
–	St 13	CR 3	SPCD	–	–	–	–	–	–	–	1.0333	–
–	D D 13 (StW 24)	H S 3	SPHE	–	D D 13	3C	–	–	–	–	1.0335	–
–	USt 4/DC 04 G	–	–	–	D C 04 G 1	–	–	–	–	–	1.0336	–
–	Ro St 4/DC 04 GT	–	–	–	DC 04 GT	–	–	–	–	–	1.0337	–
–	St 4	DC 04/FeP04	SPCE	–	Fe P04	Fe 14	DC04/FeP04	–	–	–	1.0338	–
–	DC01Cu	–	–	–	DC 01 Cu	–	–	–	–	–	1.0344	–
–	RR St 3	CR 3	SPCD	–	Fe P03	F 13	DC 03/FeP 03	–	–	–	1.0347	–
–	U H I/P 195GH	–	SGV 480	–	P 195 Gh	–	–	–	–	–	1.0348	–
–	St 14 Cu 3	–	–	–	DC 04 Cu	–	–	–	–	–	1.0354	–
–	–	3 CR	–	–	D D 12	D D 12	–	–	–	–	1.0398	–
1015	C 15	080 M 15	S 15 C	G10170	C 15	C 12	C 15	1350	–	–	1.0401	–
–	LSt 45.8	–	–	–	C 16	–	C 16	–	–	–	1.0407	–
–	C15D	–	SWRM 15	–	C 15 D	FM 15	C 15 D	–	–	–	1.0413	–
–	C20D	–	SWRM 20	–	C 20 D	FM 20	C 20 D	–	–	–	1.0414	–
–	C26D	–	SWRH 27	–	C 26 D	FM 26	C 26 D	–	–	–	1.0415	–
–	C18D	–	SWRM 17	–	C 18 D	FM 18	C 18 D	–	–	–	1.0416	–
–	RSt 44-2	440	–	G10160	–	–	–	–	–	–	1.0419	–
–	P265 NB	–	SG 295	–	P 265 NB	BS 2	–	–	–	–	1.0423	–
–	P 265 GH	151-400	SG 30	K02801	P 265 GH	A42CP	P 265 GH	1430	–	–	1.0425	–
–	C 22.3	–	–	–	C 22 G 1	–	–	–	–	–	1.0427	–
–	BSt 420 S	–	–	–	Fe B 400	–	–	–	–	–	1.0428	–
–	C 21	–	SFVC 1	K03504	P 305 GH	–	–	–	–	–	1.0432	–
–	GS-45	A1	SC 450	J03001	GE 230	E23-45M	–	1305	–	–	1.0446	–
–	TStE 275 (S 275 NL)	40EE	–	–	S 275 NL	S 275 NL	S 275 NL	–	–	–	1.0491	–
–	St 42.8	–	STPT 42	–	–	–	Fe 42	–	–	–	1.0498	–
–	S 335 N (StE 355)	50 E	–	–	S 355 N	E 355	S 355 N	2134	–	–	1.0545	–
–	S 355 NL (TStE 355)	50 E E	–	–	S 355 NL	E 355	S 355 N L	2135	–	–	1.0546	–
–	R 7 S 6/C 7 RG 2	–	–	–	C 7 RG 2	–	–	–	–	–	1.0709	–
B1112	9 S 20	220 M 07	SUM 21	G 11120	–	–	CF 9 S 22	–	–	–	1.0711	–
1213	9 SMn 28/11 SMn 30	230 M 07	SUM 22	G 12130	11 SMn 28	S 250	CF 9 SMn 28	1912	–	–	1.0715	–
12L13	9 SMnPb 28	–	SUM 22 L	G 12134	11 SMnPb 28	S 250 Pb	CF 9 SMnPb 28	1914	–	–	1.0718	–
–	15 S 22/15 S 20	En32M	SUM 32	–	15 S 22	–	–	1922	–	–	1.0723	–
–	15 SMn 13	15 SMn 13	–	–	15 SMn 13	15 SMn 13	–	–	–	–	1.0725	–
1215	9 SMn 36/11 S Mn 37	240 M 07	SUM 25	G 12150	11 SMn 37	S 300	CF 9 SMn 36	–	–	–	1.0736	–
12L14	9 SMnPb 36/11 SMnPb 37	–	–	G 12144	11 SMnPb 37	S 300 Pb	CF 9 SMnPb 36	1926	–	–	1.0737	–
–	11 SMnPbTe 37	11 SMn 37	–	–	11 SMn 37	–	–	–	–	–	1.0738	–
–	15 SPb 20/15 SPb 22	–	–	–	15 SPb 22	–	–	–	–	–	1.0753	–
–	36 SMn 14	36SMn14	–	–	36SMn14	36SMn14	–	–	–	–	1.0764	–
–	C10D2	–	–	–	C 10 D 2	FM 10	C 10 D 2	–	–	–	1.1114	–
–	Cq 10 (C 10 C)	–	SWRCH 10 K	–	C 10 KD	–	–	–	–	–	1.1122	–
–	C15D2	–	–	–	C 15 D 2	FM 15	C 15 D 2	–	–	–	1.1126	–
–	C 18D2	–	–	–	C 18 D 2	FM 18	C 18 D 2	–	–	–	1.1129	–

(continued)

P1 Workpiece Materials Listing • Steel • P1 *(continued)*

P1 Low-Carbon Steels, Short Chipping, Free Machining *Content: C <.25%* *Tensile Strength RM (MPa)*: <530* *Hardness (HB): <125*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GS-16 Mn 5	–	–	–	G 17 Mn 5	G 17 Mn 5	G17Mn5	–	–	–	1.1131	–
–	C20D2	–	–	–	C 20 D 2	FM 20	C20D 2	–	–	–	1.1137	–
–	C26D2	–	–	–	C 26 D 2	FM 26	C26D 2	–	–	–	1.1139	–
–	GC 16 E/GS-Ck 16	–	–	–	GC 16 E	–	–	–	–	–	1.1142	–
–	C 16 E	C 16 E	–	–	C 16 E	XC 18	–	–	–	–	1.1148	–
–	Cm 22	070 M 20	C 22 R (3 C 22)	–	3 C 22	XC 18 u	C 22 R	–	–	–	1.1149	–
–	Ck 22	050 A 20	S 22 C	G10230	2 C 22	XC 25	C 20	–	–	–	1.1151	–
–	Cq 22	–	SWRCH20K	–	C 21 KD	–	CB 20 FF	–	–	–	1.1152	–
–	Ck 25	070 M 26	S 25 C	G10250	2 C 25	XC 25	C 25	–	–	–	1.1158	–
–	C2D1	–	–	–	C 2 D 1	–	C 2 D 1	–	–	–	1.1185	–
–	19 MnVS 6	–	–	–	19 MnVS 6	–	–	–	–	–	1.1301	–
–	PS 275 TM	S 275 M	–	–	S 275 M	S 275 M	S 275 M	–	–	–	1.8818	–
–	DI-MC 355 B	–	–	–	S 355 M	E 355	S 355 M	–	–	–	1.8823	–
–	DI-MC 420 B	S 420 M	–	–	S 420 M	E 420	S 420 M	–	–	–	1.8825	–
–	S 460 M	S 460 M	–	–	S 460 M	E460;S460M	S460M	–	–	–	1.8827	–
–	BTStE 355 TM	S 355 ML	–	–	S 355 ML	E 355	S 355 ML	–	–	–	1.8834	–
–	BTStE 420 TM	S 420 MI	–	–	S 420 ML	E 420	S 420 ML	–	–	–	1.8836	–
–	S 235 J 0 W (Allwesta 360)	S 235 J 0 W	SMA 400 BW	–	S 235 JO W	S 235 J 0 W	–	–	–	–	1.8958	–
–	S 355 J 0 W (Allwesta 510)	WR 50 B	SMA 490 BW	–	S 235 JO W	E24W-3	S 235 J0 W	–	–	–	1.8959	–
–	WTSt 37-2/S235JRW	WR 50 B	SMA 41 A	K11538	S 235 JR W	E 24 W-2	–	–	–	–	1.8960	–
–	WTSt 37-3	WR 50 C	SMA 50 A	–	S 235 J2 W	S 235 J 2 W	Fe 360 D FF	–	–	–	1.8961	–
–	USt 42-2	–	SS 41	–	–	HS 18-0-2-10	–	–	–	–	1.0040	–
–	St 37-2	–	–	–	S 235 JRC	E 24-2	S 235 JRC	–	–	–	1.0120	–
–	S 235 JR G1F	–	–	–	S 235 JRG 1 F	–	–	–	–	–	1.0160	–
–	St 12	DC 01/Fe P01	SPCC	–	Fe P01	DC 01/fe P01	DC 01/FeP0 1	–	–	–	1.0330	–
–	GS-38	A1	–	–	GE 200	230-400M	–	1306	–	–	1.0420	–
–	GS-20 Mn 5	–	SMnC 420	H15220	–	–	–	–	–	–	1.1120	–
–	G 20 Mn 5	–	–	–	G 20 Mn 5	–	G 20 Mn 5	–	–	–	1.6220	–

P2 Workpiece Materials Listing • Steel • P2

P2 Medium- and High-Carbon Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: >530* *Hardness (HB): <220 (HRC): <25*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 355 JR	En 50 B	SM 490 YA	–	S 1207	E36-2	Fe 510 BFN	–	–	–	1.0045	–
1035	C 35	060 A 35	S 35 C	G 10350	1 C 35	CC 35	C 35	1550	–	–	1.0501	–
1045	GS-C 45	080 M 46	S 45 C	G10450	1 C 45	CC 45	C 45	1650	–	–	1.0503	–
1040	C 40	080 M 40	S 40 C	G 10 400	1 C 40	C 40	C 40	–	–	–	1.0511	–
1046	S 355 K 2 G 4 Cu	–	–	G10460	S 355 K2 G4 Cu	–	–	–	–	–	1.0519	–
1030	C30	080 M 30	SUP 7	G 10 300	1 C 30	C C 32	C 30	–	–	–	1.0528	–
1055	C 55	070 M 55	S 55 C	J05000	1 C 55	C 55	C 55	1655	–	–	1.0535	–
1551	C 50 Pb	–	–	G15510	C 50 G Pb	–	–	–	–	–	1.0542	–
–	GS-60	A3	–	–	GE 300	320-560M	C 45	1606	–	–	1.0558	–
1037	36 Mn4	170 H 36	–	G10370	–	–	–	–	–	–	1.0561	–
–	PSt 52-3 (S 355 J2 G3 F)	–	–	–	S 355 J2 G3 F	–	FE 510 C	–	–	–	1.0572	–
–	S 355 J2H (RoSt 52-3)	50D	–	–	S355J2H	–	S355J2H	–	–	–	1.0576	–
1060	C 60	080 A 62	S 60 C-CSP	G 10600	1 C 60	AF 70 C 55	C 60	–	–	–	1.0601	–
1070	C 67	CS 70	S 70 C -CSP	G10700	1 CS 67	C 68	C 67	–	–	–	1.0603	–
1074	C 75	CS 80	–	G10740	1 CS 75	C 75	C 75	–	–	–	1.0605	–
1059	C58D	–	S 58 C	G10590	C 58 D	FM 58	C 58 D	–	–	–	1.0609	–
1075	C76D	–	–	G10750	C 76 D	FM 76	C 76 D	–	–	–	1.0614	–
1080	C86D	CS 80	–	G10860	C 86 D	FM 86	C 86 D	–	–	–	1.0616	–
1095	C92D	95 CS	–	G10950	C 92 D	–	C 92 D	–	–	–	1.0618	–
1110	U 10 S 10	–	SUM 12	G11100	–	–	–	–	–	–	1.0702	–
11L08	10 SPb 20	–	–	G 11084	10 SPb 20	10 Pb F 2	CF 10 SPb 20	–	–	–	1.0722	–
1140	35 S 20	212 M 36	–	G 11400	35 S 20	35 MF 4	–	1957	–	–	1.0726	–
1146	45 S 20	212 M 44	–	G 11460	45 S 20	45 MF 4	–	1973	–	–	1.0727	–
1151	60 S 20	–	–	G11510	60 S 20	60 MF 4	–	–	–	–	1.0728	–
1141	36 Mn 6	212 M 36	S Mn 443	G 11410	–	–	–	–	–	–	1.1127	–
1039	40 Mn 4	150 M 36	–	G10390	–	35 M 5	–	–	–	–	1.1157	–
1536	34 Mn 5	En15B	SS 55	G15360	–	–	–	–	–	–	1.1166	–
1030	Cq 35	–	F.1133 (C 35 DF)	G 10300	C 35 KD	–	CB 35	–	–	–	1.1172	–
1034	Ck 34	080 M 34	S 34 C	G 10340	2 C 34	–	C 34	–	–	–	1.1173	–
1038 H	Ck 38	–	–	G 10380	–	XF 38	–	–	–	–	1.1176	–
1030	Ck 30	080 M 30	S 30 C	G 10300	2 C 30	XC 32	C 30	–	–	–	1.1178	–
1034	Ck 35	080 M 36	S 35 C	G 10340	2 C 35	XC 38 H1	C 35	1572	–	–	1.1181	–
1035	Cf 35	060 A 35	S 35 C	G 10350	C 35 G	XC 38 TS	C 35	1572	–	–	1.1183	–
1040	Ck 40	080 A 40	S 40 C	G 10400	2 C 40	XC 42 H1	C 40	–	–	–	1.1186	–
1045	Cf 45	060 A 47	S 45 C	G10450	C 45 G	XC 42 TS	C 43	1672	–	–	1.1193	–
1055	Ck 55	070 M 55	S 55 C	G10550	2 C 55	XC 55 H1	C 55	1655	–	–	1.1203	–
1050	Ck 50	080 M 50	S 50 C	G10500	2 C 50	XC 48 H1	C 50	1674	–	–	1.1206	–
1055	Cm 55	070 M 55	–	G 10550	3 C 55	XC 55 H1	C 55 R	–	–	–	1.1209	–
1053	Ck 53	En43C	S 53 C	G 10530	–	–	–	–	–	–	1.1210	–
1050	Cf 53	060 A 57	S 50 C	G 10500	C 53 G	XC 48 TS	C 48	1674	–	–	1.1213	–
1060	Ck 60	060 A 62	S 58 C	G 10640	2 C 60	XC 60	C 60	1678	–	–	1.1221	–
1552	52 Mn 5	–	–	G15520	–	–	–	–	–	–	1.1226	–
1065	FD (Federstahldraht)	095 A 65	–	G10650	C 68 D	–	–	–	–	–	1.1230	–
1070	Ck 67	060 A 67	S 70 C-CSP	G 10700	C 67 S	XC 68	C 70	1770	–	–	1.1231	–
1069	Ck 68	–	–	G10690	C 70 D	–	–	–	–	–	1.1234	–
1080	Ck 75	060 A 78	C 75	G 10800	C 75 S	XC 75	C 75	1774	–	–	1.1248	–
–	Cf 70	–	–	–	C 70 G	XC 70	–	–	–	–	1.1249	–
1090	Ck 85	–	SK 5 -CSP	G 10900	C 85 S	XC 90	C 90	–	–	–	1.1269	–
1085	90 Mn 4	080 A 83	SUP4	G 10850	–	–	–	–	–	–	1.1273	–
1095	Ck 101	060 A 96	SUP_4	G 10950	C 100 S	XC 100	C 100	1870	–	–	1.1274	–
1050	C 50	080 M 50	S 50 C	G 10 500	1 C 50	C 50	C 50	1674	–	–	1.0540	–
–	St 52-3 G	4360-50 B	SM 50 YB	–	S 355 J 2 G 3	E 36-3	Fe 510 B	2132	–	–	1.0570	–
1078	C78D	–	SWRH 77 B	G10780	C 78 D	FM 78	C 78 D	–	–	–	1.0620	–
1035	Cm 35	080 M 36	–	G 10350	3 C 35	38 H1 k	C 35 R	1572-03	–	–	1.1180	–
1566	66 Mn 4	–	–	G15660	–	–	–	–	–	–	1.1260	–
1084	C 85 W	–	SK 5	G10840	C 90 U	Y3 90	–	–	–	–	1.1830	–

NOTE: For legend, see page Y237.

P3 Workpiece Materials Listing • Steel • P3

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1330	GS-30 Mn 5	120 M 36	SMn 433 H; SCMn 2	K13300	–	35 M 5	–	1330	–	–	1.1165	–
1330	28 Mn 6	150 M 28	SCMn 1	G 13300	28 Mn 6	35 M 5	C 28 Mn	–	–	–	1.1170	–
1335	36 Mn 5	150 M 36	SMn 438(H)	G13350	–	40 M 5	–	2120	–	–	1.1167	–
1345	StSch 90 C/GP 280 GH	–	–	G13450	GP 280 GH	GP 280 GH	GP 280 GH	–	–	–	1.0625	–
1513	P265	HR 40/30	–	G15130	–	12 M 5	–	–	–	–	1.0424	–
4142	43 CrMo 4	–	–	G41420	–	43 Cr Mo 4	–	–	–	–	1.3563	–
4147	48 CrMo 4	817 M 40	SNC 836	H41470	–	48 CrMo 4	–	–	–	–	1.3565	–
4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	–	–	–	1.5419	–
4520	16 Mo 5	1503-245-420	SBC 690	K11522	–	–	16 Mo 5	–	–	–	1.5423	–
5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3	–	–	–	–	1.7015	–
5046	44 Cr 2	–	–	H50460	46 Cr 1 KD	44 Cr 2	–	–	–	–	1.3561	–
5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173	–	–	1.7131	–
5117	17 Cr 3	17 Cr 3	–	G51170	(15 Cr 2 KD)	18 C 3	–	–	–	–	1.7016	–
5130	28 Cr 4	530 A 30	–	G51300	28 Cr 4	30 CD 4	–	–	–	–	1.7030	–
5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	–	–	–	1.7035	–
5140	42 Cr 4	530 A 40	SCr 440	–	40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245	–	–	1.7045	–
9255	51 Si 7	250 A 53	–	G92550	–	51 S 7	48 Si 7	2090	–	–	1.0903	–
9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085	–	–	1.0904	–
9260	60 Si 7	251 A 60	–	G92600	60 Si 7	60 S 7	60 Si 7	–	–	–	1.5027	–
9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	–	–	–	1.0961	–
9262	60 SC 7	–	–	G92620	60 SiCr 8	61 SC 7	60 SiCr 8	–	–	–	1.5092	–
9262	60 SiCr 7	–	–	–	60 SiCr 8	–	–	–	–	–	1.7108	–
15B21 H	19 MnB 4	170 H 20	SWRCHB 420	H15211	19 MnB 4	20 MB 5	–	–	–	–	1.5523	–
15B21 H	20 MnB 5	–	SWRCHB 620	–	20 MnB 5	20 MnB 5	20 MnB 5	–	–	–	1.5530	–
50B40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2	–	35 CB 1	–	–	–	1.7007	–
5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	–	–	–	1.7033	–
5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	–	–	–	1.7034	–
A 204 Gr. A	15 Mo 3	1501-240	STFA 12	K11820	16 Mo 3	15 D3	16 Mo 3 KW	2912	–	–	1.5415	–
A 350-LF 5	10 Ni 14	503	SL 3 N 26	K31718	12 Ni 14	12Ni14	18 Ni 14 KT	–	–	–	1.5637	–
A 387 Gr. 12 Cl. 2	16 CrMo 4 4	–	–	K11564	–	–	A 18 CrMo 4 5 KW	–	–	–	1.7337	–
A 570 Gr. 36	St 37-3	4360-40 C	–	K01501	S 235 J2 G3	Fe 360 D1(2); E 24-3	Fe 360 D1(2)	1312	–	–	1.0116	–
A 570 Gr. 40	St 44-2	4360-43 B	SM 41 B	K 02502	S 275 JR	E 28-2	Fe 430 BFN	1412	–	–	1.0044	–
A 570 Gr. 50	St 50-2	4360-50 B	SS 50	–	E 295	A 50-2	Fe 490	2172	–	–	1.0050	–
A 573 Gr. 70	St 44-3	4360-43 C	SM 41 B	–	Fe 430 D1(2); S 275 J2 G3 (4)	Fe 430 D1(2); E 28-4	Fe 430 D FF	1414	–	–	1.0144	–
A 633 Gr. C	St E 355	P 355 N	SM 50 YB	K12000	P 355 N	E 355 R/FP	Fe E 355 KG	2132	–	–	1.0562	–
A 633 Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E 420 KG	2143	–	–	1.8902	–
A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143	–	–	1.8905	–
A-6	C 67 W	–	–	T30106	–	Y1 70	–	–	–	–	1.1744	–
E 52100	100 Cr 6	535 A 99	SUJ 2	G52986	100 Cr 6	100 C 6	100 Cr 6	2258	–	–	1.3505	–
O 2	90 MnCrV 8	BO 2	–	T31502	90 Mn V 8	90 MV 8	90 MnVCr 8 KU	–	–	–	1.2842	–
P21	90 Cr 3	–	–	T51621	–	–	–	–	–	–	1.2056	–
P3	10 NC 6	–	–	T51603	15 NiCr 6	10 NC 6	–	–	–	–	1.5713	–
P6	15 NiCr 14	–	SNC 22	T51606	–	10 NC 12	–	–	–	–	1.2735	–
T 8	C 80 W2	BW 1B	SKC 3	T12008	–	Y1 80	C 80 KU	–	–	–	1.1625	–
W 108	C 80 W1	–	–	T72301	C 80 U	Y1 90	C 80 KU	1880	–	–	1.1525	–
W 110	C 105 W1	B W 1 A	–	T72301	C 105 U	Y 105	C 100 KU	1880	–	–	1.1545	–
W 112	C 125 W	–	–	–	C 125 U	–	–	–	–	–	1.1563	–
W 112	C 125 W	–	SK 2	T72301	C 120 U	Y2 120	C 120 KU	–	–	–	1.1663	–
W 210	100 V 1	BW 2	SKS 43	T72302	100 V 2	Y1 105 V	102 V 2 KU	–	–	–	1.2833	–
–	St 50-1	–	–	–	–	–	–	–	–	–	1.0052	–
–	S 235 JO/ Fe 360 C	En 40C	–	–	S 235 JO	E24-3	Fe 360 CFN	–	–	–	1.0114	–
–	QSt 37-3	–	SWRCH 12R	–	–	–	–	–	–	–	1.0123	–
–	S 275 J0	En43C; S275J0	–	–	S 275 J0/ Fe 430 C	S 275 J0; E 28-3	S275J0; Fe430CFN	–	–	–	1.0143	–
–	S 275 J2 G4/ Fe 430 D 2	S 275 J2 G4	–	–	S 275 J2 G4	E28-4; S 275 J2 G4	S 275 J2 G4	1414	–	–	1.0145	–
–	Ro St 44-2	43C	–	–	S 275 J0 H	–	S 275 J0 H	–	–	–	1.0149	–
–	St 37.0	–	STPG 38	–	P 235 T1	–	–	–	–	–	1.0254	–
–	C9D	–	SWRM 8	–	C 9 D	FM 9	C 9 D	–	–	–	1.0304	–
–	C7D	C 7 D	SWRM 8	G10060	C 7 D	FM 8	C 7 D	–	–	–	1.0313	–
–	P235 GH	P 235 GH	SPV 50	K02503	P 235 GH	A 37 CP	Fe E 235	1330	–	–	1.0345	–
–	C 25 Pb	–	–	–	C 25 GPb	–	–	–	–	–	1.0411	–
–	L 245 MB	430	–	K03006	L 245 MB	L 245 MB	–	–	–	–	1.0418	–
–	P310 NB	224-410	SG 325	K02100	P280GH	BS 2	P 275 N	2103	–	–	1.0426	–
–	L 290 MB	–	–	–	L290MB	L 290 MB	–	–	–	–	1.0429	–
–	H III/P285NH	–	Sm 38	–	P 285 NH	–	–	–	–	–	1.0435	–
–	P310 NB	224-430	SG 325	K02100	P305GH	P 275 N	P 275 N	2103	–	–	1.0436	–
–	A St 41	P 275 N	STK 400	K02100	S 275 N	BS 3	P 275 N	2103	–	–	1.0437	–
–	B 500 A	–	SD 490	–	B 500 A	–	B 500 A	–	–	–	1.0438	–
–	H IV/P295NH	–	SG 37	K03102	–	–	Fe 460-2 KW	–	–	–	1.0445	–
–	StE 240.7	–	–	–	L 245 NB	L 245 NB	–	–	–	–	1.0457	–
–	TStE 255	–	–	K11535	–	–	–	–	–	–	1.0463	–
–	15 Mn 3 Al	–	–	–	C 14 GAl	–	–	–	–	–	1.0468	–
–	19 Mn 6/P 355 GH	P 355 GH	SGV 46	K03300	P355GH	A 52 CP	Fe E355-2	2101	–	–	1.0473	–
–	17 Mn 4/P 295 GH	224-460B	SG 37	K03501	P 295 GH	A 48 CP	Fe E 295	2102	–	–	1.0481	–
–	19 Mn 5	224-460	SG 37	K 03102	–	A 52 CP; AP; FP	Fe 460- 2 KW	–	–	–	1.0482	–
–	L 290 AG	–	–	–	L290GA	TS E 290	–	–	–	–	1.0483	–
–	L 290 NB	–	–	–	L290NB	L 290 NB	–	–	–	–	1.0484	–
–	21 Mn 6	–	–	K12320	–	–	–	–	–	–	1.0485	–
–	St E 285	P 275 N	SM 41 A	K 01802	P 275 N	P 275 N	Fe E 285 KG	–	–	–	1.0486	–
–	W St E 285	P 275 N	–	K 01802	P 275 NH	P 275 N	Fe E 285 KW	–	–	–	1.0487	–
–	T St E 285	P 275 NL 1	SLA 235 A	K 01803	P 275 NL 1	P 275 NL 1	Fe E 285 KT	–	–	–	1.0488	–
–	H 300/ZSt E 300	H280LA	–	–	H 280 LA	E 280 C	–	–	–	–	1.0489	–
–	S 275 NH	S 275 NH	–	–	S 275 NH	–	S 275 NH	–	–	–	1.0493	–
–	S 275 NLH	S275NLH	–	–	S 275 NLH	–	S275NLH	–	–	–	1.0497	–
–	C 35 Pb/C 35 GPb	–	–	–	C 35 Pb	–	–	–	–	–	1.0502	–
–	St E 315/P 315N	–	SM 50 A	K11506	P 315 N	–	Fe E 315 KG	–	–	–	1.0505	–
–	W St E 315	–	SNC 1	K02404	P 315 NH	–	Fe E 315 KW	2107	–	–	1.0506	–
–	St 55	–	STKM 16A	–	–	–	Fe 540	–	–	–	1.0507	–
–	T St E315	–	SLA 325 A	K02404	P 315 NL	–	–	2106	–	–	1.0508	–
–	C 40 Pb	–	–	–	C 40 G Pb	–	–	–	–	–	1.0512	–
–	C38D	–	SWRH 37	–	C 38 D	FM 38	C 38 D	–	–	–	1.0516	–
–	C48D	–	SWRH 48	–	C 48 D	FM 48	C 48 D	–	–	–	1.0517	–
–	C56D	–	–	–	C 56 D	FM 56	C 56 D	–	–	–	1.0518	–
–	S 355 NH	S 355 NH	–	–	S 355 NH	–	S 355 NH	–	–	–	1.0539	–
–	C42D	–	SWRH 42 B	–	C 42 D	FM 42	C 42 D	–	–	–	1.0541	–
–	S 355 JO H	50 C	–	–	S 355 JO H	–	S 355 JO H	–	–	–	1.0547	–
–	ZStE 340/ H 340	H 320 L A	–	–	H 320 LA	E 315 C	–	–	–	–	1.0548	–
–	S 335 NLH	50 EE	–	–	S 355 N LH	–	S 355 N L H	–	–	–	1.0549	–
–	S 355 JO	En 50 C; S 355 JO	SM 520 M	–	S 355 JO	S 355 JO; E 36-3	S 355 JO; Fe 510 C FN	–	–	–	1.0553	–
–	GS-70	50 C	–	–	S 355 JO C	E 36-3	Fe 510 C	–	–	–	1.0554	–

