

**beyond™ EVOLUTION™**

GROOVING, CUT-OFF, AND  
MULTI-DIRECTIONAL TURNING  
MADE...

**E**  **ASY**

**INNOVATIONS**  
CATALOG **2017**

## Beyond™ Evolution™

Unwilling to sacrifice performance or applications, Beyond™ Evolution™ became the first portfolio in the market to compete in all grooving and cut-off applications.



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**01**

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# Turning

<b>Beyond Evolution Grooving and Cut-Off Full Portfolio .....</b>	<b>A2–A97</b>
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# Getting started made **EASY**

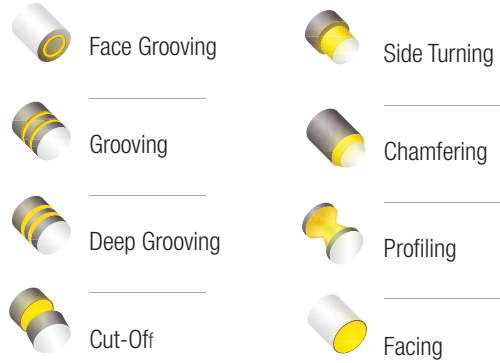
**beyond™ EVOLUTION™**

## Your day made **EASY**

Choosing the right tooling can be complicated and time-consuming. Built on simplicity, we have engineered a new tool that makes every machine operator's life **EASY**.

Unwilling to sacrifice performance or applications, Kennametal introduces Beyond™ Evolution™.

Beyond™ Evolution™ is the new single-side grooving and cut-off tool that also performs multi-directional turning.

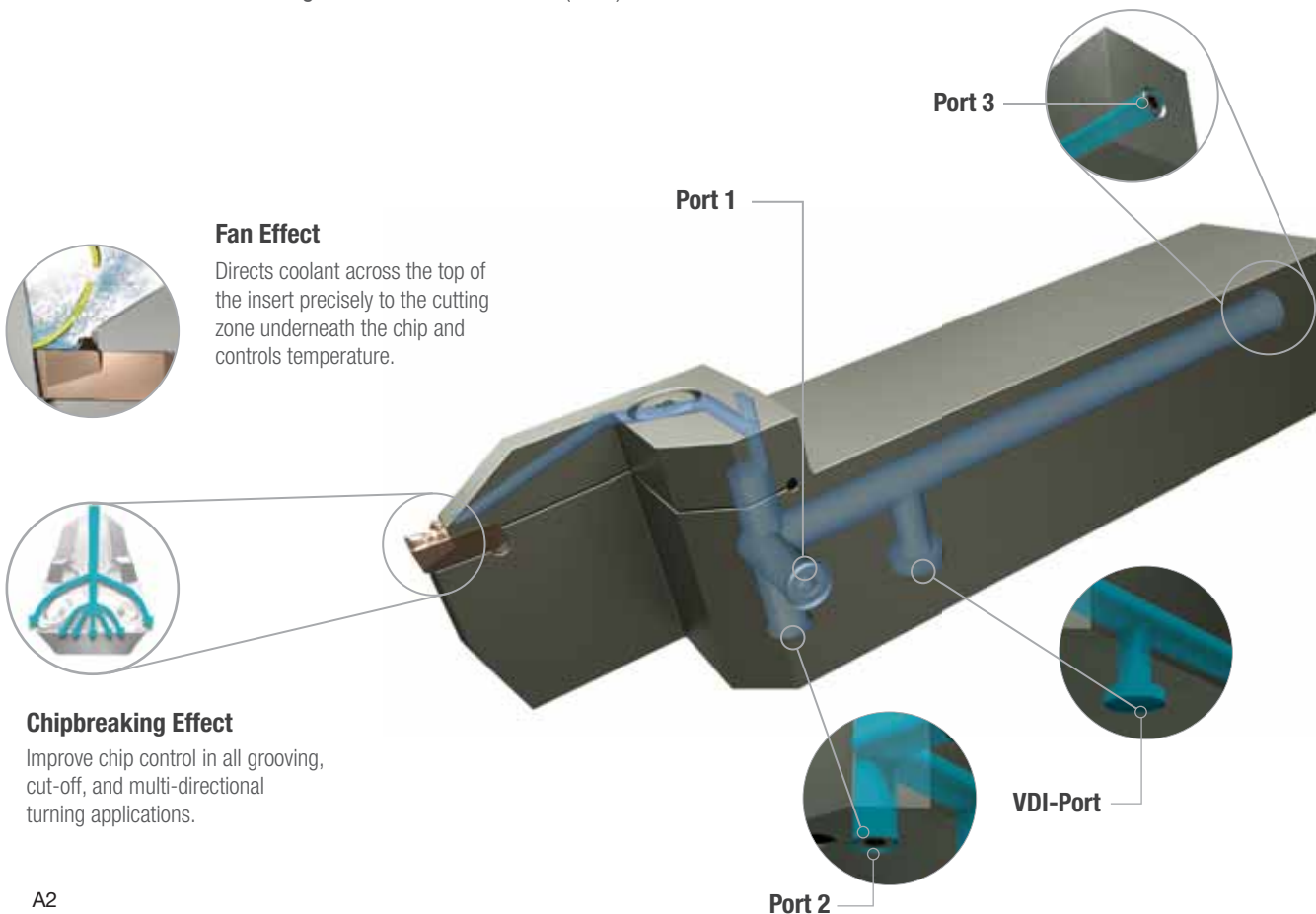


## Productivity made **EASY**

### Active Coolant Control

If your coolant delivery is typical to the market, you may be applying more heat to the cutting edge than you think. This reduces tool life and increases cycle time.

With Beyond™ Evolution™, you won't have to change your existing equipment. Whether you are using a high-pressure or low-pressure coolant supply, Beyond™ Evolution™, featuring Active Coolant Control, delivers more tool life and higher Metal Removal Rates (MRR).



#### Fan Effect

Directs coolant across the top of the insert precisely to the cutting zone underneath the chip and controls temperature.

#### Chipbreaking Effect

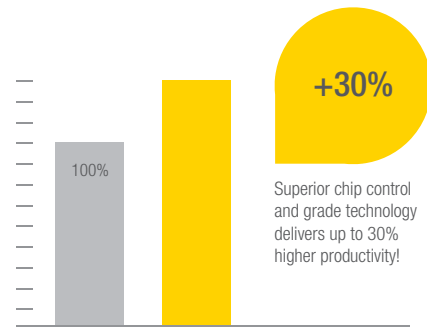
Improve chip control in all grooving, cut-off, and multi-directional turning applications.

## Smooth surface finish made EASY Triple-V Seating

**Problem:** Traditional single-sided grooving and cut-off systems cannot deliver smooth surface finish due to lack of stability.

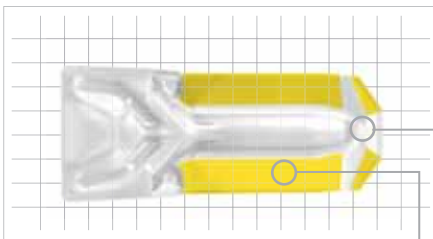
**Solution:** The Beyond™ Evolution™ proprietary new Triple-V Seating feature provides functional stability and minimizes vibration.

**Three contact surfaces provide unmatched stability:**  
When combined with GUP and CF chipbreakers, Triple-V Seating provides excellent surface finish.



## Saving money made EASY

Beyond™ Evolution™, featuring Active Coolant Control, Triple-V Seating, and Beyond™ Drive™ grades with Wear Detection Technology, provides longer tool life, maximum stability, and higher Metal Removal Rates (MRR), resulting in up to 30% higher productivity.

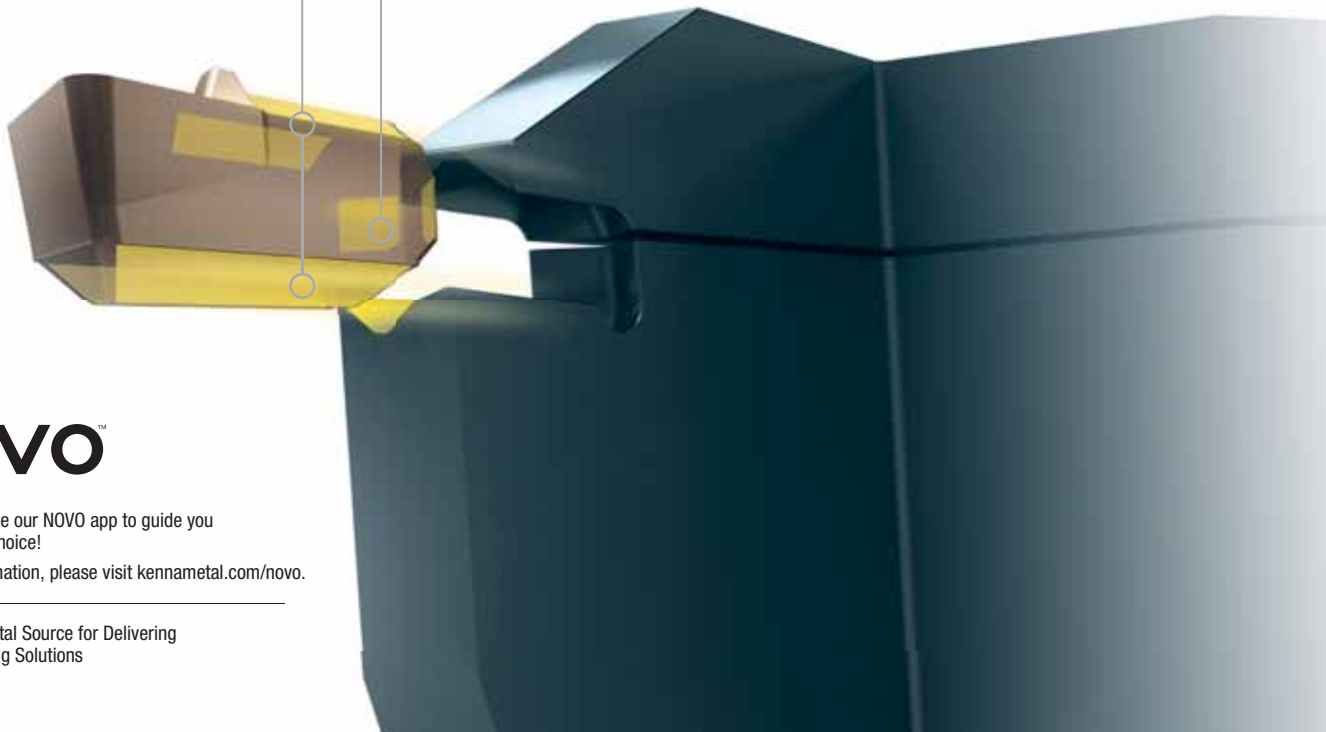


### Top and Bottom-V

Precise and secure insert positioning for increased rigidity and dimensional accuracy

### V-Back Design

Unsurpassed grooving, cut-off, and multi-directional turning load stability.



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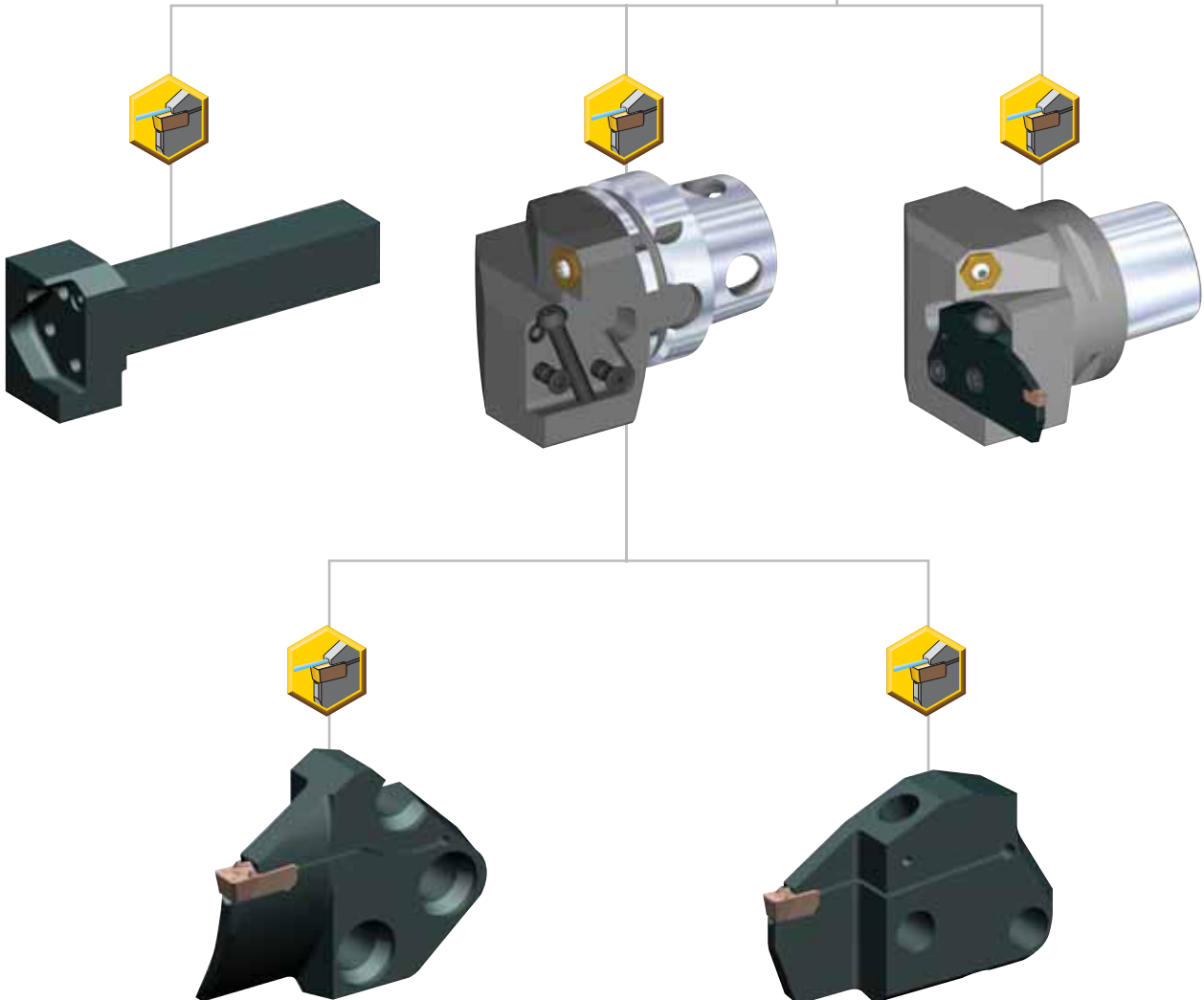
# Your day made **EASY** —



Efficient coolant delivery.  
Available in seat sizes  
3 and higher.



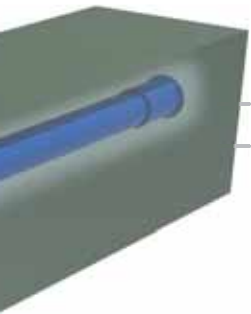
Modular with  
through coolant



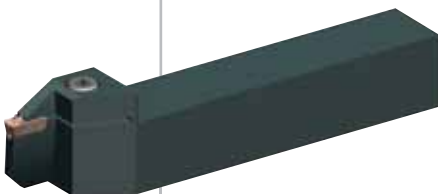


**beyond™ EVOLUTION™**

# high-performance system.



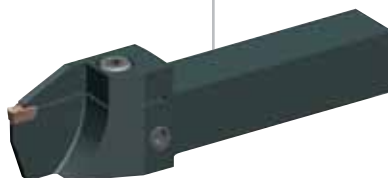
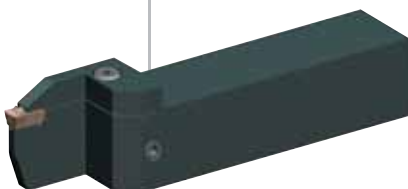
Face grooving  
with through coolant



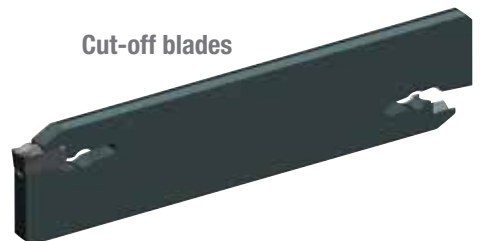
I.D. Boring Bar

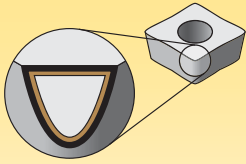


Square shank  
with through coolant



Cut-off blades



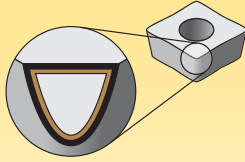


Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45
K313		<b>Composition:</b> A hard, low binder content, unalloyed WC/Co fine-grain grade. <b>Application:</b> Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temp alloys. Superior thermal deformation and depth-of-cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service.										
	C3-C4		M									
KCU10		<b>Composition:</b> An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. <b>Application:</b> The KCU10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed/feed capability.										
	C3-C4		P									
KCU25		<b>Composition:</b> An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. <b>Application:</b> The KCU25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cuts and high feed rates.										
	C2, C6		M									



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

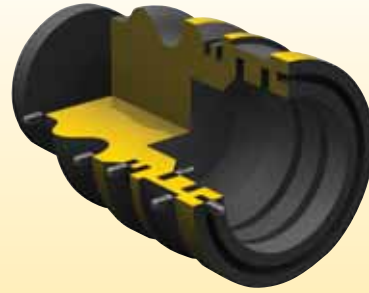
CVD-Coated Carbide Grades

Coating		Grade Description		05	10	15	20	25	30	35	40	45
KCP10B		<b>Composition:</b> A specially engineered wear-resistant carbide grade with a newly designed multilayer MTCVD-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN coating with superior interlayer adhesion. <b>Application:</b> An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes.	P									
	C3, C7		K									
KCP25B		<b>Composition:</b> A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN coating with superior interlayer adhesion. <b>Application:</b> Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimizes microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes.	P									
	C2-C3, C6-C7		K									
KCK20B		<b>Composition:</b> A multilayered coating with thick MTCVD TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN layers applied over a carbide substrate specifically engineered for cast irons. <b>Application:</b> Delivers consistent performance in high-speed machining of gray and ductile irons. The substrate design permits the insert to stay in the cut for a long time at high speeds with minimum deformation. The thick CVD coating and post-coat treatment provide superior wear resistance ensuring long and consistent tool life. Can be applied both in straight and lightly interrupted cuts.	P									
	C3, C4		K									
KCM35B		<b>Composition:</b> A multilayer TiN-MT-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN CVD coating over a super-tough substrate. <b>Application:</b> KCM35B is an excellent general purpose to roughing grade for machining stainless steels and roughing steels in turning and cut-off applications. The substrate provides improved toughness while the coating layers offer improved abrasion resistance and dependability at high cutting temperatures, along with wear identification. The polished surface improves edge toughness and provides a smooth outer surface to reduce forces and resist workpiece build-up on the cutting edge even at low cutting speeds. The grade is available in multiple sizes and geometries appropriate for increased feeds and large depths of cut.	P									
	C1-C2, C5-C6		M									
			S									

### Step 1 • Identify your grooving or cut-off application

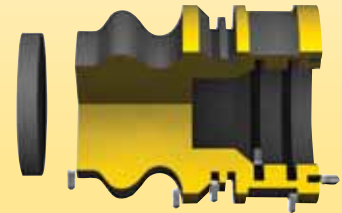
#### What you need to know:

- Groove depth, width, and profile.
- Material being machined.
- Application to be performed (O.D. and I.D. grooving, turning, face grooving, and cut-off).
- Shank size requirements of the machine.



#### General Recommendation to Select the Insert Size

for workpiece diameters	insert seat size
<25mm	3
25-50mm	4
>50mm	5-10



### Step 2 • Select chipbreaker style and feed rate

Based on the application and seat size, determine the recommended geometry and starting feed rate.

#### Plunge feed rates

■ Steel  
■ Stainless Steel  
■ Cast Iron  
■ Non-Ferrous  
■ High-Temp Alloys  
■ Hardened Materials

● first choice  
○ alternate choice

Chip Control	Description	Insert Geometry	Seat Size	Corner Radius	Starting Conditions	Plunge Feed Rates (in/rev) (mm/rev)												
						3020	3040	0060	0080	2100	2120	0140						
				In (mm)	In (mm)													
+GIP	Positive rake angle for lower cutting forces.		7	R0.06	008 (0.2)	0024 (0.30)	0.001											
					008 (0.2)	0031 (0.38)	0.001											
			3	008 (0.2)	0036 (0.39)	0.001												
				016 (0.4)	0043 (0.11)	0.001												
			4	016 (0.4)	0047 (0.12)	0.001												
				021 (0.6)	0059 (0.15)	0.001												
			5	016 (0.4)	0059 (0.15)	0.001												
				021 (0.6)	0059 (0.16)	0.001												
			6	016 (0.4)	0059 (0.15)	0.001												
				021 (0.6)	0071 (0.18)	0.001												
8	021 (0.6)	0079 (0.20)	0.001															
	021 (0.6)	0079 (0.20)	0.001															
10	047 (1.2)	0087 (0.22)	0.001															
	047 (1.2)	0094 (0.24)	0.001															
-GIP	Stable negative cutting edge allowing for more aggressive applications.		7	R0.06	008 (0.2)	0024 (0.30)	0.001											
					008 (0.2)	0031 (0.38)	0.001											
			3	008 (0.2)	0036 (0.39)	0.001												
				016 (0.4)	0043 (0.11)	0.001												
			4	016 (0.4)	0047 (0.12)	0.001												
				021 (0.6)	0059 (0.15)	0.001												
			5	016 (0.4)	0059 (0.15)	0.001												
				021 (0.6)	0059 (0.16)	0.001												
			6	016 (0.4)	0059 (0.15)	0.001												
				021 (0.6)	0071 (0.18)	0.001												
8	021 (0.6)	0079 (0.20)	0.001															
	021 (0.6)	0079 (0.20)	0.001															
10	047 (1.2)	0087 (0.22)	0.001															
	047 (1.2)	0094 (0.24)	0.001															

#### Maximum Feed Rate Values

Material Group	Feed Factor
M	0.7
N	1.2
C	0.8
S	0.5

Data above is for P and M material groups. Maximum feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.

#### I.D. and Face Grooving

For I.D. and face grooving applications, reduce feed rate by 20%.

■ **Step 3 • Select the starting speed**

Based on material and grade, identify starting speed (vc). First choice is in **bold** type.

Recommended Starting Speeds [SFM]																						
Material Group	K313			KCU10			KCU25			KCM35B			KCP10B			KCP25B			KCK20B <b>A</b>			
<b>P</b>	0-1	-	-	-	450	<b>925</b>	1100	360	<b>740</b>	880	290	<b>590</b>	700	600	<b>1120</b>	1475	475	<b>925</b>	1200	660	<b>1400</b>	1620
	2	-	-	-	450	<b>650</b>	800	350	<b>520</b>	640	290	<b>420</b>	510	600	<b>880</b>	1150	475	<b>650</b>	1000	660	<b>970</b>	1250
	3	-	-	-	450	<b>510</b>	800	300	<b>410</b>	640	200	<b>330</b>	510	550	<b>430</b>	850	450	<b>510</b>	800	600	<b>700</b>	800
	4	-	-	-	250	<b>380</b>	550	200	<b>290</b>	440	160	<b>230</b>	350	300	<b>480</b>	550	250	<b>360</b>	400	330	<b>530</b>	710
	5	-	-	-	400	<b>680</b>	850	320	<b>530</b>	680	260	<b>420</b>	540	500	<b>720</b>	1000	400	<b>650</b>	875	550	<b>800</b>	1100
	6	-	-	-	350	<b>500</b>	750	280	<b>400</b>	600	220	<b>320</b>	480	400	<b>600</b>	900	350	<b>500</b>	750	440	<b>660</b>	990
<b>M</b>	1	200	<b>300</b>	400	450	<b>790</b>	850	300	<b>550</b>	800	250	<b>400</b>	450	-	-	-	-	-	-	-	-	-
	2	150	<b>250</b>	350	400	<b>650</b>	800	300	<b>500</b>	800	250	<b>350</b>	410	-	-	-	-	-	-	-	-	-
	3	120	<b>220</b>	320	400	<b>600</b>	800	300	<b>450</b>	700	250	<b>300</b>	450	-	-	-	-	-	-	-	-	-
<b>K</b>	1	100	<b>250</b>	400	400	<b>600</b>	800	320	<b>480</b>	640	-	-	-	560	<b>800</b>	1440	450	<b>680</b>	1170	700	<b>1000</b>	1800
	2	75	<b>225</b>	350	300	<b>600</b>	700	240	<b>400</b>	560	-	-	-	400	<b>640</b>	1120	325	<b>620</b>	910	500	<b>800</b>	1400
	3	65	<b>190</b>	300	200	<b>350</b>	500	160	<b>280</b>	400	-	-	-	400	<b>560</b>	880	325	<b>455</b>	715	500	<b>700</b>	1100

■ **Step 4 • Select toolholder based on application**

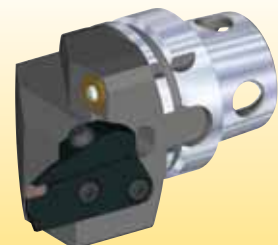
Choose the high-performance holder based on your specific grooving or cut-off application, with the corresponding seat size.

Style		Application
	<b>Boring Bar</b>	• For use in I.D. grooving applications.
	<b>Cut-Off Blade</b>	• Allows user to vary the depth of cut.
	<b>Toolholder – Integral</b>	• Offers the most stability over other styles.
	<b>Toolholder – Modular</b>	• Interchangeable blades for versatility.
	<b>KM™ – Modular KM4X™ – Modular</b>	• Best-in-class KM Quick Change platform.
	<b>PSC – Modular</b>	• The modular system in the PSC Quick Change platform.

■ **Step 5 • Select the insert and holder from catalog page**

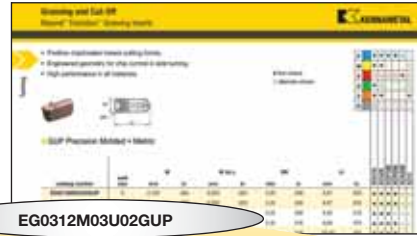
**Congratulations!**

You have successfully maximized your productivity by selecting the best insert geometry, grade, and cutting specifications for your application!



## 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.

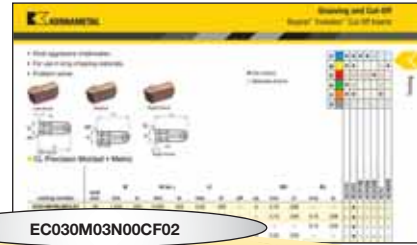


EG0312M03U02GUP

<b>E</b>	<b>G</b>	<b>0312</b>	<b>M</b>	<b>03</b>	<b>U</b>	<b>02</b>	<b>GUP</b>																																																								
Family Name	Insert Type	Groove Width	Unit	Seat Size	Tolerance	Corner Radius	Chipbreaker/ Edge Condition																																																								
Beyond™ Evolution™	G = Square  R = Full Radius	<b>Metric</b> = 1/100mm  <b>Inch</b> = 1/1000"	<b>M</b> = Metric  <b>I</b> = Inch		U = Precision Molded  P = Precision Ground		GUP = Groove-Turn Universal Positive  GUN = Groove-Turn Universal Negative  FB = Flat Top Blank  PB = Positive Chip Control Blank																																																								
				<table border="1"> <thead> <tr> <th rowspan="2">seat size</th> <th colspan="2">groove width</th> </tr> <tr> <th>mm</th> <th>inch</th> </tr> </thead> <tbody> <tr> <td>1B</td> <td>1,40</td> <td>.055</td> </tr> <tr> <td>1F</td> <td>1,60–1,99</td> <td>.063–.078</td> </tr> <tr> <td>02</td> <td>2,00–2,99</td> <td>.079–.117</td> </tr> <tr> <td>03</td> <td>3,00–3,99</td> <td>.118–.156</td> </tr> <tr> <td>04</td> <td>4,00–4,99</td> <td>.157–.196</td> </tr> <tr> <td>05</td> <td>5,00–5,99</td> <td>.197–.235</td> </tr> <tr> <td>06</td> <td>6,00–7,99</td> <td>.236–.314</td> </tr> <tr> <td>08</td> <td>8,00–8,99</td> <td>.315–.353</td> </tr> <tr> <td>10</td> <td>9,00–10,12</td> <td>.354–.398</td> </tr> </tbody> </table> <p>*.312" = seat size 08</p>	seat size	groove width		mm	inch	1B	1,40	.055	1F	1,60–1,99	.063–.078	02	2,00–2,99	.079–.117	03	3,00–3,99	.118–.156	04	4,00–4,99	.157–.196	05	5,00–5,99	.197–.235	06	6,00–7,99	.236–.314	08	8,00–8,99	.315–.353	10	9,00–10,12	.354–.398	<table border="1"> <thead> <tr> <th colspan="2">mm</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>full radius</td> </tr> <tr> <td>01</td> <td>0,1</td> </tr> <tr> <td>02</td> <td>0,2</td> </tr> <tr> <td>04</td> <td>0,4</td> </tr> <tr> <td>08</td> <td>0,8</td> </tr> <tr> <td>12</td> <td>1,2</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">inch</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>full radius</td> </tr> <tr> <td>05</td> <td>.008</td> </tr> <tr> <td>1</td> <td>.016</td> </tr> <tr> <td>2</td> <td>.032</td> </tr> <tr> <td>3</td> <td>.047</td> </tr> </tbody> </table>	mm		00	full radius	01	0,1	02	0,2	04	0,4	08	0,8	12	1,2	inch		00	full radius	05	.008	1	.016	2	.032	3	.047
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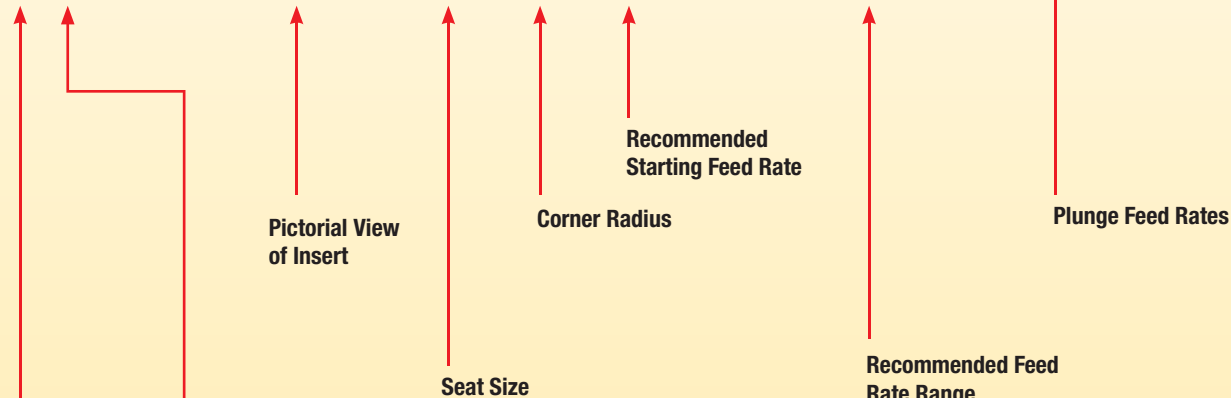
<b>E</b>	<b>C</b>	<b>030</b>	<b>M</b>	<b>03</b>	<b>N</b>	<b>00</b>	<b>CF</b>	<b>02</b>																																																															
Family Name	Insert Type	Cutting Edge Width	Unit	Seat Size	Hand of Insert	Approach Angle	Chipbreaker	Corner Radius																																																															
Beyond™ Evolution™	C = Cut-Off		M = Metric I = Inch		N = Neutral L = Left hand R = Right hand	00 = Neutral 06 = 6°	CL = Cut-Off Low Feed CF = Cut-Off Fine CM = Cut-Off Medium CR = Cut-Off Rough																																																																
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### Select the geometry

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

- first choice
- alternate choice

Chip Control	Description	Insert Geometry	Seat Size	Corner Radius		Plunge Feed Rates inch/rev (mm/rev)						
				in (mm)	in (mm)	.0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	
-GUP	Positive rake angle for lower cutting forces.		1F	.008 (0,2)	.0024 (0,06)	◀						
			2	.008 (0,2)	.0031 (0,08)		◀					
			3	.008 (0,2)	.0035 (0,09)			◀				
				.016 (0,4)	.0043 (0,11)				◀			
			4	.016 (0,4)	.0047 (0,12)					◀		
				.031 (0,8)	.0059 (0,15)						◀	



### Primary Workpiece Material Group

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

- first choice
- alternate choice

### Chip Control Geometry Designation

### Maximum Feed Rate Values

Data above is for P and K material groups. <b>Maximum</b> feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	Material Group	Feed Factor
	<b>M</b>	.8
	<b>N</b>	1.2
	<b>S</b>	.8
	<b>H</b>	.5



■ Plunge feed rates

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

- first choice
- alternate choice

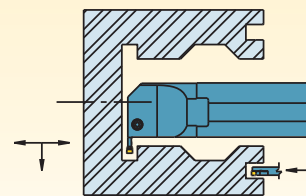
Chip Control	Description	Insert Geometry	Seat Size	Corner Radius	Starting Conditions	Plunge Feed Rates inch/rev (mm/rev)						
				in (mm)	in (mm)	.0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	.0140 (0,35)
-GUP	Positive rake angle for lower cutting forces.		1F	.008 (0,2)	.0024 (0,06)	[Feed rate chart for 1F]						
				2	.008 (0,2)	.0031 (0,08)	[Feed rate chart for 2]					
			3	.008 (0,2)	.0035 (0,09)	[Feed rate chart for 3]						
				.016 (0,4)	.0043 (0,11)	[Feed rate chart for 3]						
			4	.016 (0,4)	.0047 (0,12)	[Feed rate chart for 4]						
				.031 (0,8)	.0059 (0,15)	[Feed rate chart for 4]						
			5	.016 (0,4)	.0059 (0,15)	[Feed rate chart for 5]						
				.031 (0,8)	.0059 (0,16)	[Feed rate chart for 5]						
			6	.016 (0,4)	.0059 (0,15)	[Feed rate chart for 6]						
				.031 (0,8)	.0071 (0,18)	[Feed rate chart for 6]						
8	.047 (1,2)	.0079 (0,20)	[Feed rate chart for 8]									
	.047 (1,2)	.0087 (0,22)	[Feed rate chart for 8]									
10	.047 (1,2)	.0094 (0,24)	[Feed rate chart for 10]									
	.047 (1,2)	.0094 (0,24)	[Feed rate chart for 10]									
-GUN	Stable negative cutting edge allowing for more aggressive applications.		1F	.008 (0,2)	.0024 (0,06)	[Feed rate chart for 1F]						
				2	.008 (0,2)	.0031 (0,08)	[Feed rate chart for 2]					
			3	.008 (0,2)	.0035 (0,09)	[Feed rate chart for 3]						
				.016 (0,4)	.0043 (0,11)	[Feed rate chart for 3]						
			4	.016 (0,4)	.0047 (0,12)	[Feed rate chart for 4]						
				.031 (0,8)	.0059 (0,15)	[Feed rate chart for 4]						
			5	.016 (0,4)	.0059 (0,15)	[Feed rate chart for 5]						
				.031 (0,8)	.0059 (0,16)	[Feed rate chart for 5]						
			6	.016 (0,4)	.0059 (0,15)	[Feed rate chart for 6]						
				.031 (0,8)	.0071 (0,18)	[Feed rate chart for 6]						
8	.047 (1,2)	.0079 (0,20)	[Feed rate chart for 8]									
	.047 (1,2)	.0087 (0,22)	[Feed rate chart for 8]									
10	.047 (1,2)	.0094 (0,24)	[Feed rate chart for 10]									
	.047 (1,2)	.0094 (0,24)	[Feed rate chart for 10]									

Maximum Feed Rate Values

Data above is for P and K material groups. <b>Maximum</b> feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	Material Group	Feed Factor
	M	.8
	N	1.2
	S	.8
	H	.5

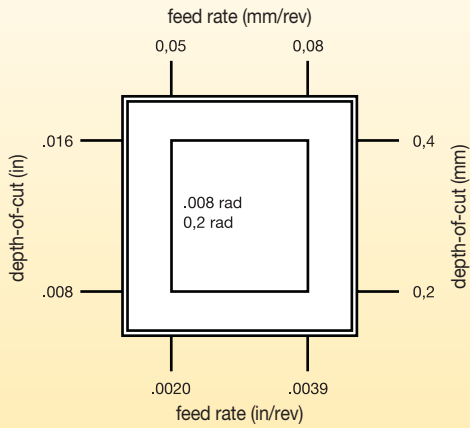
I.D. and Face Grooving

For I.D. and face grooving applications, reduce feed rate by 20%.

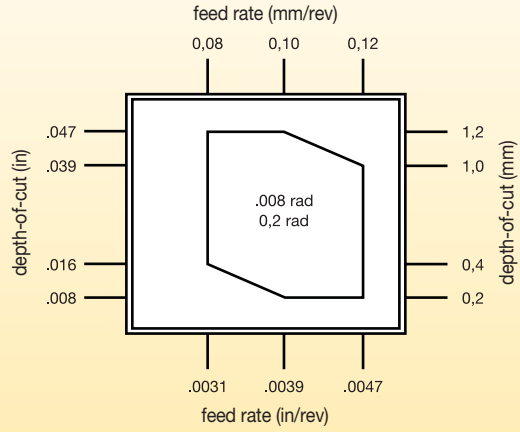


Turn and profile feed rates

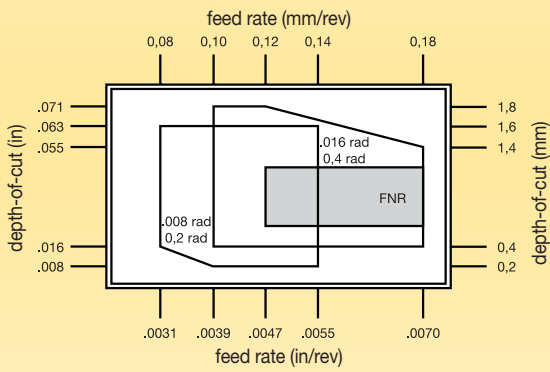
Seat Size 1F



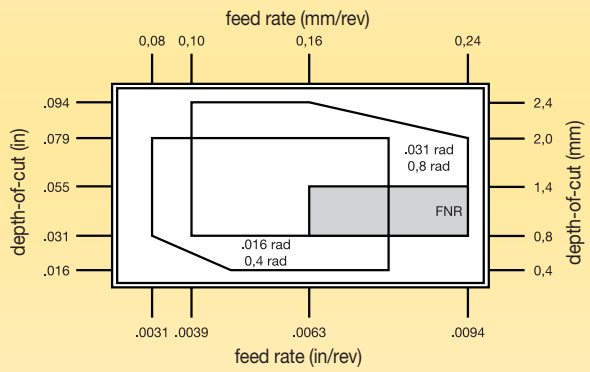
Seat Size 2



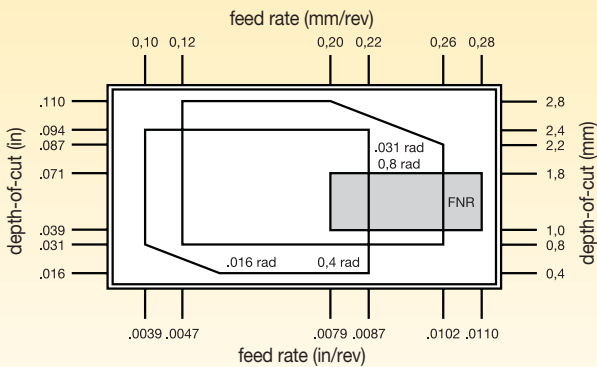
Seat Size 3



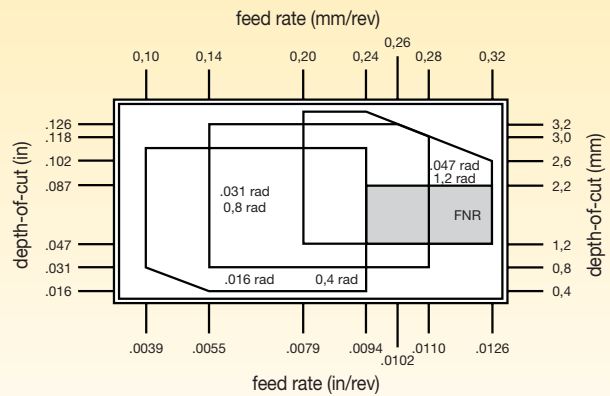
Seat Size 4



Seat Size 5

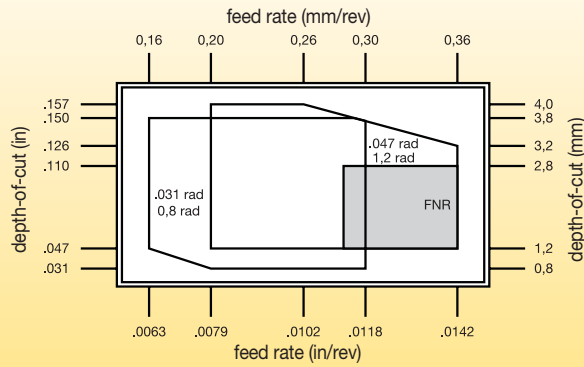
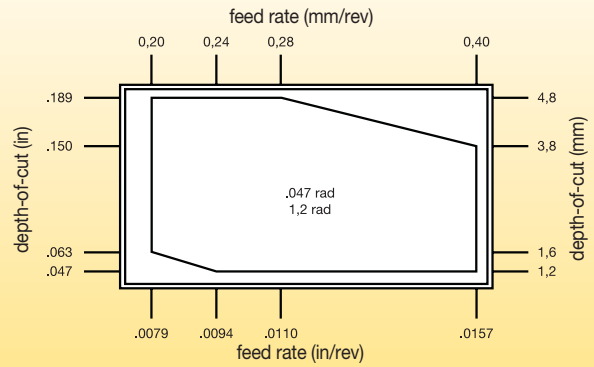


Seat Size 6



(continued)

(Turn and profile feed rates — continued)

**Seat Size 8**

**Seat Size 10**

**Cut-Off Feed Rates**
**Plunge feed rates**

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

● first choice

○ alternate choice

Geometry	Seat Size	Starting Conditions in (mm)	Cut-Off Feed Rates inch/rev (mm/rev)							
			.0020 (0,05)	.0040 (0,10)	.0060 (0,15)	.0080 (0,20)	.0100 (0,25)	.0120 (0,30)	0.0140 (0,35)	0.0160 (0,40)
-CL	1B	.0024 (0,06)	▶							
	2	.0028 (0,07)	▶	▶						
	3	.0031 (0,08)	▶	▶	▶					
	4	.0035 (0,09)	▶	▶	▶	▶				
-CF	1B	.0024 (0,06)	▶							
	2	.0028 (0,07)	▶	▶						
	3	.0035 (0,09)	▶	▶	▶					
	4	.0043 (0,11)	▶	▶	▶	▶				
	5	.0051 (0,13)	▶	▶	▶	▶	▶			
-CM	1B	.0024 (0,06)	▶							
	2	.0028 (0,07)	▶	▶						
	3	.0035 (0,09)	▶	▶	▶					
	4	.0043 (0,11)	▶	▶	▶	▶				
	5	.0055 (0,14)	▶	▶	▶	▶	▶			
	6	.0063 (0,16)	▶	▶	▶	▶	▶	▶		
-CR	2	.0039 (0,10)		▶						
	3	.0055 (0,14)		▶	▶					
	4	.0063 (0,16)		▶	▶	▶				
	5	.0075 (0,19)		▶	▶	▶	▶			
	6	.0083 (0,21)		▶	▶	▶	▶	▶		
	8	.0090 (0,23)		▶	▶	▶	▶	▶	▶	▶

NOTE: For cut-off inserts with a lead angle, maximum feed rate should be reduced by up to 40%.

**Maximum Feed Rate Values**

Data above is for P and K material groups. <b>Maximum</b> feed rates should be adjusted by multiplying max feed rate values by following factors for shown material groups.	Material Group	Feed Factor
	<b>M</b>	.8
	<b>N</b>	1.2
	<b>S</b>	.8
	<b>H</b>	.5

Recommended Starting Speeds [SFM]

Turning

Material Group	K313			KCU10			KCU25			KCM35B			KCP10B			KCP25B			KCK20B			
P	0-1	-	-	-	450	<b>925</b>	1100	360	<b>740</b>	880	290	<b>590</b>	700	600	<b>1320</b>	1475	475	<b>925</b>	1200	660	<b>1450</b>	1620
	2	-	-	-	450	<b>650</b>	800	360	<b>520</b>	640	290	<b>420</b>	510	600	<b>880</b>	1150	475	<b>650</b>	1000	660	<b>970</b>	1260
	3	-	-	-	450	<b>510</b>	800	360	<b>410</b>	640	290	<b>330</b>	510	550	<b>630</b>	850	450	<b>510</b>	800	600	<b>700</b>	920
	4	-	-	-	250	<b>360</b>	550	200	<b>290</b>	440	160	<b>230</b>	350	300	<b>480</b>	650	250	<b>360</b>	600	330	<b>530</b>	710
	5	-	-	-	400	<b>660</b>	850	320	<b>530</b>	680	260	<b>420</b>	540	500	<b>720</b>	1000	400	<b>650</b>	875	550	<b>800</b>	1100
	6	-	-	-	350	<b>500</b>	750	280	<b>400</b>	600	220	<b>320</b>	480	400	<b>600</b>	900	350	<b>500</b>	750	440	<b>660</b>	990
M	1	200	<b>300</b>	400	450	<b>700</b>	850	300	<b>550</b>	800	250	<b>400</b>	450	-	-	-	-	-	-	-	-	-
	2	150	<b>250</b>	350	400	<b>650</b>	800	300	<b>500</b>	800	250	<b>350</b>	450	-	-	-	-	-	-	-	-	-
	3	120	<b>220</b>	320	400	<b>600</b>	800	300	<b>450</b>	700	250	<b>300</b>	450	-	-	-	-	-	-	-	-	-
K	1	100	<b>250</b>	400	400	<b>600</b>	800	320	<b>480</b>	640	-	-	-	560	<b>800</b>	1440	455	<b>650</b>	1170	700	<b>1000</b>	1800
	2	75	<b>225</b>	350	300	<b>500</b>	700	240	<b>400</b>	560	-	-	-	400	<b>640</b>	1120	325	<b>520</b>	910	500	<b>800</b>	1400
	3	65	<b>190</b>	300	200	<b>350</b>	500	160	<b>280</b>	400	-	-	-	400	<b>560</b>	880	325	<b>455</b>	715	500	<b>700</b>	1100
N	1-2	500	<b>1200</b>	2000	500	<b>1800</b>	3200	400	<b>1440</b>	2560	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	400	<b>900</b>	1400	400	<b>1200</b>	2000	320	<b>960</b>	1600	-	-	-	-	-	-	-	-	-	-	-	-
	5	150	<b>300</b>	500	300	<b>550</b>	800	240	<b>440</b>	640	-	-	-	-	-	-	-	-	-	-	-	-
	6	120	<b>250</b>	500	400	<b>700</b>	1000	320	<b>560</b>	800	-	-	-	-	-	-	-	-	-	-	-	-
S	1	25	<b>100</b>	250	50	<b>180</b>	450	25	<b>125</b>	200	25	<b>125</b>	200	-	-	-	-	-	-	-	-	-
	2	25	<b>110</b>	250	50	<b>195</b>	450	25	<b>100</b>	250	25	<b>100</b>	200	-	-	-	-	-	-	-	-	-
	3	25	<b>125</b>	250	50	<b>225</b>	450	50	<b>125</b>	250	50	<b>125</b>	200	-	-	-	-	-	-	-	-	-
	4	25	<b>150</b>	250	50	<b>225</b>	550	25	<b>175</b>	350	50	<b>150</b>	300	-	-	-	-	-	-	-	-	-
H	1	-	-	-	100	<b>150</b>	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	50	<b>100</b>	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: FIRST choice starting speeds are in bold type.  
As the average chip thickness increases, the speed should be decreased.

■ Recommended Starting Speeds [m/min]

Material Group		K313			KCU10			KCU25			KCM35B			KCP10B			KCP25B			KCK20B		
P	0-1	-	-	-	140	<b>280</b>	335	110	<b>225</b>	270	90	<b>180</b>	213	185	<b>400</b>	450	145	<b>290</b>	365	200	<b>440</b>	490
	2	-	-	-	140	<b>200</b>	245	110	<b>160</b>	195	90	<b>130</b>	155	185	<b>270</b>	350	145	<b>200</b>	305	200	<b>300</b>	380
	3	-	-	-	140	<b>155</b>	245	110	<b>125</b>	195	90	<b>100</b>	155	170	<b>190</b>	260	140	<b>155</b>	245	600	<b>200</b>	280
	4	-	-	-	75	<b>110</b>	170	60	<b>90</b>	135	50	<b>70</b>	110	90	<b>145</b>	200	75	<b>110</b>	180	100	<b>160</b>	220
	5	-	-	-	120	<b>200</b>	260	100	<b>160</b>	210	80	<b>130</b>	165	150	<b>220</b>	305	120	<b>200</b>	270	165	<b>240</b>	330
	6	-	-	-	110	<b>150</b>	230	85	<b>120</b>	185	70	<b>100</b>	145	120	<b>180</b>	275	110	<b>150</b>	230	130	<b>190</b>	300
M	1	60	<b>90</b>	120	140	<b>210</b>	260	90	<b>170</b>	245	75	<b>120</b>	135	-	-	-	-	-	-	-	-	-
	2	45	<b>75</b>	110	120	<b>200</b>	245	90	<b>150</b>	245	75	<b>110</b>	135	-	-	-	-	-	-	-	-	-
	3	35	<b>65</b>	100	120	<b>180</b>	245	90	<b>140</b>	210	75	<b>90</b>	135	-	-	-	-	-	-	-	-	-
K	1	30	<b>75</b>	120	120	<b>180</b>	245	100	<b>145</b>	195	-	-	-	170	<b>245</b>	440	140	<b>200</b>	360	210	<b>305</b>	550
	2	25	<b>70</b>	110	90	<b>150</b>	210	70	<b>120</b>	170	-	-	-	120	<b>195</b>	340	100	<b>160</b>	280	150	<b>245</b>	430
	3	20	<b>60</b>	90	60	<b>110</b>	150	50	<b>85</b>	120	-	-	-	120	<b>170</b>	270	100	<b>140</b>	220	150	<b>210</b>	335
N	1-2	150	<b>370</b>	610	150	<b>550</b>	975	120	<b>440</b>	780	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	120	<b>275</b>	430	120	<b>365</b>	610	100	<b>290</b>	490	-	-	-	-	-	-	-	-	-	-	-	-
	5	45	<b>90</b>	150	90	<b>170</b>	245	70	<b>135</b>	195	-	-	-	-	-	-	-	-	-	-	-	-
	6	40	<b>75</b>	150	120	<b>210</b>	305	100	<b>170</b>	245	-	-	-	-	-	-	-	-	-	-	-	-
S	1	8	<b>30</b>	75	15	<b>55</b>	135	8	<b>40</b>	60	8	<b>35</b>	60	-	-	-	-	-	-	-	-	-
	2	8	<b>35</b>	75	15	<b>60</b>	135	8	<b>30</b>	75	8	<b>30</b>	60	-	-	-	-	-	-	-	-	-
	3	8	<b>40</b>	75	15	<b>70</b>	135	15	<b>40</b>	75	15	<b>35</b>	60	-	-	-	-	-	-	-	-	-
	4	8	<b>45</b>	75	15	<b>70</b>	170	8	<b>50</b>	110	15	<b>45</b>	90	-	-	-	-	-	-	-	-	-
H	1	-	-	-	30	<b>45</b>	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	15	<b>30</b>	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

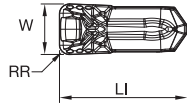
NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.





Turning

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.



- first choice
- alternate choice

P	●	●	●	●	○				
M	●	●						●	○
K	○	○	○	○	○	●			○
N	●	○							●
S	●	●							●
H	○								

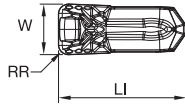
### ■ GUP Precision Molded • Metric

catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG0212M02U02GUP	2	2,125	.084	0,050	.002	0,20	.008	8,97	.353	●	●	●	●	○		
EG0251M02U02GUP	2	2,511	.099	0,050	.002	0,20	.008	8,97	.353	●	●	●	●	○		
EG0312M03U02GUP	3	3,125	.123	0,075	.003	0,20	.008	9,60	.378	●	●	●	●	○		
EG0312M03U04GUP	3	3,125	.123	0,075	.003	0,40	.016	9,60	.378	●	●	●	●	○		
EG0412M04U04GUP	4	4,125	.162	0,075	.003	0,40	.016	10,19	.401	●	●	●	●	○		
EG0412M04U08GUP	4	4,125	.162	0,075	.003	0,80	.031	10,19	.401	●	●	●	●	○		
EG0512M05U04GUP	5	5,125	.202	0,075	.003	0,40	.016	12,25	.482	●	●	●	●	○		
EG0512M05U08GUP	5	5,125	.202	0,075	.003	0,80	.031	12,25	.482	●	●	●	●	○		
EG0612M06U04GUP	6	6,125	.241	0,075	.003	0,40	.016	14,60	.575	●	●	●	●	○		
EG0612M06U08GUP	6	6,125	.241	0,075	.003	0,80	.031	14,60	.574	●	●	●	●	○		
EG0712M06U08GUP	6	7,125	.281	0,075	.003	0,80	.032	14,60	.574	●	●	●	●	○		
EG0812M08U08GUP	8	8,125	.320	0,075	.003	0,80	.031	17,47	.688	●	●	●	●	○		
EG0812M08U12GUP	8	8,125	.320	0,075	.003	1,18	.046	17,45	.687	●	●	●	●	○		
EG1012M10U12GUP	10	10,125	.399	0,075	.003	1,20	.047	20,80	.817	●	●	●	●	○		

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.
- More precise widths and better repeatability.

- first choice
- alternate choice

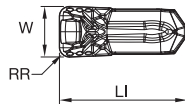
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M	●	●																		○
K	○	○	○	○																○
N	●	○																		●
S	●	●																		●
H	○																			



### GUP Precision Ground • Metric

catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG0200M02P02GUP	2	2,000	.079	0,025	.001	0,20	.008	8,80	.347	●	●	-	-	-	-	●
EG0300M03P02GUP	3	3,000	.118	0,025	.001	0,20	.008	9,40	.372	●	●	-	-	-	-	●
EG0300M03P04GUP	3	3,000	.118	0,025	.001	0,40	.016	9,60	.376	●	●	-	-	-	-	●
EG0400M04P04GUP	4	4,000	.157	0,025	.001	0,40	.016	10,10	.399	●	●	-	-	-	-	●
EG0400M04P08GUP	4	4,000	.158	0,025	.001	0,80	.032	10,10	.399	●	●	-	-	-	-	●
EG0500M05P04GUP	5	5,000	.197	0,025	.001	0,40	.016	12,20	.480	●	●	-	-	-	-	●
EG0500M05P08GUP	5	5,000	.197	0,025	.001	0,80	.032	12,20	.480	●	●	-	-	-	-	●
EG0600M06P04GUP	6	6,000	.236	0,025	.001	0,40	.016	14,50	.572	●	●	-	-	-	-	●
EG0600M06P08GUP	6	6,000	.236	0,025	.001	0,80	.031	14,50	.572	●	●	-	-	-	-	●
EG0700M06P08GUP	6	7,000	.276	0,025	.001	0,80	.031	14,50	.572	●	●	-	-	-	-	●
EG0800M08P08GUP	8	8,000	.315	0,025	.001	0,80	.031	17,40	.685	●	●	-	-	-	-	●
EG0800M08P12GUP	8	8,000	.350	0,025	.001	1,20	.047	17,40	.685	●	●	-	-	-	-	●
EG1000M10P12GUP	10	10,000	.394	0,025	.001	1,20	.047	20,70	.815	●	●	-	-	-	-	●

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.



### GUP Precision Molded • Inch

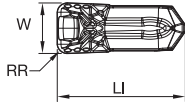
catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG130103U05GUP	3	3,301	.130	0,075	.003	0,20	.008	9,60	.378	●	●	●	●	-	-	-
EG130103U1GUP	3	3,301	.130	0,075	.003	0,40	.016	9,60	.378	●	●	●	●	-	-	-
EG192104U1GUP	4	4,877	.192	0,075	.003	0,40	.016	10,19	.401	●	●	●	●	-	-	-
EG192104U2GUP	4	4,877	.192	0,075	.003	0,79	.031	10,19	.401	●	●	●	●	-	-	-
EG255106U1GUP	6	6,478	.255	0,075	.003	0,40	.016	14,58	.574	●	●	●	●	-	-	-
EG255106U2GUP	6	6,478	.255	0,075	.003	0,80	.031	14,58	.574	●	●	●	●	-	-	-
EG317108U3GUP	8	8,051	.317	0,075	.003	1,19	.047	17,46	.687	●	●	●	●	-	-	-
EG380110U3GUP	10	9,651	.380	0,075	.003	1,19	.047	20,80	.817	●	●	●	●	-	-	-

Turning

- Positive chipbreaker lowers cutting forces.
- Engineered geometry for chip control in side turning.
- High performance in all materials.
- More precise widths and better repeatability.

- first choice
- alternate choice

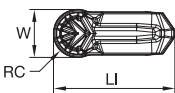
P	●	●	●	●	○				
M	●	●						●	○
K	○	○	○	○	○	●			○
N	●	○							●
S	●	●							●
H	○								



**GUP Precision Ground • Inch**

catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG06311FP05GUP	1F	1,600	.063	0,025	.001	0,20	.008	9,00	.353	●	●	-	-	-	-	●
EG094102P05GUP	2	2,388	.094	0,025	.001	0,20	.008	8,88	.350	●	●	-	-	-	-	●
EG125103P05GUP	3	3,175	.125	0,025	.001	0,20	.008	9,40	.371	●	●	-	-	-	-	●
EG125103P1GUP	3	3,175	.125	0,025	.001	0,40	.016	9,40	.372	●	●	-	-	-	-	●
EG187104P1GUP	4	4,760	.188	0,025	.001	0,40	.016	10,10	.399	●	●	-	-	-	-	●
EG187104P2GUP	4	4,762	.188	0,025	.001	0,79	.031	10,10	.399	●	●	-	-	-	-	●
EG250106P1GUP	6	6,350	.250	0,025	.001	0,40	.016	14,50	.572	●	●	-	-	-	-	●
EG250106P2GUP	6	6,350	.250	0,025	.001	0,80	.031	14,50	.572	●	●	-	-	-	-	●
EG312108P3GUP	8	7,920	.312	0,025	.001	1,20	.047	17,40	.685	●	●	-	-	-	-	●
EG375110P3GUP	10	9,525	.375	0,025	.001	1,20	.047	20,70	.815	●	●	-	-	-	-	●

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



**GUP Full Radius Precision Molded • Metric**

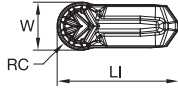
catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER0312M03U00GUP	3	3,125	.123	0,075	.003	1,560	.06	9,60	.378	●	●	●	●	-	-	-
ER0412M04U00GUP	4	4,125	.162	0,075	.003	2,060	.08	10,20	.401	●	●	●	●	-	-	-
ER0512M05U00GUP	5	5,125	.202	0,075	.003	2,560	.10	12,20	.482	●	●	●	●	-	-	-
ER0612M06U00GUP	6	6,125	.241	0,075	.003	3,060	.12	14,60	.575	●	●	●	●	-	-	-
ER0812M08U00GUP	8	8,125	.320	0,075	.003	4,060	.16	17,50	.688	●	●	●	●	-	-	-



- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.
- More precise widths and better repeatability.

● first choice  
○ alternate choice

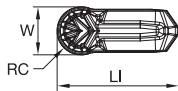
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M	●	●							○	
K	○	○	○	○	●				○	
N	●	○							●	
S	●	●							●	
H	○									



■ GUP Full Radius Precision Ground • Metric

catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER0300M03P00GUP	3	3,000	.118	0,025	.001	1,500	.06	9,50	.376	●	●	-	-	-	-	●
ER0400M04P00GUP	4	4,000	.157	0,025	.001	2,000	.08	10,10	.399	●	●	-	-	-	-	●
ER0500M05P00GUP	5	5,000	.197	0,025	.001	2,500	.10	12,20	.480	●	●	-	-	-	-	●
ER0600M06P00GUP	6	6,000	.236	0,025	.001	3,000	.12	14,50	.572	●	●	-	-	-	-	●
ER0800M08P00GUP	8	8,000	.315	0,025	.001	4,000	.16	17,40	.685	●	●	-	-	-	-	●

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



■ GUP Full Radius Precision Molded • Inch

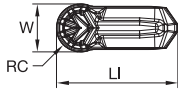
catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER130I03U00GUP	3	3,302	.130	0,075	.003	1,650	.07	9,60	.378	●	●	●	-	-	-	-
ER192I04U00GUP	4	4,878	.192	0,075	.003	2,440	.10	10,20	.401	●	●	●	-	-	-	-
ER255I06U00GUP	6	6,478	.255	0,075	.003	3,240	.13	14,60	.575	●	●	●	-	-	-	-
ER317I08U00GUP	8	8,052	.317	0,075	.003	4,030	.16	17,50	.688	●	●	●	-	-	-	-

Turning

- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.
- More precise widths and better repeatability.

- first choice
- alternate choice

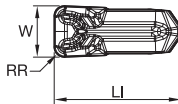
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M	●	●							●	○
K	○	○	○	○	○	●				○
N	●	○								●
S	●	●								●
H	○									



**■ GUP Full Radius Precision Ground • Inch**

catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER125I03P00GUP	3	3,175	.125	0,025	.001	1,590	.06	9,50	.376	●	●	-	-	-	-	●
ER187I04P00GUP	4	4,762	.187	0,025	.001	2,380	.09	10,10	.399	●	●	-	-	-	-	●
ER250I06P00GUP	6	6,350	.250	0,025	.001	3,170	.13	14,50	.572	●	●	-	-	-	-	●
ER312I08P00GUP	8	7,920	.312	0,025	.001	3,960	.16	17,40	.685	●	●	-	-	-	-	●

- Negative rake face for strongest cutting edge.
- More aggressive applications.
- Advantages in low-feed and depth-of-cut applications.



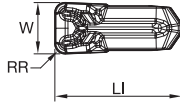
**■ GUN Precision Molded • Metric**

catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG0212M02U02GUN	2	2,125	.084	0,050	.002	0,20	.008	8,97	.353	●	●	●	●	●	-	-
EG0251M02U02GUN	2	2,510	.099	0,050	.002	0,20	.008	8,97	.353	●	●	●	●	●	-	-
EG0312M03U02GUN	3	3,125	.123	0,075	.003	0,20	.008	9,60	.378	●	●	●	●	●	-	-
EG0312M03U04GUN	3	3,125	.123	0,075	.003	0,40	.016	9,60	.378	●	●	●	●	●	-	-
EG0412M04U04GUN	4	4,125	.162	0,075	.003	0,40	.016	10,19	.401	●	●	●	●	●	-	-
EG0412M04U08GUN	4	4,125	.162	0,075	.003	0,80	.031	10,19	.401	●	●	●	●	●	-	-
EG0512M05U04GUN	5	5,125	.202	0,075	.003	0,40	.016	12,20	.481	●	●	●	●	●	-	-
EG0512M05U08GUN	5	5,125	.202	0,075	.003	0,80	.031	12,20	.481	●	●	●	●	●	-	-
EG0612M06U04GUN	6	6,125	.241	0,075	.003	0,40	.016	14,60	.575	●	●	●	●	●	-	-
EG0612M06U08GUN	6	6,125	.241	0,075	.003	0,80	.031	14,60	.574	●	●	●	●	●	-	-
EG0812M08U08GUN	8	8,125	.320	0,075	.003	0,80	.031	17,50	.687	●	●	●	●	●	-	-
EG0812M08U12GUN	8	8,125	.320	0,075	.003	1,20	.047	17,50	.687	●	●	●	●	●	-	-
EG1012M10U12GUN	10	10,125	.399	0,075	.003	1,20	.047	20,80	.817	●	●	●	●	●	-	-

- Negative rake face for strongest cutting edge.
- More aggressive applications.
- Advantages in low-feed and depth-of-cut applications.

● first choice  
○ alternate choice

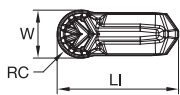
P	●	●	●	○					
M	●	●						○	
K	○	○	○	○	●			○	
N	●	○						●	
S	●	●						●	
H	○								



### ■ GUN Precision Molded • Inch

catalog number	seat size	W		W tol ±		RR		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
EG06311FU05GUN	1F	1,600	.063	0,050	.002	0,20	.008	9,00	.355	●	●	●	●	○		
EG130I03U05GUN	3	3,302	.130	0,075	.003	0,20	.008	9,60	.378	●	●	●	●	○		
EG130I03U1GUN	3	3,302	.130	0,075	.003	0,40	.016	9,60	.378	●	●	●	●	○		
EG192I04U1GUN	4	4,877	.192	0,075	.003	0,40	.016	10,19	.401	●	●	●	●	○		
EG192I04U2GUN	4	4,878	.192	0,075	.003	0,79	.031	10,19	.401	●	●	●	●	○		
EG255I06U1GUN	6	6,477	.255	0,075	.003	0,40	.016	14,58	.574	●	●	●	●	○		
EG255I06U2GUN	6	6,477	.255	0,075	.003	0,80	.031	14,58	.574	●	●	●	●	○		
EG317I08U3GUN	8	8,052	.317	0,075	.003	1,19	.047	17,46	.687	●	●	●	●	○		
EG380I10U3GUN	10	9,651	.380	0,075	.003	1,20	.047	20,80	.817	●	●	●	●	○		

- Negative rake face for strongest cutting edge.
- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.

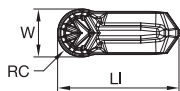


### ■ GUN Full Radius Precision Molded • Metric

catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER0312M03U00GUN	3	3,125	.123	0,075	.003	1,560	.06	9,60	.378	●	●	●	●	○		
ER0412M04U00GUN	4	4,125	.162	0,075	.003	2,060	.08	10,20	.401	●	●	●	●	○		
ER0512M05U00GUN	5	5,125	.202	0,075	.003	2,560	.10	12,20	.482	●	●	●	●	○		
ER0612M06U00GUN	6	6,125	.241	0,075	.003	3,060	.12	14,60	.575	●	●	●	●	○		
ER0812M08U00GUN	8	8,125	.320	0,075	.003	4,060	.16	17,47	.688	●	●	●	●	○		

Turning

- Negative rake face for strongest cutting edge.
- First choice in profiling.
- >180° cutting edge.
- High performance in all materials.



- first choice
- alternate choice

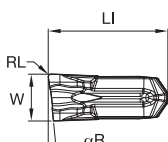
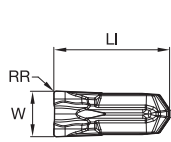
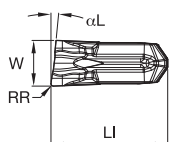
P	●	●	●	●	○				
M	●	●				●	○		
K	○	○	○	○	●		○		
N	●	○					●		
S	●	●					●		
H	○								

### ■ GUN Full Radius Precision Molded • Inch

catalog number	seat size	W		W tol ±		RC		LI		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	mm	in							
ER130I03U00GUN	3	3,300	.130	0,075	.003	1,650	.07	9,60	.378	●	●	●	●	●	-	-
ER192I04U00GUN	4	4,873	.192	0,075	.003	2,440	.10	10,20	.401	●	●	●	●	●	-	-
ER255I06U00GUN	6	6,473	.255	0,075	.003	3,240	.13	14,60	.575	●	●	●	●	●	-	-
ER317I08U00GUN	8	8,052	.317	0,075	.003	4,030	.16	17,50	.688	●	●	●	●	●	-	-

### Beyond™ Evolution™ Cut-Off Inserts

- Positive chipbreaker lowers cutting forces.
- First choice for steel and stainless steel.
- Excellent surface finish.



- first choice
- alternate choice

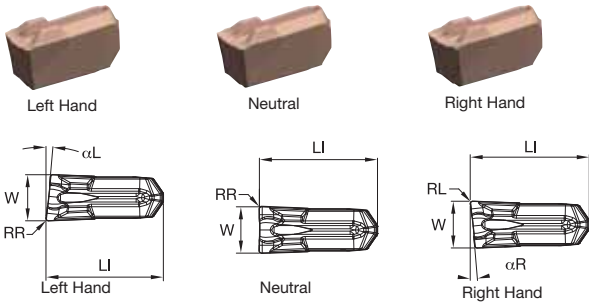
P	●	●	●	●	○				
M	●	●				●	○		
K	○	○	○	○	●		○		
N	●	○					●		
S	●	●					●		
H	○								

### ■ CF Precision Molded • Metric

catalog number	seat size	W		W tol ±		LI		RR		RL		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in	αR	αL	mm	in							
EC014M1BL06CF01	1B	1,404	.055	0,050	.002	9,00	.355	—	6	0,15	.006	—	—	-	●	-	●	-
EC014M1BN00CF01	1B	1,400	.055	0,050	.002	9,00	.355	—	—	0,15	.006	0,15	.006	-	●	-	●	-
EC014M1BR06CF01	1B	1,404	.055	0,050	.002	9,00	.355	6	—	—	—	0,15	.006	-	●	-	●	-
EC020M02L06CF02	2	2,000	.079	0,050	.002	8,97	.353	—	6	0,20	.008	—	—	-	●	-	●	-
EC020M02N00CF02	2	2,000	.079	0,050	.002	8,97	.353	—	—	0,20	.008	0,20	.008	-	●	-	●	-
EC020M02R06CF02	2	2,000	.079	0,050	.002	8,97	.353	6	—	—	—	0,20	.008	-	●	-	●	-
EC030M03L06CF02	3	3,000	.118	0,075	.003	9,60	.378	—	6	0,20	.008	—	—	-	●	-	●	-
EC030M03N00CF02	3	3,000	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	-	●	-	●	-
EC030M03R06CF02	3	3,000	.118	0,075	.003	9,60	.378	6	—	—	—	0,20	.008	-	●	-	●	-
EC040M04L06CF02	4	4,000	.157	0,075	.003	10,19	.401	—	6	0,20	.008	—	—	-	●	-	●	-
EC040M04N00CF02	4	4,000	.158	0,075	.003	10,19	.401	—	—	0,20	.008	0,20	.008	-	●	-	●	-
EC040M04R06CF02	4	4,000	.158	0,075	.003	10,19	.401	6	—	—	—	0,20	.008	-	●	-	●	-
EC050M05N00CF03	5	5,000	.197	0,075	.003	12,20	.482	—	—	0,30	.012	0,30	.012	-	●	-	●	-

- Most aggressive chipbreaker.
- For use in long chipping materials.
- Problem solver.

● first choice  
○ alternate choice



■ CL Precision Molded • Metric

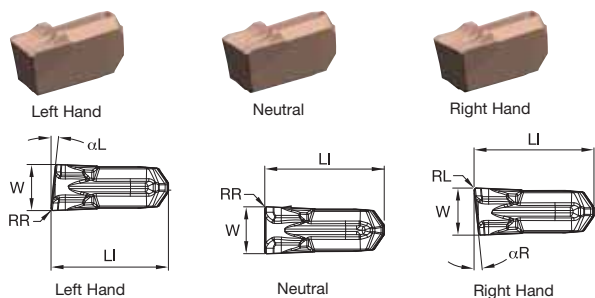
P	●	●	●	○													
M	●	●															
K	○	○	○	○	●												
N	●	○															
S	●	●															
H	○																



catalog number	seat size	W		W tol ±		LI		RR		RL		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313	
		mm	in	mm	in	mm	in	mm	in	mm	in								
EC014M1BL06CL01	1B	1,400	.055	0,050	.002	9,00	.355	—	6	0,15	.006	—	—	—	—	—	—	—	—
EC014M1BN00CL01	1B	1,400	.055	0,050	.002	9,00	.355	—	—	0,15	.006	0,15	.006	—	—	—	—	—	—
EC014M1BR06CL01	1B	1,400	.055	0,050	.002	9,00	.355	6	—	—	—	0,15	.006	—	—	—	—	—	—
EC020M02L06CL02	2	2,000	.079	0,050	.002	8,96	.353	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC020M02N00CL02	2	2,000	.079	0,050	.002	8,97	.353	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC020M02R06CL02	2	2,000	.079	0,050	.002	8,96	.353	6	—	—	—	0,20	.005	—	—	—	—	—	—
EC030M03L06CL02	3	3,000	.118	0,075	.003	9,59	.378	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC030M03N00CL02	3	3,000	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC030M03R06CL02	3	3,000	.118	0,075	.003	9,59	.378	6	—	—	—	0,20	.008	—	—	—	—	—	—
EC040M04L06CL02	4	4,000	.158	0,075	.003	10,19	.401	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC040M04N00CL02	4	4,000	.157	0,075	.003	10,20	.401	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC040M04R06CL02	4	4,000	.158	0,075	.003	10,19	.401	6	—	—	—	0,20	.008	—	—	—	—	—	—

Turning

- Ultimate solution in edge stability.
- Leverage for interrupted cuts or hardened skin.
- First choice for cast iron.



● first choice  
○ alternate choice

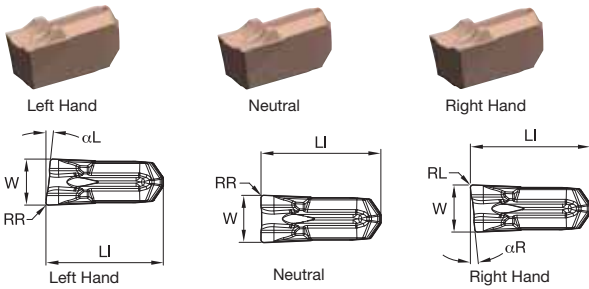
P	●	●	●	○			
M	●	●	○	○	○	○	○
K	○	○	○	○	●	○	○
N	●	○	○	○	○	○	○
S	●	●	○	○	○	○	○
H	○						

**CM Precision Molded • Metric**

catalog number	seat size	W		W tol ±		LI		RR		RL		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313	
		mm	in	mm	in	mm	in	αR	αL	mm	in								mm
EC014M1BL06CM01	1B	1,400	.055	0,050	.002	9,00	.355	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC014M1BN00CM01	1B	1,400	.055	0,050	.002	9,00	.355	—	—	0,15	.006	0,15	.006	—	—	—	—	—	—
EC014M1BR06CM01	1B	1,400	.055	0,050	.002	9,00	.355	6	—	—	—	0,20	.008	—	—	—	—	—	—
EC020M02L06CM02	2	2,000	.079	0,050	.002	9,00	.353	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC020M02N00CM02	2	2,000	.079	0,050	.002	8,98	.353	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC020M02R06CM02	2	2,000	.079	0,050	.002	9,00	.353	6	—	—	—	0,20	.008	—	—	—	—	—	—
EC030M03L06CM02	3	3,000	.118	0,075	.003	9,60	.378	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC030M03N00CM02	3	3,000	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC030M03R06CM02	3	3,000	.118	0,075	.003	9,60	.378	6	—	—	—	0,20	.008	—	—	—	—	—	—
EC040M04L06CM02	4	4,000	.157	0,075	.003	10,20	.401	—	6	0,20	.008	—	—	—	—	—	—	—	—
EC040M04N00CM02	4	4,000	.158	0,075	.003	10,20	.402	—	—	0,20	.008	0,20	.008	—	—	—	—	—	—
EC040M04R06CM02	4	4,000	.157	0,075	.003	10,20	.401	6	—	—	—	0,20	.008	—	—	—	—	—	—
EC050M05N00CM03	5	5,000	.197	0,075	.003	12,20	.482	—	—	0,30	.012	0,30	.012	—	—	—	—	—	—
EC060M06N00CM03	6	6,000	.236	0,075	.003	14,59	.574	—	—	0,30	.012	0,30	.012	—	—	—	—	—	—
EC070M06N00CM04	6	7,000	.276	0,075	.003	14,60	.574	—	—	0,40	.016	0,40	.016	—	—	—	—	—	—
EC080M08N00CM04	8	8,000	.315	0,075	.003	17,50	.688	—	—	0,40	.016	0,40	.016	—	—	—	—	—	—

- Strong chip control due to concave edge.
- First choice in steel when additional stability is required.
- Can apply most aggressive speed rates.

● first choice  
○ alternate choice



### CR Precision Molded • Metric

P	●	●	●	●	○										
M	●	●													○
K	○	○	○	○	○	●									○
N	●	○													●
S	●	●													●
H	○														



catalog number	seat size	W		W tol ±		LI		αR	αL	RR		RL		KCU10	KCU25	KCP10B	KCP25B	KCK20B	KCM35B	K313
		mm	in	mm	in	mm	in			mm	in	mm	in							
EC020M02L06CR02	2	2,000	.079	0,050	.002	9,00	.353	—	6	0,20	.008	—	—	—	●	—	—	—	—	—
EC020M02N00CR02	2	2,000	.079	0,050	.002	8,98	.353	—	—	0,20	.008	0,20	.008	—	●	—	—	—	—	—
EC020M02R06CR02	2	2,000	.079	0,050	.002	9,00	.353	6	—	—	—	0,20	.008	—	●	—	—	—	—	—
EC030M03L06CR02	3	3,000	.118	0,075	.003	9,60	.378	—	6	0,20	.008	—	—	—	●	—	—	—	—	—
EC030M03N00CR02	3	3,000	.118	0,075	.003	9,60	.378	—	—	0,20	.008	0,20	.008	—	●	—	—	—	—	—
EC030M03R06CR02	3	3,000	.118	0,075	.003	9,60	.378	6	—	—	—	0,20	.008	—	●	—	—	—	—	—
EC040M04L06CR02	4	4,000	.157	0,075	.003	10,20	.402	—	6	0,20	.008	—	—	—	●	—	—	—	—	—
EC040M04N00CR02	4	4,000	.158	0,075	.003	10,20	.402	—	—	0,20	.008	0,20	.008	—	●	—	—	—	—	—
EC040M04R06CR02	4	4,000	.157	0,075	.003	10,20	.402	6	—	—	—	0,20	.008	—	●	—	—	—	—	—
EC050M05N00CR03	5	5,000	.197	0,075	.003	12,25	.482	—	—	0,30	.012	0,30	.012	—	●	—	—	—	—	—
EC060M06L06CR04	6	6,000	.236	0,075	.003	14,59	.574	—	6	0,40	.016	—	.016	—	●	—	—	—	—	—
EC060M06N00CR03	6	6,000	.236	0,075	.003	14,59	.574	—	—	0,30	.012	0,30	.012	—	●	—	—	—	—	—
EC060M06R06CR04	6	6,000	.236	0,075	.003	14,59	.574	6	—	—	.016	0,40	.016	—	●	—	—	—	—	—
EC070M06N00CR04	6	7,000	.276	0,075	.003	14,60	.574	—	—	0,40	.016	0,40	.016	—	●	—	—	—	—	—
EC080M08L06CR04	8	8,000	.315	0,075	.003	17,50	.687	—	6	0,40	.016	—	—	—	●	—	—	—	—	—
EC080M08N00CR04	8	8,000	.315	0,075	.003	17,50	.687	—	—	0,40	.016	0,40	.016	—	●	—	—	—	—	—
EC080M08R06CR04	8	8,000	.315	0,075	.003	17,50	.687	6	—	—	—	0,40	.016	—	●	—	—	—	—	—

## 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.



EVSML2525M0316030035C  
EVSML160316030035C

Metric								
<b>EV</b>	<b>S</b>	<b>M</b>	<b>L</b>	<b>2525M</b>	<b>03</b>	<b>16</b>	<b>030035</b>	<b>C</b>
Inch								
<b>EV</b>	<b>S</b>	<b>M</b>	<b>L</b>	<b>16</b>	<b>03</b>	<b>16</b>	<b>030035</b>	<b>C</b>
Family Name	Tool Style	Support Type	Hand	Shank Size	Seat Size	Max Groove Depth	Face Grooving Diameters	Coolant
Beyond™ Evolution™	S = Straight mount		L = Left hand  R = Right hand		1B 1F 02 03 04 05 06 08 10	in millimeters	030 = Minimum diameter in mm  035 = Maximum diameter in mm	C = Through the pocket coolant capable
<p><b>M</b> = Maximum support for specific groove width and straight clearance for unlimited workpiece diameter</p> <p><b>A</b> = Face grooving-inboard sweep</p> <p><b>B</b> = Face grooving-outboard sweep</p>				<p><b>Metric</b> = Height x Width in mm letter indicates tool length according to ISO</p> <p><b>Inch</b> = Height x Width in 1/16" increments</p>				



## 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.



Metric								
<b>EV</b>	<b>S</b>	<b>C</b>	<b>T</b>	<b>L</b>	<b>2525M</b>	<b>03</b>	<b>16</b>	<b>C</b>
Inch								
<b>EV</b>	<b>S</b>	<b>C</b>	<b>T</b>	<b>L</b>	<b>16</b>	<b>03</b>	<b>16</b>	<b>C</b>
Family Name	Tool Style	Support Type	Clamping Screw Position	Hand	Shank Size	Seat Size	Max Groove Depth	Coolant
Beyond™ Evolution™	<b>S</b> = Straight mount		<b>T</b> = Top <b>F</b> = Front	<b>L</b> = Left hand <b>R</b> = Right hand		<b>1B</b> <b>1F</b> <b>02</b> <b>03</b> <b>04</b> <b>05</b> <b>06</b> <b>08</b> <b>10</b>	in millimeters	<b>C</b> = Through the pocket coolant capable
<b>C</b> = Reinforced support				<b>Metric</b> = Height x Width in mm letter indicates tool length according to ISO				
				<b>Inch</b> = Height x Width in 1/16" increments				

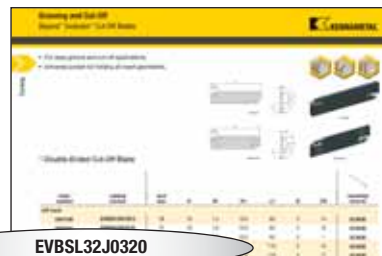
## How Do Catalog Numbers Work?