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	ZStE 420/H 420	46/40HR, HS, CS	–	–	H 400 LA	H 400 LA	–	–	–	–	1.0556	–
–	P355 NB	–	SG 365	–	P 355 NB	BS 4	–	–	–	–	1.0557	–
–	W St E 355	P 355 NH	–	K01600	P 355 NH	P 355 NH	Fe E 355 KW	–	–	–	1.0565	–
–	T St E355	P 355 NL1	SLA 37	–	P 355 NL1	P 355 NL1	Fe E 355 KT	–	–	–	1.0566	–
–	P355 QH1	P 355 QH	–	–	P 355 QH	P 355 QH	–	–	–	–	1.0571	–
–	S 355 J 2 G 4	S 355 J 2 G 4	–	–	S 355 J 2 G 4	S 355 J 2 G 4	S 355 J 2 G 4	–	–	–	1.0577	–
–	L 360 MB	–	–	–	L 360 MB	L 360 MB	–	–	–	–	1.0578	–
–	St 52.4	–	STS 49	–	–	–	–	–	–	–	1.0581	–
–	L 360 NB/StE 360.7	–	–	–	L360NB	L 360 NB	–	–	–	–	1.0582	–
–	S 355 J 2 G 3 Cu/St 52-3 Cu3	–	–	–	S 355 J2 G3 Cu + CR	–	–	–	–	–	1.0585	–
–	C50D	–	–	–	C 50 D	FM 50	C 50 D	–	–	–	1.0586	–
–	QSt 52-3 Cu 3	–	–	–	S 355 J2 G3 Cu C	–	–	–	–	–	1.0587	–
–	D 53-2	–	SWRH 52 B	–	C 52 D	FM 52	C 52 D	–	–	–	1.0588	–
–	S 355 J 2 G 4 Cu	–	–	–	S 355 J2 G4 Cu	–	–	–	–	–	1.0592	–
–	S355k2G3/Fe 510 DD1 (MULTIST)	S 355 K 2 G 3	SM 520 C	K02505	S 355 K 2 G 3	E36-4	S 355 K 2 G 3	–	–	–	1.0595	–
–	S355K2G4/Fe 510 DD 2 (MULTIST)	S 355 K 2 G 4	–	–	S 355 K 2 G 4	S 355 K 2 G 4	S 355 K 2 G 4	–	–	–	1.0596	–
–	C62D	–	SWRH 62 B	–	C 62 D	FM 62	C 62 D	–	–	–	1.0611	–
–	C66D	–	–	–	C 66 D	FM 66	C 66 D	–	–	–	1.0612	–
–	C68D	–	SWRH 67 B	–	C 68 D	FM 68	C 68 D	–	–	–	1.0613	–
–	C70D	–	–	–	C 70 D	FM 70	C 70 D	–	–	–	1.0615	–
–	C72D	–	SWRH 72 B	–	C 72 D	FM 72	C 72 D	–	–	–	1.0617	–
–	GS-C 25	–	SCPH 1	–	GP 240 GH	GP 240 GH	GP 240 Gh	–	–	–	1.0619	–
–	C80D	–	–	–	C 80 D	FM 80	C 80 D	–	–	–	1.0622	–
–	C82D	–	SWRH 82 B	–	C 82 D	FM 82	C 82 D	–	–	–	1.0626	–
–	35 SPb 20	35 SPb 20	–	–	35 SPb 20	35 SPb 20	–	–	–	–	1.0756	–
–	45 SPb 20	–	–	–	46 SPb 20	–	–	–	–	–	1.0757	–
–	38 SMnPb 28	38 SMnPb 28	–	–	38 SMnPb 28	38 SMnPb 28	–	–	–	–	1.0761	–
–	44 SMn 28	44 SMn 28	–	–	44 SMn 28	44 SMn 28	–	–	–	–	1.0762	–
–	44 SMnPb 28	44 SMnPb 28	–	–	44 SMnPb 28	44 SMnPb 28	–	–	–	–	1.0763	–
–	36 SMnPb 14	36 SMnPb 14	–	–	36 SMnPb 14	36 SMnPb 14	–	–	–	–	1.0765	–
–	QSt E 690 TM (S 700 MC)	–	–	–	S 700 MC	S 690 MC	S 700 MC	–	–	–	1.0966	–
–	QSt E 260 N 7 S 260 NC	–	AE 275 NC	–	S 260 NC	–	S 260 NCX	–	–	–	1.0971	–
–	QSt E 300 TM/S 315 MC	43 F35 HR, HS, CS	–	–	S 315 MC	E 315 D	S 315 MC	–	–	–	1.0972	–
–	QSt E 300 N 7/ S 315 NC	–	AE 340 NC	–	S 315 NC	–	S 315 NC	–	–	–	1.0973	–
–	QSt E340 TM	HR 40/30	–	–	S 340 MC	E 335 D	–	–	–	–	1.0974	–
–	QSt E340 N	–	–	–	S 340 NC	–	Fe E 355 TD	–	–	–	1.0975	–
–	QSt E 360TM	–	–	–	S 355 MC	E 355 D	Fe E 355 TM	–	–	–	1.0976	–
–	QSt E360 N	–	–	–	S 355 NC	–	Fe E 355 TD	–	–	–	1.0977	–
–	QSt E380 TM	–	–	–	S 380 MC	E 390 D	–	–	–	–	1.0978	–
–	QSt E380 N	–	–	–	S 380 NC	–	Fe E 380 TD	–	–	–	1.0979	–
–	QSt E420 TM	HR 50 F 45	–	–	S 420 MC	E 430 D	Fe E 420 TM	–	–	–	1.0980	–
–	QSt E 420 N	–	–	–	S 420 NC	–	Fe E 420 TD	–	–	–	1.0981	–
–	QSt E 460 TM	50/45 HR	–	–	S 460 MC	E 445 D	–	–	–	–	1.0982	–
–	QSt E 460 N	–	–	–	S 460 NC	–	Fe E 460 TD	–	–	–	1.0983	–
–	QSt E500 TM	–	–	–	S 500 MC	E 490 D	Fe E 490 TM	2662	–	–	1.0984	–
–	QSt E500 N	–	–	–	S 500 NC	–	–	–	–	–	1.0985	–
–	QSt E550 TM	60/55 HS	–	–	S 550 MC	E 560 D	Fe E 560 TM	–	–	–	1.0986	–
–	QSt E550 N	–	–	–	S 550 NC	–	–	–	–	–	1.0987	–
–	EStE 285	P 275 NL 2	STK 400	–	P 275 NL 2	P 275 NL 2	P 275 NL 2	–	–	–	1.1104	–
–	EStE 315	–	–	–	S 315 NL 1	–	–	–	–	–	1.1105	–
–	EStE 355	P 355 NL 2	STK 500	–	P 355 NL 2	P 355 NL 2	P 355 NL 2	–	–	–	1.1106	–
–	C5D2	–	–	–	C 5 D 2	FM 6	C 5 D 2	–	–	–	1.1111	–
–	C8D2	–	–	–	C 8 D 2	FM 8	C 8 D 2	–	–	–	1.1113	–
–	C 10 E W/RSD 11	–	–	–	C 10 EW	–	–	–	–	–	1.1115	–
–	C32D2	–	–	–	C 32 D 2	FM 32	C 32 D 2	–	–	–	1.1143	–
–	C36D2	–	–	–	C 36 D 2	FM 36	C 36 D 2	–	–	–	1.1145	–
–	C40D2	–	–	–	C 40 D 2	FM 40	C 40 D 2	–	–	–	1.1153	–
–	C42D2	–	–	–	C 42 D 2	FM 42	C 42 D 2	–	–	–	1.1154	–
–	C46D2	–	–	–	C 46 D 2	FM 46	C46D 2	–	–	–	1.1162	–
–	C 25 R	C 25 R	–	–	C 25 R	C 25 R	C 25 R	–	–	–	1.1163	–
–	C48D2	–	–	–	C 48 D 2	FM 48	C48 D 2	–	–	–	1.1164	–
–	20 Mn 6	150 M 19	–	–	–	20 M 5	20 Mn 6	–	–	–	1.1169	–
–	C50D2	–	–	–	C 50 D 2	FM 50	C50D 2	–	–	–	1.1171	–
–	C 30 R	C 30 R	C 30 R (3 C 30)	–	C 30 R	C 30 R	C 30 R	–	–	–	1.1179	–
–	C3D1	–	–	–	C 3 D 1	–	C 3 D 1	–	–	–	1.1187	–
–	C40R/Cm 40	C 40 R	–	–	C 40 R	C 40 R	C 40	–	–	–	1.1189	–
–	Ck 45	080 M 46	S 45 C	–	2 C 45	XC 42	C 40	1672	–	–	1.1191	–
–	Cq 45	–	SWRCH45K	–	C 45 KD	–	–	–	–	–	1.1192	–
–	C 45 R	080 M 46	S 50 C	–	C 45 R	XC 48 H1u	C 45 R	1672	–	–	1.1201	–
–	C52D2	–	–	–	C 52 D 2	FM 52	C 52 D 2	–	–	–	1.1202	–
–	C 53 R/Cm 53	–	–	–	C 53 R	–	–	–	–	–	1.1205	–
–	C 10 R	C 10 R	–	–	C 10 R	C 10 R	–	–	–	–	1.1207	–
–	C 16 R	C 16 R	–	–	C 16 R	C 16 R	–	–	–	–	1.1208	–
–	C58D2	–	–	–	C 58 D 2	FM 58	C 58 D 2	–	–	–	1.1212	–
–	C62D2	–	–	–	C 62 D 2	FM 62	C 62 D 2	–	–	–	1.1222	–
–	Cm 60	C 60 R	–	–	3 C 60	C 60 R	C 60 R	–	–	–	1.1223	–
–	C60D2	–	–	–	C 60 D 2	FM 60	C 60 D 2	–	–	–	1.1228	–
–	C68D2	–	–	–	C 68 D 2	FM 68	C 68 D 2	–	–	–	1.1232	–
–	C66D2	–	–	–	C 66 D 2	FM 66	C 66 D 2	–	–	–	1.1236	–
–	C50R	C 50 R	–	–	C 50 R	FM 50	C 50 R	–	–	–	1.1241	–
–	C72D2	–	–	–	C 72 D 2	FM 72	C 72 D 2	–	–	–	1.1242	–
–	C70D2	–	–	–	C 70 D 2	FM 70	C 70 D 2	–	–	–	1.1251	–
–	C78D2	–	–	–	C 78 D 2	FM 78	C 78 D 2	–	–	–	1.1252	–
–	C76D2	–	–	–	C 76 D 2	FM 76	C 76 D 2	–	–	–	1.1253	–
–	C80D2	–	–	–	C 80 D 2	FM 80	C 80 D 2	–	–	–	1.1255	–

NOTE: For legend, see page Y237.

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	C82D2	–	–	–	C 82 D 2	FM 82	C 82 D 2	–	–	–	1.1262	–
–	C86D2	–	–	–	C 86 D 2	FM 86	C 86 D 2	–	–	–	1.1265	–
–	C88D2	–	–	–	C 88 D 2	–	C 88 D 2	–	–	–	1.1272	–
–	C92D2	–	–	–	C 92 D 2	–	C 92 D 2	–	–	–	1.1282	–
–	C98D2	–	–	–	C 98 D 2	–	C 98 D 2	–	–	–	1.1283	–
–	46 MnVS 6	–	–	–	46 MnVS 6	–	–	–	–	–	1.1304	–
–	C 90 U	–	–	–	C90U	–	–	–	–	–	1.1535	–
–	85 Cr 1	–	–	–	–	Y1 100 C 2	–	–	–	–	1.2004	–
–	140 Cr 3	–	SKS 8	–	140 Cr 2	Y2 140 C	–	–	–	–	1.2008	–
–	21 MnCr 5	–	SCR 420 H	–	21 MnCr 5	20 NC 5	–	–	–	–	1.2162	–
–	40 CrMnNiMo 8 6 4	–	–	–	40 CrMnNiMo 8-6-4	–	–	–	–	–	1.2738	–
–	16 CrNiMo 6	820A16	–	–	–	16 NCD 6	16NiCrMo6	–	–	–	1.3531	–
–	100 CrMn 7 3	–	–	–	100 CrMnMo 7	100 CD 7	–	–	–	–	1.3536	–
–	100 CrMo 7	–	SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	–	–	–	1.3537	–
–	100 CrMnMo 8	–	–	–	–	100 CrMnMo 8	–	–	–	–	1.3539	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	12 CrMo 11 10	–	–	–	–	–	–	–	–	–	1.7305	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 500 M	–	–	–	S 500 m	–	–	–	–	–	1.8829	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/P460NI2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VA/S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	TStE 690 VB/S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–
–	WSt E 420/P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.1150	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	12 CrMo 11 10	–	–	–	–	–	–	–	–	–	1.7305	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 500 M	–	–	–	S 500 m	–	–	–	–	–	1.8829	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/P460NI2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VA/S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	TStE 690 VB/S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–

NOTE: For legend, see page Y237.

(continued)

P3 Workpiece Materials Listing • Steel • P3 *(continued)*

P3 Alloy Steels and Tool Steels *Content: C >.25%* *Tensile Strength RM (MPa)*: 600–850* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	WSt E 420/P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.1150	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–

P4 Workpiece Materials Listing • Steel • P4

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 570 Gr. 40	St 44-2	4360-43 B	SM 41 B	K 02502	S 275 JR	E 28-2	Fe 430 BFN	1412	–	–	1.0044	–
–	S 235 J0/Fe 360 C	En 40C	–	–	S 235 J0	E24-3	Fe 360 CFN	–	–	–	1.0114	–
A 570 Gr. 36	St 37-3	4360-40 C	–	K01501	S 235 J2 G3	Fe 360 D1(2); E 24-3	Fe 360 D1(2)	1312	–	–	1.0116	–
–	QSt 37-3	–	SWRCH 12R	–	–	–	–	–	–	–	1.0123	–
–	S 275 J0	En43C; S275J0	–	–	S 275 J0/Fe 430 C	S 275 J0; E 28-3	S275J0; Fe430CFN	–	–	–	1.0143	–
A 573 Gr. 70	St 44-3	4360-43 C	SM 41 B	–	Fe 430 D1(2); S 275 J2 G3 (4)	Fe 430 D1(2); E 28-4	Fe 430 D FF	1414	–	–	1.0144	–
–	S 275 J2 G4/Fe 430 D 2	S 275 J2 G4	–	–	S 275 J2 G4	E28-4; S 275 J2 G4	S 275 J2 G4	1414	–	–	1.0145	–
–	Ro St 44-2	43C	–	–	S 275 J0 H	–	S 275 J0 H	–	–	–	1.0149	–
–	St 37.0	–	STPG 38	–	P 235 T1	–	–	–	–	–	1.0254	–
–	C9D	–	SWRM 8	–	C 9 D	FM 9	C 9 D	–	–	–	1.0304	–
–	C7D	C 7 D	SWRM 8	G10060	C 7 D	FM 8	C 7 D	–	–	–	1.0313	–
–	L 210 GA	–	–	–	L 210 GA	TS E 220 class 2	–	–	–	–	1.0319	–
–	USD 7/C 8 G1 W	–	–	–	C 8 G 1 W	–	–	–	–	–	1.0323	–
–	RSD 7/C8G2W	–	–	–	C 8 G 2 W	–	–	–	–	–	1.0324	–
–	RSD 10 Si/C10WSi	–	–	–	C 10 W Si	–	–	–	–	–	1.0339	–
–	P235 GH	P 235 GH	SPV 50	K02503	P 235 GH	A 37 CP	Fe E 235	1330	–	–	1.0345	–
–	RRSD 10/C10 W	–	–	–	C 10 W	–	–	–	–	–	1.0351	–
–	St 45.8	–	STB 410	K02727	–	–	–	–	–	–	1.0405	–
–	C 25 Pb	–	–	–	C 25 GPb	–	–	–	–	–	1.0411	–
–	L 245 MB	430	–	K03006	L 245 MB	L 245 MB	–	–	–	–	1.0418	–
1513	P265	HR 40/30	–	G15130	–	12 M 5	–	–	–	–	1.0424	–
–	P310 NB	224-410	SG 325	K02100	P280GH	BS 2	P 275 N	2103	–	–	1.0426	–
–	L 290 MB	–	–	–	L290MB	L 290 MB	–	–	–	–	1.0429	–
–	H II/P285NH	–	Sm 38	–	P 285 NH	–	–	–	–	–	1.0435	–
–	P310 NB	224-430	SG 325	K02100	P305GH	P 275 N	P 275 N	2103	–	–	1.0436	–
–	A St 41	P 275 N	STK 400	K02100	S 275 N	BS 3	P 275 N	2103	–	–	1.0437	–
–	B 500 A	–	SD 490	–	B 500 A	–	B 500 A	–	–	–	1.0438	–
–	GS-45	–	SC 450	–	–	–	–	–	–	–	1.0443	–
–	H IV/P295NH	–	SG 37	K03102	–	–	Fe 460-2 KW	–	–	–	1.0445	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	StE 240.7	–	–	–	L 245 NB	L 245 NB	–	–	–	–	1.0457	–
–	HIII/L 235 GA	–	–	–	L 235 GA	–	–	–	–	–	1.0458	–
–	L 245 GA/RRStE 240.7	–	–	–	L 245 GA	TS E 250	–	–	–	–	1.0459	–
–	St E255	–	–	K01800	–	–	–	–	–	–	1.0461	–
–	TStE 255	–	–	K11535	–	–	–	–	–	–	1.0463	–
–	15 Mn 3 Al	–	–	–	C 14 GAl	–	–	–	–	–	1.0468	–
–	21 Mn 4	–	–	–	–	–	20 Mn 4	–	–	–	1.0469	–
–	19 Mn 6/P 355 GH	P 355 GH	SGV 46	K03300	P355GH	A 52 CP	Fe E355-2	2101	–	–	1.0473	–
–	17 Mn 4/P 295 GH	224-460B	SG 37	K03501	P 295 GH	A 48 CP	Fe E 295	2102	–	–	1.0481	–
–	19 Mn 5	224-460	SG 37	K 03102	–	A 52 CP; AP; FP	Fe 460- 2 KW	–	–	–	1.0482	–
–	L 290 AG	–	–	–	L290GA	TS E 290	–	–	–	–	1.0483	–
–	L 290 NB	–	–	–	L290NB	L 290 NB	–	–	–	–	1.0484	–
–	21 Mn 6	–	–	K12320	–	–	–	–	–	–	1.0485	–
–	St E 285	P 275 N	SM 41 A	K 01802	P 275 N	P 275 N	Fe E 285 KG	–	–	–	1.0486	–
–	W St E 285	P 275 N	–	K 01802	P 275 NH	P 275 N	Fe E 285 KW	–	–	–	1.0487	–
–	T St E 285	P 275 NL 1	SLA 235 A	K 01803	P 275 NL 1	P 275 NL 1	Fe E 285 KT	–	–	–	1.0488	–
–	H 300/ZSt E 300	H280LA	–	–	H 280 LA	E 280 C	–	–	–	–	1.0489	–
–	S 275 NH	S 275 NH	–	–	S 275 NH	–	S 275 NH	–	–	–	1.0493	–
–	S 275 NLH	S275NLH	–	–	S 275 NLH	–	S275NLH	–	–	–	1.0497	–
–	L 360 GA	–	–	–	L 360 GA	–	–	–	–	–	1.0499	–
–	C 35 Pb/C 35 GPb	–	–	–	C 35 Pb	–	–	–	–	–	1.0502	–
–	St E 315/P 315N	–	SM 50 A	K11506	P 315 N	–	Fe E 315 KG	–	–	–	1.0505	–
–	W St E 315	–	SNC 1	K02404	P 315 NH	–	Fe E 315 KW	2107	–	–	1.0506	–
–	St 55	–	STKM 16A	–	–	–	Fe 540	–	–	–	1.0507	–
–	T St E315	–	SLA 325 A	K02404	P 315 NL	–	–	2106	–	–	1.0508	–
–	C 40 Pb	–	–	–	C 40 G Pb	–	–	–	–	–	1.0512	–
–	C38D	–	SWRH 37	–	C 38 D	FM 38	C 38 D	–	–	–	1.0516	–
–	C48D	–	SWRH 48	–	C 48 D	FM 48	C 48 D	–	–	–	1.0517	–
–	C56D	–	–	–	C 56 D	FM 56	C 56 D	–	–	–	1.0518	–
–	StSch 700 (R 0 700)	–	–	–	R 0700	–	–	–	–	–	1.0521	–
–	StSch800 (R 0 800)	–	–	–	R 0800	–	–	–	–	–	1.0524	–
–	Cf 45 Pb	–	–	–	–	–	C 46	–	–	–	1.0526	–
–	C32D	–	SWRH 32	K02701	C 32 D	FM 32	C 32 D	–	–	–	1.0530	–
–	GL-A 40 (S 390 G 1 S)	–	–	–	S 390 G 1 S	–	–	–	–	–	1.0532	–
–	S 355 NH	S 355 NH	–	–	S 355 NH	–	S 355 NH	–	–	–	1.0539	–
–	C42D	–	SWRH 42 B	–	C 42 D	FM 42	C 42 D	–	–	–	1.0541	–
–	Schienen 60 F(R 0600/ St Sch 60)	–	–	–	R 0600	–	–	–	–	–	1.0544	–
–	S 355 J0 H	50 C	–	–	S 355 J0 H	–	S 355 J0 H	–	–	–	1.0547	–
–	ZStE 340/H 340	H 320 L A	–	–	H 320 LA	E 315 C	–	–	–	–	1.0548	–
–	S 335 NLH	50 EE	–	–	S 355 N LH	–	S 355 N L H	–	–	–	1.0549	–
–	GS-52	A2	–	–	GE 260	–	–	–	–	–	1.0552	–
–	S 355 J0	En 50 C;S 355 J0	SM 520 M	–	S 355 J0	S 355 J0; E 36-3	S 355 J0; Fe 510 C FN	–	–	–	1.0553	–
–	GS-70	50 C	–	–	S 355 J0 C	E 36-3	Fe 510 C	–	–	–	1.0554	–
–	GS-62	–	–	–	S 355 GO 1	–	–	–	–	–	1.0555	–
–	ZStE 420/H 420	46/40HR,HS,CS	–	–	H 400 LA	H 400 LA	–	–	–	–	1.0556	–
–	P355 NB	–	SG 365	–	P 355 NB	BS 4	–	–	–	–	1.0557	–
–	GS-62.3	–	–	–	S 355 GO 2	–	–	–	–	–	1.0559	–
A 633 Gr. C	St E 355	P 355 N	SM 50 YB	K12000	P 355 N	E 355 R/FP	Fe E 355 KG	2132	–	–	1.0562	–
–	N 80	–	–	–	–	–	–	–	–	–	1.0564	–
–	W St E 355	P 355 NH	–	K01600	P 355 NH	P 355 NH	Fe E 355 KW	–	–	–	1.0565	–
–	T St E355	P 355 NL1	SLA 37	–	P 355 NL1	P 355 NL1	Fe E 355 KT	–	–	–	1.0566	–
–	32 Mn 3	–	–	–	–	–	–	–	–	–	1.0567	–
–	P355 QH1	P 355 QH	–	–	P 355 QH	P 355 QH	–	–	–	–	1.0571	–
–	ZStE 460/H 460	–	–	–	–	–	–	–	–	–	1.0574	–
–	S 355 J 2 G 4	S 355 J 2 G 4	–	–	S 355 J 2 G 4	S 355 J 2 G 4	S 355 J 2 G 4	–	–	–	1.0577	–
–	L 360 MB	–	–	–	L 360 MB	L 360 MB	–	–	–	–	1.0578	–
–	St 52.4	–	STS 49	–	–	–	–	–	–	–	1.0581	–
–	L 360 NB/StE 360.7	–	–	–	L360NB	L 360 NB	–	–	–	–	1.0582	–
–	S 355 J 2 G 3 Cu/St 52-3 Cu3	–	–	–	S 355 J2 G3 Cu + CR	–	–	–	–	–	1.0585	–
–	C50D	–	–	–	C 50 D	FM 50	C 50 D	–	–	–	1.0586	–
–	QSt 52-3 Cu 3	–	–	–	S 355 J2 G3 Cu C	–	–	–	–	–	1.0587	–
–	D 53-2	–	SWRH 52 B	–	C 52 D	FM 52	C 52 D	–	–	–	1.0588	–
–	FStE 355 OS 3/S355G03	–	–	K12000	S 355 G03	–	–	–	–	–	1.0591	–
–	S 355 J 2 G 4 Cu	–	–	–	S 355 J2 G4 Cu	–	–	–	–	–	1.0592	–
–	S355k2G3/Fe 510 DD1 (MULTIST)	S 355 K 2 G 3	SM 520 C	K02505	S 355 K 2 G 3	E36-4	S 355 K 2 G 3	–	–	–	1.0595	–
–	S355K2G4/Fe 510 DD 2 (MULTIST)	S 355 K 2 G 4	–	–	S 355 K 2 G 4	S 355 K 2 G 4	S 355 K 2 G 4	–	–	–	1.0596	–
–	C 30 Pb	–	–	–	C 3 0 GPb	–	–	–	–	–	1.0598	–
–	C 60 Pb	–	–	–	C 60 GPb	–	–	–	–	–	1.0602	–
–	C 67 GPb/C 67 Pb	–	–	–	C 67 GPb	–	–	–	–	–	1.0606	–
–	C 75 GPb/C 75 Pb	–	–	–	C 75 GPb	–	–	–	–	–	1.0607	–

NOTE: For legend, see page Y237.

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	C62D	–	SWRH 62 B	–	C 62 D	FM 62	C 62 D	–	–	–	1.0611	–
–	C66D	–	–	–	C 66 D	FM 66	C 66 D	–	–	–	1.0612	–
–	C68D	–	SWRH 67 B	–	C 68 D	FM 68	C 68 D	–	–	–	1.0613	–
–	C70D	–	–	–	C 70 D	FM 70	C 70 D	–	–	–	1.0615	–
–	C72D	–	SWRH 72 B	–	C 72 D	FM 72	C 72 D	–	–	–	1.0617	–
–	GS-C 25	–	SCPH 1	–	GP 240 GH	GP 240 GH	GP 240 Gh	–	–	–	1.0619	–
–	GP 240 GR	–	–	–	GP 240 GR	GP 240 GR	GP 240 GR	–	–	–	1.0621	–
–	C80D	–	–	–	C 80 D	FM 80	C 80 D	–	–	–	1.0622	–
–	StSch 900 A (R 0900)	–	–	–	R 0900	–	–	–	–	–	1.0623	–
–	StSch 900 B (R 0900 Mn)	–	–	–	R 0900 Mn	–	–	–	–	–	1.0624	–
1345	StSch 90 C/GP 280 GH	–	–	G13450	GP 280 GH	GP 280 GH	GP 280 GH	–	–	–	1.0625	–
–	C82D	–	SWRH 82 B	–	C 82 D	FM 82	C 82 D	–	–	–	1.0626	–
–	C88D	–	–	–	C 88 D	–	C 88 D	–	–	–	1.0628	–
–	StSch 1200 (R 1200)	–	–	–	R 1200	–	–	–	–	–	1.0631	–
–	C 61/60 Mn 3	–	–	–	C 61	–	C 61	–	–	–	1.0642	–
–	C 85/85 Mn 3	–	–	–	C 85	–	C 85	–	–	–	1.0647	–
–	35 SPb 20	35 SPb 20	–	–	35 SPb 20	35 SPb 20	–	–	–	–	1.0756	–
–	45 SPb 20	–	–	–	46 SPb 20	–	–	–	–	–	1.0757	–
–	38 SMnPb 28	38 SMnPb 28	–	–	38 SMnPb 28	38 SMnPb 28	–	–	–	–	1.0761	–
–	44 SMn 28	44 SMn 28	–	–	44 SMn 28	44 SMn 28	–	–	–	–	1.0762	–
–	44 SMnPb 28	44 SMnPb 28	–	–	44 SMnPb 28	44 SMnPb 28	–	–	–	–	1.0763	–
–	36 SMnPb 14	36 SMnPb 14	–	–	36 SMnPb 14	36 SMnPb 14	–	–	–	–	1.0765	–
9255	51 Si 7	250 A 53	–	G92550	–	51 S 7	48 Si 7	2090	–	–	1.0903	–
9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085	–	–	1.0904	–
–	StSch 1100 (R 1100 Cr)	–	–	–	R 1100 Cr	–	–	–	–	–	1.0915	–
9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	–	–	–	1.0961	–
–	QSt E 690 TM (S 700 MC)	–	–	–	S 700 MC	S 690 MC	S 700 MC	–	–	–	1.0966	–
–	QSt E 260 N 7 S 260 NC	–	AE 275 NC	–	S 260 NC	–	S 260 NCX	–	–	–	1.0971	–
–	QSt E 300 TM/S 315 MC	43 F35 HR,HS,CS	–	–	S 315 MC	E 315 D	S 315 MC	–	–	–	1.0972	–
–	QSt E 300 N 7/S 315 NC	–	AE 340 NC	–	S 315 NC	–	S 315 NC	–	–	–	1.0973	–
–	QSt E340 TM	HR 40/30	–	–	S 340 MC	E 335 D	–	–	–	–	1.0974	–
–	QSt E340 N	–	–	–	S 340 NC	–	Fe E 355 TD	–	–	–	1.0975	–
–	QSt E 360TM	–	–	–	S 355 MC	E 355 D	Fe E 355 TM	–	–	–	1.0976	–
–	QSt E360 N	–	–	–	S 355 NC	–	Fe E 355 TD	–	–	–	1.0977	–
–	QSt E380 TM	–	–	–	S 380 MC	E 390 D	–	–	–	–	1.0978	–
–	QSt E380 N	–	–	–	S 380 NC	–	Fe E 380 TD	–	–	–	1.0979	–
–	QSt E420 TM	HR 50 F 45	–	–	S 420 MC	E 430 D	Fe E 420 TM	–	–	–	1.0980	–
–	QSt E 420 N	–	–	–	S 420 NC	–	Fe E 420 TD	–	–	–	1.0981	–
–	QSt E 460 TM	50/45 HR	–	–	S 460 MC	E 445 D	–	–	–	–	1.0982	–
–	QSt E 460 N	–	–	–	S 460 NC	–	Fe E 460 TD	–	–	–	1.0983	–
–	QSt E500 TM	–	–	–	S 500 MC	E 490 D	Fe E 490 TM	2662	–	–	1.0984	–
–	QSt E500 N	–	–	–	S 500 NC	–	–	–	–	–	1.0985	–
–	QSt E550 TM	60/55 HS	–	–	S 550 MC	E 560 D	Fe E 560 TM	–	–	–	1.0986	–
–	QSt E550 N	–	–	–	S 550 NC	–	–	–	–	–	1.0987	–
–	FStE 355 OS 3/S355G04	–	–	–	S 355 G04	–	–	–	–	–	1.1102	–
–	EStE 285	P 275 NL 2	STK 400	–	P 275 NL 2	P 275 NL 2	P 275 NL 2	–	–	–	1.1104	–
–	EStE 315	–	–	–	S 315 NL 1	–	–	–	–	–	1.1105	–
–	EStE 355	P 355 NL 2	STK 500	–	P 355 NL 2	P 355 NL 2	P 355 NL 2	–	–	–	1.1106	–
–	C5D2	–	–	–	C 5 D 2	FM 6	C 5 D 2	–	–	–	1.1111	–
–	USD 5/C 8 E1 W	–	–	–	C 8 E 1 W	–	–	–	–	–	1.1112	–
–	C8D2	–	–	–	C 8 D 2	FM 8	C 8 D 2	–	–	–	1.1113	–
–	C 10 E W/RSD 11	–	–	–	C 10 EW	–	–	–	–	–	1.1115	–
–	USD 6/C 8 E2 W	–	–	–	C 8 E 2 W	–	–	–	–	–	1.1116	–
–	G 24 Mn 4/GS 24 Mn 4	–	–	–	G 24 Mn 4	–	–	–	–	–	1.1136	–
–	C32D2	–	–	–	C 32 D 2	FM 32	C 32 D 2	–	–	–	1.1143	–
–	C36D2	–	–	–	C 36 D 2	FM 36	C 36 D 2	–	–	–	1.1145	–
–	C38D2	–	–	–	C 38 D 2	FM 38	C 38 D 2	–	–	–	1.115	–
–	C 25 R	C 25 R	–	–	C 25 R	C 25 R	C 25 R	–	–	–	1.1163	–
–	C48D2	–	–	–	C 48 D 2	FM 48	C48 D 2	–	–	–	1.1164	–
1330	GS-30 Mn 5	120 M 36	SMn 433 H; SCMn 2	K13300	–	35 M 5	–	1330	–	–	1.1165	–
1335	36 Mn 5	150 M 36	SMn 438(H)	G13350	–	40 M 5	–	2120	–	–	1.1167	–
–	G 40 Mn 5/GS 40 Mn 5	–	–	–	G 40 Mn 5	–	–	–	–	–	1.1168	–
–	20 Mn 6	150 M 19	–	–	–	20 M 5	20 Mn 6	–	–	–	1.1169	–
–	C50D2	–	–	–	C 50 D 2	FM 50	C50D 2	–	–	–	1.1171	–
–	Ck 38 Pb	–	–	–	25 Mn 4	–	–	–	–	–	1.1177	–
–	C 30 R	C 30 R	C 30 R (3 C 30)	–	C 30 R	C 30 R	C 30 R	–	–	–	1.1179	–
–	Ck 35 Pb	–	–	–	S 355 G 13	–	–	–	–	–	1.1182	–
–	Ck 36	–	–	–	S 355 G 14	–	–	–	–	–	1.1184	–
–	C3D1	–	–	–	C 3 D 1	–	C 3 D 1	–	–	–	1.1187	–
–	C40R/Cm 40	C 40 R	–	–	C 40 R	C 40 R	C 40	–	–	–	1.1189	–
–	C52D2	–	–	–	C 52 D 2	FM 52	C 52 D 2	–	–	–	1.1202	–
–	C 53 R/Cm 53	–	–	–	C 53 R	–	–	–	–	–	1.1205	–
–	C 10 R	C 10 R	–	–	C 10 R	C 10 R	–	–	–	–	1.1207	–
–	C 16 R	C 16 R	–	–	C 16 R	C 16 R	–	–	–	–	1.1208	–
–	C58D2	–	–	–	C 58 D 2	FM 58	C 58 D 2	–	–	–	1.1212	–
–	Ck 53 Pb	–	–	–	C 90 S	–	–	–	–	–	1.1217	–
–	C62D2	–	–	–	C 62 D 2	FM 62	C 62 D 2	–	–	–	1.1222	–
–	Cm 60	C 60 R	–	–	3 C 60	C 60 R	C 60 R	–	–	–	1.1223	–
–	C60D2	–	–	–	C 60 D 2	FM 60	C 60 D 2	–	–	–	1.1228	–
–	C68D2	–	–	–	C 68 D 2	FM 68	C 68 D 2	–	–	–	1.1232	–
–	C66D2	–	–	–	C 66 D 2	FM 66	C 66 D 2	–	–	–	1.1236	–
–	C50R	C 50 R	–	–	C 50 R	FM 50	C 50 R	–	–	–	1.1241	–
–	C72D2	–	–	–	C 72 D 2	FM 72	C 72 D 2	–	–	–	1.1242	–
–	C70D2	–	–	–	C 70 D 2	FM 70	C 70 D 2	–	–	–	1.1251	–
–	C78D2	–	–	–	C 78 D 2	FM 78	C 78 D 2	–	–	–	1.1252	–
–	C76D2	–	–	–	C 76 D 2	FM 76	C 76 D 2	–	–	–	1.1253	–
–	C80D2	–	–	–	C 80 D 2	FM 80	C 80 D 2	–	–	–	1.1255	–
–	C82D2	–	–	–	C 82 D 2	FM 82	C 82 D 2	–	–	–	1.1262	–
–	C86D2	–	–	–	C 86 D 2	FM 86	C 86 D 2	–	–	–	1.1265	–
–	C88D2	–	–	–	C 88 D 2	–	C 88 D 2	–	–	–	1.1272	–
–	C92D2	–	–	–	C 92 D 2	–	C 92 D 2	–	–	–	1.1282	–
–	C98D2	–	–	–	C 98 D 2	–	C 98 D 2	–	–	–	1.1283	–
–	46 MnVS 6	–	–	–	46 MnVS 6	–	–	–	–	–	1.1304	–
–	C 90 U	–	–	–	C90U	–	–	–	–	–	1.1535	–
–	C 110 W	–	–	–	C 110 U	–	–	–	–	–	1.1554	–
–	C 120 U	–	–	–	C120U	–	–	–	–	–	1.1555	–
T 8	C 80 W2	BW 1B	SKC 3	T12008	–	Y1 80	C 80 KU	–	–	–	1.1625	–
–	C 105 W2	–	SK 3	–	–	–	–	–	–	–	1.1645	–
–	C 135 W	–	SK 1	–	–	Y2 140	C 140 KU	–	–	–	1.1673	–
A-6	C 67 W	–	–	T30106	–	Y1 70	–	–	–	–	1.1744	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	125 Cr 1	–	–	–	125 Cr 2	Y2 120 C	–	–	–	–	1.2002	–
–	85 Cr 1	–	–	–	–	Y1 100 C 2	–	–	–	–	1.2004	–
–	140 Cr 3	–	SKS 8	–	140 Cr 2	Y2 140 C	–	–	–	–	1.2008	–
–	105 Cr 4	–	SKC 11	–	–	–	–	–	–	–	1.2057	–
–	21 MnCr 5	–	SCR 420 H	–	21 MnCr 5	20 NC 5	–	–	–	–	1.2162	–
–	35 CrMo 7	–	–	–	35 CrMo 7	–	–	–	–	–	1.2302	–
–	48 CrMoV 67	–	–	–	–	45 CDV 6	–	–	–	–	1.2323	–
P6	15 NiCr 14	–	SNC 22	T51606	–	10 NC 12	–	–	–	–	1.2735	–
–	40 CrMnNiMo 8 6 4	–	–	–	40 CrMnNiMo 8-6-4	–	–	–	–	–	1.2738	–
–	57 NiCrMoV 7 7	–	–	–	55 NiCrMoV 7	–	–	–	–	–	1.2744	–
–	70 MnMoCr 8	–	–	–	70 MnMoCr 8	–	–	–	–	–	1.2824	–
–	95 MnWCr 5	–	–	–	95 MnWCr 5	–	–	–	–	–	1.2825	–
–	60 MnSi 4	–	–	–	–	60 MSC 4	–	–	–	–	1.2826	–
–	101 Cr 6	–	–	–	–	–	102 Cr 6 KU	–	–	–	1.3514	–
–	16 CrNiMo 6	820A16	–	–	–	16 NCD 6	16NiCrMo6	–	–	–	1.3531	–
–	100 CrMn 7 3	–	–	–	100 CrMnMo 7	100 CD 7	–	–	–	–	1.3536	–
–	100 CrMo 7	–	SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	–	–	–	1.3537	–
–	100 CrMnMo 8	–	–	–	–	100 CrMnMo 8	–	–	–	–	1.3539	–
5046	44 Cr 2	–	–	H50460	46 Cr 1 KD	44 Cr 2	–	–	–	–	1.3561	–
4142	43 CrMo 4	–	–	G41420	–	43 Cr Mo 4	–	–	–	–	1.3563	–
4147	48 CrMo 4	817 M 40	SNC 836	H41470	–	48 CrMo 4	–	–	–	–	1.3565	–
–	46 Si 7	–	–	–	45 Si	46 S 7	–	–	–	–	1.5024	–
9259H	51 Si 7	–	–	–	50 Si 7	–	48 Si 7	2090	–	–	1.5025	–
–	55 Si 7	250 A 53	–	G92550	56 Si 7	55 S 7	55 Si 8	2085	–	–	1.5026	–
9260	60 Si 7	251 A 60	–	G92600	60 Si 7	60 S 7	60 Si 7	–	–	–	1.5027	–
–	65 Si 7	–	SUP 7	–	–	–	–	–	–	–	1.5028	–
–	12 Mn 8	–	–	–	11 Mn 8 KE	–	–	–	–	–	1.5086	–
9262	60 SC 7	–	–	G92620	60 SiCr 8	61 SC 7	60 SiCr 8	–	–	–	1.5092	–
–	37 MnSi 5	–	–	–	–	38 MS 5	–	F.130.A	–	–	1.5122	–
–	50 MnSi 4	–	–	K04800	–	–	–	–	–	–	1.5131	–
–	15 MnMoV 4 5	–	–	–	15 MnMoV 4-5	15 MDV 4.05	–	–	–	–	1.5402	–
A 204 Gr. A	15 Mo 3	1501-240	STFA 12	K11820	16 Mo 3	15 D3	16 Mo 3 KW	2912	–	–	1.5415	–
4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	–	–	–	1.5419	–
–	20 MnMo 3 5	–	–	K12121	–	–	–	–	–	–	1.5421	–
–	G 18 Mo 5	–	–	–	G18Mo5	–	G 18 Mo5	–	–	–	1.5422	–
4520	16 Mo 5	1503-245-420	SBC 690	K11522	–	–	16 Mo 5	–	–	–	1.5423	–
–	11 MnMo 4 5	–	–	K11123	11 MnMo 45 KE	–	–	–	–	–	1.5425	–
–	13 MnMo 6 5	–	–	K11424	11 MnMo 65 KE	–	–	–	–	–	1.5426	–
–	13 MnMo 8 5	–	–	K11423	11 MnMo 85 KE	–	–	–	–	–	1.5427	–
–	35 B 2	–	SWRCHB 237	–	C 35 B	35 B 3	–	–	–	–	1.5511	–
15B21 H	19 MnB 4	170 H 20	SWRCHB 420	H15211	19 MnB 4	20 MB 5	–	–	–	–	1.5523	–
15B21 H	20 MnB 5	–	SWRCHB 620	–	20 MnB 5	20 MnB 5	20 MnB 5	–	–	–	1.553	–
–	24 Ni 8	–	SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	–	–	–	1.5633	–
A 350-LF 5	10 Ni 14	503	SL 3 N 26	K31718	12 Ni 14	12Ni14	18 Ni 14 KT	–	–	–	1.5637	–
P3	10 NC 6	–	–	T51603	15 NiCr 6	10 NC 6	–	–	–	–	1.5713	–
–	10 NiCr 5 4	10NiCr5-4	–	–	10 NiCr 5-4	10 NiCr 5-4	–	–	–	–	1.5805	–
–	18 MnMoNi 5 5	–	–	–	18 MnMoNi 5-5	–	–	–	–	–	1.6308	–
–	20 MnMoNi 4 5	–	SQV 2 B	K12539	20 MnMoNi 4-5	–	–	–	–	–	1.6311	–
–	10 NiMnMo 6 5	–	–	K11160	–	–	–	–	–	–	1.6312	–
–	16 NiCrMO 12 6	–	–	–	–	16 NCD 13	–	–	–	–	1.6782	–
–	15 MnCrMoNiV 5 3	–	–	–	15 MnCrMoNiV 5-3	–	–	–	–	–	1.6920	–
50B40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2	–	35 CB 1	–	–	–	1.7007	–
–	13 Cr 2	–	–	–	–	–	–	–	–	–	1.7012	–
–	17 CrS 3	17 CrS3	–	–	17 CrS 3	17 CrS 3	–	–	–	–	1.7014	–
5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3	–	–	–	–	1.7015	–
5117	17 Cr 3	17 Cr 3	–	G51170	(15 Cr 2 KD)	18 C 3	–	–	–	–	1.7016	–
5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	–	–	–	1.7033	–
5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	–	–	–	1.7034	–
5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	–	–	–	1.7035	–
–	28 CrS 4	–	–	–	28CrS4	28CrS4	–	–	–	–	1.7036	–
–	34 CrS 4	34 CrS 4	–	–	34 CrS 4	34 CrS 4	34 CrS 4	–	–	–	1.7037	–
–	41 CrS 4	41 CrS 4	–	–	41 CrS 4	41 CrS 4	41 CrS 4	2245	–	–	1.7039	–
–	38 Cr 4	–	–	–	38 Cr 4	–	38 Cr 4	–	–	–	1.7043	–
5140	42 Cr 4	530 A 40	SCr 440	–	40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245	–	–	1.7045	–
–	54 SiCr 6	–	–	–	–	54 SC 6	–	–	–	–	1.7102	–
–	67 SiCr 5	–	–	–	67 SiCr 5	–	67 SiCr 5	–	–	–	1.7103	–
9262	60 SiCr 7	–	–	–	60 SiCr 8	–	–	–	–	–	1.7108	–
–	52 SiCrNi 5	–	–	–	–	52 SCN 5	–	–	–	–	1.7117	–
5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173	–	–	1.7131	–
–	49 CrMo 4	–	SCM 445	–	–	–	–	–	–	–	1.7238	–
–	16 CrMo 4	18 CrMo4	SCM 418 H	–	18 CrMo 4	15 CD 3.5	18 CrMo 4	–	–	–	1.7242	–
–	10 CrMo 11	–	–	–	–	12 CD 10	–	–	–	–	1.7276	–
–	16 CrMo 9 3	–	–	–	–	20 CD 8	–	–	–	–	1.7281	–
–	22 CrMoS 3 5	–	–	–	22 CrMoS 3-5	22 CrMoS 3-5	–	–	–	–	1.7333	–
A 387 Gr. 12 Cl. 2	16 CrMo 4 4	–	–	K11564	–	–	A 18 CrMo 4 5 KW	–	–	–	1.7337	–
–	12 CrMo 8 5	–	–	K21509	–	–	–	–	–	–	1.7358	–
–	12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	–	–	–	1.7362	–
–	X 7 CrMo 6 1	B 5	–	S50281	CM 5-IG	–	–	–	–	–	1.7373	–
–	12 CrMo 9 10	–	–	–	–	12 CrMo 9-10	–	–	–	–	1.7375	–
–	SG-CrMo 9	–	–	S50480	–	–	–	–	–	–	1.7388	–
–	51 CrMoV 4	–	–	–	51 CrMoV 4	51 CDV 4	51 CrMoV 4	–	–	–	1.7701	–
–	21 CrMoV 5 7	–	–	K14073	21 CrmoV 5-7	20 CDV 5.07	–	–	–	–	1.7709	–
–	20 CrMoVTiB 4 10	–	–	–	20 CrMoVTiB 4-10	20 CrMoVTiB 4-10	–	–	–	–	1.7729	–
6150	50 CrV 4	735 A 50	SUP 10	G61500	51 CrV 4	50 CV 4	50 CrV 4	2230	–	–	1.8159	–
–	PS 275 TMK	S 275 ML	–	–	S 275 ML	S 275 ML	S 275 ML	–	–	–	1.8819	–
–	S 355 G1 M	–	–	–	S 355 G 1 M	–	–	–	–	–	1.8822	–
–	BTStE 460 TM	S 460 ML	–	–	S 460 ML	E 460	S 460 ML	–	–	–	1.8838	–
–	S 500 ML	–	–	–	S 500 ML	–	–	–	–	–	1.8839	–

NOTE: For legend, see page Y237.

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S 275 MH	–	–	–	S 275 MH	–	S 275 MH	–	–	–	1.8843	–
–	S 275 MLH	–	–	–	S 275 MLH	–	S 275 MLH	–	–	–	1.8844	–
–	S 355 MH	–	–	–	S 355 MH	–	S 355 MH	–	–	–	1.8845	–
–	S 355 MLH	–	–	–	S 355 MLH	–	S 355 MLH	–	–	–	1.8846	–
–	S 420 MH	–	–	–	S 420 MH	–	S 420 MH	–	–	–	1.8847	–
–	S 420 MLH	–	–	–	S 420 MLH	–	S 420 MLH	–	–	–	1.8848	–
–	S 460 MH	–	–	–	S 460 MH	–	S 460 MH	–	–	–	1.8849	–
–	S 460 MLH	–	–	–	S 460 MLH	–	S 460 MLH	–	–	–	1.885	–
–	FStE 355 OS 4/ S420G5Q	–	–	–	S 420 G 2	–	–	–	–	–	1.8853	–
–	P 550 QL	–	–	–	P 550 QL	–	–	–	–	–	1.8878	–
–	StE 460	S 460 N	–	–	S 460 N	E 460	S 460N	–	–	–	1.8901	–
A 633 Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E 420 KG	2143	–	–	1.8902	–
–	TStE 460	S 460 L	–	–	S 460 NL	E460	S 460 NL	–	–	–	1.8903	–
–	S 550 Q	–	–	–	S 550 Q	E 550	S 550 Q	–	–	–	1.8904	–
A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143	–	–	1.8905	–
–	BGH 8906	55 F	–	–	S 460 QL	S 460 QL	S 460 QL	–	–	–	1.8906	–
–	St E 500	–	SM 58	K02001	–	–	–	–	–	–	1.8907	–
–	S 460 Q	55 F	–	–	S 460 Q	E 460	S 460 Q	–	–	–	1.8908	–
–	S 420 NL/TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	–	–	–	1.8912	–
–	EStE 420/ S420NL1	–	STK 540	–	–	–	–	–	–	–	1.8913	–
–	S 620 Q	–	–	–	S 620 Q	E 620	S 620 Q	–	–	–	1.8914	–
–	T St E 460/ P460NL1	P 460 NL 1	–	K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	–	–	–	1.8915	–
–	S 460 QL1	55 F	–	–	S 460 QL 1	–	–	–	–	–	1.8916	–
–	T St E 500	–	–	K02001	–	E 500 T-I	–	–	–	–	1.8917	–
–	EStE 460/ P460Nl2	P 460 NL 2	–	–	P 460 NL 2	P 460 NL 2	P 460 NL 2	–	–	–	1.8918	–
–	EStE 500/ S500NL1	–	–	–	S 500 NL 1	–	–	–	–	–	1.8919	–
–	TStE 690 VB/ S690G2QL	–	–	K11646	S 690 G 2 QL	–	–	–	–	–	1.8921	–
–	S 690 G 4 QL/ TStE 690 VC	–	–	–	S 690 G 4 QL	–	–	–	–	–	1.8922	–
–	S 590 QL/TStE 590 V	–	–	–	S 590 QL	–	–	–	–	–	1.8923	–
–	S 500 Q (StE 500 V)	–	–	–	S 500 Q	E 500	S 500 Q	2614	–	–	1.8924	–
–	S 890 QL 1 (EStE 90 V)	–	–	–	S 890 QL 1	–	–	–	–	–	1.8925	–
–	S 690 QL (TStE 690 V)	–	SHY 685 NS	–	S 690 QL	–	–	–	–	–	1.8928	–
–	TStE 690 VD/ S690G3QL	–	–	–	S 690 G 3 QL	–	–	–	–	–	1.8929	–
–	S 690 Q/StE 690 V	–	SHY 685 N	–	S 690 Q	E 690	S 690 Q	–	–	–	1.8931	–
–	WSt E 420/ P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	–	–	–	1.8932	–
–	S 960 QL/TStE 960 V	–	–	–	S 960 QL	–	–	–	–	–	1.8933	–
–	WSt E 460/ P460NH	P 460 NH	–	K02900	P 460 NH	P 460 NH	Fe E 460 KW	–	–	–	1.8935	–
–	P420 QH	–	–	–	P 420 QH	–	–	–	–	–	1.8936	–
–	TStE 770 V/ S770QL	–	–	–	S 770 QL	–	–	–	–	–	1.8938	–
–	EStE 790 V/ S790QL1	–	–	–	S 790 QL 1	–	–	–	–	–	1.8939	–
–	S 960 Q	–	–	–	S 960 Q	E 960 T-II	S 960 Q	–	–	–	1.8941	–
–	S 550 G 1 QL 1/ EStE 550 VA	–	–	–	S 550 G 1 QL 1	–	–	–	–	–	1.8944	–
–	S 355 J 0 WP	WR 50 A	–	–	S 355 J0 WP	E 36 W-A3	S 355 J0 WP	–	–	–	1.8945	–
–	S 355 J 2 WP	S 355 J 2 WP	–	–	S 355 J2 WP	E36W-A4	S 355 J2 WP	–	–	–	1.8946	–
–	L 415 QB	–	–	–	L 415 QB	L 415 QB	–	–	–	–	1.8947	–
–	L 360 QB	–	–	–	L 360 QB	L 360 QB	–	–	–	–	1.8948	–
–	L 450 QB	–	–	–	L 450 QB	L 450 QB	–	–	–	–	1.8952	–
–	S 460 NH (FGS 47)	–	–	–	S 460 NH	–	S 460 NH	–	–	–	1.8953	–
–	EStE620VA/S 620 G 1 QL 1	–	–	–	S 620 G 1 QL 1	–	–	–	–	–	1.8954	–
–	L 485 QB	–	–	–	L 485 QB	L 485 QB	–	–	–	–	1.8955	–
–	S 460 NLH/FG S 47	–	–	–	S 460 NLH	–	S460NLH	–	–	–	1.8956	–
–	L 555 QB	–	–	–	L 555 QB	L 555 QB	–	–	–	–	1.8957	–
–	9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430	–	–	–	–	–	–	1.8962	–
–	WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2	–	–	–	–	1.8963	–
–	EStE 690 VA	–	–	–	S 690 G1 QL1	–	–	–	–	–	1.8964	–
–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	–	–	–	1.8965	–
–	S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW	–	S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	–	–	–	1.8966	–
–	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	S 355 K2G2W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	–	–	–	1.8967	–
–	QStE 600 TM/S 600 MC	–	–	–	S 600 MC	E 620 D	S 600 MC	–	–	–	1.8969	–
–	StE 415..7/L 415 NB	–	–	–	L 415 NB	L 415 NB	–	–	–	–	1.8972	–
–	StE 415.7 TM/L 415 MB	–	–	–	L 415 MB	L 415 MB	–	–	–	–	1.8973	–
–	S 700 MC (QStE 690 TM)	–	–	–	S 700 MC	E 690 D	S 700 MC	–	–	–	1.8974	–
–	L 450 MB/StE 445.7 TM	–	–	–	L 450 MB	L 450 MB	–	–	–	–	1.8975	–
–	S 650 MC (QStE 650 TM)	–	–	–	S 650 MC	E 620 D	S 650 MC	–	–	–	1.8976	–
–	L 485 MB/StE 480.7 TM	–	–	–	L 485 MB	L 485 MB	–	–	–	–	1.8977	–
–	StE 550.7 TM/L 555 MB	–	–	–	L 555 MB	L 555 MB	–	–	–	–	1.8978	–