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.



**A16REVEMR0310M030035**

<b>A</b>	<b>16</b>	<b>R</b>	<b>EV</b>	<b>E</b>	<b>M</b>	<b>R</b>	<b>03</b>	<b>10</b>	<b>M</b>	<b>030035</b>																					
Steel Bar with Coolant	Bar Diameter	Bar Length	Platform	Tool Type	Support Type	Hand of Tool	Insert Seat Size	Max Cutting Depth	Tool Units	Face Grooving Diameters																					
Steel boring bar with through coolant capability.			Beyond™ Evolution™	E = End mount (90°) S = Straight Mount	M = Maximum support A = Face Grooving-inboard sweep	R = Right hand L = Left hand	1F 02 03 04 05 06 08 10	in millimeters	M = Metric I = Inch	030 = Minimum diameter in mm 035 = Maximum diameter in mm																					
Metric = Diameter in mm																															
Inch = Diameter in 1/16" increments																															
		<table border="1"> <thead> <tr> <th>symbol</th> <th>mm</th> <th>inch</th> </tr> </thead> <tbody> <tr> <td>K</td> <td>125</td> <td>5</td> </tr> <tr> <td>M</td> <td>150</td> <td>6</td> </tr> <tr> <td>Q</td> <td>180</td> <td>7</td> </tr> <tr> <td>R</td> <td>200</td> <td>8</td> </tr> <tr> <td>S</td> <td>250</td> <td>10</td> </tr> <tr> <td>T</td> <td>300</td> <td>12</td> </tr> </tbody> </table>									symbol	mm	inch	K	125	5	M	150	6	Q	180	7	R	200	8	S	250	10	T	300	12
symbol	mm	inch																													
K	125	5																													
M	150	6																													
Q	180	7																													
R	200	8																													
S	250	10																													
T	300	12																													



**EVBSL32J0320**

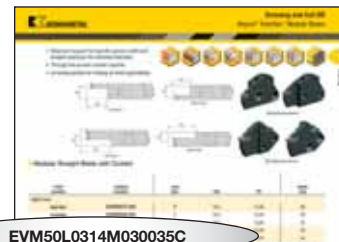
<b>EV</b>	<b>B</b>	<b>S</b>	<b>L</b>	<b>32</b>	<b>J</b>	<b>03</b>	<b>20</b>
Family Name	Tool Style	Support Type	Hand	Blade Height	Overall Length	Seat Size	Max Cutting Depth
Beyond™ Evolution™	B = 2 pocket blade	S = Standard C = Reinforced	N = Neutral L = Left hand R = Right hand	in millimeters	According to ISO G = 90mm J = 110mm M = 150mm X = Special	1B 1F 02 03 04 05 06 08 10	in millimeters

## 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.



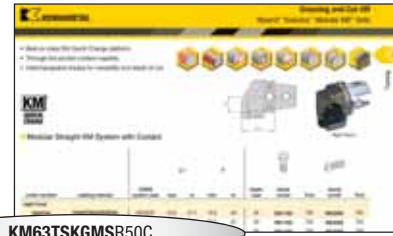
<b>Metric</b>	<b>KGM</b>	<b>S</b>	<b>L</b>	<b>2525M</b>	<b>50</b>	<b>C</b>
<b>Inch</b>	<b>KGM</b>	<b>S</b>	<b>L</b>	<b>16</b>	<b>50</b>	<b>C</b>
Family Name	Tool Style	Hand	Shank Size	Blade Size	Coolant	
Grooving Modular System	S = Straight mount E = End mount (90°)	L = Left hand R = Right hand	Metric = Height x Width in mm letter indicates tool length according to ISO  Inch = Height x Width in 1/16" increments	50 65	C = Through coolant capable	

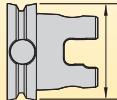
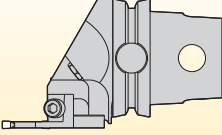
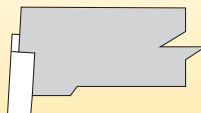



<b>EVM</b>	<b>50</b>	<b>L</b>	<b>03</b>	<b>14</b>	<b>M</b>	<b>030035</b>	<b>C</b>
Family Name	Blade Size	Hand	Seat Size	Max Groove Depth	Support Type	Face Grooving Diameters	Coolant
Beyond™ Evolution™ Modular Blade	50 65	L = Left hand R = Right hand	1B 1F 02 03 04 05 06 08 10	in millimeters	M = Maximum support for specific groove width and straight clearance for unlimited diameter A = Face grooving-inboard sweep B = Face grooving-outboard sweep	030 = Minimum diameter in mm 035 = Maximum diameter in mm	C = Through the pocket coolant capable

## 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.



<b>KM</b>	<b>63</b>	<b>TS</b>	<b>KGM</b>	<b>S</b>
KM Quick Change	System Size	Feature	Insert Holding Method	Insert Location
KM KM4X™ PSC	40 = 40mm 50 = 50mm 63 = 63mm 80 = 80mm 100 = 100mm  	TS XMZ	KGM   Beyond™ Evolution™ Modular Grooving	E = End mount  S = Side mount    

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



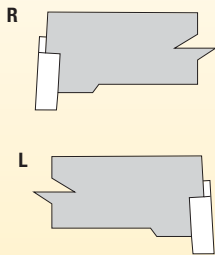
KM63TSKGMRSR50C

**R**

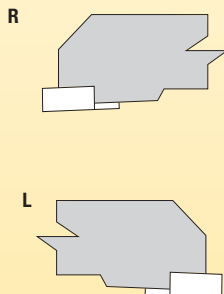
Hand of Tool

R = Right hand  
 L = Left hand

End Mount



Side Mount



**50**

Blade Size

50  
 60

**C**

Coolant

C = Through the pocket coolant capable

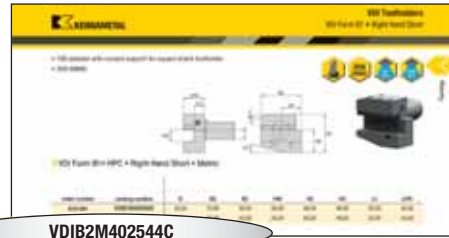
**Y**

Special Features

Y= Mazak®  
 INTEGREX®

## 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.



VDIB2M402544C

**VDI**

Connection

**B2**

Style

**M**

Metric

**40**

VDI Shank Diameter

**25**

Toolholder Shank Size

**44**

Projection Length

**C**

Internal Coolant

## NOVO KNOWS SEARCH

Searching for a tool by using the outdated method of a catalog has been replaced with the Advise and Select functions from NOVO™ — saving you time and money.

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### 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

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### SELECT

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

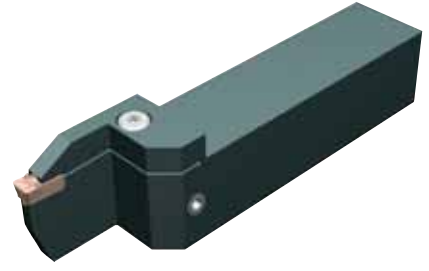
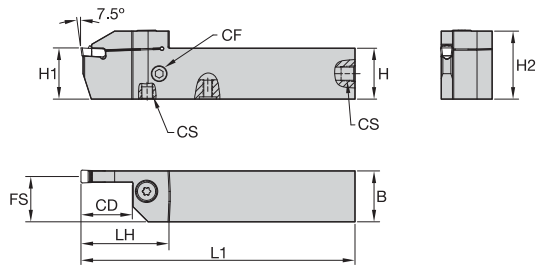
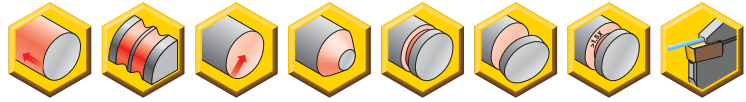
- If you know which product you are looking for, a quick search can be performed by just the catalog number or product description.
- Smart filters significantly reduce the amount of potential tooling solutions.
- After the tool is selected, NOVO also provides cutting and adaptive item options that fit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

NOVO 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](http://kennametal.com/novo)



Turning

- Offers the greatest stability.
- Straight clearance for unlimited workpiece diameters.
- Through the pocket coolant capable.



Left Hand

■ Integral Straight • Inch



order number	catalog number	seat size	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>															
5956542	EVSMR120216	2	.63	.750	.750	.750	1.03	4.50	.71	1.22	—	—	—	MS1160	T20
5956450	EVSMR160216	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—	—	MS1160	T20
5956541	EVSMR120222	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—	MS2091	—	25 IP
5956449	EVSMR160226	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—	MS2091	—	25 IP
5939462	EVSMR120316C	3	.63	.750	.750	.750	1.09	4.50	.69	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939458	EVSMR160316C	3	.63	1.000	1.000	1.000	1.34	6.00	.94	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939461	EVSMR120322C	3	.87	.750	.750	.750	1.10	4.50	.69	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939457	EVSMR160326C	3	1.02	1.000	1.000	1.000	1.35	6.00	.94	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939460	EVSMR120416C	4	.63	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939456	EVSMR160416C	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939459	EVSMR120422C	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939455	EVSMR160426C	4	1.02	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939454	EVSMR200426C	4	1.02	1.250	1.250	1.250	1.62	6.00	1.18	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5939463	EVSMR200432C	4	1.26	1.250	1.250	1.250	1.62	6.00	1.18	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955445	EVSMR120516C	5	.63	.750	.750	.750	1.09	4.50	.66	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955441	EVSMR160516C	5	.63	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955444	EVSMR120522C	5	.87	.750	.750	.750	1.10	4.50	.66	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955430	EVSMR160526C	5	1.02	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955446	EVSMR200526C	5	1.02	1.250	1.250	1.250	1.62	6.00	1.16	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955447	EVSMR200532C	5	1.26	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955443	EVSMR120616C	6	.63	.750	.750	.750	1.09	4.50	.64	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955429	EVSMR160616C	6	.63	1.000	1.000	1.000	1.34	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955442	EVSMR120622C	6	.87	.750	.750	.750	1.10	4.50	.64	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955428	EVSMR160626C	6	1.02	1.000	1.000	1.000	1.35	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955448	EVSMR200626C	6	1.02	1.250	1.250	1.250	1.62	6.00	1.14	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955449	EVSMR200632C	6	1.26	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955450	EVSMR240640C	6	1.58	1.500	1.500	1.500	1.93	7.00	1.39	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955427	EVSMR160826C	8	1.02	1.000	1.000	1.000	1.39	6.00	.86	1.93	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955451	EVSMR200826C	8	1.02	1.250	1.250	1.250	1.66	6.00	1.11	1.93	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955452	EVSMR200832C	8	1.26	1.250	1.250	1.250	1.66	6.00	1.11	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955453	EVSMR240840C	8	1.58	1.500	1.500	1.500	1.93	7.00	1.36	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

(continued)



(Integral Straight • Inch — continued)



Turning

order number	catalog number	seat size											Torx clamp screw	Torx clamp screw	Torx
			CD	H1	H	B	H2	L1	FS	LH	CF	CS			
5955454	EVSMR201032C	10	1.26	1.250	1.250	1.250	1.69	6.00	1.08	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955455	EVSMR241040C	10	1.58	1.500	1.500	1.500	1.94	7.00	1.33	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
left hand															
5956543	EVSMR120216	2	.63	.750	.750	.750	1.03	4.50	.71	1.22	—	—	—	MS1160	T20
5956545	EVSMR160216	2	.63	1.000	1.000	1.000	1.28	6.00	.96	1.22	—	—	—	MS1160	T20
5956544	EVSMR120222	2	.87	.750	.750	.750	1.10	4.50	.71	1.50	—	—	MS2091	—	25 IP
5956546	EVSMR160226	2	1.02	1.000	1.000	1.000	1.35	6.00	.96	1.65	—	—	MS2091	—	25 IP
5939464	EVSMR120316C	3	.63	.750	.750	.750	1.09	4.50	.69	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939466	EVSMR160316C	3	.63	1.000	1.000	1.000	1.34	6.00	.94	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939465	EVSMR120322C	3	.87	.750	.750	.750	1.10	4.50	.69	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939467	EVSMR160326C	3	1.02	1.000	1.000	1.000	1.35	6.00	.94	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939468	EVSMR120416C	4	.63	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939470	EVSMR160416C	4	.63	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939469	EVSMR120422C	4	.87	.750	.750	.750	1.10	4.50	.68	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939471	EVSMR160426C	4	1.02	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939472	EVSMR200426C	4	1.02	1.250	1.250	1.250	1.62	6.00	1.18	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5939453	EVSMR200432C	4	1.26	1.250	1.250	1.250	1.62	6.00	1.18	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955456	EVSMR120516C	5	.63	.750	.750	.750	1.09	4.50	.66	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955459	EVSMR160516C	5	.63	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955457	EVSMR120522C	5	.87	.750	.750	.750	1.10	4.50	.66	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955460	EVSMR160526C	5	1.02	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955426	EVSMR200526C	5	1.02	1.250	1.250	1.250	1.62	6.00	1.16	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955461	EVSMR200532C	5	1.26	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955462	EVSMR120616C	6	.63	.750	.750	.750	1.09	4.50	.64	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955464	EVSMR160616C	6	.63	1.000	1.000	1.000	1.34	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955463	EVSMR120622C	6	.87	.750	.750	.750	1.10	4.50	.64	1.69	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5955465	EVSMR160626C	6	1.02	1.000	1.000	1.000	1.35	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955466	EVSMR200626C	6	1.02	1.250	1.250	1.250	1.62	6.00	1.14	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5955467	EVSMR200632C	6	1.26	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955468	EVSMR240640C	6	1.58	1.500	1.500	1.500	1.93	7.00	1.39	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955469	EVSMR160826C	8	1.02	1.000	1.000	1.000	1.39	6.00	.86	1.93	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955470	EVSMR200826C	8	1.02	1.250	1.250	1.250	1.66	6.00	1.11	1.93	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955471	EVSMR200832C	8	1.26	1.250	1.250	1.250	1.66	6.00	1.11	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955472	EVSMR240840C	8	1.58	1.500	1.500	1.500	1.93	7.00	1.36	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955473	EVSMR201032C	10	1.26	1.250	1.250	1.250	1.69	6.00	1.08	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5955474	EVSMR241040C	10	1.58	1.500	1.500	1.500	1.94	7.00	1.33	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

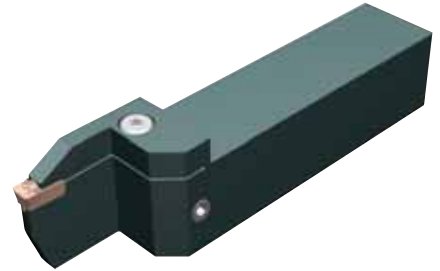
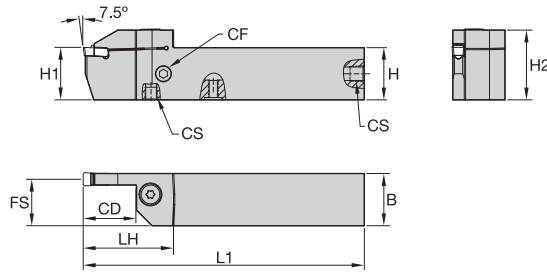
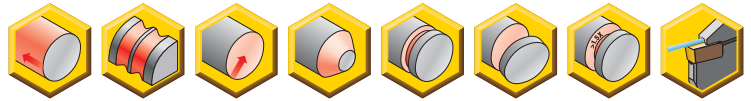
NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



Turning

- Offers the greatest stability.
- Straight clearance for unlimited workpiece diameters.
- Through the pocket coolant capable.



Left Hand

■ Integral Straight • Metric





order number	catalog number	seat size	CD	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>															
5953960	EVSMR2020K0216	2	16	20	20	20	27	125	19	31	—	—	—	MS1160	T20
5953958	EVSMR2525M0216	2	16	25	25	25	32	150	24	31	—	—	—	MS1160	T20
5953959	EVSMR2020K0222	2	22	20	20	20	29	125	19	38	—	—	MS2091	—	25 IP
5953957	EVSMR2525M0226	2	26	25	25	25	34	150	24	42	—	—	MS2091	—	25 IP
5939452	EVSMR2020K0316C	3	16	20	20	20	29	125	19	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939448	EVSMR2525M0316C	3	16	25	25	25	34	150	24	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939451	EVSMR2020K0322C	3	22	20	20	20	29	125	19	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939447	EVSMR2525M0326C	3	26	25	25	25	34	150	24	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939450	EVSMR2020K0416C	4	16	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939446	EVSMR2525M0416C	4	16	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939449	EVSMR2020K0422C	4	22	20	20	20	29	125	18	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939445	EVSMR2525M0426C	4	26	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939444	EVSMR3232P0426C	4	26	32	32	32	42	170	30	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5939443	EVSMR3232P0432C	4	32	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954258	EVSMR2020K0516C	5	16	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954254	EVSMR2525M0516C	5	16	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954257	EVSMR2020K0522C	5	22	20	20	20	29	125	18	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954253	EVSMR2525M0526C	5	26	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954249	EVSMR3232P0526C	5	26	32	32	32	42	170	30	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954248	EVSMR3232P0532C	5	32	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954256	EVSMR2020K0616C	6	16	20	20	20	29	125	20	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954252	EVSMR2525M0616C	6	16	25	25	25	34	150	25	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954255	EVSMR2020K0622C	6	22	20	20	20	29	125	20	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954251	EVSMR2525M0626C	6	26	25	25	25	34	150	25	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954247	EVSMR3232P0626C	6	26	32	32	32	42	170	32	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954246	EVSMR3232P0632C	6	32	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954242	EVSMR4040R0640C	6	40	40	40	40	51	200	37	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954250	EVSMR2525M0826C	8	26	25	25	25	35	150	21	49	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954245	EVSMR3232P0826C	8	26	32	32	32	43	170	28	49	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954244	EVSMR3232P0832C	8	32	32	32	32	43	170	28	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954241	EVSMR4040R0840C	8	40	40	40	40	51	200	36	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954243	EVSMR3232P1032C	10	32	32	32	32	43	170	28	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954240	EVSMR4040R1040C	10	40	40	40	40	51	200	36	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

(continued)

(Integral Straight • Metric — continued)



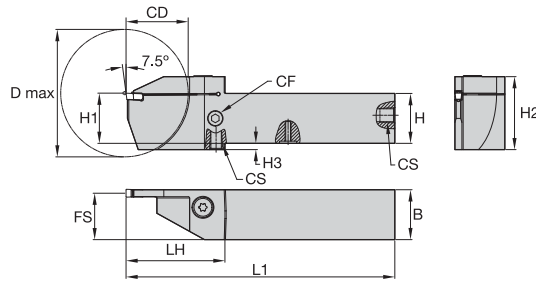
order number	catalog number	seat size	CD	H1	H	B	H2	L1	FS	LH	CF	CS			Torx
													Torx clamp screw	Torx clamp screw	
left hand															
5953956	EVSMML2020K0216	2	16	20	20	20	27	125	19	31	—	—	—	MS1160	T20
5953954	EVSMML2525M0216	2	16	25	25	25	32	150	24	31	—	—	—	MS1160	T20
5953955	EVSMML2020K0222	2	22	20	20	20	29	125	19	38	—	—	MS2091	—	25 IP
5953953	EVSMML2525M0226	2	26	25	25	25	34	150	24	42	—	—	MS2091	—	25 IP
5939442	EVSMML2020K0316C	3	16	20	20	20	29	125	19	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939438	EVSMML2525M0316C	3	16	25	25	25	34	150	24	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939441	EVSMML2020K0322C	3	22	20	20	20	29	125	19	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939437	EVSMML2525M0326C	3	26	25	25	25	34	150	24	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939440	EVSMML2020K0416C	4	16	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939436	EVSMML2525M0416C	4	16	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939439	EVSMML2020K0422C	4	22	20	20	20	29	125	18	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5939435	EVSMML2525M0426C	4	26	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5939433	EVSMML3232P0426C	4	26	32	32	32	42	170	30	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5939432	EVSMML3232P0432C	4	32	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954239	EVSMML2020K0516C	5	16	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954235	EVSMML2525M0516C	5	16	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954238	EVSMML2020K0522C	5	22	20	20	20	29	125	18	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954234	EVSMML2525M0526C	5	26	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954220	EVSMML3232P0526C	5	26	32	32	32	42	170	30	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954219	EVSMML3232P0532C	5	32	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954237	EVSMML2020K0616C	6	16	20	20	20	29	125	17	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954233	EVSMML2525M0616C	6	16	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954236	EVSMML2020K0622C	6	22	20	20	20	29	125	17	43	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5954232	EVSMML2525M0626C	6	26	25	25	25	34	150	22	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954218	EVSMML3232P0626C	6	26	32	32	32	42	170	29	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5954217	EVSMML3232P0632C	6	32	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954213	EVSMML4040R0640C	6	40	40	40	40	51	200	37	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954231	EVSMML2525M0826C	8	26	25	25	25	35	150	21	49	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954216	EVSMML3232P0826C	8	26	32	32	32	43	170	28	49	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954215	EVSMML3232P0832C	8	32	32	32	32	43	170	28	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954212	EVSMML4040R0840C	8	40	40	40	40	51	200	36	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954214	EVSMML3232P1032C	10	32	32	32	32	43	170	28	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
5954211	EVSMML4040R1040C	10	40	40	40	40	51	200	36	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

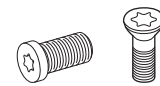
screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

Turning

- Through the pocket coolant capable.
- Reinforced for added support in specific workpiece diameters.



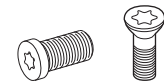
■ Integral Reinforced Straight Top Clamp • Inch



order number	catalog number	seat size	CD	D max	H1	H	B	H2	H3	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>																	
6179398	EVSCTR081B16	1B	.63	1.654	.500	.500	.500	.93	—	4.50	.47	1.22	—	—	—	MS1160	T20
6179399	EVSCTR081F16	1F	.63	1.654	.500	.500	.500	.93	—	4.50	.47	1.22	—	—	—	MS1160	T20
6179400	EVSCTR080216	2	.63	1.654	.500	.500	.500	.93	—	4.50	.46	1.22	—	—	—	MS1160	T20
5980815	EVSCTR100216	2	.63	1.654	.625	.625	.625	.90	—	4.50	.59	1.22	—	—	—	MS1160	T20
5980818	EVSCTR120216	2	.63	1.654	.750	.750	.750	1.03	—	4.50	.71	1.22	—	—	—	MS1160	T20
5980913	EVSCTR160216	2	.63	1.654	1.000	1.000	1.000	1.28	—	6.00	.96	1.22	—	—	—	MS1160	T20
5980914	EVSCTR160226	2	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.96	1.65	—	—	MS2091	—	25 IP
6179721	EVSCTR080316C	3	.63	2.047	.500	.500	.500	.93	.16	4.50	.45	1.32	M8X1.25	M8X1.25	MS1944	—	T25
5980816	EVSCTR100316C	3	.63	2.047	.625	.625	.625	.92	—	4.50	.57	1.42	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980819	EVSCTR120316C	3	.63	2.047	.750	.750	.750	1.09	—	4.50	.69	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980915	EVSCTR160316C	3	.63	2.441	1.000	1.000	1.000	1.34	—	6.00	.94	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980820	EVSCTR120326C	3	1.02	2.441	.750	.750	.750	1.26	.16	4.50	.69	1.85	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980916	EVSCTR160326C	3	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.94	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980817	EVSCTR100416C	4	.63	2.047	.625	.625	.625	.92	—	4.50	.55	1.42	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980911	EVSCTR120416C	4	.63	2.047	.750	.750	.750	1.09	—	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980912	EVSCTR120426C	4	1.02	2.441	.750	.750	.750	1.26	.16	4.50	.70	1.85	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980917	EVSCTR160426C	4	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.92	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980918	EVSCTR160432C	4	1.26	2.520	1.000	1.000	1.000	1.51	.16	6.00	.92	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980932	EVSCTR200432C	4	1.26	2.520	1.250	1.250	1.250	1.62	—	6.00	1.25	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30

(continued)

(Integral Reinforced Straight Top Clamp • Inch — continued)



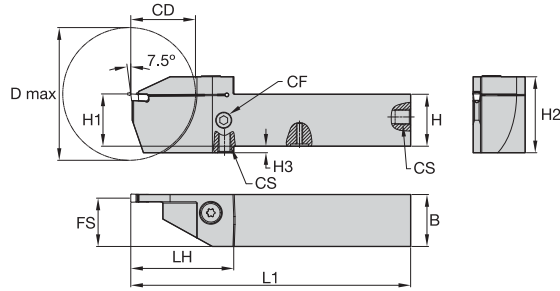
order number	catalog number	seat size	CD	D max	H1	H	B	H2	H3	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
5980919	EVSCTR160526C	5	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980920	EVSCTR160532C	5	1.26	2.441	1.000	1.000	1.000	1.53	.16	6.00	.91	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980933	EVSCTR200540C	5	1.58	3.228	1.250	1.250	1.250	1.82	.16	6.00	1.25	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45
left hand																	
6179722	EVSCTL081B16	1B	.63	1.654	.500	.500	.500	.93	—	4.50	.47	1.22	—	—	—	MS1160	T20
6179723	EVSCTL081F16	1F	.63	1.654	.500	.500	.500	.93	—	4.50	.47	1.22	—	—	—	MS1160	T20
6179724	EVSCTL080216	2	.63	1.654	.500	.500	.500	.93	—	4.50	.46	1.22	—	—	—	MS1160	T20
5980938	EVSCTL100216	2	.63	1.654	.625	.625	.625	.90	—	4.50	.59	1.22	—	—	—	MS1160	T20
5981011	EVSCTL120216	2	.63	1.654	.750	.750	.750	1.03	—	4.50	.71	1.22	—	—	—	MS1160	T20
5981016	EVSCTL160216	2	.63	1.654	1.000	1.000	1.000	1.28	—	6.00	.96	1.22	—	—	—	MS1160	T20
5981017	EVSCTL160226	2	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.96	1.65	—	—	MS2091	—	25 IP
6179725	EVSCTL080316C	3	.63	2.047	.500	.500	.500	.93	.16	4.50	.45	1.32	M8X1.25	M8X1.25	MS1944	—	T25
5980939	EVSCTL100316C	3	.63	2.047	.625	.625	.625	.92	—	4.50	.57	1.42	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5981012	EVSCTL120316C	3	.63	2.047	.750	.750	.750	1.09	—	4.50	.69	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5981018	EVSCTL160316C	3	.63	2.441	1.000	1.000	1.000	1.34	—	6.00	.94	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5981013	EVSCTL120326C	3	1.02	2.441	.750	.750	.750	1.26	.16	4.50	.69	1.85	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5981019	EVSCTL160326C	3	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.94	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980940	EVSCTL100416C	4	.63	2.047	.625	.625	.625	.92	—	4.50	.55	1.42	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5981014	EVSCTL120416C	4	.63	2.047	.750	.750	.750	1.09	—	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5981015	EVSCTL120426C	4	1.02	2.441	.750	.750	.750	1.26	.16	4.50	.70	1.85	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5981020	EVSCTL160426C	4	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.92	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5981021	EVSCTL160432C	4	1.26	2.520	1.000	1.000	1.000	1.51	.16	6.00	.92	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5981024	EVSCTL200432C	4	1.26	2.520	1.250	1.250	1.250	1.62	—	6.00	1.25	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5981022	EVSCTL160526C	5	1.02	2.441	1.000	1.000	1.000	1.35	—	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5981023	EVSCTL160532C	5	1.26	2.520	1.000	1.000	1.000	1.53	.16	6.00	.91	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5981025	EVSCTL200540C	5	1.58	3.228	1.250	1.250	1.250	1.82	.16	6.00	1.25	2.48	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



- Through the pocket coolant capable.
- Reinforced for added support in specific workpiece diameters.



■ Integral Reinforced Straight Top Clamp • Metric





order number	catalog number	seat size	CD	D max	H1	H	B	H2	H3	L1	FS	LH	CF	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>																	
6179757	EVSCTR1212K1B16	1B	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
6179758	EVSCTR1212K1F16	1F	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
6179759	EVSCTR1212K0216	2	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
5980139	EVSCTR1616K0216	2	16	42	16	16	16	23	—	125	15	31	—	—	—	MS1160	T20
5980762	EVSCTR2020K0216	2	16	42	20	20	20	27	—	125	19	31	—	—	—	MS1160	T20
5980767	EVSCTR2525M0216	2	16	42	25	25	25	32	—	150	24	31	—	—	—	MS1160	T20
5980768	EVSCTR2525M0226	2	26	62	25	25	25	34	—	150	24	42	—	—	MS2091	—	25 IP
6179755	EVSCTR1212K0316C	3	16	52	12	12	12	23	4	125	11	34	M8X1.25	M8X1.25	MS1944	—	T25
5980140	EVSCTR1616K0316C	3	16	52	16	16	16	24	—	125	15	36	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980763	EVSCTR2020K0316C	3	16	52	20	20	20	29	—	125	19	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980138	EVSCTR2525M0316C	3	16	62	25	25	25	34	—	150	24	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980764	EVSCTR2020K0326C	3	26	62	20	20	20	33	4	125	19	47	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980769	EVSCTR2525M0326C	3	26	62	25	25	25	34	—	150	24	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980761	EVSCTR1616K0416C	4	16	52	16	16	16	24	—	125	14	36	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980765	EVSCTR2020K0416C	4	16	52	20	20	20	29	—	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980766	EVSCTR2020K0426C	4	26	62	20	20	20	33	—	125	18	47	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980770	EVSCTR2525M0426C	4	26	62	25	25	25	34	—	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980771	EVSCTR2525M0432C	4	32	64	25	25	25	38	4	150	23	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980774	EVSCTR3232P0432C	4	32	64	32	32	32	42	—	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980772	EVSCTR2525M0526C	5	26	62	25	25	25	34	—	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980773	EVSCTR2525M0532C	5	32	64	25	25	25	39	4	150	23	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980775	EVSCTR3232P0540C	5	40	82	32	32	32	47	4	170	30	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

(continued)



(Integral Reinforced Straight Top Clamp • Metric – continued)



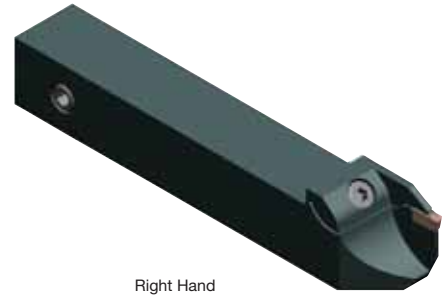
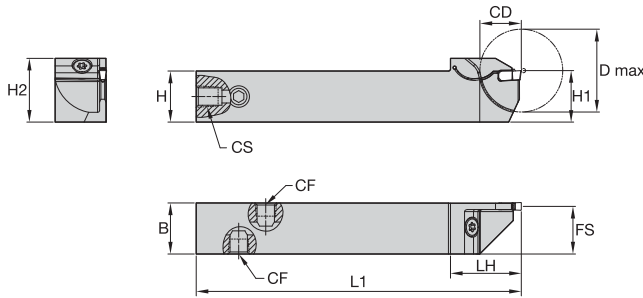
order number	catalog number	seat size	CD	D max	H1	H	B	H2	H3	L1	FS	LH	CF	CS			Torx
															Torx clamp screw	Torx clamp screw	
left hand																	
6179760	EVSCTL1212K1B16	1B	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
6179761	EVSCTL1212K1F16	1F	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
6179762	EVSCTL1212K0216	2	16	42	12	12	12	23	4	125	11	31	—	—	—	MS1160	T20
5980777	EVSCTL1616K0216	2	16	42	16	16	16	23	—	125	15	31	—	—	—	MS1160	T20
5980780	EVSCTL2020K0216	2	16	42	20	20	20	27	—	125	19	31	—	—	—	MS1160	T20
5980805	EVSCTL2525M0216	2	16	42	25	25	25	32	—	150	24	31	—	—	—	MS1160	T20
5980806	EVSCTL2525M0226	2	26	62	25	25	25	34	—	150	24	42	—	—	MS2091	—	25 IP
6179756	EVSCTL1212K0316C	3	16	52	12	12	12	23	4	125	11	34	M8X1.25	M8X1.25	MS1944	—	T25
5980778	EVSCTL1616K0316C	3	16	52	16	16	16	24	—	125	15	36	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980801	EVSCTL2020K0316C	3	16	52	20	20	20	29	—	125	19	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980776	EVSCTL2525M0316C	3	16	62	25	25	25	34	—	150	24	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980802	EVSCTL2020K0326C	3	26	62	20	20	20	33	4	125	19	47	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980807	EVSCTL2525M0326C	3	26	62	25	25	25	34	—	150	24	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980779	EVSCTL1616K0416C	4	16	52	16	16	16	24	—	125	14	36	1/16 - 27 NPTF	1/16 - 27 NPTF	MS2091	—	25 IP
5980803	EVSCTL2020K0416C	4	16	52	20	20	20	29	—	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980804	EVSCTL2020K0426C	4	26	62	20	20	20	33	—	125	18	47	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	—	T30
5980808	EVSCTL2525M0426C	4	26	62	25	25	25	34	—	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980809	EVSCTL2525M0432C	4	32	64	25	25	25	38	4	150	23	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1595	—	T30
5980812	EVSCTL3232P0432C	4	32	64	32	32	32	42	—	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980810	EVSCTL2525M0526C	5	26	62	25	25	25	34	—	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980811	EVSCTL2525M0532C	5	32	64	25	25	25	39	4	150	23	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	—	T30
5980813	EVSCTL3232P0540C	5	40	82	32	32	32	47	4	170	30	63	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	—	T45

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



Turning



■ Integral Reinforced Front Clamp • Inch



order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>right hand</b>															
6180116	EVSCFR061B10	1B	.39	.787	.375	.375	.375	.53	4.50	.35	.81	—	—	191.916	T15
6180119	EVSCFR081B10	1B	.39	.787	.500	.500	.500	.66	4.50	.47	.81	—	—	191.916	T15
6180120	EVSCFR081B13	1B	.51	1.024	.500	.500	.500	.66	4.50	.47	.93	—	—	191.916	T15
6180129	EVSCFR101B16	1B	.63	1.260	.625	.625	.625	.80	4.50	.60	1.04	—	—	MS1160	T20
6180143	EVSCFR121B16	1B	.63	1.260	.750	.750	.750	.93	4.50	.72	1.04	—	—	MS1160	T20
6180117	EVSCFR061F10	1F	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—	—	191.916	T15
6180121	EVSCFR081F10	1F	.39	.787	.500	.500	.500	.66	4.50	.47	.81	—	—	191.916	T15
6180124	EVSCFR081F13	1F	.51	1.024	.500	.500	.500	.66	4.50	.47	.93	—	—	191.916	T15
6180130	EVSCFR101F16	1F	.63	1.260	.625	.625	.625	.80	4.50	.59	1.04	—	—	MS1160	T20
6180144	EVSCFR121F16	1F	.63	1.260	.750	.750	.750	.93	4.50	.72	1.04	—	—	MS1160	T20
6180118	EVSCFR060210	2	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—	—	191.916	T15
6180125	EVSCFR080210	2	.39	.787	.500	.500	.500	.66	4.50	.46	.81	—	—	191.916	T15
6180126	EVSCFR080216	2	.63	1.260	.500	.500	.500	.66	4.50	.46	1.04	—	—	191.916	T15
6180141	EVSCFR100216	2	.63	1.260	.625	.625	.625	.80	4.50	.59	1.04	—	—	MS1160	T20
6180146	EVSCFR120216	2	.63	1.260	.750	.750	.750	.93	4.50	.71	1.04	—	—	MS1160	T20
6180127	EVSCFR080310C	3	.39	.787	.500	.500	.500	.69	4.50	.44	.85	M8X1.25	M8X1.25	191.916	T15
6180128	EVSCFR080316C	3	.63	1.260	.500	.500	.500	.69	4.50	.44	1.08	M8X1.25	M8X1.25	191.916	T15
6180142	EVSCFR100316C	3	.63	1.260	.625	.625	.625	.81	4.50	.57	1.08	M8X1.25	M8X1.25	MS1160	T20
6180147	EVSCFR120316C	3	.63	1.260	.750	.750	.750	.94	4.50	.69	1.08	M8X1.25	M8X1.25	MS1160	T20

(continued)



(Integral Reinforced Front Clamp • Inch — continued)



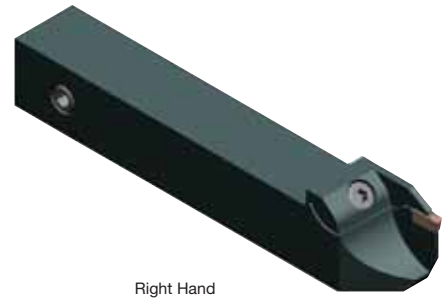
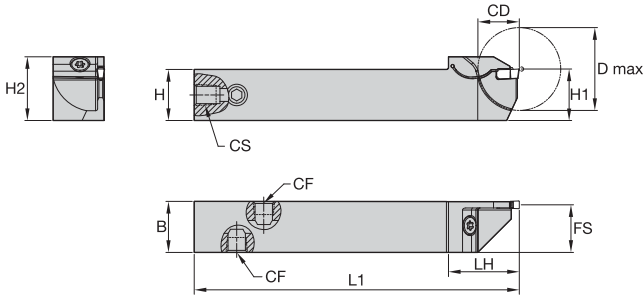
Turning

order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>left hand</b>															
6179726	EVSCFL061B10	1B	.39	.787	.375	.375	.375	.53	4.50	.35	.81	—	—	191.916	T15
6179729	EVSCFL081B10	1B	.39	.787	.500	.500	.500	.66	4.50	.47	.81	—	—	191.916	T15
6179730	EVSCFL081B13	1B	.51	1.024	.500	.500	.500	.66	4.50	.47	.93	—	—	191.916	T15
6179737	EVSCFL101B16	1B	.63	1.260	.625	.625	.625	.80	4.50	.60	1.04	—	—	MS1160	T20
6179751	EVSCFL121B16	1B	.63	1.260	.750	.750	.750	.93	4.50	.72	1.04	—	—	MS1160	T20
6179727	EVSCFL061F10	1F	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—	—	191.916	T15
6179731	EVSCFL081F10	1F	.39	.787	.500	.500	.500	.66	4.50	.47	.81	—	—	191.916	T15
6179732	EVSCFL081F13	1F	.51	1.024	.500	.500	.500	.66	4.50	.47	.93	—	—	191.916	T15
6179738	EVSCFL101F16	1F	.63	1.260	.625	.625	.625	.80	4.50	.59	1.04	—	—	MS1160	T20
6179752	EVSCFL121F16	1F	.63	1.260	.750	.750	.750	.93	4.50	.72	1.04	—	—	MS1160	T20
6179728	EVSCFL060210	2	.39	.787	.375	.375	.375	.53	4.50	.34	.81	—	—	191.916	T15
6179733	EVSCFL080210	2	.39	.787	.500	.500	.500	.66	4.50	.46	.81	—	—	191.916	T15
6179734	EVSCFL080216	2	.63	1.260	.500	.500	.500	.66	4.50	.46	1.04	—	—	191.916	T15
6179739	EVSCFL100216	2	.63	1.260	.625	.625	.625	.80	4.50	.59	1.04	—	—	MS1160	T20
6179753	EVSCFL120216	2	.63	1.260	.750	.750	.750	.93	4.50	.71	1.04	—	—	MS1160	T20
6179735	EVSCFL080310C	3	.39	.787	.500	.500	.500	.69	4.50	.44	.85	M8X1.25	M8X1.25	191.916	T15
6179736	EVSCFL080316C	3	.63	1.260	.500	.500	.500	.69	4.50	.44	1.08	M8X1.25	M8X1.25	191.916	T15
6179740	EVSCFL100316C	3	.63	1.260	.625	.625	.625	.81	4.50	.57	1.08	M8X1.25	M8X1.25	MS1160	T20
6179754	EVSCFL120316C	3	.63	1.260	.750	.750	.750	.94	4.50	.69	1.08	M8X1.25	M8X1.25	MS1160	T20

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

Turning



■ Integral Reinforced Front Clamp • Metric



order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>right hand</b>															
6179763	EVSCFR1010K1B10	1B	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179766	EVSCFR1212K1B10	1B	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179767	EVSCFR1212K1B13	1B	13	26	12	12	12	16	125	11	24	—	—	191.916	T15
6179774	EVSCFR1616K1B16	1B	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179778	EVSCFR2020K1B16	1B	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179764	EVSCFR1010K1F10	1F	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179768	EVSCFR1212K1F10	1F	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179769	EVSCFR1212K1F13	1F	13	26	12	12	12	16	125	11	24	—	—	191.916	T15
6179775	EVSCFR1616K1F16	1F	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179779	EVSCFR2020K1F16	1F	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179765	EVSCFR1010K0210	2	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179770	EVSCFR1212K0210	2	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179771	EVSCFR1212K0216	2	16	32	12	12	12	16	125	11	27	—	—	191.916	T15
6179776	EVSCFR1616K0216	2	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179780	EVSCFR2020K0216	2	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179772	EVSCFR1212K0310C	3	10	20	12	12	12	17	125	11	22	M8X1.25	M8X1.25	191.916	T15
6179773	EVSCFR1212K0316C	3	16	32	12	12	12	17	125	11	28	M8X1.25	M8X1.25	191.916	T15
6179777	EVSCFR1616K0316C	3	16	32	16	16	16	21	125	15	28	M8X1.25	M8X1.25	MS1160	T20
6179781	EVSCFR2020K0316C	3	16	32	20	20	20	25	125	19	28	M8X1.25	M8X1.25	MS1160	T20

(continued)

(Integral Reinforced Front Clamp • Metric — continued)



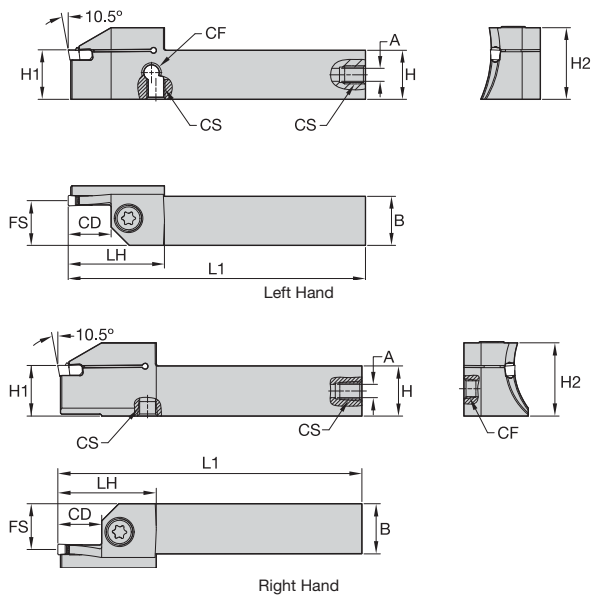
order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>left hand</b>															
6179709	EVSCFL1010K1B10	1B	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179922	EVSCFL1212K1B10	1B	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179923	EVSCFL1212K1B13	1B	13	26	12	12	12	16	125	11	24	—	—	191.916	T15
6179930	EVSCFL1616K1B16	1B	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179934	EVSCFL2020K1B16	1B	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179710	EVSCFL1010K1F10	1F	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179924	EVSCFL1212K1F10	1F	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179925	EVSCFL1212K1F13	1F	13	26	12	12	12	16	125	11	24	—	—	191.916	T15
6179931	EVSCFL1616K1F16	1F	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179935	EVSCFL2020K1F16	1F	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179921	EVSCFL1010K0210	2	10	20	10	10	10	14	125	9	21	—	—	191.916	T15
6179926	EVSCFL1212K0210	2	10	20	12	12	12	16	125	11	21	—	—	191.916	T15
6179927	EVSCFL1212K0216	2	16	32	12	12	12	16	125	11	27	—	—	191.916	T15
6179932	EVSCFL1616K0216	2	16	32	16	16	16	21	125	15	27	—	—	MS1160	T20
6179936	EVSCFL2020K0216	2	16	32	20	20	20	25	125	19	27	—	—	MS1160	T20
6179928	EVSCFL1212K0310C	3	10	20	12	12	12	17	125	11	22	M8X1.25	M8X1.25	191.916	T15
6179929	EVSCFL1212K0316C	3	16	32	12	12	12	17	125	11	28	M8X1.25	M8X1.25	191.916	T15
6179933	EVSCFL1616K0316C	3	16	32	16	16	16	21	125	15	28	M8X1.25	M8X1.25	MS1160	T20
6179937	EVSCFL2020K0316C	3	16	32	20	20	20	25	125	19	28	M8X1.25	M8X1.25	MS1160	T20

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

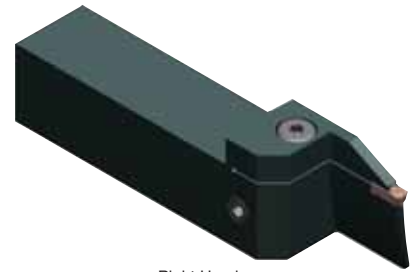
screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



Turning



Left Hand



Right Hand

■ Integral Face Grooving Straight Outboard • Inch



order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>right hand</b>															
6080418	EVSBR120312035040C	3	.47	1.575	.751	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117117	EVSBR120312040050C	3	.47	1.969	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117119	EVSBR120312050060C	3	.47	2.362	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117351	EVSBR120312060075C	3	.47	2.953	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117353	EVSBR120312075100C	3	.47	3.937	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080489	EVSBR160312100180C	3	.47	7.087	1.000	1.000	1.000	1.34	6.00	.95	1.30	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080491	EVSBR160312180250C	3	.47	9.843	1.000	1.000	1.000	1.34	6.00	.95	1.30	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080477	EVSBR160320060075C	3	.79	2.953	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080479	EVSBR160320075100C	3	.79	3.937	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080481	EVSBR160320100180C	3	.79	7.087	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080483	EVSBR160320180250C	3	.79	9.843	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080419	EVSBR120416040050C	4	.63	1.969	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080475	EVSBR120416050060C	4	.63	2.362	.750	.750	.750	1.34	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117355	EVSBR120416060075C	4	.63	2.953	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117357	EVSBR120416075100C	4	.63	3.937	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117402	EVSBR160416100180C	4	.63	7.087	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117404	EVSBR160416180250C	4	.63	9.843	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117359	EVSBR160426060075C	4	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117381	EVSBR160426075100C	4	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117383	EVSBR160426100180C	4	1.02	7.087	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117386	EVSBR160426180250C	4	1.02	9.843	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080420	EVSBR160516050060C	5	.63	2.362	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117166	EVSBR160516060075C	5	.63	2.953	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30

(continued)

(Integral Face Grooving Straight Outboard • Inch — continued)



order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
6117170	EVSBR160516075100C	5	.63	3.937	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117264	EVSBR160516100180C	5	.63	7.087	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117268	EVSBR160516180250C	5	.63	9.843	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117272	EVSBR160516250350C	5	.63	13.780	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117276	EVSBR160516350999C	5	.63	39.331	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117164	EVSBR160526050060C	5	1.02	2.362	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117168	EVSBR160526060075C	5	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117262	EVSBR160526075100C	5	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117280	EVSBR200532100180C	5	1.26	7.087	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117282	EVSBR200532180250C	5	1.26	9.843	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117284	EVSBR200532250350C	5	1.26	13.780	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117286	EVSBR200532350999C	5	1.26	39.331	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079180	EVSBR160616060075C	6	.63	2.953	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079354	EVSBR160616075100C	6	.63	3.937	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079358	EVSBR160616100180C	6	.63	7.087	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079362	EVSBR160616180250C	6	.63	9.843	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079366	EVSBR160616250350C	6	.63	13.780	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079370	EVSBR160616350999C	6	.63	39.331	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079352	EVSBR160626060075C	6	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079356	EVSBR160626075100C	6	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079374	EVSBR200632100180C	6	1.26	7.087	1.250	1.250	1.000	1.66	6.00	1.14	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079376	EVSBR200632180250C	6	1.26	9.843	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079378	EVSBR200632250350C	6	1.26	13.780	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079380	EVSBR200632350999C	6	1.26	39.331	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
<b>left hand</b>															
6117118	EVSBL120312040050C	3	.47	1.969	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117120	EVSBL120312050060C	3	.47	2.362	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117352	EVSBL120312060075C	3	.47	2.953	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117354	EVSBL120312075100C	3	.47	3.937	.750	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080472	EVSBL120312035040C	3	.47	1.575	.751	.750	.750	1.09	4.50	.70	1.30	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080490	EVSBL160312100180C	3	.47	7.087	1.000	1.000	1.000	1.34	6.00	.95	1.30	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080492	EVSBL160312180250C	3	.47	9.843	1.000	1.000	1.000	1.34	6.00	.95	1.30	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080480	EVSBL160320075100C	3	.79	3.937	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080482	EVSBL160320100180C	3	.79	7.087	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080484	EVSBL160320180250C	3	.79	9.843	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080478	EVSBL160320060075C	3	.79	2.953	1.000	1.000	1.000	1.35	6.00	.95	1.61	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080473	EVSBL120416040050C	4	.63	1.969	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080476	EVSBL120416050060C	4	.63	2.362	.750	.750	.750	1.34	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117356	EVSBL120416060075C	4	.63	2.953	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117358	EVSBL120416075100C	4	.63	3.937	.750	.750	.750	1.09	4.50	.68	1.46	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6117403	EVSBL160416100180C	4	.63	7.087	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117405	EVSBL160416180250C	4	.63	9.843	1.000	1.000	1.000	1.34	6.00	.93	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117360	EVSBL160426060075C	4	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117382	EVSBL160426075100C	4	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30

(continued)

(Integral Face Grooving Straight Outboard • Inch — continued)

Turning



order number	catalog number	seat size	CD	D max	H1	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
														MS1970	T30
6117384	EVSBL160426100180C	4	1.02	7.087	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117387	EVSBL160426180250C	4	1.02	9.843	1.000	1.000	1.000	1.35	6.00	.93	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080474	EVSBL160516050060C	5	.63	2.362	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117167	EVSBL160516060075C	5	.63	2.953	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117261	EVSBL160516075100C	5	.63	3.937	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117265	EVSBL160516100180C	5	.63	7.087	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117269	EVSBL160516180250C	5	.63	9.843	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117273	EVSBL160516250350C	5	.63	13.780	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117277	EVSBL160516350999C	5	.63	39.331	1.000	1.000	1.000	1.34	6.00	.91	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117165	EVSBL160526050060C	5	1.02	2.362	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117169	EVSBL160526060075C	5	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117263	EVSBL160526075100C	5	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.91	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117281	EVSBL200532100180C	5	1.26	7.087	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117283	EVSBL200532180250C	5	1.26	9.843	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117285	EVSBL200532250350C	5	1.26	13.780	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6117287	EVSBL200532350999C	5	1.26	39.331	1.250	1.250	1.250	1.62	6.00	1.16	2.09	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079351	EVSBL160616060075C	6	.63	2.953	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079355	EVSBL160616075100C	6	.63	3.937	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079359	EVSBL160616100180C	6	.63	7.087	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079363	EVSBL160616180250C	6	.63	9.843	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079367	EVSBL160616250350C	6	.63	13.780	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079371	EVSBL160616350999C	6	.63	39.331	1.000	1.000	1.000	1.34	6.00	.89	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079353	EVSBL160626060075C	6	1.02	2.953	1.000	1.000	1.000	1.35	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079357	EVSBL160626075100C	6	1.02	3.937	1.000	1.000	1.000	1.35	6.00	.89	1.46	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6079375	EVSBL200632100180C	6	1.26	7.087	1.250	1.250	1.000	1.66	6.00	1.14	1.85	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079377	EVSBL200632180250C	6	1.26	9.843	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079379	EVSBL200632250350C	6	1.26	13.780	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6079381	EVSBL200632350999C	6	1.26	39.331	1.250	1.250	1.250	1.66	6.00	1.14	2.17	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45

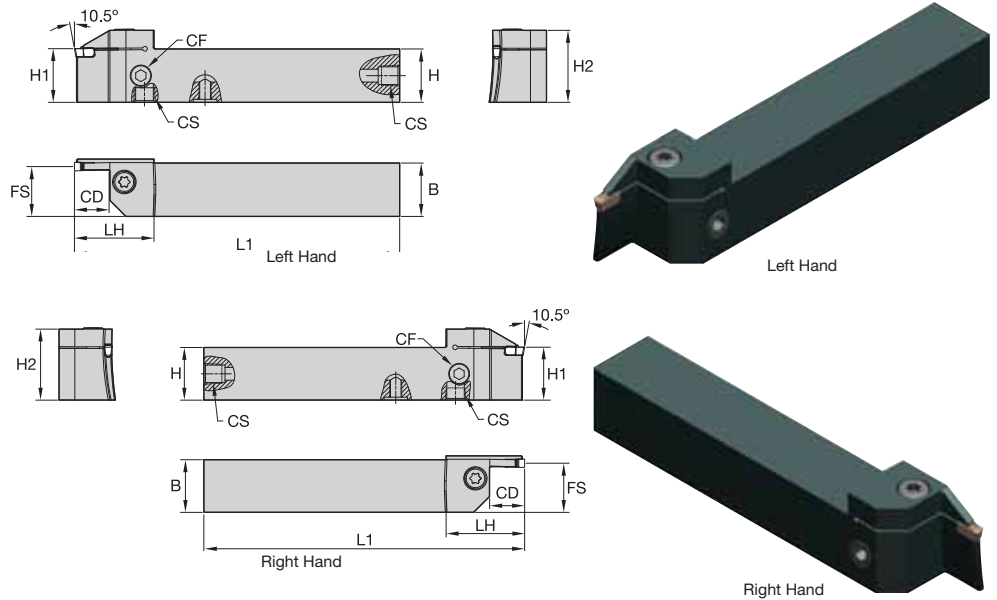
NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113





Turning



■ Integral Face Grooving Straight Outboard • Metric



order number	catalog number	seat size	CD	D max	W min	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
<b>right hand</b>															
6080031	EVSBR2020K0312035040C	3	12	40	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116561	EVSBR2020K0312040050C	3	12	50	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T20
6116563	EVSBR2020K0312050060C	3	12	60	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116567	EVSBR2020K0312060075C	3	12	75	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116569	EVSBR2020K0312075100C	3	12	100	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080067	EVSBR2525M0312100180C	3	12	180	25	25	25	34	150	24	33	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080069	EVSBR2525M0312180250C	3	12	250	25	25	25	34	150	24	33	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080053	EVSBR2525M0320060075C	3	20	75	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080055	EVSBR2525M0320075100C	3	20	100	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080057	EVSBR2525M0320100180C	3	20	180	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080060	EVSBR2525M0320180250C	3	20	250	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080033	EVSBR2020K0416040050C	4	16	50	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080040	EVSBR2020K0416050060C	4	16	60	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116571	EVSBR2020K0416060075C	4	16	75	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116573	EVSBR2020K0416075100C	4	16	100	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116587	EVSBR2525M0416100180C	4	16	180	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116589	EVSBR2525M0416180250C	4	16	250	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116575	EVSBR2525M0426060075C	4	26	75	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116577	EVSBR2525M0426075100C	4	26	100	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116579	EVSBR2525M0426100180C	4	26	180	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116581	EVSBR2525M0426180250C	4	26	250	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080035	EVSBR2525M0516050060C	5	16	60	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124200	EVSBR2525M0516060075C	5	16	60	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30

(continued)

(Integral Face Grooving Straight Outboard • Metric – continued)



Turning

order number	catalog number	seat size	CD	D max	W min	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	Torx
6124214	EVSBR2525M0516075100C	5	16	100	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124218	EVSBR2525M0516100180C	5	16	180	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124222	EVSBR2525M0516180250C	5	16	250	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124226	EVSBR2525M0516250350C	5	16	350	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124230	EVSBR2525M0516350999C	5	16	999	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124198	EVSBR2525M0526050060C	5	26	60	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124212	EVSBR2525M0526060075C	5	26	60	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124216	EVSBR2525M0526075100C	5	26	100	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124235	EVSBR3232P0532100180C	5	32	180	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124237	EVSBR3232P0532180250C	5	32	250	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124239	EVSBR3232P0532250350C	5	32	350	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124241	EVSBR3232P0532350999C	5	32	999	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124605	EVSBR2525M0616060075C	6	16	75	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124609	EVSBR2525M0616075100C	6	16	100	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124673	EVSBR2525M0616100180C	6	16	180	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124677	EVSBR2525M0616180250C	6	16	250	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124681	EVSBR2525M0616250350C	6	16	350	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124685	EVSBR2525M0616350999C	6	16	999	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124607	EVSBR2525M0626060075C	6	26	75	25	25	25	34	150	22	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124671	EVSBR2525M0626075100C	6	26	100	25	25	25	34	150	22	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124689	EVSBR3232P0632100180C	6	32	180	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124691	EVSBR3232P0632180250C	6	32	250	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124693	EVSBR3232P0632250350C	6	32	350	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124695	EVSBR3232P0632350999C	6	32	999	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
left hand															
6080037	EVSBL2020K0312035040C	3	12	40	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116562	EVSBL2020K0312040050C	3	12	50	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116564	EVSBL2020K0312050060C	3	12	60	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116568	EVSBL2020K0312060075C	3	12	75	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116570	EVSBL2020K0312075100C	3	12	100	20	20	20	29	125	19	33	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080068	EVSBL2525M0312100180C	3	12	180	25	25	25	34	150	24	33	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080070	EVSBL2525M0312180250C	3	12	250	25	25	25	34	150	24	33	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080054	EVSBL2525M0320060075C	3	20	75	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080056	EVSBL2525M0320075100C	3	20	100	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080059	EVSBL2525M0320100180C	3	20	180	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080061	EVSBL2525M0320180250C	3	20	250	25	25	25	34	150	24	41	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080038	EVSBL2020K0416040050C	4	16	50	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6080051	EVSBL2020K0416050060C	4	16	60	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116572	EVSBL2020K0416060075C	4	16	75	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116574	EVSBL2020K0416075100C	4	16	100	20	20	20	29	125	18	37	1/16 - 27 NPTF	1/16 - 27 NPTF	MS1595	T30
6116588	EVSBL2525M0416100180C	4	16	180	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116590	EVSBL2525M0416180250C	4	16	250	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116576	EVSBL2525M0426060075C	4	26	75	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116578	EVSBL2525M0426075100C	4	26	100	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30

(continued)



(Integral Face Grooving Straight Outboard • Metric – continued)



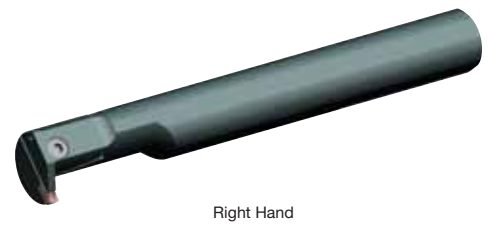
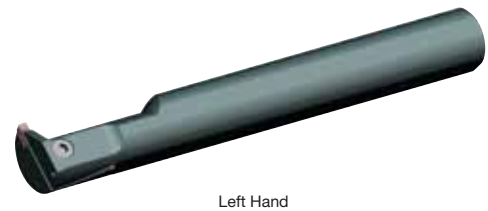
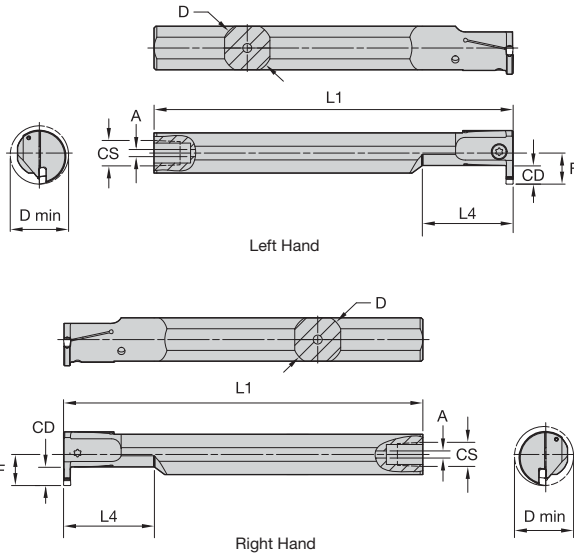
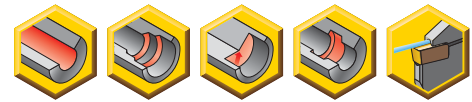
order number	catalog number	seat size	CD	D max	W min	H	B	H2	L1	FS	LH	CF	CS	Torx clamp screw	
														Torx	Torx
6116580	EVSBL2525M0426100180C	4	26	180	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6116582	EVSBL2525M0426180250C	4	26	250	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6080039	EVSBL2525M0516050060C	5	16	60	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124211	EVSBL2525M0516060075C	5	16	60	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124215	EVSBL2525M0516075100C	5	16	100	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124219	EVSBL2525M0516100180C	5	16	180	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124223	EVSBL2525M0516180250C	5	16	250	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124227	EVSBL2525M0516250350C	5	16	350	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124232	EVSBL2525M0516350999C	5	16	999	25	25	25	34	150	23	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124199	EVSBL2525M0526050060C	5	26	60	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124213	EVSBL2525M0526060075C	5	26	60	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124217	EVSBL2525M0526075100C	5	26	100	25	25	25	34	150	23	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124236	EVSBL3232P0532100180C	5	32	180	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124238	EVSBL3232P0532180250C	5	32	250	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124240	EVSBL3232P0532250350C	5	32	350	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124242	EVSBL3232P0532350999C	5	32	999	32	32	32	42	170	30	53	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124606	EVSBL2525M0616060075C	6	16	75	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124610	EVSBL2525M0616075100C	6	16	100	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124674	EVSBL2525M0616100180C	6	16	180	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124678	EVSBL2525M0616180250C	6	16	250	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124682	EVSBL2525M0616250350C	6	16	350	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124686	EVSBL2525M0616350999C	6	16	999	25	25	25	34	150	22	37	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124608	EVSBL2525M0626060075C	6	26	75	25	25	25	34	150	22	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124672	EVSBL2525M0626075100C	6	26	100	25	25	25	34	150	22	47	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1970	T30
6124690	EVSBL3232P0632100180C	6	32	180	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124692	EVSBL3232P0632180250C	6	32	250	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124694	EVSBL3232P0632250350C	6	32	350	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45
6124696	EVSBL3232P0632350999C	6	32	999	32	32	32	43	170	29	55	1/8 - 27 NPTF	1/8 - 27 NPTF	MS1490	T45

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

Turning

- For use in I.D. grooving applications.
- Maximum support.
- Steel boring bar with through coolant capability.





### Steel Boring Bar • Inch

order number	catalog number	seat size	CD	D	D min	L1	F	L4	A	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>													
5980635	A08KEVEMR1F05I	1F	.197	.500	.625	4.92	.336	1.00	.16	1/16 - 27 NPT	—	MS1285	T15
5980637	A10MEVEMR1F07I	1F	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5980639	A12QEVEMR1F07I	1F	.276	.750	1.000	7.09	.550	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5980636	A08KEVEMR0205I	2	.197	.500	.625	4.92	.336	1.00	.16	1/16 - 27 NPT	—	MS1285	T15
5980638	A10MEVEMR0207I	2	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5980640	A12QEVEMR0207I	2	.276	.750	.984	7.09	.550	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5980671	A16REVEMR0210I	2	.394	1.000	1.250	7.87	.681	2.00	.16	1/4 - 18 NPT	—	MS1162	T25
5954291	A10MEVEMR0307I	3	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5954292	A12QEVEMR0307I	3	.276	.750	.984	7.09	.549	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5954293	A16REVEMR0310I	3	.394	1.000	1.250	7.87	.681	2.00	.16	1/4 - 18 NPT	—	MS1162	T25
5954295	A20SEVEMR0312I	3	.472	1.250	1.500	9.84	.832	2.00	.25	1/4 - 18 NPT	MS1595	—	T25
5954294	A16REVEMR0410I	4	.394	1.000	1.250	7.87	.681	2.50	.16	1/4 - 18 NPT	—	MS1162	T25
5954296	A20SEVEMR0412I	4	.472	1.250	1.500	9.84	.832	2.50	.25	1/4 - 18 NPT	MS1595	—	T30

(continued)

(Steel Boring Bar • Inch — continued)

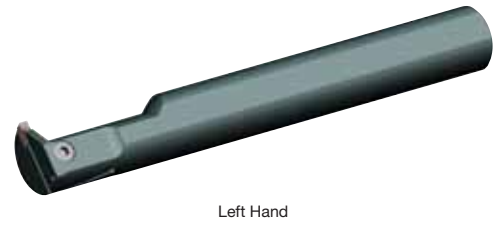
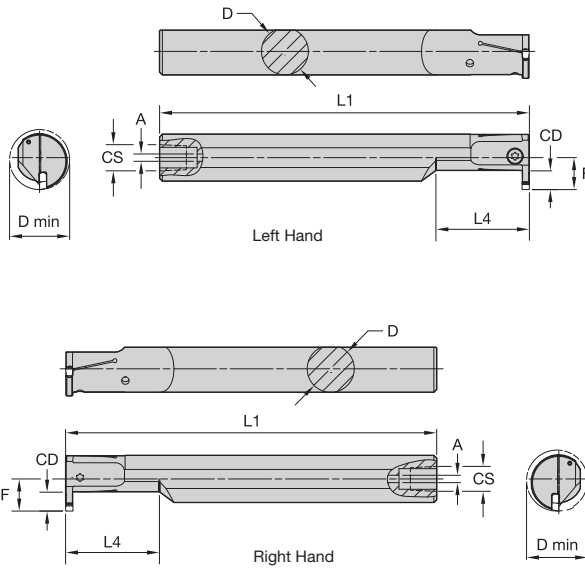
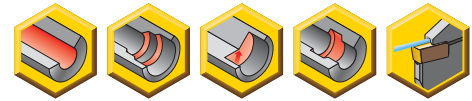


order number	catalog number	seat size	CD	D	D min	L1	F	L4	A	CS			Torx
											Torx clamp screw	Torx clamp screw	
left hand													
5980672	A08KEVEML1F05I	1F	.197	.500	.625	4.92	.336	1.00	.16	1/16 - 27 NPT	—	MS1285	T15
5980674	A10MEVEML1F07I	1F	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5980676	A12QEVEML1F07I	1F	.276	.750	1.000	7.09	.550	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5980673	A08KEVEML0205I	2	.197	.500	.625	4.92	.336	1.00	.16	1/16 - 27 NPT	—	MS1285	T15
5980675	A10MEVEML0207I	2	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5980677	A12QEVEML0207I	2	.276	.750	.984	7.09	.550	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5980678	A16REVEML0210I	2	.394	1.000	1.250	7.87	.681	2.00	.16	1/4 - 18 NPT	—	MS1162	T25
5954297	A10MEVEML0307I	3	.276	.625	.787	5.91	.436	1.25	.16	1/8 - 27 NPT	—	MS1273	T15
5954298	A12QEVEML0307I	3	.276	.750	.984	7.09	.549	1.50	.16	1/8 - 27 NPT	—	MS1160	T20
5954299	A16REVEML0310I	3	.394	1.000	1.250	7.87	.681	2.00	.16	1/4 - 18 NPT	—	MS1162	T25
5954301	A20SEVEML0312I	3	.472	1.250	1.500	9.84	.832	2.00	.25	1/4 - 18 NPT	MS1595	—	T30
5954300	A16REVEML0410I	4	.394	1.000	1.250	7.87	.681	2.00	.16	1/4 - 18 NPT	—	MS1162	T25
5954302	A20SEVEML0412I	4	.472	1.250	1.500	9.84	.832	2.50	.25	1/4 - 18 NPT	MS1595	—	T30

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

Turning

- For use in I.D. grooving applications.
- Maximum support.
- Steel boring bar with through coolant capability.





### Steel Boring Bar • Metric

order number	catalog number	seat size	CD	D	D min	L1	F	L4	A	CS	Torx clamp screw	Torx clamp screw	Torx
<b>right hand</b>													
5980519	A12KEVEMR0205M	2	5,00	12	16	125	9	24,0	4,00	1/16 - 27 NPTF	—	MS1285	T15
5980518	A12KEVEMR1F05M	1F	5,00	12	16	125	9	24,0	4,00	1/16 - 27 NPTF	—	MS1285	T15
5980621	A16MEVEMR0207M	2	7,00	16	20	150	11	32,0	4,00	1/8 - 27 NPTF	—	MS1273	T15
5980520	A16MEVEMR1F07M	1F	7,00	16	20	150	11	32,0	4,00	1/8 - 27 NPTF	—	MS1273	T15
5980623	A20QEVEVMR0207M	2	7,00	20	25	180	13	40,0	4,00	1/8 - 27 NPTF	—	MS1160	T20
5980622	A20QEVEVMR1F07M	1F	7,00	20	25	180	13	40,0	4,00	1/8 - 27 NPTF	—	MS1160	T20
5980624	A25REVEMR0210M	2	10,00	25	32	200	18	50,0	6,40	1/4 - 18 NPT	—	MS1162	T25
5954259	A16MEVEMR0307M	3	7,00	16	20	150	11	40,3	4,00	1/8 - 27 NPT	—	MS1273	T15
5954260	A20QEVEVMR0307M	3	7,00	20	25	180	13	40,3	4,00	1/8 - 27 NPT	—	MS1160	T20
5954281	A25REVEMR0310M	3	10,00	25	32	200	17	50,3	6,40	1/4 - 18 NPT	—	MS1162	T25
5954283	A32SEVEMR0312M	3	12,00	32	40	250	22	64,0	6,40	1/4 - 18 NPT	MS1595	—	T30
5954282	A25REVEMR0410M	4	10,00	25	32	200	17	50,3	6,40	1/4 - 18 NPT	—	MS1162	T25
5954284	A32SEVEMR0412M	3	12,00	32	40	250	22	64,0	6,40	1/4 - 18 NPT	MS1595	—	T30

(continued)

(Steel Boring Bar • Metric — continued)

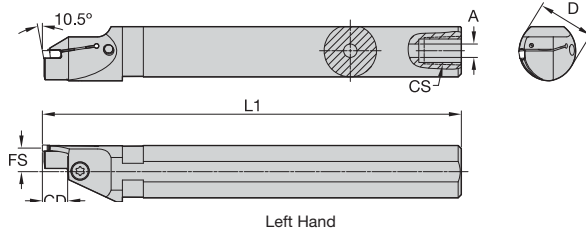


order number	catalog number	seat size	CD	D	D min	L1	F	L4	A	CS			Torx
											Torx clamp screw	Torx clamp screw	
<b>left hand</b>													
5980626	A12KEVEML0205M	2	5,00	12	16	125	9	24,0	4,00	1/16 - 27 NPTF	—	MS1285	T15
5980625	A12KEVEML1F05M	1F	5,00	12	16	125	9	24,0	4,00	1/16 - 27 NPTF	—	MS1285	T15
5980628	A16MEVEML0207M	2	7,00	16	20	150	11	32,0	4,00	1/8 - 27 NPTF	—	MS1273	T15
5980627	A16MEVEML1F07M	1F	7,00	16	20	150	11	32,0	4,00	1/8 - 27 NPTF	—	MS1273	T15
5980630	A20QEVEML0207M	2	7,00	20	25	180	13	40,0	4,00	1/8 - 27 NPTF	—	MS1160	T20
5980629	A20QEVEML1F07M	1F	7,00	20	25	180	13	40,0	4,00	1/8 - 27 NPTF	—	MS1160	T20
5980631	A25REVEML0210M	2	10,00	25	32	200	18	50,0	6,40	1/4 - 18 NPT	—	MS1162	T25
5954285	A16MEVEML0307M	3	7,00	16	20	150	11	40,3	4,00	1/8 - 27 NPT	—	MS1273	T15
5954286	A20QEVEML0307M	3	7,00	20	25	180	13	40,3	4,00	1/8 - 27 NPT	—	MS1160	T20
5954287	A25REVEML0310M	3	10,00	25	32	200	17	50,3	6,40	1/4 - 27 NPT	—	MS1162	T25
5954289	A32SEVEML0312M	3	12,00	32	40	250	22	64,0	6,40	1/4 - 27 NPT	MS1595	—	T30
5954288	A25REVEML0410M	4	10,00	25	32	200	17	50,3	6,40	1/4 - 18 NPT	—	MS1162	T25
5954290	A32SEVEML0412M	4	12,00	32	40	250	22	64,0	6,40	1/4 - 18 NPT	MS1595	—	T30

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



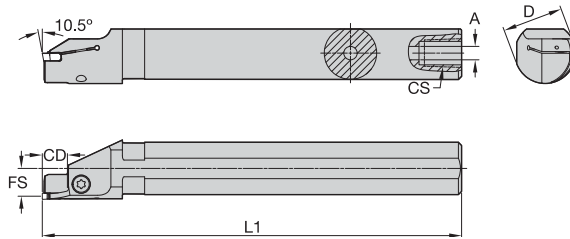
Turning



Left Hand



Left Hand



Right Hand



Right Hand

■ Steel Face Grooving Boring Bar • Inch

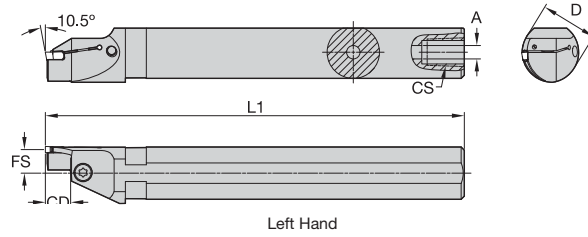


order number	catalog number	seat size	CD	D	D min	L1	F	CS	Torx clamp screw	Torx
<b>right hand</b>										
6116533	A16REVSAR0212I026030	2	.472	1.000	1.024	7.87	.510	1/4-18 NPT	MS1160	T20
6116534	A16REVSAR0312I030035	3	.472	1.000	1.181	7.87	.510	1/4-18 NPT	MS1162	T25
6116529	A20SEVSAR0312I033042	3	.472	1.250	1.299	9.84	.635	1/4-18 NPT	MS1162	T25
6116531	A24TEVSAR0312I041050	3	.472	1.500	1.614	11.81	.760	1/4-18 NPT	MS1162	T25
<b>left hand</b>										
6116539	A16REVSAL0212I026030	2	.472	1.000	1.024	7.87	.510	1/4-18 NPT	MS1160	T20
6116540	A16REVSAL0312I030035	3	.472	1.000	1.181	7.87	.510	1/4-18 NPT	MS1162	T25
6116530	A20SEVSAL0312I033042	3	.472	1.250	1.295	9.84	.635	1/4-18 NPT	MS1162	T25
6116532	A24TEVSAL0312I041050	3	.472	1.500	1.610	11.81	.760	1/4-18 NPT	MS1162	T25

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



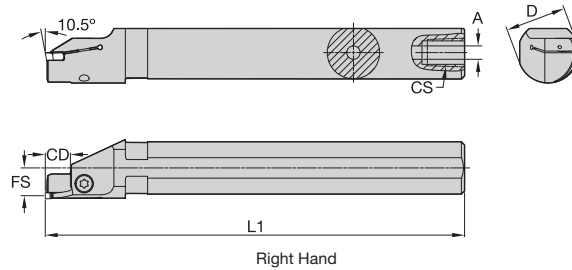
Turning



Left Hand



Left Hand



Right Hand



Right Hand

Steel Face Grooving Boring Bar • Metric

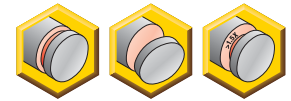


order number	catalog number	seat size	CD	D	D min	L1	F	CS	Torx clamp screw	Torx
<b>right hand</b>										
6116521	A25REVSAR0212M026030	2	12,00	25	26	200	13	1/4-18 NPT	MS1160	T20
6116522	A25REVSAR0312M030035	3	12,00	25	30	200	13	—	MS1162	T25
6116297	A32SEVSAR0312M033042	3	12,00	32	33	250	16	1/4-18 NPT	MS1162	T25
6116299	A40TEVSAR0312M041050	3	12,00	40	41	300	20	1/4-18 NPT	MS1162	T25
<b>left hand</b>										
6116527	A25REVSAL0212M026030	2	12,00	25	26	200	13	1/4-18 NPT	MS1160	T20
6116528	A25REVSAL0312M030035	3	12,00	25	30	200	13	1/4-18 NPT	MS1982	T25
6116298	A32SEVSAL0312M033042	3	12,00	32	33	250	16	1/4-18 NPT	—	T25
6116300	A40TEVSAL0312M041050	3	12,00	40	41	300	20	1/4-18 NPT	—	T25

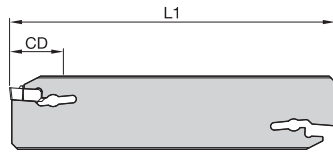
screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



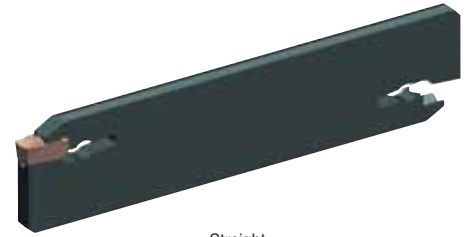
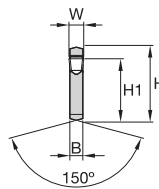
- For deep groove and cut-off applications.
- Universal pocket for holding all insert geometries.