(continued)

P4 Workpiece Materials Listing • Steel • P4 *(continued)*

P4 Alloy Steels and Tool Steels *Content: C>.25%* *Tensile Strength RM (MPa)*: 850–1400* *Hardness (HB): 350–450 (HRC): 35–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 570 Gr. 50	St 50-2	4360-50 B	SS 50	–	E 295	A 50-2	Fe 490	2172	–	–	1.0050	–
–	St 60-2	4360-55 E	SM 58	–	E 335	A 60-2	Fe 60-2	1650	–	–	1.0060	–
–	St 70-2	E 360	–	–	E 360	A 70-2	Fe 70-2	1655	–	–	1.0070	–
–	C4D	–	–	–	C 4 D	FM 5	C 4 D	–	–	–	1.0300	–
–	C 22 8	–	–	–	P 250 GH	–	–	–	–	–	1.0460	–
–	H 260/ZSt E 260	H 240 LA	–	–	H 240 LA	E 240 C	–	–	–	–	1.0480	–
–	ZStE 380/H 380	H 360 L A	–	–	H 360 LA	E 355 C	–	–	–	–	1.0550	–
–	GL-E - 40 (S 390 G 3 S)	–	–	–	S 390 G 3 S	–	–	–	–	–	1.0560	–
–	C60D	–	–	–	C 60 D	FM 60	C 60 D	–	–	–	1.0610	–
–	C 64/64 Mn 3	–	–	–	C 64	–	–	–	–	–	1.0640	–
–	38 SMn 28	38 SMn 28	–	–	38 SMn 28	38 SMn 28	–	–	–	–	1.0760	–
–	QSt E 260 TM/5260 MC	–	–	–	S 260 MC	41 S 7	Fe E 275 TM	–	–	–	1.0970	–
–	C3D2	–	–	–	C 3 D 2	FM 5	C 3 D 2	–	–	–	1.1110	–
1330	28 Mn 6	150 M 28	SCMn 1	G 13300	28 Mn 6	35 M 5	C 28 Mn	–	–	–	1.1170	–
–	C 42 E Al/Ck 42 Al	–	–	–	S 355 G15	–	–	–	–	–	1.1190	–
–	C56D2/D 55-2	–	–	–	C 56 D 2	FM 56	C 56 D 2	–	–	–	1.1220	–
–	C 70 W1	–	–	–	CT 70	C 70 E 2 U	C 70 K U	–	–	–	1.1520	–
–	C 70 W2	–	–	–	C 70 U	–	–	–	–	–	1.1620	–
–	C 45 W	–	–	–	C 45 U	Y3 42	–	–	–	–	1.1730	–
–	C 60 W	–	SK 7	–	–	Y3 55	–	–	–	–	1.1740	–
–	100 CrMn 6	–	–	K19195	100 CrMn 6	100 CM 6	–	–	–	–	1.3520	–
–	28 B 2	–	SWRCHB 26	–	C 30 B	20 B 3	–	–	–	–	1.5510	–
5130	28 Cr 4	530 A 30	–	G51300	28 Cr 4	30 CD 4	–	–	–	–	1.7030	–
–	S 420 G1 M	–	–	–	P 550 M	–	–	–	–	–	1.8830	–
–	St E 380	–	SM 50 B	–	S 380 N	–	Fe E 390 KG	–	–	–	1.8900	–
–	TStE 380/ S380NL	–	–	–	S 380 NL	–	Fe E 390 KT	2117	–	–	1.8910	–
–	TStE 690 VA/ S690G1QL	–	–	–	S 690 G 1 QL	–	–	–	–	–	1.8920	–
–	WSt E 380/ P380Nh	–	–	–	P 380 NH	–	Fe E 390 KW	2116	–	–	1.8930	–
–	S 890 Q	–	–	–	S 890 Q	S 890 Q	S 890 Q	–	–	–	1.8940	–

P5 Workpiece Materials Listing • Steel • P5

P5 Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 600–900* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
410 S	X 7 Cr 14	–	–	–	–	–	–	–	–	–	1.4001	–
405	X 6 CrAl 13	405 S 17	SUS 405	S40500	X 6 CrAl 13	Z 6 CA 13	X 6 CrAl 13	2302	–	–	1.4002	–
–	X 2 CrNi 1 2	–	–	–	Hyfab3/12	CLC4003	F12N(Mn<1,50)	–	–	–	1.4003	–
416	X 12CrS 13	416 S 21	SUS416	S41600	X 12 CrS 13	Z 12 CF 13	X12CrS13	2380	–	–	1.4005	ATI 416™
410	X 12Cr 13	410 S 21	SUS410	S 41000	(X 12 Cr 13 KD)	Z 12 C 13	X12Cr13	2302	–	–	1.4006	ATI 410™
414	GX 8 CrNi 1 3	410 C 21	SCS 1	S41400	GX 7 CrNiMo 12-1	Z 12 CN 13 M	GX 12 Cr 13	–	–	–	1.4008	–
–	X 8 Cr 14	–	SUS Y 410	S41080	X 8 Cr 13 KE	–	–	–	–	–	1.4009	B13Fe
–	GX 12 Cr 1 2	–	–	–	GX12Cr12	GX12Cr12	–	–	–	–	1.4011	–
–	N 3 2 0 (LW)	–	–	–	3S62	–	–	–	–	–	1.4014	–
–	X 8 Cr 18	–	SUS Y 430	S43080	–	–	–	–	–	–	1.4015	B17Fe
430	X 8 Cr 17	430 S 15	SUS430	S 43000	X 8 Cr 17	Z8C17	X8Cr17	2320	–	–	1.4016	ATI 430™
–	X 6 CrNi 17 1	–	–	–	X6CrNi17-1	F17N	X6CrNi17-1	–	–	–	1.4017	–
420	X20Cr13	420 S 37	SUS 420J1	S42000	X 20 Cr 13	Z20C13	X20Cr13	2303	–	–	1.4021	ATI 420™
403	X 15 Cr 13	420 S 29	SUS 410 J1	J91201	X 15 Cr 13	Z 12 C 13 M	X 12 Cr 13	2301	–	A403M	1.4024	ATI 403™
–	GX 20 Cr 1 4	420 C 29	SCS 2	–	–	Z 20 C 13 M	–	–	–	A743-4	1.4027	–
420	X 40 Cr 13	–	SUS 420 J2	S42080	X 40 Cr 13	Z 40 C 14	X 40 Cr 14	2304	–	–	1.4031	–
–	GX 120 Cr 29	425 C 11	–	–	–	–	–	–	–	F30C	1.4086	–
430 F	X 12 CrMoS 17	441 S 29	SUS 430 F	S 43020	X 14 CrMoS 17	Z 10 CF 17	X 10 CrS 17	2383	–	–	1.4104	–
430	X 4 CrMoS 18	–	SUS 430F	–	X 6 CrMoS 17	Z 6 CDF 18 - 02	–	–	–	–	1.4105	–
–	X 2 CrMoSiS 18 2 1	–	–	J91151	–	–	–	–	–	CA15	1.4106	–
–	GX 8 CrNi 1 2	–	–	–	GX 8 CrNi 12	GX8CrNi 12	G X 8 CrNi 12	–	–	–	1.4107	–
434	X 6CrMo 17	434 S 17	SUS434	S43400	434S17	Z8CD17-01	X8CrMo17	2325	–	–	1.4113	AL 434
–	X 15 CrMo 13	–	–	–	–	–	–	–	–	–	1.4119	–
–	GX 70 CrMo 29 2	–	–	–	–	Z 60 CD 29.2 M	–	–	–	–	1.4136	–
–	X 2 CrNi 24 12	309 S 93	–	–	X 2 CrNi 24 13 KE	Z 2 CN 24-14	–	–	–	–	1.4332	CN23/12-IG
–	X 5 NiCr 32 21	–	–	S33200	–	–	–	–	–	B536	1.4333	H521
–	GX 5 CrNiMo 16 5	–	–	–	GX 4 CrNiMo 16-5-1	GX4CrNiMo 16-5-1	G X 4 CrNiMo 16-5-1	–	–	–	1.4405	–
–	ERO 4411 A	–	–	–	GX 4 CrNiMo 16-5-2	GX 4 CrNiMo 16-5-2	–	–	–	–	1.4411	–
–	X 38 CrMo 14	–	–	–	–	–	–	–	–	–	1.4419	–
–	X 8 CrTi 18	–	–	–	X 6 Cr 18 KE	–	–	–	–	–	1.4502	–
430 Nb	X 6 CrNb 17	–	SUS 430 LX	–	X 3 CrNb 17	Z 8 CNb 17	X 6 CrNb 17	–	–	–	1.4511	AXC525
409	X 6 CrTi 12	409 S 19	SUH 409	S40900	X 5 CrTi 12	Z 6 CT 12	X 6 CrTi 12	–	–	–	1.4512	–
–	X 6 CrNiTi 12	–	–	–	X 6 CrNiTi 12	X 6 CrNiTi 12	X 6 CrNiTi 12	–	–	–	1.4516	–
–	X 2 CrTi 17	–	SUS 430 LX	–	X 2 CrTi 17	F 20T	X 2 CrTi 17	–	–	–	1.4520	–
–	X 8 CrMoTi 17	–	–	–	X 2 CrMoTiS 18 2	X2CrMoTiS18-2	–	–	–	–	1.4523	1802
–	GX 5 CrNiCu 16 4	–	–	–	GX 5 CrNiCu 16-4	GX 5 CrNiCu 16-4	–	–	–	–	1.4525	–
–	X 6 CrMoNb 17 1	–	–	–	X 6 CrMoNb 17-1	X6CrMoNb 17-1	F 17 MNb	–	–	–	1.4526	–
904 L	X 1 NiCrMoCuN 25 20 5	904 S 13	–	N08904	X 1 NiCrMoCuN 25 20 5	Z 1 NCDU 25 20	–	2562	–	–	1.4539	ATI 904L™
348	X 5 CrNiNb 18 10	S 527	–	J92640	–	–	X 6 CrNiNb 18 11	–	–	–	1.4546	ATI 348™
–	X 5 CrNiNb 19 9	–	SUS Y 347	S34780	X 5 CrNiNb 20 10 KE	Z 6 CNNb 20-10	–	–	–	–	1.4551	–
–	GX 7 NiCrMoCuNb 42 20	–	–	–	GX 7 NiCrMoCuNb 4220	–	–	–	–	–	1.4559	–
–	X 5 CrNiMoNb 19 12	318 S 96	–	S31980	X 5 CrNiMoNb 19 12 03 KE	Z 4 CNDSNb 19-12-03	–	–	–	–	1.4576	–
–	X 2 CrAlTi 18 2	–	–	–	X 2 CrAlTi 18-2	DMV 59	X 2 CrAlTi 18-2	–	–	–	1.4605	–
–	X 10 CrAl 7	–	–	–	X 10 CrAl 7	–	–	–	–	–	1.4713	–

NOTE: For legend, see page Y237.

(continued)

P5 ■ Workpiece Materials Listing • Steel • P5 *(continued)*

P5 Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 600–900* *Hardness (HB): <330 (HRC): <35*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 215 Cr 12	–	–	–	–	–	–	–	–	–	1.4721	–
H-12	X 10 CrAl 13	BH 12	SUS 405	T20812	X 10 CrAl 13	Z 10 C 13	X 10 CrAl 12	–	–	–	1.4724	–
430	X 10 CrAl 18	(430 S 15)	SUH 21	S43000	–	Z 10 CAS 18	(X 8 Cr 17)	–	–	–	1.4742	–
446	X 10 CrAl 25	–	SUH 442	S44600	X 10 CrAl 24	Z 10 CAS 24	X 16 Cr 26	2322	–	–	1.4762	–
–	GX 40 CrNiSi 27 4	–	–	J92605	–	–	–	–	–	–	1.4823	–
–	X 12 CrNi 22 12	311 S 94	SUS Y 309	S30980	X 15 CrNi 23 13	–	X 16 CrNi 23 14	–	–	309	1.4829	–
–	X 9 CrNiSiNCe 21 11 2	–	–	–	X 9 CrNiSiNCe 21-11-2	–	–	–	–	–	1.4835	–
314	X 15 CrNiSi 25 20	314 S 25	SUH 310	S31400	X 15 CrNiSi 25 20	Z 15 CNS 25.20	X 16 CrNiSi 25 20	–	–	–	1.4841	Cronifer® 2520
–	X 12 CrNi 25 20	310 S 94	–	S31080	X 12 CrNi 26 21 KE	Z 12 CN 26-21	–	–	–	–	1.4842	–
–	CrNi 25 20	–	SCS 18	S31400	–	–	–	–	–	–	1.4843	–
310 S	X 12 CrNi 25 21	310 S 24	SUS 310 S	S31008	X 8 CrNi 25 21	Z 12 CN 25.20	X 6 CrNi 25 20	2361	–	–	1.4845	ATI 310S™
HK	X 40 CrNiSi 25 20	310 C 40	SCH 21	J94204	–	–	GX 40 CrNi 26 20	–	–	–	1.4848	–
–	GX 40 NiCrSiNb 38-18	–	–	–	3072.76	–	–	–	–	–	1.4849	–
–	GX 10 NiCrNb 32 20	–	–	J95151	–	–	–	–	–	–	1.4859	–
330	X 12 NiCrSi 35 16	NA 17	SUH 330	N08330	X 12 NiCrSi 35 1 6	Z 12 NCS 37.18	–	–	–	–	1.4864	–
–	X40NiCrSi38-18	330 C 40	SCH15/SCH16	J94605	330C11/330C40/331C40	–	GX50NiCr39-19	–	–	–	1.4865	–
–	GX 50 CrNi 30-30	–	–	N08801	–	Z5NCT3220	–	–	–	–	1.4868	–
B163	X 10 NiCrAlTi 32 20	NA 15	NCF800(TP)	–	NA15(H)	Z10NC32.21	–	–	B163	–	1.4876	B163
–	X 6 NiCrNbCe 32 27	–	–	–	X 6 NiCrNbCe 32-27	–	–	–	–	–	1.4877	–
–	X 12 NiCrSi 35 19	–	–	N08830	X1 0 NiCrSi 35 19	–	–	–	–	–	1.4886	330
–	X 10 NiCrSiNb 35 22	–	–	–	X10NiCrSiNb35-22	–	–	–	–	–	1.4887	–
–	X 10 CrMoV 9 1	–	–	S59180	X 10 CrMoV 9-1	–	–	–	–	–	1.4903	–
–	X 20 CrMoV 12 1	–	–	–	X 20 CrMoV 11-1	–	X 20 CrMoV 12 01 KW	2317	–	–	1.4922	–
–	GX 22 CrMoV 12 1	–	–	–	G-X 22 CrMoV 12 1	GX23CrMoV12-1	G X 23 CrMoV 12-1	–	–	–	1.4931	–
422	X 20 CrMoWV 12 1	–	SUH 616	S42200	–	–	X 22 CrMoWV 12 1	–	–	–	1.4935	–
661	X 12 CrCoNi 21 20	–	SUH 661	R30155	–	–	–	–	–	–	1.4971	–
R30155	X 12 CrCoNiMoWNb 21 20 20	–	–	R30155	X 12 CrCoNiMoWNb 21 20 20	Z 12 CKNDWNb 21.20.20	N-155	–	–	–	1.4974	–
–	X 40 CoCrNi 20 20	–	–	–	–	Z 42 CNKDWNb	–	–	–	–	1.4977	–
403	X 6 Cr 13	403 S 17	SUS 403	S 40300	X 6 Cr 13	Z 6 C 13	X 6 Cr 13	2301	–	A240	1.4000	ATI 410S™
439	X 6 CrTi 17	–	SUS 430 LX	S 43035	X 8 CrTi 1 7	Z 8 CT 1 7	X 6 CrTi 17	–	–	–	1.4510	430 Ti
–	X 22 CrMoV 1 -1 = ST12T	–	–	–	–	–	–	–	–	A437-76 Grade B4B	–	ATI FV448™
409 Cb	–	–	–	–	–	–	–	–	–	–	–	ATI 409Cb™
436 S	–	–	–	–	–	–	–	–	–	–	–	ATI 436S™
439 HP	–	–	–	S43035	–	–	–	–	–	–	–	ATI 439 HP™
441 HP	–	–	–	–	–	–	–	–	–	–	–	ATI 441 HP™
–	–	–	–	S44735	–	–	–	–	–	A240	–	AL 29-4C®
–	–	–	–	–	–	–	–	–	–	B625	–	ATI E-BRITE®
403Cb	–	–	–	–	–	–	–	–	–	–	–	T656
420 modified	–	–	–	–	–	–	–	–	–	–	–	Stavax ESR
–	–	–	–	–	–	–	–	–	–	–	–	420HC
–	–	–	–	–	–	–	–	–	–	–	–	CPM 154
–	–	–	–	–	–	–	–	–	–	–	–	CPM® S30V®
–	–	–	–	–	–	–	–	–	–	–	–	CPM® S35VN®
420 V	–	–	–	–	–	–	–	–	–	–	–	CPM® S90V®
–	–	–	–	–	–	–	–	–	–	–	–	M390
422	–	–	–	S42200	–	–	–	–	–	–	–	616

P6 Workpiece Materials Listing • Steel • P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels *Tensile Strength RM (MPa)*: 900–1350*
Hardness (HB): 350–450 (HRC): 35–48

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	17-7 PH	301 S 81	SUS 631	S17700	X 7 CrNiAl 17-7	X7CrNiAl17-7; Z9CNA17-07	X 7 CrNiAl 17-7	2388	–	A693	1.4564	ATI 17-7™
–	GX 22 CrNi 17	ANC 2	–	J91803	–	Z 20 CN 17.2 M	–	–	–	CB30	1.4059	–
–	GX 30 CrSi 6	–	–	–	–	–	–	–	–	–	1.4710	–
–	GX 4 CrNi 13 4	–	–	–	GX 4 CrNi 13-4	GX 4 CrNi 13-4	GX 4 CrNi 13-4	–	–	–	1.4317	–
–	GX 40 CrSi 17	–	–	–	–	–	GX 35 Cr 17	–	–	–	1.4740	–
–	GX 40 CrSi 24	–	SCH 1	–	–	–	GX 35 Cr 13	–	–	–	1.4745	–
–	GX 40 CrSi 28	452 C 11	SCH 2	J92605	–	–	GX 35 Cr 28	–	–	CC50	1.4776	–
–	X 105 CrCoMo 18 2	–	–	–	–	–	–	–	–	–	1.4528	N690
440 C	X 105CrMo 17	–	SUS 440C	S44004	X 105 CrMo 17	Z 100 CD 17	X 105 CrMo 17	–	–	–	1.4125	ATI 440C™
–	X 110 CrMoV 15	–	SUS 430 LX	–	–	Z 4 CN b 17	X 6 CrNb 17	–	–	–	1.4111	–
5718.9	X 12 CrNiMo 12	S.151	–	S64152	–	Z12CNDV12	–	–	–	–	1.4939	ATI Jethete™ M152
–	X 12 CrNiMoV 12 3	–	–	–	X 12 CrNiMoV 12-3	X 12 CrNiMoV 12-3	–	–	–	–	1.4938	T522
–	X 15 TN	–	–	–	420S25	Z40CDV16-02	X40CrMoVN16-2	–	–	F899	1.4123	X 15 TN
15-5 PH	X 15 U 5 W	–	–	S15500	–	Z6CNU15.05	–	–	–	A564/ A693/A705	1.4545	ATI 15-5™
–	X 19 CrMoNbVN 11 1	–	–	–	–	Z 21 CDNbV 11	–	–	–	–	1.4913	Jethete X19
431	X 19 CrNi 17 2	431 S 29	SUS 431	S 43100	X 19 CrNi 17 2	Z 15 CN 16.02	X 16 CrNi 16	2321	–	–	1.4057	431 (HT)
–	X 20 CrMo 17 1	–	–	–	–	–	–	–	–	–	1.4115	B17MoFe
420F Mod	X 22 CrMoNiS 13 1	–	–	–	–	–	–	–	–	–	1.4121	Bioline 4C27A
–	X 22 CrMoV 12 1	762	–	–	X 22 CrMoV 12-1	Z 21 CDV 12	X 22 CrMoV 12 1	–	–	–	1.4923	Jethete X20
420	X 29 CrS 13	416 S 37	SUS 416	–	X 29 CrS 13	Z29CF13	X 29 CrS 13	–	–	–	1.4029	–
–	X 3 CrNiCuTi 12 9	–	–	S45500	–	–	X 6 CrNiNb 18 11	–	–	–	1.4543	ATI 455™
13-8 PH	X 3 CrNiMoAl 13 8 2	–	–	S13800	–	Z4 CNDAT 13 09	–	–	–	–	1.4534	ATI 13-8Mo™
420 F	X 30 Cr 13	420 S 45	SUS420J2	S42020	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	2304	–	CA40	1.4028	–
–	X 30CrMoN 15 1	–	–	–	420S45	Z33C13	–	2304	–	–	1.4108	N360
–	X 35 CrMo 17	–	–	–	X 39 CrMo 17 1	X39CrMo17-1	X 35 CrMo 17	–	–	–	1.4122	–
–	X 4 CrNiCuNb 16 4	–	–	J92200	–	Z 4 CNUNb 16.4 M	–	–	–	–	1.4540	–
415 M	X 4 CrNiMo 16 5 1	–	–	–	X 4 CrNiMo 16 5 1	Z 6 CND 16.05.01	–	2387	–	–	1.4418	APX4
–	X 40 CrNi 25 21	310 S 98	SCH 13	–	–	–	–	–	–	–	1.4846	–
–	X 40 CrSiMo 10 2	–	SUH3	–	X 40 CrSiMo 10-2	Z40CSD10	–	–	–	–	1.4731	–
420	X 45 Cr 13	(420 S45)	–	–	X 45 Cr 13	Z 40 C 14	X 40 Cr 14	–	–	–	1.4034	–
–	X 45 CrMoV 15	–	–	–	X 50 CrMoV 15	Z 50 CD 15	X 50 CrMo V 15	–	–	–	1.4116	UGI 4116N
HNV3	X 45 CrSi 9 3	–	SUH1	–	401S45	Z45CS9	X45CrSi8	–	HNV3	–	1.4718	–
HNV 2	X 45 SiCr 4	–	–	S64006	–	–	–	–	–	–	1.4704	–
CA 6-NM	X 5 CrNi 134	425 C 11	SCS 5	J91540	X 3 CrNiMo 13 4	Z 4 CDN 13.4	X 6 CrNi 13 04	2385	–	–	1.4313	–
630	X 5 CrNiCuNb 16 4	–	SUS 630	–	X 5 CrNiCuNb 16-4	Z6CNU17.04	–	–	–	CB7Cu	1.4542	UGIMA® 4542
17-4 PH	X 5 CrNiCuNb 17 4 4	–	SUS 630	S17400	X 5 CrNiCuNb 16-4	X5CrNiCuNb16.4	–	–	–	A693	1.4548	–
–	X 5 CrNiMoCuNb 14 5	–	–	–	X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCuNb 14-5	–	–	–	1.4594	–
–	X 50 CoCrNi 20 20	–	–	–	–	–	–	–	–	–	1.4978	–
EV8	X 53 CrMnNiN 2 9	349 S 54	SUH35/SUH36	S63008	349S54	Z52CMN21.09	X53CrMnNiN21-9	–	EV8	–	1.4871	–
–	X 55 CrMo 14	–	–	–	–	Z 50 CD 13	–	–	–	–	1.4110	–
–	X 60 CrMnMoVNbN 21 10	–	–	–	–	Z 60 CMDVNb 21-10 Az	–	–	–	–	1.4785	–
440 A	X 65 CrMo 14	–	SUS 440A	S44002	X 70 CrMo 15	Z 70 CD 14	–	–	–	–	1.4109	ATI 440A™
–	X 7 CrNiAl 17 7	301 S 81	SUS 631	S17700	X 7 CrNiAl 17-7	X7CrNiAl17-7;Z9CNA17-07	X 7 CrNiAl 17-7	2388	–	A693	1.4568	–
632	X 7 CrNiMoAl 15 7	–	–	S15700	–	–	–	–	–	–	1.4574	PH 15-7 Mo®
–	X 8 CrCoNiMo 10 6	Z 9 CKD 11	–	–	S152	Z10CKD10	–	–	–	–	1.4911	ATI FV535™
15-7 PH	X 8 CrNiMoAl 15 7 2	–	–	S15700	X 8 CrNiMoAl 15-7-2	Z8CNDA15.07	X 8 CrNiMoAl 15-7-2	–	–	A693	1.4532	ATI 15-7™
HNV 6	X 80 CrNiSi 20	443 S 65	SUH 4	S65006	X 80 CrNiSi 20	Z 80 CSN 20.02	X 80 CrSiNi 20	–	–	–	1.4747	–
–	X 85 CrMoV 18 2	–	–	–	X 85 CrMoV 18 2	Z 85 CDMV 18.02	X 85 CrMoV 19 3	–	–	–	1.4748	–
440 B	X 90 CrMoV 18	409 S 1 9	SUS 440 B	S44003	X 90 CrMoV 18	Z 3 CT 1 2	X 6 Cr Ti 1 2	–	–	–	1.4112	–
–	X45CrNiW18-9	331 S 40	SUH31	–	X 45 CrNiW 18 9	Z35CNWS14.14	X45CrNiW18-9	–	–	–	1.4873	–

NOTE: For legend, see page Y237.

M1 Workpiece Materials Listing • Stainless Steel • M1

M1 Austenitic Stainless Steel *Tensile Strength RM (MPa)*: <600* *Hardness (HB): 130–200*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
CF-8	X 6 CrNi 18 9	304 C 15	SCS 13	–	X 2 CrNiN 18 7	Z 6 CN 18.10 M	G X 5 CrNi 19-10	2333	–	CF8	1.4308	CF-8
–	X 2 NiCr 18 16	–	–	–	–	Z 3 CDT 18-02	–	–	–	–	1.4321	–
–	X 1 CrNi 25 21	–	–	–	X 1 CrNi 25 21	X1CrNi25-21	X 1 CrNi 25-21	–	–	–	1.4335	Uranus 65
610	X1CrNiSi 18-15-4	–	–	S30600	X 1 CrNiSi 18-15-4	Z1 CNS 17.5	X 1 CrNiSi 18-15-4	–	–	A240-97A	1.4361	ATI 610™
CF-8M	X 6 CrNiMo 18 10	316 C 16	SCS 14	J92900	GX 5 CrNiMo 19-11-2	GX5CrNiMo 19-11-2	G X 5 CrNiMo 19-11-2	2343	–	–	1.4408	–
–	GX 2 CrNiMo 19 11 2	–	–	–	GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	–	–	–	1.4409	–
–	ER0 4412 AHMo	–	–	J92900	GX 5 CrNiMo19-11-3	GX 5 CrNiMo 19-11-3	–	–	–	A743CF8M	1.4412	–
–	ER0 4416 AHCRMo	–	–	–	GX 2 NiCrMoN 25-20-5	GX2NiCrMoN 25-20-5	–	–	–	–	1.4416	–
–	GX 6 CrNiMo 18 12	317 C 12	–	–	–	–	–	–	–	–	1.4437	–
–	X 2 CrNiMo 18 16 5	–	–	S31780	–	–	–	–	–	–	1.4440	–
–	GX 2 CrNiMoN 17 1 3 4	–	–	–	GX 2 CrNiMoN 17 1 3 4	–	–	–	–	–	1.4446	–
–	GX 6 CrNiMo 17 13	317 C 16	–	J93000	–	–	–	–	–	CG8M	1.4448	–
–	GX 2 NiCrMo 28 20 2	–	–	–	GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	–	–	–	1.4458	–
–	GX 4 NiCrCuMo 30 20 4	–	–	–	GX 4 NiCrCuMo 30-20-4	GX 4 NiCrCuMo 30-20-4	–	–	–	–	1.4527	–
–	GX 5 CrNiNb 18 9	347 C 17	SCS 21	J92710	GX 5 CrNiNb 19-11	Z 4 CNNb 19.10 M	G-X 5 CrNiNb 19-11	–	–	–	1.4552	–
–	GX 2 CrNiMoCuN 20 18 6	–	–	–	GX 2 CrNiMoCuN 20-18-6	GX 2 CrNiMoCuN 20-18-6	–	–	–	–	1.4557	–
–	X 3 CrNiCuMo 17 11 3 2	–	–	–	X 3 CrNiCuMo17 11 3 2	X3CrNiCuMo 17-11-3-2	X 3 CrNiCuMo 17-11-3-2	–	–	–	1.4578	–
–	GX 5 CrNiMoNb 18 10	318 C 17	SCS 22	–	GX 5 CrNiMoNb 19-11-2	Z 4 CNDNb 18.12 M	GX 6 CRNOMONB 20 11	–	–	–	1.4581	–
–	GX 2 NiCrMoCu 25 2 0 5	–	–	–	GX 2 NiCrMoCu 25-20-5	GX 2 NiCrMoCu 25-20-5	–	–	–	–	1.4584	–
–	GX 7 CrNiMoCuNb 18 18	–	–	J94651	–	–	–	–	–	–	1.4585	–
–	GX 2 NiCrMoCuN 29 25 5	–	–	–	GX 2 NiCrMoCuN 29-25-5	GX 2 NiCrMoCuN 29-25-5	–	–	–	–	1.4587	–
–	GX 2 NiCrMoCuN 25 20 6	–	–	–	GX 2 NiCrMoCuN 25-20-6	GX 2 NiCrMoCuN 25-20-6	–	–	–	–	1.4588	–
–	GX 25 CrNiSi 18 9	302 C 35	–	J92602	–	–	G X 16 CrNi 20 10	–	–	CF20	1.4825	–
–	GX 40 CrNiSi 22 9	–	SCH 12	J92603	–	–	–	–	–	–	1.4826	–
–	GX 50 CrNiNb 25 22	–	–	–	–	–	–	–	–	–	1.4836	–
–	GX 40 CrNiSi 25 12	309 C 30	SCS 17	J93503	–	–	GX 35 CrNi 25 12	–	–	CE30	1.4837	–
334	X 8 CrNiAlTi 20 20	–	–	S33400	–	–	–	–	–	–	1.4847	ATI 334™
–	GX 40 NiCrSiNb 38 18	–	–	N08004	–	–	–	–	–	–	1.4849	–
–	GX 40 NiCrSiNb 35 25	–	–	–	–	–	–	–	–	–	1.4852	–
–	GX 40 NiCrSi 35 25	–	–	J95705	–	–	GX 50 NiCr 35 25	–	–	–	1.4857	–
105 MA	BGH 4892	–	–	–	–	–	–	–	–	–	1.4892	–
–	X 3 CrNi 18 11	–	–	–	–	–	X 2 CrNiN 18 11	–	–	–	1.4949	–
–	X 2 CrNiMo 19 12	316 S 93	–	S31683	x 2 CrNiMo 19 13 03 KE	Z 2 CND 19-12-03	–	–	–	–	1.4430	–
–	GX 7 NiCrMoCuNb 25 20	–	SCS 23	J95150	10.204.3.1B	Z 3 NCDU 25.20 M	GX 5 NiCrCuMo 29 21	–	–	–	1.4500	–
–	X 3 CrNiCu 19 9 2	–	–	–	S 124 M	PHYHQ 4560	304 RH1	–	–	–	1.4560	ACX276
–	–	–	–	S63198	–	–	–	–	19-9 DL	–	–	19-9 DL
–	X 2 CrNiMoN 17 13 3	–	–	–	–	Z 2 CND 17.13	X 2 CrNiMoN 17 13 3	–	–	–	–	–
332	–	–	–	N08800	–	–	–	–	–	–	–	ATI 332™
–	–	–	–	N08367	–	–	–	–	–	–	–	AL-6XN®
611	–	–	–	S30601	–	–	–	–	–	A240-97A	–	ATI 611™

M2 Workpiece Materials Listing • Stainless Steel • M2

M2 High-Strength Austenitic Stainless and Cast Stainless Steels *Tensile Strength RM (MPa)*: 600–800*
Hardness (HB): 150–230 (HRC): <25

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
304 H	X 5 CrNi 18 10	304 S 15	SUS 304	S30409	X 6 CrNi 18 10 KD	Z 6 CN 18.09	X 5 CrNi 18 10	2332	–	–	1.4301	–
–	X 5 CrNi 19 9	308 S 96	–	S30888	X 6CrNi 20 10 KE	–	–	–	–	–	1.4302	–
305	X 4 CrNi 18 12	305 S 19	SUS 305	S30500	X 4 CrNi18 12 KD	Z 5 CN 18.12	X 4 CrNi 19 10	–	–	–	1.4303	–
303	X 10 CrNiS 18 9	303 S 21	SUS 303	S30300	X 10 CrNiS 18 9	Z 10 CNF 18.09	X 10 CrNiS 18 09	2346	–	–	1.4305	ATI 303™
304 L	X 2 CrNi 19 11	304 C 12	SUS 304L	S30403	X 3 CrNi18 10 KD	Z 2 CN 18.09	GX 2 CrNi 19 10	2352	–	CF3	1.4306	ATI 304L™
304 L	X 2 CrNi 18 9	304 S 11	SUS 304L	–	X 2 CrNi 18 9	CLC18.9.L	X 2 CrNi 18-9	–	–	–	1.4307	–
–	GX 2 CrNi 19 11	304 C 12	–	J92500	GX2CrNi19-11	GX2CrNi19-11	GX2CrNi19-11	2352	–	CF3	1.4309	–
304 LN	X 2 CrNiN 18 10	304 S 62	SUS 304 LN	S30453	X 2 CrNiN 18 10	Z 8 CN 18.12	X 8 CrNi 19 10	2371	–	–	1.4311	–
305	GX 10 CrNi 18 8	302 C 25	SCS 12	–	–	Z 10 CN 18.9 M	–	–	–	–	1.4312	ATI 305™
308 L	X 2 CrNi 19 9	308 S 92	SUS Y 308L	S30883	X 2 CrNi 20 10 KE	Z 2 CN 20.10	–	–	–	–	1.4316	–
–	X 2 CrNiN 18 7	–	–	–	X 2 CrNiN 18-7	18-7L	18-7L	–	–	–	1.4318	–
302	X 10 CrNi 18 9	302 S 26	SUS 302	S20200	302S31	Z10CN18-09	X 10 CrNi 18 09	2330	–	–	1.4319	ATI 302™
301	X 10 CrNi 18 9	302 S 26	–	J92501	X 10 CrNi 18 9	–	–	–	–	–	1.4324	–
–	X 10 CrNi 30 9	312 S 94	–	–	X 12 CrNi 30 09 KE	Z 10 CN 31-10	–	–	–	–	1.4337	–
–	X 3 CrNi 13 4	–	–	S41086	X 3 CrNi 14 04 KE	–	–	–	–	–	1.4351	410NiMo
202	X 3CrMnNiN 18 8 7	–	–	–	284S16	Z8CMN18-08-05	–	–	–	–	1.4371	–
201	X 12 CrMnNiN 17 7 5	284 S 16	SUS 201	–	X 12 CrMnNiN 17-7-5	X 12 CrMnNiN17-7-5	X 12 CrMnNiN 17-7-5	–	–	–	1.4372	ACX060
316	X 5 CrNiMo 17 12 2	316 S 16	SUS 316	S31600	X6 CrNiMo 17 12 2 KD	Z 6 CND 17.11	X 5 CrNiMo 17 12	2347	–	–	1.4401	ATI 316™
316L	X 2 CrNiMo 17 13 2	316 S 12	SUS 316 L	S31603	GX 3 CrNiMo 17 12 2 KD	Z 3 CND 19.10 M	GX 2 CrNiMo 19 11	2348	–	–	1.4404	ATI 316L™
316 LN	X 2 CrNiMoN 17 12 2	316 S 61	SUS 316 LN	S31653	X 3 CrNiMoN 17 12 2	Z 2 CND 17.12 Az	X 2 CrNiMoN 17 12	2353	–	–	1.4406	ATI 316LN™
–	X 5 CrNiMo 13 4	–	–	J91550	–	Z 6 CND 16.05.01	–	–	–	–	1.4407	–
–	X12CrNiMoS18-11	–	–	–	–	Z3CNDF17-13	–	–	–	–	1.4427	Chronifer® Special KL
316L	X 2 CrNiMo 17 12 3	316 S 13	SUS 316L	–	X 2 CrNiMo 17 12 2	Z 3 CND 17-13-30	X 2 CrNiMo 17-12-3	2348/2353/2354	–	–	1.4432	–
–	X 2 CrNiMoN 18 12 4	–	–	–	317 LN	CLC18.12.4.LN	X2CrNiMoN1812-4	–	–	–	1.4434	–
316 L	X 2 CrNiMo 18 14 3	316 S 11	SCS 16	S31603	X 2 CrNiMo 18 16	Z 2 CND 17.13	X 2 CrNiMo 17 13	2353	–	–	1.4435	–
316	X 5 CrNiMo 17 1 3 3	316 S 16	SUS 316	S31600	X6 CrNiMo 18 13 3 KD	Z 6 CND 17.12	X 5 CrNiMo 17 13	2343	–	–	1.4436	–
317 L	X 2 CrNiMo 18 16 4	317 S 12	SUS 317 L	S31703	X 3 CrNiMo 18 16 4	Z 2 CND 19.15	X 2 CrNiMo 18 15	2367	–	–	1.4438	ATI 317L™
–	X 2 CrNiMoN 17 13 5	–	–	–	X 3 CrNiMo 17 13 5	Z 3 CND 18.14-05 AZ	–	–	–	–	1.4439	–
–	X 2 CrNiMo 18 15 4	–	–	S31675	–	X 3 CrNiMoN 19-14	–	–	–	–	1.4442	–
317	X 5 CrNiMo 17 13	317 S 16	SUS 317	S31700	–	–	X 5 CrNiMo 18 15	–	–	–	1.4449	AL 317L+E55
–	X 5 CrNiCuNb 16 4	–	–	–	–	Z7CNU16.04	–	–	–	–	1.4452	–
–	–	–	–	S21904	–	–	–	–	–	A666	1.4454	ATI 219
–	X 2 CrNiMnMoN 20 16	–	–	–	X 2 CrNiMnMoN 20 15 08 KE	–	–	–	–	–	1.4455	–
–	X 1 CrNiMoN 25 2 5 2	–	–	S31050	–	–	–	–	–	–	1.4465	2RE69

(continued)

M2 Workpiece Materials Listing • Stainless Steel • M2 *(continued)*

M2 High-Strength Austenitic Stainless and Cast Stainless Steels *Tensile Strength RM (MPa)*: 600–800*
Hardness (HB): 150–230 (HRC): <25

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 1 CrNiMoN 25 22 2	–	–	–	725 LN	DMV 25.22.2	X 1 CrNiMoN 25-22-2	–	–	–	1.4466	–
–	X 1 NiCrMoCuN 25 20 6	–	–	–	–	–	–	–	–	–	1.4529	Uranus B26 6Mo
–	GX 2 NiCrMoCuN 25 20	–	–	J94650	GX 2 CrNiMoCuN 25-20-6	–	–	–	–	–	1.4536	–
–	X 1 CrNiMoCuN 25 25 5	–	–	–	X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	–	–	–	1.4537	–
321	X 6 CrNiTi 18 10	321 S 12	SUS 321	S32100	X 6 CrNiTi 18 10	Z 6 CNT 18.10	X 6 CrNiTi 18 11	2337	–	–	1.4541	ATI 321™
321	A 700	304 S 31	–	J92630	–	Z 10 CNT 18 11	X 6 CrNiTi 18 11	–	–	–	1.4544	–
–	X 1 CrNiMoCuN 20 18 7	X 1 CrNiMoCuN 20 18 7	–	S31254	X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	–	–	–	1.4547	Uranus B25 6Mo
–	X 2 NiCrAlTi 32 20	–	NCF 800 TB	–	–	–	–	–	–	–	1.4558	–
–	X 1 NiCrMoCuN 31 27 4	–	–	–	X 1 NiCrMoCu 31 27 4	X 1 NiCrMoCuN 31 -27-4	X 1 NiCrMoCuN 31 -27-4	2584	–	–	1.4563	–
–	X 3 CrNiCu 18 9 4	394 S 17	SUS XM7	–	X3CrNiCu18-9-4	304CU	304K	–	–	–	1.4567	–
316 Ti	X 6 CrNiMoTi 17 12 2	320 S 31	SUS 316Ti	–	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17.12	X 6 CrNiMoTi 17 12	2350	–	–	1.4571	ATI 316Ti™
–	GX 5 CrNiMoNb 23 9	–	–	–	–	–	–	–	–	–	1.4572	–
316 Ti	X 10 CrNiMoTi 18 12	320 S 33	SUS 316Ti	S31635	–	–	X 6 CrNiMoTi 17 13	–	–	–	1.4573	–
318	X 10 CrNiMoNb 18 12	–	–	–	–	–	X 6 CrNiMoNb 17 13	–	–	–	1.4583	–
–	X 2 CrNiCu 19 10	–	–	–	X 2 CrNiCu 19-10	TX 304L	–	–	–	–	1.4650	–
–	X1CrNiMoCuN24-22-8	–	–	S32654	–	–	–	–	–	–	1.4652	654 SMO®
–	153 MA	–	–	S30415	X 6 CrNiSiNCe 19 10	–	–	–	–	–	1.4818	153 MA™
–	X 20 CrNiSi 25 4	–	–	S44635	X 15 CrNiSi 25 4	Z 20 CNS 25.04	X 20 CrNiSi 25 4	–	–	–	1.4821	–
309	X 15 CrNiSi 20 12	309 S 24	SUH 309	S30900	X 15 CrNiSi 20 12	Z 15 CNS 20.12	X 16 CrNiSi 25,20	–	–	–	1.4828	ATI 309™
309 S	X 7 CrNi 23 14	309 S 24	SUS 309 S	J93400	X 12 CrNi 23 13	Z 15 CN 24.13	X 6 CrNi 23 14	–	–	–	1.4833	–
–	353 MA	–	–	S35315	X 6 NiCrSiNCe 35-25	–	–	–	–	–	1.4854	353 MA®
–	X 8 NiCrSi 38 18	NA 17	–	N08330	–	Z 12 NCS 37.18	–	–	–	–	1.4862	–
–	X 33 CrNiMnN 23 8	–	–	–	X 33 CrNiMnN 23-8	X 33 CrNiMnN 23-8	–	–	–	–	1.4866	–
EV 12	X 55 CrMnNiN 20 8	–	–	S63012	X 55 CrMnNiN 20-8	Z 55 CMN 20.08 Az	–	–	–	–	1.4875	–
321	X 12 CrNiTi 18 9	321 S 20	SUS 321	S32100	X 10 CrNiTi 18 10	Z 6 CNT 18.12	X 6 CrNiTi 18.11	2337	–	–	1.4878	ACX315
EV 11	X 70 CrMnNiN 21 6	–	–	S63011	–	–	X 70 CrMnNiN 21 6	–	–	–	1.4881	–
–	X 50 CrMnNiNbN 21 9	–	–	–	X 50 CrMnNiNbN 21-9	Z 50 CMNNb 21.09	–	–	–	–	1.4882	–
–	X 7 CrNiNb 18 10	–	SUS347H	S34709	X7CrNiNb18-10	X7CrNiNb18-10	–	–	–	–	1.4912	–
316 H	X 6 CrNiMo 17 13	316 S 51	–	S31609	X 6 CrNiMo 17 12 2	Z 6 CND 17-13 B	–	–	–	–	1.4919	–
321 H	X 8 CrNiTi 18 10	–	–	–	X 6 CrNiTiB 18-10	Z 6 CNT 18-10 B	X 6 CrNiTiB 11	–	–	–	1.4941	–
A660	X 4 NiCrTi 25 15	HR251	SUH 660	S66286	–	Z 6 NCTDV 25.15 B	–	–	–	–	1.4943	Discaloy
–	X 6 CrNiWNb 16 16	–	–	–	–	–	–	–	–	–	1.4945	–
–	X 6 CrNi 18 11	304 S 51	–	S30480	X 6 CrNi 18 10	Z 6 CN 18-09	X 5 CrNi 18 10 KW	2333	–	–	1.4948	–
–	X 6 CrNi 25 20	–	–	–	310 H	–	–	–	–	–	1.4951	–
–	X 8 CrNiNb 16 13	347 S 51	–	–	–	–	–	–	–	–	1.4961	–
–	Esshete12 50	–	–	S21500	X 10 CrNiMoMnNbVB 15-10-1	X 10 CrNiMoMnNbVB 15-10-1	–	–	–	A213	1.4982	Esshete 1250
–	X 8 CrNiMoBNb 16 16	–	–	–	X 7 CrNiMoBNb 16-16	–	–	–	–	–	1.4986	–
301	X 12 CrNi 17 7	301 S 21	SUS 301	S30100	X 12 CrNi 17 7	Z 12 CN 17.07	X 12 CrNi 17 07	2331	–	–	1.4310	ATI 301™
–	GX 40 CrNi 27 4	–	–	J92615	–	–	GX 35 CrNi 28 05	–	–	–	1.4340	–
304	X 5 CrNi 18 9	304 S 31	SUS 304	S30400	1	Z6CN18.09	X5CrNi1810	2332/2333	–	A276	1.4350	ATI 304™
–	X 15 CrNiMn 18 8	307 S 98	–	–	X 15 CrNiMn 18 08 KE	Z 8 CNM 19-09-07	–	–	–	–	1.4370	–
S32750	GX 10 CrNiMo 18 9	–	SCS 14 A	S32750	X 2 CrNiMoN 25-7-4	Z 5 CND 20.10 M	X 2 CrNiMoN 25-7-4	–	–	–	1.4410	–
–	X 5 CrNiMo 18 11	315 S 16	–	–	–	–	–	2340	–	–	1.4420	–
347	X 6 CrNiNb 18 10	347 S 17	SUS 347	S34700	X 6 CrNiNb 18 10	Z 6 CNNb 18.10	X 6 CrNiNb 18 11	2338	–	–	1.4550	ATI 347™
316 Cb	X 6 CrNiMoNb 17 12 2	318 S 17	–	–	X 6 CrNiMoNb 17 12 2	Z 6 CNDNb 17.12	X 6 CrNiMoNb 17 12	–	–	–	1.4580	–
–	X 3 CrNiMoN 17 13	–	–	–	X 3 CrNiMoN 17-13-3	–	X 2 CrNiMoN 17 12	–	–	–	1.4910	–
–	X 6 CrNi 23 13	–	–	–	309 H	–	–	–	–	–	1.4950	–
A286	X 6 NiCrTiMoVB 25-15-2	286 S 31	–	S66286	X 6 NiCrTiMoVB 21-15-2	–	–	–	–	–	1.4980	Incoloy A 286
XM-19	–	–	–	S20910	–	–	–	–	–	F1314	–	ATI XM-19™
303 plus X	–	–	–	S30310	–	–	–	–	–	XM-5	–	303 plus X
–	X 2 CrNi 18 13 3	–	–	–	–	–	–	–	–	–	–	Staybrite® 4435NCu
218	–	–	–	S21800	–	–	–	–	–	–	–	Nitronic 60
201LN	–	–	–	S20153	–	–	–	–	–	–	–	ATI 201LN™-MIL
–	X 2 CrNiMoN 17 13 3	–	–	–	–	Z 2 CND 17.13	X 2 CrNiMoN 17 13 3	–	–	–	–	AL 316LXN
–	–	–	–	S31675	–	–	–	–	–	F1586	–	ATI REX 734™
–	–	–	–	–	–	–	–	–	–	–	–	P558
–	X 1 NiCrMoCu 22 24 6	–	–	–	–	–	–	–	–	–	–	Uranus B66
–	–	–	–	–	–	–	–	–	–	–	–	ATI Datalloy 2®
–	–	–	–	–	–	–	–	–	–	–	–	ATI Staballoy® AG17®
–	–	–	–	–	–	–	–	–	–	–	–	P530
–	X 1 NiCrMoCu 31 27 4	–	–	N08028	–	–	–	–	–	–	–	Uranus B28
–	–	–	–	–	–	–	–	–	–	–	–	P750
–	–	–	–	–	–	–	–	–	–	–	–	P750-I
–	X 4 CrNiMoN 21 9 4	–	–	–	–	–	–	–	–	F1586	–	M30NW
–	–	–	–	–	–	–	–	–	–	–	–	P550
–	–	–	–	–	–	–	–	–	–	–	–	P580
–	–	–	–	–	–	–	–	–	–	–	–	P650
–	–	–	–	–	–	–	–	–	–	–	–	ATI Datalloy HP™

NOTE: For legend, see page Y237.