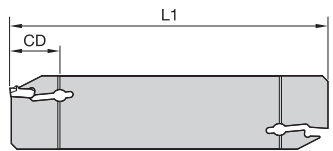
Turning



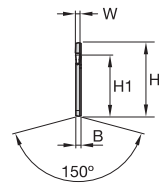
Straight



Straight



Reinforced



Reinforced

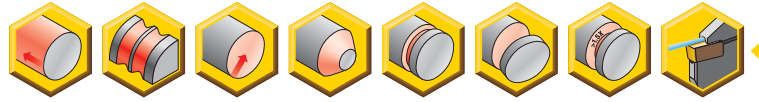
### Double-Ended Cut-Off Blade



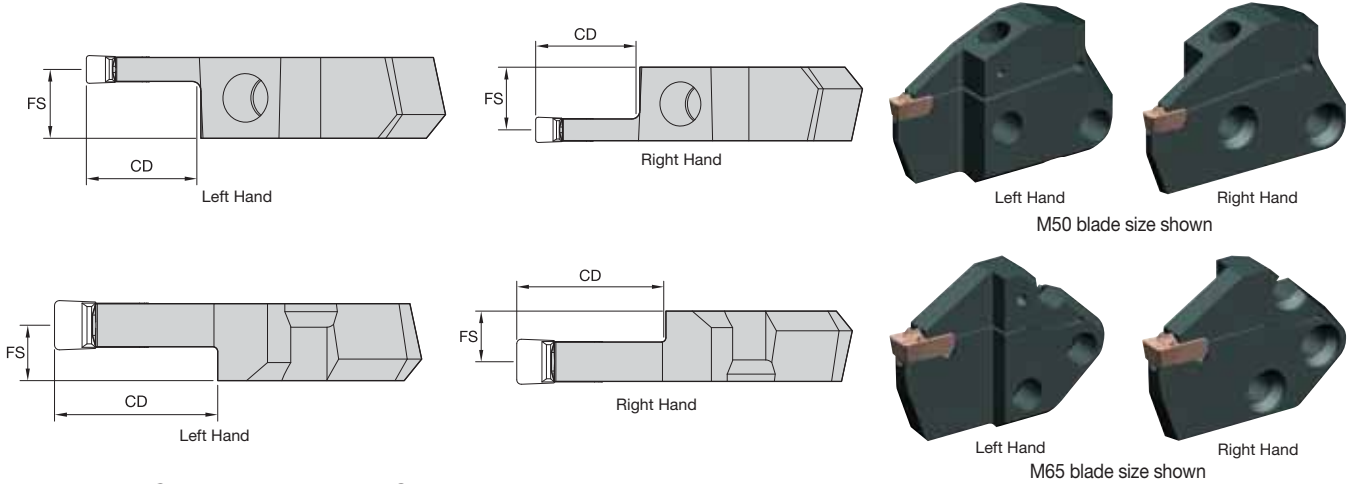
order number	catalog number	seat size	H	W	H1	L1	B	CD	assembly wrench
<b>left hand</b>									
5941706	EVBSN19G1B14	1B	19	1,4	15,5	90	2	14	SCW5E
5941708	EVBSN26J1B15	1B	26	1,4	21,5	110	2	15	SCW5E
5955391	EVBSN19G1F16	1F	19	1,6	15,5	90	2	16	SCW5E
5955392	EVBSN26J1F17	1F	26	1,6	21,5	110	2	17	SCW5E
5941707	EVBSN19G0220	2	19	2,0	15,5	90	2	—	SCW5E
5941709	EVBSN26J0230	2	26	2,0	21,5	110	2	—	SCW5E
5941710	EVBSN26M0230	2	26	2,0	21,5	150	2	—	SCW5E
5941724	EVBSN32M0250	2	32	2,0	25,1	150	2	—	SCW5E
5941721	EVBSN26J0340	3	26	3,0	21,5	110	2	—	SCW5E
5941722	EVBSN26M0340	3	26	3,0	21,5	150	2	—	SCW5E
5941725	EVBSN32M0350	3	32	3,0	25,1	150	2	—	SCW5E
5941723	EVBSN26J0440	4	26	4,0	21,5	110	3	—	SCW5E
5941726	EVBSN32M0450	4	32	4,0	25,1	150	3	—	SCW5E
5977635	EVBSN26J0540	5	26	5,0	21,5	110	4	—	SCW5E
5977637	EVBSN32M0560	5	32	5,0	25,1	150	4	—	SCW5E
5977636	EVBSN26J0640	6	26	6,0	21,5	110	5	—	SCW8E
5977638	EVBSN32M0660	6	32	6,0	25,1	150	5	—	SCW8E
5977640	EVBSN52X06120	6	53	6,0	45,3	260	5	—	SCW8E
5977639	EVBSN32M0860	8	32	8,0	25,1	150	7	—	SCW8E
5977721	EVBSN52X08120	8	53	8,0	45,3	260	7	—	SCW8E



- Maximum support for specific groove width and straight clearance for unlimited diameter.
- Through the pocket coolant capable.
- Universal pocket for holding all insert geometries.



Turning



### ■ Modular Straight Blade with Coolant

order number	catalog number	seat size	CD	FS	blade size
<b>right hand</b>					
6031041	EVM50R1F12M	1F	12,0	11,00	50
6030969	EVM50R0212M	2	12,0	10,88	50
5955423	EVM50R0216MC	2	16,0	10,88	50
5979200	EVM50R0312MC	3	12,0	10,43	50
5979010	EVM50R0316MC	3	16,0	10,43	50
5979181	EVM50R0322MC	3	22,0	10,43	50
5979201	EVM50R0412MC	4	12,0	9,93	50
5979182	EVM50R0416MC	4	16,0	9,93	50
5979183	EVM50R0422MC	4	22,0	9,93	50
5979198	EVM50R0426MC	4	26,0	9,93	50
5979184	EVM50R0432MC	4	32,0	9,93	50
6031031	EVM50R0512MC	5	12,0	9,43	50
6031033	EVM50R0516MC	5	16,0	9,43	50
5955415	EVM50R0526MC	5	26,0	9,43	50
5955416	EVM50R0532MC	5	32,0	9,43	50
6031035	EVM65R0616MC	6	16,0	9,88	65
5955417	EVM65R0626MC	6	26,0	9,88	65
6031037	EVM65R0632MC	6	32,0	9,88	65
6031039	EVM65R0816MC	8	16,0	9,00	65
5955418	EVM65R0826MC	8	26,0	9,00	65

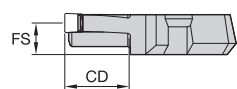
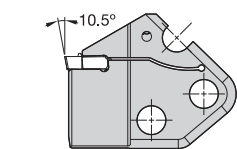
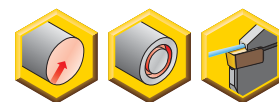
(continued)

(Modular Straight Blade with Coolant — continued)

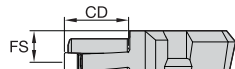
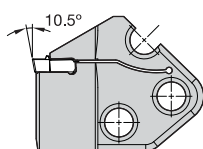
Turning

order number	catalog number	seat size	CD	FS	blade size
<b>left hand</b>					
6031042	EVM50L1F12M	1F	12,0	11,00	50
6030970	EVM50L0212M	2	12,0	10,88	50
5955424	EVM50L0216MC	2	16,0	10,88	50
5979202	EVM50L0312MC	3	12,0	10,43	50
5979185	EVM50L0316MC	3	16,0	10,43	50
5979186	EVM50L0322MC	3	22,0	10,43	50
5979203	EVM50L0412MC	4	12,0	9,93	50
5979187	EVM50L0416MC	4	16,0	9,93	50
5979188	EVM50L0422MC	4	22,0	9,93	50
5979199	EVM50L0426MC	4	26,0	9,93	50
5979189	EVM50L0432MC	4	32,0	9,93	50
6031032	EVM50L0512MC	5	12,0	9,93	50
6031034	EVM50L0516MC	5	16,0	9,43	50
5955419	EVM50L0526MC	5	26,0	9,43	50
5955420	EVM50L0532MC	5	32,0	9,43	50
6031036	EVM65L0616MC	6	16,0	9,88	65
5955421	EVM65L0626MC	6	26,0	9,88	65
6031038	EVM65L0632MC	6	32,0	9,88	65
6031040	EVM65L0816MC	8	16,0	9,00	65
5955422	EVM65L0826MC	8	26,0	9,00	65

NOTE: Through the pocket coolant available in seat sizes 3 and higher.



Left Hand



Right Hand

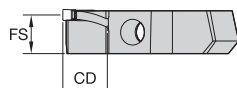
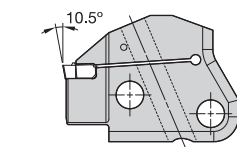


Left Hand

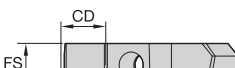
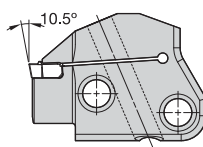


Right Hand

M65 blade size shown



Left Hand



Right Hand



Left Hand



Right Hand

M50 blade size shown

## Modular Inboard Face Grooving Blade with Coolant

order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
<b>right hand</b>									
6097181	EVM50R0312A035040C	3	1.378	35	1.575	40	12,0	10,50	50
6097182	EVM50R0312A040050C	3	1.575	40	1.969	50	12,0	10,50	50
6097183	EVM50R0312A050060C	3	1.969	50	2.362	60	12,0	10,50	50
6097184	EVM50R0312A060075C	3	2.362	60	2.953	75	12,0	10,50	50
6116789	EVM50R0312A075100C	3	2.953	75	3.937	100	12,0	10,50	50
6117063	EVM50R0312A100180C	3	3.937	100	7.087	180	12,0	10,50	50
6117067	EVM50R0312A180250C	3	7.087	180	9.843	250	12,0	10,50	50
6117071	EVM50R0312A250350C	3	9.843	250	13.780	350	12,0	10,50	50
6117075	EVM50R0312A350999C	3	13.780	350	39.331	999	12,0	10,50	50
6097185	EVM50R0320A075100C	3	2.953	75	3.937	100	20,0	10,50	50
6097186	EVM50R0320A100180C	3	3.937	100	7.087	180	20,0	10,50	50
6097187	EVM50R0320A180250C	3	7.087	180	9.843	250	20,0	10,50	50
6097188	EVM50R0320A250350C	3	9.843	250	13.780	350	20,0	10,50	50
6097189	EVM50R0320A350999C	3	13.780	350	39.331	999	20,0	10,50	50
6079480	EVM50R0416A040050C	4	1.575	40	1.969	50	16,0	10,00	50
6079481	EVM50R0416A050060C	4	1.969	50	2.362	60	16,0	10,00	50
6079482	EVM50R0416A060075C	4	2.362	60	2.953	75	16,0	10,00	50
6079483	EVM50R0416A075100C	4	2.953	75	3.937	100	16,0	10,00	50
6117079	EVM50R0416A100180C	4	3.937	100	7.087	180	16,0	10,00	50
6117093	EVM50R0416A180250C	4	7.087	180	9.843	250	16,0	10,00	50
6117097	EVM50R0416A250350C	4	9.843	250	13.780	350	16,0	10,00	50
6117101	EVM50R0416A350999C	4	13.780	350	39.331	999	16,0	10,00	50
6079484	EVM50R0426A100180C	4	3.937	100	7.087	180	26,0	10,00	50

(continued)

(Modular Inboard Face Grooving Blade with Coolant — continued)

Turning

order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
6079485	EVM50R0426A180250C	4	7.087	180	9.843	250	26,0	10,00	50
6079486	EVM50R0426A250350C	4	9.843	250	13.780	350	26,0	10,00	50
6079487	EVM50R0426A350999C	4	13.780	350	39.331	999	26,0	10,00	50
6079488	EVM50R0520A050060C	5	1.969	50	2.362	60	20,0	9,50	50
6079489	EVM50R0520A060075C	5	2.362	60	2.953	75	20,0	9,50	50
6079490	EVM50R0520A075100C	5	2.953	75	3.937	100	20,0	9,50	50
6079491	EVM50R0520A100180C	5	3.937	100	7.087	180	20,0	9,50	50
6079492	EVM50R0520A180250C	5	7.087	180	9.843	250	20,0	9,50	50
6079493	EVM50R0520A250350C	5	9.843	250	13.780	350	20,0	9,50	50
6079494	EVM50R0520A350999C	5	13.780	350	39.331	999	20,0	9,50	50
6079223	EVM65R0620A060075C	6	2.362	60	2.953	75	20,0	9,88	65
6079224	EVM65R0620A075100C	6	2.953	75	3.937	100	20,0	9,88	65
6079225	EVM65R0620A100180C	6	3.937	100	7.087	180	20,0	9,88	65
6079226	EVM65R0620A180250C	6	7.087	180	9.843	250	20,0	9,88	65
6079227	EVM65R0620A250350C	6	9.843	250	13.780	350	20,0	9,88	65
6079228	EVM65R0620A350999C	6	13.780	350	39.331	999	20,0	9,88	65
6079229	EVM65R0820A080180C	8	3.150	80	7.087	180	20,0	9,00	65
6079230	EVM65R0820A180999C	8	7.087	180	39.331	999	20,0	9,00	65
left hand									
6097190	EVM50L0312A035040C	3	1.378	35	1.575	40	12,0	10,50	50
6097191	EVM50L0312A040050C	3	1.575	40	1.969	50	12,0	10,50	50
6097192	EVM50L0312A050060C	3	1.969	50	2.362	60	12,0	10,50	50
6097193	EVM50L0312A060075C	3	2.362	60	2.953	75	12,0	10,50	50
6116790	EVM50L0312A075100C	3	2.953	75	3.937	100	12,0	10,50	50
6117064	EVM50L0312A100180C	3	3.937	100	7.087	180	12,0	10,50	50
6117068	EVM50L0312A180250C	3	7.087	180	9.843	250	12,0	10,50	50
6117072	EVM50L0312A250350C	3	9.843	250	13.780	350	12,0	10,50	50
6117076	EVM50L0312A350999C	3	13.780	350	39.331	999	12,0	10,50	50
6097194	EVM50L0320A075100C	3	2.953	75	3.937	100	20,0	10,50	50
6097195	EVM50L0320A100180C	3	3.937	100	7.087	180	20,0	10,50	50
6097196	EVM50L0320A180250C	3	7.087	180	9.843	250	20,0	10,50	50
6097197	EVM50L0320A250350C	3	9.843	250	13.780	350	20,0	10,50	50
6097198	EVM50L0320A350999C	3	13.780	350	39.331	999	20,0	10,50	50
6079495	EVM50L0416A040050C	4	1.575	40	1.969	50	16,0	10,00	50
6079496	EVM50L0416A050060C	4	1.969	50	2.362	60	16,0	10,00	50
6079497	EVM50L0416A060075C	4	2.362	60	2.953	75	16,0	10,00	50
6079498	EVM50L0416A075100C	4	2.953	75	3.937	100	16,0	10,00	50
6117080	EVM50L0416A100180C	4	3.937	100	7.087	180	16,0	10,00	50
6117094	EVM50L0416A180250C	4	7.087	180	9.843	250	16,0	10,00	50
6117098	EVM50L0416A250350C	4	9.843	250	13.780	350	16,0	10,00	50
6117102	EVM50L0416A350999C	4	13.780	350	39.331	999	16,0	10,00	50
6079499	EVM50L0426A100180C	4	3.937	100	7.087	180	26,0	10,00	50
6079500	EVM50L0426A180250C	4	7.087	180	9.843	250	26,0	10,00	50
6079501	EVM50L0426A250350C	4	9.843	250	13.780	350	26,0	10,00	50

(continued)

(Modular Inboard Face Grooving Blade with Coolant — continued)

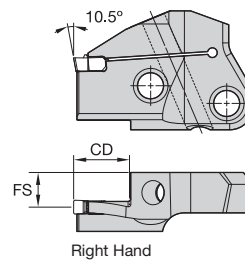
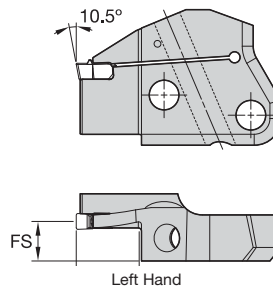
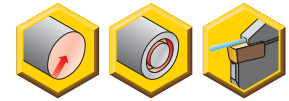
order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
6079502	EVM50L0426A350999C	4	13.780	350	39.331	999	26,0	10,00	50
6079503	EVM50L0520A050060C	5	1.969	50	2.362	60	20,0	9,50	50
6079504	EVM50L0520A060075C	5	2.362	60	2.953	75	20,0	9,50	50
6079505	EVM50L0520A075100C	5	2.953	75	3.937	100	20,0	9,50	50
6079506	EVM50L0520A100180C	5	3.937	100	7.087	180	20,0	9,50	50
6079507	EVM50L0520A180250C	5	7.087	180	9.843	250	20,0	9,50	50
6079508	EVM50L0520A250350C	5	9.843	250	13.780	350	20,0	9,50	50
6079509	EVM50L0520A350999C	5	13.780	350	39.331	999	20,0	9,50	50
6079234	EVM65L0620A060075C	6	2.362	60	2.953	75	20,0	9,88	65
6079235	EVM65L0620A075100C	6	2.953	75	3.937	100	20,0	9,88	65
6079236	EVM65L0620A100180C	6	3.937	100	7.087	180	20,0	9,88	65
6079237	EVM65L0620A180250C	6	7.087	180	9.843	250	20,0	9,88	65
6079238	EVM65L0620A250350C	6	9.843	250	13.780	350	20,0	9,88	65
6079239	EVM65L0620A350999C	6	13.780	350	39.331	999	20,0	9,88	65
6079240	EVM65L0820A080180C	8	3.150	80	7.087	180	20,0	9,00	65
6079241	EVM65L0820A180999C	8	7.087	180	39.331	999	20,0	9,00	65

NOTE: Through the pocket coolant available in seat sizes 3 and higher.





Turning



■ Modular Outboard Face Grooving Blade with Coolant

order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
right hand									
6079340	EVM50R0312B035040C	3	1.378	35	1.575	40	12,0	10,50	50
6079411	EVM50R0312B040050C	3	1.575	40	1.969	50	12,0	10,50	50
6079412	EVM50R0312B050060C	3	1.969	50	2.362	60	12,0	10,50	50
6079413	EVM50R0312B060075C	3	2.362	60	2.953	75	12,0	10,50	50
6117061	EVM50R0312B075100C	3	2.953	75	3.937	100	12,0	10,50	50
6117065	EVM50R0312B100180C	3	3.937	100	7.087	180	12,0	10,50	50
6117069	EVM50R0312B180250C	3	7.087	180	9.843	250	12,0	10,50	50
6117073	EVM50R0312B250350C	3	9.843	250	13.780	350	12,0	10,50	50
6117077	EVM50R0312B350999C	3	13.780	350	39.331	999	12,0	10,50	50
6079414	EVM50R0320B075100C	3	2.953	75	3.937	100	20,0	10,50	50
6079415	EVM50R0320B100180C	3	3.937	100	7.087	180	20,0	10,50	50
6079416	EVM50R0320B180250C	3	7.087	180	9.843	250	20,0	10,50	50
6079417	EVM50R0320B250350C	3	9.843	250	13.780	350	20,0	10,50	50
6079418	EVM50R0320B350999C	3	13.780	350	39.331	999	20,0	10,50	50
6079429	EVM50R0416B040050C	4	1.575	40	1.969	50	16,0	10,00	50
6079430	EVM50R0416B050060C	4	1.969	50	2.362	60	16,0	10,00	50
6079451	EVM50R0416B060075C	4	2.362	60	2.953	75	16,0	10,00	50
6079452	EVM50R0416B075100C	4	2.953	75	3.937	100	16,0	10,00	50
6117091	EVM50R0416B100180C	4	3.937	100	7.087	180	16,0	10,00	50

(continued)

(Modular Outboard Face Grooving Blade with Coolant — continued)



order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
6117095	EVM50R0416B180250C	4	7.087	180	9.843	250	16,0	10,00	50
6117099	EVM50R0416B250350C	4	9.843	250	13.780	350	16,0	10,00	50
6117103	EVM50R0416B350999C	4	13.780	350	39.331	999	16,0	10,00	50
6079453	EVM50R0426B100180C	4	3.937	100	7.087	180	26,0	10,00	50
6079454	EVM50R0426B180250C	4	7.087	180	9.843	250	26,0	10,00	50
6079455	EVM50R0426B250350C	4	9.843	250	13.780	350	26,0	10,00	50
6079456	EVM50R0426B350999C	4	13.780	350	39.331	999	26,0	10,00	50
6079457	EVM50R0520B050060C	5	1.969	50	2.362	60	20,0	9,50	50
6079458	EVM50R0520B060075C	5	2.362	60	2.953	75	20,0	9,50	50
6079459	EVM50R0520B075100C	5	2.953	75	3.937	100	20,0	9,50	50
6079460	EVM50R0520B100180C	5	3.937	100	7.087	180	20,0	9,50	50
6079461	EVM50R0520B180250C	5	7.087	180	9.843	250	20,0	9,50	50
6079462	EVM50R0520B250350C	5	9.843	250	13.780	350	20,0	9,50	50
6079463	EVM50R0520B350999C	5	13.780	350	39.331	999	20,0	9,50	50
6079246	EVM65R0620B060075C	6	2.362	60	2.953	75	20,0	9,88	65
6079247	EVM65R0620B075100C	6	2.953	75	3.937	100	20,0	9,88	65
6079248	EVM65R0620B100180C	6	3.937	100	7.087	180	20,0	9,88	65
6079249	EVM65R0620B180250C	6	7.087	180	9.843	250	20,0	9,88	65
6079250	EVM65R0620B250350C	6	9.843	250	13.780	350	20,0	9,88	65
6079261	EVM65R0620B350999C	6	13.780	350	39.331	999	20,0	9,88	65
6079262	EVM65R0820B080180C	8	3.150	80	7.087	180	20,0	9,00	65
6079263	EVM65R0820B180999C	8	7.087	180	39.331	999	20,0	9,00	65
left hand									
6079420	EVM50L0312B035040C	3	1.378	35	1.575	40	12,0	10,50	50
6079421	EVM50L0312B040050C	3	1.575	40	1.969	50	12,0	10,50	50
6079422	EVM50L0312B050060C	3	1.969	50	2.362	60	12,0	10,50	50
6079423	EVM50L0312B060075C	3	2.362	60	2.953	75	12,0	10,50	50
6117062	EVM50L0312B075100C	3	2.953	75	3.937	100	12,0	10,50	50
6117066	EVM50L0312B100180C	3	3.937	100	7.087	180	12,0	10,50	50
6117070	EVM50L0312B180250C	3	7.087	180	9.843	250	12,0	10,50	50
6117074	EVM50L0312B250350C	3	9.843	250	13.780	350	12,0	10,50	50
6117078	EVM50L0312B350999C	3	13.780	350	39.331	999	12,0	10,50	50
6079424	EVM50L0320B075100C	3	2.953	75	3.937	100	20,0	10,50	50
6079425	EVM50L0320B100180C	3	3.937	100	7.087	180	20,0	10,50	50
6079426	EVM50L0320B180250C	3	7.087	180	9.843	250	20,0	10,50	50
6079427	EVM50L0320B250350C	3	9.843	250	13.780	350	20,0	10,50	50
6079428	EVM50L0320B350999C	3	13.780	350	39.331	999	20,0	10,50	50
6079464	EVM50L0416B040050C	4	1.575	40	1.969	50	16,0	10,00	50
6079465	EVM50L0416B050060C	4	1.969	50	2.362	60	16,0	10,00	50
6079466	EVM50L0416B060075C	4	2.362	60	2.953	75	16,0	10,00	50

(continued)



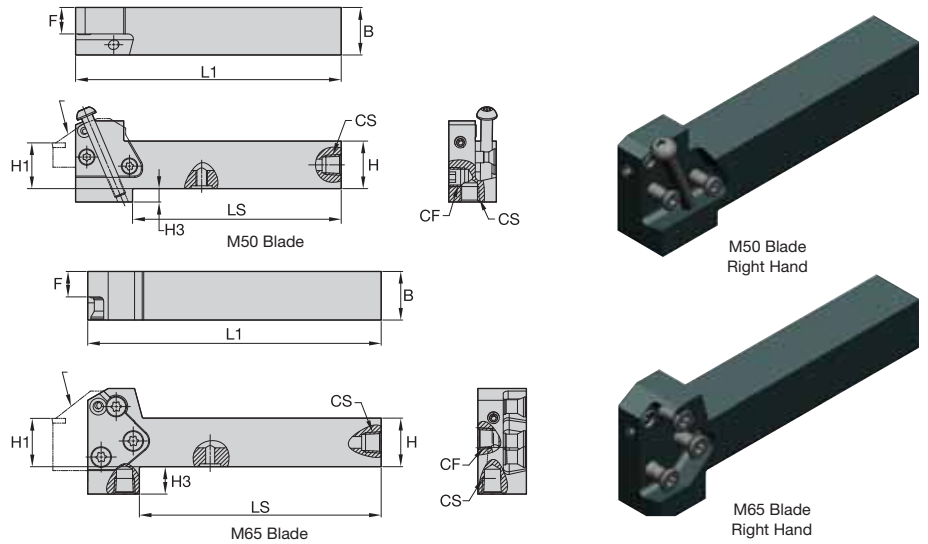
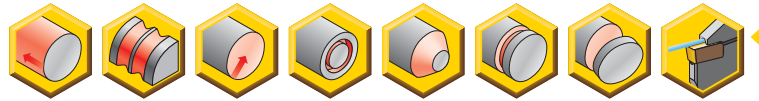
(Modular Outboard Face Grooving Blade with Coolant — continued)

Turning

order number	catalog number	seat size	D min		D max		CD	FS	blade size
			in	mm	in	mm			
6079467	EVM50L0416B075100C	4	2.953	75	3.937	100	16,0	10,00	50
6117092	EVM50L0416B100180C	4	3.937	100	7.087	180	16,0	10,00	50
6117096	EVM50L0416B180250C	4	7.087	180	9.843	250	16,0	10,00	50
6117100	EVM50L0416B250350C	4	9.843	250	13.780	350	16,0	10,00	50
6117104	EVM50L0416B350999C	4	13.780	350	39.331	999	16,0	10,00	50
6079468	EVM50L0426B100180C	4	3.937	100	7.087	180	26,0	10,00	50
6079469	EVM50L0426B180250C	4	7.087	180	9.843	250	26,0	10,00	50
6079470	EVM50L0426B250350C	4	9.843	250	13.780	350	26,0	10,00	50
6079471	EVM50L0426B350999C	4	13.780	350	39.331	999	26,0	10,00	50
6079472	EVM50L0520B050060C	5	1.969	50	2.362	60	20,0	9,50	50
6079473	EVM50L0520B060075C	5	2.362	60	2.953	75	20,0	9,50	50
6079474	EVM50L0520B075100C	5	2.953	75	3.937	100	20,0	9,50	50
6079475	EVM50L0520B100180C	5	3.937	100	7.087	180	20,0	9,50	50
6079476	EVM50L0520B180250C	5	7.087	180	9.843	250	20,0	9,50	50
6079477	EVM50L0520B250350C	5	9.843	250	13.780	350	20,0	9,50	50
6079478	EVM50L0520B350999C	5	13.780	350	39.331	999	20,0	9,50	50
6079266	EVM65L0620B060075C	6	2.362	60	2.953	75	20,0	9,88	65
6079267	EVM65L0620B075100C	6	2.953	75	3.937	100	20,0	9,88	65
6079268	EVM65L0620B100180C	6	3.937	100	7.087	180	20,0	9,88	65
6079269	EVM65L0620B180250C	6	7.087	180	9.843	250	20,0	9,88	65
6079270	EVM65L0620B250350C	6	9.843	250	13.780	350	20,0	9,87	65
6079271	EVM65L0620B350999C	6	13.780	350	39.331	999	20,0	9,88	65
6079272	EVM65L0820B080180C	8	3.150	80	7.087	180	20,0	9,00	65
6079273	EVM65L0820B180999C	8	7.087	180	39.331	999	20,0	9,00	65

NOTE: Through the pocket coolant available in seat sizes 3 and higher.

- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



■ Modular Straight Toolholder with Coolant • Inch



order number	catalog number	H	H1	B	L1	LS	F	CS	CF	H2	H3	blade size	blade screw	Torx	clamp screw	Torx
<b>right hand</b>																
5979194	KGMSR1650C	1.00	1.00	1.00	5.5	4.27	.56	1/8 - 27 NPTF	1/8 - 27 NPTF	1.67	0.25	50	—	T25	—	T25
5979801	KGMSR1665C	1.00	1.00	1.00	6.0	4.62	.53	1/8 - 27 NPTF	1/8 - 27 NPTF	2.09	0.50	65	MS1163	T30	—	—
5979802	KGMSR2050C	1.25	1.25	1.25	5.5	4.72	.81	1/8 - 27 NPTF	1/8 - 27 NPTF	1.78	—	50	MS1162	T25	MS2002	T25
5979803	KGMSR2065C	1.25	1.25	1.25	6.0	4.88	.78	1/8 - 27 NPTF	1/8 - 27 NPTF	2.09	0.25	65	MS1163	T30	—	—
5979804	KGMSR2450C	1.50	1.50	1.50	5.5	4.72	1.06	1/8 - 27 NPTF	1/8 - 27 NPTF	2.03	—	50	MS1162	T25	MS2002	T25
5979805	KGMSR2465C	1.50	1.50	1.50	7.0	5.90	1.03	1/8 - 27 NPTF	1/8 - 27 NPTF	2.09	—	65	MS1163	T30	—	—
<b>left hand</b>																
5979195	KGMSL1650C	1.00	1.00	1.00	5.5	4.27	.56	1/8 - 27 NPTF	1/8 - 27 NPTF	1.67	0.25	50	—	T25	—	T25
5979806	KGMSL1665C	1.00	1.00	1.00	6.0	4.62	.52	1/8 - 27 NPTF	1/8 - 27 NPTF	2.10	0.50	65	MS1163	T30	—	—
5979807	KGMSL2050C	1.25	1.25	1.25	5.5	4.52	.81	1/8 - 27 NPTF	1/8 - 27 NPTF	1.67	—	50	MS1162	T25	MS2002	T25
5979808	KGMSL2065C	1.25	1.25	1.25	6.0	4.88	.78	1/8 - 27 NPTF	1/8 - 27 NPTF	2.09	0.25	65	MS1163	T30	—	—
5979809	KGMSL2450C	1.50	1.50	1.50	5.5	4.74	1.06	1/8 - 27 NPTF	1/8 - 27 NPTF	2.03	—	50	MS1162	T25	MS2002	T25
5979810	KGMSL2465C	1.50	1.50	1.50	7.0	5.90	1.03	1/8 - 27 NPTF	1/8 - 27 NPTF	2.09	—	65	MS1163	T30	—	—

NOTE: KGMS...: Right-hand holder uses right-hand blades.  
 KGME...: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

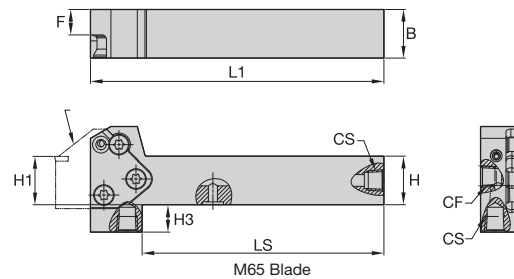
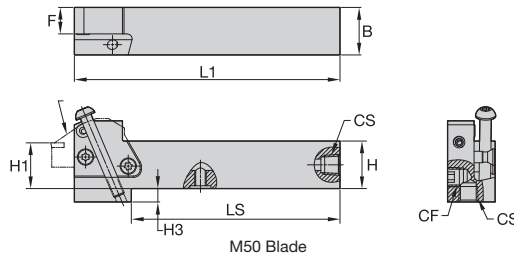
screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113



- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



Turning



■ Modular Straight Toolholder with Coolant • Metric

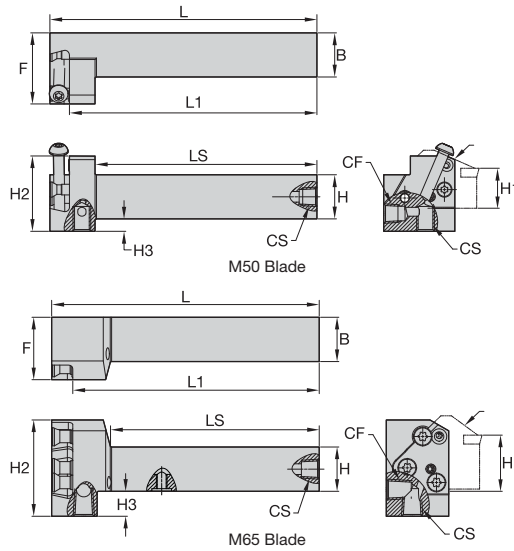
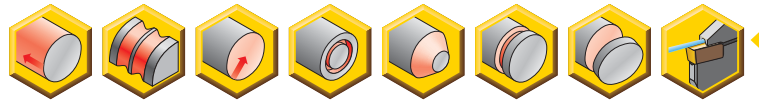


order number	catalog number	B	H	H1	L1	F	CS	CF	LS	H3	blade size	blade screw	Torx	clamping screw	Torx
<b>right hand</b>															
5979190	KGMSR2525M50C	25	25	25	138,75	13,84	1/8 - 27 NPTF	1/8 - 27 NPTF	109,00	7,00	50	MS1162	T25	MS2002	T25
5979745	KGMSR2525M65C	25	25	25	150,00	13,00	1/8 - 27 NPTF	1/8 - 27 NPTF	122,00	14,00	65	MS1163	T30	—	—
5979746	KGMSR3232P50C	32	32	32	158,75	20,81	1/8 - 27 NPTF	1/8 - 27 NPTF	133,62	—	50	MS1162	T25	MS2002	T25
5979747	KGMSR3232P65C	32	32	32	170,00	20,00	1/8 - 27 NPTF	1/8 - 27 NPTF	138,50	7,00	65	MS1163	T30	—	—
<b>left hand</b>															
5979191	KGMSL2525M50C	25	25	25	138,75	13,84	1/8 - 27 NPTF	1/8 - 27 NPTF	109,00	7,00	50	MS1162	T25	MS2002	T25
5979748	KGMSL2525M65C	25	25	25	150,00	13,00	1/8 - 27 NPTF	1/8 - 27 NPTF	122,00	14,00	65	MS1163	T30	—	—
5979749	KGMSL3232P50C	32	32	32	158,75	20,80	1/8 - 27 NPTF	1/8 - 27 NPTF	133,62	—	50	MS1162	T25	MS2002	T25
5979750	KGMSL3232P65C	32	32	32	170,00	20,00	1/8 - 27 NPTF	1/8 - 27 NPTF	142,00	7,00	65	MS1163	T30	—	—

NOTE: KGMS...: Right-hand holder uses right-hand blades.  
 KGME...: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



M50 Blade  
Right Hand



M65 Blade  
Right Hand

### ■ Modular End Mount Toolholder with Coolant • Inch



order number	catalog number	H	H1	B	L1	LS	F	H2	H3	blade size	blade screw	Torx	clamp screw	Torx
<b>right hand</b>														
5979196	KGMER1650C	1.00	1.00	1.00	5.5	4.96	1.58	1.67	0.25	50	—	T25	—	T25
5979814	KGMER1665C	1.00	1.00	1.00	5.5	4.70	1.38	2.09	0.50	65	MS1163	T30	—	—
5979815	KGMER2050C	1.25	1.25	1.25	5.5	4.96	1.58	1.67	—	50	—	T25	—	T25
5979816	KGMER2065C	1.25	1.25	1.25	5.5	4.70	1.38	2.09	0.25	65	MS1163	T30	—	—
5979817	KGMER2450C	1.50	1.50	1.50	5.5	4.96	1.58	1.92	—	50	MS1162	T25	MS2002	T25
5979818	KGMER2465C	1.50	1.50	1.50	6.5	5.70	1.49	2.09	—	65	MS1163	T30	—	—
<b>left hand</b>														
5979197	KGME1650C	1.00	1.00	1.00	5.5	4.96	1.58	1.67	0.25	50	—	T25	—	T25
5979819	KGME1665C	1.00	1.00	1.00	5.5	4.70	1.38	2.09	0.50	65	MS1163	T30	—	—
5979820	KGME12050C	1.25	1.25	1.25	5.5	4.96	1.58	1.67	—	50	—	T25	—	T25
5979881	KGME12065C	1.25	1.25	1.25	5.5	4.70	1.38	2.09	0.25	65	MS1163	T30	—	—
5979882	KGME12450C	1.50	1.50	1.50	5.5	4.96	1.58	1.92	—	50	MS1162	T25	MS2002	T25
5979883	KGME12465C	1.50	1.50	1.50	6.5	5.70	1.49	2.09	—	65	MS1163	T30	—	—

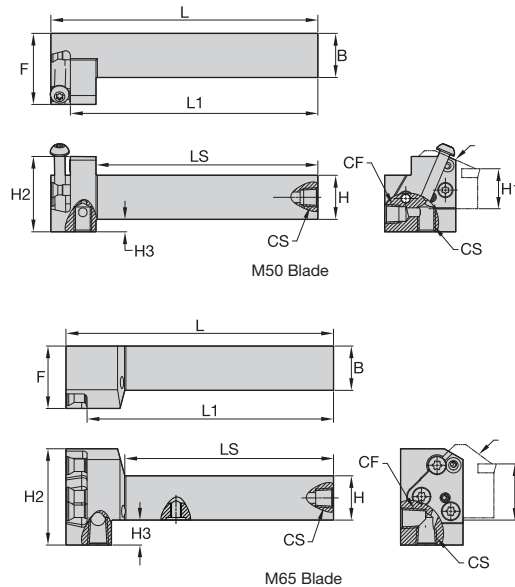
NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm)  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm)

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

- Interchangeable blades for versatility and depth of cut.
- Through the pocket coolant capable.



Turning



M50 Blade  
Right Hand



M65 Blade  
Right Hand

### ■ Modular End Mount Toolholder with Coolant • Metric

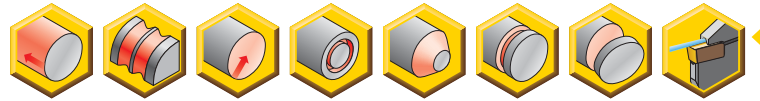


order number	catalog number	B	H	H1	L1	F	CS	CF	LS	H3	blade size	blade screw	Torx	clamping screw	Torx
<b>right hand</b>															
5979765	KGMER2525M65C	25	25	25	138,15	35,00	1/8 - 27 NPTF	1/8 - 27 NPTF	117,00	14,00	65	MS1163	T30	—	—
5979192	KGMER2525M50C	25	25	25	139,25	40,00	1/8 - 27 NPTF	1/8 - 27 NPTF	124,85	7,00	50	MS1162	T25	MS2002	T25
5979767	KGMER3232P65C	32	32	32	158,15	35,00	1/8 - 27 NPTF	1/8 - 27 NPTF	137,00	7,00	65	MS1163	T30	—	—
5979766	KGMER3232P50C	32	32	32	159,25	40,00	1/8 - 27 NPTF	1/8 - 27 NPTF	145,25	—	50	MS1162	T25	MS2002	T25
<b>left hand</b>															
5979768	KGME2525M65C	25	25	25	138,15	35,00	1/8 - 27 NPTF	1/8 - 27 NPTF	117,00	14,00	65	MS1163	T30	—	—
5979193	KGME2525M50C	25	25	25	139,25	40,00	1/8 - 27 NPTF	1/8 - 27 NPTF	124,85	7,00	50	MS1162	T25	MS2002	T25
5979770	KGME3232P65C	32	32	32	158,15	35,00	1/8 - 27 NPTF	1/8 - 27 NPTF	137,00	7,00	65	MS1163	T30	—	—
5979769	KGME3232P50C	32	32	32	159,25	40,00	1/8 - 27 NPTF	1/8 - 27 NPTF	145,25	—	50	MS1162	T25	MS2002	T25

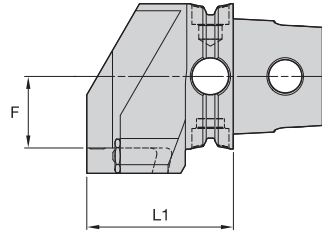
NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

screw catalog number	screw order number	torque		thread	socket	wrench catalog number	wrench order number
		Nm	in. lbs.				
MS1160	1099645	7	62	M5	T20	KT20	1022703
MS1162	1127019	9	80	M6	T25	KT25	1022725
MS1163	1124104	18	159	M8	T30	KT30L	1099676
MS1273	1020977	4	35.4	M4-0.7p	T15	KT15	1022701
MS1490	2263299	17	151	M8	T45	KT45	1018227
MS1595	1094300	12	106	M6	T30	KT30	1099676
MS1970	1106668	12	106	M6	T30	KT30	1099676
MS2002	1621087	9	80	M6-1.0P x 45	T25	KT25	1022725
MS2091	1931147	9	80	M5	25IP	K25IP	2050113

- Best-in-class KM Quick Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Turning



Right Hand

■ Modular Straight KM System with Coolant

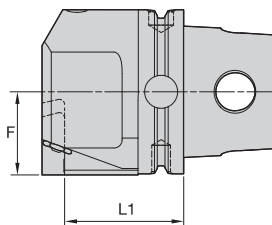
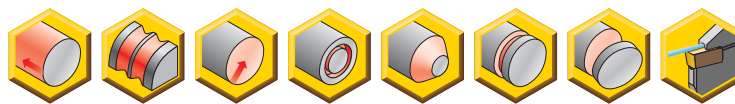


order number	catalog number	CSMS system size	L1		F		blade size	blade screw	Torx	clamp screw	Torx
			mm	in	mm	in					
<b>right hand</b>											
5999790	KM40TSKGMSR50C	KM40TS	53,5	2.11	15,0	.59	50	MS1162	T25	MS2002	T25
5999864	KM50TSKGMSR50C	KM50TS	58,5	2.30	23,0	.91	50	MS1162	T25	MS2002	T25
5999948	KM63TSKGMSR50C	KM63TS	63,5	2.50	31,0	1.22	50	MS1162	T25	MS2002	T25
5999972	KM63XMZKGMSR50CY	KM63XMZ	63,5	2.50	31,0	1.22	50	MS1162	T25	MS2002	T25
6000018	KM80ATCKGMSR50C	KM80ATC	66,5	2.62	41,0	1.61	50	MS1162	T25	MS2002	T25
6000014	KM80TSKGMSR50C	KM80TS	66,5	2.62	41,0	1.61	50	MS1162	T25	MS2002	T25
<b>left hand</b>											
5999861	KM40TSKGMSL50C	KM40TS	53,5	2.11	15,0	.59	50	MS1162	T25	MS2002	T25
5999865	KM50TSKGMSL50C	KM50TS	58,5	2.30	23,0	.91	50	MS1162	T25	MS2002	T25
5999949	KM63TSKGMSL50C	KM63TS	63,5	2.50	31,0	1.22	50	MS1162	T25	MS2002	T25
5999973	KM63XMZKGMSLF50CY	KM63XMZ	63,5	2.50	31,0	1.22	50	MS1162	T25	MS2002	T25
6000019	KM80ATCKGMSL50C	KM80ATC	66,5	2.62	41,0	1.61	50	MS1162	T25	MS2002	T25
6000015	KM80TSKGMSL50C	KM80TS	66,5	2.62	41,0	1.61	50	MS1162	T25	MS2002	T25

NOTE: KGMS... Right-hand holder uses right-hand blades.  
 KGME... Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

Turning

- Best-in-class KM Quick Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand



### Modular End Mount KM System with Coolant • Metric

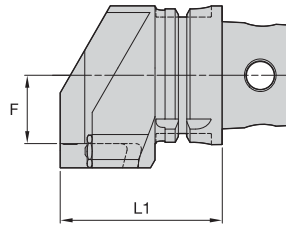
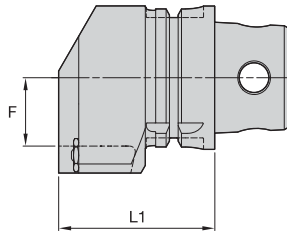
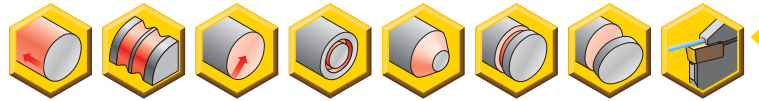


order number	catalog number	CSMS system size	L1		F		blade size	blade screw	Torx	clamp screw	Torx
			mm	in	mm	in					
<b>right hand</b>											
5999788	KM40TSKGMER50C	KM40TS	28,0	1.10	20,5	1	50	MS1162	T25	MS2002	T25
5999862	KM50TSKGMER50C	KM50TS	38,0	1.50	25,5	1	50	MS1162	T25	MS2002	T25
6000410	KM50TSKGMER65C	KM50TS	47,0	1.85	25,5	1	65	MS1163	T30	—	—
6000425	KM63TSKGMER65C	KM63TS	47,0	1.85	32,5	1	65	MS1163	T30	—	—
5999946	KM63TSKGMER50C	KM63TS	48,0	1.89	32,5	1	50	MS1162	T25	MS2002	T25
5999950	KM63XMZKGMER50CY	KM63XMZ	48,0	1.89	32,5	1	50	MS1162	T25	MS2002	T25
6017697	KM80ATCKGMER65C	KM80ATC	57,0	2.24	40,5	2	65	MS1163	T30	—	—
6000016	KM80ATCKGMER50C	KM80ATC	58,0	2.28	40,5	2	50	MS1162	T25	MS2002	T25
6017693	KM80TSKGMER65C	KM80TS	57,0	2.24	40,5	2	65	MS1163	T30	—	—
6000012	KM80TSKGMER50C	KM80TS	58,0	2.28	40,5	2	50	MS1162	T25	MS2002	T25
<b>left hand</b>											
5999789	KM40TSKGMEL50C	KM40TS	28,0	1.10	20,5	1	50	MS1162	T25	MS2002	T25
5999863	KM50TSKGMEL50C	KM50TS	38,0	1.50	25,5	1	50	MS1162	T25	MS2002	T25
6000421	KM50TSKGMEL65C	KM50TS	47,0	1.85	25,5	1	65	MS1163	T30	—	—
6000430	KM63TSKGMEL65C	KM63TS	47,0	1.85	32,5	1	65	MS1163	T30	—	—
5999947	KM63TSKGMEL50C	KM63TS	48,0	1.89	32,5	1	50	MS1162	T25	MS2002	T25
5999971	KM63XMZKGMELF50CY	KM63XMZ	48,0	1.89	32,5	1	50	MS1162	T25	MS2002	T25
6017698	KM80ATCKGMEL65C	KM80ATC	57,0	2.24	40,5	2	65	MS1163	T30	—	—
6000017	KM80ATCKGMEL50C	KM80ATC	58,0	2.28	40,5	2	50	MS1162	T25	MS2002	T25
6017694	KM80TSKGMEL65C	KM80TS	57,0	2.24	40,5	2	65	MS1163	T30	—	—
6000013	KM80TSKGMEL50C	KM80TS	58,0	2.28	40,5	2	50	MS1162	T25	MS2002	T25

NOTE: KGMS..: Right-hand holder uses right-hand blades.  
 KGME..: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).



- Best-in-class KM Quick Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

■ Modular Straight KM4X™ System with Coolant

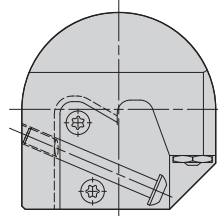
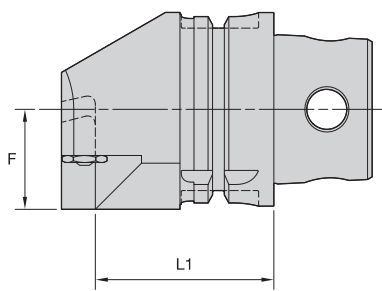


order number	catalog number	CSMS system size	L1		F		blade size	blade screw	Torx
			mm	in	mm	in			
<b>right hand</b>									
5543560	KM4X63KGMSR65C	KM4X63	68,5	2.70	30,0	1.18	65	MS1163	T30
<b>left hand</b>									
5543558	KM4X63KGMSL65C	KM4X63	68,5	2.70	30,0	1.18	65	MS1163	T30

NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).



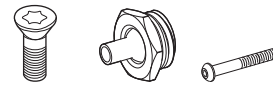
Turning



Right Hand



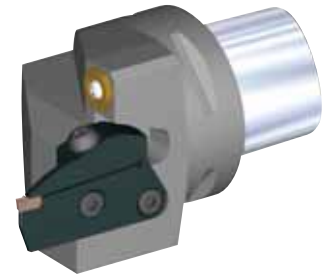
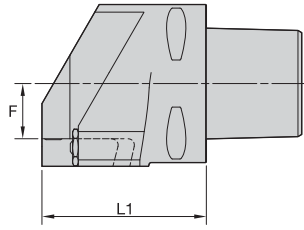
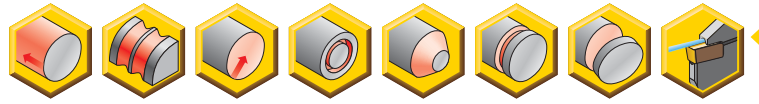
■ Modular End Mount KM4X System with Coolant



order number	catalog number	CSMS system size	L1		F		cartridge size	blade screw	nozzle	clamp screw	kg	lbs
			mm	in	mm	in						
<b>right hand</b>												
6000404	KM4X63KGMER50C	KM4X63	58,0	2.283	32,5	1.280	50	MS1162	PMT04525	MS2002	1,85	4.08
6000407	KM4X63KGMSR50C	KM4X63	73,5	2.894	31,0	1.220	50	MS1162	PMT04525	MS2002	1,86	4.11
<b>left hand</b>												
6000405	KM4X63KGME50C	KM4X63	58,0	2.283	32,5	1.280	50	MS1162	PMT04525	MS2002	1,85	4.08
6000408	KM4X63KGMSL50C	KM4X63	73,5	2.894	31,0	1.220	50	MS1162	PMT04525	MS2002	1,86	4.11

NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71–88 in. lbs. (8–10 Nm).  
 M65 blade and clamp screw torque equals 159–177 in. lbs. (18–20 Nm).

- Standard PSC Quick Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

■ Modular Straight PSC System with Coolant

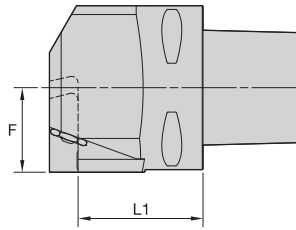


order number	catalog number	CSMS system size	L1		F		blade size	blade screw	Torx	clamp screw	Torx
			mm	in	mm	in					
<b>right hand</b>											
6000028	PSC40KGMSR50C	PSC40	63,5	2.50	10,0	.39	50	MS1162	T25	MS2002	T25
5405654	PSC50KGMSR65C	PSC50	49,0	1.93	25,5	1.00	65	MS1163	T30	—	—
6000152	PSC50KGMSR50C	PSC50	63,5	2.50	15,0	.59	50	MS1162	T25	MS2002	T25
6000464	PSC63KGMSR65C	PSC63	60,5	2.38	21,0	.83	65	MS1163	T30	—	—
6000211	PSC63KGMSR50C	PSC63	65,5	2.58	22,0	.87	50	MS1162	T25	MS2002	T25
6000468	PSC80KGMSR65C	PSC80	68,5	2.70	29,0	1.14	65	MS1163	T30	—	—
6000216	PSC80KGMSR50C	PSC80	73,5	2.89	30,0	1.18	50	MS1162	T25	MS2002	T25
<b>left hand</b>											
6000029	PSC40KGMSL50C	PSC40	63,5	2.50	10,0	.39	50	MS1162	T25	MS2002	T25
5405655	PSC50KGMSL65C	PSC50	49,0	1.93	25,5	1.00	65	MS1163	T30	—	—
6000153	PSC50KGMSL50C	PSC50	63,5	2.50	15,0	.59	50	MS1162	T25	MS2002	T25
6000465	PSC63KGMSL65C	PSC63	60,5	2.38	21,0	.83	65	MS1163	T30	—	—
6000213	PSC63KGMSL50C	PSC63	65,5	2.58	22,0	.87	50	MS1162	T25	MS2002	T25
6000469	PSC80KGMSL65C	PSC80	68,5	2.70	29,0	1.14	65	MS1163	T30	—	—
6000217	PSC80KGMSL50C	PSC80	73,5	2.89	30,0	1.18	50	MS1162	T25	MS2002	T25

NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71-88 in. lbs. (8-10 Nm)  
 M65 blade and clamp screw torque equals 159-177 in. lbs. (18-20 Nm)

Turning

- Standard PSC Quick Change platform.
- Through the pocket coolant capable.
- Interchangeable blades for versatility and depth of cut.



Right Hand

### ■ Modular End Mount PSC System with Coolant



order number	catalog number	CSMS system size	L1		F		blade size	blade screw	Torx	clamp screw	Torx
			mm	in	mm	in					
<b>right hand</b>											
6000026	PSC40KGMER50C	PSC40	33,0	1.30	20,5	.81	50	MS1162	T25	MS2002	T25
6000030	PSC50KGMER50C	PSC50	43,0	1.69	25,5	1.00	50	MS1162	T25	MS2002	T25
5405652	PSC50KGMER65C	PSC50	55,5	2.19	22,0	.87	65	MS1163	T30	—	—
6000159	PSC63KGMER50C	PSC63	48,0	1.89	32,5	1.28	50	MS1162	T25	MS2002	T25
6000462	PSC63KGMER65C	PSC63	49,0	1.93	32,5	1.28	65	MS1163	T30	—	—
6000466	PSC80KGMER65C	PSC80	57,0	2.24	40,5	1.59	65	MS1163	T30	—	—
6000214	PSC80KGMER50C	PSC80	58,0	2.28	40,5	1.59	50	MS1162	T25	MS2002	T25
<b>left hand</b>											
6000027	PSC40KGMEL50C	PSC40	33,0	1.30	20,5	.81	50	MS1162	T25	MS2002	T25
6000151	PSC50KGMEL50C	PSC50	43,0	1.69	25,5	1.00	50	MS1162	T25	MS2002	T25
5405653	PSC50KGMEL65C	PSC50	55,5	2.19	22,0	.87	65	MS1163	T30	—	—
6000160	PSC63KGMEL50C	PSC63	48,0	1.89	32,5	1.28	50	MS1162	T25	MS2002	T25
6000463	PSC63KGMEL65C	PSC63	49,0	1.93	32,5	1.28	65	MS1163	T30	—	—
6000467	PSC80KGMEL65C	PSC80	57,0	2.24	40,5	1.59	65	MS1163	T30	—	—
6000215	PSC80KGMEL50C	PSC80	58,0	2.28	40,5	1.59	50	MS1162	T25	MS2002	T25

NOTE: KGMS.: Right-hand holder uses right-hand blades.  
 KGME.: Right-hand holder uses left-hand blades.  
 M50 blade and clamp screw torque equals 71-88 in. lbs. (8-10 Nm)  
 M65 blade and clamp screw torque equals 159-177 in. lbs. (18-20 Nm)

## NOVO KNOWS CAD/CAM

With the addition of NOVO™ 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 not only helps 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.

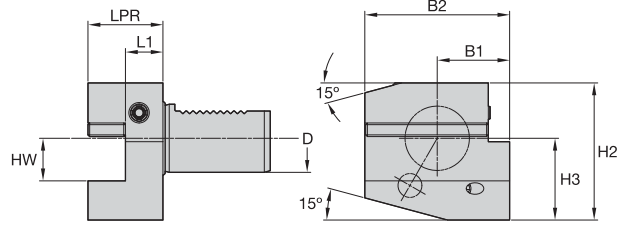
NOVO can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. [kennametal.com/novo](http://kennametal.com/novo)



## ➤ VDI Toolholders



- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

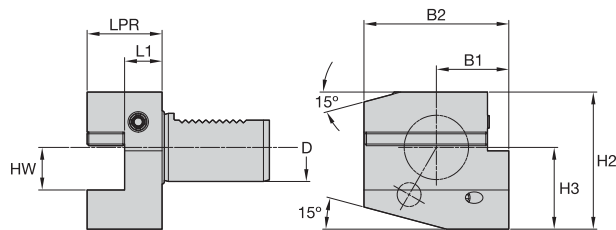


■ VDI Form B1 • HPC • Right Hand Short • Metric

order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151491	VDIB1M302040C	30,00	70,00	35,00	20,00	66,00	38,00	22,00	40,00
6151492	VDIB1M402544C	40,00	85,00	42,50	25,00	80,50	48,00	22,00	44,00

VDI Form B2 • Left Hand Short

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.



Artwork shows right hand tool.  
Left hand tool mirror inverted.

■ VDI Form B2 • HPC • Left Hand Short • Metric

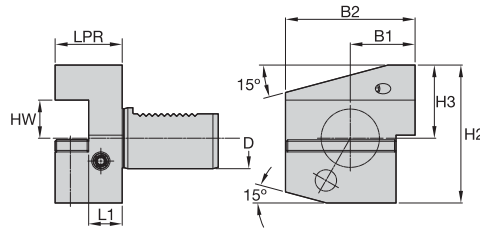
order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151493	VDIB2M302040C	30,00	70,00	35,00	20,00	66,00	38,00	22,00	40,00
6151494	VDIB2M402544C	40,00	85,00	42,50	25,00	80,50	48,00	22,00	44,00





Turning

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

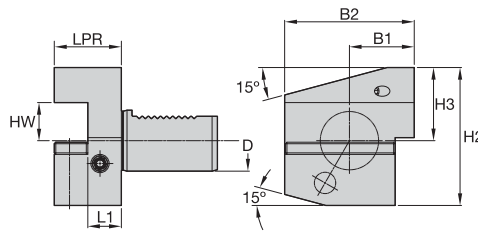


**VDI Form B3 • HPC • Right Hand Short Inverted • Metric**

order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151495	VDIB3M302040C	30,00	70,00	35,00	20,00	73,00	38,00	22,00	40,00
6151497	VDIB3M402544C	40,00	85,00	42,50	25,00	90,50	48,00	22,00	44,00

**VDI Form B4 • Left Hand Short Inverted**

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

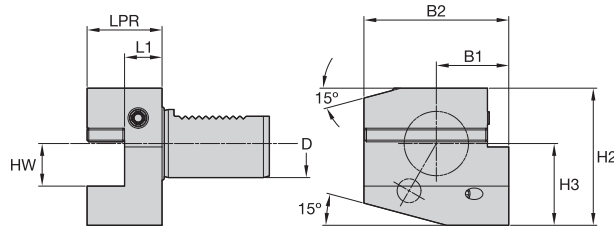


Artwork shows right hand tool.  
Left hand tool mirror inverted.

**VDI Form B4 • HPC • Left Hand Short Inverted • Metric**

order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151498	VDIB4M302040C	30,00	70,00	35,00	20,00	73,00	38,00	22,00	40,00
6151499	VDIB4M402544C	40,00	85,00	42,50	25,00	90,50	48,00	22,00	44,00

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

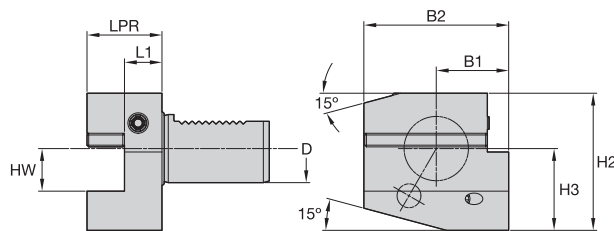


■ VDI Form B5 • HPC • Right Hand Long • Metric

order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151500	VDIB5M302040C	30,00	100,00	65,00	20,00	66,00	38,00	22,00	40,00
6151511	VDIB5M402544C	40,00	118,00	75,50	25,00	80,50	48,00	22,00	44,00

VDI Form B6 • Left Hand Long

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.



Artwork shows right hand tool.  
Left hand tool mirror inverted.

■ VDI Form B6 • HPC • Left Hand Long • Metric

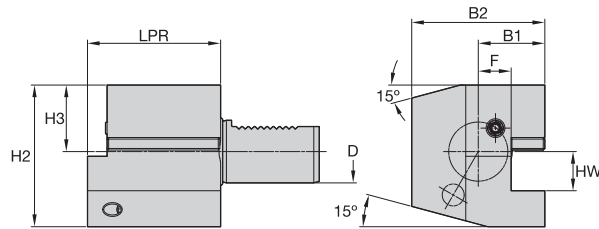
order number	catalog number	D	B2	B1	HW	H2	H3	L1	LPR
6151512	VDIB6M302040C	30,00	100,00	65,00	20,00	66,00	38,00	22,00	40,00
6151513	VDIB6M402544C	40,00	118,00	75,50	25,00	80,50	48,00	22,00	44,00



- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.



Turning

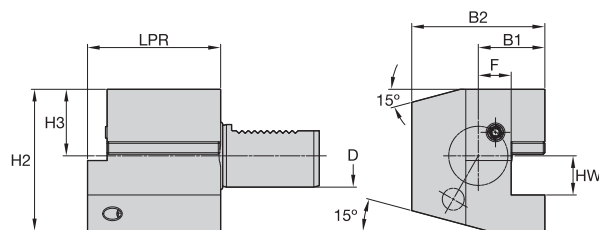


■ VDI Form C1 • HPC • Right Hand • Metric

order number	catalog number	D	B2	B1	F	HW	H2	H3	LPR
6151514	VDIC1M302070C	30,00	70,00	35,00	17,00	20,00	66,00	38,00	70,00
6151515	VDIC1M402585C	40,00	85,00	42,50	21,00	25,00	80,50	48,00	85,00

VDI Form C2 • Left Hand

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

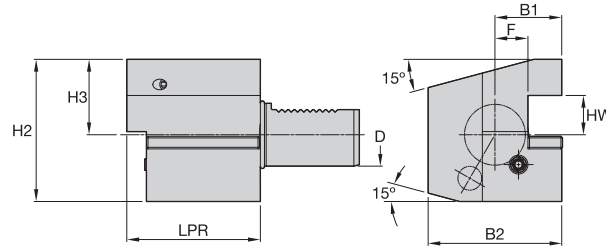


Artwork shows right hand tool.  
Left hand tool mirror inverted.

■ VDI Form C2 • HPC • Left Hand • Metric

order number	catalog number	D	B2	B1	F	HW	H2	H3	LPR
6151516	VDIC2M302070C	30,00	76,00	41,00	23,00	20,00	66,00	38,00	70,00
6151517	VDIC2M402585C	40,00	90,00	47,50	25,50	25,00	80,50	48,00	85,00

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.



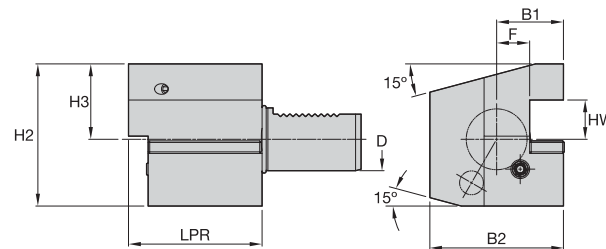
Turning

■ VDI Form C3 • HPC • Right Hand Inverted • Metric

order number	catalog number	D	B2	B1	F	HW	H2	H3	LPR
6151518	VDIC3M302070C	30,00	70,00	35,00	17,00	20,00	73,00	38,00	70,00
6151519	VDIC3M402585C	40,00	85,00	42,50	21,00	25,00	90,50	48,00	85,00

VDI Form C4 • Left Hand Inverted

- VDI adapter with coolant support for square shank toolholder.
- DIN 69880.

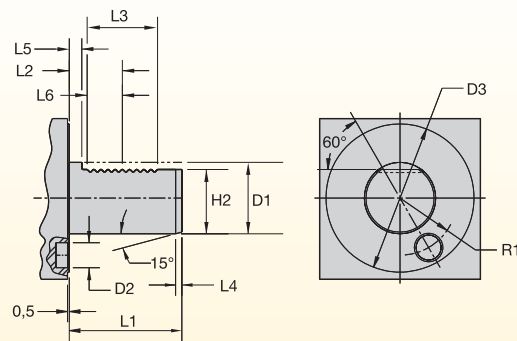


Artwork shows right hand tool.  
Left hand tool mirror inverted.

■ VDI Form C4 • HPC • Left Hand Inverted • Metric

order number	catalog number	D	B2	B1	F	HW	H2	H3	LPR
6151520	VDIC4M302070C	30,00	70,00	35,00	17,00	20,00	73,00	38,00	70,00
6151521	VDIC4M402585C	40,00	85,00	42,50	21,00	25,00	90,50	48,00	85,00

■ Shank Specifications



	D1	D2	D3	L1	L2	L3	L4	L5	L6	H2	R1
<b>30</b>	30,00	14,00	68,00	55,00	29,70	40,00	2,00	7,00	20,00	27,00	25,00
	1.181	0.551	2.677	2.165	1.169	1.575	0.079	0.276	0.787	1.063	0.984
<b>40</b>	40,00	14,00	83,00	63,00	29,70	40,00	3,00	7,00	20,00	36,00	32,00
	1.575	0.551	3.268	2.480	1.169	1.575	0.118	0.276	0.787	1.417	1.260
<b>50</b>	50,00	16,00	98,00	78,00	35,70	48,00	3,00	8,00	24,00	45,00	37,00
	1.969	0.630	3.858	3.071	1.406	1.890	0.118	0.315	0.945	1.772	1.457
<b>60</b>	60,00	16,00	123,00	94,00	43,70	56,00	4,00	10,00	28,00	55,00	48,00
	2.362	0.630	4.843	3.701	1.720	2.205	0.157	0.394	1.102	2.165	1.890

# Beyond™ PVD Grades



Beyond™ advanced PVD coatings are well suited to resist high-temperatures associated with machining tough alloys. By offering increased tool life, the general engineering, transportation, aerospace, energy, and earthworks markets can experience benefits in their profitability as well as utilize the strength of Beyond's PVD coating in combination with the broad product offering to perform turning, grooving, and cut-off operations in a wide array of materials and applications while maintaining consistent chip control and minimizing insert edge wear.



## KCU10

- PVD-coated grade with excellent wear resistance. Finishing to medium applications.
- Use in all materials, especially stainless steels and high-temp alloys.

## KCU25

- PVD-coated grade with superior edge toughness and excellent wear resistance. Medium to roughing applications.
- Use in all materials.

Experience the advantages at your Authorized Kennametal Distributor or at [kennametal.com](http://kennametal.com).



[kennametal.com](http://kennametal.com)



**beyond™ EVOLUTION™**

Connecting the tool to your machine is easy. Just select one of the two available hose packages, and Active Coolant Control will be keeping you cool in no time!

## ➤ Don't know exactly what you need?

To connect Beyond™ Evolution™ tooling to the industry's most common machines. The Kennametal universal coolant packs are ideal! Each pack contains the most common thread sizes with a variety of fitting styles for maximum flexibility.

### ■ Universal 200mm Coolant Pack

order number	catalog number	quantity	description
6145372	COOL-KIT-101	1	1/16 NPTF male to 7/16 JIC male fitting
		1	1/8 NPTF male to 7/16 JIC male fitting
		1	G1/8 male to 7/16 JIC male fitting
		1	M10 x 1,5 male to 7/16 JIC male fitting
		2	Male JIC to Swivel Female JIC Elbow
		1	200mm Hose Female JIC to Female JIC

### ■ Universal 300mm Coolant Pack

order number	catalog number	quantity	description
6145373	COOL-KIT-201	1	1/16 NPTF male to 7/16 JIC male fitting
		1	1/8 NPTF male to 7/16 JIC male fitting
		1	G1/8 male to 7/16 JIC male fitting
		1	M10 x 1,5 male to 7/16 JIC male fitting
		2	Male JIC to Swivel Female JIC Elbow
		1	300mm Hose Female JIC to Female JIC



## ➤ Know what you need?

Every component is individually available, including less common fittings.  
Knowing the precise components required will allow you to choose only the fittings you need!

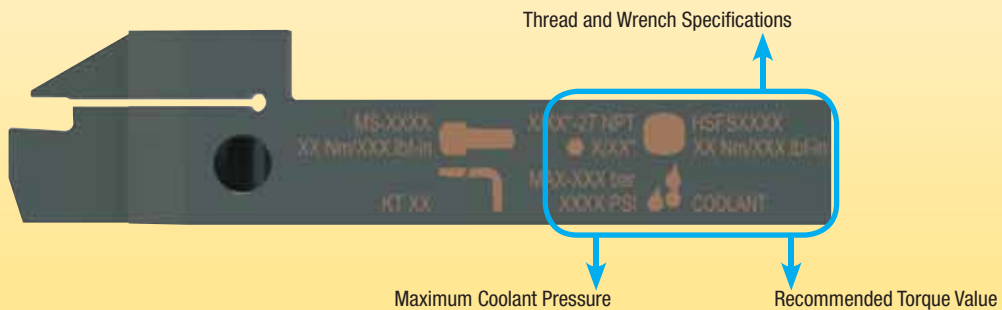
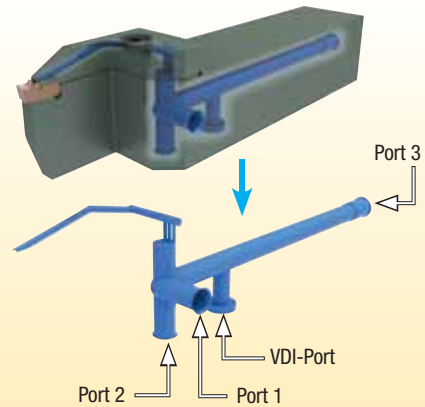
### ■ Coolant Hose Accessories

order number	catalog number	description
6145374	1-16NPTF-JIC	1/16 NPTF male to 7/16 JIC male fitting
6145375	1-8NPTF-JIC	1/8 NPTF male to 7/16 JIC male fitting
6145376	G18-JIC	G1/8 male to 7/16 JIC male fitting
6145377	M10-JIC	M10 x 1,5 male to 7/16 JIC male fitting
6145379	JICM-JICF-ELB	Male JIC to Swivel Female JIC Elbow
6145380	COOL-HOSE-200	200mm Hose Female JIC to Female JIC
6145381	COOL-HOSE-300	300mm Hose Female JIC to Female JIC
6145382	M6-JIC	M6 x 1,0 male to 7/16 JIC male fitting
6145378	M8-JIC	M8 x 1,25 male to 7/16 JIC male fitting
6145383	JICM-JICM-STR	7/16 JIC male to 7/16 JIC male adapter
6145386	G14-G18-RED	Male G1/4 to Female G1/8 reducer



**Active Coolant Control Guidelines**

1. Beyond™ Evolution™ system capable of 350 bar (5076 psi).
2. Toolholder delivered with four entry holes.
3. A quality filtration system is necessary to prevent blockages in the toolholder that will effect coolant flow and performance.
4. Machines without a proper filtering system may require modification or an inline filter.
  - For pressure >70 bar [1015 psi], use 10–20 µm filter.
  - For pressure <70 bar [1015 psi], 50–100 µm.
  - Using fine filters in low-pressure applications may affect flow rate.

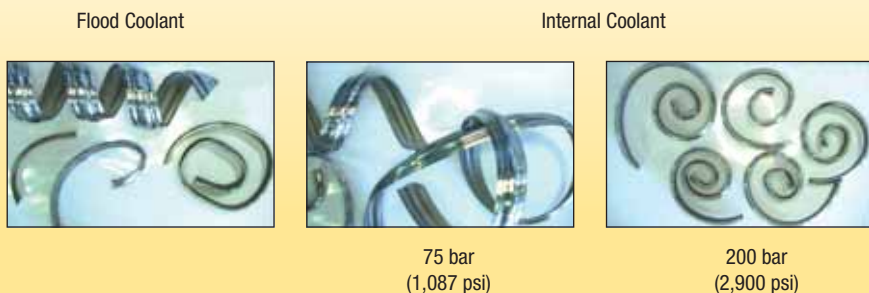


**General Safety Guidelines**

1. All safety doors and mechanisms must be in place before trying out the internal coolant to avoid any danger to the operator in the event of a failure.
2. Use the correct pipe fittings to connect the holders to the system. Ensure the maximum pressure recommended for the fittings are not exceeded.
3. While implementing pressure >80 bar [1160 psi], increase the pressure in steps to ensure proper functioning of insert clamping and leak-free joints.
4. While indexing inserts, ensure the pocket is free from chips and/or dirt. Also, inspect the insert and make sure there are no blockages in the coolant canal.
5. Periodically check all hoses and fittings for damage and wear for proper functioning of the system. This check should also include filters.

**Active Coolant Control Performance**

Internal coolant offers a clear advantage in tool life and chip forming/evacuation vs. external coolant in difficult conditions and in high-pressure coolant.  
 Example: Chipbreaking in plunging of steel.



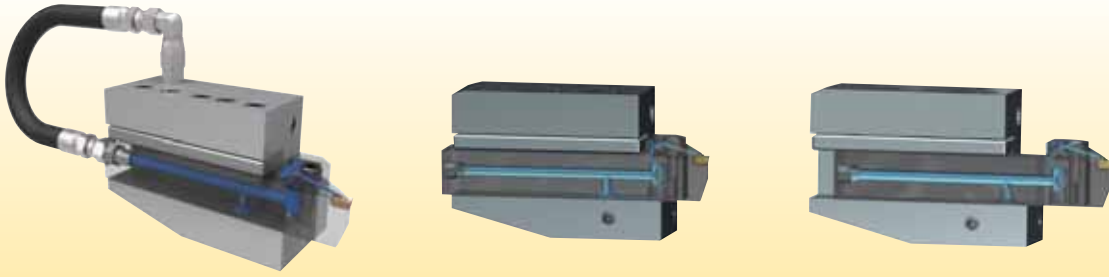
Material steel ST52;  
 Insert size 6mm; f = 0,25mm/U

**Low Pressure** — If performance is at risk due to low coolant pressure, apply internal coolant in combination with external coolant to increase volume.

**Recommendation to improve tool life and/or productivity:** Apply high pressure coolant: 80–350 bar recommended.

**VDI Assemblies**

The Beyond™ Evolution™ Active Coolant Control can be leveraged with VDI holding systems with both traditional or quick change coolant connections.



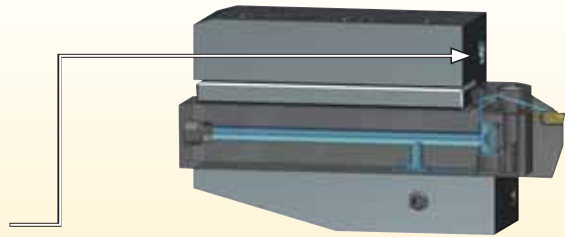
Coolant flow transfer from VDI adapter to toolholder

A marker on the toolholder must remain within the coolant range indicated on the VDI system for uninterrupted coolant transfer.

■ **Technical Details**

**Pressure limit 1160 Psi [lbf/in<sup>2</sup>] (80 bar).**

Nozzle set comes pre-assembled.  
For the holder application with internal coolant only nozzle can be plugged by M5 screw (delivered). Use Loc Tite light, medium strength, or thread sealant.



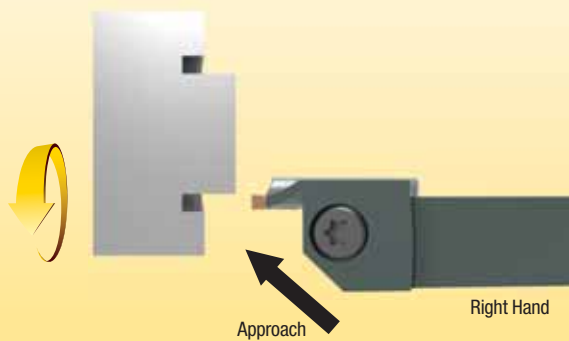
Holder	Slide Area	Max. Pressure	Torque (Pressure Screws)
VDI 30	0.87" (22mm)	1160 Psi [lbf/in <sup>2</sup> ] (80 bar)	14.75 ft. lb. (20 Nm)
VDI 40	1.18" (30mm)	1160 Psi [lbf/in <sup>2</sup> ] (80 bar)	25.81 ft. lb. (35 Nm)
<b>Spare sets</b>			
Nozzle		<b>PKGNLAL 1205M</b>	
Set Pressure Screw, Pressure Plate, Spring		See separately for each type in BOM	

### Steps to proper face grooving tool selection

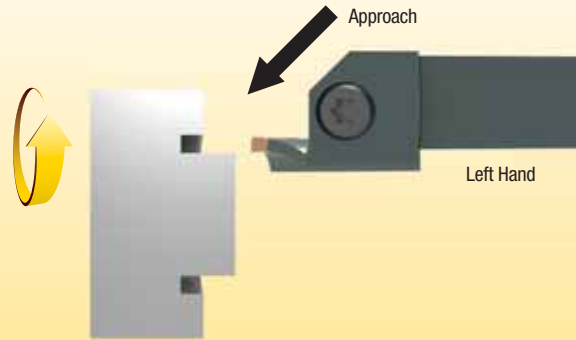
- Step 1: Select your spindle rotation
- Step 2: Select your angle of approach and toolholder orientation

### Integral Tooling

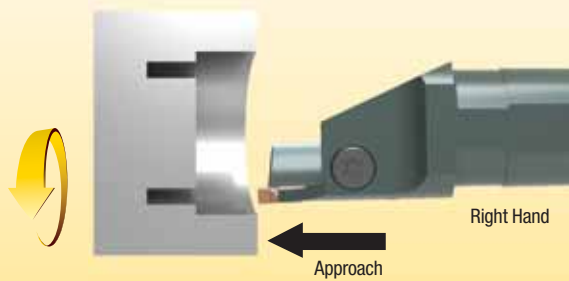
Counter-Clockwise Rotation  
Square Shank



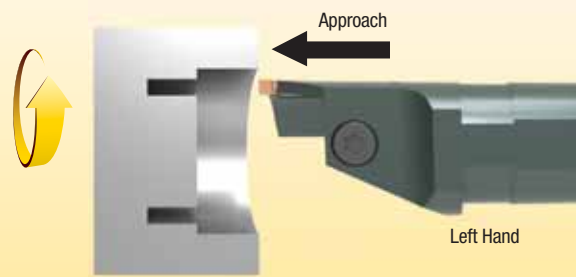
Clockwise Rotation  
Square Shank



Boring Bar



Boring Bar

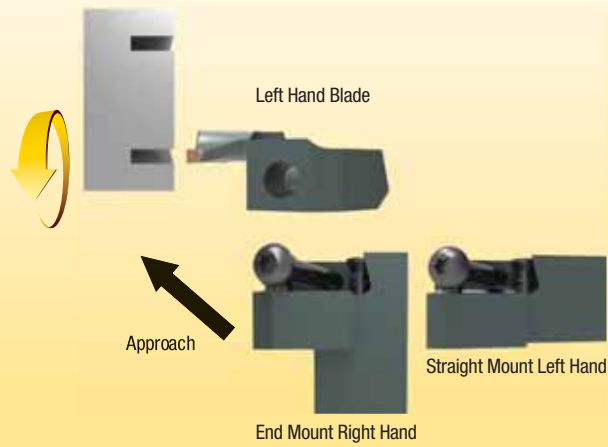


### Steps to proper modular face grooving tool selection

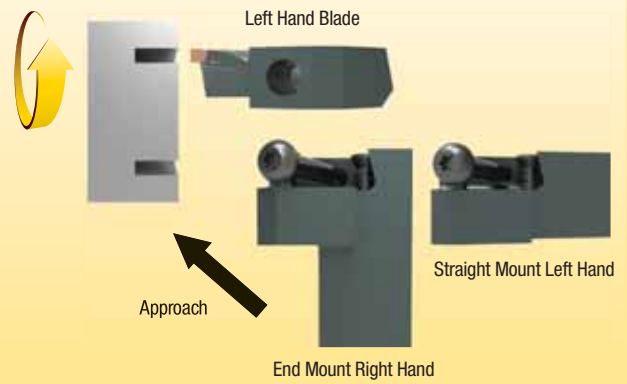
- Step 1: Select your spindle rotation
- Step 2: Select your angle of approach and toolholder orientation
- Step 3: Identify combination of blade and shank tool

### Modular Tooling

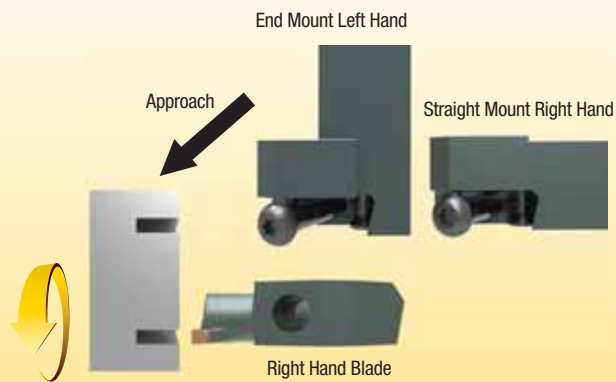
Counter-Clockwise Rotation  
Left Hand Outboard Sweep



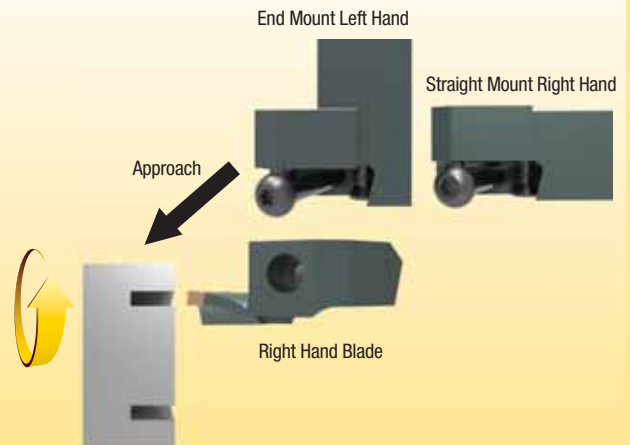
Clockwise Rotation  
Left Hand Inboard Sweep



Right Hand Inboard Sweep



Right Hand Outboard Sweep



## ■ Tool Application Guidelines

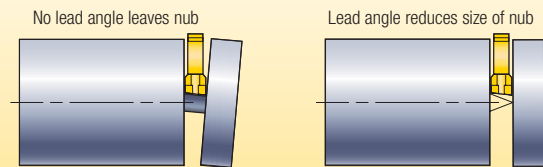
- Always use good general machining practices.
- Make the machine and workpiece setup as rigid as possible.
- Integral shank toolholders offer the best rigidity. They should be your first toolholder choice, when possible.
- Use the toolholder with the shortest possible depth of cut for the application ("CD" dimension).
- When changing inserts, make sure the new insert locates securely against the toolholder's positive stop.
- Never tighten the clamping screw without an insert in the pocket.
- Toolholder projection out of the tool block should be as short as possible.
- Inserts should cut as close to center as possible.
- Dwell time in bottom of groove should be less than three revolutions.
- Recommended cutting speed and feeds are a starting point. Adjust, as necessary, for optimum tool life and chip control.

### Definitions and Guidelines

1. Width of cut (W) = width of the insert.
2. Lead angle = 0° (neutral); 6° (RH or LH).

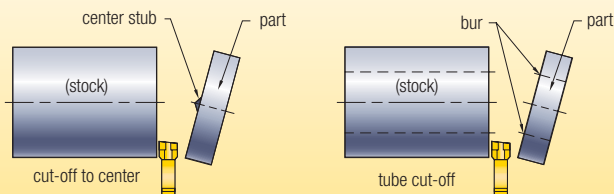
### Reduce bur of cut-off faces:

- Use lead angle-type inserts (Figures 1 and 2). Lead angle on a cut-off insert reduces the bur that remains on the part but decreases tool life and increases tool side deflection and possibly cycle time.
- If 0° lead angle is mandatory, use the narrowest possible cut-off insert and blade. This will minimize the center stub or cut-off bur length.



**Figure 1**

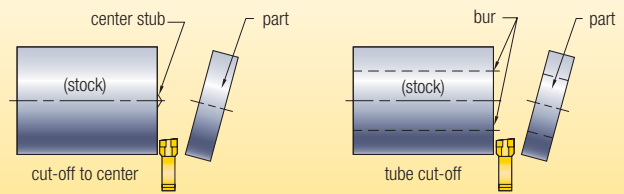
### Insert selection left-hand lead



Left-hand lead insert leaves center stub or bur on part and produces clean stock surface.

**Figure 2**

### Insert selection right-hand lead



Reduces nub but decreases tool life and productivity

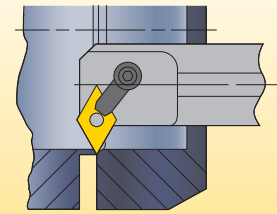
Right-hand lead insert leaves center stub or bur on stock and produces clean part surface.

- Check total height and maintain on center with part diameter.
- The cutting edge height should be within  $\pm .004$ " (0,1mm) to the center; recommended cutting position is  $.002$ " (0,05mm) above center.

### ■ Tubing

- On tubing-type parts that require a chamfer on the I.D., align I.D. chamfer tool with cut-off surface. This will enable the chamfering operation to actually separate the part from the bar (see Figure 3). Note the part may drop onto the chamfering bar, which, in this case, will act like a catcher for the part.

Figure 3

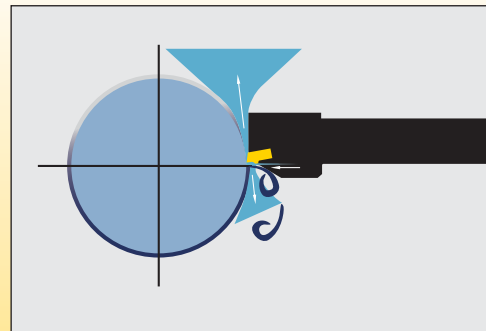


Internal chamfer line up

### Improve surface finish of cut-off faces:

- Use insert with 0° lead angle.
- Increase coolant flow or improve application technique, as shown in Figure 4.
- Decrease the feed rate near the break-through point of the cut.
- Check that the grooving tool is set at the correct angle.
- Use blades with the greatest possible face height and smallest possible cutting width.
- Increase the speed.

Figure 4

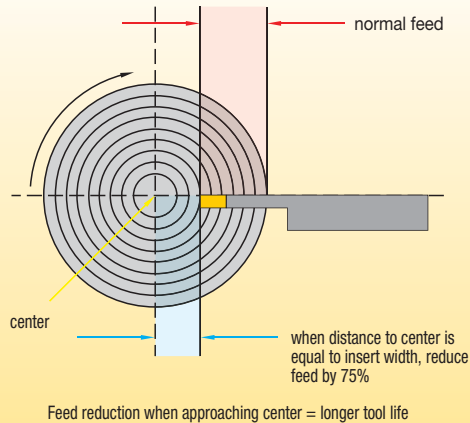


Preferred method for applying coolant

- Mount cut-off tool upside down. This enables gravity to remove chips and avoid cutting the chips twice. Another benefit of mounting the tool upside down is preventing chips from wedging between the tool insert and the groove side walls, which galls the side wall surfaces.

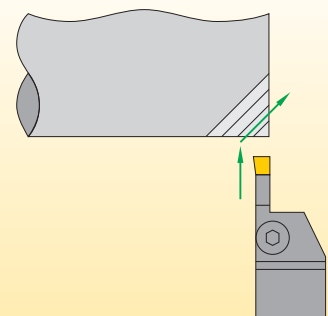
### ■ Programming Guidelines

#### Feed reduction in cut-off



#### Chamfering

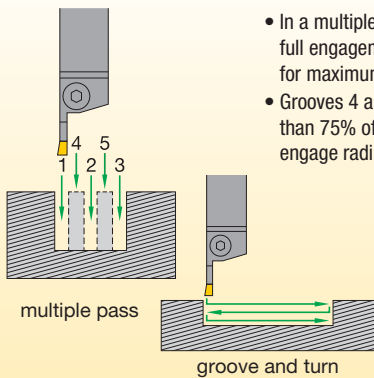
Chamfering with a grooving tool reduced machine index time and tool stations.



(continued)

## ■ Programming Guidelines (continued)

### Pocketing



- In a multiple-pass operation, generate full engagement grooves in 1, 2, and 3 for maximum stability.
- Grooves 4 and 5 should be no more than 75% of insert width, so as not to engage radii.

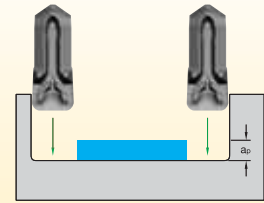
If pocket is deeper than wide = multiple pass

If pocket is wider than deep = groove and turn

### Square Pocket

#### Steps 1 and 2

Plunge the radius and wall on each side to open up two grooves.



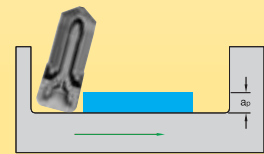
#### Step 3

Retract tool .004" (0,1mm); this is necessary to create a flat bottom.



#### Step 4

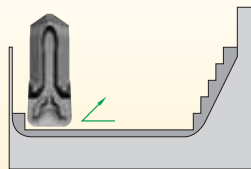
Side turn. This tool is designed to deflect, creating the necessary front clearance.



### Profile Pocket

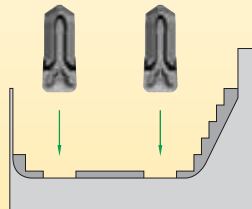
#### Step 1

Rough to have about the same amount of stock left on all surfaces for finish.



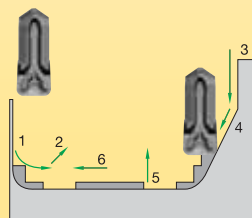
#### Step 2

Open up two grooves away from wall and radius.



#### Step 3

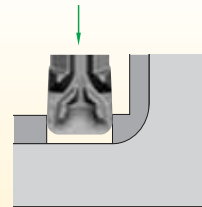
(1 and 2) Finish wall and radius.  
(3 and 4) Finish wall, angle, and radius on opposite side of pocket.  
(5) Retract tool .004" (0,1mm).  
(6) Side turn to finish the floor of the pocket.



### Generating a Radius

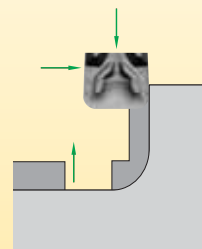
#### Step 1

Open up a groove away from the radius.



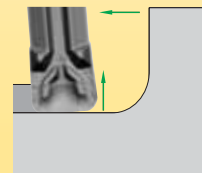
#### Step 2

Retract and move the material on the wall and generate the radius. By generating the groove in the prior step, only one surface is engaged at a time, reducing the risk of vibrations.



#### Step 3

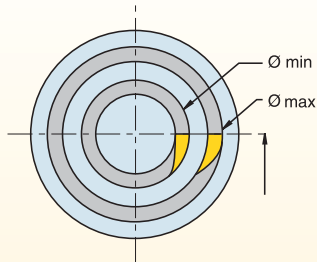
Retract the tool .004" (0,1mm) and then side turn.





## Grooving Tool Failure and Solution Guide

### Face Grooving Application Guidelines



#### Tool Selection

- When selecting the toolholder, always start at the largest diameter possible and work toward the smaller diameter. This will allow the strongest tool to be used.

#### Cutting the First Groove

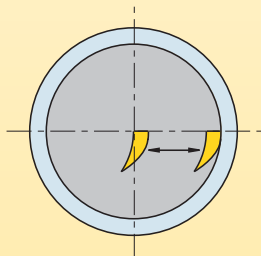
- The outside diameter of the first groove must be between the diameter minimum and diameter maximum capability of the face grooving tool (see illustration above). This creates clearance for the toolholder.

#### Chip Control

- Adjust speed and feed for good chip control and evacuation from the groove. Chip compaction can cause poor surface finish, tool breakage, and reduced tool life.

#### Tool Setting

- The tool should be set as close to the center as possible to avoid extreme formation of burrs.
- Align the cutting edge square to the workpiece.



#### Widening a Face Groove

- After the first groove has been cut, the groove width can be widened in either direction using the same tool. The best practice is to work from the O.D. to the I.D.

### Practical Solutions to Grooving Problems

problem	remedy
bur	<ol style="list-style-type: none"> <li>1. Verify tool center height.</li> <li>2. Use sharp tools (index more often).</li> <li>3. Use positive rake PVD coated insert.</li> <li>4. Use correct grade for workpiece material.</li> <li>5. Use correct geometry (e.g., positive rake for workhardening material).</li> <li>6. Change tool path.</li> </ol>
poor surface finish	<ol style="list-style-type: none"> <li>1. Increase speed.</li> <li>2. Use sharp tools (index more often).</li> <li>3. Dwell time in bottom 1–3 revolutions (max).</li> <li>4. Use proper chip control geometry.</li> <li>5. Increase coolant flow.</li> <li>6. Verify proper setup (overhang, shank size).</li> <li>7. Use correct geometry (e.g., positive rake for workhardening material).</li> </ol>
groove bottom not flat	<ol style="list-style-type: none"> <li>1. Use sharp tools (index more often).</li> <li>2. Dwell time in bottom 1–3 revolutions (max).</li> <li>3. Reduce tool overhang (increase rigidity).</li> <li>4. Reduce feed rate at groove bottom.</li> <li>5. Use a wider insert.</li> <li>6. Verify tool center height.</li> </ol>
poor chip control	<ol style="list-style-type: none"> <li>1. Use sharp tools (index more often).</li> <li>2. Increase coolant concentration.</li> <li>3. Adjust feed rate (usually increase first).</li> </ol>
chatter	<ol style="list-style-type: none"> <li>1. Reduce tool and workpiece overhang.</li> <li>2. Adjust speed (usually increase first).</li> <li>3. Adjust feed (usually increase first).</li> <li>4. Verify tool center height.</li> </ol>
insert chipping	<ol style="list-style-type: none"> <li>1. Use correct grade for workpiece material.</li> <li>2. Increase speed.</li> <li>3. Reduce feed.</li> <li>4. Use a stronger grade.</li> <li>5. Increase tool and setup rigidity.</li> </ol>
built-up edge	<ol style="list-style-type: none"> <li>1. Use positive rake PVD coated insert.</li> <li>2. Increase speed.</li> <li>3. Reduce feed.</li> <li>4. Increase coolant flow/concentration.</li> <li>5. Use cermets.</li> </ol>
side walls not straight	<ol style="list-style-type: none"> <li>1. Check tool alignment for square.</li> <li>2. Reduce workpiece and tool overhang.</li> <li>3. Use sharp inserts (index more often).</li> </ol>

# ➤ Top Notch™

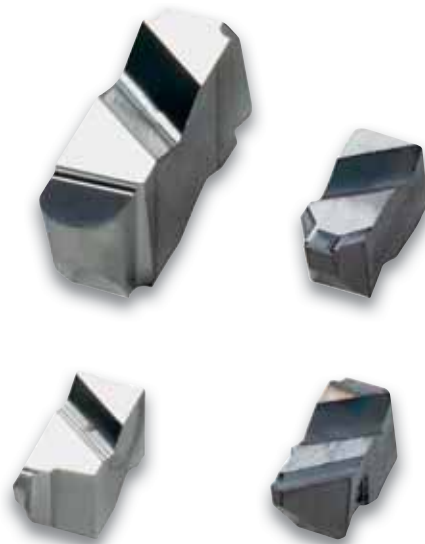
Grooving Tools and Beyond™ Inserts for  
Your Shallow Groove and Turn Operations

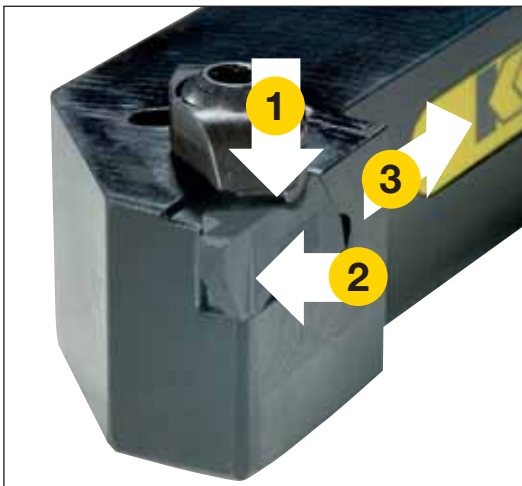
## Primary Application

Top Notch Grooving is the proven solution for high productivity. The Top Notch system provides consistent tool performance, accurate indexing, and superior clamping to provide excellent surface finishing and superior tool life.

## Features and Benefits

- The Beyond PVD coated grades are designed to cut a variety of workpiece materials.
- Rigid clamping securely locks insert in place through the toughest cuts.
- Versatile design enables one system to handle O.D. and I.D. grooving, face grooving, back turning, undercutting, and even threading operations.
- Chip control inserts provide excellent chip evacuation in grooving, and offer better chip control in multidirectional turning.





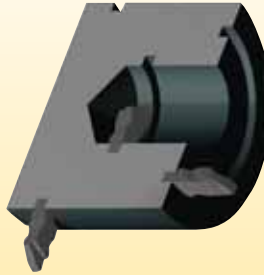
Our rigid clamping design prevents insert movement during high-feed rate applications. This benefit ensures excellent surface finish, improved productivity, and superior tool life and promotes perfect concentricity. The rugged bridge clamp generates locking forces in three directions to provide superior resistance to side thrust and tangential forces.

**Step 1 • Select system based on the required groove depth**

**What you need to know**

- Groove depth, width, and profile.
- Material to be machined.
- Application to be performed (face, O.D., or I.D. grooving).
- Toolholder requirements (e.g., KM™, square shank, right/left).

**Top Notch™**



**Grooving**

For grooving depth  $\leq 1.5x$  grooving width, review system capability chart and proceed to Step 2.

**Top Notch Grooving for Internal, External, and Face Grooving Applications**

system capabilities		minimum in (mm)	maximum in (mm)
O.D./I.D. grooving	width	0.31 (0,79)	.375 (9,53)
	depth	.050 (1,27)	.375 (9,53)
face grooving	width	.125 (3,18)	.375 (9,53)
	depth	.150 (3,81)	.250 (6,35)
internal grooving	diameter	.440 (11,2)	—
face grooving diameter	standard	.940 (23,9)	—
	deep	1.875 (47,6)	—
deep O.D./I.D. grooving	width	.062 (1,57)	.250 (6,35)
	depth	.125 (3,18)	.500 (12,70)
deep face grooving	width	.125 (3,18)	.250 (6,35)
	depth	.250 (6,35)	.500 (12,70)



**Step 2 • Select toolholder based on the application**

NOTE: Toolholders are available as conventional square shank versions as well as quick-change versions. The insert size must match the gage insert of your toolholder selection.

**Step 3 • Select chipbreaker style and feed rate**
**Chipbreaker and Feed Rates • in/rev (mm/rev)**


workpiece material and application	P	M	K	N	S	H
<b>first choice</b>	<b>NG-K</b> .003–.011 (0,08–0,28)	<b>NG-K</b> .0025–.008 (0,07–0,20)	<b>NG</b> .004–.012 (0,01–0,30)	<b>NGP</b> .004–.012 (0,01–0,30)	<b>NG-K</b> .0025–.008 (0,07–0,20)	<b>NG-ST</b> CBN tipped .002–.004 (0,05–0,10)
<b>alternate choice</b>	<b>NG</b> .004–.012 (0,10–0,30)	<b>NGP</b> .004–.009 (0,10–0,23)	<b>NG-K</b> .003–.011 (0,08–0,28)	<b>NG-K</b> .003–.012 (0,08–0,30)	<b>NGP</b> .004–.008 (0,10–0,20)	—

\_K chipbreaker inserts



flat-top inserts



positive rake inserts


**Step 4 • Select grade and speed**
**Recommendations for Grade**

Starting speed chart shown under “Application Guide”

machining condition	workpiece material					
	P	M	K	N	S	H
<b>high-performance for optimal conditions</b> (clean cuts, good machine condition, higher speed capability)	KCP10B	KCU10	KCP10B	KD1425	KCU10	KB5625
<b>general purpose</b> (first choice for general machining)	KCP25B	KCU25	KCU10	KCU10	KCU10	KB5625
<b>unfavorable conditions</b> (roughing, poor machine condition, interrupted cuts, low speed, I.D. grooving)	KCU25	KCU25	KCU25	K313	KCU25	KB1630

**Step 5 • Select insert and holder from catalog page**

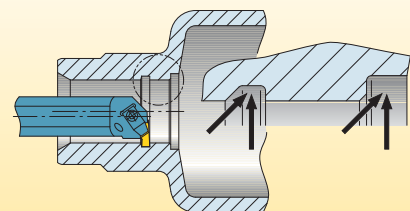
NOTE: The insert size must match the gage insert size of your toolholder selection.

**Example for Top Notch • Grooving**

 Material ..... low-alloyed steel  
 Groove depth ..... .079" (2mm)  
 Groove width ..... .118" (3mm)  
 Operation..... I.D. cut, limited speed capability,  
 plunge groove and chamfer

**Recommendation**

 Insert ..... NG2M300RK  
 Grade ..... KC5025  
 Insert width ..... .118" (3mm)  
 Insert size ..... 2

 Toolholder ..... A20QNTOL2 (metric)  
 A12NEL2 (inch)  
 Gage insert ..... N.2R

 Speed: 400 SFM (120 m/min)  
 Feed: .006 in/rev (0,15 mm/rev)

**Congratulations!**

You have successfully maximized your productivity by selecting the best Top Notch insert geometry, grade, and cutting specifications for your application!

## 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.



NGC2C110R035K

N	G	C	2	C	110	R	035	K																				
Type of Insert	Insert Style	Additional Information	Insert Size	Size Identification	Groove Size**	Hand of Insert	Cutting Depth	Chipbreaker Design	Definition of Inserts																			
<p><b>N</b> = Top Notch</p>		<p><b>D</b> = Deep grooving  <b>P</b> = Positive  <b>C</b> = Groove and chamfer</p>		<p><b>M</b> = Metric insert groove width  <b>C</b> = Circlip groove insert width is nominal circlip size                      □ = Blank indicates inch width insert</p>		<p><b>L</b> = Left hand  <b>R</b> = Right hand</p>	<p>Shown for groove and chamfer inserts in .0004" increments.</p>	<p><b>E</b> = Hone only  <b>K</b> = Standard chip control  <b>S</b> = T Land and Hone  <b>ST</b> = STD Tip (PcBN)</p>	<p>Groove size "J" or "L" for Poly-Vee inserts                      "I" indicates internal face grooving</p>																			
<p><b>B</b> = Blank (for special forms)  <b>F</b> = Face grooving  <b>G</b> = Grooving  <b>P</b> = Back  <b>R</b> = Full radius  <b>U</b> = Undercutting (or relieving)  <b>V</b> = Poly-Vee</p>		<table border="1"> <thead> <tr> <th>insert number</th> <th>W1 (in)</th> <th>W1 (mm)</th> </tr> </thead> <tbody> <tr><td>1</td><td>.100</td><td>2,54</td></tr> <tr><td>2</td><td>.150</td><td>3,81</td></tr> <tr><td>3</td><td>.195</td><td>4,95</td></tr> <tr><td>4</td><td>.255</td><td>6,98</td></tr> <tr><td>5</td><td>.380</td><td>9,65</td></tr> <tr><td>6</td><td>.383</td><td>9,73</td></tr> </tbody> </table>		insert number	W1 (in)	W1 (mm)	1	.100	2,54	2	.150	3,81	3	.195	4,95	4	.255	6,98	5	.380	9,65	6	.383	9,73	<p>Position pertains to groove width for F-, G-, and U-style inserts, radii for R-style grooving inserts, and circlip size for groove and chamfer inserts. Dimension in .001" or 0,01mm.</p> <p><b>Inch example:</b> 1/32" width groove or radius equals "031" catalog position number.</p> <p><b>Metric example:</b> 3,25mm width groove or radius equals "325" catalog position number.</p> <p><b>Width Tolerance:</b> ±.001" (±0,025mm) unless otherwise specified.</p>			
insert number	W1 (in)	W1 (mm)																										
1	.100	2,54																										
2	.150	3,81																										
3	.195	4,95																										
4	.255	6,98																										
5	.380	9,65																										
6	.383	9,73																										

\*Kennametal proprietary identification system.

\*\*Omit position for Top Notch NB-style blanks.

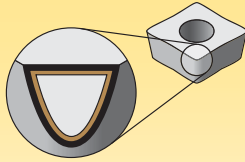
### Top Notch Threading and Grooving Insert Dimensions

insert size	mm	S	inch	mm	W1	inch
1	2,54		.100	2,54		.100
2	5,56		.219	3,81		.150
3	8,74		.344	4,95		.195
4	11,51		.453	6,48		.255
5	17,48		.688	9,65		.380
6	11,51		.453	9,73		.383
8	7,93		.312	11,13		.438

### Top Notch Holder Design

NOTE: Holders are designed to locate insert inclined to 3° to provide back clearance down open side.

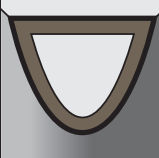
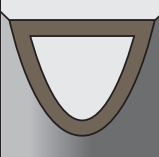
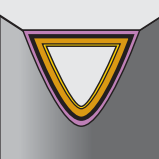
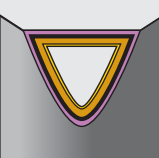
**Kennametal and Top Notch tooling technology combine to bring you the very best threading and grooving system available in the world today.**



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	Performance Matrix																																																																								
				05	10	15	20	25	30	35	40	45																																																															
Grade	 <b>KCUI10</b>	<b>Composition:</b> An advanced multilayer PVD coating over a very deformation-resistant unalloyed carbide substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. <b>Application:</b> The KCUI10™ grade is ideal for finishing to general machining of most workpiece materials at a wide range of speed and feed capabilities. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys with improved edge toughness and higher cutting speed/feed capability.	<table border="1"> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>M</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>K</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>S</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>H</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	P												M												K												N												S												H											
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C3-C4																																																																											
Grade	 <b>KCUI25</b>	<b>Composition:</b> An advanced PVD grade with hard AlTiN coating and fine-grain unalloyed substrate. The new and improved coating improves edge stability with wide range speed and feed capabilities. <b>Application:</b> The KCUI25™ grade is ideal for general machining of most steels, stainless steels, high-temp alloys, titanium, irons, and non-ferrous materials in a wide range of speeds and feeds with improved edge toughness for interrupted cuts and high feed rates.	<table border="1"> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>M</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>K</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>S</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	P												M												K												N												S																							
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C2, C6																																																																											
CVD-Coated Carbide Grades	 <b>KCP10B</b>	<b>Composition:</b> A specially engineered wear-resistant carbide grade with a newly designed multilayer MTCVD-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN coating with superior interlayer adhesion. <b>Application:</b> An excellent finishing to medium machining grade for a variety of workpiece materials, including most steels, ferritic, martensitic, and PH stainless steels, and cast irons. The cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. Smooth coating provides resistance to edge build-up and microchipping and produces excellent surface finishes.	<table border="1"> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>M</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>K</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>S</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	P												M												K												N												S																							
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C3, C7																																																																											
CVD-Coated Carbide Grades	 <b>KCP25B</b>	<b>Composition:</b> A tough cobalt-enriched carbide grade with a newly designed multilayer MTCVD-TiCN-Al <sub>2</sub> O <sub>3</sub> -TiOCN coating with superior interlayer adhesion. <b>Application:</b> Best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design ensures adequate deformation resistance with excellent insert edge strength. Coating layers offer good wear resistance over a wide range of machining conditions and the post-coat treatment minimizes microchipping and improves coating adhesion to substrate leading to long tool life and improved workpiece finishes.	<table border="1"> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>M</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>K</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>S</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	P												M												K												N												S																							
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Turning

Recommended Starting Speeds [SFM]

Material Group	K313	KCU10	KCU25	KCP10B	KCP25B	KCK20B	KB5625	KB1630
P	0-1	450 925 1100	360 740 880	600 1320 1475	475 925 1200	660 1450 1620	- - -	- - -
	2	450 650 800	360 520 640	600 880 1150	475 650 1000	660 970 1260	- - -	- - -
	3	450 510 800	360 410 640	550 630 850	450 510 800	600 700 920	- - -	- - -
	4	250 360 550	200 290 440	300 480 650	250 360 600	330 530 710	- - -	- - -
	5	400 660 850	320 530 680	500 720 1000	400 650 875	550 800 1100	- - -	- - -
	6	350 500 750	280 400 600	400 600 900	350 500 750	440 660 990	- - -	- - -
M	1	200 300 400	450 700 850	300 550 800	- - -	- - -	- - -	- - -
	2	150 250 350	400 650 800	300 500 800	- - -	- - -	- - -	- - -
	3	120 220 320	400 600 800	300 450 700	- - -	- - -	- - -	- - -
K	1	100 250 400	400 600 800	320 480 640	560 800 1440	455 650 1170	700 1000 1800	- - -
	2	75 225 350	300 500 700	240 400 560	400 640 1120	325 520 910	500 800 1400	- - -
	3	65 190 300	200 350 500	160 280 400	400 560 880	325 455 715	500 700 1100	- - -
N	1-2	500 1200 2000	500 1800 3200	400 1440 2560	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	4	400 900 1400	400 1200 2000	320 960 1600	- - -	- - -	- - -	- - -
	5	150 300 500	300 550 800	240 440 640	- - -	- - -	- - -	- - -
	6	120 250 500	400 700 1000	320 560 800	- - -	- - -	- - -	- - -
	S	1	25 100 250	50 180 450	25 125 200	- - -	- - -	- - -
2		25 110 250	50 195 450	25 100 250	- - -	- - -	- - -	- - -
3		25 125 250	50 225 450	50 125 250	- - -	- - -	- - -	- - -
4		25 150 250	50 225 550	25 175 350	- - -	- - -	- - -	- - -
H	1	- - -	100 150 200	- - -	- - -	- - -	150 500 760	150 400 560
	2	- - -	50 100 150	- - -	- - -	- - -	150 460 760	150 360 560
	3	- - -	- - -	- - -	- - -	- - -	150 430 760	150 330 560
	4	- - -	- - -	- - -	- - -	- - -	150 400 760	150 300 560

Recommended Starting Speeds [m/min]

Material Group	K313	KCU10	KCU25	KCP10B	KCP25B	KCK20B	KB5625	KB1630
P	0-1	140 280 335	110 225 270	185 400 450	145 290 365	200 440 490	- - -	- - -
	2	140 200 245	110 160 195	185 270 350	145 200 305	200 300 380	- - -	- - -
	3	140 155 245	110 125 195	170 190 260	140 155 245	600 200 280	- - -	- - -
	4	75 110 170	60 90 135	90 145 200	75 110 180	100 160 220	- - -	- - -
	5	120 200 260	100 160 210	150 220 305	120 200 270	165 240 330	- - -	- - -
	6	110 150 230	85 120 185	120 180 275	110 150 230	130 190 300	- - -	- - -
M	1	60 90 120	140 210 260	90 170 245	- - -	- - -	- - -	- - -
	2	45 75 110	120 200 245	90 150 245	- - -	- - -	- - -	- - -
	3	35 65 100	120 180 245	90 140 210	- - -	- - -	- - -	- - -
K	1	30 75 120	120 180 245	100 145 195	170 245 440	140 200 360	210 305 550	- - -
	2	25 70 110	90 150 210	70 120 170	120 195 340	100 160 280	150 245 430	- - -
	3	20 60 90	60 110 150	50 85 120	120 170 270	100 140 220	150 210 335	- - -
N	1-2	150 370 610	150 550 975	120 440 780	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	4	120 275 430	120 365 610	100 290 490	- - -	- - -	- - -	- - -
	5	45 90 150	90 170 245	70 135 195	- - -	- - -	- - -	- - -
	6	40 75 150	120 210 305	100 170 245	- - -	- - -	- - -	- - -
	S	1	8 30 75	15 55 135	8 40 60	- - -	- - -	- - -
2		8 35 75	15 60 135	8 30 75	- - -	- - -	- - -	- - -
3		8 40 75	15 70 135	15 40 75	- - -	- - -	- - -	- - -
4		8 45 75	15 70 170	8 50 110	- - -	- - -	- - -	- - -
H	1	- - -	30 45 60	- - -	- - -	- - -	45 150 230	45 120 170
	2	- - -	15 30 45	- - -	- - -	- - -	45 140 230	45 110 170
	3	- - -	- - -	- - -	- - -	- - -	45 130 230	45 100 170
	4	- - -	- - -	- - -	- - -	- - -	45 120 230	45 90 170





(Grooving Inserts • NG-K — continued)

Turning

● first choice  
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

catalog number	insert size	W		W tol ±		Ap max		RR		T		KCUI10	KCU25	KCP10B	KCP25B	KCK20B	K313	KC5010	KC5025	KT315	KB1630	KB5625	KD1425	
		mm	in	mm	in	mm	in	mm	in	mm	in													
NG3M325RK	3	3,25	.128	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	-	●	-	●	-	-	●	-	-	-	-	-	-
NG3M350RK	3	3,50	.138	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	-	●	-	●	-	-	●	●	-	-	-	-	-
NG3156RK	3	3,96	.156	0,03	.001	2,92	.115	0,19	.0075	3,81	.150	●	●	●	●	-	-	●	-	-	-	-	-	-
NG3M400RK	3	4,00	.157	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	●	●	●	●	-	-	●	●	-	-	-	-	-
NG3M425RK	3	4,25	.167	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	●	●	●	●	-	-	●	-	-	-	-	-	-
NG3M450RK	3	4,50	.177	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	-	●	-	●	-	-	-	-	-	-	-	-	-
NG3189RK	3	4,80	.189	0,03	.001	2,92	.115	0,57	.0225	3,81	.150	●	●	●	●	-	-	●	-	-	-	-	-	-
NG4M300RK	4	3,00	.118	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	-	●	-	●	-	-	-	-	-	-	-	-	-
NG4125RK	4	3,18	.125	0,03	.001	1,06	.040	0,19	.0075	3,81	.150	●	●	●	●	-	-	●	-	-	-	-	-	-
NG4M350RK	4	3,50	.138	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	-	●	-	●	-	-	-	-	-	-	-	-	-
NG4M400RK	4	4,00	.158	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	●	●	●	●	-	-	●	-	-	-	-	-	-
NG4M450RK	4	4,50	.177	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	-	●	-	●	-	-	-	-	-	-	-	-	-
NG4189RK	4	4,80	.189	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	●	●	●	●	-	-	●	●	-	-	-	-	-
NG4M500RK	4	5,00	.197	0,03	.001	2,92	.115	0,32	.0125	6,35	.250	●	●	●	●	-	-	-	-	-	-	-	-	-
NG4M550RK	4	5,50	.217	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	-	●	-	●	-	-	●	-	-	-	-	-	-
NG4M600RK	4	6,00	.236	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	-	●	-	●	-	-	-	-	-	-	-	-	-
NG4250RK	4	6,35	.250	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	●	●	●	●	-	-	●	-	-	-	-	-	-
left hand																								
NG2M050LK	2	0,50	.020	0,03	.001	0,64	.025	0,09	.0035	0,64	.025	●	●	-	●	-	-	●	-	-	-	-	-	-
NG2031LK	2	0,79	.031	0,03	.001	0,76	.030	0,09	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M080LK	2	0,80	.032	0,03	.001	0,76	.030	0,09	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M100LK	2	1,00	.039	0,03	.001	0,76	.030	0,08	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2047LK	2	1,19	.047	0,03	.001	0,76	.030	0,09	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M120LK	2	1,20	.047	0,03	.001	0,76	.030	0,09	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M140LK	2	1,40	.055	0,03	.001	0,76	.030	0,09	.0035	1,27	.050	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M150LK	2	1,50	.059	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	-	●	-	●	-	-	●	-	-	-	-	-	-
NG2062LK	2	1,58	.062	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	●	-	-	-	-	-
NG2M170LK	2	1,70	.067	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M175LK	2	1,75	.069	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	-	●	-	●	-	-	●	-	-	-	-	-	-
NG2M195LK	2	1,95	.077	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M200LK	2	2,00	.079	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	●	-	-	-	-	-
NG2M220LK	2	2,20	.087	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	-	●	-	●	-	-	-	-	-	-	-	-	-
NG2M225LK	2	2,25	.088	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2094LK	2	2,39	.094	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M250LK	2	2,50	.098	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	-	●	-	●	-	-	●	-	-	-	-	-	-
NG2M275LK	2	2,75	.108	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	-	●	-	-	●	-	-	-	-	-	-
NG2M300LK	2	3,00	.118	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2125LK	2	3,18	.125	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	●	●	●	●	-	-	●	-	-	-	-	-	-
NG2M325LK	2	3,25	.128	0,03	.001	1,09	.043	0,19	.0075	2,79	.110	-	●	-	●	-	-	-	-	-	-	-	-	-
NG3M100LK	3	1,00	.039	0,03	.001	0,76	.030	0,20	.0080	1,91	.075	-	●	-	●	-	-	●	-	-	-	-	-	-

(continued)

(Grooving Inserts • NG-K — continued)

● first choice  
○ alternate choice

Turning

P	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

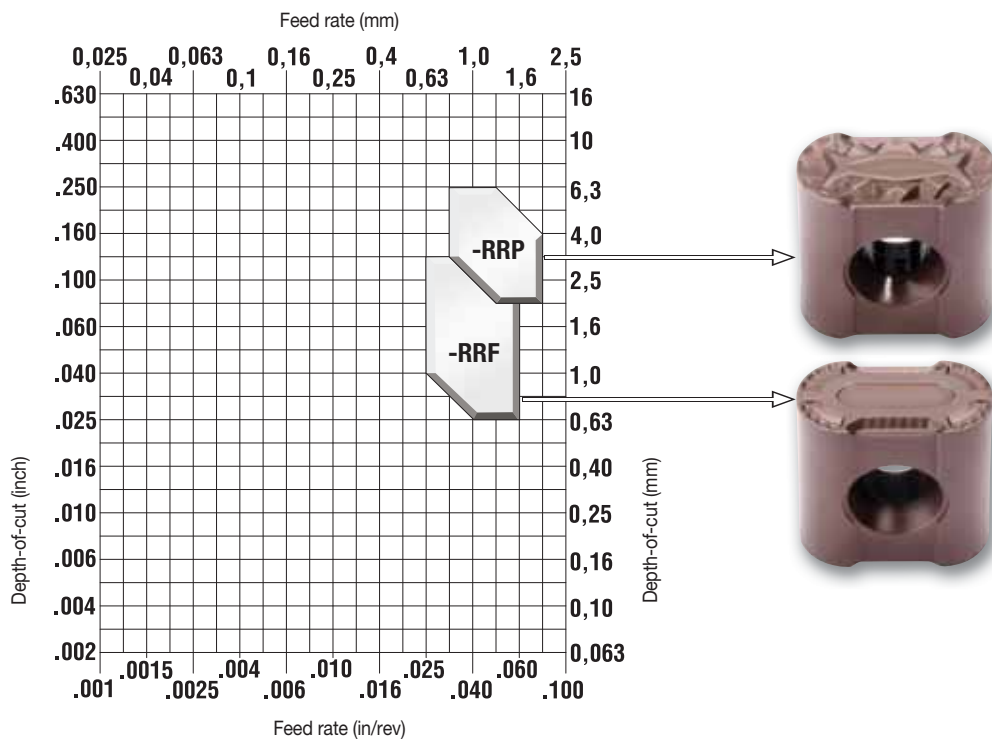
catalog number	insert size	W		W tol ±		Ap max		RR		T		KCU10	KCU25	KCP10B	KCP25B	KCK20B	K313	KC5010	KC5025	KT315	KB1630	KB5625	KD1425	
		mm	in	mm	in	mm	in	mm	in	mm	in													
NG3047LK	3	1,19	.047	0,03	.001	0,76	.030	0,19	.0075	1,90	.075	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M120LK	3	1,20	.047	0,03	.001	0,76	.030	0,19	.0075	1,91	.075	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M150LK	3	1,50	.059	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3062LK	3	1,58	.062	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	●	○	○	○	○	○	○	○	○	○	○	○	○
NG3M175LK	3	1,75	.069	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3072LK	3	1,83	.072	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3078LK	3	1,98	.078	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M200LK	3	2,00	.079	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3M220LK	3	2,20	.087	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3M225LK	3	2,25	.089	0,03	.001	1,02	.040	0,19	.0075	2,39	.094	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3094LK	3	2,39	.094	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M250LK	3	2,50	.098	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3M275LK	3	2,75	.108	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M300LK	3	3,00	.118	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3125LK	3	3,18	.125	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M320LK	3	3,20	.126	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3M325LK	3	3,25	.128	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3M350LK	3	3,50	.138	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3156LK	3	3,96	.156	0,03	.001	2,92	.115	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M400LK	3	4,00	.158	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M425LK	3	4,25	.167	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG3M450LK	3	4,50	.177	0,03	.001	2,92	.115	0,32	.0125	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG3189LK	3	4,80	.189	0,03	.001	2,92	.115	0,57	.0225	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG4M300LK	4	3,00	.118	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4125LK	4	3,18	.125	0,03	.001	1,06	.400	0,19	.0075	3,81	.150	●	●	●	○	○	○	○	○	○	○	○	○	○
NG4M320LK	4	3,20	.126	0,03	.001	1,02	.040	0,19	.0075	3,81	.150	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4M350LK	4	3,50	.138	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4M400LK	4	4,00	.158	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	●	●	●	○	○	○	○	○	○	○	○	○	○
NG4M450LK	4	4,50	.177	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4189LK	4	4,80	.189	0,03	.001	2,92	.115	0,57	.0225	6,35	.250	●	●	●	○	○	○	○	○	○	○	○	○	○
NG4M500LK	4	5,00	.197	0,03	.001	2,92	.115	0,32	.0125	6,35	.250	●	●	●	○	○	○	○	○	○	○	○	○	○
NG4M550LK	4	5,50	.217	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4M600LK	4	6,00	.236	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	○	○	○	○	○	○	○	○	○	○	○	○	○
NG4250LK	4	6,35	.250	0,03	.001	3,81	.150	0,57	.0225	6,35	.250	●	●	●	○	○	○	○	○	○	○	○	○	○

# ➤ LNUX

## Full-Radius Design

### Our well-performed chipbreaking geometry RRF and RRP

- One insert can be applied in profiling and facing.
- Chip control even at smaller DOC will be improved!

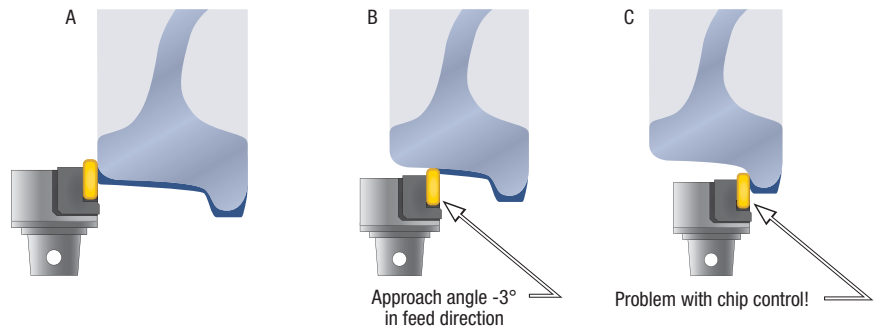


## Application Recommendation

A: At the beginning of the process, the DOC is higher because most of the bigger bur needs to be removed.

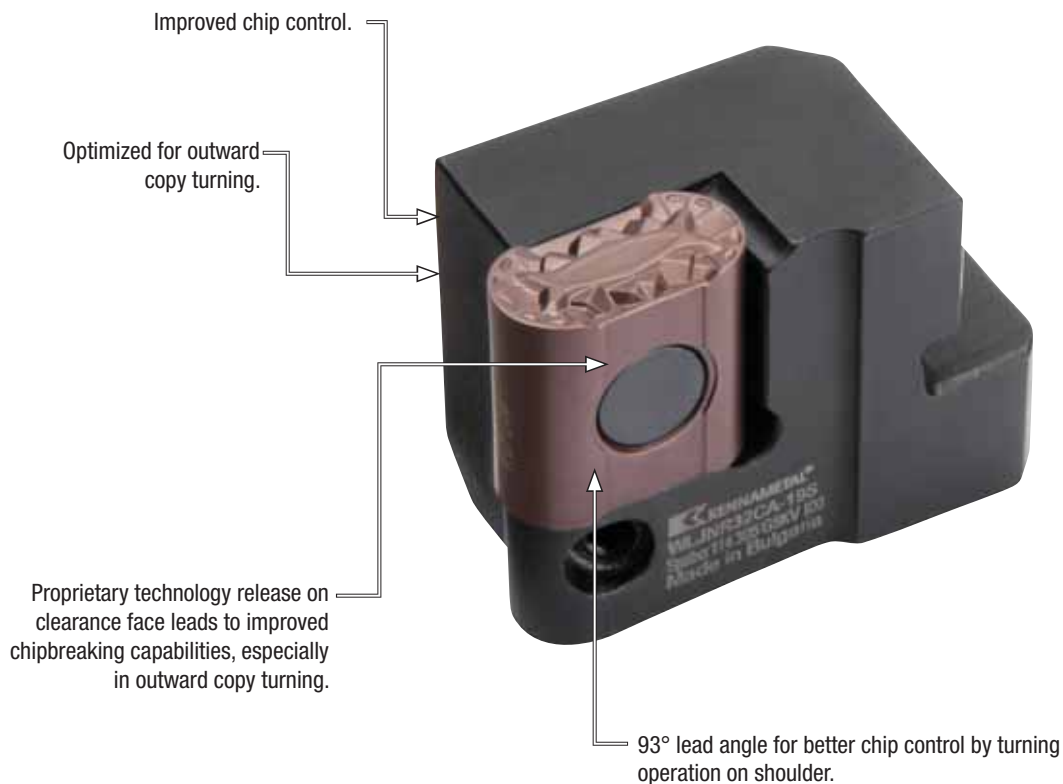
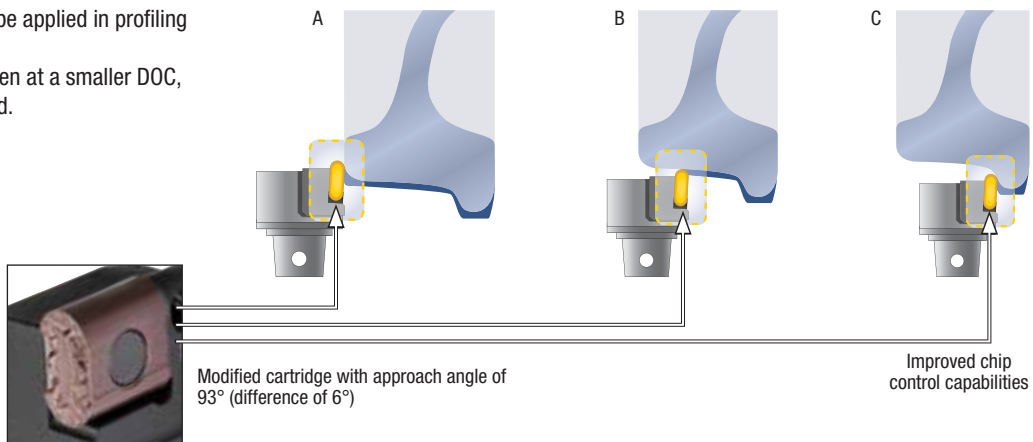
B: The DOC is smaller, but sometimes it has "hot spots" or brake spots.

C: Most critical area in regards to chip control because the thickness of the chip is quite thin and very difficult to manage.



A: One insert can be applied in profiling and facing.

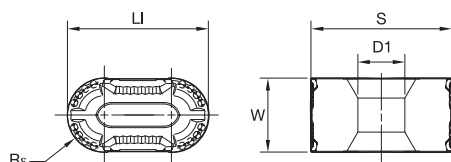
C: Chip control, even at a smaller DOC, will be improved.





- The well performed RRF and RRP chipbreaker geometry with a full-radius design offers better chip control even at smaller DOC.

Turning

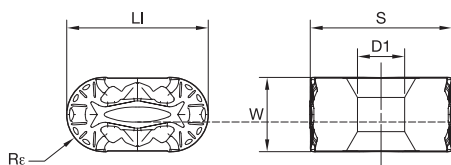


- first choice
- alternate choice

P	●	●
M	○	○
K	○	○
N	○	○
S	○	○
H	○	○

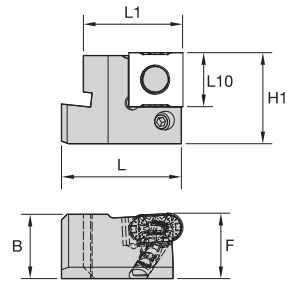
## ■ LNUX-RRF Full-Radius

ISO catalog number	ANSI catalog number	W		LI		S		Re		D1		KCP10B	KCP25B
		mm	in	mm	in	mm	in	mm	in	mm	in		
LNUX191950RRF	LNUX191950RRF	10,00	.394	19,05	.750	19,05	3/4	5,00	.196	6,35	.250	●	●



## ■ LNUX-RRP Full-Radius

ISO catalog number	ANSI catalog number	W		LI		S		Re		D1		KCP10B	KCP25B
		mm	in	mm	in	mm	in	mm	in	mm	in		
LNUX191950RRP	LNUX191950RRP	10,00	.394	19,05	.750	19,05	3/4	5,00	.197	6,35	.250	●	●
LNUX301960RRP	LNUX301960RRP	12,00	.472	30,00	1.181	19,05	3/4	6,00	.236	6,35	.250	●	●



■ Cartridge WLJN

order number	catalog number	H1		B		F		L10		L1		L		gage insert
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
6049016	WLJNL32CA19S	32,00	1.260	22,60	.890	23,00	.906	19,050	.750	35,00	1.38	42,70	1.681	LNUX191950RRP
6049018	WLJNL32CA30S	32,00	1.260	22,60	.890	23,50	.925	30,000	1.181	35,00	1.38	45,00	1.772	LNUX301960RRP
6049015	WLJNR32CA19S	32,00	1.260	22,60	.890	23,00	.906	19,050	.750	35,00	1.38	42,70	1.681	LNUX191950RRP
6049017	WLJNR32CA30S	32,00	1.260	22,60	.890	23,50	.925	—	—	35,00	1.38	45,00	1.772	LNUX301960RRP

■ Spare Parts

catalog number	clamp stud	clamp screw	hex wrench
WLJNL32CA19S	114.305	121.616	170.003
WLJNL32CA30S	114.305	121.616	170.003
WLJNR32CA19S	114.305	121.616	170.003
WLJNR32CA30S	114.305	121.616	170.003

# ➤ Advanced Materials for Cast Iron Machining



## Primary Application

Kennametal's advanced materials, utilizing Beyond™ technology, offer greater wear resistance and toughness, depending on the job.

KYK ceramic inserts are the first choice for high-speed, continuous, and lightly interrupted turning applications in cast iron materials. Benefits include improved fracture toughness, better wear resistance, and an extended application range. Combining KYK10™ and CVD-coated KYK25™ with our other ceramic grades for cast iron, Kennametal provides a complete high-performance ceramic portfolio that can reduce machining cycle times and lower manufacturing costs.

The Kennametal SiAlON grades, such as KYK10, can be applied at high cutting speeds up to the PcBN range and at varying cast iron material machinability. Combining SiAlON material science, CVD coating technology, and PcBN grades for cast iron machining, Kennametal provides a complete high-performance portfolio that can reduce cycle time and lower machining costs.

## Features and Benefits

### Solid PcBN Inserts

#### KBK45™

- Designed for elevated abrasion-resistance.
- Go-to grade for cost-per-part manufacturing.
- For roughing and finishing.
- Gold color for improved usage monitoring.

#### KB1340™

- Designed for elevated abrasion-resistance.
- High-temperature resistance.
- For roughing and finishing.

### Tipped PcBN Inserts

#### KB5630™

- Laminated material for fine finishing.
- Excellent edge stability.
- PVD coating for reliable tool life, even at varying material machinability.

#### KB1345™

- Abrasion-resistant high CBN content tipped grade.
- Very fine PcBN structure suitable for fine finishing applications.



**KBK45™ provides the best cost-per-part in cast irons.**

**KB5630™ has greater abrasion resistance for chilled and hardened irons.**



## Ceramic Inserts

### KYK10™

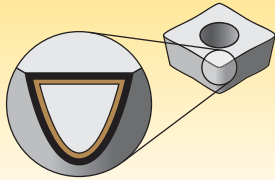
- Improved wear resistance and toughness with 20% longer tool life than current KY1310™.
- Best suited for continuous turning of cast iron materials and in lightly interrupted cuts.

### KYK25™

- 12-micron thick coating provides excellent wear resistance, and pre-coat treatment allows for very consistent tool life and performance in cast iron applications.
- Up to 30% longer tool life vs. competitors' CVD-coated ceramic grades.

### KY3500™

- Excellent for roughing to finishing operations in wet or dry cuts with speeds up to 320 SFM (1000 m/min).
- Performs well in difficult interrupted cuts in ductile or malleable cast iron (<70 KSI tensile strength) at speeds of 85–160 SFM (250–450 m/min).



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

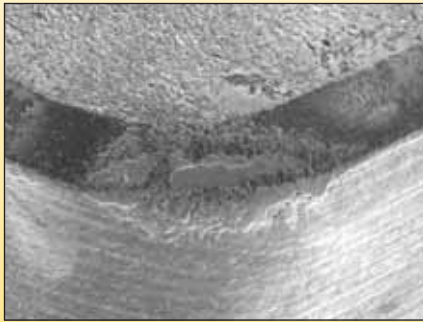
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

wear resistance ← → toughness

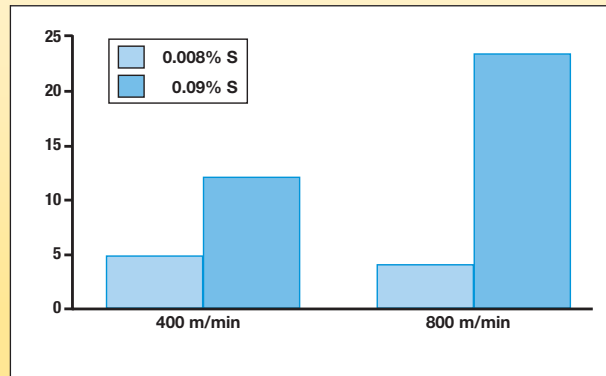
Coating		Grade Description		05	10	15	20	25	30	35	40	45
Solid PcbN Grades	 KBK45	<b>Composition:</b> A PVD TiN coated high CBN content, solid PcbN insert having multiple cutting edges. <b>Application:</b> Applied in roughing to finishing of gray and hard cast irons. Also used for finishing chilled cast iron and fully pearlitic cast iron. The solid PcbN insert offers better security and shock resistance compared to tipped PcbN inserts, while also enabling deeper depth-of-cut capabilities.										
	<b>beyond</b>											
Solid PcbN Grades	 KB1340	<b>Composition:</b> A high CBN content, solid PcbN insert having multiple cutting edges. <b>Application:</b> Applied in roughing to finishing of fully pearlitic gray cast iron, chilled irons, high-chrome alloyed steels, and heavy cuts in hardened steels (>45 HRC). The solid PcbN insert offers better security and shock resistance compared to tipped PcbN inserts, while also enabling deeper depth-of-cut capabilities.										
	<b>beyond</b>											
Tipped PcbN Grades	 KB1345	<b>Composition:</b> A high CBN content, PcbN tip brazed onto a carbide insert. <b>Application:</b> Applied in roughing to finishing of fully pearlitic gray cast iron, chilled irons, high-chrome alloyed steels, sintered powdered metals, and heavy cuts in hardened steels (>45 HRC). Also used for finishing chilled cast iron and fully pearlitic cast iron. The tipped PcbN insert is available in a wide range of insert styles including positive rake geometries that are ideally suited for boring applications.										
	<b>beyond</b>											
Tipped PcbN Grades	 KB5630	<b>Composition:</b> A high content PcbN with a PVD AlTiN coating for added wear resistance. <b>Application:</b> Designed for roughing to finishing of hardened steels (>45 HRC), abrasive workpiece materials such as sintered valve seat materials, powder metallurgy steels, and hard high-alloy cast irons. The PVD coating provides resistance to crater wear and increased resistance to chipping. A wide range of styles are available, including Screw-On geometries that are ideal for boring applications.										
	<b>beyond</b>											
Ceramic Grades	 KYK10	<b>Composition:</b> An advanced SiAlON ceramic grade. <b>Application:</b> Provides maximum wear resistance. Used for high-speed continuous turning of gray cast iron, including through scale. To be used for varying cast iron machinability.										
	<b>beyond</b>											
Ceramic Grades	 KYK25 C3	<b>Composition:</b> Pure silicon nitride ceramic with an alumina CVD coating. <b>Application:</b> Excellent combination of toughness and edge wear resistance. Used for general purpose machining of gray, ductile, or nodular cast irons. To be used for varying cast iron machinability.										
	<b>beyond</b>											
Ceramic Grades	 KY3500 C2	<b>Composition:</b> Pure silicon nitride grade. <b>Application:</b> Maximum toughness. Used at high feed rates for rough machining of gray cast iron, including machining through interruptions.										

### ■ Machinability of Cast Iron

- Unaged casting is difficult to machine and leads to shorter tool life.
- Low sulfur content leads to shorter tool life.
- High titanium content decreases the tool life significantly.
- Increased ferrite content leads to high chemical wear and a substantially shorter tool life.
- Compacted graphite cast iron shows high chemical wear.



Proper application of KB1340™ — formation of protective layer; tool life should exceed 70 km sliding distance.

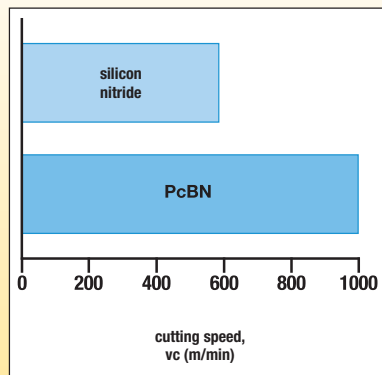


Comparison of the life of PcBN cutting tools in machining two different gray cast irons, primarily differing in sulfur content.

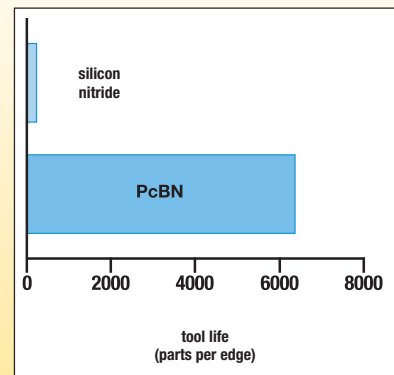
### ■ Gray Cast Iron Brake Disk Machining • Ceramic vs. PcBN



(a)



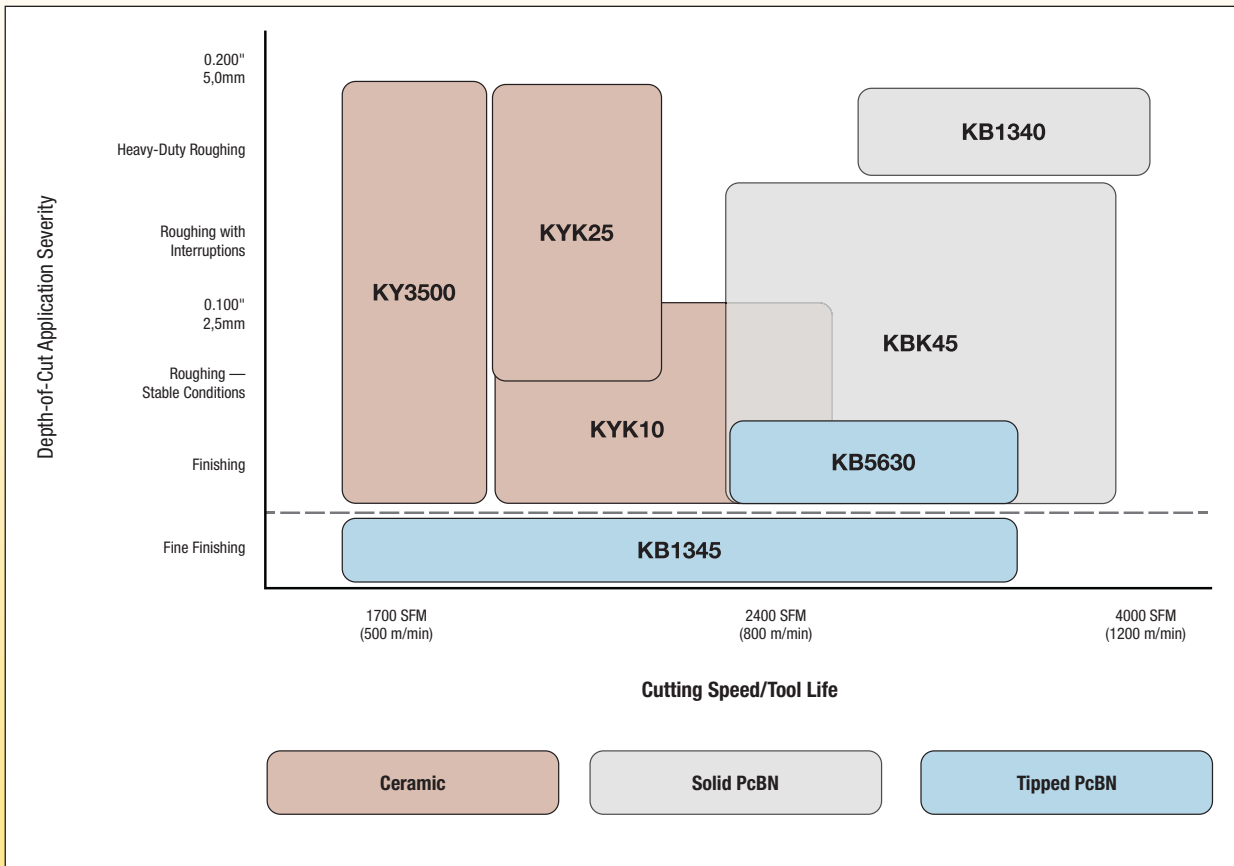
(b)



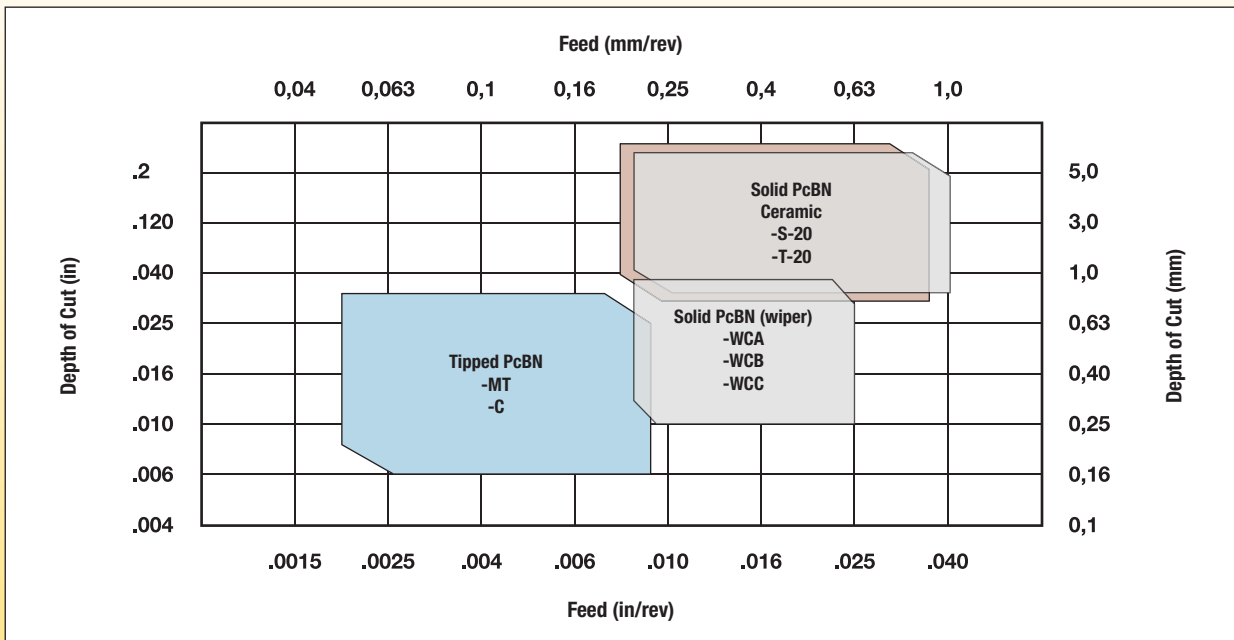
(c)

PcBN increases productivity when machining gray iron brake disks (a) in terms of cutting speed (b) and tool life (c) compared to silicon nitride ceramic.

■ Select the Cutting Material



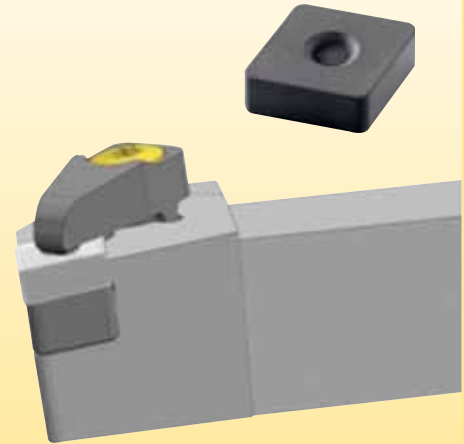
■ Depth of Cut



## ■ Dimple Clamps for Added Stability

### Typical Application

Continuous cost pressures force manufacturers of gray cast iron brake disks to look for cost-cutting solutions. CBN inserts deliver high productivity and long tool life. Kennametal has developed the solid, high-content grade KB1340™, which provides superior performance when machining gray cast iron components, such as brake disks or fly wheels. To ensure secure seating in the toolholder, the inserts are available with dimple-design clamping. The clamps fit Ceramtec holders, which makes the conversion to Kennametal tooling easier.



### Higher Productivity and Profitability

- Ensures tight and rigid clamping.
- Dimpled insert with special clamping provides increased stability in the pocket.
- Ideal for use in heavy-duty machining applications.
- Cladded clamps for improved resistance against chip wash are available upon request.
- The shallow dimple design enables the use of less expensive 3/16" (4,76mm) inserts.
- Round dimple design works with custom tooling where clamping direction must be offset due to space limitations.

## ■ Clamp Selection Chart

inserts		clamp	
ANSI Catalog Number	ISO Catalog Number	Catalog Number	Order Number
CNGX433S0415	CNGX120412S01015	551.718-100° Corner	3968904
CNGX433S0415FW	CNGX120412S01015FW	551.718-100° Corner	3968904
CNGX434S0820	CNGX120416S02020	551.718-100° Corner	3968904
CNGF432	CNGF120408	551.718-100° Corner	3968904
DNGX434S0820	DNGX150416S02020	551.720	4094234
SNGX434S0820	SNGX120416S02020	551.718	3968904
SNGX534S0820	SNGX150416S02020	551.718	3968904
VNGX333S0820	VNGX160412S02020	551.721	4094236
TNGX333EFW	TNGX160412EFW	551.733	4094235

## ■ Wipers for Cast Iron Machining

### WCA

Wiper for cast iron machining for a feed rate up to  $f = 0.010/\text{rev}$  (0,25mm/rev).

### WCB

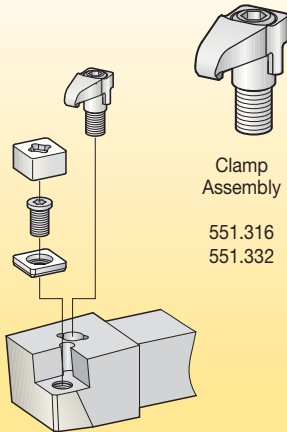
Wiper for cast iron machining for a feed rate up to  $f = 0.018/\text{rev}$  (0,45mm/rev).

### WCC

Wiper for cast iron machining for a feed rate up to  $f = 0.025/\text{rev}$  (0,65mm/rev).

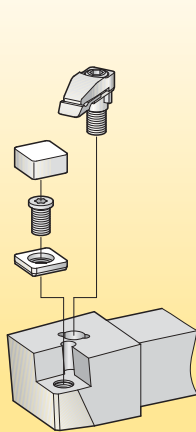
■ Spare Parts • -MX, -MN, -MF, and -MA Clamping Version

**Clamping Mode  
MX**



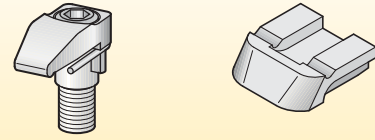
Clamp Assembly  
551.316  
551.332

**Clamping Mode  
MN**



Clamp Assembly  
551.251  
551.255

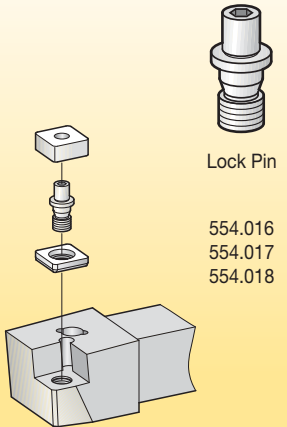
Individual  
Clamping Elements



Clamping Element  
551.333  
551.317

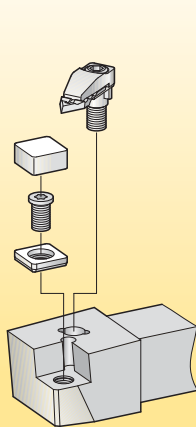
Pressure Plate  
557.111  
557.111

**Clamping Mode  
MA**



Lock Pin  
554.016  
554.017  
554.018

**Clamping Mode  
MF**



Clamp Assembly  
551.252  
551.253  
551.254  
551.256  
551.257  
551.258  
551.260  
551.261

Individual  
Clamping Elements



Clamping Element  
551.317  
551.317  
551.317  
551.317  
551.317  
551.317  
551.317  
551.317

Chipbreaker  
557.125  
557.126  
557.127  
557.120  
557.121  
557.122  
557.123  
557.124

■ Example of components



Brake Disc



Brake Drum



Pulley



Clutch Plate

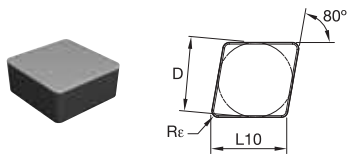


Flywheel

P			
M			
K	●	●	
N			
S			○
H			○

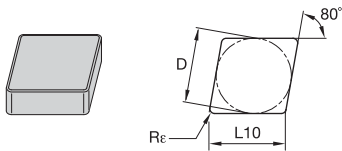


● first choice  
○ alternate choice



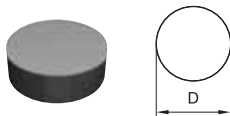
■ CNGN

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNGN090408T02020	CNGN332T0820	9,53	3/8	9,67	.381	0,8	1/32	●	-
CNGN090412S02020	CNGN333S0820	9,53	3/8	9,67	.381	1,2	3/64	●	-
CNGN120408T02020	CNGN432T0820	12,70	1/2	12,90	.508	0,8	1/32	●	-
CNGN120412S02020	CNGN433S0820	12,70	1/2	12,90	.508	1,2	3/64	●	-
CNGN120416S02020	CNGN434S0820	12,70	1/2	12,90	.508	1,6	1/16	●	-



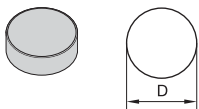
■ CNMN

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNMN090308S02020	CNM322S0820	9,53	3/8	9,67	.381	0,8	1/32	-	●
CNMN120408S02020	CNM432S0820	12,70	1/2	12,90	.508	0,8	1/32	-	●
CNMN120412S02020	CNM433S0820	12,70	1/2	12,90	.508	1,2	3/64	-	●



■ RNGN

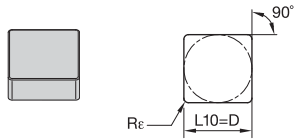
ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
RNGN090400S02020	RNGN33S0820	9,53	3/8	-	-	-	-	●	-
RNGN120400S02020	RNGN43S0820	12,70	1/2	-	-	-	-	●	-



■ RNMN

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
RNMN090300S02020	RNM32S0820	9,53	3/8	-	-	-	-	-	●
RNMN120300S02020	RNM42S0820	12,70	1/2	-	-	-	-	-	●
RNMN120400S02020	RNM43S0820	12,70	1/2	-	-	-	-	-	●

Turning

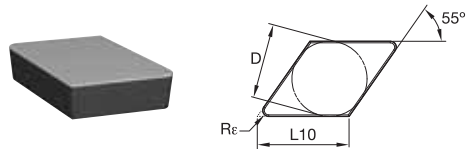


● first choice  
○ alternate choice

P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

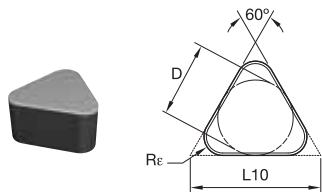
■ SNMN

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNMN090308S02020	SNM322S0820	9,53	3/8	9,53	.375	0,8	1/32	-	●
SNMN090316S02020	SNM324S0820	9,53	3/8	9,53	.375	1,6	1/16	-	●
SNMN120308S02020	SNM422S0820	12,70	1/2	12,70	.500	0,8	1/32	-	●
SNMN120312S02020	SNM423S0820	12,70	1/2	12,70	.500	1,2	3/64	-	●
SNMN120316S02020	SNM424S0820	12,70	1/2	12,70	.500	1,6	1/16	-	●
SNMN120416T02020	SNM434S0820	12,70	1/2	12,70	.500	1,6	1/16	-	●



■ DNGN

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
DNGN120408S02020	DNGN120408S02020	10,00	.394	12,21	.481	0,8	1/32	●	-
DNGN120412S02020	DNGN120412S02020	10,00	.394	12,21	.481	1,2	3/64	●	-



■ TNGN

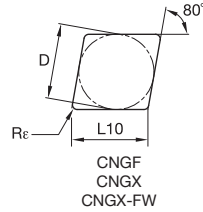
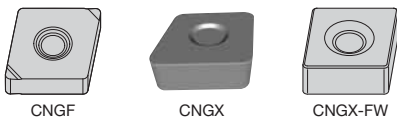
ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
TNGN110416S02020	TNGN234S0820	6,35	1/4	11,00	.433	1,6	1/16	●	-
TNGN160416S02020	TNGN334S0820	9,52	3/8	16,50	.650	1,6	1/16	●	-





P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

- first choice
- alternate choice



■ CNGF

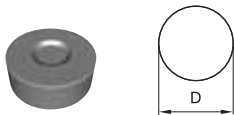
ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNGF120408	CNGF432	12,70	1/2	12,90	.508	0,8	1/32	-	●

■ CNGX

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNGX120408T02020	CNGX432T0820	12,70	1/2	12,90	.508	0,8	1/32	●	-
CNGX120412S01015	CNGX433S0415	12,70	1/2	12,90	.508	1,2	3/64	-	●
CNGX120412S02020	CNGX433S0820	12,70	1/2	12,90	.508	1,2	3/64	●	-
CNGX120416S02020	CNGX434S0820	12,70	1/2	12,90	.508	1,6	1/16	●	●

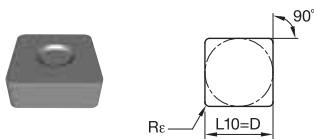
■ CNGX-FW

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNGX120412S01015FW	CNGX433S0415FW	12,70	1/2	12,90	.508	1,2	3/64	-	●



■ RNGX

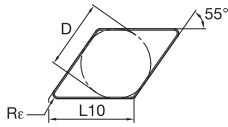
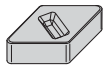
ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
RNGX120400S02020	RNGX43S0820	12,70	1/2	-	-	-	-	●	-



■ SNGX

ISO catalog number	ANSI catalog number	D		L10		Re		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNGX120408T02020	SNGX432T0820	12,70	1/2	12,70	.500	0,8	1/32	●	-
SNGX120412S02020	SNGX433S0820	12,70	1/2	12,70	.500	1,2	3/64	●	-
SNGX120416S02020	SNGX434S0820	12,70	1/2	12,70	.500	1,6	1/16	●	●

Turning

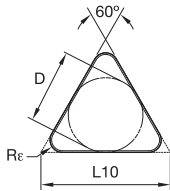
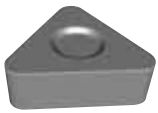


● first choice  
○ alternate choice

P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

■ DNGX

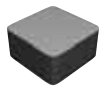
ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
DNGX150416S02020	DNGX434S0820	12,70	1/2	15,50	.610	1,6	1/16	-	●



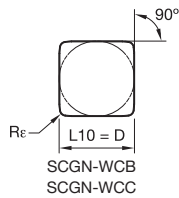
■ TNGX

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
TNGX160416S02020	TNGX334S0820	9,53	3/8	16,50	.650	1,6	1/16	●	-

Kendex Negative Wiper Inserts



SCGN-WCB  
SCGN-WCC



● first choice  
○ alternate choice

P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

■ SCGN-WCB

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
SCGN090408S01015WCB	SCGN332S0415WCB	9,53	3/8	9,52	.375	0,8	1/32	●	-

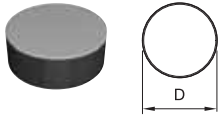
■ SCGN-WCC

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
SCGN090408S01015WCC	SCGN332S0415WCC	9,53	3/8	9,52	.375	0,8	1/32	●	-

P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	●

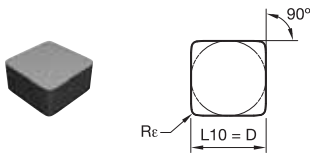


● first choice  
○ alternate choice



**RCGN**

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
RCGN090400T01015	RCGN33T0415	9,53	3/8	—	—	—	—	●	—



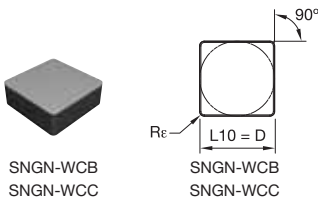
**SNGN**

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNGN120408T02020	SNGN432T0820	12,70	1/2	12,70	.500	0,8	1/32	●	—
SNGN120412S02020	SNGN433S0820	12,70	1/2	12,70	.500	1,2	3/64	●	—
SNGN120416S02020	SNGN434S0820	12,70	1/2	12,70	.500	1,6	1/16	●	—

**Kendex Positive Wiper Inserts**

P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	●

● first choice  
○ alternate choice



SNGN-WCB  
SNGN-WCC

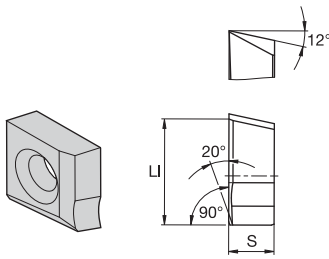
**SNGN-WCB**

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNGN090408S01015WCB	SNGN332S0415WCB	9,53	3/8	9,52	.375	0,8	1/32	●	—

**SNGN-WCC**

ISO catalog number	ANSI catalog number	D		L10		Rε		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNGN090408S01015WCC	SNGN332S0415WCC	9,53	3/8	9,53	.375	0,8	1/32	●	—

Turning



- first choice
- alternate choice

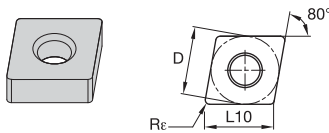
P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

■ **SPHX-W**

ISO catalog number	ANSI catalog number	D		L10		R <sub>ε</sub>		KBK45	KB1340
		mm	in	mm	in	mm	in		
SPHX1205PCERGNT1WB	SPHX1205PCERGNT1WB	12,00	0.4724	12,70	.500	—	—	—	●
SPHX1205ZCERGNT1W	SPHX1205ZCERGNT1W	12,00	0.4724	10,00	.394	—	—	—	●

**Kenloc™ Inserts**

- Beyond Drive™ grades included.

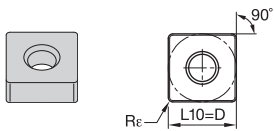


- first choice
- alternate choice

P	■	■	■
M	■	■	■
K	■	●	●
N	■	■	■
S	■	○	○
H	■	○	●

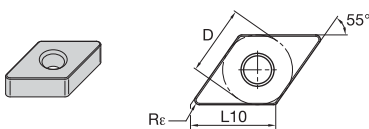
■ **CNMA**

ISO catalog number	ANSI catalog number	D		L10		R <sub>ε</sub>		KBK45	KB1340
		mm	in	mm	in	mm	in		
CNMA120408S02020	CNMA432S0820	12,70	1/2	12,90	.508	0,8	1/32	—	●
CNMA120412S02020	CNMA433S0820	12,70	1/2	12,90	.508	1,2	3/64	—	●



■ **SNMA**

ISO catalog number	ANSI catalog number	D		L10		R <sub>ε</sub>		KBK45	KB1340
		mm	in	mm	in	mm	in		
SNMA120412S02020	SNMA433S0820	12,70	1/2	12,70	.500	1,2	3/64	—	●



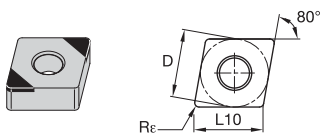
■ **DNMA**

ISO catalog number	ANSI catalog number	D		L10		R <sub>ε</sub>		KBK45	KB1340
		mm	in	mm	in	mm	in		
DNMA110408S02020	DNMA332S0820	9,53	3/8	11,63	.458	0,8	1/32	—	●
DNMA110412S02020	DNMA333S0820	9,53	3/8	11,63	.458	1,2	3/64	—	●

P			
M			
K	●	●	
N			
S	○	●	
H	●	●	



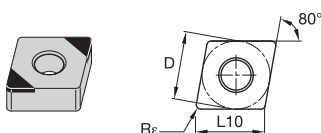
● first choice  
○ alternate choice



### ■ CNGA-FW/MW MT

ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
CNGA120404S01025FWMT	CNGA431S0425FWMT	12,70	1/2	12,90	.508	0,4	1/64	-	●
CNGA120408S01025FWMT	CNGA432S0425FWMT	12,70	1/2	12,90	.508	0,8	1/32	-	●

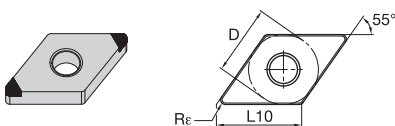
- Medium geometry utilized in high-temp and stainless applications.



### ■ CNGA-MT

ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
CNGA120404S01025MT	CNGA431S0425MT	12,70	1/2	12,90	.508	0,4	1/64	-	●
CNGA120408S01020MT	CNGA432S0420MT	12,70	1/2	12,90	.508	0,8	1/32	●	-
CNGA120408S01025MT	CNGA432S0425MT	12,70	1/2	12,90	.508	0,8	1/32	-	●
CNGA120408S02020MT	CNGA432S0820MT	12,70	1/2	12,90	.508	0,8	1/32	●	-
CNGA120412S01020MT	CNGA433S0420MT	12,70	1/2	12,90	.508	1,2	3/64	-	●
CNGA120412S01025MT	CNGA433S0425MT	12,70	1/2	12,90	.508	1,2	3/64	-	●

- Medium geometry utilized in high-temp and stainless applications.

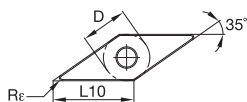
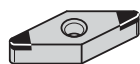


### ■ DNGA-MT

ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
DNGA150404S01025MT	DNGA431S0425MT	12,70	1/2	15,50	.610	0,4	1/64	-	●
DNGA150408S01020MT	DNGA432S0420MT	12,70	1/2	15,50	.610	0,8	1/32	●	-
DNGA150408S01025MT	DNGA432S0425MT	12,70	1/2	15,50	.610	0,8	1/32	-	●

Turning

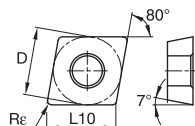
- Medium geometry utilized in high-temp and stainless applications.



### VNGA-MT

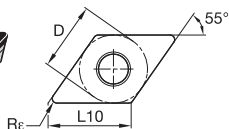
ISO catalog number	ANSI catalog number	D		L10		Rε		KB1345	KB5630
		mm	in	mm	in	mm	in		
VNGA160404S01025MT	VNGA331S0425MT	9,53	3/8	16,61	.654	0,4	1/64	-	•
VNGA160408S01025MT	VNGA332S0425MT	9,53	3/8	16,61	.654	0,8	1/32	-	•

- Medium geometry utilized in high-temp and stainless applications.