M3 ■ Workpiece Materials Listing • Stainless Steel • M3

M3 Duplex Stainless Steel *Tensile Strength RM (MPa)*: <800* *Hardness (HB): 135–275 (HRC): <30*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GX 120 CrMo 29 2	–	–	–	–	–	–	–	–	F30M	1.4138	PK324
–	X 2 CrMnNiN 21 5 1	–	–	S32101	–	–	–	–	–	–	1.4162	LDX2101
–	GX 6 CrNiN 26 7	–	–	–	GX 6 CrNiN 26-7	–	–	–	–	–	1.4347	–
S32304	X 2 CrNiN 23 4	–	–	S32304	SAF 2304	35 N	X 2 CrNiN 23-4	2327	–	A240	1.4362	ATI 2304™
S31500	X 2 CrNiMoSi 19 5	–	–	S39215	GX 2 CrNiMoN 25-7-3	GX 2 CrNiMoN 25-7-3	–	2376	–	–	1.4417	–
S31803	X 2 CrNiMoN 22 5 3	318 S 13	SUS 329J 3L	S31803, S32205	X 2 CrNiMoN 22 5 3	Z 3 CND 22.05 AZ	X 2 CrNiMoN 22-5-3	2377	F51	2205	1.4462	ATI 2205™
–	GX 6 CrNiMo 24 8 2	–	–	–	–	–	–	–	–	–	1.4463	–
–	GX 2 CrNiMoN 25 6 3	–	–	–	GX 2 CrNiMoN 25-6-3	GX 2 CrNiMoN 25-6-3	–	–	–	–	1.4468	–
–	GX 2 CrNiMoN 26 7 4	–	–	J93404	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	–	–	–	1.4469	–
–	X 2 CrNiMoCuWN 25 7 4	–	–	S32760	X 2 CrNiMoCuWN 25 7 4	X 2 CrNiMoCuWN 25-7-4	X 2 CrNiMoCuWN 25-7-4	–	–	F 55	1.4501	F55
2507	X 2 CrNiMoCuN 25 6 3	–	–	–	X 2 CrNiMoCuN 25-6-3	DMV25.7Cu	329SK	–	–	–	1.4507	Uranus 52N+
–	GX 2 CrNiMoCuWN 25 8 4	–	–	–	X 6 CrNiCu 18 10 4 KD	Z 4 CNUD 17-11-03 FF	–	–	–	–	1.4508	–
–	GX 2 CrNiMoCuN 25 6 3 3	–	–	–	GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	–	–	–	1.4517	–
–	X 4 CrNiMoNb 25 7	–	SCS 22	–	–	–	–	–	–	–	1.4582	PK343
–	BGH 4593	–	–	–	GX 3 CrNiMoCuN 24 6 2 3	–	–	–	–	–	1.4593	Noridur®
329	X 4 CrNiMo 27 5 2	–	SUS 329 J1	S32900	X 3 CrNiMo 27 5 2	X 2 CrNiMo 25-7-3	X 3 CrNiMo 27-5-2	2324	–	A240	1.4460	10RE51
–	GX 2 CrNiMoN 22 5 3	–	–	–	GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	–	–	–	1.4470	–
S32550	–	–	–	S32550	–	–	–	–	–	–	–	Ferralium® alloy 255
–	–	–	–	S32003	–	–	–	–	–	–	–	ATI 2003®
–	–	–	–	S80211	–	–	–	–	–	–	–	ATI 2102™
–	–	–	–	S32550	–	–	–	–	–	–	–	ATI 255™
–	–	–	–	S34565	–	–	–	–	–	–	–	ATI 4565™
–	X 2 CrNiMoN 25 6 3	–	–	–	–	–	–	–	–	–	–	Uranus 47N+
–	–	–	–	–	–	–	F60	–	–	32760	–	Zeron® 100

Cast Iron

K1 ■ Workpiece Materials Listing • Cast Iron • K1

K1 Gray Cast Iron *Tensile Strength RM (MPa)*: 125–500* *Hardness (HB): 120–290 (HRC): <32*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GG-150HB	–	–	–	GJL-HB 170	–	–	–	–	–	0.6012	–
A48-25 B	GG-15	Grade 150	FC 150	–	GJL-150	FGL 150	G 15	0115-00	–	A 48 Class 25	0.6015	–
–	GG-170HB	–	–	N06985	GJL-HB 205	–	–	–	–	–	0.6017	–
–	GG-190HB	–	–	N06022	GJL-HB 230	–	–	–	–	–	0.6022	–
A48-35 B	GG-25	Grade 260	FC 250	–	GJL-250	FGL 250	G 25	0125-00	–	A 48 Class 35	0.6025	–
–	GG-26	–	FC260	–	–	–	G 26	0126-00	–	–	0.6026	–
–	GG-220HB	–	–	W06027	GJL-HB 250	FGL 250	–	–	–	–	0.6027	–
–	GG-240HB	–	–	–	GJL-HB 275	–	–	–	–	–	0.6032	–
A48-50 B	GG-35	Grade 350	FC 350	–	GJL-350	FGL 350	G 35	0135-00	–	A 48 Class 50	0.6035	–
–	GG-260HB	–	–	–	GJL-HB 275	–	–	–	–	–	0.6037	–
A48-20 B	GG-10	Grade 100	FC 100	–	GJL-100	FGL 100	G 10	0110-00	–	A 48 Class 20	0.6010	–
A48-30 B	GG-20	Grade 220	FC 200	W06020	GJL-200	FGL 200	G 20	0120-00	–	A 48 Class 30	0.6020	–
A48-45 B	GG-30	Grade 300	FC 300	–	GJL-300	FGL 300	G 30	0130-00	–	A 48 Class 45	0.6030	–
A48-55 B	GG-40	Grade 400	–	–	GJL-400	FGL 400	–	0140-00	–	A 48 Class 55	0.6040	–
A48-40	–	–	–	–	–	–	–	–	–	A 48 Class 40	–	–
A48-60	–	–	–	–	–	–	–	–	–	A 48 Class 60	–	–
–	–	–	–	–	–	–	–	–	G1800	A 159 G1800	–	–
–	–	–	–	–	–	–	–	–	G3000	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G10H18	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G11H18	A 159 G3000	–	–
–	–	–	–	–	–	–	–	–	G3500	A 159 G3500	–	–
–	–	–	–	–	–	–	–	–	G11H20	A 159 G3500	–	–
–	–	–	–	–	–	–	–	–	G4000	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G13H19	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G12H21	A 159 G4000	–	–
–	–	–	–	–	–	–	–	–	G9H12	A 159 G1800	–	–
–	GG-26-Cr	–	–	–	–	–	–	–	–	–	–	–
–	GG-25-Cr	–	–	–	–	–	–	–	–	–	–	–

K2 Workpiece Materials Listing • Cast Iron • K2

K2 Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI) *Tensile Strength RM (MPa)*: <600*
Hardness (HB): 130–260 (HRC): <28

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GGL-NiMn137	L-NiMn 13 7	FCA NiMn 13 7	F43000	GJLA-XNiMn 13-7	L-NM 13 7	–	–	–	–	0.6652	–
A 436 Type 1	GGL- NiCuCr1562	L-NiCuCr 15 6 2	FCA-NiCuCr 15 6 2	F41000	GJLA-XNiCuCr 15-6-2	L-NUC 15 6 2	–	–	–	–	0.6655	–
A 436 Type 1b	GGL-NiCuCr1563	L-NiCuCr 15 6 3	FCA-NiCuCr 15 6 3	F41001	GJLA-XNiCuCr 15-6-3	L-NUC 15 6 3	–	–	–	–	0.6656	–
A 436 Type 2b	GGL-NiCr203	L-NiCr 20 3	FCA-NiCr 20 3	F41003	GJLA-XNiCr 20-3	L-NC 20 3	–	–	–	–	0.6661	–
–	GGL-NiSiCr2053	L-NiSiCr 20 5 3	FCA-NiSiCr 20 5 3	–	GJLA-XNiSiCr 20-5-3	L-NSC 20 5 3	–	–	–	–	0.6667	–
A 436 Type 3	GGL- NiCr303	L-NiCr 30 3	FCA-NiCr 30 3	F41004	GJLA-XNiCr 30-3	L-NC 30 3	–	–	–	–	0.6676	–
–	GGG-35.3	–	–	–	GJS-350-22	–	–	0717-15	–	–	0.7033	–
–	GGG-40.3	SNG 370/17	FCD 370	–	GJS-400-18	FGS 370-17	GSO 42/15	0717-15	–	–	0.7043	–
–	GGG-45	–	FCD 450	–	–	–	–	–	–	–	0.7045	–
–	–	–	–	–	–	FGS450.10	–	–	–	–	0.7049	–
–	GGG-65	–	–	–	–	–	–	–	–	–	0.7065	–
–	GGG-NiMn137	S-NiMn 13 7	FCDA-NiMn 13 7	–	GJSA-XNiMn 13-7	S-Mn 13 7	–	0772-00	–	–	0.7652	–
–	GGG-NiCrNb202	S2W	FCDA-NiCrNb 20 2	–	GJSA-XNiCrNb 20-2	–	–	–	–	–	0.7659	–
A 439 Type D-2B	GGG-NiCr203	S-NiCr 20 3	FCDA-NiCr 20 3	F43001	GJSA-XNiCr 20-3	–	–	–	–	–	0.7661	–
–	GGG-NiSiCr2052	S-NiSiCr 20 5 2	FCDA-NiSiCr 20 5 2	–	GJSA-XNiSiCr 20-5-2	S-NSC 20 5 2	–	–	–	–	0.7665	–
A 571 Type D-2M	GGG-NiMn234	S-NiMn 23 4	FCDA-NiMn 23 4	–	GJSA-XNiMn 23-4	S-NM 23 4	–	–	–	–	0.7673	–
A 439 Type D-3	GGG-NiCr303	S-NiCr 30 3	FCDA-NiCr 30 3	F43003	GJSA-XNiCr 30-3	S-NC 30 3	–	–	–	–	0.7676	–
A 439 Type D-3A	GGG-NiCr301	S-NiCr 30 1	FCDA-NiCr 30 1	F43004	GJSA-XNiCr 30-1	S-NC 30 1	–	–	–	–	0.7677	–
–	GGG-NiSiCr3055	–	FCDA-NiSiCr 30 5 5	–	GJSA-XNiSiCr 30-5-5	–	–	–	–	–	0.7679	–
A 439 Type D-5	GGG-Ni35	S-Ni 35	FCDA-Ni 35	F43006	GJSA-XNi 35	S-N 35	–	–	–	–	0.7683	–
A 439 Type D-5A	GGG-NiCr353	S-NiCr 35 3	FCDA-NiCr 35 3	F43007	GJSA-XNiCr 35-3	S-NC 35 3	–	–	–	–	0.7685	–
–	GGG-NiSiCr3552	–	FCDA-NiSiCr 35 5 2	–	GJSA-XNiSiCr 35-5-2	FGS Ni35 Si 5 Cr2	–	–	–	–	0.7688	–
–	GTW-35-04	W 35-04	FCMW 330 class 1	–	GJMW-35-0-4	MB 35-7	W 35-04	–	–	–	0.8035	–
–	GTW-S-38-1 2	W 38-12	–	–	GJMW-360-12	MB 300-12	–	–	–	–	0.8038	–
–	GTW-45-07	W 45-07	FCMWP 440 class 3	–	GJMW-450-7	MB 450-7	GMB 45	–	–	–	0.8045	–
–	GTW-55	–	–	–	–	–	GMB 55	–	–	–	0.8055	–
–	GTW-65	–	–	–	–	–	GMB 65	–	–	–	0.8065	–
32510	GTS-35-10	B 340/12	FCMP 330	–	GJMB-350-10	MN 350-10	–	815	–	–	0.8135	–
40010	GTS-45-06	P 440/7	FCMP 440	–	GJMB-450-6	MN 450 - 6	P 45-06	852	–	–	0.8145	–
50005	GTS-55-04	P 510/4	FCMP 490	–	GJMB-550-4	MN 550-4	P 55-04	854	–	–	0.8155	–
70003	GTS-65-02	P 570/3	FCMP 540	–	GJMB-650-2	MN 650-3	P 65-02	0858-00, 0856-00	–	–	0.8165	–
90001	GTS-70-02	P 690/2	FCMP 690	–	GJMB-700-2	MN 700-2	P 70-02	0862-03; 0864-03	–	–	0.8170	–
–	GGV-30	–	–	–	GJV-300	–	–	–	–	–	0.9991	–
A 436 Type 2	GGL-NiCr202	L-NiCr 20 2	FCA-NiCr 20 2	F41002	GJLA-XNiCr 20-2	L-NC 20 2	–	0523-00	–	–	0.6660	–
A 436 Type 4	GGL- NiSiCr3055	L-NiSiCr 30 5 5	FCA-NiSiCr 30 5 5	F41005	GJLA-XNiSiCr 30-5-5	L-NSC 30 5 5	–	–	–	–	0.6680	–
60-40-18	GGG-40	SNG 420/12	FCD 400 class 1	F32800	GJS-400-15	FGS400-12	GS400-12	0717-02	60-40-18	60-40-18	0.7040	–
65-45-12	GGG-50	SNG 500/7	FCD 500	F33100	GJS-500-7	FGS 500-7	GS 500/7	0727-02	65-45-12	65-45-12	0.7050	–
–	GGG-60	SNG 600/3	FCD 600-3	–	GJS-600-3	–	GS 600/3	–	80-55-06	80-55-06	0.7060	–
100-70-03	GGG-70	SNG 700/2	FCD 700	F34800	GJS-700-2	FGS 700-2	GS 700-2	0737-01	100-70-03	100-70-03	0.7070	–
120-90-02	GGG-80	SNG 800/2	FCD 800	F36200	GJS-800-2	FGS 800-2	GS 800-2	–	120-90-02	120-90-02	0.7080	–
A 439 Type D-2	GGG-NiCr202	L-NiCuCr 20 2	FCDA-NiCr 20 2	–	GJSA-XNiCr 20-2	L-NC 20 2	–	0523-00	–	–	0.7660	–
A 439 Type D-2C	GGG-Ni22	S-Ni 22	FCDA-Ni 22	F43002	GJSA-XNi 22	S-N 22	–	–	–	–	0.7670	–
A 439 Type D-4	GGG-NiSiCr3053	S-NiSiCr 30 5 5	FCDA-NiSiCr 30 5 4	F43005	GJSA-XNiSiCr 30-5-3	S-NSC 30 5 5	–	–	–	–	0.7680	–
–	GTW-40-05	W 40-05	FCMW 370	–	GJMW-400-5	MB 400-5	GMB 40	–	–	–	0.8040	–
–	GGV-40	–	–	–	GJV-400	–	–	–	–	–	0.9990	–
80-55-06	–	–	–	F33800	–	FGS 350-22	–	0732-03	D5506	–	–	–
–	–	–	–	–	–	–	–	–	D4018	–	–	–
–	–	–	–	–	–	–	–	–	D400	–	–	–
–	–	–	–	–	–	–	–	–	D4512	–	–	–
–	–	–	–	–	–	–	–	–	D450	–	–	–
–	–	–	–	–	–	–	–	–	M3210	–	–	–
–	–	–	–	–	–	–	–	–	M4504	–	–	–
–	–	–	–	–	–	–	–	–	M5003	–	–	–
–	–	–	–	–	–	–	–	–	M5503	–	–	–
–	–	–	–	–	–	–	–	–	M7002	–	–	–
–	–	–	–	–	–	–	–	–	D7003	–	–	–
–	–	–	–	–	–	–	–	–	M8501	A 602 M8501	–	–
–	GGV-45	–	–	–	GJV-450	–	–	–	–	–	–	–
–	GGG-SiMo3.08	–	–	–	–	–	–	–	–	–	–	–
–	GGG-SiMo4.10	–	–	–	–	–	–	–	–	–	–	–
–	GGG-SiMo5.10	–	–	–	–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–	–	–	–	–	HPI C13 06
–	GGV-35	–	–	–	GJV-350	–	–	–	–	–	–	–
–	GGV-50	–	–	–	GJV-500	–	–	–	–	–	–	–

K3 Workpiece Materials Listing • Cast Iron • K3

K3 High-Strength Ductile Irons and Austempered Ductile Iron (ADI) *Tensile Strength RM (MPa)*: >600* *Hardness (HB): 180–350 (HRC): <43*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	–	–	–	–	–	–	–	–	–	A 897 125-80-10	–	–
–	–	–	–	–	–	–	–	–	–	A 897 150-100-7	–	–
–	–	–	–	–	–	–	–	–	–	A 897 175-125-4	–	–
–	–	–	–	–	–	–	–	–	–	A 897 200-150-1	–	–
–	–	–	–	–	–	–	–	–	–	A 897 230-185	–	–

NOTE: For legend, see page Y237.

N1 Workpiece Materials Listing • Non-Ferrous Metals • N1

N1 Wrought Aluminum

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
1080	Al99.8	–	1A	–	–	–	–	–	–	–	3.0128	–
1050	Al99.5	L 31	1B	–	–	A 59050 C	–	–	–	–	3.0255	–
–	SG-Al 99,5	–	–	–	–	–	–	–	–	–	3.0259	–
1070	Al99.7	–	–	–	–	–	4508	–	–	–	3.0275	–
3103	AlMn	–	N3	–	–	–	–	–	–	–	3.0515	–
3003	AlMnCu	–	–	–	–	–	–	–	–	–	3.0517	–
3005	AlMn1Mg0.5	–	–	–	–	–	–	–	–	–	3.0525	–
3004	AlMn1Mg1	–	–	–	–	–	–	–	–	–	3.0526	–
–	AlMgSiPb	–	–	–	–	–	–	–	–	–	3.0615	–
–	SG-Al 99,5Ti	–	–	–	–	–	–	–	–	–	3.0805	–
–	SG-Al 99,5 Ti	–	–	–	–	–	–	–	–	–	3.0805	–
2014	AlCuSiMn	–	H15	–	–	A-U4SG	3581	–	–	–	3.1255	–
2017	AlCuMg 1	–	–	–	AW-2017 A	A-U4G	3579	–	–	–	3.1325	–
2024	AlCuMg 2	–	L97	–	AW-2024	A-U4G1	–	–	–	–	3.1355	–
–	AlCuMgPb	–	–	–	–	–	–	–	–	–	3.1645	–
2011	AlCuBiPb	–	FC1	–	–	A-U5PbBi	6362	–	–	–	3.1655	–
6082	AlMgSi 1	–	H30	–	AW-6005 A	A-SGM0.7	3571	–	–	–	3.2315	–
6060	AlMgSi0.5	–	–	–	–	–	–	–	–	–	3.3206	–
6063	AlMgSi0.7	–	H9	–	–	A-GS	3569	–	–	–	3.3206	–
6463	EAlMgSi0.5	–	91E	–	–	–	–	–	–	–	3.3207	–
5005	AlMg 1	–	N41	–	AW-6082	A-G0.6	5764-66	–	–	–	3.3315	–
5050	–	–	–	–	–	–	–	–	–	–	3.3316	–
5052	AlMg2.5	–	2L56	–	–	A-G2.5C	4574	–	–	–	3.3523	–
5754	AlMg 3	–	N5	–	–	A-G3M	3575	–	–	–	3.3535	–
5454	AlMg2.5Mn	–	N51	–	–	A-G2.5MC	7789	–	–	–	3.3537	–
5086	AlMg4Mn	–	–	–	–	–	–	–	–	–	3.3545	–
–	SG-Al Mg 4,5 Mn Zr	–	–	–	–	–	–	–	–	–	3.3546	–
5083	AlMg4,5Mn	–	N8	–	–	A-G4.5MC	7790	–	–	–	3.3547	–
5056	AlMg5	–	N6	–	–	A-G5	3576	–	–	–	3.3549	–
–	AlMg 5	–	–	–	–	–	–	–	–	–	3.3555	–
7050	AlZnMgCu0,5	L 86	–	–	–	AZ 4 GU/9051	811-04	–	–	–	3.4144	–
7020	AlZn4.5Mg1	–	H17	–	–	A-Z5G	–	–	–	–	3.4335	–
7022	AlZnMgCu0.5	–	–	–	–	–	–	–	–	–	3.4345	–
–	AlZn5,5MgCu	–	–	–	–	–	–	–	–	–	3.4365	–
7075	AlZnMgCu 1.5	–	DTD5074	A97075	AL-P7075	A-Z5GU	3735	–	7075	–	3.4365	–
1000	Al99.5H	L31	–	–	–	A59050C	–	–	–	–	3.0250	–
–	Al99.8	–	–	–	–	–	–	–	–	–	3.0280	–
–	AlMg3Mn	–	–	–	–	–	–	–	–	–	–	–
2025	–	–	A 2025 FD	A92025	–	–	–	–	2025	B 247 2025	–	–
1100	–	–	–	–	–	–	–	–	–	–	–	–
3105	–	–	–	–	–	–	–	–	–	–	–	–
5657	AlMg0.8Si	–	–	–	–	–	–	–	–	–	–	–
6070	–	–	–	–	–	–	–	–	–	–	–	–
6262	–	–	–	–	–	–	–	–	–	–	–	–
7003	–	–	–	–	–	–	–	–	–	–	–	–
2050	–	–	–	–	–	–	–	–	–	–	–	–
7475	–	–	–	–	–	–	–	–	–	–	–	–
7175	–	–	–	–	–	–	–	–	–	–	–	–
7178	–	–	–	–	–	–	–	–	–	–	–	–
5251	AlMg2Mo3	–	N4	–	–	A-G2M	3574	–	–	–	–	–
6151	–	–	–	–	–	–	–	–	–	–	–	–
7001	–	–	–	–	–	–	–	–	–	–	–	–
7040	–	–	–	–	–	–	–	–	–	–	–	–

N2 Workpiece Materials Listing • Non-Ferrous Metals • N2

N2 Low-Silicon Aluminum Alloys and Magnesium Alloys *Content: Si <12.2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	SG-Al99,8	–	–	–	–	–	–	–	–	–	3.0286	–
–	G-AlCu 4 TiMg	–	–	–	–	–	–	–	–	–	3.1371	–
–	G-AlCu 4 TiMg	–	–	–	–	–	–	–	–	–	3.1371	–
–	G-AlCu 5 Ni 1,5	–	–	–	–	–	–	–	–	–	3.1754	–
–	G-AlCu 4 Ti	–	–	–	–	–	–	–	–	–	3.1841	–
–	G-AlSi 5 Cu 1	–	–	–	–	–	–	–	–	–	3.2131	–
–	G-AlSi 6 Cu 4	–	–	–	–	–	–	–	–	–	3.2151	–
–	G-AlSi 8 Cu 3	–	–	–	–	–	–	–	–	–	3.2161	–
–	G-AlSi 9 Cu 3	–	–	–	–	–	–	–	–	–	3.2163	–
–	G-AlSi 1 1	–	–	–	–	–	–	–	–	–	3.2211	–
–	SG-AlSi 5	–	–	–	–	–	–	–	–	–	3.2245	–
–	SG-AlSi 5	–	–	–	–	–	–	–	–	–	3.2245	–
–	G-AlSi 5 Mg	–	–	–	–	–	–	–	–	–	3.2341	–
4218 B	G-AlSi 7 Mg	–	–	–	–	–	–	–	–	–	3.2371	–
–	G-AlSi 9 Mg	–	–	–	–	–	–	–	–	–	3.2373	–
–	G-AlSi 10 Mg	–	–	–	–	–	–	–	–	–	3.2381	–
–	G-D AlSi 10 Mg	–	–	–	–	–	–	–	–	–	3.2382	–
A 360.2	G-AlSi 10 Mg(Cu)	LM 9	–	–	–	–	–	4253	–	–	3.2383	–
A 413.0	G-D AlSi 12	–	–	–	–	–	–	4247	–	–	3.2582	–
–	SG-AlSi 12	–	–	–	–	–	–	–	–	–	3.2585	–
–	G-D AlSi 12(Cu)	–	–	–	–	–	–	–	–	–	3.2982	–
6061	AlMgSiCu	–	H20	–	–	A-GSUC	6170	–	–	–	3.3211	–
–	G-AlMg 3 Si	–	–	–	–	–	–	–	–	–	3.3241	–
–	G-AlMg 5 Si	–	–	–	–	–	–	–	–	–	3.3261	–
–	G-D AlMg 9	–	–	–	–	–	–	–	–	–	3.3292	–
–	G-AlMg5Si(Cu,Mn)	–	–	–	–	–	–	–	–	–	3.3458	–
–	SG-AlMg 3	–	–	–	–	–	–	–	–	–	3.3536	–

(continued)

N2 Workpiece Materials Listing • Non-Ferrous Metals • N2 *(continued)*

N2 Low-Silicon Aluminum Alloys and Magnesium Alloys *Content: Si <12.2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	G-AlMg 3	–	–	–	–	–	–	–	–	–	3.3541	–
–	SG-AlMg 4,5 Mn	–	–	–	–	–	–	–	–	–	3.3548	–
–	SG-AlMg 5	–	–	–	–	–	–	–	–	–	3.3556	–
–	G-AlMg 5	–	–	–	–	–	–	–	–	–	3.3561	–
ZE 41	G-MgZn 4 SE 1 Zr 1	MAG 5	–	–	MCMgZn 4 RE 1 Zr	G-Z 4 TR	–	–	–	–	3.5101	–
–	G-MgZn 5 Th 2 Zr 1	–	–	–	–	–	–	–	–	–	3.5102	–
EZ 33	MgSE 3 Zn 2 Zr 1	MAG 6	–	–	MCMgRE 3 Zn 2 Zr	G-TR 3 Z 2	–	–	–	–	3.5103	–
–	MgAl 9 Zn 1	–	–	–	–	–	–	–	–	–	3.5104	–
–	G-MgTh 3 Zn 2 Zr 1	–	–	–	–	–	–	–	–	–	3.5105	–
QE 22	G-MgAg 3 SE 2 Zr 1	MAG 12	–	–	MCMgRE 2 Ag 2 Zr	G-Ag 22,5	–	–	–	–	3.5106	–
–	G-D MgAl 6 Zn 1	–	–	–	–	–	–	–	–	–	3.5612	–
–	G-D MgAl 6	–	–	–	–	–	–	–	–	–	3.5662	–
AZ 81	G-MgAl 8 Zn 1	MAG 1	–	–	MCMgAl 8 Zn 1	G-A 9	–	–	–	–	3.5812	–
AZ 91	G-MgAl 9 Zn 1	MAG 7	–	–	MCMgAl 9 Zn 1	G-A 9 Z 1	–	–	–	–	3.5912	–
–	G-MgAl 8 Zn 1	–	–	–	–	–	–	–	–	–	3.5200	–
AS 41	G-D MgAl 4 Si 1	–	–	–	MCMgAl4Si	G-A4S 1	–	–	–	–	3.5470	–
–	G-AlZn10Si8Mg	–	–	–	–	–	–	–	–	–	–	–
AS 7 G	AlSi7Mg	–	–	–	–	–	–	–	–	–	–	–
2117	–	–	–	–	–	–	–	–	–	–	–	–
2218	AlCuMgNi2	–	–	–	–	–	–	–	–	–	–	–
2091	–	–	–	–	–	–	–	–	–	–	–	–
8090	–	–	–	–	–	–	–	–	–	–	–	–
2090	–	–	–	–	–	–	–	–	–	–	–	–
2224	–	–	–	–	–	–	–	–	–	–	–	–
2094	–	–	–	–	–	–	–	–	–	–	–	–
2095	–	–	–	–	–	–	–	–	–	–	–	–
2097	–	–	–	–	–	–	–	–	–	–	–	–
2098	–	–	–	–	–	–	–	–	–	–	–	–
2099	–	–	–	–	–	–	–	–	–	–	–	–
2195	–	–	–	–	–	–	–	–	–	–	–	–
2196	–	–	–	–	–	–	–	–	–	–	–	–
2197	–	–	–	–	–	–	–	–	–	–	–	–
2198	–	–	–	–	–	–	–	–	–	–	–	–
2297	–	–	–	–	–	–	–	–	–	–	–	–
2397	–	–	–	–	–	–	–	–	–	–	–	–
8017	–	–	–	–	–	–	–	–	–	–	–	–
8024	–	–	–	–	–	–	–	–	–	–	–	–
8091	–	–	–	–	–	–	–	–	–	–	–	–
8093	–	–	–	–	–	–	–	–	–	–	–	–
2199	–	–	–	–	–	–	–	–	–	–	–	–

N3 Workpiece Materials Listing • Non-Ferrous Metals • N3

N3 High-Silicon Aluminum Alloys and Magnesium Alloys *Content: Si >12.2%*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 413.1	G-AlSi 12(Cu)	LM 20	–	–	–	–	–	4260	–	–	3.2583	–
A 413.2	G-AlSi 12	LM 6	–	–	–	–	–	4261	–	–	3.2581	–
–	G-AlSi17Cu4Mg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi18CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi21CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi12CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	GK-AlSi25CuNiMg	–	–	–	–	–	–	–	–	–	–	–
–	G-AlSi 21 CuNiMg	–	–	–	–	–	–	–	–	–	–	–
4032	–	–	–	–	–	–	–	–	–	–	–	–

N4 Workpiece Materials Listing • Non-Ferrous Metals • N4

N4 Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
C 11000	E-Cu 58	C 101	–	–	–	Cn-a2	–	–	–	–	2.0065	–
C 81100	G-CuL 45	HCC 1	–	–	–	–	–	–	–	–	2.0082	–
C 81100	G-Cu L 50	HCC 1	–	–	–	–	–	–	–	–	2.0085	–
–	CuZn 40 MnPb	–	–	–	–	–	–	–	–	–	2.0241	–
C 26000	CuZn 30	CZ 102	C 2600	–	–	CuZn 30	–	–	–	–	2.0265	–
C 27200	CuZn 37	CZ 108	–	–	–	CuZn 37	C 2720	–	–	–	2.0321	–
–	CuZn 36 Pb 1.5	–	–	–	–	–	–	–	–	–	2.0331	–
–	S-CuZn40	–	–	–	–	–	–	–	–	–	2.0366	–
–	CuZn 39 Pb 3 + D567	–	–	–	–	–	–	–	–	–	2.0401	–
–	CuZn 40 Pb 2	–	–	–	–	–	–	–	–	–	2.0402	–
B-198	G-CuZn 15Si 4	–	–	–	–	–	–	–	–	–	2.0492	–
–	CuZn 40Al 1	–	–	–	–	–	–	–	–	–	2.0561	–
–	G-KCuZn 38 Al	–	–	–	–	–	–	–	–	–	2.0591	–
C 86500	G-CuZn 35 Al 1	HTB 1	–	–	–	U-Z 36 N 3	–	–	–	–	2.0592	–
–	G-KCuZn 37 Al 1	–	–	–	–	–	–	–	–	–	2.0595	–
C 86200	G-CuZn 34 Al 2	HTB 1	–	–	–	U-Z 36 N 3	–	–	–	–	2.0596	–
–	G-CuZn 25 Al 5	–	–	–	–	–	–	–	–	–	2.0598	–
–	S - CuNi 30 Fe	–	–	–	–	–	–	–	–	–	2.0837	–
–	CuNi 10 Fe 1 Mn	–	–	–	–	–	–	–	–	–	2.0872	–

NOTE: For legend, see page Y237.