### CCGW-MT

ISO catalog number	ANSI catalog number	D		L10		Rε		KB1345	KB5630
		mm	in	mm	in	mm	in		
CCGW09T304S01015MT	CCGW3251S0415MT	9,53	3/8	9,67	.381	0,4	1/64	-	•
CCGW09T308S01015MT	CCGW3252S0415MT	9,53	3/8	9,67	.381	0,8	1/32	-	•



### DCGW-C

ISO catalog number	ANSI catalog number	D		L10		Rε		KB1345	KB5630
		mm	in	mm	in	mm	in		
DCGW070202S01015C	DCGW21505S0415C	6,35	1/4	7,75	.305	0,2	.008	-	•
DCGW070204S01015C	DCGW2151S0415C	6,35	1/4	7,75	.305	0,4	1/64	-	•

P	•	•
M	•	•
K	•	•
N	•	•
S	○	•
H	•	•

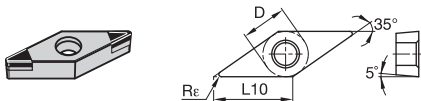
- first choice
- alternate choice

- Medium geometry utilized in high-temp and stainless applications.

P		
M		
K	•	•
N		
S	○	•
H	•	•

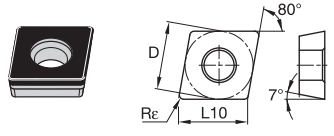


- first choice
- alternate choice



■ VBGW-MT

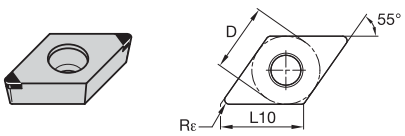
ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
VBGW160404S01015MT	VBGW331S0415MT	9,53	3/8	16,61	.654	0,4	1/64	-	•
VBGW160408S01015MT	VBGW332S0415MT	9,53	3/8	16,61	.654	0,8	1/32	-	•



■ CCGW-C

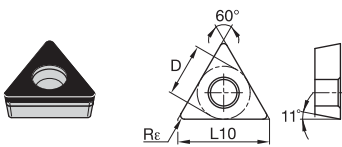
ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
CCGW060202S01015C	CCGW21505S0415C	6,35	1/4	6,45	.254	0,2	.008	-	•
CCGW060204S01015C	CCGW2151S0415C	6,35	1/4	6,45	.254	0,4	1/64	-	•
CCGW09T308EC	CCGW3252EC	9,53	3/8	9,67	.381	0,8	1/32	•	-

- Medium geometry utilized in high-temp and stainless applications.



■ DCGW-MT

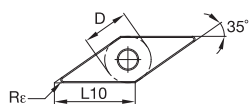
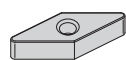
ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
DCGW11T304S01015MT	DCGW3251S0415MT	9,53	3/8	11,63	.458	0,4	1/64	•	•
DCGW11T308S01015MT	DCGW3252S0415MT	9,53	3/8	11,63	.458	0,8	1/32	•	•



■ TPGW-C

ISO catalog number	ANSI catalog number	D		L10		Re		KB1345	KB5630
		mm	in	mm	in	mm	in		
TPGW110204EC	TPGW2151EC	6,35	1/4	11,00	.433	0,4	1/64	•	-
TPGW110204S01015C	TPGW2151S0415C	6,35	1/4	11,00	.433	0,4	1/64	-	•
TPGW110208S01015C	TPGW2152S0415C	6,35	1/4	11,00	.433	0,8	1/32	-	•

Turning

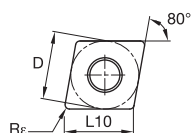
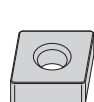


- first choice
- alternate choice

P			
M			
K	●	●	●
N			
S			
H			

■ VNGA

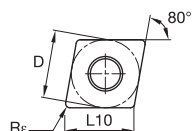
ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
VNGA160408T02020	VNGA332T0820	9,53	3/8	16,61	.654	0,8	1/32	-	-	●
VNGA220408T02020	VNGA432T0820	12,70	1/2	22,14	.872	0,8	1/32	●	-	-



■ CNGA

ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
CNGA120408T02020	CNGA432T0820	12,70	1/2	12,90	.508	0,8	1/32	●	●	●
CNGA120412T02020	CNGA433T0820	12,70	1/2	12,90	.508	1,2	3/64	●	●	●
CNGA120416T02020	CNGA434T0820	12,70	1/2	12,90	.508	1,6	1/16	●	●	●
CNGA160612T02020	CNGA543T0820	15,88	5/8	16,12	.635	1,2	3/64	●	-	●
CNGA160616T02020	CNGA544T0820	15,88	5/8	16,12	.635	1,6	1/16	-	-	●
CNGA190612T02020	CNGA643T0820	19,05	3/4	19,34	.762	1,2	3/64	●	-	●
CNGA190616T02020	CNGA644T0820	19,05	3/4	19,34	.762	1,6	1/16	●	-	●

- Finishing wiper when surface finish is of highest importance.



■ CNGA-FW

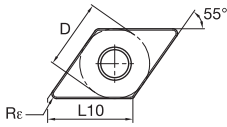
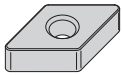
ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
CNGA120408T01020FW	CNGA432T0420FW	12,70	1/2	12,90	.508	0,8	1/32	●	-	●
CNGA120412T01020FW	CNGA433T0420FW	12,70	1/2	12,90	.508	1,2	3/64	●	●	●
CNGA120412T02020FW	CNGA433T0820FW	12,70	1/2	12,90	.508	1,2	3/64	-	●	-
CNGA120416T01020FW	CNGA434T0420FW	12,70	1/2	12,90	.508	1,6	1/16	-	-	●



P	■	■	■
M	■	■	■
K	●	●	●
N	■	■	■
S	■	■	■
H	■	■	■

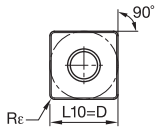


- first choice
- alternate choice



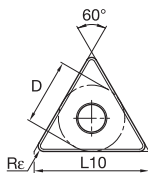
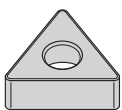
■ DNGA

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
DNGA150408T02020	DNGA432T0820	12,70	1/2	15,50	.610	0,8	1/32	●	●	●
DNGA150412T02020	DNGA433T0820	12,70	1/2	15,50	.610	1,2	3/64	●	●	●
DNGA150416T02020	DNGA434T0820	12,70	1/2	15,50	.610	1,6	1/16	●	●	●
DNGA150608T02020	DNGA442T0820	12,70	1/2	15,50	.610	0,8	1/32	-	-	●
DNGA150612T02020	DNGA443T0820	12,70	1/2	15,50	.610	1,2	3/64	-	-	●
DNGA150616T02020	DNGA444T0820	12,70	1/2	15,50	.610	1,6	1/16	-	-	●



■ SNGA

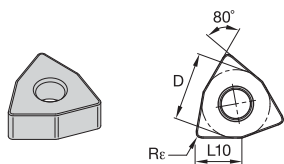
ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SNGA120408T02020	SNGA432T0820	12,70	1/2	12,70	.500	0,8	1/32	●	●	●
SNGA120412T02020	SNGA433T0820	12,70	1/2	12,70	.500	1,2	3/64	●	-	●
SNGA120416T02020	SNGA434T0820	12,70	1/2	12,70	.500	1,6	1/16	●	-	●
SNGA150612T02020	SNGA543T0820	15,88	5/8	15,88	.625	1,2	3/64	●	-	-
SNGA150612T02020	SNGA543T	15,88	5/8	15,88	.625	1,2	3/64	-	-	●
SNGA150616T02020	SNGA544T	15,88	5/8	15,88	.625	1,6	1/16	-	-	●
SNGA190612T02020	SNGA643T0820	19,05	3/4	19,05	.750	1,2	3/64	-	-	●
SNGA190616T02020	SNGA644T0820	19,05	3/4	19,05	.750	1,6	1/16	-	-	●



■ TNGA

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
TNGA160408T02020	TNGA332T0820	9,53	3/8	16,50	.650	0,8	1/32	-	●	●
TNGA160412T02020	TNGA333T0820	9,53	3/8	16,50	.650	1,2	3/64	-	-	●
TNGA160416T02020	TNGA334T0820	9,53	3/8	16,50	.650	1,6	1/16	●	-	●
TNGA220412T02020	TNGA433T0820	12,70	1/2	22,00	.866	1,2	3/64	●	-	-
TNGA220416T02020	TNGA434T	12,70	1/2	22,00	.866	1,6	1/16	-	-	●

Turning



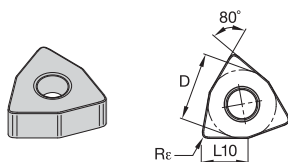
- first choice
- alternate choice

P			
M			
K	●	●	●
N			
S			
H			

■ WNGA

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
WNGA080408T01020FW	WNGA432T0420FW	12,70	1/2	8,69	.342	0,8	1/32	-	-	●
WNGA080408T02020	WNGA432T0820	12,70	1/2	8,69	.342	0,8	1/32	●	-	●
WNGA080412T01020FW	WNGA433T0420FW	12,70	1/2	8,69	.342	1,2	3/64	-	-	●
WNGA080412T02020	WNGA433T0820	12,70	1/2	8,69	.342	1,2	3/64	●	●	●
WNGA080416T02020	WNGA434T0820	12,70	1/2	8,69	.342	1,6	1/16	●	-	●

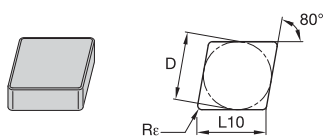
- Finishing wiper when surface finish is of highest importance.



■ WNGA-FW

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
WNGA080408T01020FW	WNGA432T0420FW	12,70	1/2	8,69	.342	0,8	1/32	-	-	●
WNGA080412T01020FW	WNGA433T0420FW	12,70	1/2	8,69	.342	1,2	3/64	-	-	●

Kendex™ Negative Inserts



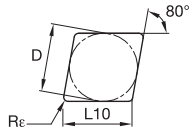
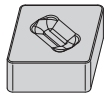
- first choice
- alternate choice

P			
M			
K	●	●	●
N			
S			
H			

■ CNGN

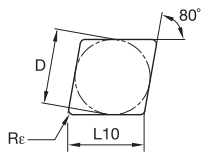
ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
CNGN120408T02020	CNG432T0820	12,70	1/2	12,90	.508	0,8	1/32	-	-	●
CNGN120412T02020	CNG433T0820	12,70	1/2	12,90	.508	1,2	3/64	●	-	●
CNGN120416T02020	CNG434T0820	12,70	1/2	12,90	.508	1,6	1/16	-	-	●
CNGN120712T02020	CNG453T0820	12,70	1/2	12,90	.508	1,2	3/64	●	-	●
CNGN120716T02020	CNG454T0820	12,70	1/2	12,90	.508	1,6	1/16	-	●	-
CNGN160716T02020	CNG554T0820	15,88	5/8	16,12	.635	1,6	1/16	-	-	●

- Finishing wiper when surface finish is of highest importance.



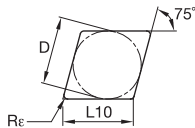
■ CNGX-FW

ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
CNGX120708T01020FW	CNGX452T0420FW	12,70	1/2	12,90	.508	0,8	1/32	-	-	•
CNGX120712T01020FW	CNGX453T0420FW	12,70	1/2	12,90	.508	1,2	3/64	-	-	•
CNGX120716T01020FW	CNGX454T0420FW	12,70	1/2	12,90	.508	1,6	1/16	-	-	•



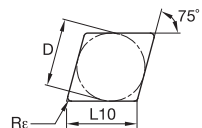
■ CNMX

ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
CNMX120708T02020	CNMX452T0820	12,70	1/2	12,90	.508	0,8	1/32	-	-	•
CNMX120712T02020	CNMX453T0820	12,70	1/2	12,90	.508	1,2	3/64	-	-	•
CNMX120716T02020	CNMX454T0820	12,70	1/2	12,90	.508	1,6	1/16	-	-	•



■ ENG

ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
ENGN130712T02020	ENG453T0820	12,70	1/2	13,15	.518	1,2	3/64	-	-	•



■ ENGX

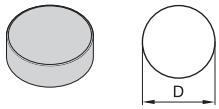
ISO catalog number	ANSI catalog number	D		L10		Rε		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
ENGN130716T02020	ENGX454T0820	12,70	1/2	13,15	.518	1,6	1/16	-	-	•

P	•		
M	•		
K	•	•	•
N	•		
S	•		
H	•		

- first choice
- alternate choice



Turning

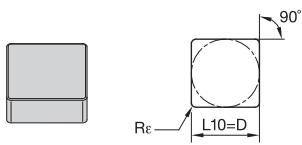


**RNGN**

● first choice  
○ alternate choice

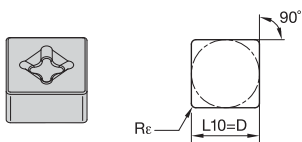
P				
M				
K	●	●	●	
N				
S				
H				

ISO catalog number	ANSI catalog number	D		L10		R <sub>e</sub>		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
RNGN120400T02020	RNG43T0820	12,70	1/2	—	—	—	—	●	●	●
RNGN120700T02020	RNG45T0820	12,70	1/2	—	—	—	—	●	●	●
RNGN190700T02020	RNG65T0820	19,05	3/4	—	—	—	—	—	—	●



**SNGN**

ISO catalog number	ANSI catalog number	D		L10		R <sub>e</sub>		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SNGN090308T02020	SNG322T0820	9,53	3/8	9,53	.375	0,8	1/32	—	—	●
SNGN120408T02020	SNG432T0820	12,70	1/2	12,70	.500	0,8	1/32	●	—	●
SNGN120412T02020	SNG433T0820	12,70	1/2	12,70	.500	1,2	3/64	●	●	●
SNGN120416T02020	SNG434T0820	12,70	1/2	12,70	.500	1,6	1/16	—	—	●
SNGN120424T02020	SNG436T0820	12,70	1/2	12,70	.500	2,4	3/32	—	—	●
SNGN120432T02020	SNG438T0820	12,70	1/2	12,70	.500	3,2	1/8	—	—	●
SNGN120712T02020	SNG453T0820	12,70	1/2	12,70	.500	1,2	3/64	●	—	●
SNGN120716T02020	SNG454T0820	12,70	1/2	12,70	.500	1,6	1/16	●	—	●
SNGN150712T02020	SNG553T0820	15,88	5/8	15,88	.625	1,2	3/64	—	—	●
SNGN190416T02020	SNG634T0820	19,05	3/4	19,05	.750	1,6	1/16	—	—	●



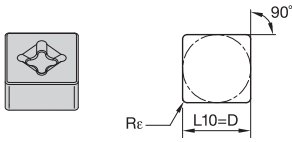
**SNGX**

ISO catalog number	ANSI catalog number	D		L10		R <sub>e</sub>		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SNGX120708T02020	SNGX452T0820	12,70	1/2	12,70	.500	0,8	1/32	—	—	●
SNGX120712T02020	SNGX453T0820	12,70	1/2	12,70	.500	1,2	3/64	●	●	●
SNGX120716T02020	SNGX454T0820	12,70	1/2	12,70	.500	1,6	1/16	●	●	●
SNGX150712T02020	SNGX553T0820	15,88	5/8	15,88	.625	1,2	3/64	●	—	—
SNGX150716T02020	SNGX554T0820	15,88	5/8	15,88	.625	1,6	1/16	●	●	●
SNGX150724T02020	SNGX556T0820	15,88	5/8	15,88	.625	2,4	3/32	—	—	●

- Finishing wiper when surface finish is of highest importance.

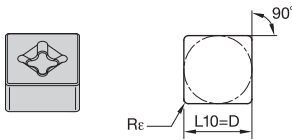
- first choice
- alternate choice

P			
M			
K	●	●	●
N			
S			
H			



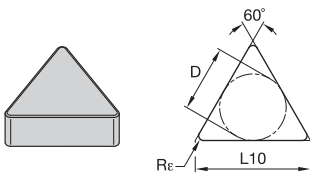
■ SNGX-FW

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SNGX120712T01020FW	SNGX453T0420FW	12,70	1/2	12,70	.500	1,2	3/64	-	-	●



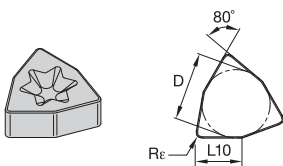
■ SNMX

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SNMX120712T02020	SNMX453T0820	12,70	1/2	12,70	.500	1,2	3/64	-	-	●
SNMX120716T02020	SNMX454T0820	12,70	1/2	12,70	.500	1,6	1/16	-	-	●
SNMX150716T02020	SNMX554T0820	15,88	5/8	15,88	.625	1,6	1/16	-	-	●



■ TNGN

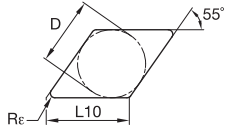
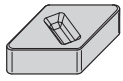
ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
TNGN160408T02020	TNG332T0820	9,53	3/8	16,50	.650	0,8	1/32	-	-	●
TNGN220408T02020	TNG432T0820	12,70	1/2	22,00	.866	0,8	1/32	-	-	●
TNGN220416T02020	TNG434T0820	12,70	1/2	22,00	.866	1,6	1/16	●	-	●



■ WNGX

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
WNGX080708T02020	WNGX452T0820	12,70	1/2	8,69	.342	0,8	1/32	●	-	●
WNGX080712T02020	WNGX453T0820	12,70	1/2	8,69	.342	1,2	3/64	●	●	●
WNGX080716T02020	WNGX454T0820	12,70	1/2	8,69	.342	1,6	1/16	●	-	-

Turning

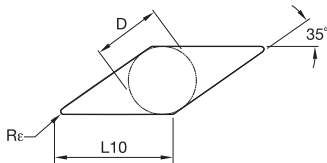
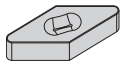


- first choice
- alternate choice

P			
M			
K	●	●	●
N			
S			
H			

■ DNGX

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
DNGX120708T02020	DNGX120708T02020	10,00	.3937	12,21	.481	0,8	1/32	-	-	●
DNGX120712T02020	DNGX120712T02020	10,00	.3937	12,21	.481	1,2	3/64	●	-	●
DNGX120716T02020	DNGX120716T02020	10,00	.3937	12,21	.481	1,6	1/16	-	-	●
DNGX150708T02020	DNGX452T0820	12,70	1/2	15,50	.610	0,8	1/32	-	-	●
DNGX150712T02020	DNGX453T0820	12,70	1/2	15,50	.610	1,2	3/64	●	-	●
DNGX150716T02020	DNGX454T0820	12,70	1/2	15,50	.610	1,6	1/16	-	-	●



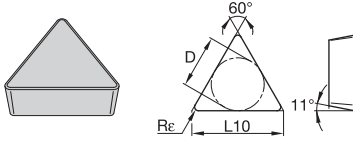
■ VNGX

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
VNGX160712T02020	VNGX353T0820	9,53	3/8	16,61	.654	1,2	3/64	-	-	●
VNGX160716T02020	VNGX354T0820	9,53	3/8	16,61	.654	1,6	1/16	-	-	●



P	●		
M	●		
K	●	●	●
N	●		
S	●		
H	●		

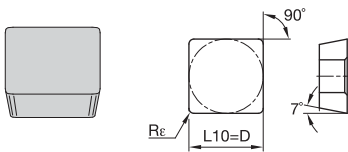
● first choice  
○ alternate choice



■ TPGN

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
TPGN160308T02020	TPG322T0820	9,53	3/8	16,50	.650	0,8	1/32	-	●	●
TPGN160312T02020	TPG323T0820	9,53	3/8	16,50	.650	1,2	3/64	-	●	●
TPGN220408T02020	TPG432T0820	12,70	1/2	22,00	.866	0,8	1/32	-	●	●
TPGN220412T02020	TPG433T0820	12,70	1/2	22,00	.866	1,2	3/64	-	-	●

- Finishing geometry with sharp edge line.



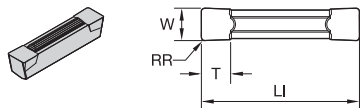
■ SCGN-FW

ISO catalog number	ANSI catalog number	D		L10		Re		KYK25	KYK10	KY3500
		mm	in	mm	in	mm	in			
SCGN090408EFW	SCG332EFW	9,53	3/8	9,53	.375	0,8	1/32	-	●	-
SCGN090408EFW	SCG332FW	9,53	3/8	9,53	.375	0,8	1/32	-	-	●

■ Clamp Selection Chart

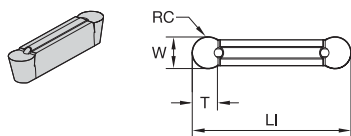
order number	catalog number	clamp	
3960807	CNGX120412S01015	551.718-100° Corner	551.716-80° Corner
3960808	CNGX120412S01015FW	551.718-100° Corner	551.716-80° Corner
3960806	CNGX120416S02020	551.718-100° Corner	551.716-80° Corner
3960811	DNGX150416S02020	551.720	551.72
3960812	SNGX120416S02020	551.718	551.718
3960823	SNGX150416S02020	551.718	551.718
3876843	CNGF120408	551.718-100° Corner	551.716-80° Corner
3960825	TNGX160412EFW	551.733	551.733

Turning



■ A4G-P-T

ISO catalog number	ANSI catalog number	seat size	W		RR		LI		T		KY3500
			mm	in	mm	in	mm	in	mm	in	
A4G0300M03P04T01025	A4G0300M03P04T01025	3	3,00	.118	0,4	.016	20	.79	3,4	.134	●
A4G125I03P1T0425	A4G125I03P1T0425	3	3,18	.125	0,4	.016	20	.79	3,4	.134	●
A4G0400M04P04T01025	A4G0400M04P04T01025	4	4,00	.157	0,4	.016	20	.79	3,4	.134	●
A4G187I04P2T0425	A4G187I04P2T0425	4	4,76	.187	0,8	.031	20	.79	3,4	.134	●
A4G0500M05P08T01025	A4G0500M05P08T01025	5	5,00	.197	0,8	.031	25	.98	4,2	.165	●
A4G0600M06P08T01025	A4G0600M06P08T01025	6	6,00	.236	0,8	.031	30	1.18	4,8	.189	●
A4G250I06P2T0425	A4G250I06P2T0425	6	6,35	.250	0,8	.031	30	1.18	4,9	.193	●
A4G0800M08P08T01025	A4G0800M08P08T01025	8	8,00	.315	0,8	.031	30	1.18	6,4	.250	●



■ A4R-P-T

ISO catalog number	ANSI catalog number	seat size	W		RC		LI		T		KY3500
			mm	in	mm	in	mm	in	mm	in	
A4R0300M03P00T01025	A4R0300M03P00T01025	3	3,00	.118	1,5	.059	20	.79	2,4	.095	●
A4R125I03P00T0425	A4R125I03P00T0425	3	3,18	.125	1,6	.062	20	.79	2,6	.100	●
A4R187I04P00T0425	A4R187I04P00T0425	4	4,76	.187	2,4	.094	20	.79	4,3	.169	●
A4R0500M05P00T01025	A4R0500M05P00T01025	5	5,00	.197	2,5	.098	25	.98	4,1	.163	●
A4R0600M06P00T01025	A4R0600M06P00T01025	6	6,00	.236	3,0	.118	30	1.18	4,3	.167	●
A4R250I06P00T0425	A4R250I06P00T0425	6	6,35	.250	3,2	.125	30	1.18	4,8	.191	●
A4R0800M08P00T01025	A4R0800M08P00T01025	8	8,00	.315	4,0	.157	30	1.18	6,4	.250	●

P	■
M	■
K	●
N	■
S	■
H	■

● first choice  
○ alternate choice



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# Holemaking

<b>KenTIP 12 x D Holders .....</b>	<b>B2–B7</b>
<b>KenTIP CounterFix Micro: Tangential Inserts for Chamfering and Counterboring .....</b>	<b>B8–B10</b>
<b>Drill Fix DS/LP Chipbreaker — Indexable Drills and KSEM PLUS.....</b>	<b>B12–B29</b>
<b>RMR and RHR Disc Style Reamers.....</b>	<b>B30–B48</b>

# ➤ KenTIP™

## New 12 x D Holders with Round Shanks Modular Drill System

### Primary Application

Our 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.

Our new range of 12 x D toolholders allow for deeper holes with the same quality and performance our customers expect from KenTIP.



## Features and Benefits

### Improved Interface

- Stronger pocket seats on all inserts and bodies.
- Longer tip and body life in unstable conditions, especially side loads.
- All new tips and bodies are interchangeable with previous versions.

### HP Drill-Point Design

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

### Disposable

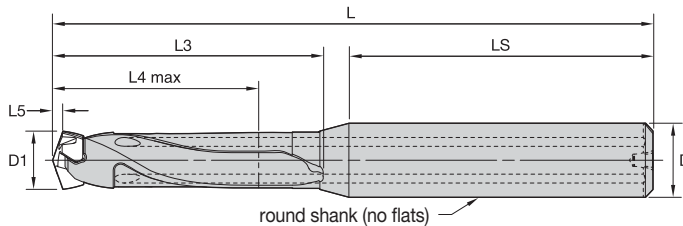
- No reconditioning costs.
- Consistent performance.
- Eliminates number of tools waiting for reconditioning, providing significant cost savings.

## 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.



- KenTIP modular drills offer performance commonly achieved by solid carbide drills. The strong pocket seat provides stability and high tool life.
- KenTIP drilling system uses disposable inserts — no reconditioning cost, consistent performance, and significantly reduced tool logistics compared to regrindable drilling solutions.
- Through coolant close to the cutting edge for improved tool life, hole finish, and chip removal.
- Tool body shipped with insert wrench.



For information on L, L3, L4 max, L5, LS, and D, see page B6.

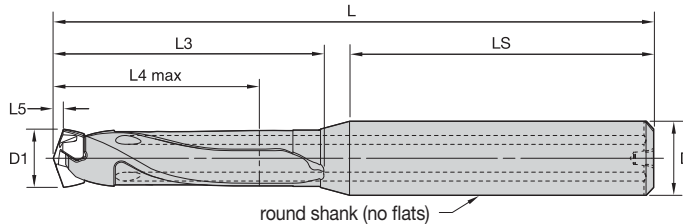


**KenTIP Round Shank • 1.5 x D/3 x D/5 x D/8 x D/12 x D • Metric**

					NEW!					
					D1		D1 max		seat size	KenTIP wrench
1.5 x D	3 x D	5 x D	8 x D	12 x D	mm	in	mm	in		
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



- KenTIP modular drills offer performance commonly achieved by solid carbide drills. The strong pocket seat provides stability and high tool life.
- KenTIP drilling system uses disposable inserts — no reconditioning cost, consistent performance, and significantly reduced tool logistics compared to regrindable drilling solutions.
- Through coolant close to the cutting edge for improved tool life, hole finish, and chip removal.
- Tool body shipped with insert wrench.



For information on L, L3, L4 max, L5, LS, and D, see page B7.



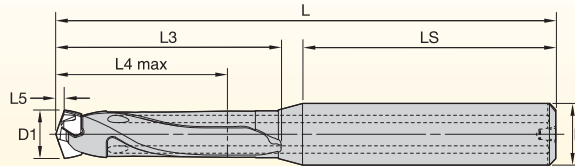
■ KenTIP Round Shank • 3 x D/5 x D/8 x D/12 x D • Inch

	3 x D	5 x D	8 x D	12 x D	D1		D1 max		seat size	KenTIP wrench
					mm	in	mm	in		
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	



**Modular Drills • Dimension Tables**

**■ Dimensions for KenTIP™ Modular Drills • Round Shank • Metric**



**NEW!**

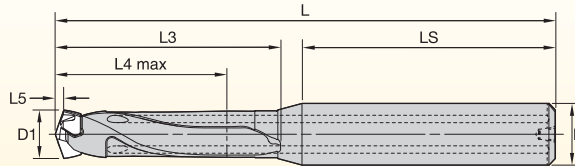
D1 mm	D1 max	seat	L5	LS	round D	1.5 x D L	L3	L4 max	3 x D L	L3	L4 max	5 x D L	L3	L4 max	8 x D L	L3	L4 max	12 x D L	L3	L4 max	wrench
8,000	8,499	F	1,4	41	10	67	23	13	79	35	26	97	53	43	123	79	68	157	113	102	170.306
8,500	8,999	G	1,5	41	10	68	24	14	81	37	27	100	56	45	127	83	72	163	119	108	170.306
9,000	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**



**NEW!**

D1 mm	D1 max	seat	L5	LS	round D	3 x D L	L3	L4 max	5 x D L	L3	L4 max	8 x D L	L3	L4 max	12 x D L	L3	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

# KenTIP™

## CounterFix Micro (CFM) — Small Inserts That Make a Big Difference

Our new CounterFix Micro (CFM) tangential inserts are a new way to enhance your drilling, chamfering, and counterboring operations. Unlike conventional inserts used on drills, this new insert style is not pointing towards the core of the drill, nor does it stand widely over the drill's center.

CFM Inserts are perfect for creating very small incremental steps on indexable drills and countersinking tools with the precision and flexibility of a solid carbide tool.

CounterFix Micro can be used on KenTIP and KSEM™ as well as Drill Fix™ indexable made-to-order step drills.

## Features and Benefits

### Very Small Steps: Tangential Insert Positioning

- CFM inserts need a very low amount of space near the drill core.
- High relative thickness of the insert.
- Increased stability and reliability for multistep toolholders.

### Negative Clearance Angle

- Drastically decreased vibrations.
- Very smooth and precise cut.
- Very low tendency for chattering.

### Inclined Cutting Edge

- Cutting edge inclines relative to toolholder center.
- Large shoulder for improved chip forming and breaking.
- CFM inserts are 2x indexable.

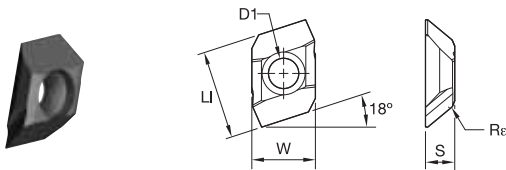


- Very small incremental diameter changes for step drills.
- Best reliability and hole quality.
- Improved chip control and very low tendency for chattering.
- High tool life per edge; 2x indexable.
- Can be used with KenTIP and KSEM™ as well as Drill Fix™ indexable made-to-order step drills.
- CFM inserts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

Holemaking

- first choice
- alternate choice

P	●
M	○
K	○
N	●
S	●
H	



■ CounterFix Micro • Tangential Chamfer and Counterboring Inserts

catalog number	D1		LI		W		S		Re		KCU40
	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	●

NOTE: ...R00...: Chamfer angle = 0°  
 ...R30...: Chamfer angle = 30°  
 ...R45...: Chamfer angle = 45°

Speeds and feeds should be oriented on the primary tooling platform CFM inserts are used upon.  
 Specific cutting data recommendation can apply depending on custom holder design and application specifications.

# Spade Blade Drilling System

# Kennametal UniDrill™

Our UniDrill System provides a comprehensive, flexible, and cost-efficient spade blade style drilling system range. It excels in small to medium lot sizes where a tough tool is needed to drill high-quality workpieces. UniDrill feels at home in almost every application and material — insert geometry and specific grades are available for a diverse range of applications. Inserts are available in coated and uncoated carbide as well as coated high-speed steel.

## High Versatility

Comprehensive selection of HSS and carbide inserts for a multitude of applications. Wide diameter range from 0.390" (9,9mm) up to 4.528" (114mm). One toolholder works with different blade diameters for high usability.

## Enhanced Design

- Unique pocket design with precision inserts.
- High productivity, low downtimes, and extremely economic operation.
- Through coolant for improved hole finish and chip removal.

## Customization

- Intermediate diameters for all insert styles available as semi-standards.
- Holders in customized lengths and individual backends.
- Drilling diameters up to 7.874" (200mm) upon request.
- The design of our drill body allows for complex multifunction tools with drilling, chamfering, counterboring, and forming on one drill body.



UniDrill XR HSS Blade



UniDrill Custom Holder with Flange and Coolant Hose

To view the UniDrill Product Brochure, visit [kennametal.com](http://kennametal.com).



[kennametal.com](http://kennametal.com)

## New Styles

# ➤ DS and LP Inserts

High Metal Removal Rates (MRR) without long chips, especially for working in low carbon steel applications.

### Primary Application

The new DS geometry insert style can be used on Drill Fix™ DFT™, HTS™, and KSEM PLUS™ tooling systems.

In general it is recommended to use this new geometry in all applications where long chips are an issue, such as:

- Working in very soft low carbon steels (P0, P1).
  - Drilling in higher alloyed tool steels and stainless steels where high feed rates cannot be used to provide short chips.
  - Where power limitations make it difficult to apply a certain tool in a way that short chips can be provided consistently.
- The same general statements apply for the new LP style inserts for usage as DFSP™ outboard inserts.

## Features and Benefits

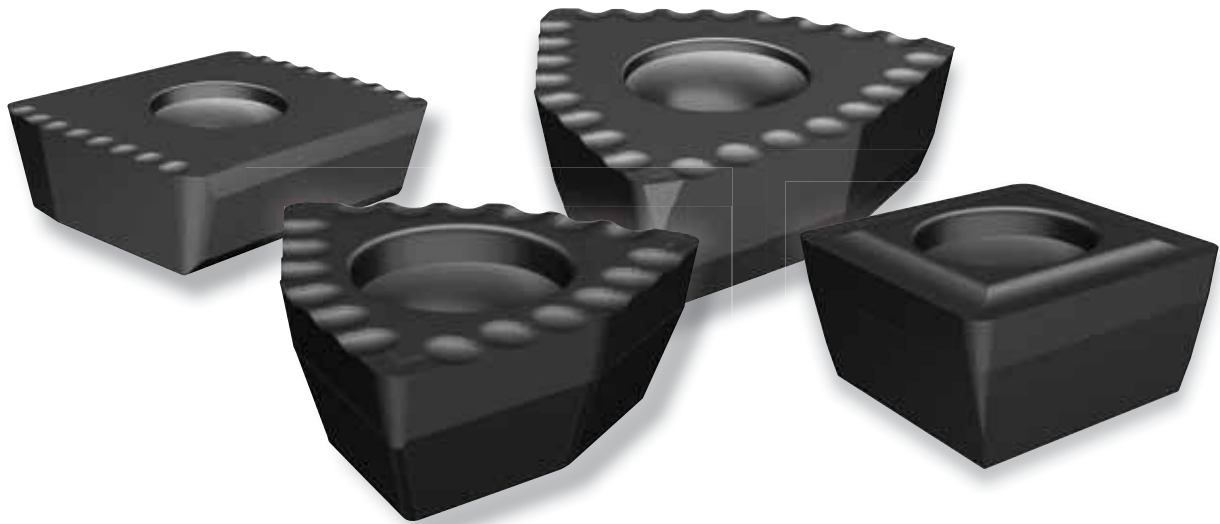
### Optimized Chip Formation

- Improved control of chip flow, chip breakage, and chip curling.
- Eliminates chip jamming by providing excellent chip forming and breaking capabilities in P0 and P1 materials.

### Improved Processes

- Avoid bird nesting and long, stringy chips in general.
- Drill large diameters on low-power machines and setups with weak workpiece fixturing.
- Reduced cutting forces compared to other chipbreaker geometries.
- Reduced drill deflection and rubbing by lowering feed rates when machining long chipping materials.
- Reduced idle time and improved process stability.

## For Working in Low Carbon Steels and Other Long Chipping Materials



### Versatility

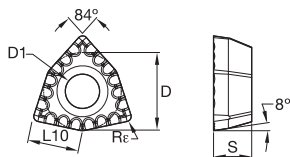
- Applicable in various product platforms, like Drill Fix™ DFT™, DFSP™, HTS™, and KSEM PLUS™ (A1 and B1 Heads).
- New DS and LP geometry styles are available in universal Beyond™ grade KCU40™, offering high reliability when machining with medium cutting speeds. KCU40 features a multilayer TiAlN-PVD coating, providing high wear resistance even in challenging conditions.

- 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	○

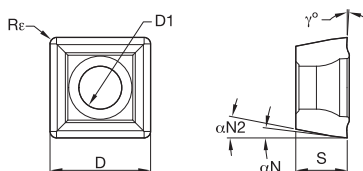
Holemaking



## ■ DFT • DS

catalog number	L10		D		D1		S		Rε		KCU40
	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	●

- 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.



## ■ SP..X..LP

catalog number	D		D1		S		Rε		γ°	αN	αN2	KCU40
	mm	in	mm	in	mm	in	mm	in				
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	●



■ Drill Fix™ DFT™ • Inch

Inch														
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter						
					Range – SFM			Ø	DFT03... .625–.969	DFT05... .984–1.250	DFT06... 1.313–1.563	DFT07... 1.625–1.875	DFT09... 1.938–2.125	
					min	Starting Value	max							
P	0	S	O	DS	KCU40	1017	1066	1181	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		U	O	DS	KCU40	656	705	754	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		I	O	DS	KCU40	426	443	492	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
	1	S	O	DS	KCU40	1017	1066	1181	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		U	O	DS	KCU40	656	705	754	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		I	O	DS	KCU40	426	443	492	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
	2	S	O	DS	KCU40	1017	1066	1181	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		U	O	DS	KCU40	656	705	754	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		I	O	DS	KCU40	426	443	492	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
	3	S	O	DS	KCU40	853	935	1050	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		U	O	DS	KCU40	590	640	722	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
		I	O	DS	KCU40	361	394	459	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106
			I	DS	KCU40									
4	S	O	DS	KCU40	722	820	984	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	
		I	DS	KCU40										
	U	O	DS	KCU40	492	590	722	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	
		I	DS	KCU40										
	I	O	DS	KCU40	295	361	459	IPR	.0020–.0031	.0028–.0047	.0035–.0059	.0051–.0083	.0067–.0106	
		I	DS	KCU40										
M	1	S	O	DS	KCU40	492	623	754	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									
		U	O	DS	KCU40	328	426	525	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									
		I	O	DS	KCU40	197	262	328	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									
	2	S	O	DS	KCU40	492	590	689	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									
		U	O	DS	KCU40	328	426	525	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									
		I	O	DS	KCU40	197	262	328	IPR	.0020–.0031	.0020–.0039	.0024–.0051	.0031–.0055	.0035–.0067
			I	DS	KCU40									

Condition: S = Stable cutting conditions;  
U = Unstable cutting conditions;  
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
O = Outboard insert



Holemaking

### ■ Drill Fix™ DFT™ • Inch

Holemaking

		Inch												
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter						
					Range – SFM			Ø	DFT03... .625–.969	DFT05... .984–1.250	DFT06... 1.313–1.563	DFT07... 1.625–1.875	DFT09... 1.938–2.125	
					min	Starting Value	max							
N	1	S	O	DS	KCU40	1312	1968	2624	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055
			I	DS	KCU40									
	U	O	DS	KCU40	984	1312	1640	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055	
		I	DS	KCU40										
	I	O	DS	KCU40	656	984	1312	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055	
		I	DS	KCU40										
	2	S	O	DS	KCU40	1230	1804	2542	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055
			I	DS	KCU40									
		U	O	DS	KCU40	820	1148	1476	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055
			I	DS	KCU40									
		I	O	DS	KCU40	574	820	1066	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055
			I	DS	KCU40									
3	S	O	DS	KCU40	1148	1640	2133	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055	
		I	DS	KCU40										
	U	O	DS	KCU40	820	1148	1476	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055	
		I	DS	KCU40										
	I	O	DS	KCU40	492	820	1148	IPR	.0020–.0031	.0020–.0031	.0024–.0039	.0031–.0047	.0035–.0055	
		I	DS	KCU40										
S	3	S	O	DS	KCU40	230	262	295	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047
			I	DS	KCU40									
	U	O	DS	KCU40	164	197	230	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	
		I	DS	KCU40										
	I	O	DS	KCU40	98	131	164	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047	
		I	DS	KCU40										
	4	S	O	DS	KCU40	230	262	295	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047
			I	DS	KCU40									
		U	O	DS	KCU40	164	197	230	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047
			I	DS	KCU40									
		I	O	DS	KCU40	98	131	164	IPR	.0020–.0028	.0020–.0028	.0020–.0031	.0024–.0039	.0028–.0047
			I	DS	KCU40									

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			Recommended Feed Rate (fz) by Diameter						
					Range – m/min			Ø	DFT03... 16–24,00	DFT05... 25–32,00	DFT06... 33–40,00	DFT07... 41–48,00	DFT09... 49–68,00	
					min	Starting Value	max							
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
			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
			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	
		I	DS	KCU40										
	1	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
			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
			I	DS	KCU40									
		I	O	DS	KCU40	200	135	150	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27
			I	DS	KCU40									
	2	S	O	DS	KCU40	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
			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
			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
			I	DS	KCU40									
	3	S	O	DS	KCU40	260	285	320	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27
			I	DS	KCU40									
		U	O	DS	KCU40	180	195	220	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27
			I	DS	KCU40									
		I	O	DS	KCU40	110	120	140	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27
			I	DS	KCU40									
4	S	O	DS	KCU40	220	250	300	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	
		I	DS	KCU40										
	U	O	DS	KCU40	150	180	220	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	
		I	DS	KCU40										
	I	O	DS	KCU40	90	110	140	mm/r	0,05–0,08	0,07–0,12	0,09–0,15	0,13–0,21	0,17–0,27	
		I	DS	KCU40										
M	1	S	O	DS	KCU40	90	105	120	mm/r	0,05–0,08	0,05–0,10	0,06–0,13	0,08–0,14	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
			I	DS	KCU40									
		I	O	DS	KCU40	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
			I	DS	KCU40									
	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
			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
			I	DS	KCU40									
		I	O	DS	KCU40	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
			I	DS	KCU40									

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert



Holemaking

### ■ Drill Fix™ DFT™ • Metric

Holemaking

		Metric												
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter						
					Range – m/min			Ø	DFT03... 16–24,00	DFT05... 25–32,00	DFT06... 33–40,00	DFT07... 41–48,00	DFT09... 49–68,00	
					min	Starting Value	max							
N	1	S	O	DS	KCU40	400	600	800	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014
			I	DS	KCU40									
		U	O	DS	KCU40	300	400	500	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014
	I		DS	KCU40										
	I	O	DS	KCU40	200	300	400	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014	
		I	DS	KCU40										
	2	S	O	DS	KCU40	375	550	775	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014
			I	DS	KCU40									
		U	O	DS	KCU40	250	350	450	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014
			I	DS	KCU40									
		I	O	DS	KCU40	175	250	325	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014
			I	DS	KCU40									
3	S	O	DS	KCU40	350	500	650	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014	
		I	DS	KCU40										
	U	O	DS	KCU40	250	350	450	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014	
		I	DS	KCU40										
	I	O	DS	KCU40	150	250	350	mm/r	0,05–0,08	0,05–0,08	0,06–0,10	0,08–0,12	0,09–0,014	
		I	DS	KCU40										
S	3	S	O	DS	KCU40	70	80	90	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									
		U	O	DS	KCU40	50	60	70	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									
		I	O	DS	KCU40	30	40	50	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									
	4	S	O	DS	KCU40	70	80	90	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									
		U	O	DS	KCU40	50	60	70	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									
		I	O	DS	KCU40	30	40	50	mm/r	0,05–0,07	0,05–0,07	0,05–0,08	0,06–0,10	0,07–0,12
			I	DS	KCU40									

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			Recommended Feed Rate (fz) by Diameter						
					Range – SFM			Ø	SPGX05 DFTX2 .563-.707	SPGX06 DFT03 .708-.865	SPPX07 DFT05 0.866-1.023	SPPX09 DFT05 1.024-1.299	SPPX12 DFT06/..07 1.300-1.732	SPPX15 DFT07/..09 1.733-2.165
					min	Starting Value	max							
P	0	O	LP	KCU40	1017	1066	1181	IPR	.0022-.0039	.0025-.0044	.0031-.0055	.0047-.0083	.0055-.0102	.0063-.0102
			DS	KCU40										
	U	O	LP	KCU40	656	705	754	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	I	O	LP	KCU40	426	443	492	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	S	O	LP	KCU40	1017	1066	1181	IPR	.0022-.0039	.0025-.0044	.0031-.0055	.0047-.0083	.0055-.0102	.0063-.0102
			DS	KCU40										
	U	O	LP	KCU40	656	705	754	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	I	O	LP	KCU40	426	443	492	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	S	O	LP	KCU40	1017	1066	1181	IPR	.0022-.0039	.0025-.0044	.0031-.0055	.0047-.0083	.0055-.0102	.0063-.0102
			DS	KCU40										
	U	O	LP	KCU40	656	705	754	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	I	O	LP	KCU40	426	443	492	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	S	O	DS	KCU40	853	935	1050	IPR	.0022-.0039	.0025-.0044	.0031-.0055	.0047-.0083	.0055-.0102	.0063-.0102
			DS	KCU40										
	U	O	LP	KCU40	590	640	722	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
	I	O	LP	KCU40	361	394	459	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083
			DS	KCU40										
S	O	LP	KCU40	722	820	984	IPR	.0022-.0039	.0025-.0044	.0031-.0055	.0047-.0083	.0055-.0102	.0063-.0102	
		DS	KCU40											
U	O	LP	KCU40	492	590	722	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083	
		DS	KCU40											
I	O	LP	KCU40	295	361	459	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0028-.0047	.0035-.0059	.0043-.0083	
		DS	KCU40											
M	1	O	LP	KCU40	492	623	754	IPR	.0019-.0033	.0022-.0038	.0028-.0047	.0039-.0063	.0047-.0083	.0055-.0094
			DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0020-.0039	.0024-.0051	.0031-.0063
			DS	KCU40										
	I	O	LP	KCU40	197	262	328	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0020-.0039	.0024-.0051	.0031-.0055
			DS	KCU40										
	S	O	LP	KCU40	492	590	689	IPR	.0019-.0033	.0022-.0038	.0028-.0047	.0039-.0063	.0047-.0083	.0055-.0094
			DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0020-.0039	.0024-.0051	.0031-.0063
			DS	KCU40										
	I	O	LP	KCU40	197	262	328	IPR	.0019-.0028	.0022-.0031	.0028-.0039	.0020-.0039	.0024-.0051	.0031-.0055
			DS	KCU40										

Condition: S = Stable cutting conditions;  
U = Unstable cutting conditions;  
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
O = Outboard insert



Holemaking

**Drill Fix™ DFSP™ • Inch**

Holemaking

		Inch													
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter							
					Range – SFM			Ø	SPGX05 DFTX2 .563–.707	SPGX06 DFT03 .708–.865	SPPX07 DFT05 .866–1.023	SPPX09 DFT05 1.024–1.299	SPPX12 DFT06/07 1.300–1.732	SPPX15 DFT07/09 1.733–2.165	
					min	Starting Value	max								
N	1	S	O	LP	KCU40	492	623	754	IPR	.0020–.0033	.0025–.0038	.0031–.0047	.0039–.0063	.0047–.0083	.0055–.0094
			I	DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0063	
		I	DS	KCU40											
	I	O	LP	KCU40	197	262	328	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0055	
		I	DS	KCU40											
	2	S	O	LP	KCU40	492	590	689	IPR	.0020–.0033	.0025–.0038	.0031–.0047	.0039–.0063	.0047–.0083	.0055–.0094
			I	DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0063	
		I	DS	KCU40											
	I	O	LP	KCU40	197	262	328	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0055	
		I	DS	KCU40											
3	S	O	LP	KCU40	492	590	689	IPR	.0020–.0033	.0025–.0038	.0031–.0047	.0039–.0063	.0047–.0083	.0055–.0094	
		I	DS	KCU40											
U	O	LP	KCU40	328	426	525	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0063		
	I	DS	KCU40												
I	O	LP	KCU40	197	262	328	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0020–.0039	.0024–.0051	.0031–.0055		
	I	DS	KCU40												
S	3	S	O	LP	KCU40	492	590	689	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0031–.0043	.0039–.0051	.0039–.0063
			I	DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0024–.0039	.0024–.0031	.0031–.0055	
		I	DS	KCU40											
	I	O	LP	KCU40	197	262	328	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0024–.0039	.0024–.0031	.0031–.0055	
		I	DS	KCU40											
	4	S	O	LP	KCU40	492	590	689	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0031–.0043	.0039–.0051	.0039–.0063
			I	DS	KCU40										
	U	O	LP	KCU40	328	426	525	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0024–.0039	.0024–.0031	.0031–.0055	
		I	DS	KCU40											
	I	O	LP	KCU40	197	262	328	IPR	.0019–.0028	.0022–.0031	.0028–.0039	.0024–.0039	.0024–.0031	.0031–.0055	
		I	DS	KCU40											

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			Recommended Feed Rate (fz) by Diameter						
					Range – m/min			Ø	SPGX05 DFTX2 14–17,99	SPGX06 DFT03 18–21,99	SPPX07 DFT05 22–25,99	SPPX09 DFT05 26–32,99	SPPX12 DFT06/07 33–43,99	SPPX15 DFT07/09 44–55,00
					min	Starting Value	max							
P	0	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
			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
			DS	KCU40										
	I	O	LP	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
			DS	KCU40										
	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
			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
			DS	KCU40										
	I	O	LP	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
			DS	KCU40										
	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
			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
			DS	KCU40										
	I	O	LP	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
			DS	KCU40										
	S	O	DS	KCU40	260	285	320	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
			DS	KCU40										
	U	O	LP	KCU40	180	195	220	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
			DS	KCU40										
	I	O	LP	KCU40	110	120	140	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
			DS	KCU40										
S	O	LP	KCU40	220	250	300	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	
		DS	KCU40											
U	O	LP	KCU40	150	180	220	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	
		DS	KCU40											
I	O	LP	KCU40	90	110	140	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	
		DS	KCU40											
M	1	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
			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
			DS	KCU40										
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,14
			DS	KCU40										
	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
			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
			DS	KCU40										
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,13	0,08–0,14
			DS	KCU40										

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert



Holemaking

### Drill Fix™ DFSP™ • Metric

Holemaking

		Metric													
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter							
					Range – m/min			Ø	SPGX05 DFTX2 14–17,49	SPGX06 DFT03 17,5–21,99	SPGX07 DFT05 22–25,99	SPGX09 DFT05 26–32,99	SPGX12 DFT06/07 33–43,99	SPGX15 DFT07/09 44–55,00	
					min	Starting Value	max								
N	1	S	O	LP	KCU40	150	190	230	mm/r	0,06–0,08	0,06–0,10	0,08–0,12	0,10–0,16	0,12–0,021	0,14–0,024
			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	0,06–0,013	0,08–0,016	
		I	DS	KCU40											
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,013	0,08–0,014	
		I	DS	KCU40											
	2	S	O	LP	KCU40	150	180	210	mm/r	0,06–0,08	0,06–0,10	0,08–0,12	0,10–0,16	0,12–0,021	0,14–0,024
				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	0,06–0,013	0,08–0,016	
		I	DS	KCU40											
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,013	0,08–0,014	
		I	DS	KCU40											
S	3	S	O	LP	KCU40	150	190	230	mm/r	0,06–0,08	0,06–0,10	0,08–0,12	0,10–0,16	0,12–0,021	0,14–0,024
			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	0,06–0,013	0,08–0,016	
		I	DS	KCU40											
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,05–0,10	0,06–0,013	0,08–0,014	
		I	DS	KCU40											
4	3	S	O	LP	KCU40	150	180	210	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,08–0,11	0,10–0,13	0,10–0,16
			I	DS	KCU40										
	U	O	LP	KCU40	100	130	160	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,06–0,10	0,06–0,08	0,08–0,14	
		I	DS	KCU40											
	I	O	LP	KCU40	60	80	100	mm/r	0,05–0,07	0,06–0,08	0,07–0,10	0,06–0,10	0,06–0,08	0,08–0,14	
		I	DS	KCU40											

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert



■ HTS™ with Drill Fix™ DFT™ Inserts • Inch

Inch												
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter				
					Range – SFM			Ø	DFT03... 1.77–2.17	DFT05... 2.17–3.07	DFT06... 3.07–5.51	DFT07... 5.51–10.63
					min	Starting Value	max					
P	0	O	DS	KCU40	309	623	750	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	U	O	DS	KCU40	231	427	561	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	I	O	DS	KCU40	143	262	348	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	S	O	DS	KCU40	309	623	750	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	U	O	DS	KCU40	231	427	561	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	I	O	DS	KCU40	143	262	348	IPR	.0020-.0028	.0020-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
S	O	DS	KCU40	309	591	750	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
U	O	DS	KCU40	231	394	561	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
I	O	DS	KCU40	143	230	348	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
S	O	DS	KCU40	229	459	555	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
U	O	DS	KCU40	163	328	396	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
I	O	DS	KCU40	98	197	238	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
S	O	DS	KCU40	309	394	750	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
U	O	DS	KCU40	231	328	561	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
I	O	DS	KCU40	143	262	348	IPR	.0031-.0043	.0039-.0059	.0039-.0059	.0039-.0067	
		DS	KCU40									
M	1	O	DS	KCU40	159	361	439	IPR	.0020-.0028	.0024-.0035	.0031-.0047	.0043-.0063
			DS	KCU40								
	U	O	DS	KCU40	101	230	281	IPR	.0020-.0028	.0024-.0035	.0031-.0047	.0044-.0063
			DS	KCU40								
	I	O	DS	KCU40	72	164	199	IPR	.0020-.0028	.0024-.0035	.0031-.0047	.0044-.0063
			DS	KCU40								
	S	O	DS	KCU40	159	325	439	IPR	.0024-.0039	.0031-.0051	.0035-.0055	.0039-.0063
			DS	KCU40								
	U	O	DS	KCU40	101	207	281	IPR	.0024-.0039	.0031-.0051	.0035-.0055	.0039-.0063
			DS	KCU40								
	I	O	DS	KCU40	72	148	199	IPR	.0024-.0039	.0031-.0051	.0035-.0055	.0039-.0063
			DS	KCU40								

Condition: S = Stable cutting conditions;  
U = Unstable cutting conditions;  
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
O = Outboard insert



Holemaking

■ HTS™ with Drill Fix™ DFT™ Inserts • Inch

Holemaking

		Inch											
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter					
					Range – SFM			Ø	DFT03... 1.77–2.17	DFT05... 2.17–3.07	DFT06... 3.07–5.51	DFT07... 5.51–10.63	
					min	Starting Value	max						
N	1	S	O	DS	KCU40	504	787	1176	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047
			I	DS	KCU40								
	U	O	DS	KCU40	336	525	784	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047	
		I	DS	KCU40									
	I	O	DS	KCU40	218	341	510	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047	
		I	DS	KCU40									
	2	S	O	DS	KCU40	504	787	1176	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047
			I	DS	KCU40								
		U	O	DS	KCU40	336	525	784	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047
			I	DS	KCU40								
		I	O	DS	KCU40	218	341	510	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047
			I	DS	KCU40								
3	S	O	DS	KCU40	504	787	1176	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047	
		I	DS	KCU40									
	U	O	DS	KCU40	336	525	784	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047	
		I	DS	KCU40									
	I	O	DS	KCU40	218	341	510	IPR	.0020–.0028	.0020–.0031	.0024–.0039	.0031–.0047	
		I	DS	KCU40									
S	3	S	O	DS	KCU40	80	131	160	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043
			I	DS	KCU40								
	U	O	DS	KCU40	60	98	120	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043	
		I	DS	KCU40									
	I	O	DS	KCU40	50	82	100	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043	
		I	DS	KCU40									
	4	S	O	DS	KCU40	80	131	160	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043
			I	DS	KCU40								
		U	O	DS	KCU40	60	98	120	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043
			I	DS	KCU40								
I		O	DS	KCU40	50	82	100	IPR	.0020–.0028	.0020–.0028	.0024–.0035	.0028–.0043	
		I	DS	KCU40									

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert

**HTS™ with Drill Fix™ DFT™ Inserts • Metric**

Metric													
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter					
					Range – m/min			Ø	DFT03... 45–55,00	DFT05... 55–78,00	DFT06... 78–140,00	DFT07... 140–270,00	
					min	Starting Value	max						
P	0	O	DS	KCU40	94	190	229	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	U	O	DS	KCU40	71	130	171	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	I	O	DS	KCU40	44	80	106	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	S	O	DS	KCU40	94	190	229	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	U	O	DS	KCU40	71	130	171	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	I	O	DS	KCU40	44	80	106	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	S	O	DS	KCU40	94	180	229	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
	U	O	DS	KCU40	71	120	171	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
	I	O	DS	KCU40	44	70	106	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
	S	O	DS	KCU40	70	140	169	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
	U	O	DS	KCU40	50	100	121	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
	I	O	DS	KCU40	30	60	72	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17	
			DS	KCU40									
S	O	DS	KCU40	94	120	229	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17		
		DS	KCU40										
U	O	DS	KCU40	71	100	171	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17		
		DS	KCU40										
I	O	DS	KCU40	44	80	106	mm/r	0,08–0,11	0,10–0,15	0,10–0,15	0,10–0,17		
		DS	KCU40										
M	1	O	DS	KCU40	48	110	134	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	U	O	DS	KCU40	31	70	86	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	I	O	DS	KCU40	22	50	61	mm/r	0,05–0,07	0,06–0,09	0,08–0,12	0,11–0,16	
			DS	KCU40									
	S	O	DS	KCU40	48	99	134	mm/r	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,16	
			DS	KCU40									
	U	O	DS	KCU40	31	63	86	mm/r	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,16	
			DS	KCU40									
	I	O	DS	KCU40	22	45	61	mm/r	0,06–0,10	0,08–0,13	0,09–0,14	0,10–0,16	
			DS	KCU40									

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert



Holmaking

### HTS™ with Drill Fix™ DFT™ Inserts • Metric

Holemaking

		Metric											
Material Group	Condition	Pocket Seat	Geometry	Grade	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter					
					Range – m/min			Ø	DFT03... 45–55,00	DFT05... 55–78,00	DFT06... 78–140,00	DFT07... 140–270,00	
					min	Starting Value	max						
N	1	O	DS	KCU40	154	240	358	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
	U	O	DS	KCU40	102	160	239	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
	I	O	DS	KCU40	67	104	155	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
	2	S	O	DS	KCU40	154	240	358	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12
				DS	KCU40								
		U	O	DS	KCU40	102	160	239	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12
				DS	KCU40								
		I	O	DS	KCU40	67	104	155	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12
				DS	KCU40								
3	S	O	DS	KCU40	154	240	358	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
	U	O	DS	KCU40	102	160	239	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
	I	O	DS	KCU40	67	104	155	mm/r	0,05–0,07	0,05–0,08	0,06–0,10	0,08–0,12	
			DS	KCU40									
S	3	O	DS	KCU40	24	40	49	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11	
			DS	KCU40									
		U	O	DS	KCU40	18	30	37	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11
				DS	KCU40								
		I	O	DS	KCU40	15	25	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11
				DS	KCU40								
	4	S	O	DS	KCU40	24	40	49	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11
				DS	KCU40								
		U	O	DS	KCU40	18	30	37	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11
				DS	KCU40								
		I	O	DS	KCU40	15	25	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,09	0,07–0,11
				DS	KCU40								

Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
 O = Outboard insert

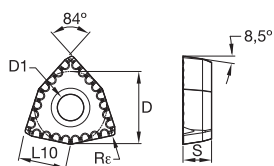
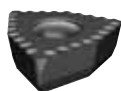
- DS geometry for improved control of chip flow, chip breakage, and chip curling.
- These inserts support drilling in P0 and P1 steel, higher alloyed tool steels, and stainless steels where high feed rates cannot be used to provide short chips.

- first choice
- alternate choice

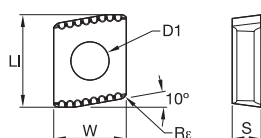
P	●
M	○
K	○
N	○
S	○
H	○



Holemaking


**■ DFT • DS**

catalog number	L10		D		D1		S		Re		KCU40
	mm	in	mm	in	mm	in	mm	in	mm	in	
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	●


**■ DFC • DS**

catalog number	LI		W		D1		S		Re		KCU40
	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	●

■ **KSEM PLUS™ A1 and B1 Head Using Drill Fix™ DFT™/DFC™ DS Inserts • Metric**

Holemaking

		Metric										
Material Group	Condition	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter							
		Range – m/min			Ø	KSEM 14....17 DFC04... 28–31,74	KSEM 15....18 DFC05.../ DFT05... 31,75–35,99	KSEM 13....22 DFC06.../ DFT06... 36–44,99	KSEM 18....28 DFC07.../ DFT07... 45–55,99	KSEM 20....34 DFC09.../ DFT09... 56–70,00	KSEM 26....40 DFx06.../ DFx07... 70,36–102,35	
		min	Starting Value	max								
P	0	S	90	190	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
		U	71	130	170	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
		I	50	80	110	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
	1	S	90	190	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
		U	71	130	170	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
		I	50	80	110	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
	2	S	90	190	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
		U	71	130	170	mm/r	0,140–0,240	0,140–0,240	0,180–0,320	0,180–0,340	0,180–0,400	0,180–0,400
		I	50	80	110	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
	3	S	90	180	230	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
		U	70	120	170	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
		I	50	70	106	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400
4	S	90	140	220	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400	
	U	70	110	160	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400	
	I	50	80	110	mm/r	0,140–0,240	0,140–0,240	0,180–0,280	0,180–0,340	0,180–0,400	0,180–0,400	
M	1	S	60	110	135	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
		U	40	70	90	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
		I	30	50	65	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
	2	S	60	100	135	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
		U	40	60	90	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
		I	30	50	65	mm/r	0,110–0,210	0,110–0,210	0,120–0,200	0,140–0,280	0,160–0,280	0,160–0,280
N	1	S	150	240	360	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		U	100	160	240	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		I	60	100	160	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
	2	S	150	220	360	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		U	100	150	240	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		I	60	100	160	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
	3	S	150	200	360	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		U	100	140	240	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240
		I	60	90	160	mm/r	0,100–0,180	0,100–0,180	0,120–0,200	0,140–0,220	0,160–0,240	0,160–0,240

■ **Insert Recommendation**

P	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315
M	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315
		KSEM-PC	KC7135
N	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315

Condition: S = Stable cutting conditions;  
U = Unstable cutting conditions;  
I = Interrupted cutting conditions

Pocket seat: I = Inboard insert;  
O = Outboard insert

**■ KSEM PLUS™ A1 and B1 Head Using Drill Fix™ DFT™/DFC™ DS Inserts • Inch**

Inch												
Material Group	Condition	Cutting Speed – vc			Recommended Feed Rate (fz) by Diameter							
		Range – SFM			Ø	KSEM 14....17 DFC04... 1.102-1.249	KSEM 15....18 DFC05.../ DFT05... 1.250-1.416	KSEM 13....22 DFC06.../ DFT06... 1.417-1.771	KSEM 18....28 DFC07.../ DFT07... 1.772-2.204	KSEM 20....34 DFC09.../ DFT09... 2.205-2.756	KSEM 26....40 DFx06.../DFx07... 2.757-4.0295	
		min	Starting Value	max								
P	0	S	295	<b>623</b>	755	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		U	233	<b>427</b>	558	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		I	164	<b>262</b>	361	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
	1	S	295	<b>623</b>	755	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		U	233	<b>427</b>	558	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		I	164	<b>262</b>	361	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
	2	S	295	<b>623</b>	755	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		U	233	<b>427</b>	558	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		I	164	<b>262</b>	361	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
	3	S	295	<b>591</b>	755	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		U	230	<b>394</b>	558	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
		I	164	<b>230</b>	361	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016
4	S	295	<b>459</b>	722	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016	
	U	230	<b>361</b>	525	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016	
	I	264	<b>262</b>	361	IPR	.005-.009	.005-.009	.007-.012	.007-.014	.007-.016	.007-.016	
M	1	S	197	<b>361</b>	443	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
		U	131	<b>230</b>	295	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
		I	98	<b>164</b>	213	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
	2	S	197	<b>328</b>	443	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
		U	131	<b>197</b>	295	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
		I	98	<b>164</b>	213	IPR	.004-.008	.004-.008	.005-.009	.005-.014	.007-.012	.007-.012
N	1	S	150	<b>240</b>	360	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		U	100	<b>160</b>	240	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		I	60	<b>100</b>	160	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
	2	S	150	<b>220</b>	360	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		U	100	<b>150</b>	240	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		I	60	<b>100</b>	160	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
	3	S	150	<b>200</b>	360	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		U	100	<b>140</b>	240	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010
		I	60	<b>90</b>	160	IPR	.004-.007	.004-.007	.005-.008	.006-.009	.006-.010	.006-.010



Holemaking

**■ Insert Recommendation**

P	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315
M	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315
		KSEM-PC	KC7135
N	O	DFC-/DFT-DS	KCU40
	I	KSEMP-HPG	KC7315

 Condition: S = Stable cutting conditions;  
 U = Unstable cutting conditions;  
 I = Interrupted cutting conditions

 Pocket seat: I = Inboard insert;  
 O = Outboard insert

# ➤ RMR and RHR

## Disc Style Reaming System



Common reamers of this category 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 instead. This allows for more regrinds than a regular tipped reamer, which brings down the cost per hole significantly. Additionally, the new coating KCU05 holds the surface finish more than twice as long as conventional coatings applied on reamers, depending on the workpiece material.

### Features and Benefits

#### Disc Style Versus Regular Tipped Reamers

- Stronger brazing joint than conventional tipped reamers.
- Practically no influence of temperature on runout.
- More rigidity and less vibrations due to full carbide front-end.
- Minimum of four regrinds possible versus regularly tipped reamers with an average of three regrinds, depending on wear situation.
- No damage of flutes, compared to the steel portion of regularly tipped reamers when chips constantly rub across.

#### New Coating KCU05

- KCU05 was specifically developed for reaming applications and shows superior results versus usual market grades applied on reamers.
- Holds surface finish more than 3x as long in steel compared to regular TiAlN thin coatings.
- Holds surface finish more than 2x as long in cast iron compared to regular TiAlN thin coatings.



**The new disc style design combined with the new reaming coating KCU05 allows for significant cost-per-hole improvements.**



## ➤ RMR Disc Reaming

In comparison to solid carbide reamers or single-tipped reamers, RMR is the economic alternative without any disadvantages in regards to productivity or hole quality. Combine RMR with the Kennametal SIF™ steerable holder for the best results.



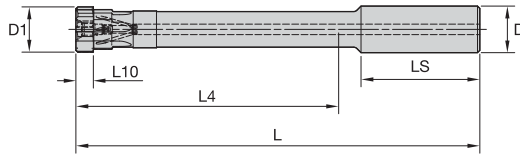
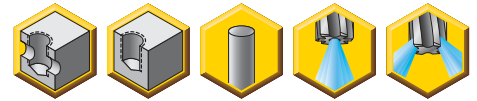
### Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating, specially developed 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

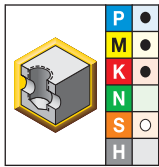
- All diameters between .5512–1.6732" (14–42,5mm).
- Variation of leads and cylindrical margin for application-specific optimization.

- 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.



Holemaking

**RMR • Disc Style Reamer • Straight Fluted for Blind Holes with Internal Coolant**

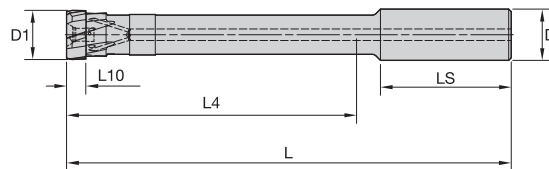
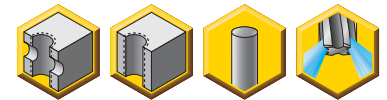


- first choice
- alternate choice

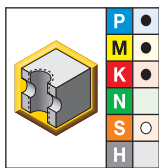
KCU05	D1		D		L		L4		L10		LS		Z
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
RMR14000H7SF	14,00	.551	16,000	0.63	147,4	5.8	92,4	3.638	7,50	.295	49,00	1.929	6
RMR15000H7SF	15,00	.591	16,000	0.63	147,4	5.8	92,4	3.638	7,50	.295	49,00	1.929	6
RMR16000H7SF	16,00	.630	20,000	0.79	159,4	6.3	102,4	4.031	7,50	.295	51,00	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

**Disc Style Reamers • Helical Fluted for Through Holes**

- 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		D		L		L4		L10		LS		Z
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
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

## ➤ RHR Disc Reaming

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 with the Kennametal SIF™ steerable holder for the best results.



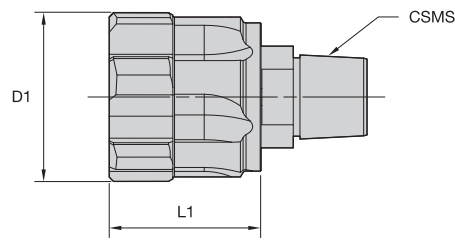
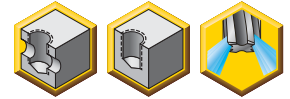
### Features and Benefits

- Solid carbide disc at front instead of single-tipped carbide blanks.
- Unique coating, specially developed for reaming applications.
- Unique patented coupling system enables same runout accuracy as monoblock systems (<3 microns), which eliminates the need for repeat runout checking.
- Comfortable radial clamping for quick interchanging even in narrow situations in the machine.
- No fixture for clamping or dismounting necessary.
- Helical and straight flutes for chip control in through and blind holes.
- Five coupling sizes for reamer heads from .5512" (14mm) up to 1.6732" (42,5mm) with the bodies.
- Bodies available with straight shank, HSK back end, and SIF connection.

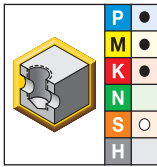
### Customization

- All diameters between .5512–1.6732" (14–42,5mm).
- Variation of leads and cylindrical margin for application-specific optimization.

- For hole tolerance H7.
- Intermediate sizes ground to achieve IT6 or IT7 hole tolerance class available.
- Please order lock screw and retention knob separately.



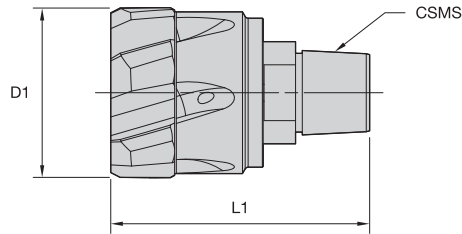
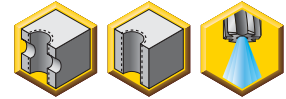
■ RHR • Disc Style Reamer Head • Straight Fluted for Blind Holes with Internal Coolant



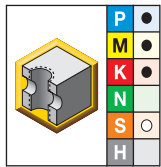
● first choice  
○ alternate choice

KCU05	CSMS system size	D1		L1		Z
		mm	in	mm	in	
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.



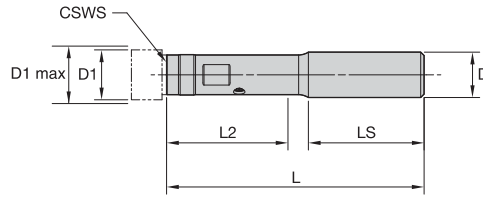
### ■ RHR • Disc Style Reamer Head • Helical Fluted for Through Holes with Internal Coolant



- first choice
- alternate choice

KCU05	CSMS system size	D1		L1		Z
		mm	in	mm	in	
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

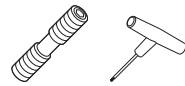
- Tool body shipped with lock screw and wrench.
- Order reamer head separately.



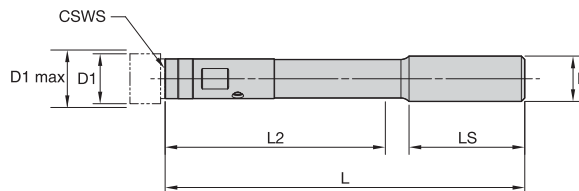
Holemaking

■ Straight Shank • Axial Clamping • 3 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L		L2		LS		central lock screw	Torx wrench	Nm	ft. lbs.
			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in				
4056174	SS16KST115AR3M	KST115	14,00	.551	15,999	.630	16,00	0.630	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	0.787	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	0.787	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	0.787	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	0.787	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	0.984	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

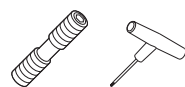


- Tool body shipped with lock screw and wrench.
- Order reamer head separately.

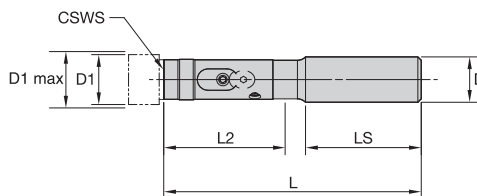
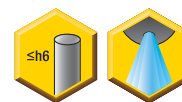


■ Straight Shank • Axial Clamping • 5 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L		L2		LS		central lock screw	Torx wrench	Nm	ft. lbs.
			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in				
4056177	SS16KST115AR5M	KST115	14,00	.551	15,999	.630	16,00	0.630	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	0.787	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	0.787	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	0.787	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	0.787	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	0.984	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



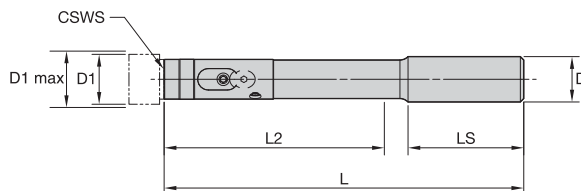
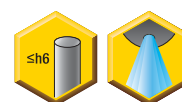
- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.



### ■ Straight Shank • Radial Clamping • 3 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L		L2		LS		retention knob	clamp set	Torx wrench	ft.	
			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in				Nm	lbs.
3861195	SS20KST175RR3M	KST175	20,00	.787	22,499	.886	20,00	0.787	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	0.787	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	0.984	152,50	6.004	80,50	3.169	56,00	2.20	KST250250RK	KST250CS	TT25	9,0	6.7
3861198	SS32KST300RR3M	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	KST300350RK	KST300CS	TT30	13,0	9.7
3861199	SS32KST350RR3M	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	KST300350RK	KST350CS	TT30	13,0	9.7

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.

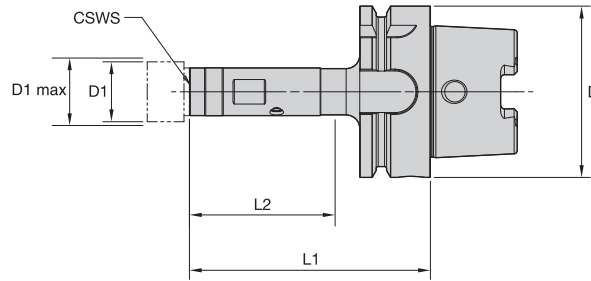


### ■ Straight Shank • Radial Clamping • 5 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L		L2		LS		retention knob	clamp set	Torx wrench	ft.	
			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in				Nm	lbs.
3861200	SS20KST175RR5M	KST175	20,00	.787	22,499	.886	20,00	0.787	158,50	6.24	96,50	3.80	51,000	2.01	KST175200RK	KST175CS	TT15	5,0	3.7
3861201	SS20KST200RR5M	KST200	22,50	.886	27,499	1.083	20,00	0.787	185,50	7.30	120,50	4.74	51,000	2.01	KST175200RK	KST200CS	TT15	5,0	3.7
3861202	SS25KST250RR5M	KST250	27,50	1.083	32,499	1.280	25,00	0.984	217,50	8.56	145,50	5.73	56,000	2.20	KST250250RK	KST250CS	TT25	9,0	6.7
3861203	SS32KST300RR5M	KST300	32,50	1.280	37,499	1.476	32,00	1.260	249,00	9.80	169,00	6.65	61,000	2.40	KST300350RK	KST300CS	TT30	13,0	9.7
3861204	SS32KST350RR5M	KST350	37,50	1.476	42,000	1.654	32,00	1.260	274,00	10.79	192,00	7.56	61,000	2.40	KST300350RK	KST350CS	TT30	13,0	9.7



- Tool body shipped with lock screw and wrench.
- Order reamer head separately.

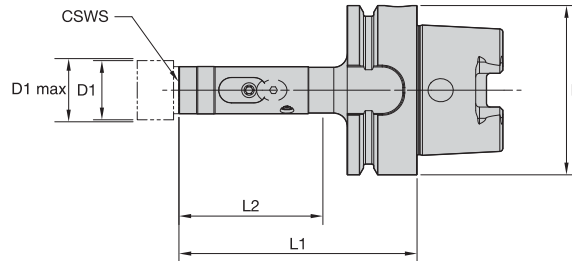


■ HSK63A Shank • Axial Clamping • 3 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L1		L2		central lock screw	Torx wrench	Nm	ft. lbs.
			mm	in	mm	in	mm	in	mm	in	mm	in				
4056180	HSK63AKST115AR3M	KST115	14,00	.551	15,999	.630	63,00	2,480	69,00	2,717	35,00	1,380	KST115115AS	FT8	3,0	2.2
4056181	HSK63AKST135AR3M	KST135	16,00	.630	17,999	.709	63,00	2,480	74,00	2,913	39,00	1,540	KST135155AS	FT10	4,0	3.0
4056182	HSK63AKST155AR3M	KST155	18,00	.709	19,999	.787	63,00	2,480	81,00	3,189	45,00	1,770	KST135155AS	FT10	4,0	3.0
3860911	HSK63AKST175AR3M	KST175	20,00	.787	22,499	.886	63,00	2,480	88,50	3,484	51,50	2,028	KST175200AS	TT15	5,0	3.7
3860912	HSK63AKST200AR3M	KST200	22,50	.886	27,499	1,083	63,00	2,480	105,50	4,154	65,50	2,579	KST175200AS	TT15	5,0	3.7
3860963	HSK63AKST250AR3M	KST250	27,50	1,083	32,499	1,280	63,00	2,480	122,50	4,823	80,50	3,169	KST250250AS	TT25	9,0	6.7
3860964	HSK63AKST300AR3M	KST300	32,50	1,280	37,499	1,476	63,00	2,480	139,00	5,472	94,00	3,701	KST300350AS	TT30	13,0	9.7
3860965	HSK63AKST350AR3M	KST350	37,50	1,476	42,000	1,654	63,00	2,480	155,00	6,102	108,00	4,252	KST300350AS	TT30	13,0	9.7

HSK63A Shank Bodies • Radial Clamping

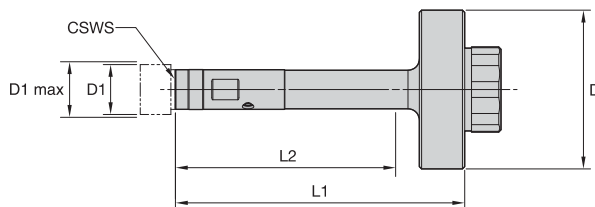
- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.



■ HSK63A Shank • Radial Clamping • 3 x D

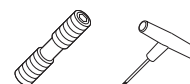
order number	catalog number	CSWS system size	D1		D1 max		D		L1		L2		retention knob	clamp set	Torx wrench	Nm	ft. lbs.
			mm	in	mm	in	mm	in	mm	in	mm	in					
3860966	HSK63AKST175RR3M	KST175	20,00	.787	22,499	.886	63,00	2,480	88,50	3,48	51,50	2,028	KST175200RK	KST175CS	TT15	5,0	3.7
3860967	HSK63AKST200RR3M	KST200	22,50	.886	27,499	1,083	63,00	2,480	105,50	4,15	65,50	2,579	KST175200RK	KST200CS	TT15	5,0	3.7
3860968	HSK63AKST250RR3M	KST250	27,50	1,083	32,499	1,280	63,00	2,480	122,50	4,82	80,50	3,169	KST250250RK	KST250CS	TT25	9,0	6.7
3860969	HSK63AKST300RR3M	KST300	32,50	1,280	37,499	1,476	63,00	2,480	139,00	5,47	94,00	3,701	KST300350RK	KST300CS	TT30	13,0	9.7
3860970	HSK63AKST350RR3M	KST350	37,50	1,476	42,000	1,654	63,00	2,480	155,00	6,10	108,00	4,252	KST300350RK	KST350CS	TT30	13,0	9.7

- Tool body shipped with lock screw and wrench.
- Order reamer head separately.
- Order SIF™ steerable toolholder separately; see the Kennametal Innovations Master Catalog Cutting Tools 2013, page K129, for more information.