(continued)

N4 Workpiece Materials Listing • Non-Ferrous Metals • N4 *(continued)*

N4 Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	S - CuNi 10 Fe	–	–	–	–	–	–	–	–	–	2.0873	–
–	CuNi 30 Mn 1 Fe	–	–	–	–	–	–	–	–	–	2.0882	–
–	SG-Cu Al 8	–	–	–	–	–	–	–	–	–	2.0921	–
–	SG-CuAl 8 Ni 2	–	–	–	–	–	–	–	–	–	2.0922	–
–	SG-CuAl 9 Ni5 Fe	–	–	–	–	–	–	–	–	–	2.0927	–
–	CuAl 10 Fe 3 Mn 2	CA 103	–	–	–	U-A 10 Fe	–	–	–	–	2.0936	–
–	SG-Cu Al 10 Fe	–	–	–	–	–	–	–	–	–	2.0937	–
C 63000	CuAl 10 Ni 5 Fe 4	Ca 104	–	–	–	U-A 10 N	–	–	–	–	2.0966	–
B-148-52	G-CuAl 10 Ni	–	–	–	–	–	–	–	–	–	2.0975	–
–	SG-Cu Sn	–	–	–	–	–	–	–	–	–	2.1006	–
–	SG-Cu Sn 6	–	–	–	–	–	–	–	–	–	2.1022	–
C 90800	G-CuSn 12	Pb 2	–	–	–	UE 12 P	–	–	–	–	2.1052	–
–	G-CuSn 12 Pb	–	–	–	–	–	–	–	–	–	2.1061	–
–	G-CuSn 10 Zn	–	–	–	–	–	–	–	–	–	2.1086	–
C 93200	G-CuSn 7 ZnPb	–	–	–	–	U-E 7 Z 5 Pb 4	–	–	–	–	2.1090	–
–	G-CuSn 6 ZnNi	LG 4	–	–	–	–	–	–	–	–	2.1093	–
C 83600	G-CuSn 5 ZnPb	LG 2	–	–	–	U-E 5 Pb 5 Z 5	–	–	–	–	2.1096	–
–	G-CuSn 2 ZnPb	–	–	–	–	–	–	–	–	–	2.1098	–
C 93700	G-CuPb 10 Sn	LB 2	–	–	–	U-E 10 Pb 10	–	–	–	–	2.1176	–
C 93800	G-CuPb 15 Sn	LB 1	–	–	–	U-Pb 15 E 8	–	–	–	–	2.1182	–
C 94100	G-CuPb 20 Sn	LB 5	–	–	–	U-Pb 20	–	–	–	–	2.1188	–
C 81500	G-CuCrF 35	CC1-FF	–	–	–	–	–	–	–	–	2.1292	–
C 18200	CuCrZr	CC 102	–	–	–	U-Cr 0,8 Zr	–	–	–	–	2.1293	–
–	SG-Cu Mn 13 Al 7	–	–	–	–	–	–	–	–	–	2.1367	–
–	SG-Cu Si 3	–	–	–	–	–	–	–	–	–	2.1461	–
CuSi 3 Mn	–	–	–	–	–	–	–	–	–	–	2.1525	–
–	OF-Cu	–	–	–	–	–	–	–	–	–	2.0040	–
B-120	E-Cu 57	–	–	–	–	–	–	–	–	–	2.0060	–
C 10300	SE-Cu	C 101	–	–	–	Cu-c1	–	–	–	–	2.0070	–
–	CuZn 5	–	–	–	–	–	–	–	–	–	2.0220	–
C 23000	CuZn 15	CZ 102	C 2300	–	–	CuZn 15	–	–	–	–	2.0240	–
–	G-CuZn 33 Pb	–	–	–	–	–	–	–	–	–	2.0290	–
–	CuZn 36 Pb 2	–	–	–	–	–	–	–	–	–	2.0330	–
–	G-CuZn 37 Pb	–	–	–	–	–	–	–	–	–	2.0340	–
–	CuZn 40	–	–	–	–	–	–	–	–	–	2.0360	–
–	CuZn 39 Pb 2	–	–	–	–	–	–	–	–	–	2.0380	–
–	CuZn 20 Al 2	–	–	–	–	–	–	–	–	–	2.0460	–
–	CuZn 37Al 1	–	–	–	–	–	–	–	–	–	2.0510	–
–	CuZn 40 Al 2	–	–	–	–	–	–	–	–	–	2.0550	–
–	G-CuZn 40 Fe	–	–	–	–	–	–	–	–	–	2.0590	–
–	G-CuAl 10 Fe	–	–	–	–	–	–	–	–	–	2.0940	–
C 90700	G-CuSn 10	CT 1	–	–	–	–	–	–	–	–	2.1050	–
C 91700	G-CuSn 12 Ni	–	–	–	–	–	–	–	–	–	2.1060	–
–	C35100	–	–	–	–	–	–	–	–	–	–	–
–	17665	–	–	C95500	–	–	–	–	–	–	–	–
–	MS60	–	–	–	–	–	–	–	–	–	–	–

N5 Workpiece Materials Listing • Non-Ferrous Metals • N5

N5 Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	LEXAN	–	–	–	–	–	–	–	–	–	–	–
–	HOSTALEN	–	–	–	–	–	–	–	–	–	–	–
–	Polystyrol	–	–	–	–	–	–	–	–	–	–	–
–	Makralon	–	–	–	–	–	–	–	–	–	–	–

N6 Workpiece Materials Listing • Non-Ferrous Metals • N6

N6 Carbon, Graphite Composites, CFRP

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	GFK	–	–	–	–	–	–	–	–	–	–	–
–	CFK	–	–	–	–	–	–	–	–	–	–	–
Graphite	–	–	–	–	–	–	–	–	–	–	–	–
CFRP	–	–	–	–	–	–	–	–	–	–	–	–

S1 Workpiece Materials Listing • High-Temp Alloys • S1

S1 Iron-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 500–1200* *Hardness (HB): 160–260 (HRC): 25–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 10 Cr 25	–	–	–	–	–	–	–	–	–	1.3811	–
–	D 1 a	–	–	–	–	–	–	–	–	–	1.3915	–
–	D 3	BD 3	–	–	X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	–	–	–	1.3916	–
–	RNi 12	–	–	–	–	–	–	–	–	–	1.3926	–
–	RNi 8	–	–	–	–	–	–	–	–	–	1.3927	–
–	GX 2 NiCoMoTi1 7 10	–	–	–	–	–	–	–	–	–	1.6351	Maraging
6501, 6512, 6520	X 2 NiCoMo 18 8 5	–	–	UNS K92890	S162	Z2NKD18.8	–	–	–	ASTM A646	1.6359	ATI VascoMax® C-250
–	X 2 NiCoMo 18-8-5	–	–	K92890	–	–	–	–	–	–	1.6359	Maraging
–	X 1 CrNiCoMo 13 8 5	–	–	–	–	–	–	–	–	–	–	Maraging
–	Ni 36	–	–	–	–	–	–	–	–	–	1.3910	Magnifer 36
–	Ni 46	–	–	–	–	–	–	–	–	–	1.3920	–
–	X 2 CrNiCoMo 12 8 5	–	–	–	–	–	–	–	–	–	1.6980	Maraging
ASTM B463	–	–	–	UNS N08020	–	–	–	–	–	ASTM B463	2.4660	20CB-3
ASTM A666	–	–	–	–	–	–	–	–	–	ASTM A666	–	6/21/09
ASTM B753	–	–	–	–	–	–	–	–	–	ASTM B753	–	AL 4750
S66286	–	–	NAS 660	UNS S66286	–	–	A-286	–	–	–	–	ATI A286™
–	–	–	–	UNS K92810	–	–	–	–	–	–	–	ATI VascoMax® C-200
6514	–	–	–	UNS K93120	–	–	–	–	–	–	–	ATI VascoMax® C-300
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® C-350
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-200
6518, 6519, 6591	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-250
–	–	–	–	–	–	–	–	–	–	–	–	ATI VascoMax® T-300
5725	–	–	–	–	–	Z3NCT25	–	–	SAE 16-25-6	–	–	Discaloy 16-25-6
ASTM A638	–	–	–	–	–	Z3NCT25	–	–	Discaloy	ASTM A638	–	Discaloy 24
–	–	–	–	R30556	–	–	–	–	–	–	–	Haynes® 556
5768	X 12 CrCoNi 21 20	–	–	–	–	Z12CKNDWNb21.20.20	–	–	–	–	–	Haynes 556
ASTM F30	–	–	–	–	–	–	–	–	Invar	ASTM F30	–	Invar 42
5768	–	–	–	UNS R30155	–	Z12CNKDW20	–	–	–	–	–	Multimet N-155
–	–	–	–	–	–	–	–	–	–	–	–	Multimet N-156
5533	X 40 CoCrNi 20 20	–	–	–	–	Z42CKNDW	–	–	–	–	–	S 590
–	X 2 NiCrAlTi 32 20	–	–	–	–	–	–	–	–	–	–	Sanicro 30
AISI:665	–	–	–	–	–	Z8NCTDA2613	–	–	–	–	–	W-545

S2 Workpiece Materials Listing • High-Temp Alloys • S2

S2 Cobalt-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 1000–1450* *Hardness (HB): 250–450 (HRC): 25–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	CoCr 26 Ni 9 Mo	–	–	–	–	–	–	–	–	–	2.4681	–
–	CoCr 25 NiW	–	–	–	–	KC25WN	–	–	–	ASTM A567	2.4682	Stellite® 31 (X40)
–	CoCr 22 NiW	–	–	–	–	–	–	–	–	–	2.4683	–
–	CoCr 28 Mo	–	–	–	–	KC27D5NFe	–	–	–	ASTM F-75	2.4691	HS 21
–	CoCr 20 Ni 15 Mo	–	–	–	–	–	–	–	–	–	2.4711	–
–	CoCr 29 Mo	–	–	–	–	–	–	–	–	–	2.4723	–
–	CoCr 33 W	–	–	–	–	–	–	–	–	–	2.4775	–
–	CoCr 28	–	–	–	–	–	–	–	–	–	2.4778	–
–	CoCr 28 Nb	–	–	–	–	–	–	–	–	–	2.4779	–
–	–	–	–	–	–	–	–	–	–	ASTM F90	2.4964	F 90
–	–	–	–	R30605	–	KC20WN	–	–	–	–	2.4964	Haynes 25
–	CoCr 20 W 15 Ni	HR 240	–	R30605	–	KC20WN	–	–	–	5759	2.4964	L 605
–	CoCr 20 W 15 Ni	–	–	CAST Version of L605	–	KC20WN	–	–	–	5759	2.4964	Stellite 25
AMS 5399	NiCr 19 Co 11 MoTi	–	–	–	–	NC 19 KDT	–	–	–	–	2.4973	–
–	CoCr 20 Ni 20 W	–	–	–	–	–	–	–	–	5534	2.4979	S 816
–	CoCr20NiW	–	–	–	–	–	–	–	–	–	2.4989	–
–	–	–	–	R31537 & R31538	–	CoCr28Mo	–	–	–	ASTM F1537	–	F 1537
–	–	–	–	–	–	–	–	–	–	ASTM F562	–	F 562
–	–	–	–	–	–	–	–	–	–	ASTM F563	–	F 563
–	–	–	–	R30188	–	KC22N22W14Fe	–	–	–	–	–	Haynes 188
AISI 670	CoCr 20 W 15 Ni	–	–	–	–	KC20WN	–	–	–	–	–	HS 25
–	CoCr 26 Ni 14 Mo	–	–	–	–	–	–	–	–	5380	–	HS 30
–	CoCr 19 W 14 NiB	–	–	–	–	–	–	–	–	–	–	HS 36
–	–	–	–	–	–	–	–	–	–	–	–	L 251
–	CoCrW 10 TaZrB	–	–	–	–	KC21W10Ta9	–	–	–	–	–	MAR-M 302
–	CoCr 22 W 9 TaZrNb	–	–	–	–	KC21W9Ta	–	–	–	–	–	MAR-M 322
–	CoCr 24 Ni 10 WTaZrB	–	–	–	–	KC23N10W7Ta	–	–	–	–	–	MAR-M 509
–	–	–	–	–	–	KC20N20Ta7	–	–	–	–	–	MAR-M 905
–	CoCr 20 Ni 20 Ta	–	–	–	–	KC20N20Ta7	–	–	–	–	–	MAR-M 918
–	–	–	–	R30159	–	–	–	–	–	–	–	MP159
–	–	–	–	R30035	–	–	–	–	–	–	–	MP35N
–	–	–	–	–	–	KC33W13	–	–	–	–	–	Stellite 1
–	–	–	–	–	–	KC28W8	–	–	–	–	–	Stellite 12
–	–	–	–	–	–	KC22N22W14Fe	–	–	–	–	–	Stellite 188
–	–	–	–	–	–	KC26NW	–	–	–	–	–	Stellite 6
–	–	–	–	–	–	–	–	–	–	–	–	Stellite 8 (F75)
–	CoCr 25 Ni 20 MoWNb	–	–	–	–	KC25N20DFeWNb	–	–	–	–	–	V-36
–	CoCr 21 Mo 11 W	–	–	–	–	KC21W11ANbT	–	–	–	–	–	WI-52
–	–	–	–	–	–	KC25N10W7Fe	–	–	–	–	–	X 45
–	–	–	–	–	–	–	–	–	J-1570	–	–	–
–	K13C20N126Fe15D7	–	–	R3003 & R3008	–	K13C20N126Fe15D7	–	–	–	ASTM F1058	–	–

NOTE: For legend, see page Y237.

S3 Workpiece Materials Listing • High-Temp Alloys • S3

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	X 7 NiCrCoMo 54 20	–	–	–	–	–	–	–	–	–	1.2789	–
–	Ni 99,7 Mg 0,07	–	–	J24053	–	–	–	–	–	A 915 J24053	2.4053	–
–	LC-Ni 99,6	–	–	N02201	–	–	–	–	–	–	2.4061	–
–	–	–	–	N02200	–	–	–	–	–	–	2.4066	200
Nickel 200	Ni 99,2	NA 11	–	N02200	–	–	–	–	–	–	2.4066	–
–	–	–	–	N02201	–	–	–	–	–	–	2.4068	201
Nickel 201	LC-Ni 99	NA 12	–	–	–	–	–	–	–	–	2.4068	–
–	NiMn 1	–	–	–	–	–	–	–	–	–	2.4106	–
–	NiMn 1 C	–	–	–	–	–	–	–	–	–	2.4108	–
–	NiMn 1,5	–	–	–	–	–	–	–	–	–	2.4109	–
–	NiMn 3 Al	–	–	–	–	–	–	–	–	–	2.4122	–
–	NiMn 3 SiMg	–	–	–	–	–	–	–	–	–	2.4126	–
–	NiCr 2 Mn	–	–	–	–	–	–	–	–	–	2.4145	–
–	NiCr 2 MnSi	–	–	–	–	–	–	–	–	–	2.4146	–
–	NiCr 5 MnSi	–	–	–	–	–	–	–	–	–	2.4151	–
–	SG-NiTi 4	NA32	–	–	NA 32	–	–	–	–	–	2.4155	–
CZ-100	G-Ni 93 C	–	–	–	–	–	–	–	–	–	2.4175	–
–	NiCr 4 Mn	–	–	–	–	–	–	–	–	–	2.4199	–
M 35-1/2	G-NiCu 30 Nb	–	–	N24030	–	–	–	–	–	–	2.4365	–
–	EL-NiCu 30 Mn	–	–	N04402	–	–	–	–	–	–	2.4366	–
M 30-H	G-NiCu 30 Si 3	–	–	–	–	–	–	–	–	–	2.4367	–
M-255	G-NiCu 30 Si 4	–	–	–	–	–	–	–	–	–	2.4368	–
–	NiCu 30 Al	–	–	–	–	–	–	–	–	–	2.4374	–
–	NiCu 30 Al	NA 18	–	N05500	3072.76	NU 30 AT	–	–	–	–	2.4375	Monel® K500
–	SG-NiCu 30 MnTi	NA 33	–	–	–	–	–	–	–	–	2.4377	–
–	NiFe 16 CuCr	–	–	–	–	–	–	–	–	–	2.4501	–
–	G-NiMo 16 CrW	–	–	–	–	–	–	–	–	–	2.4537	–
–	NiCr 21 Mo 14 W	–	–	N26022	–	–	–	–	–	–	2.4602	INCONEL® alloy 622
–	NiCr 30 FeMo	–	–	–	–	–	–	–	–	–	2.4603	Hastelloy® G-30
–	–	–	–	N06059	–	–	–	–	–	ASTM B575	2.4605	Allcorr
–	NiCr 23 Mo 16 Al	–	–	–	–	–	–	–	–	–	2.4605	–
–	SG/UP-NiCr 23 Mo 16	–	–	–	–	–	–	–	–	–	2.4607	–
–	NiCr 26 MoW	–	–	–	–	–	–	–	–	–	2.4608	–
–	SG-NiMo 27	–	–	–	–	–	–	–	–	–	2.4615	–
–	NiMo 28	–	–	N10665	–	NiMo 28	–	–	–	–	2.4617	–
–	NiCr 22 Mo 6 Cu	–	–	–	–	–	–	–	–	–	2.4618	–
–	–	–	–	N06985	–	–	–	–	–	–	2.4619	Hastelloy G-3
–	NiCr 22 Mo 7 Cu	–	–	N06985	–	–	–	–	–	–	2.4619	–
–	SG-NiCr 23 Al	NA 49	–	–	–	–	–	–	–	–	2.4626	–
–	SG-NiCr 22 Co 12 Mo	NA 50	–	–	–	–	–	–	–	–	2.4627	–
–	NiCr 20 Ti	HR5	–	N06075	HR5, 203.4	NC 20 T	–	–	–	–	2.4630	Nimonic® 75
–	NiCr 20 TiAl	NA 20	NCF 80A	N07080	HR401, 601	NC 20 TA	–	–	–	–	2.4631	Nimonic 80A
–	NiCr 20 Co 18 Ti	NA 36	–	N07090	HR2, 202	NC20KTA	–	–	–	–	2.4632	Nimonic 90
–	NiCo 20 Cr 15 MoAlTi	–	–	N13021	HR3	NCKD20ATV	–	–	–	–	2.4634	Nimonic 105
–	NiCo 15 Cr 15 MoAlTi	HR4	–	–	HR401, 601	NCVK15ATD	–	–	–	–	2.4636	Nimonic 115
AISI 687	NiCo 15 Cr 15 MoAlTi	–	–	–	–	NCKD20AT	–	–	–	–	2.4636	Udimet® 700
–	NiCr 22 Mo 8 AlCuTi	–	–	–	–	–	–	–	–	–	2.4637	–
–	SG-NiCr 20	NA 34	–	–	–	–	–	–	–	–	2.4639	–
–	NiCr 21 Mo 6 Cu	–	NCF 600 TP	–	–	–	–	–	–	–	2.4641	–
–	NiCr 29 Fe	–	NCF 690	N06690	–	NC 30 Fe	–	–	–	–	2.4642	INCONEL® alloy 690
–	NiCr 25 FeAlYC	–	–	–	–	–	–	–	–	–	2.4647	–
–	NiCr 20 CoMoTi	NA 38	NCF 690	N07263	HR10	NCK 20 D	–	–	–	–	2.4650	Nimonic C263
–	EL-NiCr 26 Mo	–	–	–	–	–	–	–	–	–	2.4652	–
–	NiCr 19 Co 14 Mo 4 Ti	–	–	N07001	–	NC20K14Y	–	–	–	–	2.4654	Waspaloy
–	SG-NiCr 29 Mo	–	–	–	–	–	–	–	–	–	2.4656	–
–	NiCr 70 30	–	–	N06008	–	–	–	–	–	–	2.4658	–
–	SG-NiCr 30 Mo 5 W	–	–	–	–	–	–	–	–	–	2.4659	–
–	EL-NiCr 29 Mo 5 W	–	–	–	–	–	–	–	–	–	2.4661	–
–	NiFe 35 Cr 14 MoTi	–	–	N09901	–	Z8NCDT42	–	–	–	–	2.4662	INCOLOY® 901
–	NiCr 13 Mo 6 Ti 3	–	–	N09901	–	Z8NCDT42	–	–	–	–	2.4662	Nimonic 901
–	NiCr 23 Co 12 Mo	–	–	N06617	–	NC22K12D9A	–	–	–	–	2.4663	INCONEL® alloy 617
–	NiCr 22 FeMo	–	–	N06002	HR6, 204	NC22FeD	–	–	–	–	2.4665	Hastelloy X
–	NiCr 22 Fe 18 Mo	NA 40	–	N06002	–	NC22FeD	–	–	–	–	2.4665	INCONEL alloy HX
–	NiCr 18 CoMo	–	–	–	–	NKCD20ATU	–	–	–	–	2.4666	Nimonic PK25
–	SG-NiCr 19 NbMoTi	NA 51	–	–	–	–	–	–	–	–	2.4667	–
–	NiCr 19 FeNbMo	–	–	N07718	HR8	NC 19 Fe Nb	–	–	–	–	2.4668	INCONEL alloy 718
–	NiCr 15 Fe 7 TiAl	–	–	N07750	–	NC 15 Fe 7 TA	–	–	–	–	2.4669	INCONEL alloy X750
–	G-NiCr 12 Al 6 MoNb	–	–	–	–	–	–	–	–	–	2.4671	–
–	G-NiCr 20 Co 20 MoTi	–	–	–	–	–	–	–	–	–	2.4672	–
–	NiCo 15 Cr 10 MoAlTi	–	–	N13100	–	NK15CAT	–	–	–	–	2.4674	IN 100
–	NiCo 15 Cr 10 MoAlTi	–	–	–	–	NK15C10A5T	–	–	–	–	2.4674	René 100
–	G-NiCo 15 Cr 10 AlTiMo	–	–	–	–	–	–	–	–	–	2.4674	–
–	G-NiCo 10 W 10 CrAlNb	–	–	–	–	–	–	–	–	–	2.4676	–
–	G-NiCr 50	–	–	–	–	–	–	–	–	–	2.4678	–
–	G-NiCr 35	–	–	–	–	–	–	–	–	–	2.4679	–
–	–	–	–	N10665	–	–	–	–	–	N7M	2.4685	Hastelloy B-2
CW-12 MW	G-NiMo 17 CrW	–	–	–	–	–	–	–	–	–	2.4686	–
–	NiCr 25 Mo 7 Ti	–	–	–	–	–	–	–	–	–	2.4693	–
–	NiCr 16 Fe 7 TiAl	–	–	N 07751	–	–	–	–	–	–	2.4694	INCONEL alloy 751
–	G-NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4697	–
–	NiCr 22 W 14 Mo	–	–	–	–	–	–	–	–	–	2.4733	–
–	NiCr 20 AlY	–	–	–	–	–	–	–	–	–	2.4764	–
–	NiCr 17 AlWY	–	–	–	–	–	–	–	–	–	2.4765	–
–	SG-NiCr 20 Nb	NA 35	–	–	–	–	–	–	–	–	2.4806	–
–	G-NiCr 50 Nb	–	–	–	–	–	–	–	–	–	2.4813	–
–	NiCr 15 Fe	NA 14	NCF 600	N06600	3072.76	NC 15 Fe	–	–	–	–	2.4816	INCONEL alloy 600
–	G-NiMo 30	–	–	N10276	–	NC 15 D 14 KFe	–	–	–	–	2.4819	Hastelloy C-276
ASME SB575	NiMo 16 Cr 15 W	–	–	N10276	–	NC 17 D	–	–	–	–	2.4819	Nimonic C276