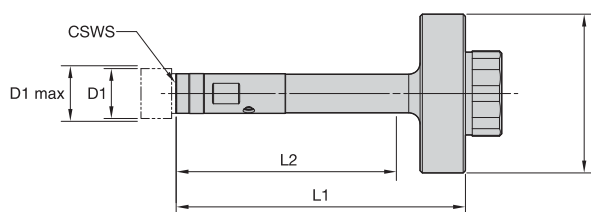
### ■ SIF70 Shank • Axial Clamping • 5 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L1		L2		central lock screw	Torx wrench	ft. lbs.	
			mm	in	mm	in	mm	in	mm	in	mm	in				
4056183	SIF70KST115AR5M	KST115	14,00	.551	15,999	.630	70,00	2.756	94,97	3.739	67,000	2.640	KST115115AS	FT8	3,0	2.2
4056184	SIF70KST135AR5M	KST135	16,00	.630	17,999	.709	70,00	2.756	104,00	4.094	75,000	2.950	KST135155AS	FT10	4,0	3.0
4056185	SIF70KST155AR5M	KST155	18,00	.709	19,999	.787	70,00	2.756	115,00	4.530	85,000	3.350	KST135155AS	FT10	4,0	3.0
3860971	SIF70KST175AR5M	KST175	20,00	.787	22,499	.886	70,00	2.756	127,50	5.020	96,500	3.799	KST175200AS	TT15	5,0	3.7
3860972	SIF70KST200AR5M	KST200	22,50	.886	27,499	1.083	70,00	2.756	154,50	6.083	120,500	4.744	KST175200AS	TT15	5,0	3.7
3860973	SIF70KST250AR5M	KST250	27,50	1.083	32,499	1.280	70,00	2.756	181,50	7.146	145,500	5.728	KST250250AS	TT25	9,0	6.7
3860974	SIF70KST300AR5M	KST300	32,50	1.280	37,499	1.476	70,00	2.756	208,00	8.189	169,000	6.654	KST300350AS	TT30	13,0	9.7
3860975	SIF70KST350AR5M	KST350	37,50	1.476	42,000	1.654	70,00	2.756	233,00	9.173	192,000	7.559	KST300350AS	TT30	13,0	9.7



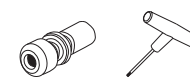
### SIF70 Shank Bodies • Radial Clamping

- Tool body shipped with retention knob, clamp set, and wrench.
- Order reamer head separately.
- Order SIF steerable toolholder separately; see the Kennametal Innovations Master Catalog Cutting Tools 2013, page K129, for more information.



### ■ SIF70 Shank • Radial Clamping • 5 x D

order number	catalog number	CSWS system size	D1		D1 max		D		L1		L2		retention knob	Torx wrench	ft. lbs.	
			mm	in	mm	in	mm	in	mm	in	mm	in				
3860976	SIF70KST175RR5M	KST175	20,00	.787	22,499	.886	70,00	2.756	127,50	5.020	96,500	3.799	KST175200RK	TT15	5,0	3.7
3860977	SIF70KST200RR5M	KST200	22,50	.886	27,499	1.083	70,00	2.756	154,50	6.083	120,500	4.744	KST175200RK	TT15	5,0	3.7
3860978	SIF70KST250RR5M	KST250	27,50	1.083	32,499	1.280	70,00	2.756	181,50	7.146	145,500	5.728	KST250250RK	TT25	9,0	6.7
3860979	SIF70KST300RR5M	KST300	32,50	1.280	37,499	1.476	70,00	2.756	208,00	8.189	169,000	6.654	KST300350RK	TT30	13,0	9.7
3860980	SIF70KST350RR5M	KST350	37,50	1.476	42,000	1.654	70,00	2.756	233,00	9.173	192,000	7.559	KST300350RK	TT30	13,0	9.7



■ RHR • Metric

Material Group	KCU05				Metric						
	Cutting Speed – vc				Recommended Feed Rate per Tooth						
	Range – m/min				Tool Diameter (mm)	14,00–19,99		20,00–32,00		32,50–42,00	
	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



■ RHR • Inch

Material Group	KCU05				Inch						
	Cutting Speed – vc				Recommended Feed Rate per Tooth						
	Range – SFM				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

■ RMR • Metric

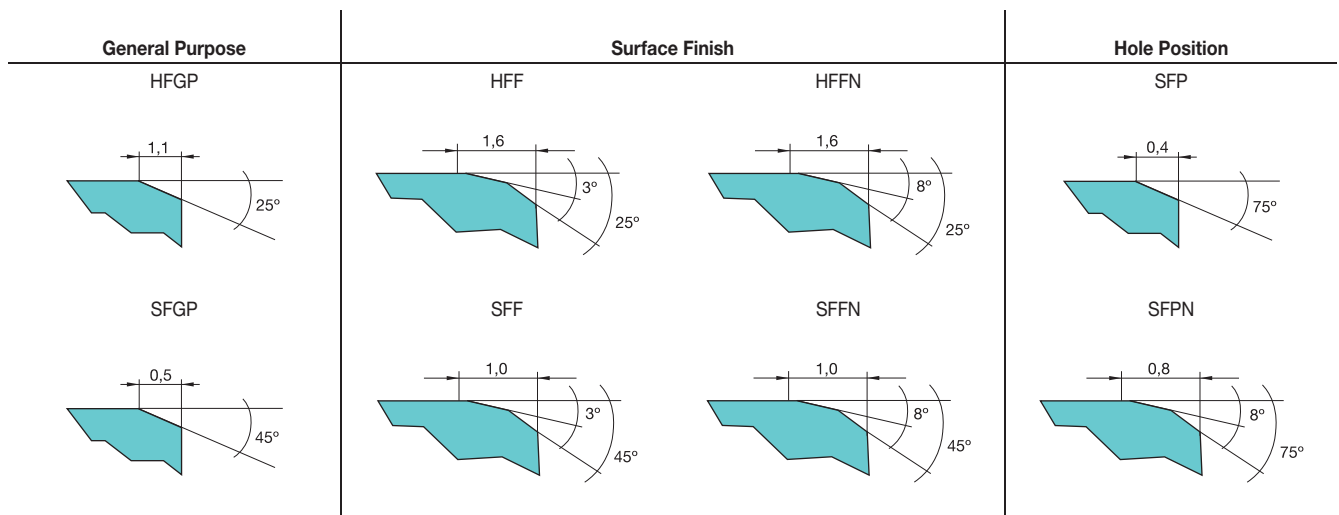
Holemaking

Material Group		KCU05			Metric				
		Cutting Speed – vc			Recommended Feed Rate per Tooth				
		Range – m/min			Tool Diameter (mm)	14,00–19,99		20,00–32,00	
		min	Starting Value	max		Feed/Tooth	min	max	min
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

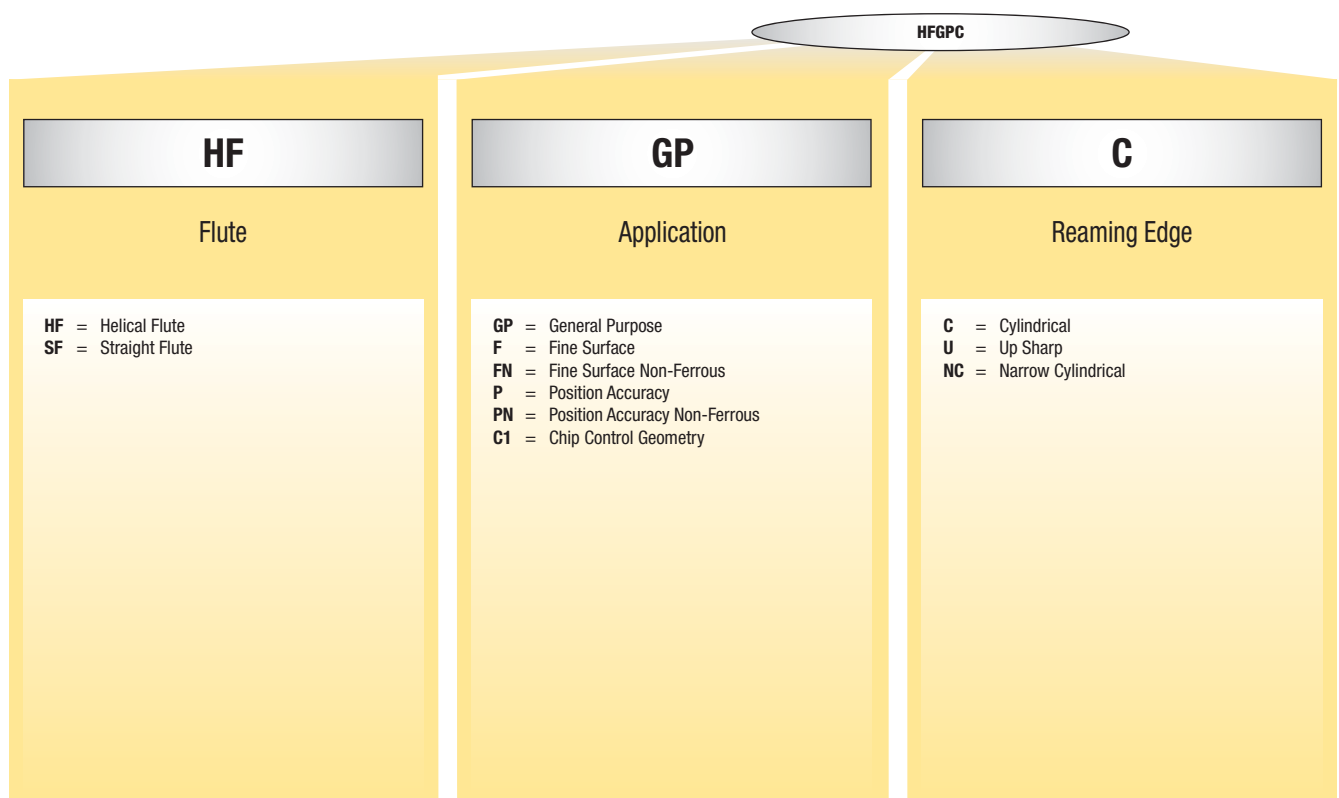
■ RMR • Inch

Material Group		KCU05			Inch				
		Cutting Speed – vc			Recommended Feed Rate per Tooth				
		Range – SFM			Tool Diameter (inch)	.551–.787		.787–1.260	
		min	Starting Value	max		Feed/Tooth	min	max	min
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

## Lead Design Overview



## Lead Nomenclature



■ **General Purpose**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <1.6	HFGP	C
	blind		SFGP	
M	through	IT 7, Ra <1.0	HFGP	C, NC
	blind		SFGP	
K	through	IT 7, Ra <1.6	HFGP	C
	blind		SFGP	
S	through	IT 7, Ra <0.6	HFGP	U, NC
	blind		SFGP	

■ **Extra Surface Finish**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <0.8	HFFN	C
	blind		SFFN	
K	through	IT 7, Ra <0.8	HFFN	C
	blind		SFFN	

■ **Additional Hole Position Accuracy**

Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	through	IT 7, Ra <1.6	SFP	C
	blind			
M	through	IT 7, Ra <1.0	SFP	C, NC
	blind			
K	through	IT 7, Ra <1.6	SFP	C
	blind			
S	through	IT 7, Ra <0.6	SFP	U, NC
	blind			

■ **Extra Chip Control**

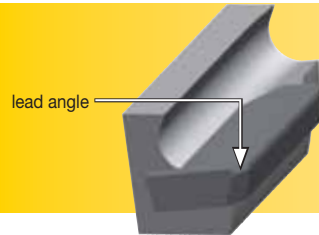
Material Group	Hole Type	Surface Requirement	Recommended Geometry	Design
P	blind	Ra 0.4–1.6	SFC1	C, U

## Customization Capabilities

### Diameter

- .5512" (14mm) up to 1.6732" (42,5mm) in diameter.
- Depending on the application, up to tolerance IT6.
- Diameter steps.

### Leads

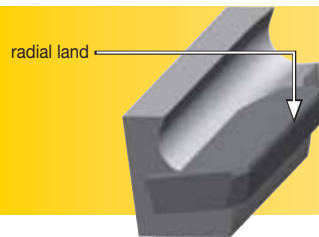


- 25–90° leads for smoother cutting or better positioning.
- Double leads for better surface quality.
- Radius leads for optimal CI machining.

### Grades

- Different coatings possible: TiAlN, AlCrN, TiN, TiCN, TiB<sub>2</sub>.
- Cermet grades for steel cutting.

### Radial Land



- Cylindrical for better guiding and form.
- Upsharp (no land) for best surface finishes and less passive forces.
- Narrow land to reduce forces.

## Application Hints

### Pre-Drill

- Leave stock for reamer, depending on diameter.
- .0079" (0,2mm) up to .0156" (0,4mm) in diameter.
- If possible, a chamfer will ease the reaming operation.

### Entries/Exits

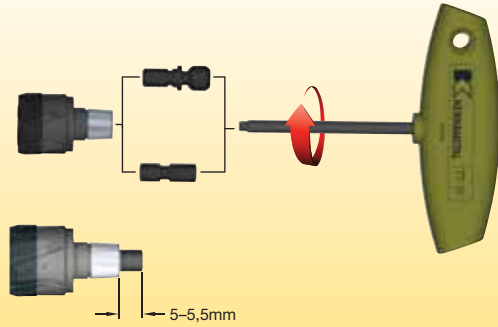


### Runout

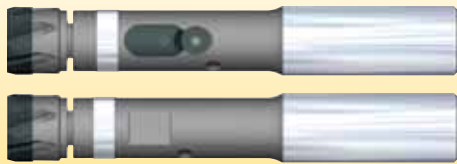
- Runout and angularity are critical.
- If possible, use an adjustable holder.
- The Kennametal SIF™ holder series are adjustable to .00004" (1 micron).
- Recommended runout and angularity are .00001–.00002" (3–5 microns).

## Assembly

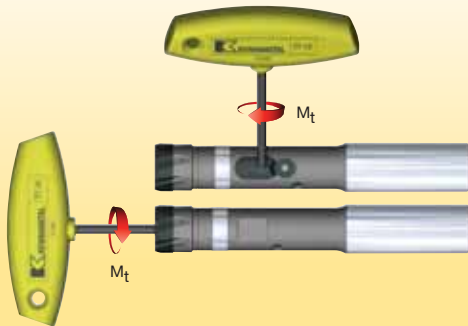
### 1 >>> Assembling the Reamer Head



### 2 >>> Place the Reamer Head in the Reamer Body



### 3 >>> Clamp the Reamer Head in the Reamer Body



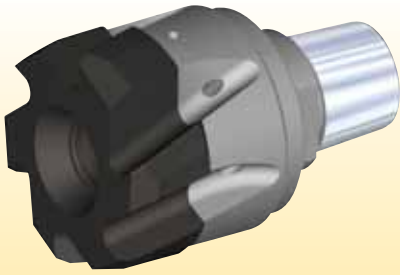
## Disassembly

### 3 >>> 2 >>> 1 >>>

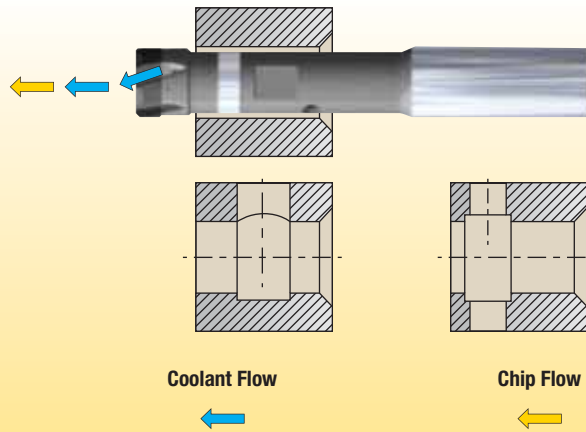
KST	Ø Range (mm)		M <sub>t</sub> (Nm)	Torx size	L (mm)
115	14	15,999	1,3	FT-8	5-5,5
135	16	17,999	2	FT-10	5,5-6
155	18	19,999	2	FT-10	5-5,5
175	20	22,499	4	TT-15	5-5,5
200	22,5	27,499	4	TT-15	5-5,5
250	27,5	32,499	5	TT-25	5,5-6
300	32,5	37,499	9	TT-30	5,5-6
350	37,5	42	9	TT-30	5,5-6



### Through Hole



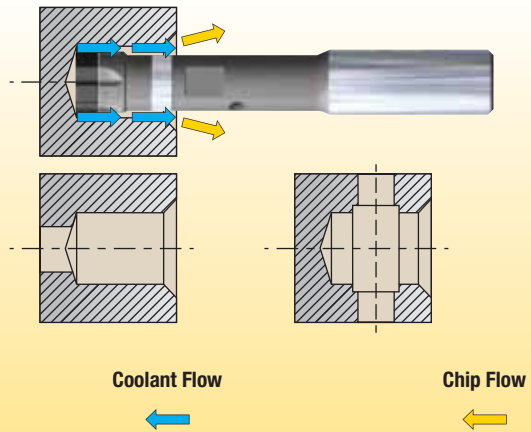
Helical fluted reamer pushes chips forward, supported by coolant.



### Blind Hole



Straight fluted reamer and coolant force chips backwards.



■ Reaming Allowances for Multi-Blade Reaming

mm	in	reaming allowances					
		min	mm middle	max	min	in 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

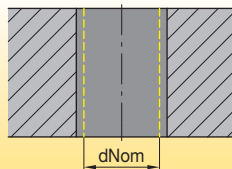
■ Troubleshooting

**Problem**

**Cause**

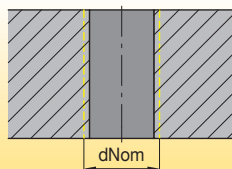
**Possible Remedy**

Hole diameter too large.



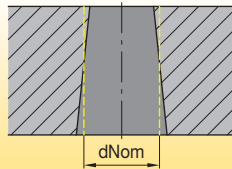
- Reaming tool running out-of-center.
- Concentricity of pilot hole and ream machining unsatisfactory.
- Built-up edge.
- Unsuitable cooling lubricant.
- Reaming tool diameter too large.
- Use equalizing adapter.
- Re-align, use floating head.
- Change cooling lubricant.
- Change cutting speed.
- Measure reamers and send for repairs.

Hole diameter too small.



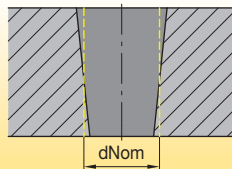
- Reamer worn.
- Unsuitable cooling lubricant.
- Reaming allowance too small.
- Replace and refit tool.
- Change cooling lubricant.
- Increase reaming allowance.

Conical hole profile wider towards drill runoff.



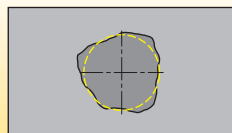
- Concentricity of pilot hole and reaming unsatisfactory.
- Positioning accuracy of pilot hole to reaming.
- Re-align, use equalizing adapter.
- Correct positioning accuracy.

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.



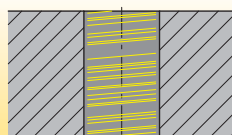
- Reaming tool running out-of-center.
- Slanted cutting surface/asymmetrical cutting.
- Workpiece twisted.
- Use equalizing adapter.
- Spot face as drilling preparation.
- Take the direction of impact into account when clamping the workpiece.

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.

Hole out-of-center and/or showing chatter marks.



- Built-up edge.
- Change cooling lubricant.
- Change cutting speed.

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# Tapping

<b>High-Performance Taps .....</b>	<b>C2–C30</b>
HSS-E PM Form Taps.....	C2–C17
HSS-E GOtap Multipurpose.....	C18–C30

## Line Expansion

# ➤ High-Performance HSS-E-PM Form Taps

### Primary Application

High-Performance High-Speed Steel (HSS-E-PM) Taps are manufactured to both ANSI and DIN standards from powder metal, offer high productivity and reliable thread quality, and are engineered for greater wear and heat resistance. HSS-E-PM tools can be used on conventional non-rigid and CNC-synchronous tapping machines for tapping through and blind holes in a variety of materials and are particularly efficient in tapping soft steel and aluminum.

The precision h6 shank enables usage in either conventional square drive tap holders or in precision round toolholders.



## Features and Benefits

### Improved Performance, Wide Range of Choices

- Higher strength and wider range of applications versus carbide taps.
- Higher tapping speed capability and longer life than conventional HSS-E taps.
- Can be used on either conventional or synchronous tapping machines.
- Forming taps for soft steel and aluminum.
- Selection of taps for all materials:
  - Steel
  - Stainless steel
  - Iron
  - Aluminum, cast and wrought
  - Aerospace
  - Hard steel

### Customization

- Customized taps are available with short lead times from semi-finished blanks.

# High-Performance HSS-E-PM Form Taps for Steel and Stainless Steel





### Through Holes

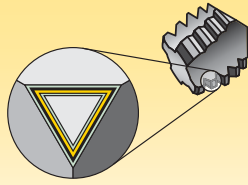


### Blind Holes

		Cutting		Forming		Cutting		Forming	
		Flood	Internal Coolant	Flood	Internal Coolant	Flood	Internal Coolant	Flood	Internal Coolant
<b>P</b>	<32 HRC	<b>T320_KC7542</b> T620_KP6525	<b>T321_KC7542</b> T621_KP6525	T622_KSP21 T624_KSP27	<b>T381_KC7542</b> T623_KSP21 T625_KSP27	T630_KP6525 T630_KP6505 T632_KP6525 T650_KP6525	<b>T331_KC7542</b> T631_KP6525 T633_KP6525 T651_KP6525	T622_KSP21 T626_KSP27	<b>T391_KC7542</b> T623_KSP21 T627_KSP27
	32-44 HRC	T600_KSP2	—	—	—	T602_KSP21 T604_KSH26	—	—	—
<b>M</b>	—	T620_KM6515	T621_KM6515	—	—	T630_KM6515	T631_KM6515	—	—
<b>K</b>	—	<b>T340_KC7542</b> T640_KP6525	<b>T353_KCK17</b> T641_KP6525	—	—	T640_KP6525 T642_KP6525	<b>T351_KCK17</b> <b>T353_KCK17</b> T641_KP6525 T643_KP6525	—	—
<b>N</b>	Wrought, Low Si	T670_KSN38	—	T622_KSN28	<b>T481_KC7512</b> T623_KSN28	T680_KSN38	—	T622_KSN28	<b>T491_KCN14</b> <b>T623_KSN28</b>
	Cast, Si 12%	T640_KP6525	<b>T461_KC7512</b> T641_KP6525	T622_KSN28	<b>T481_KC7512</b> T623_KSN28	T640_KP6525 T642_KP6525	<b>T471_KCN14</b> T641_KP6525 T643_KP6525	T622_KSN28	<b>T491_KCN14</b> T623_KSN28
<b>S</b>	Titanium Alloys	T614_KSN25 T660_KSS20 T660_KSSM24	—	—	—	T616_KSN25 T662_KSS20 T662_KSSM24	—	—	—
	Ni and Co Alloys	T610_KSSH22 T690_KSS29 T690_KSP27	—	—	—	T612_KSSH22 T692_KSS29 T692_KSP27 T694_KSS29 T694_KSP27	—	—	—
<b>H</b>	44-55 HRC	T606_KSSH22	—	—	—	T606_KSSH22	—	—	—
	55-63 HRC	<b>T410_KCU36</b>	—	—	—	<b>T410_KCU36</b>	—	—	—

Solid Carbide = **bold**  
HSS-E-PM = regular





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

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron
<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys
<b>H</b>	Hardened Materials

wear resistance ← → toughness

**NEW!**

Grade

Coating	Grade Description		05	10	15	20	25	30	35	40	45	
<p><b>KSP27</b></p>	Coated HSS-E-PM, PVD — high vanadium — cobalt powder metal HSS substrate coated with new heat and wear-resistant multilayer AlCrTiN. Use in steel and stainless steel.	<b>P</b>										

## HSS Tap Identification System



Metric							
<b>T624</b>	<b>MF</b>	<b>100</b>	<b>X</b>	<b>125</b>	<b>R</b>	<b>D9</b>	<b>-DA</b>
<b>T626</b>	<b>NC</b>	<b>06250</b>	<b>-</b>	<b>11</b>	<b>R</b>	<b>H7</b>	<b>-DA</b>
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)			

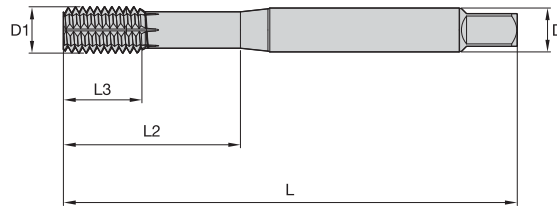
  

<p><b>M</b> = Metric coarse-pitch thread (ISO form)</p> <p><b>MF</b> = Metric fine-pitch thread (ISO form)</p> <p><b>NC</b> = Unified coarse series thread</p> <p><b>NF</b> = Unified fine series thread</p>	<p><b>DA</b> = DIN length and ANSI shank</p>
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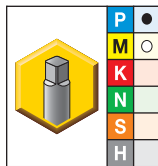
  

<p><b>Style</b></p> <p><b>T624</b> = Steel and stainless steel, blind and through holes, forming tap, solid</p> <p><b>T625</b> = Steel and stainless steel, blind and through holes, forming tap, through coolant</p> <p><b>T626</b> = Steel and stainless steel, blind holes, forming tap, solid</p> <p><b>T627</b> = Steel and stainless steel, blind holes, forming tap, through coolant</p>
---

- KSP27 AlCrTiN for steel and stainless steel.



■ T624 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Machine Screw and Fractional



- 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

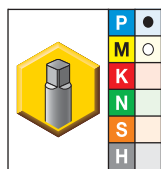
(continued)

# High-Performance Taps

Beyond™ Forming Taps HSS-E-PM • Blind and Through Holes



(T624 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Machine Screw and Fractional — continued)



● first choice

○ alternate choice

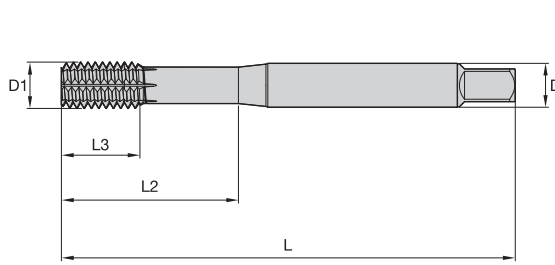
Tapping

KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
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

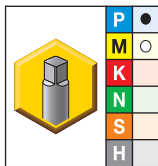
- KSP27 AlCrTiN for steel and stainless steel.



Tapping



■ T624 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Metric



- 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

# High-Performance Taps

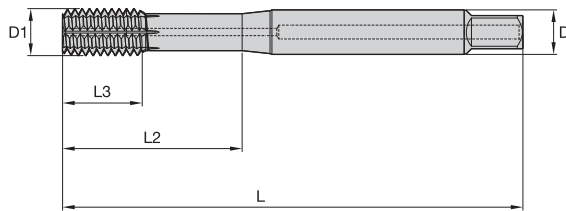
Beyond™ Forming Taps HSS-E-PM • Blind and Through Holes



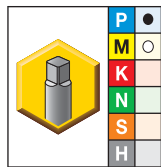
- KSP27 AlCrTiN for steel and stainless steel.



Tapping



## ■ T625 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Fractional



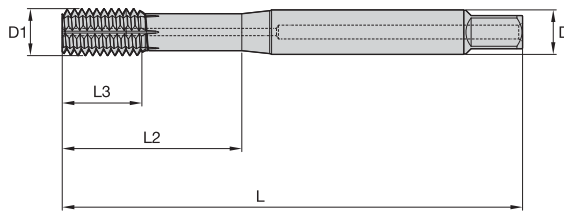
- first choice
- alternate choice

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

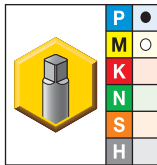
### Shank Tolerance

D fractional	tolerance h6
.250-.375	+0, -.0004
.438-.625	+0, -.0004

- KSP27 AlCrTiN for steel and stainless steel.



■ T625 • DIN Length ANSI Shank • Form C Semi-Bottoming Entry Taper • Through Coolant • Metric



- 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

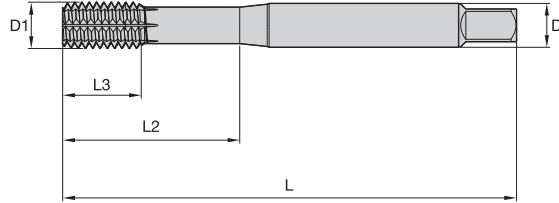
Shank Tolerance

D fractional	tolerance h6
.250-.375	+0, -.0004
.438-.625	+0, -.0004

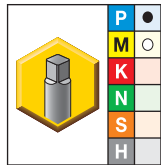
- KSP27 AlCrTiN for steel and stainless steel.



Tapping



■ T626 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Machine Screw and Fractional



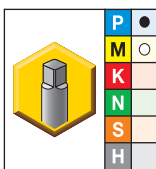
- first choice
- alternate choice

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

(continued)



(T626 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Machine Screw and Fractional — continued)



● first choice  
○ alternate choice

KSP27	D1 size	L	L3	L2	D	number of lube grooves	pitch diameter limit
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

Shank Tolerance

D fractional	tolerance h6
.250-.375	+0, -.0004
.438-.625	+0, -.0004

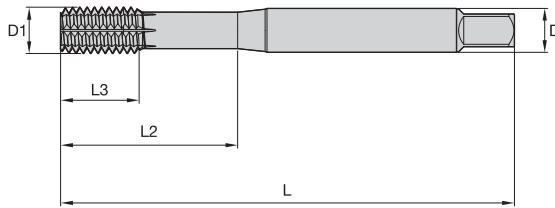


# High-Performance Taps

Beyond™ Forming Taps HSS-E-PM • Blind Holes



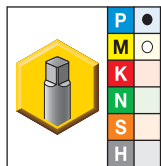
- KSP27 AlCrTiN for steel and stainless steel.



Tapping



## ■ T626 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Metric



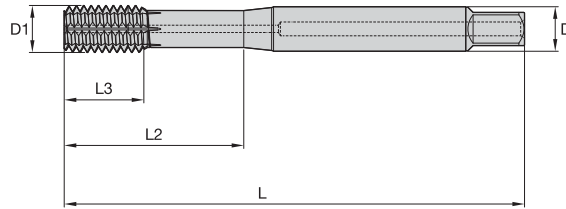
- first choice
- alternate choice

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

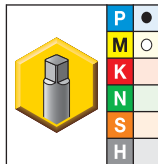
### Shank Tolerance

D fractional	tolerance h6
.250-.375	+0, -.0004
.438-.625	+0, -.0004

- KSP27 AlCrTiN for steel and stainless steel.



■ T627 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Through Coolant • Fractional



- 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

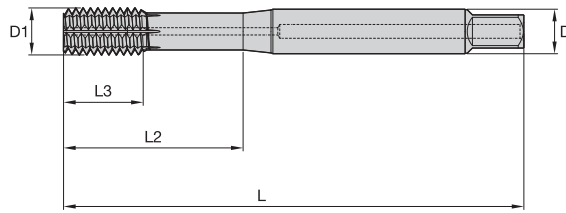
D fractional	tolerance h6
.250-.375	+0, -.0004
.438-.625	+0, -.0004

# High-Performance Taps

Beyond™ Forming Taps HSS-E-PM • Blind Holes



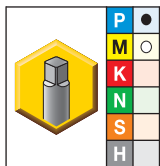
- KSP27 AlCrTiN for steel and stainless steel.



Tapping



## ■ T627 • DIN Length ANSI Shank • Form E Bottoming Entry Taper • Through Coolant • Metric



- 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

■ HSS-E-PM • Metric

Material Group		Through Holes					Blind Holes				
		Tap Style	Grade	Range – m/min			Tap Style	Grade	Range – m/min		
				min	Starting Value	max			min	Starting Value	max
P	1	T624	KSP27	20	30	45	T624, T626	KSP27	14	21	32
	2	T624	KSP27	17	25	38	T624, T626	KSP27	12	18	26
M	1	T624	KSP27	6	8	10	T624, T626	KSP27	4	6	7



■ HSS-E-PM • Inch

Material Group		Through Holes					Blind Holes				
		Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM		
				min	Starting Value	max			min	Starting Value	max
P	1	T624	KSP27	70	100	150	T624, T626	KSP27	50	70	100
	2	T624	KSP27	50	80	120	T624, T626	KSP27	40	60	90
M	1	T624	KSP27	20	30	30	T624, T626	KSP27	10	20	20

## Line Expansion

# ➤ 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.

## Features and Benefits

### Advanced Technology

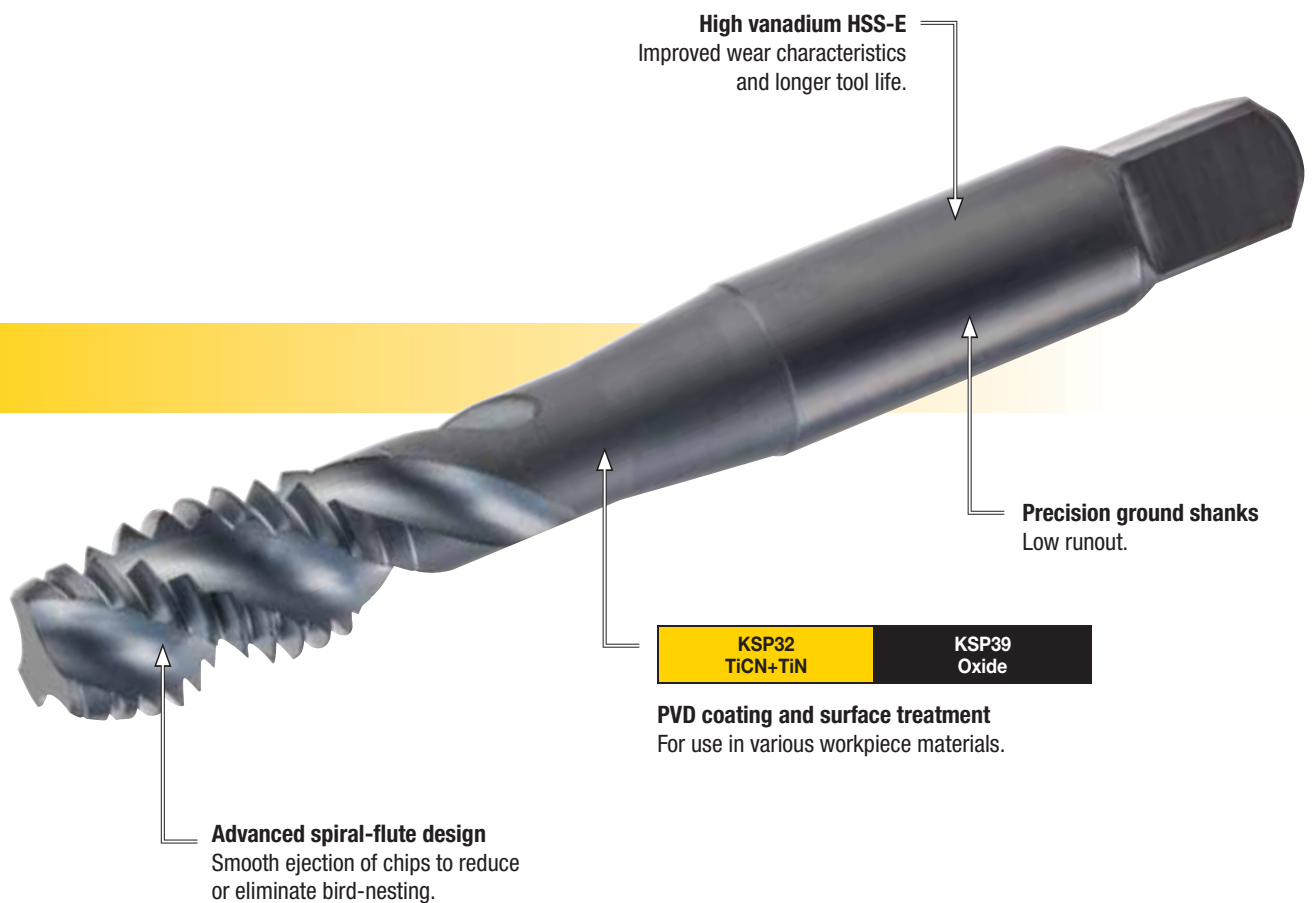
- Manufactured with high-vanadium HSS-E material for exceptional wear characteristics and longer tool life.
- Optimized geometries for efficient chip evacuation in both through and blind holes.
- Advanced PVD coatings to reduce tapping torque resulting in high-quality thread finish and longer tool life.

### Application Information

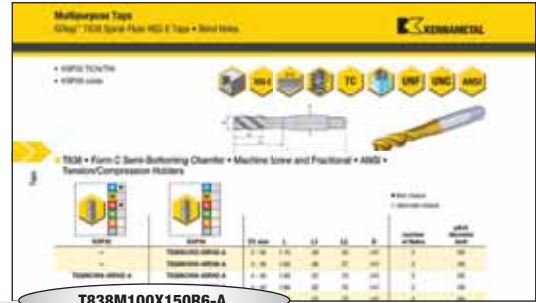
- Multipurpose taps for use in a wide variety of ductile materials, including stainless steels, carbon and alloy steels, cast aluminum, and ductile iron.
- For use in both synchronous and non-synchronous machining centers:
  - Vertical and horizontal CNC machines.
  - Screw machines.
  - Rotary index machines.
  - Secondary tapping units.



# Multipurpose HSS-E Spiral-Flute Taps for Use in Tension/Compression Tap Holders



HSS Taps Identification System



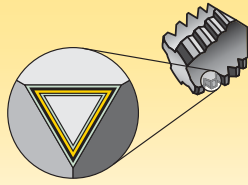
Metric							
<b>T838</b>	<b>M</b>	<b>100</b>	<b>X</b>	<b>150</b>	<b>R</b>	<b>6</b>	<b>-A</b>
Inch							
<b>T839</b>	<b>NC</b>	<b>06520</b>	<b>—</b>	<b>11</b>	<b>R</b>	<b>H3</b>	<b>-A</b>
Tap Design	Type of Thread	Nominal Diameter of Thread		Pitch	Cutting Direction	Tolerance Class	Taps Dimension
		mm 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

**A** = ANSI

**Style**  
**T838** = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, TC, semi-bottom  
**T839** = Steel, stainless steel, ductile iron, and cast aluminum, blind holes, spiral flute, TC, bottom





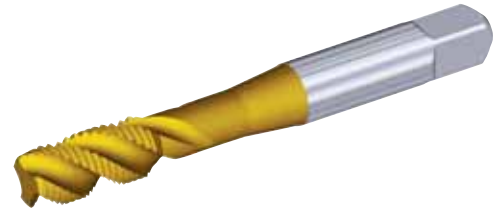
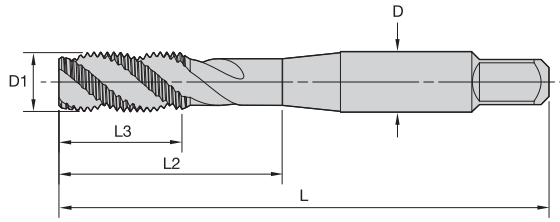
Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

wear resistance ← → toughness

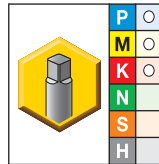
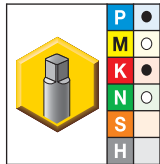
Coating		Grade Description		05	10	15	20	25	30	35	40	45
Grade	KSP39	<p>HSS-E substrate with black oxide surface treatment. Use in a variety of materials, including steel, stainless steel, and ductile iron. Not recommended for non-ferrous materials.</p>	P									
			M									
			K									
			P									
	KSP32	<p>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									

- KSP32 TiCN/TiN
- KSP39 oxide



Tapping

### ■ T838 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders

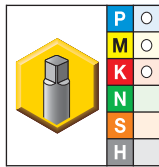
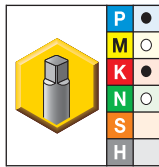


- first choice
- alternate choice

KSP32	KSP39	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	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

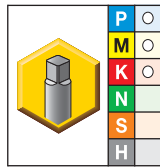
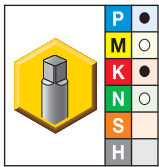


# Multipurpose Taps

G0tap™ T838 Spiral-Flute HSS-E Taps • Blind Holes



(T838 • Form C Semi-Bottoming Chamfer • Machine Screw and Fractional • ANSI • Tension/Compression Holders — continued)



● first choice  
○ alternate choice

Tapping

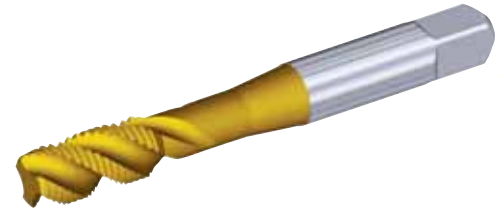
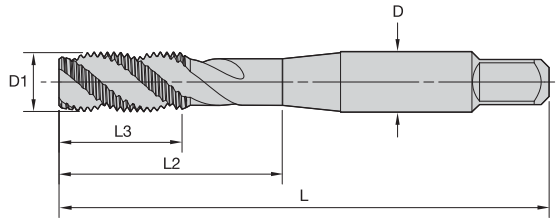
		D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
KSP32	—							
	—							
KSP39	T838NC05625-12RH5-A	9/16 - 12	3.59	1.00	1.74	.429	3	H5
	T838NF05625-18RH3-A	9/16 - 18	3.59	1.00	1.74	.429	3	H3
T838NC06250-11RH3-A	T838NF05625-18RH5-A	9/16 - 18	3.59	1.00	1.74	.429	3	H5
	T838NC06250-11RH3-A	5/8 - 11	3.81	1.09	1.89	.480	3	H3
T838NC06250-11RH5-A	T838NC06250-11RH7-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
T838NF06250-18RH6-A	T838NF06250-18RH7-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	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.

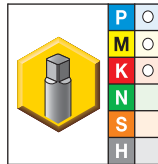
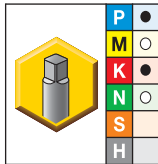
### Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

- KSP32 TiCN/TiN
- KSP39 oxide



■ T838 • Form C Semi-Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



- first choice
- alternate choice

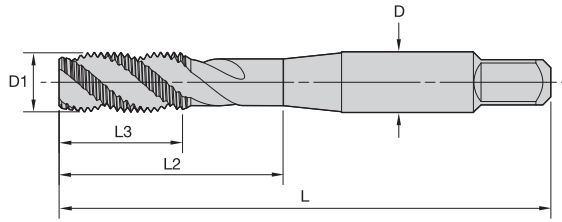
KSP32	KSP39	D1 size	L	L3	L2	D	number of flutes	pitch diameter limit
T838M030X050RD3-A	T838M030X050RD3-A	M3 X 0,5	1.94	.58	.75	.141	2	D3
—	T838M035X060RD4-A	M3,5 X 0,6	1.99	.38	.71	.141	2	D4
T838M040X070RD4-A	T838M040X070RD4-A	M4 X 0,7	2.12	.38	.76	.168	3	D4
T838M050X080RD4-A	T838M050X080RD4-A	M5 X 0,8	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.

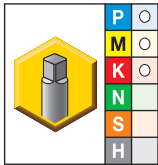
Shank Tolerance

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 • Machine Screw and Fractional • ANSI • Tension/Compression Holders

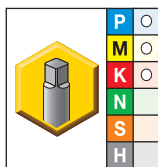


● first choice  
○ alternate choice

KSP39	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)



KSP39	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

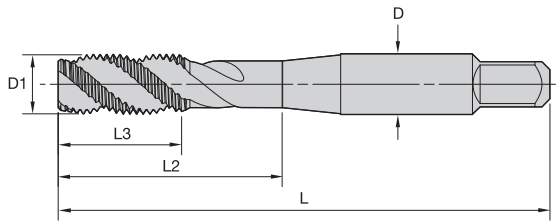


**NOTE:** Suitable for tension/compression holders.

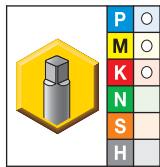
Shank Tolerance

D inch	tolerance
.141-.635	+0, -.0015
>.635-1.51	+0, -.0020
>1.51-2.01	+0, -.0030

• KSP39 oxide



### ■ T839 • Form E Bottoming Chamfer • Metric • ANSI • Tension/Compression Holders



● first choice  
○ alternate choice

KSP39	D1 size	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



GOtap • HSS-E • Inch

Material Group											
	Through Holes					Blind Holes					
	Tap Style	Grade	Range – SFM			Tap Style	Grade	Range – SFM			
			min	Starting Value	max			min	Starting Value	max	
P	1	T820	KSU31, KSP32	70	100	120	T830, T832, T838, T839	KSU31, KSP32	50	70	100
		T820	KSP39, KSU30	40	50	60	T830, T832, T838, T839	KSP39, KSU30	20	30	50
	2	T820	KSU31, KSP32	60	80	100	T830, T832, T838, T839	KSU31, KSP32	40	60	80
		T820	KSP39, KSU30	30	50	60	T830, T832, T838, T839	KSP39, KSU30	20	30	50
	3	T820	KSU31, KSP32	50	70	90	T830, T832, T838, T839	KSU31, KSP32	40	50	70
		T820	KSP39, KSU30	30	40	50	T830, T832, T838, T839	KSP39, KSU30	20	30	40
		T846	KSU31	20	26	33	T846	KSU31	20	30	30
		T846	KSU30	12	16	21	T846	KSU30	10	20	20
M	1	T820	KSMN34, KSP32	40	60	70	T830, T832, T838, T839	KSMN34, KSP32	30	40	60
		T820	KSP39, KSU30	20	30	40	T830, T832, T838, T839	KSP39, KSU30	20	20	30
		T854	KSU31	20	26	33	T854	KSU31	20	30	30
		T854	KSP39	12	16	21	T854	KSP39	10	20	20
	3	T820	KSMN34, KSP32	40	50	60	T830, T832, T838, T839	KSMN34, KSP32	20	30	50
		T820	KSP39, KSU30	20	30	40	T830, T832, T838, T839	KSP39, KSU30	10	20	30
K	1	T846	KSU31	40	50	60	T846	KSU31	40	50	60
		T846	KSU30	20	30	30	T846	KSU30	20	30	30
	2	T820	KSU31, KSP32	50	70	90	T830, T832, T838, T839	KSU31, KSP32	30	50	70
		T820	KSP39, KSU30	30	40	50	T830, T832, T838, T839	KSP39, KSU30	20	30	40
N	1	T820	KSMN34, KSP32	120	160	200	T830, T832, T838, T839	KSMN34, KSP32	80	110	160
		T820	KSU30	70	90	110	T830, T832	KSU30	40	60	90
	2	T820	KSMN34, KSP32	100	130	160	T830, T832, T838, T839	KSMN34, KSP32	60	90	130
		T820	KSU30	50	70	90	T830, T832	KSU30	30	50	70
	4	T820	KSMN34, KSP32	120	160	200	T830, T832, T838, T839	KSMN34, KSP32	80	110	160
		T820	KSU30	70	90	110	T830, T832	KSU30	40	60	90



■ G0tap • HSS-E • Metric

Tapping

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
	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
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
	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
		T846	KSU31	11	15	19	T846	KSU31	11	15	19
K	1	T846	KSU30	6	8	10	T846	KSU30	6	8	10
		T820	KSU31, KSP32	16	21	26	T830, T832, T838, T839	KSU31, KSP32	10	15	21
	2	T820	KSP39, KSU30	9	12	15	T830, T832, T838, T839	KSP39, KSU30	6	8	12
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
	4	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

## NOVO KNOWS CAD/CAM

With the addition of NOVO™ 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.

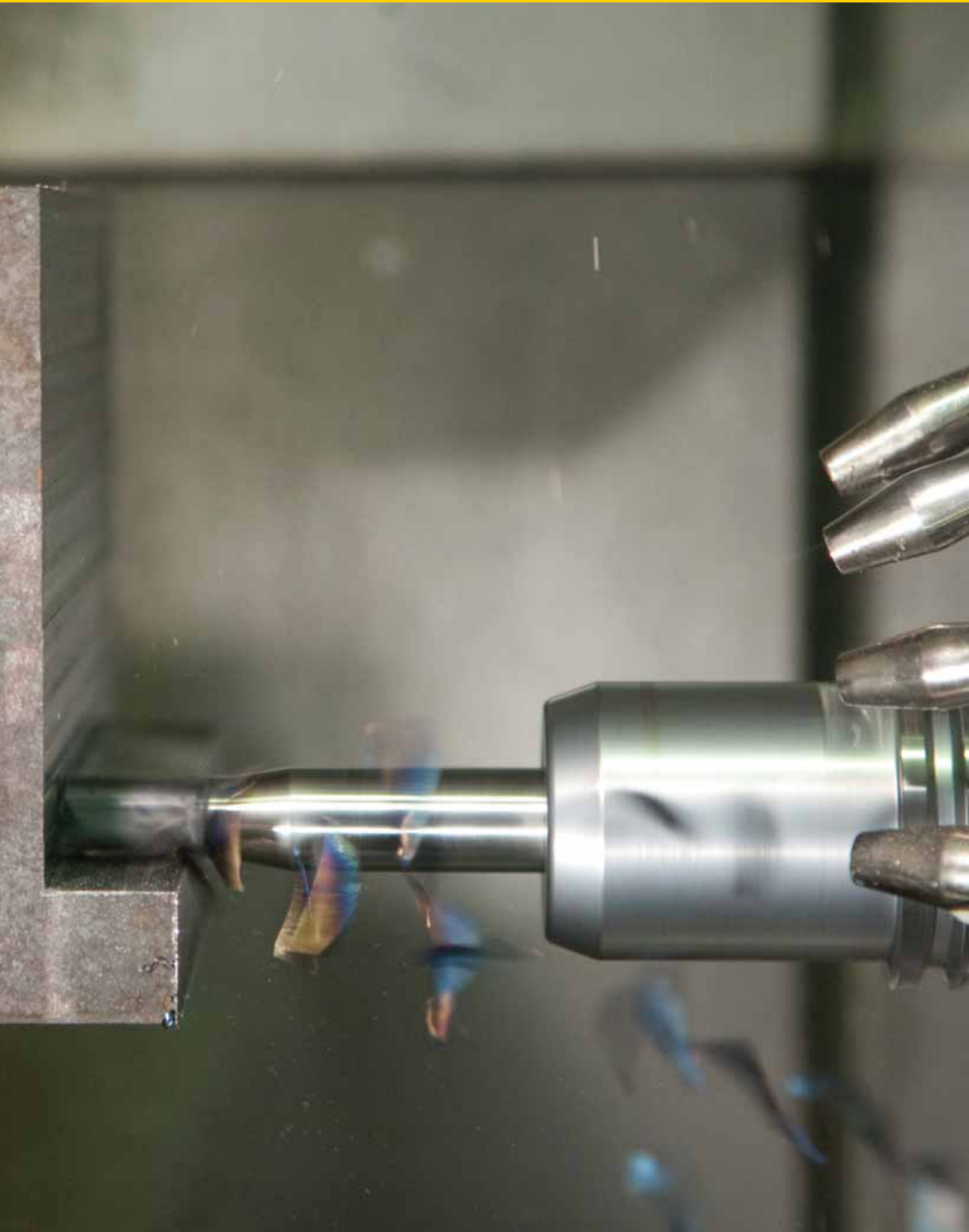
The concern is that assumptions are made, and only partial tooling information is entered.

**With NOVO:** The powerful digital intelligence of NOVO not only helps 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 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](http://kennametal.com/novo)





# Solid End Milling

<b>Duo-Lock</b> .....	<b>D2–D23</b>
HARVI Modular End Mills .....	D2–D18
Adapters .....	D19–D22
Assembly Information.....	D23
<b>RSM II Titanium Finisher</b> .....	<b>D24–D37</b>
RSM II Short .....	D24–D27
RSM II Long.....	D24–D25, D28–D29
Application Examples .....	D30–D31
Application Information.....	D32–D33
RSM I .....	D34–D35
Application Examples .....	D36–D37
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# ➤ DUO-ΛOCK®

## Primary Application

Duo-Lock™ is a new revolutionary coupling for solid carbide end milling applications. This replaceable head design combines a high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface for challenging milling applications. The Duo-Lock™ system takes full advantage of a wide range of Kennametal geometries and grades with the flexibility of a modular system, resulting in significant productivity gains through greater metal removal rates. A wide range of diameters and corner configurations, such as chamfer and radii, are available from stock.

- Cutting data and tool life comparable to high-performance solid carbide tools.
- Proprietary HARVI™ geometries allow for roughing and finishing with one tool.
- 1,5 x D standard cutting edge length allows for fewer passes.
- Up to 1 x D full slotting increases metal removal rates, increasing productivity significantly.
- Extensive straight and conical shank tools, as well as an integral adapter offering that includes CV, DV, BT, and HSK.

## Features and Benefits

### Advanced Technology

- New asymmetrical fluting geometry from the HARVI 4-flute design for higher feed per tooth rates.
- Variable helix design for chatter-free machining at high feed rates.
- Less cutting force and pressure on the cutting edge through tailored axial and radial rake angles.
- Eccentric relief design increases tool life through high edge stability.
- Proprietary tapered core provides high tool stability in roughing and finishing operations.

### Tailored Grades

- Proprietary KCSM15™ Beyond™ grade for exceptional tool life in titanium and stainless steels.
- Proprietary KCPM15™ Beyond grade for outstanding wear protection when milling stainless steel to mitigate cratering, DOCN (depth-of-cut notching), and flank wear.
- Universal KC643M™ grade suitable for cutting steel, cast iron, stainless steel (wet), and titanium (wet).

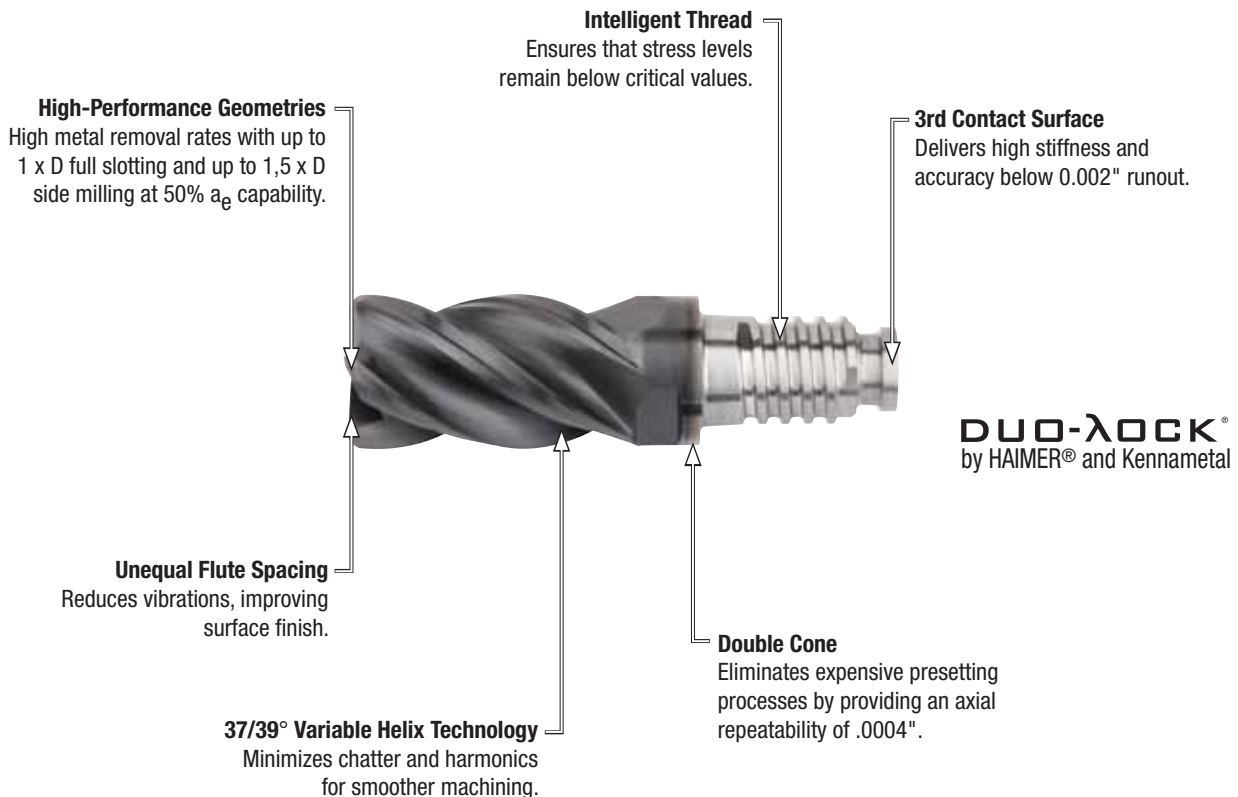
### Customization

- Intermediate diameters are available between 5/8–1-1/4".
- Chip divider geometry available for reduced power consumption and improved chip formation in difficult-to-cut materials.
- Engineered solutions that include shanks other than standard length versions are available upon request.
- Custom solutions within the envelope of the standard blank dimension are available.

### Extensive Standard Offering

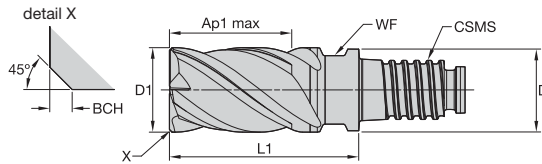
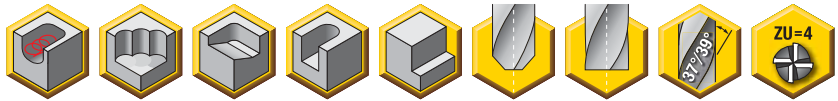
- Diameter ranges 5/8–1-1/4".
- Necked, corner radii, and chamfer tip offering.
- Integral adapters reducing the amount of interface for maximum accuracy.
- Steel extensions with Safe-Lock™ by HAIMER shanks to prevent pullout.
- Cut-to-size extra long extensions available as standard off the shelf upon request.

# High-Performance Modular Solid Carbide End Mills





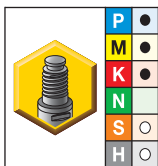
- Asymmetrical flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



End Mill Tolerances

D1	tolerance 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



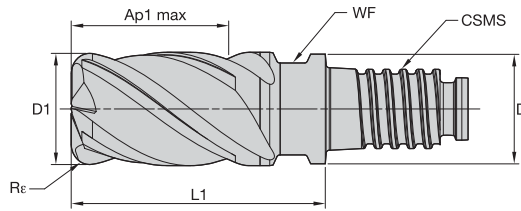
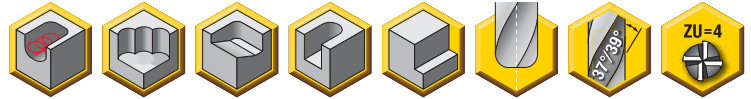
- first choice
- alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
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	2.815	DL32	1.102	—
UKDV1250Y4CV	1 1/4	1.211	1 7/8	2.815	DL32	1.102	.020

NOTE: For application data, please see page D6.



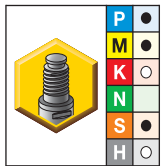
- Asymmetrical flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



Solid End Milling

**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	Re
ULDV0625Y4CQA	5/8	.605	15/16	1.406	DL16	.512	.015
ULDV0625Y4CQB	5/8	.605	15/16	1.406	DL16	.512	.030
ULDV0625Y4CQC	5/8	.605	15/16	1.406	DL16	.512	.060
ULDV0625Y4CQD	5/8	.605	15/16	1.406	DL16	.512	.090
ULDV0625Y4CQE	5/8	.605	15/16	1.406	DL16	.512	.120
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	2.815	DL32	1.102	.090
ULDV1250Y4CQF	1 1/4	1.211	1 7/8	2.815	DL32	1.102	.250

NOTE: For application data, please see page D7.

■ HARVI • UKDV • Asymmetrical Flute Spacing

Solid End Milling

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		frac.	5/8	3/4	1	1 1/4				
	ap	ae	ap	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		dec.	.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	.0039	.0044	.0049	.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0048	.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0040	.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	280	160	–	264	IPT	.0027	.0031	.0039	.0039
M	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	212	128	–	200	IPT	.0022	.0025	.0029	.0029
	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0039	.0039
S	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0029	.0029
	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0026	.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0036	.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 diameters >1/2".  
 For side milling with ap larger than 1 x D, reduce fz by 20%!

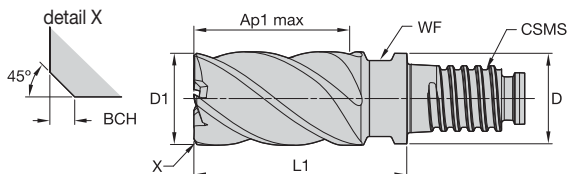
**■ HARVI • ULDV • Asymmetrical Flute Spacing**

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		frac.	5/8	3/4	1	1 1/4				
	ap	ae	ap	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		dec.	.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	.0039	.0044	.0049	.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0048	.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0040	.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	280	160	–	264	IPT	.0027	.0031	.0039	.0039
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	212	128	–	200	IPT	.0022	.0025	.0029	.0029
M	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0039	.0039
	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0029	.0029
K	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0048	.0048
	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0039	.0039
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0026	.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0036	.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0040	.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.0025	.0029	.0029
	3	1.5 x D	0.2 x D	0.3 x D	200	–	300	160	–	240	120	–	180	IPT	.0018	.0021	.0026	.0026
	4	1.5 x D	0.1 x D	0.25 x D	160	–	230	128	–	184	96	–	138	IPT	.0012	.0014	.0017	.0017

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".



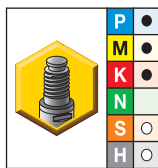
- Unequal flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Non-center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items 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

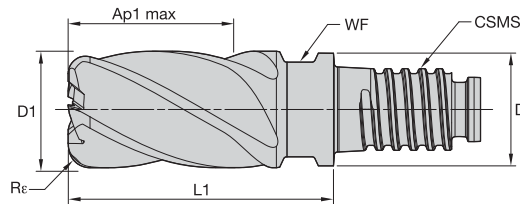


- first choice
- alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF	BCH
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	2.815	DL32	1.102	—
UCDV1250Y5CV	1 1/4	1.211	1 7/8	2.815	DL32	1.102	.020

NOTE: For application data, please see page D10.

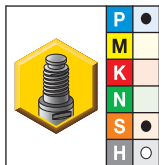
- Unequal flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Non-center cutting.
- Ramping up to 3°.
- Five-flute geometry able to slot up to 1 x D.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



Solid End Milling

**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
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	2.815	DL32	1.102	.090
UDDV1250Y5CQF	1 1/4	1.211	1 7/8	2.815	DL32	1.102	.250

NOTE: For application data, please see page D11.

■ HARVI II™ • UCDV • Unequal Flute Spacing

Solid End Milling

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		frac.	5/8	3/4	1	1 1/4				
	ap	ae	ap	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		dec.	.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	.0039	.0044	.0049	.0049
	1	1.5 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.5 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0048	.0048
	4	1.5 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0040	.0040
	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0027	.0031	.0039	.0039
M	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0022	.0025	.0029	.0029
	1	1.5 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0039	.0039
K	3	1.5 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0029	.0029
	1	1.5 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049	.0049
	2	1.5 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0048	.0048
S	3	1.5 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0039	.0039
	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0026	.0026
H	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0036	.0036
	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0040	.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.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. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".  
 For side milling with ap larger than 1 x D, reduce fz by 20%!

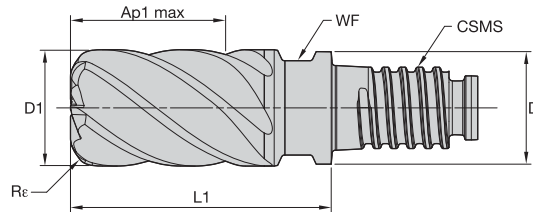
**■ HARVI II™ • UDDV • Unequal Flute Spacing**

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			frac.	5/8	3/4	1	1 1/4
		ap	ae	ap	Cutting Speed – vc SFM		Cutting Speed – vc SFM		Cutting Speed – vc SFM		dec.	.6250	.7500	1.0000	1.2500			
P	5	1.5 x D	0.5 x D	1 x D	200	–	330	170	–	280.5	160	–	264	IPT	.0027	.0031	.0039	.0039
	6	1.5 x D	0.5 x D	0.75 x D	160	–	250	136	–	212.5	128	–	200	IPT	.0022	.0025	.0029	.0029
S	1	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	2	1.5 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	3	1.5 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0026	.0026
	4	1.5 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0036	.0036
H	1	1.5 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0040	.0040
	2	1.5 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.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. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".  
 For side milling with ap larger than 1 x D, reduce fz by 20%!



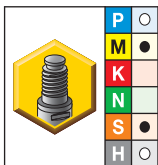
- Unequal flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Optimized geometry for titanium machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



End Mill Tolerances

D1	tolerance 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
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	.060
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	.250
UJDV1250Y6CQF	1 1/4	1.211	1 7/8	2.803	DL32	1.102	.250
UJDV1250Y6CQD	1 1/4	1.211	1 7/8	2.815	DL32	1.102	.090

NOTE: For application data, please see page D13.

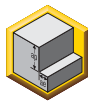



**■ HARVI III™ • UJDV • Unequal Flute Spacing • Roughing**

Material Group														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.	5/8	3/4	1	1 1/4				
ap	ae	min	max	min	max	min	max	min	max	dec.	.6250	.7500	1.0000	1.2500				
P	5	Ap max	0.4 x D	300	490	270	441	270	441	IPT	.0030	.0034	.0040	.0040				
	6	Ap max	0.4 x D	200	330	170	280	160	264	IPT	.0027	.0031	.0039	.0039				
M	1	Ap max	0.4 x D	300	380	240	304	210	266	IPT	.0034	.0039	.0048	.0048				
	2	Ap max	0.4 x D	200	260	160	208	140	182	IPT	.0027	.0031	.0039	.0039				
	3	Ap max	0.4 x D	200	230	160	184	140	161	IPT	.0022	.0025	.0029	.0029				
S	1	Ap max	0.4 x D	160	300	128	240	96	180	IPT	.0034	.0039	.0048	.0048				
	2	Ap max	0.4 x D	160	300	128	240	96	180	IPT	.0034	.0039	.0048	.0048				
	3	Ap max	0.4 x D	80	130	64	104	48	78	IPT	.0018	.0021	.0026	.0026				
	4	Ap max	0.4 x D	160	200	128	160	96	120	IPT	.0025	.0028	.0036	.0036				
H	1	Ap max	0.4 x D	260	460	208	368	156	276	IPT	.0030	.0034	.0040	.0040				
	2	Ap max	0.4 x D	230	390	184	312	138	234	IPT	.0022	.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. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".

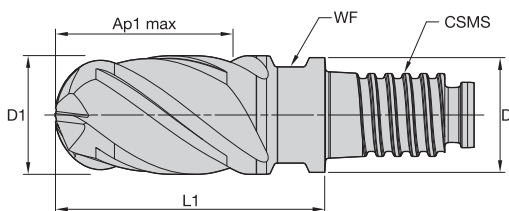
**■ HARVI III • UJDV • Unequal Flute Spacing • Finishing**

Material Group														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.	5/8	3/4	1	1 1/4				
ap	ae	min	max	min	max	min	max	min	max	dec.	.6250	.7500	1.0000	1.2500				
P	5	Ap max	0.06 x D	560	940	504	846	504	846	IPT	.0036	.0040	.0048	.0048				
	6	Ap max	0.06 x D	370	620	314	527	296	496	IPT	.0033	.0037	.0047	.0047				
M	1	Ap max	0.06 x D	560	720	448	576	392	504	IPT	.0041	.0046	.0058	.0058				
	2	Ap max	0.06 x D	370	500	296	400	259	350	IPT	.0033	.0037	.0047	.0047				
	3	Ap max	0.06 x D	370	440	296	352	259	308	IPT	.0027	.0030	.0035	.0035				
S	1	Ap max	0.06 x D	310	560	248	448	186	336	IPT	.0041	.0046	.0058	.0058				
	2	Ap max	0.06 x D	310	560	248	448	186	336	IPT	.0041	.0046	.0058	.0058				
	3	Ap max	0.06 x D	160	250	128	200	96	150	IPT	.0022	.0025	.0032	.0032				
	4	Ap max	0.06 x D	310	370	248	296	186	222	IPT	.0030	.0034	.0043	.0043				
H	1	Ap max	0.06 x D	500	870	400	696	300	522	IPT	.0036	.0040	.0048	.0048				
	2	Ap max	0.06 x D	440	750	352	600	264	450	IPT	.0027	.0030	.0035	.0035				

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".



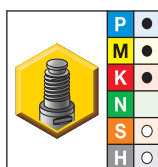
- Asymmetrical flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.



End Mill Tolerances

D1	tolerance 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"

## ■ UKBV • 4-Flute Ball Nose • Inch

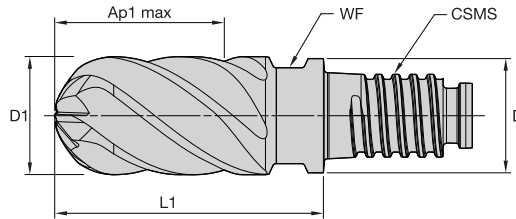


- first choice
- alternate choice

KCPM15	D1	D	Ap1 max	L1	CSMS system size	WF
UKBV0625Y4CN	5/8	.605	15/16	1.406	DL16	.512
UKBV0750Y4CN	3/4	.730	1 1/8	1.728	DL20	.630
UKBV1000Y4CN	1	.961	1 1/2	2.252	DL25	.827

NOTE: For application data, please see page D16.

- Unequal flute spacing and variable helix configuration minimizes chatter and harmonics for smoother machining.
- Center cutting.
- Optimized geometry for titanium machining.
- Single tool for both roughing and finishing operations requiring fewer setups.
- Standard items listed. Additional styles and coatings made-to-order.

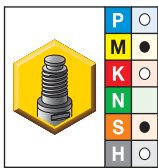


Solid End Milling

**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"

■ **UJBV • 6-Flute Ball Nose with Eccentric Relief Grind • Inch**



- first choice
- alternate choice

KCSM15	D1	D	Ap1 max	L1	CSMS system size	WF
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 D17–D18.

■ HARVI Ball Nose • UKBV • Asymmetrical Flute Spacing • Finishing • Roughing



Solid End Milling

Material Group	Side Milling (A) and Slotting (B)			adapter reach									Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
	A		B	short			medium			long			D1 – Diameter					
	ap		ae	KCPM15			KCPM15			KCPM15			frac.	5/8	3/4	1	1 1/4	
	Cutting Speed – vc SFM		Cutting Speed – vc SFM	Cutting Speed – vc SFM			Cutting Speed – vc SFM			Cutting Speed – vc SFM			dec.	.6250	.7500	1.0000	1.2500	
	min	max	min	max	min	max	min	max	min	max	min	max	dec.	.6250	.7500	1.0000	1.2500	
P	0	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	1	1.25 x D	0.5 x D	1 x D	490	–	660	441	–	594	441	–	594	IPT	.0039	.0044	.0049	.0049
	2	1.25 x D	0.5 x D	1 x D	460	–	620	414	–	558	414	–	558	IPT	.0039	.0044	.0049	.0049
	3	1.25 x D	0.5 x D	1 x D	390	–	520	351	–	468	351	–	468	IPT	.0034	.0039	.0048	.0048
	4	1.25 x D	0.5 x D	0.75 x D	300	–	490	270	–	441	270	–	441	IPT	.0030	.0034	.0040	.0040
	5	1.25 x D	0.5 x D	1 x D	200	–	330	170	–	280	160	–	264	IPT	.0027	.0031	.0039	.0039
M	6	1.25 x D	0.5 x D	0.75 x D	160	–	250	136	–	212	128	–	200	IPT	.0022	.0025	.0029	.0029
	1	1.25 x D	0.5 x D	1 x D	300	–	380	240	–	304	210	–	266	IPT	.0034	.0039	.0048	.0048
	2	1.25 x D	0.5 x D	1 x D	200	–	260	160	–	208	140	–	182	IPT	.0027	.0031	.0039	.0039
K	3	1.25 x D	0.5 x D	1 x D	200	–	230	160	–	184	140	–	161	IPT	.0022	.0025	.0029	.0029
	1	1.25 x D	0.5 x D	1 x D	390	–	490	351	–	441	351	–	441	IPT	.0039	.0044	.0049	.0049
	2	1.25 x D	0.5 x D	1 x D	360	–	460	324	–	414	324	–	414	IPT	.0034	.0039	.0048	.0048
S	3	1.25 x D	0.5 x D	1 x D	360	–	430	324	–	387	324	–	387	IPT	.0027	.0031	.0039	.0039
	1	1 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	2	1 x D	0.3 x D	0.3 x D	160	–	300	128	–	240	96	–	180	IPT	.0034	.0039	.0048	.0048
	3	1.25 x D	0.3 x D	0.3 x D	80	–	130	64	–	104	48	–	78	IPT	.0018	.0021	.0026	.0026
H	4	1.25 x D	0.5 x D	1 x D	160	–	200	128	–	160	96	–	120	IPT	.0025	.0028	.0036	.0036
	1	1.25 x D	0.5 x D	0.75 x D	260	–	460	208	–	368	156	–	276	IPT	.0030	.0034	.0040	.0040
	2	1.25 x D	0.2 x D	0.5 x D	230	–	390	184	–	312	138	–	234	IPT	.0022	.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. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".  
 For side milling with ap larger than 1 x D, reduce fz by 20%!

**■ HARVI III™ Ball Nose • UJBV • Unequal Flute Spacing • Roughing**

Material Group													Recommended feed per tooth (IPT = inch/th) for side milling (A).				
	Side Milling (A)		short			medium			long								
	A		adapter reach										D1 – Diameter				
			KCSM15			KCSM15			KCSM15								
			Cutting Speed – vc SFM		Cutting Speed – vc SFM			Cutting Speed – vc SFM				frac.	5/8	3/4	1	1 1/4	
ap	ae	min		max	min		max	min		max	dec.	.6250	.7500	1.0000	1.2500		
P	0	Ap max	0.4 x D	490	-	660	441	-	594	441	-	594	IPT	.0039	.0044	.0049	.0049
	1	Ap max	0.4 x D	490	-	660	441	-	594	441	-	594	IPT	.0039	.0044	.0049	.0049
	2	Ap max	0.4 x D	460	-	620	414	-	558	414	-	558	IPT	.0039	.0044	.0049	.0049
	3	Ap max	0.4 x D	390	-	520	351	-	468	351	-	468	IPT	.0034	.0039	.0048	.0048
	4	Ap max	0.4 x D	300	-	490	270	-	441	270	-	441	IPT	.0030	.0034	.0040	.0040
	5	Ap max	0.4 x D	200	-	330	170	-	280	160	-	264	IPT	.0027	.0031	.0039	.0039
M	6	Ap max	0.4 x D	160	-	250	136	-	212	128	-	200	IPT	.0022	.0025	.0029	.0029
	1	Ap max	0.4 x D	300	-	380	240	-	304	210	-	266	IPT	.0034	.0039	.0048	.0048
	2	Ap max	0.4 x D	200	-	260	160	-	208	140	-	182	IPT	.0027	.0031	.0039	.0039
K	3	Ap max	0.4 x D	200	-	230	160	-	184	140	-	161	IPT	.0022	.0025	.0029	.0029
	1	Ap max	0.4 x D	390	-	490	351	-	441	351	-	441	IPT	.0039	.0044	.0049	.0049
	2	Ap max	0.4 x D	360	-	460	324	-	414	324	-	414	IPT	.0034	.0039	.0048	.0048
S	3	Ap max	0.4 x D	360	-	430	324	-	387	324	-	387	IPT	.0027	.0031	.0039	.0039
	1	Ap max	0.4 x D	160	-	300	128	-	240	96	-	180	IPT	.0034	.0039	.0048	.0048
	2	Ap max	0.4 x D	160	-	300	128	-	240	96	-	180	IPT	.0034	.0039	.0048	.0048
	3	Ap max	0.4 x D	80	-	130	64	-	104	48	-	78	IPT	.0018	.0021	.0026	.0026
H	4	Ap max	0.4 x D	160	-	200	128	-	160	96	-	120	IPT	.0025	.0028	.0036	.0036
	1	Ap max	0.4 x D	260	-	460	208	-	368	156	-	276	IPT	.0030	.0034	.0040	.0040
	2	Ap max	0.4 x D	230	-	390	184	-	312	138	-	234	IPT	.0022	.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. For smaller taper machining centers, please adjust parameters accordingly on diameters >1/2".



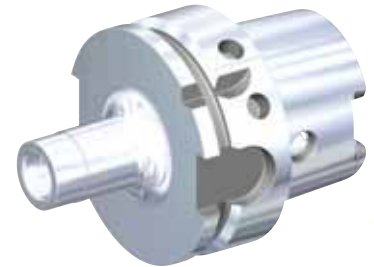
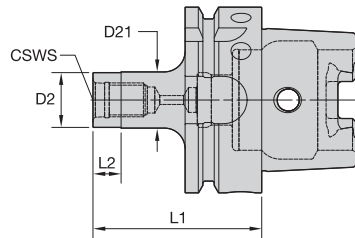
■ HARVI III™ Ball Nose • UJBV • Unequal Flute Spacing • Finishing



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.	5/8	3/4	1	1 1/4				
	ap	ae	min	max	min	max	min	max	min	max	dec.	.6250	.7500	1.0000	1.2500		
P	0	Ap max	0.06 x D	940	–	1250	846	–	1125	846	–	1125	IPT	.0047	.0053	.0059	.0059
	1	Ap max	0.06 x D	940	–	1250	846	–	1125	846	–	1125	IPT	.0047	.0053	.0059	.0059
	2	Ap max	0.06 x D	870	–	1180	783	–	1062	783	–	1062	IPT	.0047	.0053	.0059	.0059
	3	Ap max	0.06 x D	750	–	1000	675	–	900	675	–	900	IPT	.0041	.0046	.0058	.0058
	4	Ap max	0.06 x D	560	–	940	504	–	846	504	–	846	IPT	.0036	.0040	.0048	.0048
	5	Ap max	0.06 x D	370	–	620	315	–	527	296	–	496	IPT	.0033	.0037	.0047	.0047
M	1	Ap max	0.06 x D	560	–	720	448	–	576	392	–	504	IPT	.0041	.0046	.0058	.0058
	2	Ap max	0.06 x D	370	–	500	296	–	400	259	–	350	IPT	.0033	.0037	.0047	.0047
	3	Ap max	0.06 x D	370	–	440	296	–	352	259	–	308	IPT	.0027	.0030	.0035	.0035
K	1	Ap max	0.06 x D	750	–	940	675	–	846	675	–	846	IPT	.0047	.0053	.0059	.0059
	2	Ap max	0.06 x D	690	–	870	621	–	783	621	–	783	IPT	.0041	.0046	.0058	.0058
	3	Ap max	0.06 x D	690	–	810	621	–	729	621	–	729	IPT	.0033	.0037	.0047	.0047
S	1	Ap max	0.06 x D	310	–	560	248	–	448	186	–	336	IPT	.0041	.0046	.0058	.0058
	2	Ap max	0.06 x D	310	–	560	248	–	448	186	–	336	IPT	.0041	.0046	.0058	.0058
	3	Ap max	0.06 x D	160	–	250	128	–	200	96	–	150	IPT	.0022	.0025	.0032	.0032
	4	Ap max	0.06 x D	310	–	370	248	–	296	186	–	222	IPT	.0030	.0034	.0043	.0043
H	1	Ap max	0.06 x D	500	–	870	400	–	696	300	–	522	IPT	.0036	.0040	.0048	.0048
	2	Ap max	0.06 x D	440	–	750	352	–	600	264	–	450	IPT	.0027	.0030	.0035	.0035

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".

Solid End Milling

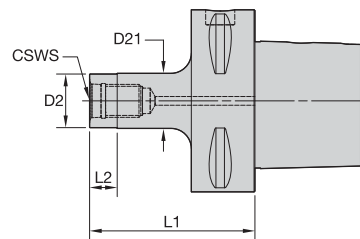


Solid End Milling

■ DL HSK Form A Inch

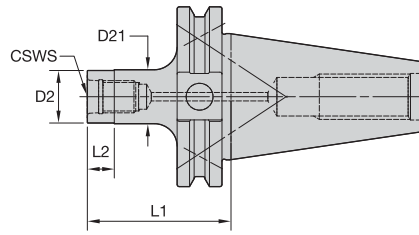
order number	catalog number	CSWS system size	D2	D21	L1	L2	ft. lbs.
6136897	HSK63ADL16225	DL16	.61	.63	2.25	.31	44.20
6136898	HSK63ADL20225	DL20	.73	.75	2.25	.38	59.00
6136899	HSK63ADL25250	DL25	.96	1.00	2.50	.50	73.80
6136900	HSK63ADL32288	DL32	1.21	1.25	2.88	.63	98.90

PSC63 Duo-Lock™ Integrated



■ DL PSC63 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	ft. lbs.
6136933	PSC63DL16225	DL16	.61	.63	2.25	.31	44.20
6136934	PSC63DL20225	DL20	.73	.75	2.25	.38	59.00
6136935	PSC63DL25238	DL25	.96	1.00	2.38	.50	73.80
6136936	PSC63DL32275	DL32	1.21	1.25	2.75	.63	98.90

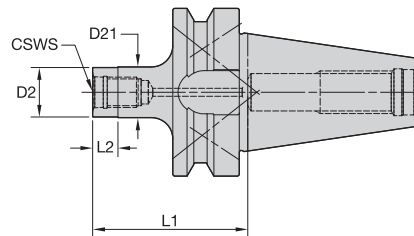


Solid End Milling

■ DL CV40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136939	CV40BDL16200	DL16	.61	.63	2.00	.31	1.92
6136940	CV40BDL20200	DL20	.73	.75	2.00	.38	1.98
6136941	CV40BDL25225	DL25	.96	1.00	2.25	.50	2.05
6136942	CV40BDL32250	DL32	1.21	1.25	2.50	.63	2.15

BT40 Duo-Lock™ Integrated

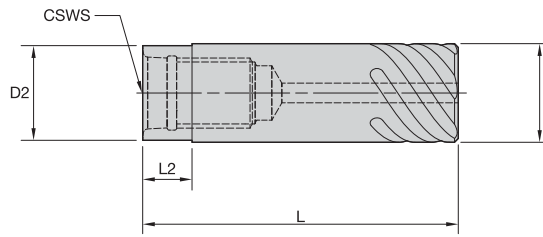


■ DL BT40 Inch

order number	catalog number	CSWS system size	D2	D21	L1	L2	lbs
6136945	BT40BDL16225	DL16	.61	.63	2.25	.31	2.24
6136946	BT40BDL20225	DL20	.73	.75	2.25	.38	2.29
6136947	BT40BDL25238	DL25	.96	1.00	2.38	.50	2.34
6136948	BT40BDL32275	DL32	1.21	1.25	2.75	.63	2.47

			40	(2x) MS2221S	2,5mm
			50	(2x) MS1296S	3mm

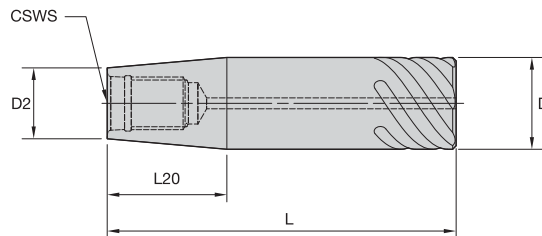




■ **DL SS SL Cylinder Inch**

order number	catalog number	CSWS system size	D	D2	L	L2	lbs
6136874	SS062SLDL160250	DL16	.63	.61	2.50	.31	0.18
6136880	SSSF075DL200275	DL20	.75	.73	2.75	.38	0.30
6136884	SS100SLDL250300	DL25	1.00	.96	3.00	.50	0.51
6136888	SS125SLDL320350	DL32	1.25	1.21	3.50	.63	0.92

Solid End Milling



■ **DL SS SL Conical Inch**

order number	catalog number	CSWS system size	D	D2	L	L20	lbs
6136878	SS100SLDL160450	DL16	1.00	.61	4.50	2.26	0.78
6136876	SSSF075DL160325	DL16	.75	.61	3.25	.83	0.25
6136882	SS100SLDL200375	DL20	1.00	.73	3.75	1.54	0.68
6136886	SS125SLDL250425	DL25	1.25	.96	4.25	1.65	1.20
6136890	SS150SLDL320550	DL32	1.50	1.21	5.50	1.65	2.30
6136892	SS200SLDL320750	DL32	2.00	1.21	7.50	4.51	4.97



Solid End Milling

■ Torque Wrench

order number	catalog number	Description
6135412	TWDLTMSSET	TORQUE WRENCH SET
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

## 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 16	60	44
DL 20	80	59
DL 25	100	74
DL 32	130	96

# ➤ 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 utilize high-speed peel milling strategies with secure chip formation and evacuation in deep cavities. RSM II is available with Safe-Lock™ by HAIMER.

- Excellent metal removal rates.
- Highest surface quality.
- Unmatched tool life and wear resistance using KC643M™.
- Highest process security.

## Features and Benefits

### Advanced Technology

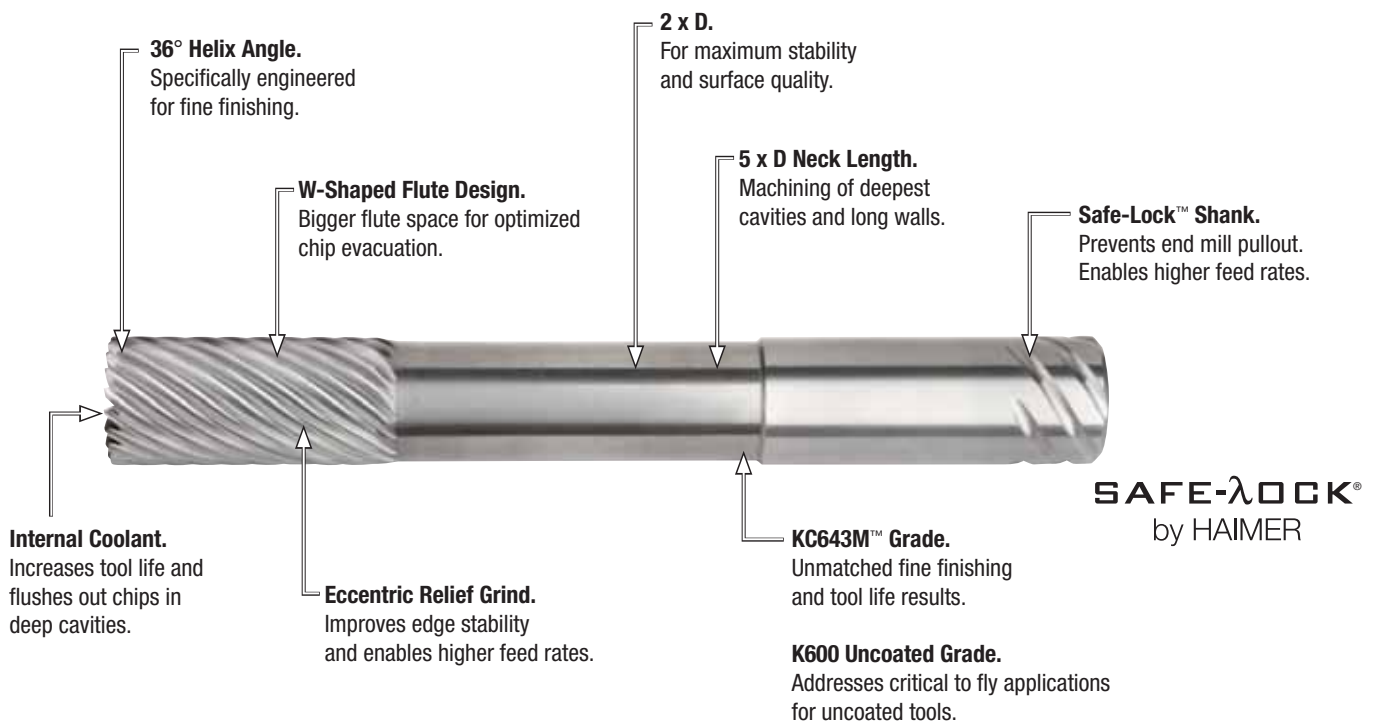
- Maximum amount of flutes for increased feed rates and less vibration tendency.
- Proprietary w-shaped flute form improves chip formation and reduces cutting forces.
- Unequal flute spacing increases tool life and surface quality.
- Proprietary AlTiN KC643M for increased tool life.
- Uncoated K600 for milling critical to fly components.

### Extensive Standard Offering

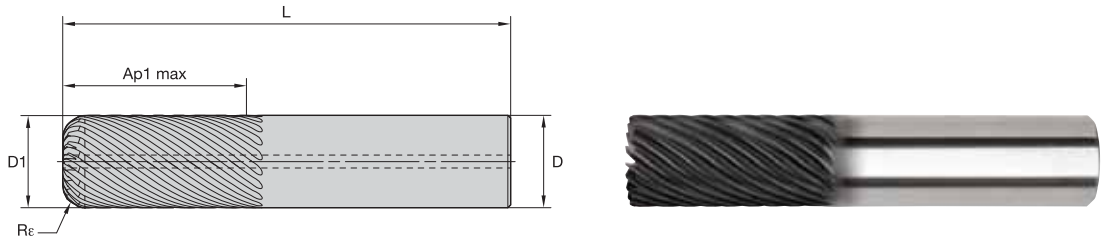
- Each diameter has an optimized number of flutes for constant edge-to-flute space ratio.
- Different radii per diameter.
- Safe-Lock™ and round shank.

### Customization

- Custom overall length and length of cut.
- Different radii per diameter.
- Custom shank styles.
- Tapered versions available.



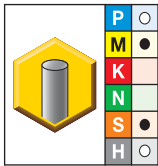
- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.



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
FSDE1000JBBCA	1	1	2	4	.015	19
FSDE1000JBBCB	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 D27.

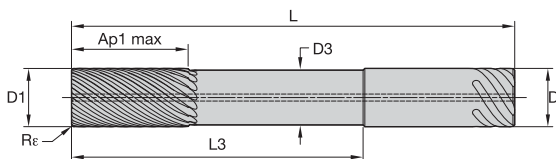
**FSDE.. • Multi-Flute • Short • Inch**

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	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	0.0032	0.0034	0.0040	0.0043	0.0049	0.0058
	5	Ap max	0.03–0.045	300	–	490	IPT	0.0028	0.0030	0.0036	0.0039	0.0045	0.0054
M	1	Ap max	0.03–0.045	440	–	570	IPT	0.0035	0.0038	0.0045	0.0049	0.0056	0.0068
	2	Ap max	0.03–0.045	300	–	390	IPT	0.0028	0.0030	0.0036	0.0039	0.0045	0.0054
	3	Ap max	0.03–0.045	300	–	340	IPT	0.0024	0.0025	0.0030	0.0032	0.0036	0.0042
S	1	Ap max	0.03–0.045	250	–	440	IPT	0.0035	0.0038	0.0045	0.0049	0.0056	0.0068
	2	Ap max	0.03–0.045	250	–	440	IPT	0.0035	0.0038	0.0045	0.0049	0.0056	0.0068
	3	Ap max	0.03–0.045	120	–	200	IPT	0.0019	0.0020	0.0024	0.0026	0.0030	0.0036
	4	Ap max	0.03–0.045	250	–	300	IPT	0.0025	0.0028	0.0033	0.0036	0.0041	0.0050
H	1	Ap max	0.03–0.045	390	–	690	IPT	0.0032	0.0034	0.0040	0.0043	0.0049	0.0058
	2	Ap max	0.03–0.045	340	–	590	IPT	0.0024	0.0025	0.0030	0.0032	0.0036	0.0042

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.



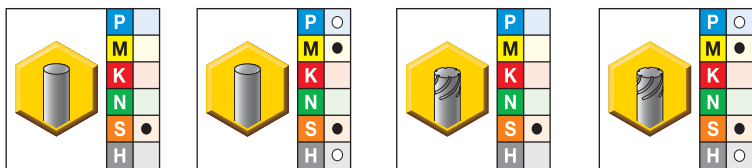
- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Reach optimized for machining deep cavities.



End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
< 1/8"	+0/-0.002	< 1/8"	0/0.00024
1/8-7/32"	+0/-0.002	1/8-7/32"	0/0.00031
1/4-3/8"	+0/-0.002	1/4-3/8"	0/0.00035
13/32-11/16"	+0/-0.002	13/32-11/16"	0/0.00043
23/32-1-3/16"	+0/-0.002	23/32-1-3/16"	0/0.00051

### FSDE.. • Multi-Flute with Neck • Inch



- first choice
- alternate choice

K600	KC643M	K600	KC643M	D1	D	D3	Ap1 max	L3	L	Re	Z U
FSDE0250J7DYA	FSDE0250J7DYA	-	-	1/4	1/4	.235	1/2	1.250	3	.015	7
FSDE0375J9DYA	FSDE0375J9DYA	-	-	3/8	3/8	.353	3/4	1.875	4	.015	9
FSDE0375J9DYB	FSDE0375J9DYB	-	-	3/8	3/8	.353	3/4	1.875	4	.030	9
-	-	FSDE0500N9DYA	FSDE0500N9DYA	1/2	1/2	.470	1	2.500	5	.015	9
-	-	FSDE0500N9DYB	FSDE0500N9DYB	1/2	1/2	.470	1	2.500	5	.030	9
-	-	FSDE0500N9DYC	FSDE0500N9DYC	1/2	1/2	.470	1	2.500	5	.060	9
-	-	FSDE0625NBDYB	FSDE0625NBDYB	5/8	5/8	.588	1 1/4	3.125	5 1/4	.030	11
-	-	FSDE0750NFDYA	FSDE0750NFDYA	3/4	3/4	.705	1 1/2	3.750	6	.015	15
-	-	FSDE0750NFDYB	FSDE0750NFDYB	3/4	3/4	.705	1 1/2	3.750	6	.030	15
-	-	FSDE0750NFDYC	FSDE0750NFDYC	3/4	3/4	.705	1 1/2	3.750	6	.060	15
-	-	FSDE0750NFDYE	FSDE0750NFDYE	3/4	3/4	.705	1 1/2	3.750	6	.120	15
-	-	FSDE1000JJDYA	FSDE1000JJDYA	1	1	.940	2	5.000	7 1/2	.015	19
-	-	FSDE1000JJDYB	FSDE1000JJDYB	1	1	.940	2	5.000	7 1/2	.030	19
-	-	FSDE1000JJDYC	FSDE1000JJDYC	1	1	.940	2	5.000	7 1/2	.060	19
-	-	FSDE1000JJDYE	FSDE1000JJDYE	1	1	.940	2	5.000	7 1/2	.120	19

NOTE: For application data, please see page D29.



**FSDE.. • Multi-Flute with Neck • Inch**

Material Group						Recommended feed per tooth (IPT = inch/th) for side milling (A).							
	Side Milling (A)		KC643M			D1 – Diameter							
	A		Cutting Speed – vc SFM			frac.	1/4	3/8	1/2	5/8	3/4	1	
	ap	ae	min		max	dec.	.2500	.3750	.5000	.6250	.7500	1.0000	
P	4	Ap max	0.008–0.012	445	–	1628	IPT	0.0042	0.0045	0.0053	0.0058	0.0061	0.0066
	5	Ap max	0.008–0.012	295	–	1078	IPT	0.0038	0.0040	0.0048	0.0052	0.0056	0.0061
M	1	Ap max	0.008–0.012	445	–	1243	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	2	Ap max	0.008–0.012	295	–	869	IPT	0.0038	0.0040	0.0048	0.0052	0.0056	0.0061
	3	Ap max	0.008–0.012	295	–	759	IPT	0.0032	0.0033	0.0040	0.0043	0.0045	0.0048
S	1	Ap max	0.008–0.012	245	–	979	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	2	Ap max	0.008–0.012	245	–	979	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	3	Ap max	0.008–0.012	125	–	429	IPT	0.0025	0.0026	0.0032	0.0035	0.0037	0.0041
	4	Ap max	0.008–0.012	245	–	649	IPT	0.0033	0.0037	0.0044	0.0048	0.0051	0.0056
H	1	Ap max	0.008–0.012	395	–	1518	IPT	0.0042	0.0045	0.0053	0.0058	0.0061	0.0066
	2	Ap max	0.008–0.012	345	–	1298	IPT	0.0032	0.0033	0.0040	0.0043	0.0045	0.0048

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.. • Multi-Flute with Neck • Inch**

Material Group						Recommended feed per tooth (IPT = inch/th) for side milling (A).							
	Side Milling (A)		K600			D1 – Diameter							
	A		Cutting Speed – vc SFM			frac.	1/4	3/8	1/2	5/8	3/4	1	
	ap	ae	min		max	dec.	.2500	.3750	.5000	.6250	.7500	1.0000	
P	4	Ap max	0.008–0.012	220	–	814	IPT	0.0042	0.0045	0.0053	0.0058	0.0061	0.0066
	5	Ap max	0.008–0.012	150	–	539	IPT	0.0038	0.0040	0.0048	0.0052	0.0056	0.0061
M	1	Ap max	0.008–0.012	220	–	627	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	2	Ap max	0.008–0.012	150	–	429	IPT	0.0038	0.0040	0.0048	0.0052	0.0056	0.0061
	3	Ap max	0.008–0.012	150	–	374	IPT	0.0032	0.0033	0.0040	0.0043	0.0045	0.0048
S	1	Ap max	0.008–0.012	125	–	484	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	2	Ap max	0.008–0.012	125	–	484	IPT	0.0047	0.0050	0.0060	0.0066	0.0070	0.0077
	3	Ap max	0.008–0.012	60	–	220	IPT	0.0025	0.0026	0.0032	0.0035	0.0037	0.0041
	4	Ap max	0.008–0.012	125	–	330	IPT	0.0033	0.0037	0.0044	0.0048	0.0051	0.0056
H	1	Ap max	0.008–0.012	195	–	759	IPT	0.0042	0.0045	0.0053	0.0058	0.0061	0.0066
	2	Ap max	0.008–0.012	170	–	649	IPT	0.0032	0.0033	0.0040	0.0043	0.0045	0.0048

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.





Solid End Milling

### FSDE 15-Flute End Mill

### FSDE 11-Flute End Mill

#### CHALLENGE

#### CHALLENGE

- Finishing contour milling on aerospace part with interrupted cut.
- Depth of cut: 1.575" (40mm).
- Titanium alloy R56400.
- External emulsion.

- Finishing long channel on aerospace frame part.
- Depth of cut: 1.535" (39mm).
- Titanium alloy.
- External emulsion.

#### SOLUTION

#### SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) radius.

- RSM II multi-flute cutter with KC643M.
- Ø .625" (15.875mm) with 11 effective cutting edges and .003" (0.762mm) radius.

#### CUTTING DATA

#### CUTTING DATA

- vc 230 SFM
- fz .0030 IPT
- ap 1.569"
- ae .001"

- vc 425 SFM
- fz .0021 IPT
- ap 1.55"
- ae .001"

#### RESULT

#### RESULT

- 3.75 times longer tool life compared to competitor solution.

- 2.5 times higher feed rates compared to initial solution.

#### BENEFIT

#### BENEFIT

- Machining time reduction of 46%.
- Metal removal rate increase of 87%.

- Machining time reduction of 60%.
- Metal removal rate increase of 150%.

(continued)

(Application Examples – continued)



Solid End Milling

## FSDE 15-Flute End Mill

## FSDE 19-Flute End Mill

### CHALLENGE

### CHALLENGE

- Finishing external profile.
- Depth of cut: .787" (20mm).
- Titanium alloy 6Al4V.
- External emulsion.

- Finishing external profile.
- Depth of cut: .787" (20mm).
- Titanium alloy 6Al4V.
- External emulsion.

### SOLUTION

### SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) corner radius.

- RSM II multi-flute cutter with KC643M.
- Ø .984" (25mm) with 19 effective cutting edges and .039" (1mm) corner radius.

### CUTTING DATA

### CUTTING DATA

- vc 492 SFM
- fz .0020 IPT
- ap .784"
- ae .0024"

- vc 492 SFM
- fz .0020 IPT
- ap .784"
- ae .0024"

### RESULT

### RESULT

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

- 50% tool life increase.
- 3x cutting speed.
- Nearly 8x the feed rates.

### BENEFIT

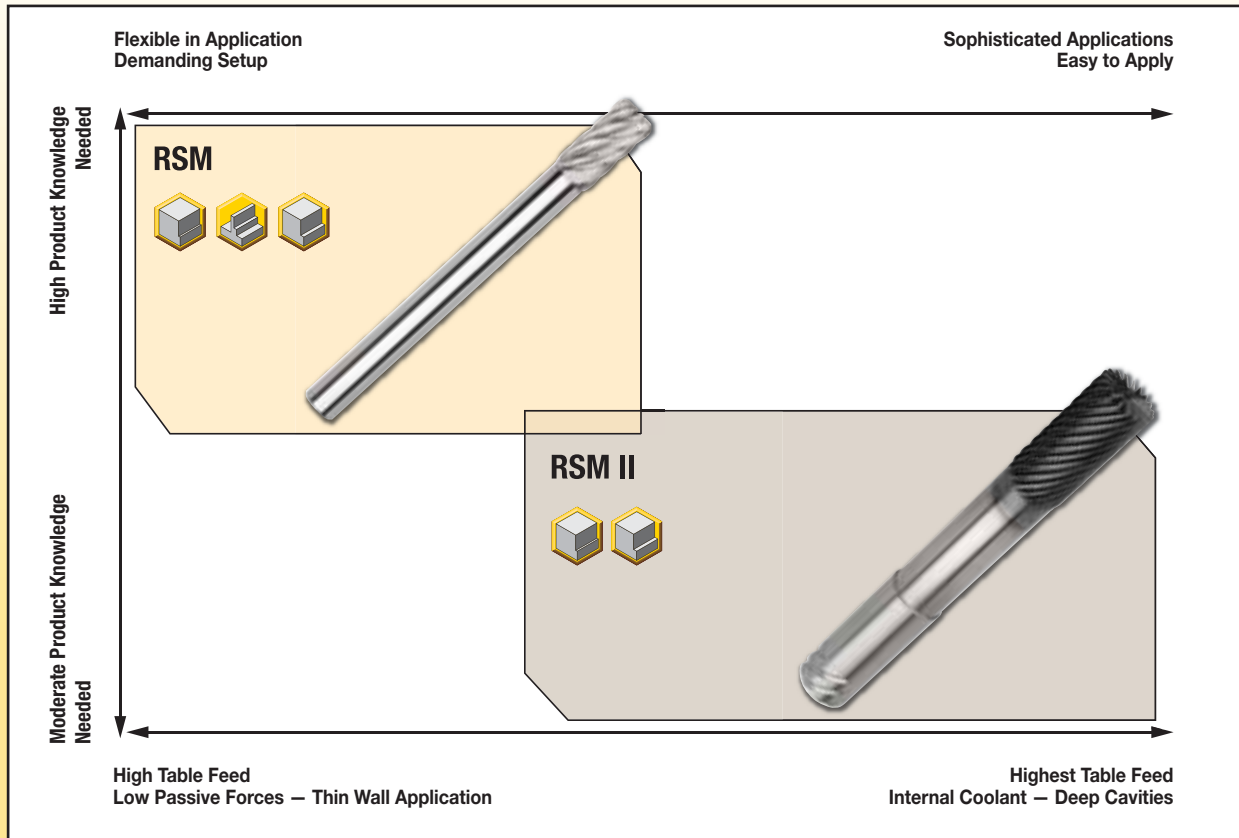
### BENEFIT

- Machining time reduction of 81% from 43.1–8.4 min vs competitor solution.
- Metal removal rate increase of 360% vs competitor solution.

- Machining time reduction of 81% from 43.1–8.3 min vs competitor solution.
- Metal removal rate increase of 366% vs competitor solution.

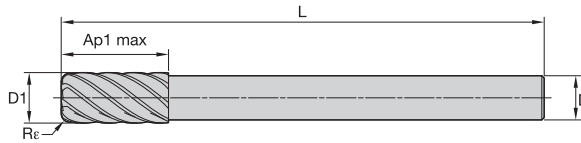
<b>Materials to Cut</b>	<ul style="list-style-type: none"> <li>• Titanium and titanium alloys.</li> <li>• Nickel-based alloys.</li> <li>• Cobalt-based alloys.</li> <li>• Steels (P4–P5).</li> <li>• Stainless steels (M2–M3).</li> <li>• Hardened steels (H1).</li> </ul>
<b>Cutting Speed</b>	<ul style="list-style-type: none"> <li>• Refer to application data recommendation.</li> <li>• Highly dynamic machines recommended.</li> </ul>
<b>Feed Rate</b>	<ul style="list-style-type: none"> <li>• Refer to application data recommendation.</li> <li>• Highly dynamic machines recommended.</li> <li>• High-speed peel milling strategies require control of adequate feed rates.</li> </ul>
<b>Depth of Cut</b>	<ul style="list-style-type: none"> <li>• High-speed peel milling requires small depth of cut (approximately 5% of diameter) not exceeding 0.0393" (1mm).</li> </ul>
<b>Coolant</b>	<ul style="list-style-type: none"> <li>• Internal coolant for machining cavities.</li> <li>• External coolant for peripheral milling.</li> </ul>
<b>Adaptation</b>	<ul style="list-style-type: none"> <li>• HydroForce™ with or without sleeve is preferred clamping.</li> <li>• Shrink Fit adaptation is preferred as alternate recommendation.</li> <li>• High-Performance Milling Chucks (HPMC) are applicable.</li> <li>• Collect chucks are not recommended due to high runout.</li> </ul>
<b>Roughing Application</b>	<ul style="list-style-type: none"> <li>• Not recommended.</li> </ul>
<b>Finishing Application</b>	<ul style="list-style-type: none"> <li>• Finishing and semi-finishing.</li> </ul>
<b>Milling Strategy</b>	<ul style="list-style-type: none"> <li>• Peel milling strategies are recommended.</li> <li>• Trochoidal milling is not required for this tool.</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Shoulder milling.</li> <li>• Shoulder milling and fine finishing.</li> <li>• Peel milling and HPC techniques.</li> <li>• Non-center cutting.</li> <li>• No ramping and helical interpolation.</li> </ul>
<b>Corner Machining</b>	<ul style="list-style-type: none"> <li>• Pre-mill corner pocket to leave appropriate depth-of-cut for finishing application.</li> <li>• Use RSM with depth-of-cut at approximately 5% of diameter and below 0.0393" (1mm).</li> <li>• RSM II tool radius shall be smaller than final corner radius.</li> </ul>
<b>Engineered Solutions</b>	<ul style="list-style-type: none"> <li>• Available upon request.</li> </ul>
<b>Reconditioning Service</b>	<ul style="list-style-type: none"> <li>• Available with standard Kennametal reconditioning procedures.</li> <li>• Check services under Kennametal website for detailed information.</li> </ul>

### Scope of Application for Multi-Flute Cutters



Application Information	RSM	RSM II
<b>Primary Target Material</b>	<ul style="list-style-type: none"> <li>• Titanium</li> <li>• Titanium alloys</li> </ul>	<ul style="list-style-type: none"> <li>• Titanium</li> <li>• Titanium alloys</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• Shoulder milling</li> <li>• HPC techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Shoulder milling</li> <li>• Fine finishing</li> <li>• Peel milling</li> </ul>
<b>Primary Scope of Application</b>	<ul style="list-style-type: none"> <li>• Thin walls</li> <li>• External walls</li> </ul>	<ul style="list-style-type: none"> <li>• Deep cavities</li> <li>• Internal walls</li> <li>• External walls</li> </ul>
<b>Shank Style</b>	<ul style="list-style-type: none"> <li>• Plain</li> </ul>	<ul style="list-style-type: none"> <li>• Safe-Lock™</li> <li>• Plain</li> </ul>
<b>Internal Coolant</b>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>
<b>Variable Helix</b>	<ul style="list-style-type: none"> <li>• Yes — 35°/38°</li> </ul>	<ul style="list-style-type: none"> <li>• No — 36°</li> </ul>
<b>Unequal Flute Space</b>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>

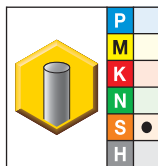
- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Variable helix design minimizes chatter for smoother machining.
- Reach optimized for machining deep cavities.



End Mill Tolerances

D1	tolerance e8	D	tolerance h6 +/-
< 1/8"	+0/-0.002"	< 1/8"	0/.00024"
1/8-7/32"	+0/-0.002"	1/8-7/32"	0/.00031"
1/4-3/8"	+0/-0.002"	1/4-3/8"	0/.00035"
13/32-11/16"	+0/-0.002"	13/32-11/16"	0/.00043"
23/32-1-3/16"	+0/-0.002"	23/32-1-3/16"	0/.00051"

### RSM • Reduced Shank Mill • Inch



- first choice
- alternate choice

SU4000	D1	D	Ap1 max	L	Re	Z U
CRSM0375LM6X-J	3/8	5/16	.790	5	.060	6
CRSM0375LM6X-K	3/8	5/16	.790	5	.090	6
CRSM0500LM6X-F033044	1/2	7/16	.940	5	.030	6
CRSM0500LM6X-J033045	1/2	7/16	.940	5	.060	6
CRSM0500LM6X-L033047	1/2	7/16	.940	5	.120	6
CRSM0625LM6X-J	5/8	9/16	1.250	5	.060	6
CRSM0625LM6X-L	5/8	9/16	1.250	6	.120	6
CRSM0625LM6X-P	5/8	9/16	1.250	6	.190	6
CRSM0625LM8X-J	5/8	9/16	1.250	6	.060	8
CRSM0625LM8X-K	5/8	9/16	1.250	6	.090	8
CRSM0625LM8X-P	5/8	9/16	1.250	6	.190	8
CRSM0750LM6-X-K	3/4	11/16	1.540	6	.090	6
CRSM0750LM6X-L033050	3/4	11/16	1.540	6 1/4	.120	6
CRSM0750LM6X-Q033052	3/4	11/16	1.540	6 1/4	.250	6
CRSM0750LM8X-L033055	3/4	11/16	1.540	6 1/4	.120	8
CRSM0750LM8X-Q	3/4	11/16	1.540	6 1/4	.250	8
CRSM1000LM8X-K	1	7/8	1.850	6 1/4	.090	8
CRSM1000LM8X-L033059	1	7/8	1.850	6 1/4	.120	8
CRSM1000LM8X-P	1	7/8	1.850	6 1/4	.190	8
CRSM1000LM8X-Q033061	1	7/8	1.850	6 1/4	.250	8
CRSM1000LM10X-Q033065	1	7/8	1.850	6 1/4	.250	10

NOTE: For application data, please see page D35.

**RSM • Reduced Shank Mill**

Material Reference Chart and Recommended Surface Speeds					
Commercial Name	Hardness HRB HRC HB	Rm N/mm <sup>2</sup>	Inch		
			vc min (FPM)	vc max (FPM)	
S4	Ti-5Al-2.5Sn	HRC36	1130	190	395
	Ti-6Al-4Zr-2Mo-2Sn	HRC28	900	205	425
	Ti-6Al-4Zr-2Mo-2Sn-0.2Si	HRC28	900	205	425
	Ti-8Al-1Mo-1V	HRC35	1100	190	395
	Ti-11.5Mo-6Zr-4.5Sn	—	—	110	225
	Ti-13V-11Cr-3Al	—	—	110	225
	Ti-3Al-8V-6Cr-4Mo-4Zr	HRC32	1000	110	225
	Ti-8Mo-8V-2Fe-3Al	—	—	110	225
	Ti-13V-11Cr-3Al	HRC40	1270	95	200
	Ti 10.2.3	HRC35	1100	90	185
	Ti-15Mo	HRC24	820	160	335
	Ti-15-333	HRC32	1000	110	230
	Ti 45Nb	—	—	145	305
	5Al-5V-5Mo-3Cr	HRC40	1270	95	200
	Ti-425	HRC36	1130	95	200
	Ti-6AL-4V	HRC30-34	1130	190	395
	Ti-6Al-4V	HRC35-39	1200	175	365
	Ti-6Al-5Zr-0.5Mo-0.25Si	—	—	160	335
	Ti-6Al-5Zr-4Mo-Cu-0.2Si	—	—	160	335
	Ti-6Al-6V-2Sn	HRC35	1100	175	365
	Ti-7Al-4Mo	—	—	160	335
	3-2.5	HRC24	820	205	425
	6-4ELI	HRC32	1000	195	410
	6-2-4-6	HRC36	1130	175	365
	Ti-17	HRC38	1200	175	365
	Ti-4Al-4Mo-2Sn-0.5Si	HRC35	1100	160	335
	Ti-4Al-4Mo-4Sn-0.5Si	—	—	160	335
	Ti 99.5	HRB100	780	285	610
Ti 99.6	HRB90	600	315	670	
Ti 99.7	HRB80	510	345	730	
Ti 99.8	HRB70	430	375	79	



Product		Dimensions (inch)																		
Description	diameter	Z	Profiling					Facing					Chip Thickness		Profiling (IPT)				Facing (IPT)	
			ae min (in)	ae max (in)	ap min (in)	ap max (in)	ad2 max (in2)	ae min (in)	ae max (in)	ap min (in)	ap max (in)	ad2 max (in2)	hm min (in)	hm max (in)	for ae min		for ae max		fz min (IPT)	fz max (IPT)
															fz min (IPT)	fz max (IPT)	fz min (IPT)	fz max (IPT)		
CRSM0375..	.375	6	.008	.025	.19	.43	.098	Radius +.020	.295	.0079	Radius +.020	.050	.008	.020	.0028	.0070	.0016	.0040	.008	.020
CRSM0500..	.500	6		.033	.27	.61	.142		.354			.070			.0031	.0077	.0016	.0040		
CRSM0625..	.625	6		.042	.32	.82	.252		.472			.126			.0035	.0890	.0016	.0040		
CRSM0625..	.625	8		.031	.32	.82	.252		.472			.126			.0035	.0089	.0018	.0045		
CRSM0750..	.750	6		.050	.38	1.02	.394		.591			.197			.0040	.0098	.0016	.0040		
CRSM0750..	.750	8		.038	.38	1.02	.394		.591			.197			.0040	.0098	.0018	.0045		
CRSM1000..	1.000	8		.050	.46	1.28	.615		.738			.308			.0044	.0110	.0018	.0045		
CRSM1000..	1.000	10		.040	.46	1.28	.615		.738			.308			.0044	.0110	.0020	.0050		



### RSM 8-Flute End Mill

### RSM 8-Flute End Mill

#### CHALLENGE

#### CHALLENGE

- Full slotting on medical part.
- Depth of cut: 1" (25,4mm).
- Aluminum 6061.
- External emulsion.

- Peel milling aerospace part.
- Depth of cut: 1" (25,4mm).
- Titanium 5.5.5.3.
- External emulsion.

#### SOLUTION

#### SOLUTION

- CRSM multi-flute cutter with SU4000.
- Ø 1" (25,4mm) with 8 effective cutting edges and 0.09" (2,3mm) corner radius.

- CRSM multi-flute cutter with SU4000.
- Ø 1.25" (31,75mm) with 8 effective cutting edges.

#### CUTTING DATA

#### CUTTING DATA

- vc 623 SFM
- fz .0013 IPT
- ap 1"
- ae 1"

- vc 207 SFM
- fz .005 IPT
- ap 1"
- ae .02"

#### RESULT

#### RESULT

- Same surface quality with significantly reduced cost per part.

- Significant increase in tool life.

#### BENEFIT

#### BENEFIT

- Tool cost reduction of 65%.
- >90% machining time reduction.

- No wear after 492 ft. (150m) cutting.
- Material 5.5.5.3.

(continued)



(Application Examples – continued)



### RSM 8-Flute End Mill

#### CHALLENGE

- Peel milling aerospace part.
- Depth of cut: 1.181" (30mm).
- Titanium.
- External emulsion.

#### SOLUTION

- RSM multi-flute cutter with SU4000.
- Ø 1.260" (32mm) with 8 effective cutting edges.

#### CUTTING DATA

- vc 295 SFM
- fz .0046 IPT
- ap 1.181"
- ae .02"

#### RESULT

- 2.3 times the feed rate over the competition.

#### BENEFIT

- Increased MRR of 130% vs the competition.
- Material 5.5.5.3.

# ➤ G0mill™ GP General Purpose Solid Carbide End Mills • 2 Flute

Designed for roughing and finishing with one tool at a value price.

## Primary Application

G0mill GP offers plunging, slotting, and profiling at high tool life on a wide range of workpiece materials. They are 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 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 necessary tooling inventory.
- Eccentric relief increases edge stability resulting in higher 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

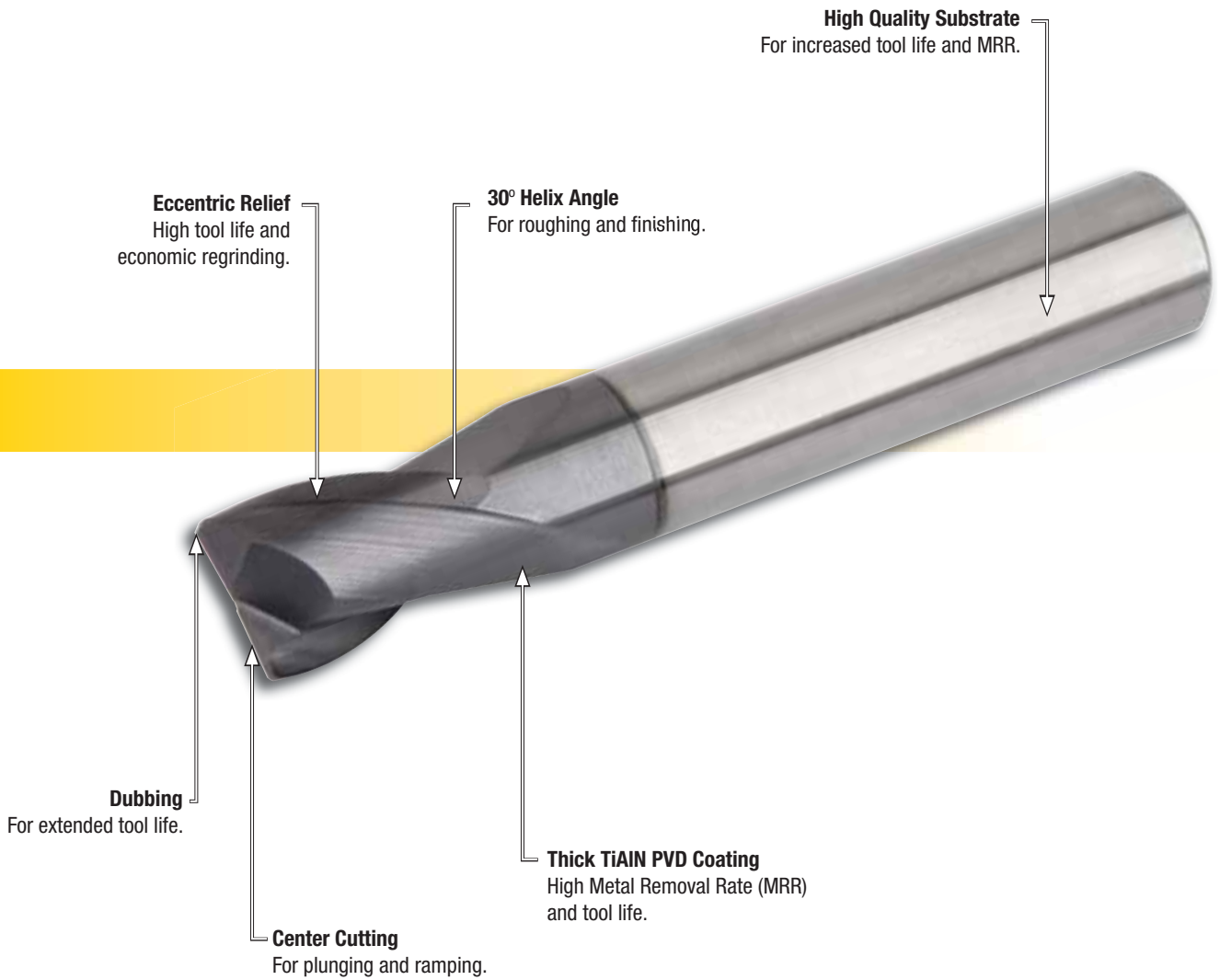
- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless (wet).

### Customization

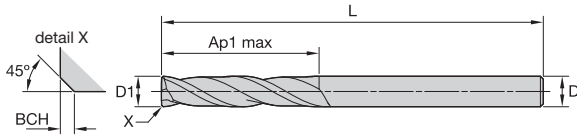
- Intermediate diameters available.
- Corner radii for near-end-shape operations available.

### Extensive Standard Offering

- Diameter range 1/64–1".
- 2-flute tooling.
- Sharp edge, chamfer edge, and ball nose as standard offering.



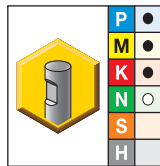
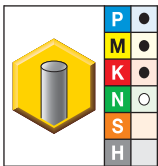
- Center cutting.



End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+0.000/- .002"	≤1/8"	+0/-0.00024"
		>1/8-1/4"	+0/-0.00031"
		>1/4-3/8"	+0/-0.00035"
		>3/8-23/32"	+0/-0.00043"
		>23/32-1 3/16"	+0/-0.00051"

■ 2CH..IS-IR-IL-IX • 2 Flute • Inch

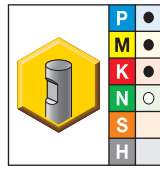
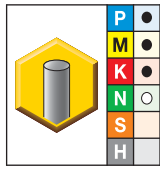


- first choice
- alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
2CH00151R003A	—	1/64	1/8	1/32	1 1/2	—
2SE00161R003A	—	1/64	1/8	1/32	1 1/2	—
2CH00311R007A	—	1/32	1/8	5/64	1 1/2	—
2SE00311R007A	—	1/32	1/8	5/64	1 1/2	—
2CH00621L012A	—	1/16	1/8	1/8	1 1/2	—
2SE00621R012A	—	1/16	1/8	1/8	1 1/2	—
2CH00621R018A	—	1/16	1/8	3/16	1 1/2	—
2SE00621L018A	—	1/16	1/8	3/16	1 1/2	—
2CH00621X050A	—	1/16	1/8	1/2	2	—
2SE00621X050A	—	1/16	1/8	1/2	2	—
2CH00781R018A	—	5/64	1/8	3/16	1 1/2	—
2SE00781R018A	—	5/64	1/8	3/16	1 1/2	—
2CH00931R018A	—	3/32	1/8	3/16	1 1/2	—
2SE00931R018A	—	3/32	1/8	3/16	1 1/2	—
2CH00931L037A	—	3/32	1/8	3/8	1 1/2	—
2SE00931L037A	—	3/32	1/8	3/8	1 1/2	—
2CH00931X062A	—	3/32	1/8	5/8	2	—
2SE00931X062A	—	3/32	1/8	5/8	2	—
2CH00091R037A	—	7/64	1/8	3/8	1 1/2	—
2SE01091R037A	—	7/64	1/8	3/8	1 1/2	—
2CH01251R025A	—	1/8	1/8	1/4	1 1/2	.010
2SE01251R025A	—	1/8	1/8	1/4	1 1/2	—
2CH01251L050A	—	1/8	1/8	1/2	1 1/2	.010
2SE01251L050A	—	1/8	1/8	1/2	1 1/2	—
2CH01251X075A	—	1/8	1/8	3/4	2 1/4	.010
2SE01251X075A	—	1/8	1/8	3/4	2 1/4	—
2CH01401R056A	—	9/64	3/16	9/16	2	.010
2SE01401R056A	—	9/64	3/16	9/16	2	—

(continued)

(2CH..IS-IR-IL-IX • 2 Flute • Inch — continued)



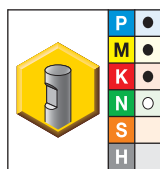
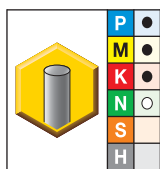
● first choice  
 ○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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	—
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	—

(continued)



(2CH..IS-IR-IL-IX • 2 Flute • Inch — continued)



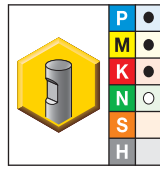
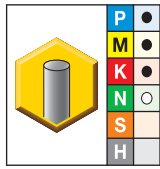
● first choice  
 ○ alternate choice

Solid End Milling

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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	—
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	—

(continued)

(2CH..IS-IR-IL-IX • 2 Flute • Inch — continued)



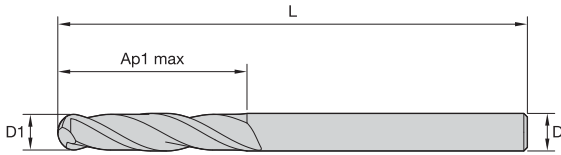
● first choice  
 ○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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 D46.

Solid End Milling

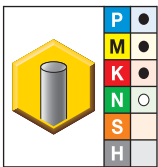
- Center cutting.



End Mill Tolerances

D1	tolerance	D	tolerance h6 + / -
All	+0.000/- .002"	≤1/8"	+0/-0.00024"
		>1/8-1/4"	+0/-0.00031"
		>1/4-3/8"	+0/-0.00035"
		>3/8-23/32"	+0/-0.00043"
		>23/32-1 3/16"	+0/-0.00051"

■ 2BN..IS-IR-IL-IX • 2 Flute • Ball Nose • Inch



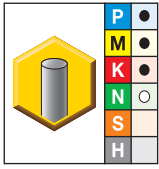
- first choice
- alternate choice

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

(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
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
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 D47.

■ GOMill GP • 2CH..IS-IR • 2 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	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	
							.0156	.0313	.0625	.0781	.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	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
M	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
	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
K	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
	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
N	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
	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 • 2CH..IL-IX • 2 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	1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1			
							.0156	.0781	.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	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	
M	4	Ap1 max	0.1 x D		300	–	490	IPT	.0003	.0004	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039	
	1	Ap1 max	0.1 x D		300	–	380	IPT	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	
K	2	Ap1 max	0.1 x D		200	–	260	IPT	.0003	.0004	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036	
	1	Ap1 max	0.1 x D		390	–	490	IPT	.0004	.0005	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049	
N	2	Ap1 max	0.1 x D		360	–	460	IPT	.0004	.0004	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045	
	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

		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														
Material Group		ap	ae	ap	min	max	inch	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		
								.00313	.0625	.0781	.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	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	
M	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	
	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	
K	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	
	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	
N	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	
	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.  
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 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

■ GOMill GP • 2BN..IL-IX • 2 Flute • Ball Nose • Long • Extra Long

		Side Milling (A)			KC633M			Recommended feed per tooth (IPT = inch/th) for side milling (A).														
		A		Cutting Speed – vc SFM			D1 – Diameter															
Material Group		ap	ae	min	max	inch	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1						
							.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	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					
M	4	Ap1 max	0.1 x D	300	–	490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039					
	1	Ap1 max	0.1 x D	300	–	380	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045					
K	2	Ap1 max	0.1 x D	200	–	260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036					
	1	Ap1 max	0.1 x D	390	–	490	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049					
N	2	Ap1 max	0.1 x D	360	–	460	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045					
	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.



# ➤ G0mill™ GP General Purpose Solid Carbide End Mills • 3 Flute

Designated for roughing and finishing with one tool at economic pricing.

## Primary Application

G0mill GP offers plunging, slotting, and profiling at high 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 are available with sharp edge 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 resulting in higher 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

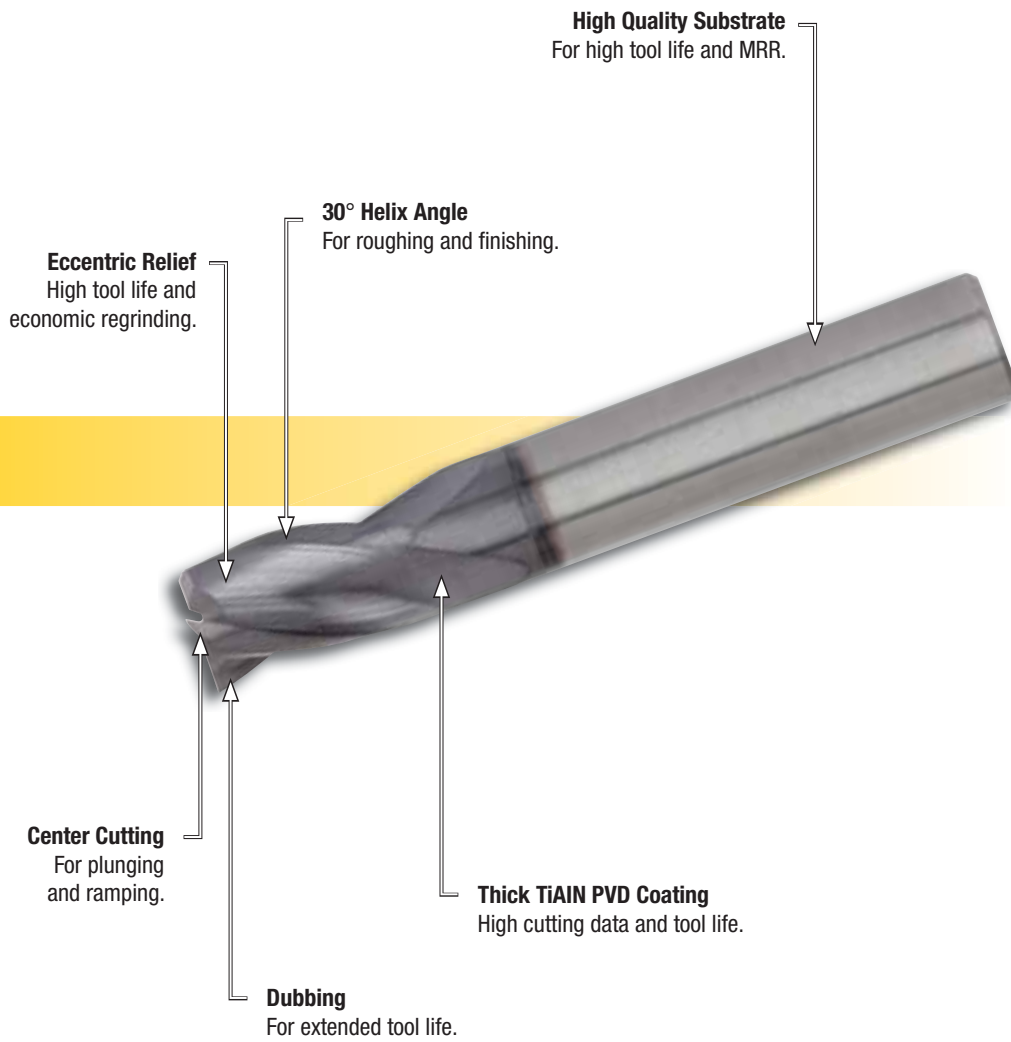
- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless (wet).

### Customization

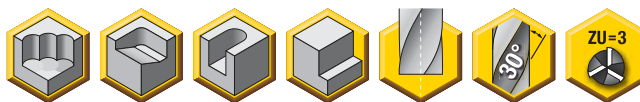
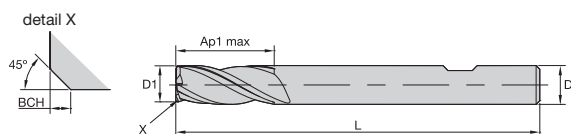
- Intermediate diameters available.
- Corner radii for near-end-shape operations available.

### Extensive Standard Offering

- Diameter range 1/32–1".
- Sharp edge as standard offering.
- 4 different lengths in factory standards on stock.



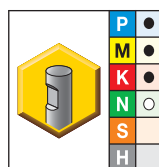
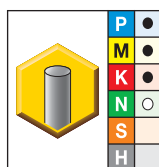
- Center cutting.



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

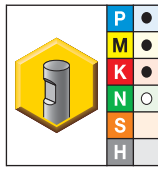
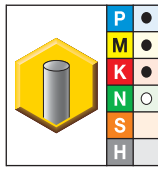


- first choice
- alternate choice

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

(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
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
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 D52–D53.



■ G0mill • 3SE..IS-IR • 3 Flute • Short • Regular


Material Group							Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.										
	A		B	Cutting Speed – vc SFM			frac.	D1 – Diameter									
	ap	ae	ap	min		max		dec.	1/8	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1
P	0	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	1	2.0 x D	0.1 x D	0.5 x D	490	–	660	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	0.5 x D	460	–	620	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	3	2.0 x D	0.1 x D	0.5 x D	390	–	520	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	2.0 x D	0.1 x D	0.5 x D	300	–	490	IPT	.0007	.0008	.0014	.0017	.0020	.0026	.0030	.0034	.0039
M	1	2.0 x D	0.1 x D	0.5 x D	300	–	380	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	2.0 x D	0.1 x D	0.5 x D	200	–	260	IPT	.0006	.0007	.0012	.0016	.0018	.0023	.0027	.0031	.0036
K	1	2.0 x D	0.1 x D	0.5 x D	390	–	490	IPT	.0009	.0011	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	2.0 x D	0.1 x D	0.5 x D	360	–	460	IPT	.0007	.0009	.0015	.0020	.0023	.0029	.0034	.0039	.0045
N	1	2.0 x D	0.1xD	0.5XD	820	–	3250	IPT	0.0013	.0016	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	2.0 x D	0.1xD	0.5XD	820	–	2450	IPT	0.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	2.0 x D	0.1xD	0.5XD	820	–	2450	IPT	0.0011	.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".

Solid End Milling



**GOmill • 3SE..IL- IX • 3 Flute • Long • Extra Long**

Material Group																
				Side Milling (A)			Recommended feed per tooth (IPT = inch/th) for side milling (A).									
		A		Cutting Speed – vc SFM			D1 – Diameter									
		ap	ae	min		max	frac.	1/8	5/32	1/4	5/16	3/8	1/2	5/8	3/4	1
		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	0.0013	.0016	.0025	.0031	.0038	.0050	.0063	.0075	.0100
	2	2.0 x D	0.1 x D	820	–	2450	IPT	0.0010	.0013	.0020	.0025	.0030	.0040	.0050	.0060	.0080
	4	2.0 x D	0.1 x D	820	–	2450	IPT	0.0011	.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".



# ➤ G0mill™ GP General Purpose Solid Carbide End Mills • 4 Flute

Designed for roughing and finishing with one tool at a value price.

## Primary Application

G0mill GP offers plunging, slotting, and profiling at high tool life on a wide range of workpiece materials. They are 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 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 necessary tooling inventory.
- Eccentric relief increases edge stability resulting in higher tool life and better surface quality.
- Eccentric relief eases regrinding and reduces reconditioning cost.
- 4-flute design for high MRR and reduction of operating time.

### Tailored Grades

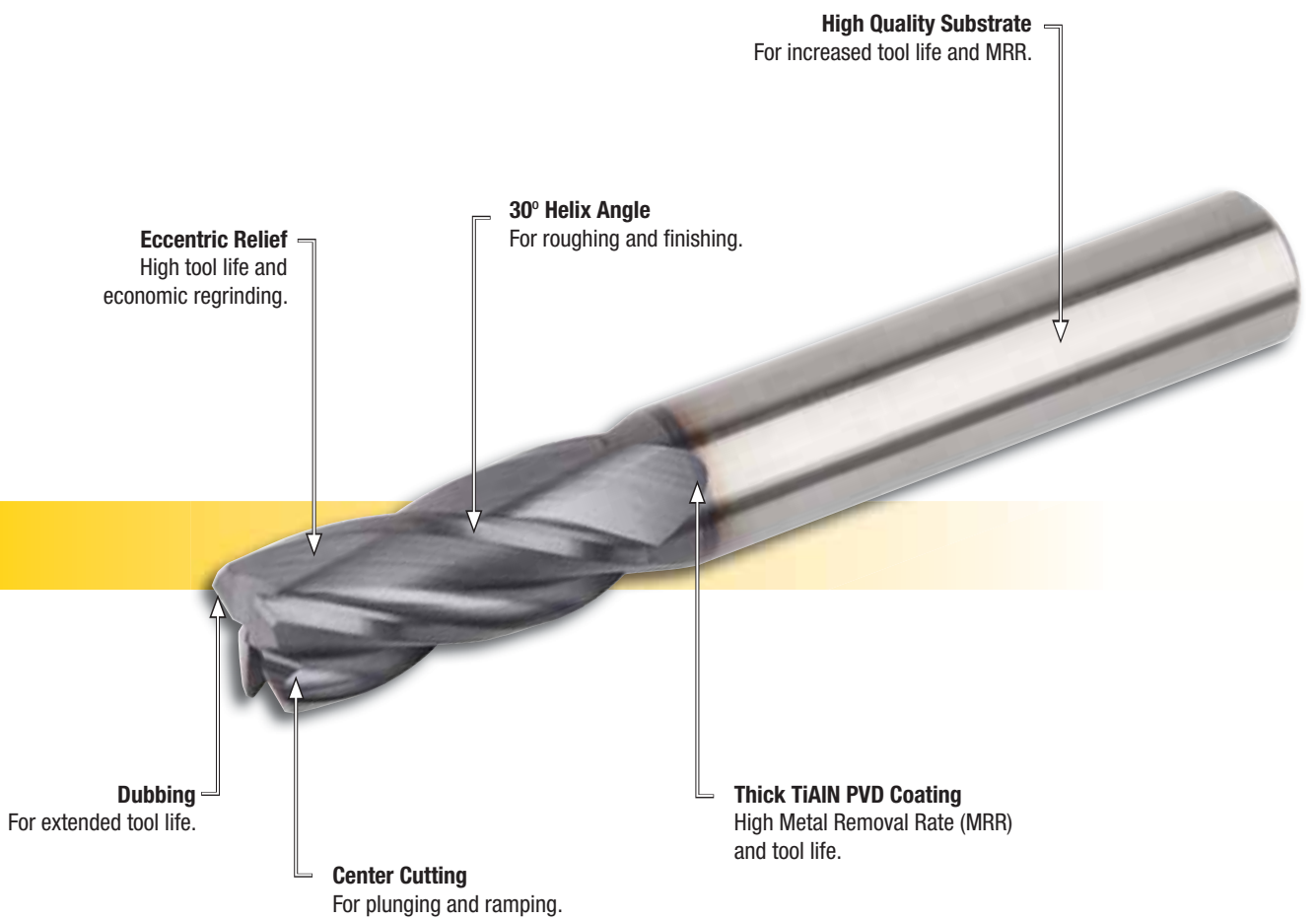
- Universal multilayer KC633M coating for cutting steel, cast iron, and stainless (wet).

### Customization

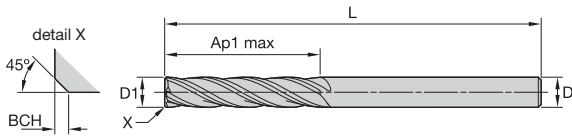
- Intermediate diameters available.
- Corner radii for near-end-shape operations available.

### Extensive Standard Offering

- Diameter range 1/64–1".
- 4-flute tooling.
- Sharp edge, chamfer edge, and ball nose as standard offering.



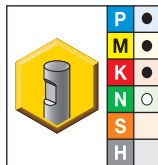
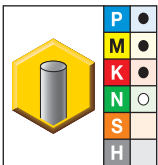
- Center cutting.



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"

■ 4CH..IS-IR-IL-IX • 4 Flute • Inch

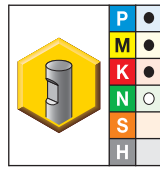
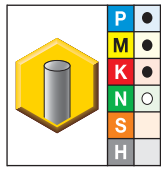


- first choice
- alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
4CH0016IR003A	—	1/64	1/8	1/32	1 1/2	—
4SE0015IR003A	—	1/64	1/8	1/32	1 1/2	—
4CH0031IR008A	—	1/32	1/8	5/64	1 1/2	—
4SE0031IR008A	—	1/32	1/8	5/64	1 1/2	—
4CH0062IR011A	—	1/16	1/8	7/64	1 1/2	—
4SE0062IR010A	—	1/16	1/8	7/64	1 1/2	—
4CH0078IR018A	—	5/64	1/8	3/16	1 1/2	—
4CH0093IR037A	—	3/32	1/8	3/8	1 1/2	—
4SE0093IR037A	—	3/32	1/8	3/8	1 1/2	—
4CH0093IL062A	—	3/32	1/8	5/8	2	—
4SE0093IL062A	—	3/32	1/8	5/8	2	—
4CH0109IR037A	—	7/64	1/8	3/8	1 1/2	—
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

(continued)

(4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



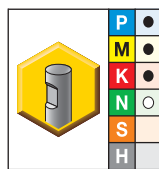
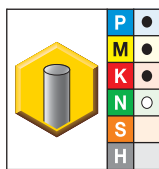
● first choice  
 ○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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
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



(continued)

(4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



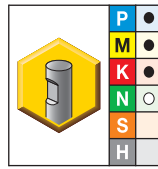
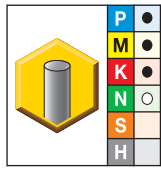
● first choice  
 ○ alternate choice

Solid End Milling

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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
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	4CH0500IS062B	1/2	1/2	5/8	2 1/2	.020
4SE0500IS062A	4SE0500IS062B	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

(continued)

(4CH..IS-IR-IL-IX • 4 Flute • Inch — continued)



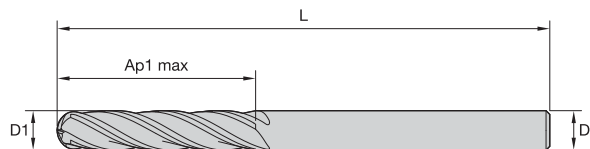
● first choice  
 ○ alternate choice

KC633M	KC633M	D1	D	length of cut Ap1 max	length L	BCH
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 3/4	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	—
4SE0078IR018A	—	25/32	1/8	3/16	1 1/2	—
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 D62.



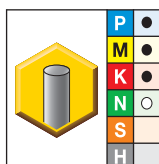
- Center cutting.



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



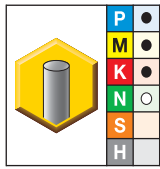
- first choice
- alternate choice

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

(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
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
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 D63.

■ GOMill GP • 4CH..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	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		
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
M	1	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
	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 • 4CH..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	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1		
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
M	1	Ap1 max	0.1 x D	300	–	490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039
	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	1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	
							.0313	.0625	.0781	.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	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	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1				
							.0938	.1250	.1875	.2500	.3125	.3750	.5000	.6250	.7500	1.0000				
P	0	Ap1 max	0.1 x D		660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049				
	1	Ap1 max	0.1 x D		660	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049				
	2	Ap1 max	0.1 x D		620	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049				
	3	Ap1 max	0.1 x D		520	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045				
	4	Ap1 max	0.1 x D		490	IPT	.0005	.0007	.0010	.0014	.0018	.0020	.0026	.0030	.0034	.0039				
M	1	Ap1 max	0.1 x D		380	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045				
	2	Ap1 max	0.1 x D		260	IPT	.0004	.0006	.0009	.0012	.0016	.0018	.0023	.0027	.0031	.0036				
K	1	Ap1 max	0.1 x D		490	IPT	.0007	.0009	.0014	.0018	.0023	.0027	.0034	.0040	.0044	.0049				
	2	Ap1 max	0.1 x D		460	IPT	.0005	.0007	.0011	.0015	.0020	.0023	.0029	.0034	.0039	.0045				
N	1	Ap1 max	0.1 x D		3250	IPT	.0009	.0013	.0019	.0025	.0031	.0038	.0050	.0063	.0075	.0100				
	2	Ap1 max	0.1 x D		2450	IPT	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0060	.0080				
	4	Ap1 max	0.1 x D		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.

General Purpose End Mills • G0mill™ GP  
G0mill GP • SE • IS-IR-IL-IX • Short • Regular • Long • Extra Long

Center cutting.

DI	tolerance	D	tolerance
A1	+0.001 -0.002	+1.0"	+0.0005"
		+1.58-1.94"	+0.0005"
		+2.00-2.36"	+0.0005"
		+2.75-3.11"	+0.0005"
		+3.50-3.86"	+0.0005"

• Not choice  
□ alternate choice

K0200M	K0200M	D1	D	length of cut Ap1 max.	length L
02000100010	02000100010	1/2"	1.0"	3/4"	1.10"
		3/4"	1.0"	3/4"	1.10"
		1.0"	1.0"	3/4"	1.10"

**3SE0250IR075A**



Solid End Milling

3	SE	0250	IR	075	A
Number of Flutes	End Mill Shape	Cutting Diameter inch	Standard	Ap1 max inch	Shank Style
<p>2 = 2 Flute 3 = 3 Flute 4 = 4 Flute</p>	<p>CH = Chamfer Edge BN = Ball Nose SE = Sharp Edge</p>		<p>IS = Factory Standard Short IR = Factory Standard Regular IL = Factory Standard Long IX = Factory Standard Extra Long</p>		<p>A = Plain Shank B = Weldon® Shank</p>

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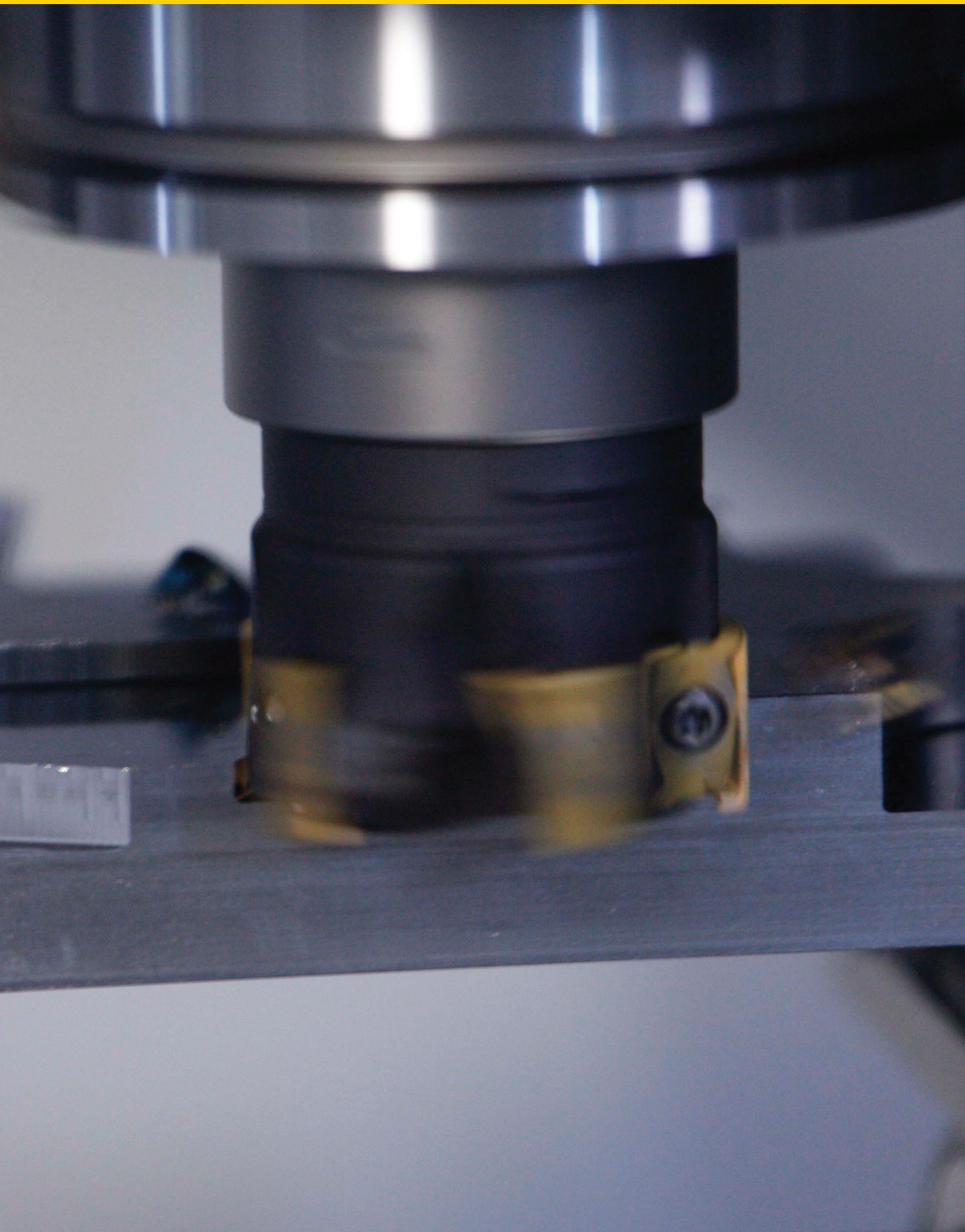
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[kennametal.com](http://kennametal.com)





## Indexable Milling

<b>Mill 4-11 Double-Sided Shoulder Milling Platform .....</b>	<b>E2–E13</b>
<b>Mill 16 • 16-Edged Productivity Booster for Machining Cast Iron Materials.....</b>	<b>E14–E19</b>
<b>KCSM40 New Titanium &amp; Stainless Steel Milling Grade .....</b>	<b>E20–E47</b>
<b>KBDM PCD Face Milling.....</b>	<b>E48–E54</b>
<b>Stellram 7792 High-Feed Series.....</b>	<b>E56–E96</b>
<b>Dodeka Series • Leader in Advanced Face Milling Applications .....</b>	<b>E98–E132</b>
Dodeka Mini.....	E98–E121
Dodeka .....	E98–E99, E122–E132
<b>MEGA Line Expansion • For True Heavy-Duty Machining.....</b>	<b>E134–E136</b>
MEGA 45 Left-Hand Inserts .....	E134–E136
MEGA 60 and 90 Left-Hand Inserts .....	E134–E136
MEGA 45/60/90 Left-Hand Shim .....	E134–E136
<b>KSSM8+ • 8-Edged Double-Sided Face Mills with Lead Angle Close to 90° .....</b>	<b>E138–E146</b>

# ➤ Mill 4-11™

One tool for all applications.

The Mill 4™ Series is specially engineered to achieve excellent performance in regards to surface quality as well as higher material 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, Mill 4 is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys.

## Features and Benefits

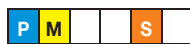
- Double-sided strong insert with 4 cutting edges.
- High positive geometry for lower cutting forces.
- Superior wall and surface finish capabilities.
- “Stepless” solution for multiple-pass operations.
- Comprehensive offering to cover all applications in all material groups.

**-ELEJ**



For non-ferrous materials.

**-EGE**



1st choice for stainless steel.  
Lower cutting forces.

**-SGE**



**First choice for Mill 4,**  
especially when machining steels.

**-SGEM**

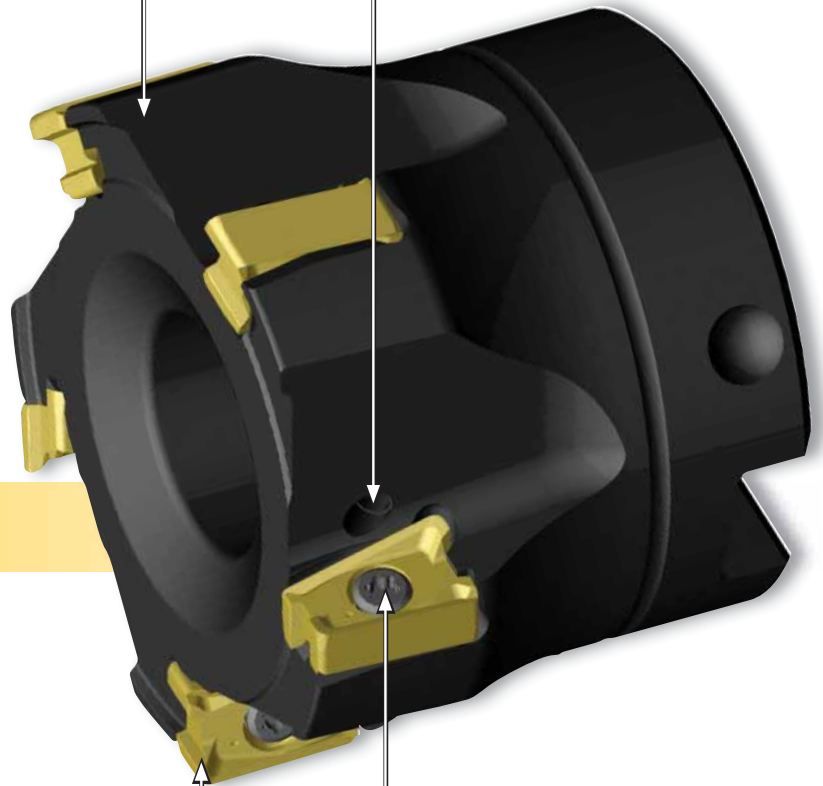


1st choice for cast iron.  
Strongest cutting edge.



Uneven pocket spacing.

Screw-on, end mills, and shell mill cutter with internal coolant.

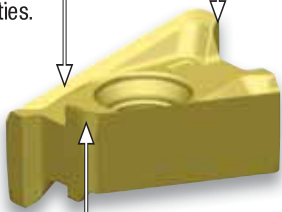


TP9 insert screw (M3) to provide higher reliability and safe processes.

Double-sided insert with 4 cutting edges!

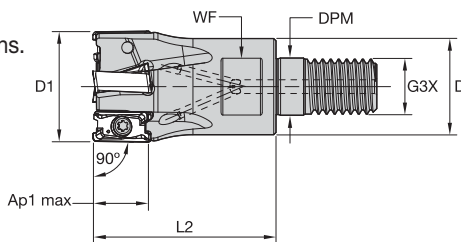
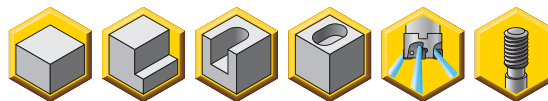
Up to 0.433" (11mm) Ap capabilities.

Integrated wiper facet for best in class floor finisher.



Multiple corner nose radii available from .016" (0,4mm) up to .063" (1.6mm).

- 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.



Indexable Milling

■ Screw-On End Mills

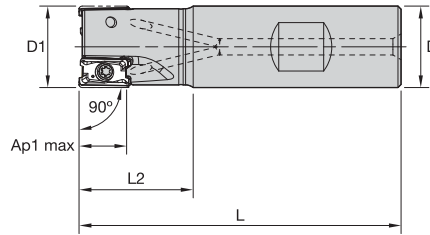
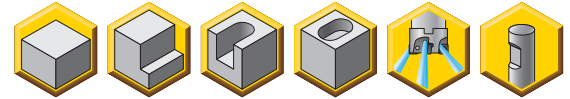
order number	catalog number	D1	D	DPM	G3X	L2	WF	Ap1 max	Z	lbs	max RPM
6139893	M4D075L1103M10L110	.750	.705	.413	M10	1.100	.590	.433	3	.01	41700
6139894	M4D100L1104M12L125	1.000	.827	.492	M12	1.250	.667	.433	4	.19	33900
6139895	M4D125L1105M16L175	1.250	1.142	.669	M16	1.750	.943	.433	5	.49	29200

■ Spare Parts



D1	insert screw	in. lbs.	Torx Plus driver
0.7500	MS2263	13.3	DT9IP
1.0000	MS2263	13.3	DT9IP
1.2500	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

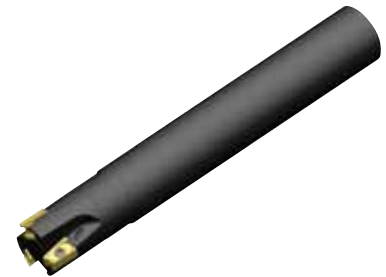
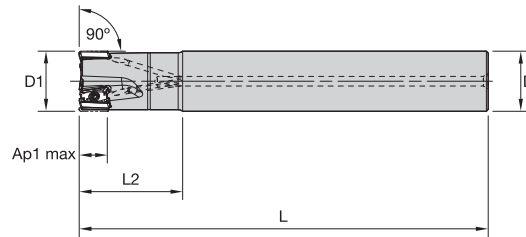
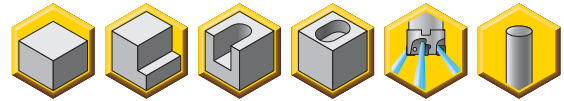
Indexable Milling

### 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.



Indexable Milling

■ Cylindrical End Mills

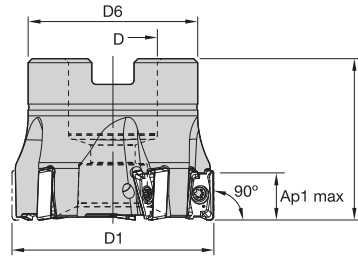
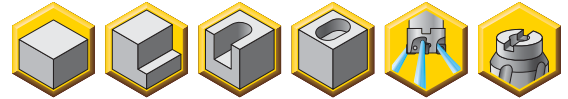
order number	catalog number	D1	D	L	L2	Ap1 max	Z	lbs	max RPM
6140053	M4D062L1102C062L400	.625	.625	4.000	1.000	.433	2	.30	48000
6139898	M4D062L1102C062L600	.625	.625	6.000	1.000	.433	2	.47	48000
6140055	M4D075L1102C075L600	.750	.750	6.000	1.100	.433	2	.67	41700
6140054	M4D075L1103C075L400	.750	.750	4.000	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	insert screw	in. lbs.	Torx Plus driver	socket-head cap screw
1.500	MS2263	13.300	DT9IP	S424
2.000	MS2263	13.300	DT9IP	S445
2.500	MS2263	13.300	DT9IP	S445
2.500	MS2263	13.300	DT9IP	S458
3.000	MS2263	13.300	DT9IP	S458
3.000	MS2263	13.300	DT9IP	S467



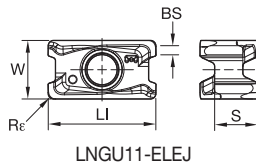
Indexable Milling

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..GE	KCPM40	.E..GE	KCPM40	.S..GE	KCPM40
P3-P4	.E..GE	KC522M	.S..GE	KCPM40	.S..GE	KCPM40
P5-P6	.S..GE	KC522M	.S..GE	KCPK30	.S..GE	KCPM40
M1-M2	.E..GE	KC725M	.E..GE	KC725M	.S..GE	KC725M
M3	.E..GE	KC522M	.E..GE	KC725M	.S..GE	KC725M
K1-K2	.S..GE	KCK15	.S..GEM	KCK15	.S..GEM	KCPK30
K3	.S..GE	KC520M	.S..GEM	KC520M	.S..GEM	KCPM40
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	KC522M	.E..GE	KC725M	.S..GE	KC725M
S3	.E..GE	KCSM30	.E..GE	KC725M	.S..GE	KC725M
S4	.E..GE	KCSM30	.S..GE	KCSM40	.S..GE	KCSM40
H1	-	-	-	-	-	-

Indexable Milling

Indexable Inserts • Mill 4-11



● first choice  
○ alternate choice

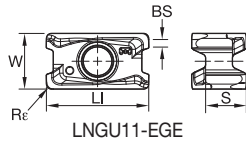
	P	M	K	N	S	H											
cutting edges	4	4	4	4	4	4	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
LNGU431ERLEJ	●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LNGU432ERLEJ	●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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	KCPM20	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.

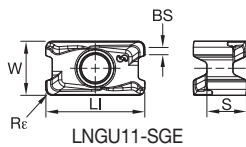
● first choice  
○ alternate choice



■ 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	KCPM20	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 compromise for both roughing and finishing operations.



■ 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	KCPM20	KCPM40	KCSM30	KCSM40
LNGU431SRGE	.479	.190	.260	.054	.016	-	4	-	-	●	-	-	-	-	●	-	●
LNGU432SRGE	.479	.190	.260	.039	.031	.004	4	-	-	●	●	●	-	-	●	-	●

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



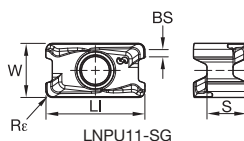
- -SGE is the universal geometry for Mill 4-11. First choice when machining steel, as well as stainless steel, and high-temp alloys in heavy applications.
- Precision-pressed insert is a perfect choice for roughing operations with a better cost-per-edge and great surface quality.