(continued)

S3 Workpiece Materials Listing • High-Temp Alloys • S3 *(continued)*

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	SG-NiCr 21 Mo 9 Nb	–	–	–	–	–	–	–	–	–	2.4831	–
–	NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4836	–
–	SG-NiCr 20 Mo 15	–	–	–	–	–	–	–	–	–	2.4839	–
–	–	–	–	N06601	–	–	–	–	–	–	2.4851	Haynes® 601
–	NiCr 23 Fe	–	NCF 601	N06601	–	NC 23 Fe 14 A	–	–	–	–	2.4851	INCONEL alloy 601
–	NiFe 33 Cr 25 Co	–	–	–	–	–	–	–	–	–	2.4854	–
–	NiCr 19 Mo 9 Si	–	–	–	–	–	–	–	–	–	2.4855	–
ASME SB443	NiCr 22 Mo 9 Nb	–	–	N06625	–	NC 22 Fe DNb	–	–	–	–	2.4856	Haynes 625
ASME SB443.4	NiCr 22 Mo 9 Nb	NA 21	NCF 625	N06625	–	NC 22 Fe DNb	–	–	–	–	2.4856	INCONEL alloy 625
ASME SB163	NiCr 21 Mo	–	–	N08825	3072.76	NC21FeDU	–	–	–	–	2.4858	INCOLOY® 825
–	NiCr 60 15	–	–	–	–	–	–	–	–	–	2.4867	–
–	NiCr 80 20	–	–	–	–	–	–	–	–	–	2.4869	–
–	NiCr 20 AlSi	–	–	–	–	–	–	–	–	–	2.4872	–
–	G-NiCr 28 W	–	–	–	–	–	–	–	–	–	2.4879	Centralloy® 4879
–	NiCr 17 Mo 17 FeW	–	–	N10002	–	NC17DWY	–	–	–	CW12MW	2.4883	Hastelloy C
–	G-NiMo 16 Cr	–	–	–	–	–	–	–	–	–	2.4883	–
–	SG-NiMo 16 cr 16 W	NA 48	–	–	–	–	–	–	–	–	2.4886	–
–	G-NiCr 13 MoAl	–	–	–	–	–	–	–	–	–	2.4888	–
–	NiCr 20 Ti	HR 5	–	N06621	–	NC 20 T	–	–	–	–	2.4951	–
–	NiCr 20 TiAl	NA 20	NCF 80 A	N07080	–	NC 20 TA	–	–	–	–	2.4952	–
–	NiFe 25 Cr 20 NbTi	–	–	–	NiFe 25 Cr 20 NbTi	–	–	–	–	–	2.4955	–
–	NiCr 20 Co 18 Ti	NA 19	–	N07090	–	–	–	–	–	–	2.4969	–
–	NiCr 22 W 12 Fe	–	–	–	–	–	–	–	–	–	2.4972	–
–	NiCr 19 Co 11 MoTi	–	–	N07041	–	NC19KDT	–	–	–	–	2.4973	René 41
–	NiFeCr 12 Mo	–	–	–	–	–	–	–	–	–	2.4975	–
–	NiCr 20 Mo	–	–	–	–	–	–	–	–	–	2.4976	–
–	NiCr 20 CoMo	–	–	–	–	–	–	–	–	–	2.4982	–
–	NiCr 18 Co	–	–	N07500	–	–	–	–	–	–	2.4983	Co500
AISI 684	NiCr 18 CoMoAlTi	–	–	N07500	–	NCK19DAT	–	–	–	–	2.4983	Udimet® 500
–	Ni 99,6	NA 46	–	–	–	–	–	–	–	–	2.4060	–
–	NiMn 2	–	–	–	–	–	–	–	–	–	2.4110	–
SZ-100	G-Ni 95	–	–	–	–	–	–	–	–	–	2.4170	–
–	G-Ni 93 Si	–	–	–	–	–	–	–	–	–	2.4180	–
–	NiCu 30 Fe	–	–	N04400	3072.76	NU30	–	–	–	–	2.4360	Monel® 400
–	NiCu 30 Ti	–	–	–	–	–	–	–	–	–	2.4370	Monel 60
–	NiFe 44	–	–	–	–	–	–	–	–	–	2.4420	Magnifer 53
–	NiFe 16 CuMo	–	–	–	–	–	–	–	–	–	2.4530	Perm 77
–	NiFeK 6040	–	–	–	–	–	–	–	–	–	2.4560	–
–	NiMo 16 Cr 16 Ti	NA 45	–	N26455	–	–	–	–	–	–	2.4610	Hastelloy C-4
–	–	–	–	–	–	20CB-3	–	–	–	ASTM B463	2.4660	INCOLOY 020
–	NiCr 20 CuMo	–	–	N08020	–	–	–	–	–	–	2.4660	–
–	G-NiCr 13 Al 16 MoNb	–	–	–	HC203	NC13AD	–	–	–	–	2.4670	Nimocast 713
–	G-NiCr 50 Nb	–	–	–	–	–	–	–	–	–	2.4680	–
–	NiMo 23 Cr 8 Fe	–	–	–	–	–	–	–	–	–	2.4710	–
–	NiMo 30	–	–	–	–	ND27FeV	–	–	–	N-12 MV	2.4810	Hastelloy B
–	NiCr 45 23	–	–	–	–	–	–	–	–	–	2.4890	–
–	–	–	–	N13017	–	NK17C15D5AT	–	–	–	–	–	Astroloy
–	–	–	–	–	–	–	–	–	–	–	–	Centralloy® 60HTD
AISI 686	–	–	–	–	–	NC15Fe10D5AT	–	–	–	–	–	GMR 235
–	NiCr 16 MoAl	–	–	–	–	NC15D5FeAT	–	–	–	–	–	GMR 235-D
–	–	–	–	–	–	–	–	–	–	CW6M	–	Hastelloy C-22
–	–	–	–	N06007	–	NC22Fe19D6KTa	–	–	–	–	–	Hastelloy G
–	–	–	–	N10003	–	–	–	–	–	–	–	Hastelloy N
–	–	–	–	N06635	–	NC15D14KFe	–	–	–	–	–	Hastelloy S
–	–	–	–	N10004	–	–	–	–	–	–	–	Hastelloy W
–	–	–	–	N07263	–	NC20K20D6T	–	–	–	–	–	Haynes® 263
–	–	–	–	–	–	–	–	–	–	–	–	Haynes 282
–	NiCr 15 Fe	–	–	N06600	–	–	–	–	–	–	–	Haynes 600
–	–	–	–	–	–	–	–	–	–	–	–	Haynes 75
–	NiCo 32 Cr 26 Mo	–	–	–	–	–	–	–	–	–	–	HS27
–	–	–	–	N06102	–	–	–	–	–	–	–	IN 102
ASME SB409	X 10 NiCrAlTi 32-20	–	–	N08800	3082.76	Z10NC3221	–	–	–	–	–	INCOLOY 800
–	–	–	–	–	–	Z4NC3221	–	–	–	–	–	INCOLOY 802
–	–	–	–	–	–	NC29Fe25	–	–	–	–	–	INCOLOY 804
–	NiFe 42 K 15 Nb	–	–	N19903	–	Z3NK28	–	–	–	–	–	INCOLOY 903
–	–	–	–	N19907	–	–	–	–	–	–	–	INCOLOY 907
–	–	–	–	N09925	–	–	–	–	–	–	–	INCOLOY 925
–	–	–	–	N09945	–	–	–	–	–	–	–	INCOLOY 945
ASME SB575	–	–	–	–	–	NiMo16Cr15	–	–	–	–	–	INCONEL alloy 22
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 230
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 600SP
–	–	–	–	–	–	–	–	–	–	–	–	INCONEL alloy 62
–	–	–	–	N06626	–	–	–	–	–	–	–	INCONEL alloy 625LCF
–	–	–	–	–	–	NC15A	–	–	–	–	–	INCONEL alloy 702
–	–	–	–	N09706	–	NFe10C16NbT	–	–	–	–	–	INCONEL alloy 706
–	–	–	–	N07718	–	–	–	–	–	–	–	INCONEL alloy 718 OP
–	–	–	–	–	–	NC16Fe8TM	–	–	–	–	–	INCONEL alloy 721
–	NiCr 16 FeTi	–	–	N07722	–	NC16FeTi	–	–	–	–	–	INCONEL alloy 722
–	–	–	–	R30783	–	–	–	–	–	–	–	INCONEL alloy 783
–	–	–	–	N09925	–	–	–	–	–	B983 N09925	–	INCONEL alloy 925
–	–	–	–	N10276	–	–	–	–	–	–	–	INCONEL alloy C-276
–	–	–	–	N07754	–	–	–	–	–	–	–	INCONEL alloy MA754
–	–	–	–	N07751	–	–	–	–	–	–	–	INCONEL alloy X751
–	–	–	–	K93600 K93603	–	–	–	–	–	ASTM F1684	–	INVAR® 36
–	NiCr 20 Co 18 Ti	–	–	–	–	–	–	–	–	–	–	Jessop G81
–	G-NiCr 19 Co	–	–	N07252	–	–	–	–	–	–	–	M 252
–	–	–	–	N04405	–	–	–	–	–	–	–	Monel® R405

NOTE: For legend, see page Y237.

(continued)

S3 Workpiece Materials Listing • High-Temp Alloys • S3 *(continued)*

S3 Nickel-Based, Heat-Resistant Alloys *Tensile Strength RM (MPa)*: 600–1700* *Hardness (HB): 160–450 (HRC): <48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
–	NiFe 33 Cr 17 Mo	–	–	–	–	–	–	–	–	–	–	Nimocast PD16
–	–	–	–	–	HC202	NC20N13	–	–	–	–	–	Nimocast PE10
–	–	–	–	–	–	NC19K18Fe5TA	–	–	–	–	–	Nimonic® 95
ASME SB575	–	–	–	N06022	–	–	–	–	–	–	–	Nimonic C22
–	NiCr 22 Fe 18 Mo	–	–	–	HR6, 204	NC22FeD	–	–	–	–	–	Nimonic PE13
–	NiFe 33 Cr 17 Mo	–	–	–	HR207	NW11AC	–	–	–	–	–	Nimonic PE16
–	NiCr 20 Co 16 MoTi	–	–	–	–	NC19KDUN	–	–	–	–	–	Nimonic PK33
–	–	–	NCF 3015	–	–	–	–	–	–	–	–	NiReVa 3015
AISI 686	–	–	–	–	–	–	–	–	–	–	–	R-235
AISI 690	–	–	–	–	–	Z6NKCDT38	–	–	–	–	–	Refractaloy 26
–	–	–	–	–	–	NK10C8W7ATaTD	–	–	–	–	–	René 125
–	–	–	–	–	–	NK15C14D6AWT	–	–	–	–	–	René 65
–	–	–	–	–	–	NC15K15ADT	–	–	–	–	–	René 77
–	–	–	–	–	–	NC14K9T5DWA	–	–	–	–	–	René 80
–	–	–	–	–	–	NC14K8	–	–	–	–	–	René 95
–	NiTa 9 Co 8 W 6 CrAl	–	–	–	–	NTa9K7C6W5A5DT	–	–	–	–	–	TRW VIA
–	NiCr 19 NbMo	–	–	–	–	NC18Fe18Nb6DWT	–	–	–	–	–	Udimet® 630
–	–	–	–	–	–	NCK18TDA	–	–	–	–	–	Udimet 710
–	–	–	–	–	–	NC18K15TDA	–	–	–	–	–	Udimet 720

S4 Workpiece Materials Listing • High-Temp Alloys • S4

S4 Titanium and Titanium Alloys *Tensile Strength RM (MPa)*: 900–1600* *Hardness (HB): 300–400 (HRC): 33–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
R 50250	Ti-99.8	2 TA 1	–	UNS R50250	TA6, TA7, TA8, TA9	AIR:9182T35	–	–	–	ASTM B381F1	3.7025	ATI 30 CP Grade 1
R 50400	Ti-99.7	2 TA 2-5	–	UNS R50400	TA2.5	AIR:9182T40	–	–	–	ASTM B381F2	3.7035	ATI 40 CP Grade 2
–	SG-Ti 2	–	–	–	–	–	–	–	–	–	3.7036	–
R 50550	Ti-99.6	TA 3	–	UNS R50550	TA2, TA3, TA4, TA5	AIR:9182T50	–	–	–	ASTM B381F3	3.7055	ATI 55 CP Grade 3
R 50700	Ti-99.5	2 TA 6-9	–	UNS R50700	–	AIR:9182T60	–	–	–	ASTM B381F4	3.7065	ATI 70 CP Grade 4
–	TiNi 0,8 Mo 0,3	–	–	UNS R53400	–	–	–	–	Ti-3Al-1.5Mn	ASTM Grade 12	3.7105	–
Ti 5Al-2.5Sn	TiAl 5 Sn 2,5	–	–	UNS R54520	TA 14,17	T-A5E	–	–	Ti-5Al-2.5Sn	–	3.7115	ATI Grade 6
–	TiCu 2	2 TA 21-24	–	–	–	–	–	–	Ti-2Cu	–	3.7124	–
R 54620	TiAl 6 Sn 2 Zr 4 Mo 2 Si	–	–	UNS R54620	–	–	–	–	Ti-6Al-2Sn-2Zr-4Mo-2Si	–	3.7145	–
–	TiAl 6 ZrMo 0,5	TA 43	–	–	–	–	–	–	Ti-6-5-0.5	–	3.7155	–
R 56400	TiAl 6 V 4	TA 10-13	TC4	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V	–	–	Ti-6Al-4V	–	3.7164	ATI 6-4™
–	TiAl 6 V4	–	TC4	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V (Beta)	–	3.7164	–
R 56620	TiAl 6 V 6 Sn2	–	–	UNS R56620	–	–	–	–	Ti-6Al-6V-2Sn	–	3.7175	ATI 6-6-2™
–	TiAl 4 Mo 4 Sn 2	TA 45-51	–	–	–	–	–	–	Ti-4Al-4Mo-2Sn	–	3.7185	–
–	TiAl 3 V2.5	–	–	UNS R56320	–	–	–	–	Ti-3Al-2.5V	ASTM Grade 9	3.7195	ATI 3-2.5-MIL™
R 52250	Ti 1 Pd	TP 1	–	UNS R 52250	–	–	–	–	–	ASTM Grade 11	3.7225	–
R 52400	Ti 2 Pd	–	–	UNS R 52400	–	–	–	–	–	ASTM Grade 7	3.7235	–
–	Ti 3 Pd	–	–	–	–	–	–	–	–	–	3.7255	–
–	TiAl 5 Fe 2,5	–	–	–	–	–	–	–	Ti-5Al-2.5Fe	–	3.7110	–
–	TiV13Cr11Al3	–	–	–	–	–	–	–	Ti-13V-11Cr-3Al	–	–	11/13/03
–	Ti-10V-2Fe-3Al	–	–	–	–	–	–	–	Ti-10.2.3	–	–	ATI 10-2-3™
–	–	–	–	UNS R58153	–	–	–	–	Ti-15-333	–	–	ATI 15-333™
–	–	–	–	–	–	–	–	–	Ti-15Mo (Alpha + Beta)	–	–	ATI 15Mo™ (Alpha + Beta)
–	–	–	–	–	–	–	–	–	Ti-15Mo (Beta)	–	–	ATI 15Mo™ (Beta)
–	Ti5Al2Sn2Zr4Cr4Mo	–	–	UNS R58650	–	–	–	–	–	–	–	ATI 17™
–	TIAl 3 V 8 Cr 6 Mo 4 Z 4	–	–	–	–	–	–	–	Ti-3Al-8V-6Cr-4Mo-4Zr	ASTN Grade 19	–	ATI 38-644™
–	–	–	–	UNS R54250	–	–	–	–	Ti-425	ASTM B265	–	ATI 425®
–	–	–	–	–	–	–	–	–	Ti-425 MIL	–	–	ATI 425®-MIL
–	TiAl 4 Mo 4 Sn 2 Si 0.5	–	–	–	5103	T-A4DE	–	–	Ti-4Al-4Mo-2Sn-0.5Si	–	–	ATI 4-4-2™
–	–	–	–	–	–	–	–	–	Ti-45Nb	–	–	ATI 45Nb™
–	–	–	–	–	–	–	–	–	Ti-5Al-5V-5Mo-3Cr	–	–	ATI 5-5-5-3 PM™
–	–	–	–	–	–	–	–	–	Ti-6Al-2Sn-2Zr-2Mn-2Cr-0.2Si	–	–	ATI 6-2222™
–	–	–	–	UNS R54620	–	–	–	–	Ti-6Al-4Zr-2Mo-2Sn	–	–	ATI 6-2-4-2 PM™
–	TiAl6Zr4Mo2Sn2	–	–	UNS R54620 modified	–	–	–	–	Ti-6Al-4Zr-2Mo-2Sn-0.2Si	–	–	ATI 6-2-4-2-Si PM™
–	–	–	–	UNS R56260	–	–	–	–	Ti-6-2-4-6	–	–	ATI 6-2-4-6™
–	–	–	–	UNS R56401	–	–	–	–	Ti-6Al-4V ELI	–	–	ATI 6-4 ELI™
–	TiAl 6 V4	–	–	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V MIL	–	–	ATI 6-4-MIL™
–	TiAl 6 V4	–	–	UNS R56400	TA10 TA11 TA12 TA13 TA28 TA56	TA6V; AIR:9183	–	–	Ti-6Al-4V MIL (HT)	–	–	ATI 6-4-MIL™
–	–	–	–	UNS R56700	–	–	–	–	Ti-6-7	ASTM F 1295	–	ATI 6-7™
–	TiAl8Mo1V1	–	–	UNS R54810	–	–	–	–	Ti-8Al-1Mo-1V	–	–	ATI 8-1-1™
–	–	–	–	–	–	–	–	–	Ti-15Mo-3Nb-3Al-0.2Si	ASTM Grade 21	–	Beta 21-S
–	–	–	–	–	–	–	–	–	Ti-12Mo-6Zr-2Fe	–	–	TMZF
–	TiAl7Nb	–	–	–	–	–	–	–	Ti-6Al-7Nb	–	–	–
–	TiAl7Mo4	–	–	–	–	–	–	–	–	ASTM B381	–	–
–	TiAl 4 Mo 4 Sn 4 Si 0.5	–	–	–	5203	–	–	–	Ti-4Al-4Mo-4Sn-0.5Si	–	–	–
–	TiA6Zr5Mo0.5Si0.25	–	–	–	–	T.AGZ.50	–	–	Ti-6Al-5Zr-0.5Mo-0.25Si	–	–	–
–	TiAl6Zr5Mo4CuSi0.2	–	–	–	M201	–	–	–	Ti-6Al-5Zr-4Mo-Cu-0.2Si	–	–	–
–	–	–	TC18	–	–	–	–	–	Ti-5Al-5Mo-5V-1Cr-1Fe	–	–	–
–	–	–	–	UNS %58210	–	–	–	–	Ti Beta 21 S	ASTM Grade 21	–	–
Ti 98.8	Ti 98.8	–	–	–	–	–	–	–	–	–	–	–
Ti 99.9	Ti 99.9	–	–	–	–	–	–	–	–	–	–	–
–	TiAL 6 Sn 2 Zr 4 Mo 2	–	–	–	–	–	–	–	–	–	–	–

NOTE: For legend, see page Y237.

H1 Workpiece Materials Listing • Hardened Steels and Irons • H1

H1 Hardened Materials *Hardness (HRC): 44–48*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
H 11	X 38 CrMoV 5 H1	BH 11	SKD 6	T20811	X 38 CrMoV 5 H1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	–	–	–	1.2343	–
H11	X 38 CrMoV 5 H1	BH 11	SKD 6	T20811	X 38 CrMoV 5 H1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	–	–	–	1.2343	–
H 13	X 40 CrMoV 5 1	BH 13	SKD 61	T20813	X 40 CrMoV 5 1	Z 40 CDV 5	X 40 CrMoV 5 1 1 KU	2242	–	–	1.2344	–
H 10	X 32 CrMoV 3 3	BH 10	SKD 7	T 20810	X 32 CrMoV 12H-28	32 DCV 28	30 CrMoV 12 27 KU	–	–	–	1.2365	–
H19	X 45 CrCoVW 5 5 5	–	–	–	–	–	–	–	–	–	1.2678	–
A 532 I B NiCr-LC	GX 260 NiCr 42	Grade 2 A	0512-00	F45001	GJH-X260NiCr 4-2	–	–	0512-00	–	–	0.9620	–
L6	–	–	–	–	–	55 NCDV 07 (HT)	–	–	–	–	–	–

H2 Workpiece Materials Listing • Hardened Steels and Irons • H2

H2 Hardened Materials *Hardness (HRC): 48–55*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 532 I A NiCr-HC	G-X 330 NiCr 42	Grade 2 B	0513-00	F45000	GJH-X330NiCr 4-2	FB Ni 4 Cr2 HC	–	0513-00	–	–	0.9625	–
H 21	X 30 WCrV 93	BH 21	SKD 5	T 20821	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	–	–	–	1.2581	–
H 12	X 37 CrMoW 5 1	BH 12	SKD 62	T20812	–	Z 35 CWDV 5	X 35 CrMoW 05 KU	–	–	–	1.2606	–
–	G-X 300 NiMo 3 Mg	–	–	–	GJH-X300NiMo 3 Mg	–	–	–	–	–	0.9610	–
A 532 I B NiCr-LC	GX 260 NiCr 42	Grade 2 A	0512-00	F45001	GJH-X260NiCr 4-2	–	–	0512-00	–	–	0.9620	–
A 532 III A 25% Cr	GX 260 Cr 27	Grade 3 D	0466-00	–	GJH-X260Cr 27	–	–	–	–	–	0.9650	–
–	X 2 NiCoMoTi 180905	–	–	–	–	Z 2 NKD 180905	–	–	–	–	–	Durimphy
K12	–	–	–	–	–	–	–	–	–	–	–	ATI K12 MIL

H3 Workpiece Materials Listing • Hardened Steels and Irons • H3

H3 Hardened Materials *Hardness (HRC): 56–60*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
A 532 IIC15% CrMo-HC	G-X 300CrMo 15 3	Grade 3 A	–	–	GJH-X300CrMo 15-3	–	–	–	–	–	0.9635	–
–	G-X 300 CrMoNi 15 2 1	Grade 3 B	–	F45005	GJH-X300CrMoNi15-2-1	–	–	–	–	–	0.9640	–
A 532 IID20% CrMo-LC	GX 260 CrMoNi 20 2 1	Grade 3 C	–	F45007	GJH-X260CrMoNi20-2-1	–	–	–	–	–	0.9645	–
A 532 III A 25% Cr	G-X 300 CrMo 27 1	Grade 3 E	–	–	GJH-X300CrMo 27-1	–	–	–	–	–	0.9655	–
A 2	X 100 CrMoV 5 1	SKD 12	–	–	BA 2	Z 100 CDV 5 (HT)	X 100 CrMoV 51 KU	2260	–	–	1.2363	–
D7 (HT)	–	–	–	T30407	–	Z 230 CVA 12 04	–	–	–	–	1.2378	–
O 2	90 MnCrV 8	BO 2	–	T31502	90 MnV 8	90 MnV 8	90 MnVCr 8 KU	–	–	–	1.2842	–
A 532 I D Ni-HiCr	G-X 300 CrNiSi 95 2	Grade 2 C	0457-00	F45003	GJH-X300CrNiSi 9-5-2	–	–	–	–	–	0.9630	Nihard type 4
S 1	60 WCrV 7	BS 1	–	–	6020 WCrV 8	55 WC 20	55 WCrV 8 KU	–	–	–	1.2550	–
S 1	60 WCrV 7	BS 1	–	–	60 WCrV 8	55 WC 20	55 WCrV 8 UK	–	–	–	1.2550	–
S 7	50 CrMoV 13 14	–	–	–	–	–	–	–	–	–	–	Cryodur 2357
K 12 (HT)	–	–	–	–	–	–	–	–	–	–	–	ATI K12-MIL

H4 Workpiece Materials Listing • Hardened Steels and Irons • H4

H4 Hardened Materials *Hardness (HRC): >60*

AISI**	DIN	BTS	JIS	UNS	EN	AFNOR	UNI	SIS	SAE	ASTM	Material Number	Manufacturer Reference
W 108	C 80 W 1	–	–	T72301	C 80 U	Y1 90	C 80 KU	1880	–	–	1.1525	–
D 2	X 155 CrVMo 12 1	BD 2	SKD §§	T 30402	X 153 CrMoV 12	Z 160 CDV 12	X 155 CrVMo 12 1 KU	2310	–	–	1.2379	–
–	100 WV4	–	SKS 21	–	–	–	–	–	–	–	1.2515	–
D 3	X 210 Cr 12	BD 3	SKD 1	T30403	X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	–	–	–	1.2080	–
O 7	110 WCrV 5	–	–	–	–	–	–	–	–	–	–	–
–	Mh97 + Pb	–	–	–	–	–	–	–	–	–	–	LAW 100 Pb

Workpiece Materials Listing Legend

* 1 Mpa = 145 psi.
** Includes ASTM and SAE material specifications.
AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

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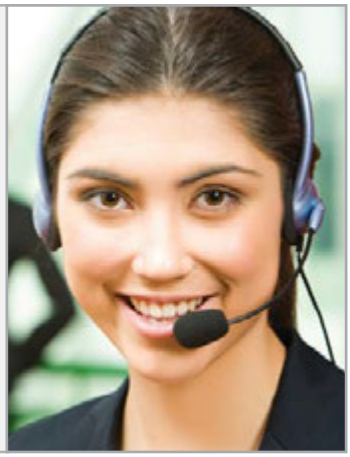

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Numbers shown only serve the originating country listed.

METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalog!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation. For more information, consult the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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