● first choice  
○ alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



LNU11-SG



LNU11-SG

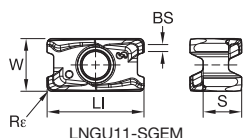
■ LNU11-SGE • Precision Pressed • General Purpose for Roughing and Semi-Finishing Operations

catalog number	LI	S	W	BS	Rε	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
LNU432SRGE	.476	.190	.260	.036	.031	.004	4	-	●	●	●	●	●	●	●	-	-
LNU433SRGE	.476	.190	.260	.021	.047	.004	4	-	●	●	●	●	-	-	●	-	-
LNU434SRGE	.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	KCPM20	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	-	●	-	-	●	-	-	●	-	-

Indexable Milling



■ Recommended Starting Speeds [SFM]

Material Group		KC422M			KC520M			KC522M			KC725M			KCK15		
P	1	-	-	-	-	-	-	1080	<b>935</b>	885	855	<b>755</b>	705	-	-	-
	2	-	-	-	-	-	-	900	<b>785</b>	655	720	<b>625</b>	525	-	-	-
	3	-	-	-	-	-	-	835	<b>705</b>	575	655	<b>560</b>	460	-	-	-
	4	-	-	-	-	-	-	740	<b>605</b>	490	590	<b>490</b>	395	-	-	-
	5	-	-	-	-	-	-	605	<b>560</b>	490	490	<b>445</b>	395	-	-	-
	6	-	-	-	-	-	-	540	<b>410</b>	330	425	<b>330</b>	260	-	-	-
M	1	-	-	-	-	-	-	670	<b>590</b>	540	560	<b>490</b>	445	-	-	-
	2	-	-	-	-	-	-	605	<b>525</b>	425	510	<b>425</b>	360	-	-	-
	3	-	-	-	-	-	-	460	<b>395</b>	310	375	<b>330</b>	260	-	-	-
K	1	-	-	-	885	<b>805</b>	705	755	<b>670</b>	605	-	-	-	1380	<b>1265</b>	1115
	2	-	-	-	690	<b>625</b>	575	590	<b>525</b>	490	-	-	-	1100	<b>970</b>	900
	3	-	-	-	575	<b>525</b>	475	490	<b>445</b>	395	-	-	-	920	<b>820</b>	755
N	1	3525	<b>3100</b>	2870	-	-	-	-	-	-	-	-	-	-	-	-
	2	3100	<b>2870</b>	2495	-	-	-	-	-	-	-	-	-	-	-	-
	3	3100	<b>2870</b>	2495	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	130	<b>115</b>	80	115	<b>100</b>	80	-	-	-
	2	-	-	-	-	-	-	130	<b>115</b>	80	115	<b>100</b>	80	-	-	-
	3	-	-	-	-	-	-	165	<b>130</b>	80	150	<b>115</b>	80	-	-	-
	4	-	-	-	-	-	-	230	<b>165</b>	115	195	<b>150</b>	100	-	-	-
H	1	-	-	-	-	-	-	395	<b>295</b>	230	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Material Group		KCPK30			KCPM20			KCPM40			KCSM30			KCSM40		
P	1	1490	<b>1295</b>	1215	1805	<b>1590</b>	1475	970	<b>855</b>	805	1215	<b>1050</b>	985	-	-	-
	2	920	<b>835</b>	755	1115	<b>1015</b>	900	820	<b>705</b>	590	1000	<b>885</b>	720	-	-	-
	3	835	<b>755</b>	670	1015	<b>900</b>	835	755	<b>640</b>	525	935	<b>785</b>	640	-	-	-
	4	625	<b>575</b>	525	755	<b>705</b>	625	670	<b>560</b>	445	820	<b>670</b>	540	-	-	-
	5	855	<b>755</b>	690	900	<b>820</b>	755	560	<b>510</b>	445	670	<b>625</b>	540	440	<b>325</b>	230
	6	525	<b>445</b>	-	625	<b>560</b>	475	490	<b>375</b>	295	605	<b>460</b>	360	375	<b>605</b>	165
M	1	670	<b>605</b>	510	740	<b>655</b>	575	640	<b>560</b>	510	740	<b>655</b>	605	850	<b>605</b>	375
	2	605	<b>525</b>	460	670	<b>575</b>	525	575	<b>490</b>	410	670	<b>590</b>	475	755	<b>560</b>	345
	3	475	<b>425</b>	375	525	<b>475</b>	410	425	<b>375</b>	295	510	<b>445</b>	345	625	<b>440</b>	280
K	1	970	<b>870</b>	785	1180	<b>1065</b>	970	-	-	-	-	-	-	-	-	-
	2	770	<b>690</b>	625	935	<b>835</b>	770	-	-	-	-	-	-	-	-	-
	3	640	<b>575</b>	525	785	<b>705</b>	655	-	-	-	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	130	<b>115</b>	100	150	<b>130</b>	100	200	<b>145</b>	90
	2	-	-	-	-	-	-	130	<b>115</b>	100	150	<b>130</b>	100	180	<b>130</b>	85
	3	-	-	-	-	-	-	165	<b>130</b>	100	180	<b>150</b>	100	210	<b>150</b>	95
	4	215	<b>165</b>	110	-	-	-	215	<b>165</b>	115	280	<b>195</b>	130	295	<b>215</b>	135
H	1	-	-	-	460	<b>375</b>	310	-	-	-	445	<b>330</b>	245	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

■ 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%			
.E..LEJ	.003	.004	.009	.002	.003	.007	.002	.003	.006	.002	.003	.006	.002	.003	.006	.E..LEJ
.E..GE	.005	.008	.010	.004	.006	.008	.003	.005	.007	.003	.005	.006	.003	.005	.006	.E..GE
.S..GE	.007	.010	.015	.005	.007	.011	.004	.006	.009	.004	.006	.009	.004	.006	.009	.S..GE
.S..GEM	.007	.012	.017	.005	.009	.012	.004	.008	.011	.004	.007	.010	.004	.007	.010	.S..GEM

NOTE: Use "Light Machining" values as starting feed rate.



Indexable Milling

## Looking for a product that's not shown in this catalog?

## Check the Kennametal website!

### Online product catalog available 24/7

Visit [kennametal.com/IndexableMilling](http://kennametal.com/IndexableMilling) to browse our electronic catalog any time you're looking for the best Kennametal tooling solutions.

It's fast, free, and always available. The online e-catalog is updated weekly with products and solutions for milling, turning, holmaking, and tooling systems applications.



# 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	inserts	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	M4-11KITD062Z2W062SGEK725M	0.62z2	Weldon	M+S	▽▽/▽▽▽	M4D062L1102W062L100	1	LNGU110408ERGE	KC725M	20
6214807	M4-11KITD062Z2C062SGEK725M	0.62z2	Cylindrical	M+S	▽▽/▽▽▽	M4D062L1102C062L400	1	LNGU110408ERGE	KC725M	20
6214808	M4-11KITD075Z3W075SGEK725M	0.75z3	Weldon	M+S	▽▽/▽▽▽	M4D075L1103W075L110	1	LNGU110408ERGE	KC725M	20
6214809	M4-11KITD075Z3C075SGEK725M	0.75z3	Cylindrical	M+S	▽▽/▽▽▽	M4D075L1103C075L400	1	LNGU110408ERGE	KC725M	20
6214810	M4-11KITD100Z3W100SGEK725M	1.00z3	Weldon	M+S	▽▽/▽▽▽	M4D100L1103W100L175	1	LNGU110408ERGE	KC725M	20
6214821	M4-11KITD100Z4C100SGEK725M	1.00z4	Cylindrical	M+S	▽▽/▽▽▽	M4D100L1104C100L450	1	LNGU110408ERGE	KC725M	20
6214822	M4-11KITD125Z4W125SGEK725M	1.25z4	Weldon	M+S	▽▽/▽▽▽	M4D125L1104W125L225	1	LNGU110408ERGE	KC725M	20
6214823	M4-11KITD125Z5C125SGEK725M	1.25z5	End Mill	M+S	▽▽/▽▽▽	M4D125L1105C125L500	1	LNGU110408ERGE	KC725M	20
6214824	M4-11KITD150Z5S050SGEK725M	1.50z5	Shell Mill	M+S	▽▽/▽▽▽	M4D150L1105S050L157	1	LNGU110408ERGE	KC725M	20
6214825	M4-11KITD200Z5S075SGEK725M	2.00z5	Shell Mill	M+S	▽▽/▽▽▽	M4D200L1105S075L157	1	LNGU110408ERGE	KC725M	20
6214826	M4-11KITD200Z7S075SGEK725M	2.00z7	Shell Mill	M+S	▽▽/▽▽▽	M4D200L1107S075L157	1	LNGU110408ERGE	KC725M	20

▽ Heavy/Roughing  
▽▽ Medium  
▽▽▽ Light machining/Finishing

# ➤ Mill 16™

New Face Mills Generation for Cast Iron Machining to Increase Productivity.

## Primary Application

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



## Features and Benefits

- 16 effective cutting edges per insert.
- $Ap1$  max = .216" (5,5mm).
- Rigid fine pitch cutters with innovative wedge clamping.
- Cutter bodies with pocket seat numbering system.
- Cutter diameter range = 2–10" (50–250mm).
- High-precision periphery ground inserts.
- Latest insert design and cutting edge technology.
- Inserts with cutting edge numbering system.
- Lower cutting forces.
- Clearance on second main cutting edge.
- Latest Beyond™ milling grade KCK20.
- Low cost per edge to cut CPP.
- Perfect fit for most of the cast iron face milling requirements.
- High feed rates to boost productivity and cut down cycle time.
- Easy and user-friendly handling.
- Comprehensive standard offering to address most of the shop floor needs.
- Improved axial runout and tool life.
- Real smooth cutting action and lower cutting forces.
- Orientated edge positioning to support axial and radial runout.
- Less spindle load and option to increase feed rate up to 20%.
- Reliable cutting above  $Ap1 = .216"$  (5,5mm) is able to address castings with varying skin thickness.
- Up to 30% improvement in tool life.

## Innovative insert design to reduce cutting forces and increase productivity.



Semi-finishing and light machining

**ENLE**

**ONGX645ENLE**  
for light machining.

**ONGX64ANENLE**  
with integrated wiper facet  
for semi-finishing.



Medium roughing

**SNGP**

**ONGX645SNGP**  
**ONPX642SNGP**  
for medium roughing with low  
cutting forces.

**ONGX64ANSNGP**  
for medium roughing with  
integrated wiper facet for  
improved surface finish.

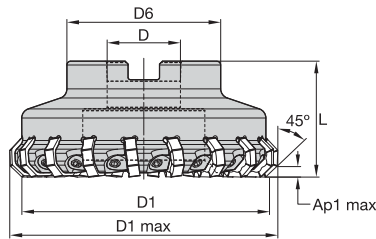
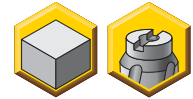


Heavy roughing

**SNHB**

**ONGX642SNHB**  
**ONGX645SNHB**  
**ONGX648SNHB**  
**ONPX645SNHB**  
first choice for heavy roughing  
jobs to perfectly manage castings  
with varying skin thickness.

- Productivity booster for machining cast iron materials.
- Ap1 max: .215" (5,5mm).
- Insert with 16 cutting edges.
- Cutter bodies with pocket seat numbering system.
- Inserts with cutting edge numbering system.
- Easy and user-friendly handling.



### Mill 16 • Shell Mills

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	2.29	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

### Spare Parts



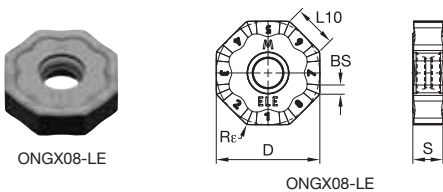
D1	wedge	wedge screw	in. lbs.	wrench	mounting screw with coolant grooves	adjustable torque wrench	bit SW3 for adjustable torque wrench
2.000	CW16	12748601000	62	12148044900	KLSS0714C	DTQ50140	BTQSW3L90
2.500	CW16	12748601000	62	12148044900	—	DTQ50140	BTQSW3L90
3.000	CW16	12748601000	62	12148044900	—	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

**Insert Selection Guide**

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	-	-	-	-	-	-
P3-P4	-	-	-	-	-	-
P5-P6	-	-	-	-	-	-
M1-M2	-	-	-	-	-	-
M3	-	-	-	-	-	-
K1-K2	.E..LE	KC514M	.S..GP	KCK15	.S..HB	KCK15
K3	.S..GP	KCK15	.S..HB	KCK20	.S..HB	KCK20
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	-	-	-	-	-	-
S3	-	-	-	-	-	-
S4	-	-	-	-	-	-
H1	-	-	-	-	-	-

**Indexable Inserts**

- ...ANENLE = semi-finishing with improved surface floor finish.
- ...ENLE = light machining.



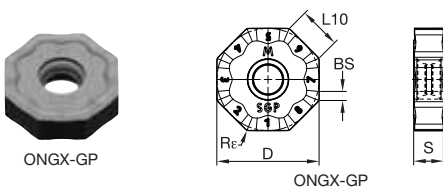
- first choice
- alternate choice

P	●		
M	●		
K	●	●	●
N	●		
S	●		
H	●		

**ONGX-LE • High-Precision Periphery Ground**

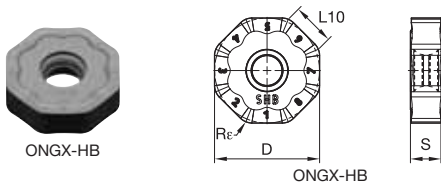
catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15
ONGX64ANENLE	.787	.229	.323	.059	.031	.002	●	-
ONGX645ENLE	.787	.229	.326	-	.079	.002	●	-

- ...ANSNGP = medium roughing with improved surface floor finish.
- ...SNGP = medium roughing with low cutting forces.


**ONGX-GP • High-Precision Periphery Ground**

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15
ONGX64ANSNGP	.787	.229	.323	.059	.031	.006	●	●
ONGX645SNGP	.787	.229	.326	-	.079	.006	●	●

- First choice for heavy roughing.



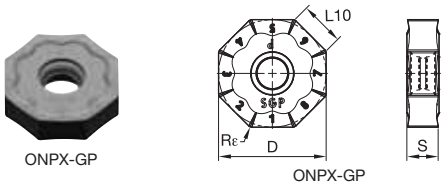
- first choice
- alternate choice

P	■				
M	■				
K	■	●	●	●	●
N	■				
S	■				
H	■				

■ ONGX-HB • High-Precision Periphery Ground

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30
ONGX642SNHB	.787	.229	.326	—	.032	.007	●	●	—	—
ONGX645SNHB	.787	.229	.326	—	.079	.007	●	●	●	●
ONGX648SNHB	.787	.229	.326	—	.118	.007	●	●	●	—

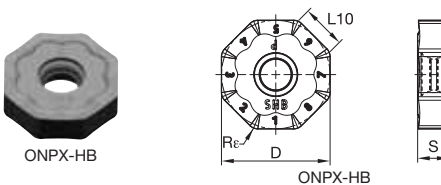
- Medium roughing with lower cutting forces.



■ ONPX-GP • Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30
ONPX642SNGP	.787	.229	.326	—	.032	.006	—	●	●	—

- Heavy roughing with regular performance.



■ ONPX-HB • Pressed and Sintered to Size

catalog number	D	S	L10	BS	Rε	hm	KC514M	KCK15	KCK20	KCPK30
ONPX645SNHB	.787	.229	.326	—	.079	.007	—	●	●	—

Indexable Milling



**Recommended Starting Speeds [SFM]**

Material Group		KC514M			KCK15			KCK20			KCPK30		
P	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-	-	-	-	-
M	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
K	1	955	<b>625</b>	495	1085	<b>725</b>	495	1085	<b>725</b>	495	970	<b>870</b>	785
	2	745	<b>525</b>	410	820	<b>595</b>	410	820	<b>595</b>	410	770	<b>690</b>	625
	3	625	<b>445</b>	395	725	<b>495</b>	395	725	<b>495</b>	395	640	<b>575</b>	525
S	1	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.


**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..LE	.009	<b>.016</b>	.031	.006	<b>.011</b>	.023	.005	<b>.008</b>	.017	.004	<b>.007</b>	.015	.004	<b>.007</b>	.013	.E..LE
.S..GP	.013	<b>.022</b>	.041	.009	<b>.016</b>	.029	.007	<b>.012</b>	.022	.006	<b>.011</b>	.019	.006	<b>.010</b>	.018	.S..GP
.S..HB	.013	<b>.027</b>	.053	.009	<b>.019</b>	.038	.007	<b>.014</b>	.028	.006	<b>.013</b>	.025	.006	<b>.012</b>	.023	.S..HB

NOTE: Use "Light Machining" values as starting feed rate.

# ➤ KCSM40

## New Beyond™ Grade KCSM40

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

Available in the following 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™, NGE™, KSSM™ 90, KSSM8+™, Rodeka™, Stellram® 5230, Stellram 7713, and Stellram 7792.

## Features and Benefits

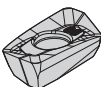
- Engineered for increased efficiency in titanium materials.
- KCSM40 maintains cutting edge integrity and stability, even at elevated temperatures.
- Advanced carbide substrate provides toughness, improves fatigue resistance, and minimizes the tendency for thermal cracking.
- Available in ground and PSTS inserts.
- Multiple corner radii available to meet aerospace customers' requirements.
- AlTiN + TiN PVD coating provides high hot hardness and high abrasive resistance for increased tool life.
- Proven indexable milling solution in heat-resistant stainless steels for turbochargers.



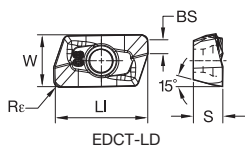


**KCSM40 completes the Kennametal indexable milling grade portfolio for titanium and stainless steel materials. KCSM40 features a new advanced substrate combined with a proven PVD coating to deliver optimum performance.**

- Finishing and high precision applications.
- Light machining.
- 15° positive rake angle.
- Perfect floor surface finish.
- Ap1 max = .393" (10mm).



EDCT-LD



EDCT-LD

- first choice
- alternate choice

beyond

P	●				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○				○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H																				

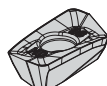
NEW!

Indexable Milling

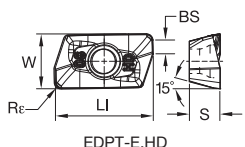
EDCT-LD

catalog number	LI	W	S	BS	Rε	hm	cutting edges	K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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	KCPM20	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	-	-	-	●	●	●	●	○	○	○	○	○	○	○

NEW!

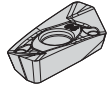


- Light machining and finish applications.
- Medium hone for increased edge protection.
- Periphery ground for high-precision machining.
- Ap1 max = .551" (14mm).

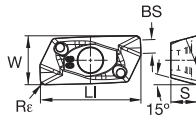
beyond

- first choice
- alternate choice

P	●				○	●	●	●	●	○	○
M	●				○	●	○	○	○	○	○
K	●				○	●	○	○			
N	●	●									
S						●	●			●	●
H											



EDCT-E.GD



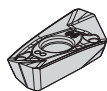
EDCT-E.GD

■ EDCT-E.GD

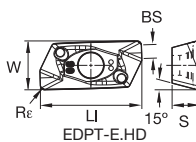
catalog number	LI	W	S	BS	Re	hm	cutting edges													
								KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40		
EC1404EGD	.687	.334	.177	.116	.016	.002	2	-	-	-	-	●	-	-	●	●	-	-	-	-
EC1408EGD	.688	.334	.177	.101	.031	.002	2	-	-	-	-	●	-	-	●	●	●	●	●	●
EC1412EGD	.688	.333	.177	.085	.047	.002	2	-	-	-	-	●	-	-	-	-	-	-	-	●
EC1416EGD	.688	.333	.177	.070	.062	.002	2	-	-	-	-	●	-	-	-	-	-	-	-	●
EC1431EGD	.689	.331	.177	.010	.122	.002	2	-	-	-	-	●	-	-	●	-	●	●	●	●

NEW!

- 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	Re	hm	cutting edges													
								KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	●	●	●	●	-	-	-	-	-	●

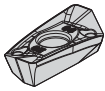
NEW!

Indexable Milling

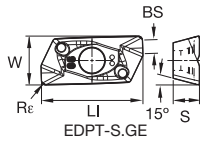
- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS – Precision pressed and sintered to size.
- Ap1 max = .551" (14mm).



- first choice
- alternate choice



EDPT-S.GE



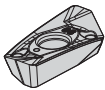
■ EDPT-S.GE

catalog number	LI	W	S	BS	Re	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	●	●	-	●	●	-	-	-	●

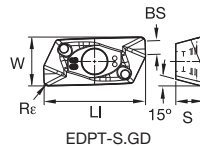


Indexable Milling

- 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

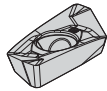
catalog number	LI	W	S	BS	Re	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
EP1408SGD	.688	.330	.177	.101	.031	.004	2	-	-	●	-	●	-	●	-	-	-	-	●
EP1412SGD	.688	.329	.177	.085	.047	.004	2	-	-	●	-	●	-	●	-	●	-	-	●
EP1416SGD	.688	.329	.177	.070	.062	.004	2	-	-	●	-	●	-	●	-	-	-	-	●



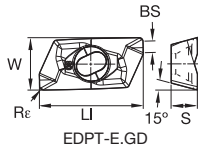
- Light machining and finish applications.
- Periphery ground for high-precision machining.
- Medium hone for increased edge protection.
- Ap1 max = .708" (18mm).

beyond

● first choice  
○ alternate choice



EDPT-E.GD



EDPT-E.GD

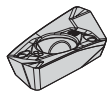
EDPT-E.GD

catalog number	LI	W	S	BS	Re	hm	cutting edges	Material Compatibility												
								KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	●	-	●	●	-	-	-	-	●	●

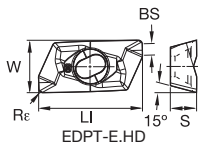
NEW!

Indexable Milling

- 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

EDPT-E.HD

catalog number	LI	W	S	BS	Re	hm	cutting edges	Material Compatibility												
								KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	-	-	●	●	-	-	-	-	-	●

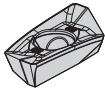
NEW!



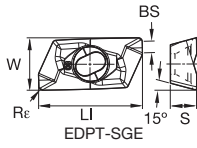


- Medium roughing and semi-finishing.
- Solution for austenitic stainless steel and super alloys.
- Medium feed rates.
- PSTS – Precision pressed and sintered to size.
- Ap1 max = .708" (18mm).

● first choice  
○ alternate choice



EDPT-SGE



EDPT-SGE

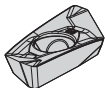
■ EDPT-S.GE

catalog number	LI	W	S	BS	Re	hm	cutting edges																	
								KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	●	-	●	-	●	●	●	-	-	-	-	-	-	●

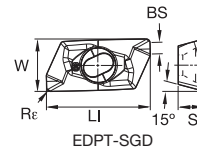


Indexable Milling

- Heavy roughing applications.
- High feed rates.
- All material groups.
- PSTS – Precision pressed and sintered to size.
- Ap1 max = .708" (18mm).



EDPT-SGD



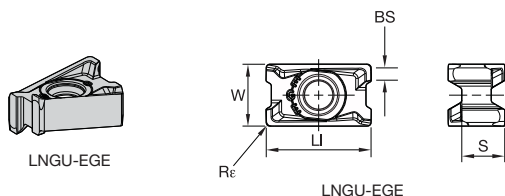
EDPT-SGD

■ EDPT-S.GD

catalog number	LI	W	S	BS	Re	hm	cutting edges																
								KC410M	KC422M	KC520M	KC522M	KC525M	KC725M	KCK15	KCPK30	KCPM20	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	-	-	-	-	-	●	●	●	●	-	●	-	●	-	●	●



- 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.



● first choice  
○ alternate choice

beyond

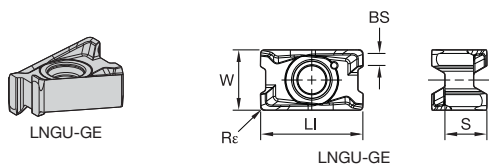
P			○	●	●	●	●	○	○
M			●	●	○	○	○	○	○
K		●	○	●	○	○	○	○	○
N	●								
S			●	●			○	●	●
H							○		

■ 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	KCPM20	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	-	-	●	-	-	-	●	●	-	-

NEW!

- 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.



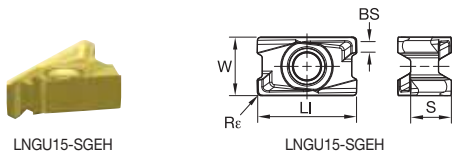
■ LNGU15-SGE • Precision Ground • For Steel Machining, Finishing, and Light Roughing

catalog number	LI	W	S	BS	Rε	hm	cutting edges										
								KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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	-	●	●	●	●	-	-	-	-	-

NEW!

Indexable Milling

- H stands for helical.
- Insert specially design to fit in helical cutters (porcupine).



● first choice  
○ alternate choice

P	●	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○

■ LNGU15-SGEH • For Mill 4-15 Helical Cutters (Porcupine Style)

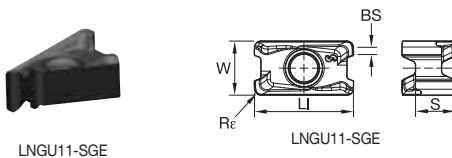
catalog number	LI	W	S	BS	Re	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
LNGU542SRGEH	.670	.394	.274	.071	.031	.004	4	—	—	—	—	—	—	—	—	—	—	●

NEW!



Mill 4-11™ • Indexable Inserts

- -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 compromise for both roughing and finishing operations.



● first choice  
○ alternate choice

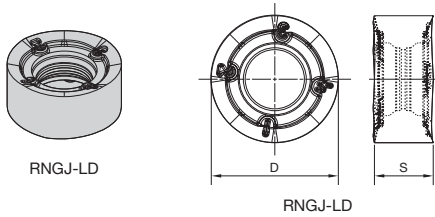
P	●	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○

■ LNGU11-SGE • Precision Ground • Universal Geometry • General purpose for roughing and finishing operations

catalog number	LI	S	W	BS	Re	hm	cutting edges	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
LNGU431SRGE	.479	.190	.260	.054	.016	—	4	—	—	●	—	—	—	—	—	—	—	●
LNGU432SRGE	.479	.190	.260	.039	.031	.004	4	—	—	●	●	●	—	—	—	—	—	●

NEW!

- -FLDJ geometry is for non-ferrous metals.
- -LD geometry is the first choice for stainless steel and titanium machining at lower cutting forces.



● first choice  
○ alternate choice

P	●	○	○	●	●	●	●	●	○
M	●	○	○	●	●	○	○	○	○
K	●	○	○	●	○	○	○	○	○
N	●	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

■ RINGJ10T3-LD/-LDJ

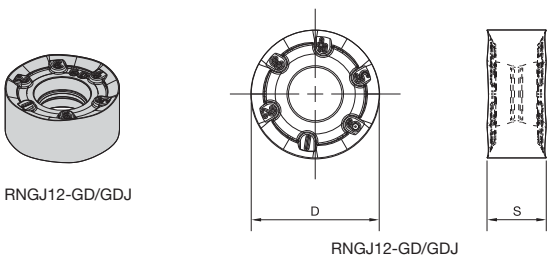
**NEW!**

Indexable Milling

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RNGJ10T3M0ELD	.394	.187	.002	8	-	-	-	-	-	●	-	-	-	-	-	-
RNGJ10T3M0ELDJ	.394	.187	.002	8	-	-	●	●	-	-	-	-	-	-	●	●
RNGJ10T3M0FLDJ	.394	.187	.002	8	●	-	-	-	-	-	-	-	-	-	-	-

Rodeka™ 12 • Inserts

- -GD geometry is for general use in steel and for stainless steel.



● first choice  
○ alternate choice

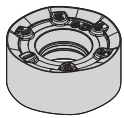
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M	○	○	○	●	●	○	○	○	○
K	○	○	○	●	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

■ RINGJ12-GD/GDJ

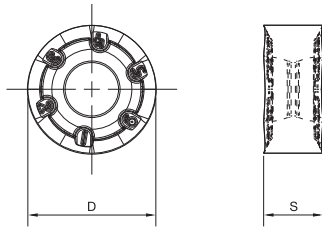
**NEW!**

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RNGJ1204M0SGD	.472	.187	.003	12	-	-	●	●	-	-	●	-	-	-	-	-
RNGJ1204M0SGDJ	.472	.187	.003	12	-	-	-	-	-	-	-	-	-	-	●	●

- GD geometry is for general use in steel and stainless steel.



RNPJ16-GD



RNPJ16-GD

**RNPJ16-GD**

catalog number	D	S	hm	cutting edges	KC422M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RNPJ1605M0SGD	.630	.250	.003	12	-	-	-	●	●	-	-	-	-	●	-	●

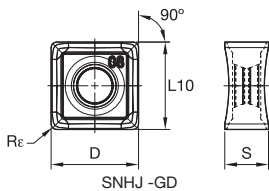
- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**NEW!**

**KSSM8+™ • IC 12,7mm • Inserts**


SNHJ -GD



SNHJ -GD

**SNHJ -GD**

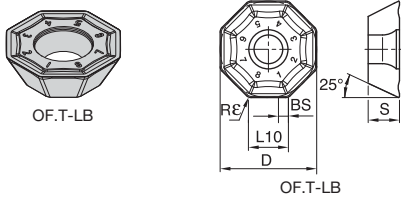
catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
SNHJ442SNGD	.500	.250	.500	.031	.005	8	●	○	-	●	●	●	●

- first choice
- alternate choice

P	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○

**NEW!**

- First choice for light machining.
- -LB light geometry is the first choice for turbine blade applications.



- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

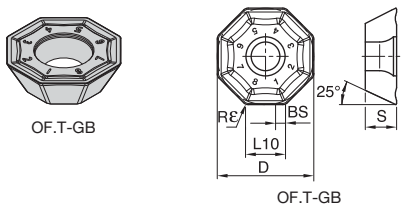
■ OFKT-LB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40
OFKT53AFEN6LB	.579	.197	.236	.048	.031	.004	8	-	-	●	●	●	●	●	-	-	●
OFKT53AFSN6LB	.579	.197	.236	.048	.031	.009	8	-	-	●	●	-	●	-	-	-	-



Indexable Milling

- First choice for general purpose.
- -GB medium geometry for roughing and finishing operations on all materials.



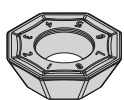
■ OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40
OFKT53AFEN4GB	.579	.197	.236	-	.031	.006	8	-	-	●	●	●	●	●	●	●	●

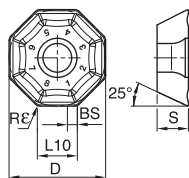




- First choice for heavy roughing.



OF.T- HB



OF.T- HB

- first choice
- alternate choice

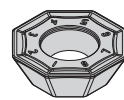
P	●				○	●	●	●	●	○
M						●	●	○	○	○
K						●	○	●	○	○
N	●	●								
S						●	●			●
H										

**NEW!**

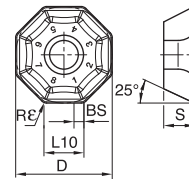
### ■ OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40
OFKT53AFSN4HB	.579	.197	.236	—	.031	.008	8	-	-	-	●	●	-	●	●	-	●

- First choice for heavy roughing.



OF.T- HB



OF.T- HB

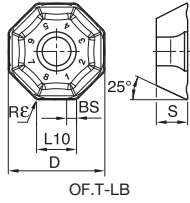
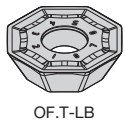
### ■ OFPT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC422M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40
OFPT53AFSN4HB	.579	.197	.236	—	.031	.008	8	-	-	●	-	●	●	●	●	-	●

**NEW!**



- First choice for light machining.



- first choice
- alternate choice

P	●									
M	○	●	●	●	●	●	●	●	●	●
K	●	○								
N	●									
S	●	●						●	●	
H										

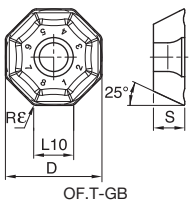
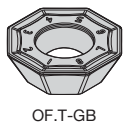
### ■ OFKT-LB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KGSM30	KGSM40
OFKT64AFEN6LB	.736	.236	.295	.083	.047	.004	8	●	●	●	●	●	●	●	●	●
OFKT64AFSN6LB	.736	.236	.295	.083	.047	.009	8	○	○	○	○	○	○	○	○	○

**NEW!**

Indexable Milling

- First choice for general purpose.

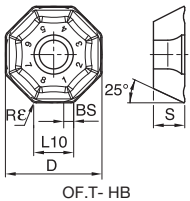
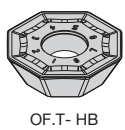


### ■ OFKT-GB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KGSM30	KGSM40
OFKT64AFEN6GB	.736	.236	.295	—	.047	.006	8	●	●	●	●	●	●	●	●	●

**NEW!**

- First choice for heavy roughing.



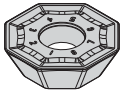
### ■ OFKT-HB

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KGSM30	KGSM40
OFKT64AFSN6HB	.736	.236	.295	—	.047	.008	8	●	●	●	●	●	●	●	●	●

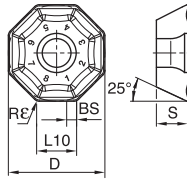
**NEW!**



- First choice for heavy roughing.



OF.T- HB



OF.T- HB

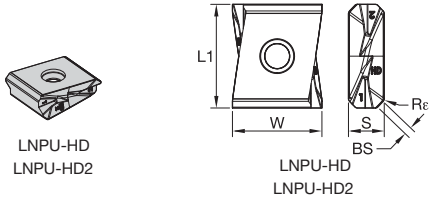
- first choice
- alternate choice

P	●			○	●	●	●	○
M	●			●	●	○	○	●
K	●	○			○			
N	●							
S				●	●		●	●
H								

**NEW!**
**OFPT- HB**

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM30	KCSM40
OFPT64AFSN6HB	.736	.236	.295	—	.047	.008	8	—	●	●	●	●	●	—	—	●





■ LNPUs-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPUs863ANSRHD	1.142	.088	.985	.047	.394	.009	4	●	●	●	●	—	—
LNPUs863ANSRHD2	1.142	.088	.986	.047	.394	.009	4	●	—	—	●	●	●
LNPUs863ANSLHD	1.142	.088	.985	.047	.394	.009	4	—	—	—	●	●	—
LNPUs863ANSLHD2	1.142	.088	.986	.047	.394	.009	4	●	●	●	●	●	—

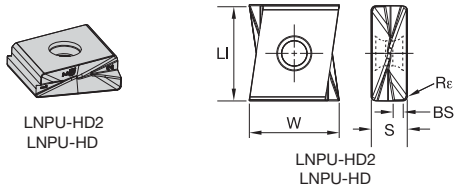
● first choice  
○ alternate choice

P	●	●	●	○
M	○	○	○	○
K	●	●	○	○
N	○	○	○	○
S	○	○	○	●
H	○	○	○	○

**NEW!**

Indexable Milling

MEGA 15°/60°/90° • Inserts



■ LNPUs-HD/-HD2

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
LNPUs763PNSRHD	1.043	.091	.985	.047	.394	.009	4	●	●	●	●	—	—
LNPUs763PNSRHD2	1.043	.091	.984	.047	.394	.009	4	●	—	—	●	●	●
LNPUs763PNSLHD2	1.043	.091	.984	.047	.394	.009	4	●	—	—	●	●	—

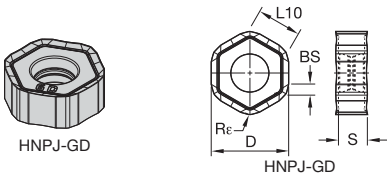
● first choice  
○ alternate choice

P	●	●	●	○
M	○	○	○	○
K	●	●	○	○
N	○	○	○	○
S	○	○	○	●
H	○	○	○	○

**NEW!**

**beyond**

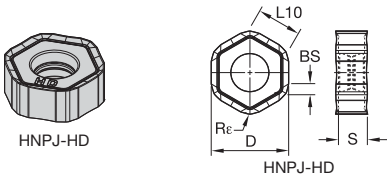
- First choice for general purpose.



### HNPJ-GD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	-	-	-	•	•	•	•	-	•	•	•	•	•	•

- First choice for heavy roughing.



### HNPJ-HD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	•	•	•	•	•	•	•	•	-	•
HNPJ438ANSNHD	.472	-	.253	.126	.174	.004	12	-	-	•	•	•	•	-	-	•	•	•	-	•

- first choice
- alternate choice

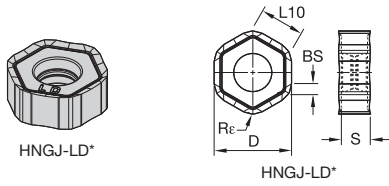
P	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
M	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
K	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
N	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
S	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

**NEW!**

**NEW!**



- First choice for light machining.



- first choice
- alternate choice

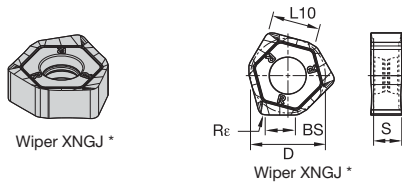
P	●	●	○	●	●	●	●	○
M	●	●	○	●	●	○	○	○
K	●	●	○	●	○	○	○	○
N	●	●	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○

■ HNGJ-LD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KGK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	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.

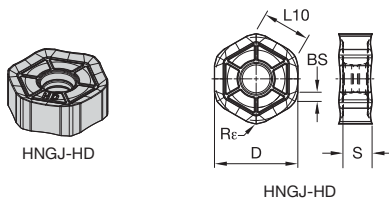
- Wiper insert for excellent floor finish.



■ XNGJ-LD3W

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KGK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	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

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KGK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	-	●	-	●	●	-	●	○	-	●

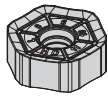
Indexable Milling

**NEW!**

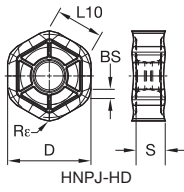
**NEW!**



- First choice for heavy roughing.



HNPJ-HD



HNPJ-HD

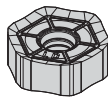
- first choice
- alternate choice

■ HNPJ-HD

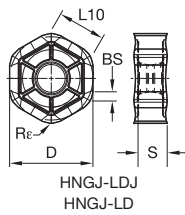
catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500	
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	-	•	•	•	•	•	•	•	•	•	•	•
HNPJ53511ANSNHD	.625	.214	.334	-	.171	.005	12	-	-	•	•	•	•	-	•	-	•	•	-



- First choice for light machining and aluminum.



HNGJ-LDJ  
HNGJ-LD



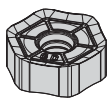
HNGJ-LDJ  
HNGJ-LD

■ HNGJ-LDJ and -LD

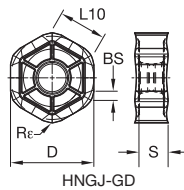
catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	•	-	-	-	-	-	-	-	-	-	-
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	-	•	•	•	•	•	-	-	•	•	-



- First choice for general purpose.



HNGJ-GD



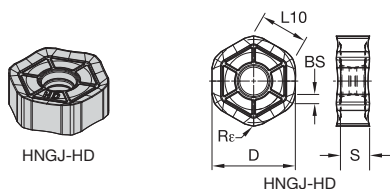
HNGJ-GD

■ HNGJ-GD

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	-	-	-	•	•	•	•	•	•	•	-



- First choice for heavy roughing.



- first choice
- alternate choice

P	●	○	●	●	●	●	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○

■ HNGJ-HD

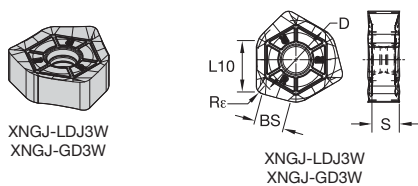
Indexable Milling

catalog number	D	S	L10	BS	Re	hm	cutting edges
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12
HNGJ53511ANSNHD	.625	.214	.334	—	.171	.008	12

KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
○	○	○	○	○	○	○	○	○	○	○

NEW!

- Wiper insert for excellent surface floor finish.



■ XNGJ-LDJ3W and -GD3W

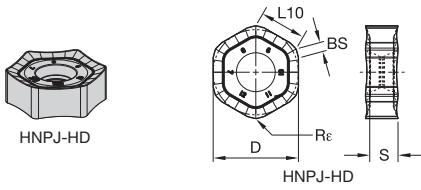
catalog number	D	S	L10	BS	Re	hm	cutting edges
XNGJ535ANFLDJ3W	.625	.217	.377	.230	.063	.001	3
XNGJ535ANSNGD3W	.625	.217	.377	.230	.063	.004	3

KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
○	○	○	○	○	○	○	○	○	○	○

NEW!

\*3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.

- First choice for heavy roughing.



- first choice
- alternate choice

P	●	●	●	○
M	●	○	○	●
K	●	●	●	○
N	○	○	○	○
S	●	○	○	●
H	○	○	○	○

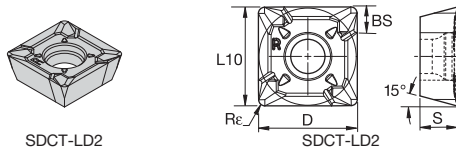
■ HNPJ-HD

catalog number	D	S	L10	BS	Re	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	●	●	●	—	—	—



KSSM™ 0° • Inserts

- Light and finish machining.
- Precision ground.
- 15° rake face.
- Four cutting edges.



- first choice
- alternate choice

P	○	○	○	○	○
M	●	●	○	○	○
K	●	○	○	○	○
N	○	○	○	○	○
S	●	●	○	○	○
H	○	○	○	○	○

■ SDCT-LD2

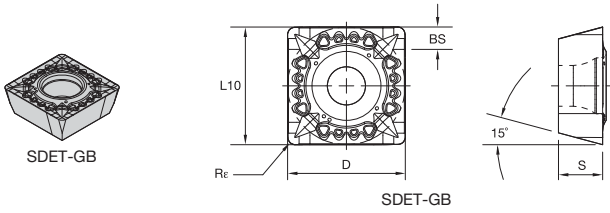
catalog number	D	S	L10	BS	Re	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPM20	KCPK30	KCSM30	KCSM40	KCPM40
SDCT43PDER8LD2	.500	.188	.500	.130	.031	.002	4	●	—	●	—	—	—	●	●	●
SDCT431PDER8LD2	.500	.188	.500	.115	.016	.002	4	—	—	●	—	—	—	—	—	—
SDCT433PDER8LD2	.500	.188	.500	.120	.047	.002	4	—	—	●	—	—	—	—	●	—
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.

beyond

● first choice  
○ alternate choice



■ SDET-GB

P	●	○	●	●	○	○	○
M	●	●	○	○	○	○	○
K	●	○	●	○	○	○	○
N	○	○	○	○	○	○	○
S	●	●	○	○	○	○	○
H	○	○	○	○	○	○	○

NEW!

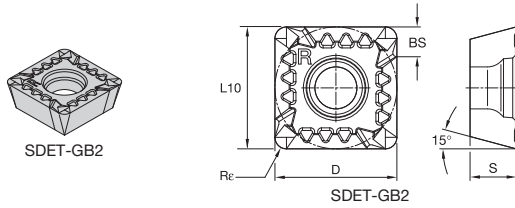
Indexable Milling

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPM20	KCPK30	KCSM30	KCSM40	KCPM40
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.



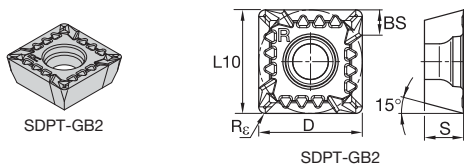
- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

### ■ SDET-GB2

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPM20	KCPK30	KCSM30	KCSM40	KCPM40
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.



### ■ SDPT-GB2

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPM20	KCPK30	KCSM30	KCSM40	KCPM40
SDPT43PDER8GB2	.500	.188	.500	.106	.031	.003	4	○	○	○	○	○	○	○	○	○
SDPT43PDSR8GB2	.500	.188	.500	.106	.031	.005	4	○	○	○	○	○	○	○	○	○

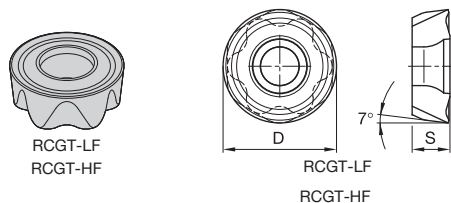
NEW!



Indexable Milling

NEW!

- 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/-LFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RCGT64ELFJ	.750	.250	.002	6	-	-	-	-	-	-	-	●	-
RCGT64ELF	.750	.250	.002	6	-	●	●	●	●	-	-	-	●

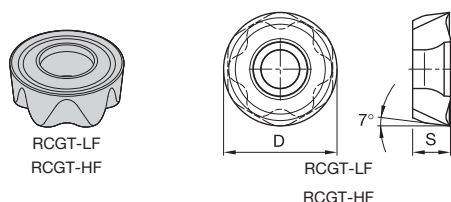
■ RCGT-HF/-HFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RCGT64SHFJ	.750	.250	.010	6	-	-	-	-	-	-	●	●	-
RCGT64SHF	.750	.250	.010	6	-	-	●	●	●	-	-	-	●

Indexable Milling

KSRM™ RCGT86 • 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

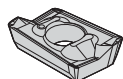
P	●	○	○	○	○	○	○	○	○	○
M	●	●	●	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○
N	●	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○

■ RCGT-LF/-LFJ

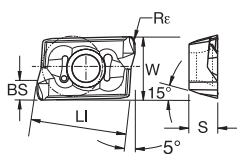
catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RCGT86ELFJ	1.000	.375	.002	6	-	-	-	-	-	-	-	●	-
RCGT86ELF	1.000	.375	.002	6	-	●	●	●	●	-	-	-	●

■ RCGT-HF/-HFJ

catalog number	D	S	hm	cutting edges	KC422M	KC522M	KC725M	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
RCGT86SHFJ	1.000	.375	.010	6	-	-	-	-	-	-	●	●	-
RCGT86SHF	1.000	.375	.010	6	-	-	●	●	●	-	-	-	●



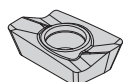
ADKT-GB



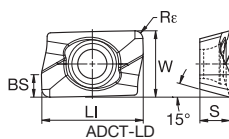
ADKT-GB

**ADKT-GB**

catalog number	LI	W	S	BS	Rε	hm
ADKT2328PDER5GB	.591	.394	.177	.104	.031	.003
ADKT2328PDSR5GB	.591	.394	.177	.103	.031	.006
ADKT23283PDER5GB	.591	.394	.177	.104	.047	.003



ADCT-LD



ADCT-LD

**ADCT-LD/LDJ**

catalog number	LI	W	S	BS	Rε	hm
ADCT2328PDER5LD	.604	.394	.177	.136	.031	.003
ADCT2328PDFR5LDJ	.604	.394	.177	.136	.031	.001
ADCT2328PDSR5LD	.604	.394	.177	.136	.031	.006
ADCT23283PDER5LD	.604	.394	.177	.089	.047	.003
ADCT23283PDSR5LD	.604	.394	.177	.089	.047	.006
ADCT23284PDER5LD	.604	.394	.177	.072	.062	.003
ADCT23284PDSR5LD	.604	.394	.177	.072	.062	.006
ADCT23286PDER5LD	.604	.394	.177	.040	.094	.003
ADCT23286PDSR5LD	.604	.394	.177	.040	.094	.006
ADCT23288PDER5LD	.604	.394	.177	.009	.125	.003
ADCT23288PDSR5LD	.604	.394	.177	.009	.125	.006
ADCT232812PDERLD	.592	.389	.177	—	.188	.003
ADCT232812PDSRLD	.589	.386	.174	—	.188	.006
ADCT232816PDERLD	.581	.385	.177	—	.257	.003
ADCT232816PDSRLD	.577	.383	.174	—	.257	.006

 ● first choice  
 ○ alternate choice

P					●	●	○
M			●	●	●	○	○
K		●				○	
N	●						
S			●	●	●	●	●
H							

**NEW!**
**NEW!**


Indexable Milling

# Recommended Starting Speeds

Shoulder Milling Platforms Mill 1™, Mill 4™, KSSM™ and HARVI™ Ultra



## Recommended Starting Speeds [SFM]

Indexable Milling

Material Group		K313	KC410M	KC422M	KC510M	KC520M	KC522M	KC725M
P	1	- - -	- - -	- - -	- - -	- - -	1080 <b>935</b> 885	855 <b>755</b> 705
	2	- - -	- - -	- - -	- - -	- - -	900 <b>785</b> 655	720 <b>625</b> 525
	3	- - -	- - -	- - -	- - -	- - -	835 <b>705</b> 575	655 <b>560</b> 460
	4	- - -	- - -	- - -	805 <b>655</b> 560	- - -	740 <b>605</b> 490	590 <b>490</b> 395
	5	- - -	- - -	- - -	- - -	- - -	605 <b>560</b> 490	490 <b>445</b> 395
	6	- - -	- - -	- - -	- - -	- - -	540 <b>410</b> 330	425 <b>330</b> 260
M	1	- - -	- - -	- - -	- - -	- - -	670 <b>590</b> 540	560 <b>490</b> 445
	2	- - -	- - -	- - -	- - -	- - -	605 <b>525</b> 425	510 <b>425</b> 360
	3	- - -	- - -	- - -	- - -	- - -	460 <b>395</b> 310	375 <b>330</b> 260
K	1	625 <b>560</b> 490	- - -	- - -	970 <b>870</b> 785	885 <b>805</b> 705	755 <b>670</b> 605	- - -
	2	- - -	- - -	- - -	755 <b>670</b> 625	690 <b>625</b> 575	590 <b>525</b> 490	- - -
	3	2610 <b>2280</b> 1970	- - -	- - -	640 <b>575</b> 525	575 <b>525</b> 475	490 <b>445</b> 395	- - -
N	1	- - -	3985 <b>3540</b> 3265	3525 <b>3100</b> 2870	2100 <b>1870</b> 1720	- - -	- - -	- - -
	2	- - -	3540 <b>3265</b> 3000	3100 <b>2870</b> 2495	1900 <b>1755</b> 1605	- - -	- - -	- - -
	3	- - -	3540 <b>3265</b> 3000	3100 <b>2870</b> 2495	1900 <b>1755</b> 1605	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	- - -	130 <b>115</b> 80	115 <b>100</b> 80
	2	- - -	- - -	- - -	- - -	- - -	130 <b>115</b> 80	115 <b>100</b> 80
	3	- - -	- - -	- - -	- - -	- - -	165 <b>130</b> 80	150 <b>115</b> 80
	4	- - -	- - -	- - -	- - -	- - -	230 <b>165</b> 115	195 <b>150</b> 100
H	1	- - -	- - -	- - -	525 <b>425</b> 295	- - -	395 <b>295</b> 230	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KD1410
P	1	- - -	1490 <b>1295</b> 1215	1805 <b>1590</b> 1475	970 <b>855</b> 805	1215 <b>1050</b> 985	- - -	- - -
	2	- - -	920 <b>835</b> 755	1115 <b>1015</b> 900	820 <b>705</b> 590	1000 <b>885</b> 720	- - -	- - -
	3	- - -	835 <b>755</b> 670	1015 <b>900</b> 835	755 <b>640</b> 525	935 <b>785</b> 640	- - -	- - -
	4	- - -	625 <b>575</b> 525	755 <b>705</b> 625	670 <b>560</b> 445	820 <b>670</b> 540	- - -	- - -
	5	- - -	855 <b>755</b> 690	900 <b>820</b> 755	560 <b>510</b> 445	670 <b>625</b> 540	440 <b>325</b> 230	- - -
	6	- - -	525 <b>445</b> -	625 <b>560</b> 475	490 <b>375</b> 295	605 <b>460</b> 360	375 <b>605</b> 165	- - -
M	1	- - -	670 <b>605</b> 510	740 <b>655</b> 575	640 <b>560</b> 510	740 <b>655</b> 605	850 <b>605</b> 375	- - -
	2	- - -	605 <b>525</b> 460	670 <b>575</b> 525	575 <b>490</b> 410	670 <b>590</b> 475	755 <b>560</b> 345	- - -
	3	- - -	475 <b>425</b> 375	525 <b>475</b> 410	425 <b>375</b> 295	510 <b>445</b> 345	625 <b>440</b> 280	- - -
K	1	1380 <b>1265</b> 1115	970 <b>870</b> 785	1180 <b>1065</b> 970	- - -	- - -	- - -	- - -
	2	1100 <b>970</b> 900	770 <b>690</b> 625	935 <b>835</b> 770	- - -	- - -	- - -	- - -
	3	920 <b>820</b> 755	640 <b>575</b> 525	785 <b>705</b> 655	- - -	- - -	- - -	- - -
N	1	- - -	- - -	- - -	- - -	- - -	- - -	13155 <b>11495</b> 9805
	2	- - -	- - -	- - -	- - -	- - -	- - -	5250 <b>4905</b> 4590
	3	- - -	- - -	- - -	- - -	- - -	- - -	5250 <b>4905</b> 4590
S	1	- - -	- - -	- - -	130 <b>115</b> 100	150 <b>130</b> 100	200 <b>145</b> 90	- - -
	2	- - -	- - -	- - -	130 <b>115</b> 100	150 <b>130</b> 100	180 <b>130</b> 85	- - -
	3	- - -	- - -	- - -	165 <b>130</b> 100	180 <b>150</b> 100	210 <b>150</b> 95	- - -
	4	- - -	215 <b>165</b> 110	- - -	215 <b>165</b> 115	280 <b>195</b> 130	295 <b>215</b> 135	- - -
H	1	- - -	- - -	460 <b>375</b> 310	- - -	445 <b>330</b> 245	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in bold type.  
As the average chip thickness increases, the speed should be decreased.

■ Recommended Starting Speeds [SFM]

Material Group		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15
P	1	- - -	- - -	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -
	2	- - -	- - -	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -
	3	- - -	- - -	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -
	4	- - -	- - -	965 <b>785</b> 670	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -
	5	- - -	- - -	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -
	6	- - -	- - -	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -
M	1	- - -	- - -	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -
	2	- - -	- - -	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -
	3	- - -	- - -	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -
K	1	750 <b>670</b> 590	- - -	1165 <b>1045</b> 940	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340
	2	- - -	- - -	905 <b>805</b> 750	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080
	3	- - -	- - -	770 <b>690</b> 630	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905
N	1	3130 <b>2735</b> 2365	4780 <b>4250</b> 3920	2520 <b>2245</b> 2065	- - -	- - -	- - -	- - -
	2	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
	3	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	2	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	3	- - -	- - -	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -
	4	- - -	- - -	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -
H	1	- - -	- - -	630 <b>510</b> 355	- - -	475 <b>355</b> 275	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -



Material Group		KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
P	1	1790 <b>1555</b> 1460	1790 <b>1555</b> 1460	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -	- - -
	2	1105 <b>1000</b> 905	1105 <b>1000</b> 905	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -	- - -
	3	1000 <b>905</b> 805	1000 <b>905</b> 805	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -	- - -
	4	750 <b>690</b> 630	750 <b>690</b> 630	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -	- - -
	5	1025 <b>905</b> 830	1025 <b>905</b> 830	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280	- - -
	6	630 <b>535</b> -	630 <b>535</b> -	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200	- - -
M	1	805 <b>725</b> 610	805 <b>725</b> 610	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450	- - -
	2	725 <b>630</b> 550	725 <b>630</b> 550	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415	- - -
	3	570 <b>510</b> 450	570 <b>510</b> 450	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340	- - -
K	1	- - -	1165 <b>1045</b> 940	1415 <b>1280</b> 1165	- - -	- - -	- - -	3170 <b>2875</b> 2555
	2	- - -	925 <b>830</b> 750	1120 <b>1000</b> 925	- - -	- - -	- - -	2500 <b>2245</b> 2090
	3	- - -	770 <b>690</b> 630	940 <b>845</b> 785	- - -	- - -	- - -	2105 <b>1870</b> 1710
N	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
S	1	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110	- - -
	2	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100	- - -
	3	180 <b>140</b> 95	- - -	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115	- - -
	4	235 <b>180</b> 120	260 <b>200</b> 130	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165	- - -
H	1	- - -	- - -	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

# ➤ 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.

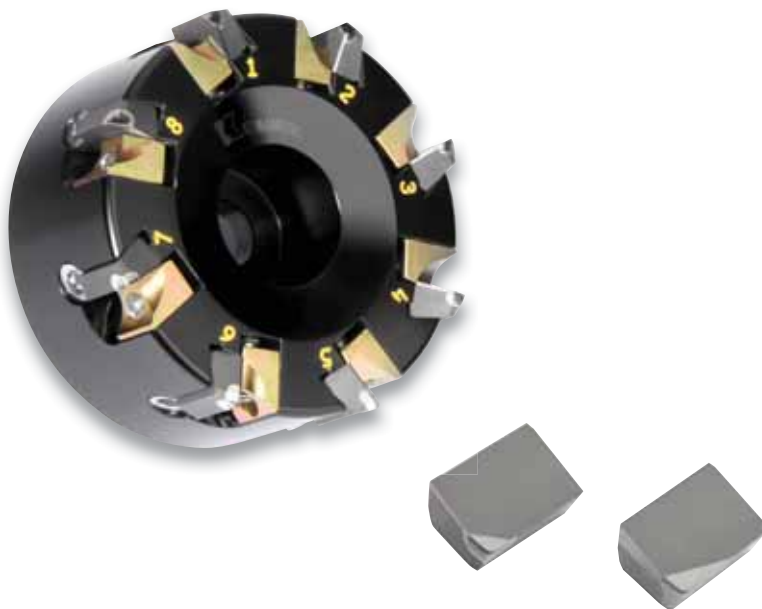
KBDM's new look, black anodized aluminum with yellow wedges, gives it a unique appearance. However, it's what lies behind the cover that really matters. Performance is key, and KBDM does not disappoint here.

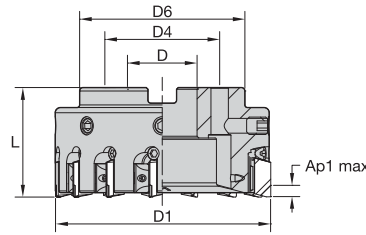


### Features and Benefits

- Cutter bodies manufactured from hard anodized aluminum provide lighter weight and excellent wear- and erosion-resistance.
- High-density platform geared toward faster machining cycles which 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).
- 2 grades, KD1400™ and KD1425™, provide options in maximizing efficiencies based upon application.
- Roughing, semi-finishing, and fine-finishing with one platform.
- 2 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.**





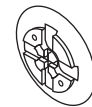
**Face Mills**

Indexable Milling

order number	catalog number	D1	D	D4	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
6044579	KBDM250SD06	2.500	1.000	—	2.380	2.000	.250	6	6	1.00	20000
6044580	KBDM300SD08	3.000	1.000	—	2.169	2.000	.250	8	8	1.40	20000
6044711	KBDM400SD12	4.000	1.250	—	2.870	2.000	.250	12	12	2.50	17320
6044712	KBDM500SD16	5.000	1.500	—	3.812	2.375	.250	16	16	4.40	15500
6044713	KBDM600SD18	6.000	1.500	—	3.810	2.375	.250	18	18	7.00	14150
6044714	KBDM800SD24	8.000	2.500	4.000	5.000	2.375	.250	24	24	1.40	12240

NOTE: Ap1 max is for standard E1 inserts.  
 For Mini-tip (E0), Ap1 max = .100".  
 For E3 inserts, Ap1 max = .500".

**Spare Parts**



D1	screw	wedge	wedglock 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



**Insert Selection Guide • KBDM • Inch**

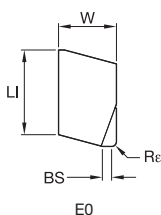
Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	-	-	-	-	-	-
P3-P4	-	-	-	-	-	-
P5-P6	-	-	-	-	-	-
M1-M2	-	-	-	-	-	-
M3	-	-	-	-	-	-
K1-K2	-	-	-	-	-	-
K3	-	-	-	-	-	-
N1-N2	KSDR...	KD1400	<b>KSDR...</b>	<b>KD1400</b>	KSDR...	KD1400
N3	KSDR...	KD1425	<b>KSDR...</b>	<b>KD1425</b>	KSDR...	KD1425
S1-S2	-	-	-	-	-	-
S3	-	-	-	-	-	-
S4	-	-	-	-	-	-
H1	-	-	-	-	-	-



## Indexable Inserts



E0



E0

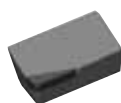
- first choice
- alternate choice

P	●		
M	●		
K	●		
N	●	●	
S	●		
H	●		

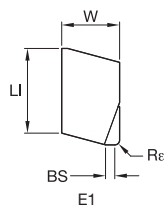
**PCD Inserts • KSDR Mini-Tip • E0**

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
<b>KSDR100031E0W4S</b>	.625	.375	.060	.031	.001	●	●

NOTE: For Mini-tip (E0), Ap1 max = .100".



E1

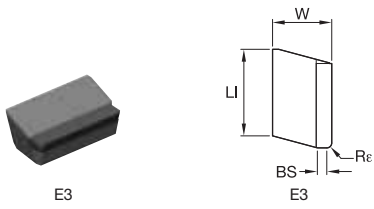


E1

**PCD Inserts • KSDR • E1**

catalog number	LI	W	BS	Rε	hm	KD1400	KD1425
<b>KSDR100031E1W4S</b>	.625	.375	.060	.031	.001	●	●
<b>KSDR100093E1W4S</b>	.625	.375	.060	.093	.001	●	●

NOTE: For E1 inserts, Ap1 max = .250".



● first choice  
○ alternate choice

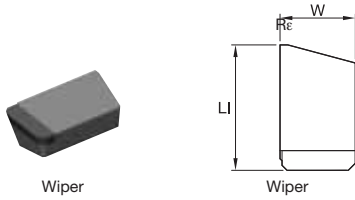
P	■	■	■
M	■	■	■
K	■	■	■
N	■	●	●
S	■	■	■
H	■	■	■

■ PCD Inserts • KSDR • E3

catalog number	LI	W	BS	Re	hm	KD1400	KD1425
KSDR100031E3W4S	.625	.375	.060	.031	.001	●	●

NOTE: For Full Edge (E3), Ap1 max = .500".

Indexable Milling



■ PCD Inserts • KSDR Wiper

catalog number	LI	W	BS	Re	hm	KD1400	KD1425
KSDR102S	.625	.375	—	—	.001	●	●

■ Recommended Starting Speeds [SFM]

Material Group		KD1400			KD1425		
P	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
M	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
K	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
N	1-2	3000	<b>6500</b>	16000	3000	<b>6500</b>	16000
	3	1500	<b>2000</b>	2500	1500	<b>2000</b>	2500
S	1	-	-	-	-	-	-
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
H	1	-	-	-	-	-	-

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

Indexable 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	
	10%			20%			30%			40%			50-100%			
KSDR...	.003	<b>.007</b>	.011	.003	<b>.005</b>	.008	.002	<b>.004</b>	.007	.002	<b>.004</b>	.006	.002	<b>.004</b>	.006	KSDR...

NOTE: Use "Light Machining" values as starting feed rate.

## ■ PCD Custom Solutions for Indexable Milling

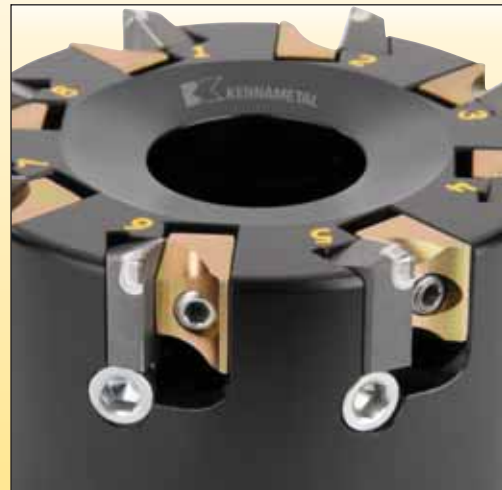
- Diameters up to 21.65" (550mm).
- Integral shank options, ie, HSK.
- Left-hand rotation.
- Internal coolant capable.
- PCD lengths up to 0.50" (12,7mm).
- Specific edge preps and nose radii available.



## ■ 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.



Leader in Advanced  
Face Milling Applications

# Dodeka™ Mini

The most comprehensive face milling booster on the market today, the Dodeka Mini series 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 from light to heavy machining.



Experience the advantages at your Authorized Kennametal Distributor or at [kennametal.com](http://kennametal.com).



[kennametal.com](http://kennametal.com)

# ➤ 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, such as steel, stainless steel, cast iron, and high-temperature alloys. These tools are also suitable for machining aluminum alloys.



## Features and Benefits

- The 7792VX high-feed cutters are the best solution when specifically focusing on reducing cycle times or removing the maximum volume of material in the shortest time.
- New ultra-fine pitch cutters further increase the material removal rates, especially on high-temp alloys.
- The unique design and insert positioning of the high-feed cutter help to achieve up to 5x higher feed rates than other cutters on the market.
- When used in long (extended) toolholders, the 7792VX cutters absorb vibrations and greatly reduce instability and tool deflection.
- Integrated wiper facet for improved surface finish:  
16 Ra (1,6 $\mu$ ) when used at <0,5 mm/z.



**7792VXP06:**

Maximum  $a_p = 0.035''$

Diameter Range = 0.625–1.250''

**7792VXD09:**

Maximum  $a_p = 0.059''$

Diameter Range = 1.000–2.000''

**7792VXD12:**

Maximum  $a_p = 0.098''$

Diameter Range = 1.250–6.300''

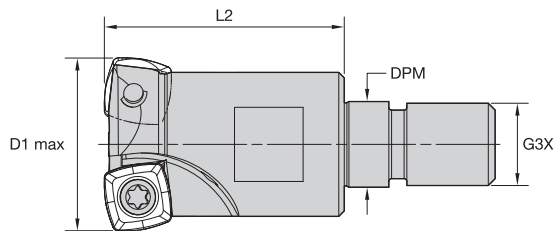
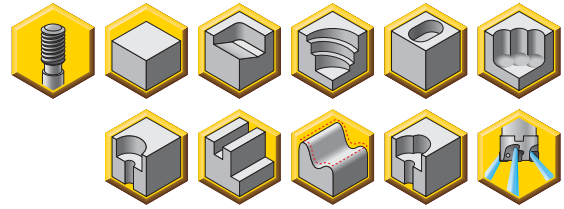
**7792VXE16:**

Maximum  $a_p = 0.138''$

Diameter Range = 1.500–6.000''

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.



Indexable Milling

■ 7792VXP06 Modular Head • Screw-On

order number	catalog number	D1 max	L2	G3X	DPM	Ap1 max	Z U
5661213	A7792VXP06SA.625Z2R1	.625	1.000	M8	.335	.035	2
5660060	A7792VXP06SA.75Z2R1.4	.750	1.377	M10	.413	.035	2
5661214	A7792VXP06SA.75Z3R1.4	.750	1.377	M10	.413	.035	3
5667958	A7792VXP06SA1.0Z3R1.4	1.000	1.377	M12	.492	.035	3
5661215	A7792VXP06SA1.0Z4R1.4	1.000	1.377	M12	.492	.035	4
5681114	A7792VXP06SA1.25Z5R2	1.250	1.693	M16	.669	.035	5

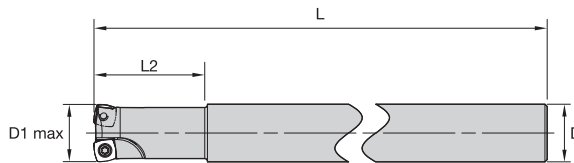
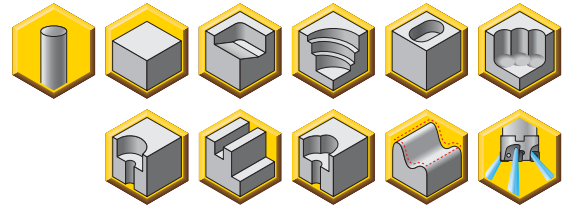
■ Spare Parts

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 page E94-E96.



- 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.



Indexable Milling

■ **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 page E94–E96.

■ Technical Information (in)

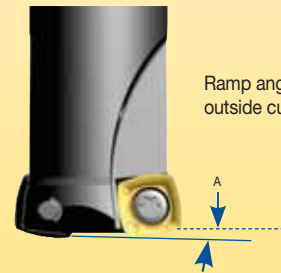
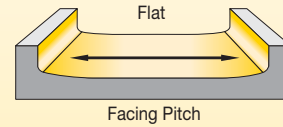
order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole		ap max helical/linear	ae max plunging	
5667588	C7792VXP06CA.62Z2R5.5	6.090	8.20	0.850	1.170	0.024	0.118	65,000
5658507	C7792VXP06CA.75Z3R6.1	3.860	6.74	1.100	1.420	0.024	0.118	57,000
5661212	C7792VXP06CA1.0Z4R6.1	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.

■ Insert Selection Guide • IC 06

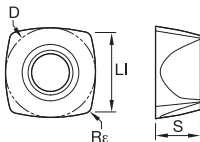
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ←————→ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...D41	SC6525	...D41	SC6525	...D41	X400
P3-P4	...D	KC522M	...D	KC522M	...D	KCPM40
P5-P6	...D41	SP6519	...D41	X500	...D41	X500
M1-M2	...D41	SP6519	...D41	SP6519	...D41	X500
M3	...D41	SP6519	...D41	X500	...D41	X500
K1-K2	...D	KC510M	...D	KCPK30	...D	KCPK30
K3	...D	KC510M	...D	KC522M	...D	KCPM40
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	KC522M

Indexable Milling

Milling Inserts



XPLT06-D41



XPLT06-D41

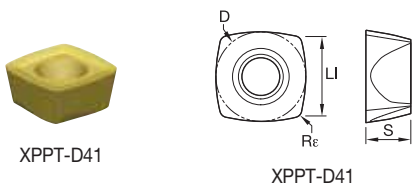
- first choice
- alternate choice

	P	M	K	N	S	H	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	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	Re	hm	RT
XPLT060308ERD41	.276	.276	.125	.031	.002	.054

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



● first choice  
○ alternate choice

P	●	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

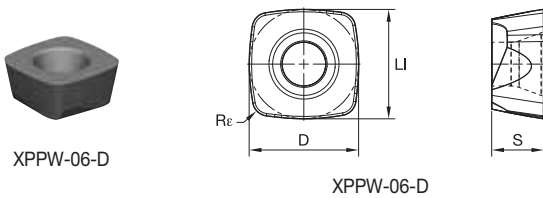
■ XPPT-D41 • Precision pressed insert. General purpose in soft steels, stainless steels and high-temp alloys.

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XPPT060308ERD41	.276	.276	.125	.031	.002	.054	-	-	-	-	-	-	-	-	●	-	-	-	-	-

**NEW!**

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

Indexable Milling



■ 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	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	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 Speeds [SFM]

Material Group		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20
P	1	- - -	- - -	1295 <b>1120</b> 1060	- - -	- - -	1790 <b>1555</b> 1460	- - -
	2	- - -	- - -	1080 <b>940</b> 785	- - -	- - -	1105 <b>1000</b> 905	- - -
	3	- - -	- - -	1000 <b>845</b> 690	- - -	- - -	1000 <b>905</b> 805	- - -
	4	- - -	965 <b>785</b> 670	890 <b>725</b> 590	- - -	- - -	750 <b>690</b> 630	- - -
	5	- - -	- - -	725 <b>670</b> 590	- - -	- - -	1025 <b>905</b> 830	- - -
	6	- - -	- - -	650 <b>490</b> 395	- - -	- - -	630 <b>535</b> -	- - -
M	1	- - -	- - -	805 <b>710</b> 650	- - -	- - -	805 <b>725</b> 610	- - -
	2	- - -	- - -	725 <b>630</b> 510	- - -	- - -	725 <b>630</b> 550	- - -
	3	- - -	- - -	550 <b>475</b> 370	- - -	- - -	570 <b>510</b> 450	- - -
K	1	985 <b>725</b> 475	1165 <b>1045</b> 940	905 <b>805</b> 725	- - -	- - -	1165 <b>1045</b> 940	- - -
	2	845 <b>630</b> 415	905 <b>805</b> 750	710 <b>630</b> 590	- - -	- - -	925 <b>830</b> 750	- - -
	3	725 <b>570</b> 395	770 <b>690</b> 630	590 <b>535</b> 475	- - -	- - -	770 <b>690</b> 630	- - -
N	1	10805 <b>6200</b> 1570	2520 <b>2245</b> 2065	- - -	- - -	- - -	- - -	- - -
	2	10805 <b>6200</b> 1570	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -	- - -
	3	8405 <b>4780</b> 1165	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	155 <b>140</b> 95	- - -	- - -	- - -	- - -
	2	- - -	- - -	155 <b>140</b> 95	- - -	- - -	- - -	- - -
	3	- - -	- - -	200 <b>155</b> 95	- - -	- - -	- - -	- - -
	4	- - -	- - -	275 <b>200</b> 140	- - -	- - -	260 <b>200</b> 130	- - -
H	1	- - -	630 <b>510</b> 355	475 <b>355</b> 275	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -



Material Group		KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P	1	1165 <b>1025</b> 965	- - -	- - -	1460 <b>1000</b> 550	1165 <b>845</b> 510	1025 <b>750</b> 475	1060 <b>785</b> 510
	2	985 <b>845</b> 710	- - -	- - -	1280 <b>890</b> 475	1025 <b>750</b> 450	905 <b>670</b> 415	940 <b>710</b> 450
	3	905 <b>770</b> 630	- - -	- - -	1140 <b>785</b> 415	905 <b>650</b> 395	785 <b>590</b> 370	830 <b>610</b> 395
	4	805 <b>670</b> 535	- - -	- - -	830 <b>570</b> 310	690 <b>490</b> 295	590 <b>430</b> 275	630 <b>475</b> 295
	5	670 <b>610</b> 535	530 <b>390</b> 280	- - -	630 <b>475</b> 310	550 <b>415</b> 275	- - -	510 <b>395</b> 275
	6	590 <b>450</b> 355	450 <b>730</b> 200	- - -	550 <b>395</b> 235	475 <b>335</b> 200	- - -	430 <b>310</b> 200
M	1	770 <b>670</b> 610	1020 <b>730</b> 450	- - -	750 <b>610</b> 475	1060 <b>770</b> 450	- - -	985 <b>725</b> 450
	2	690 <b>590</b> 490	910 <b>675</b> 415	- - -	1025 <b>725</b> 430	925 <b>670</b> 415	- - -	865 <b>630</b> 395
	3	510 <b>450</b> 355	750 <b>530</b> 340	- - -	830 <b>590</b> 355	770 <b>550</b> 335	- - -	710 <b>510</b> 310
K	1	- - -	- - -	1555 <b>1080</b> 590	1535 <b>1060</b> 570	1165 <b>865</b> 550	- - -	1105 <b>785</b> 475
	2	- - -	- - -	1320 <b>905</b> 475	1200 <b>830</b> 450	940 <b>690</b> 430	- - -	805 <b>610</b> 415
	3	- - -	- - -	1080 <b>750</b> 415	- - -	865 <b>630</b> 395	- - -	670 <b>535</b> 370
N	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
S	1	155 <b>140</b> 120	240 <b>175</b> 110	- - -	- - -	215 <b>155</b> 90	- - -	185 <b>140</b> 90
	2	155 <b>140</b> 120	220 <b>160</b> 100	- - -	- - -	185 <b>140</b> 85	- - -	175 <b>140</b> 85
	3	200 <b>155</b> 120	255 <b>180</b> 115	- - -	- - -	215 <b>155</b> 95	- - -	200 <b>155</b> 95
	4	260 <b>200</b> 140	355 <b>260</b> 165	- - -	- - -	310 <b>235</b> 145	- - -	290 <b>215</b> 140
H	1	- - -	- - -	- - -	- - -	- - -	370 <b>275</b> 180	- - -
	2	- - -	- - -	- - -	- - -	- - -	310 <b>235</b> 140	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

■ Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

At .035 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.013	<b>.040</b>	.051	.009	<b>.029</b>	.036	.008	<b>.025</b>	.031	.007	<b>.023</b>	.029	...D41
...D	-	-	-	.024	<b>.044</b>	.072	.018	<b>.032</b>	.050	.015	<b>.028</b>	.043	.014	<b>.025</b>	.039	...D

At .020 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.017	<b>.054</b>	.069	.012	<b>.039</b>	.049	.011	<b>.034</b>	.042	.010	<b>.031</b>	.038	...D41
...D	-	-	-	.032	<b>.061</b>	.100	.024	<b>.043</b>	.068	.021	<b>.037</b>	.058	.019	<b>.034</b>	.053	...D

At .014 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.020	<b>.066</b>	.084	.015	<b>.047</b>	.059	.013	<b>.040</b>	.050	.012	<b>.036</b>	.046	...D41
...D	-	-	-	.039	<b>.074</b>	.123	.028	<b>.052</b>	.082	.025	<b>.044</b>	.069	.022	<b>.040</b>	.063	...D

At .010 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.024	<b>.079</b>	.102	.018	<b>.055</b>	.070	.015	<b>.047</b>	.059	.014	<b>.043</b>	.054	...D41
...D	-	-	-	.047	<b>.089</b>	.154	.034	<b>.061</b>	.098	.029	<b>.053</b>	.082	.026	<b>.048</b>	.074	...D

■ Feed Rate Guide • Plunging • IC 06 • fz [in/tooth]

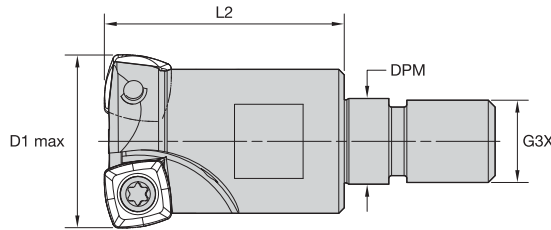
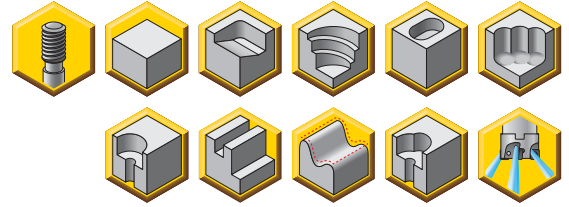
Insert Geometry	Programmed Feed per Tooth (fz) Max .118" insert engagement (ae radial engagement)				Insert Geometry
	...D41	.002		<b>.008</b>	
...D	.004		<b>.010</b>		...D



NOTE: For further details about using the 7792VX series in plunging operations, please see page E94. Use "Light Machining" values as starting feed rate.

Indexable 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.



Indexable Milling

■ **7792VXD09 Modular Head • Screw-On**

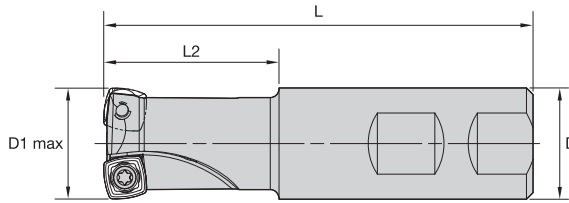
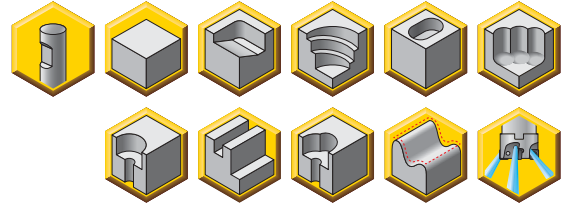
order number	catalog number	D1 max	L2	G3X	DPM	Ap1 max	Z U
5659840	A7792VXD09SA1.0Z2R1.4	1.000	1.378	M12	.492	.059	2
5660449	A7792VXD09SA1.25Z3R2	1.250	1.692	M16	.669	.059	3

■ **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 page E94–E96.

- 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.



Indexable Milling

■ 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

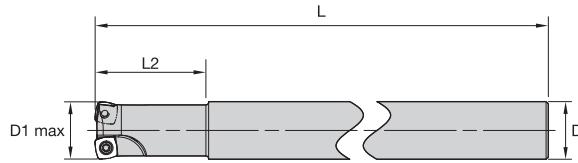
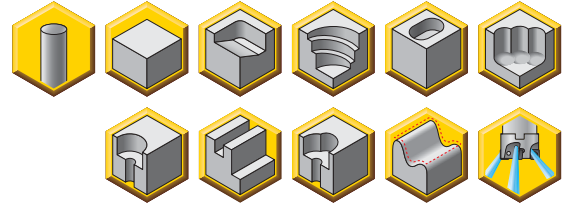
■ Spare Parts

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 page E94–E96.



- 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
<b>NEW!</b> 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
<b>NEW!</b> 6025611	C7792VXD09CA1.25Z4R3	1.251	1.250	10.000	3.000	.059	4

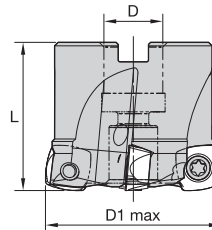
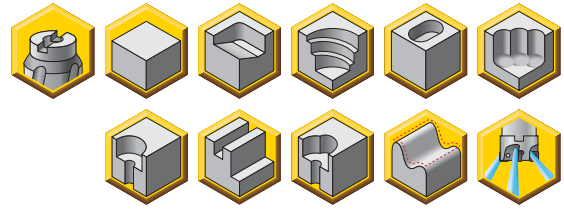
■ **Spare Parts**

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 page E94–E96.



- 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	L	Ap1 max	Z U
5667403	C7792VXD09-A1.50Z3R	1.500	.500	1.260	.059	3
5656731	C7792VXD09-A1.50Z4R	1.500	.500	1.260	.059	4
5658170	C7792VXD09-A1.50Z5R	1.500	.500	1.260	.059	5
5667832	C7792VXD09-A2.00Z5R	2.000	.750	1.575	.059	5
5665795	C7792VXD09-A2.00Z6R	2.000	.750	1.575	.059	6
<b>NEW!</b> 6025612	C7792VXD09-A2.00Z7R	2.000	.750	1.575	.059	7

■ Spare Parts

catalog number	insert screw	in. lbs.	Torx driver	mounting screw
C7792VXD09-A1.50Z3R	F3510T	18.6	T15	#1/4-28X3/4SHCSA
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 page E94–E96.

■ Technical Information (in)

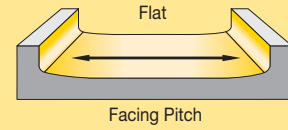
order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole		ap max helical/linear	a <sub>e</sub> max plunging	
5658075	C7792VXD09WA1.00Z2R	0.478	2.70	1.370	1.920	0.039	0.236	48,000
5666067	C7792VXD09WA1.25Z3R	0.728	1.50	1.870	2.420	0.039	0.236	40,500
5667564	C7792VXD09CA1.00Z2R2	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
5667403	C7792VXD09-A1.50Z3R	0.980	1.10	2.370	2.920	0.039	0.236	36,000
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

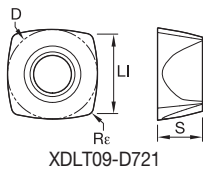
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance		←————→		toughness	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...D41	SC6525	...D41	SC6525	...D	X400
P3-P4	...D41	SC6525	...D	X400	...D	X400
P5-P6	...D411	SP6519	...D411	X500	...D41	X500
M1-M2	...D411	SP6519	...D411	SP6519	...D41	X500
M3	...D411	SP6519	...D411	X500	...D41	X500
K1-K2	...D41	SC6525	...D	SC3025	...D	SC3025
K3	...D41	SC6525	...D	SC3025	...D	SC3025
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	-	-	-	-	-	-

Indexable Milling

Milling Inserts



XDLT09-D721



XDLT09-D721

● first choice  
○ alternate choice

	P	M	K	N	S	H	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500	
P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

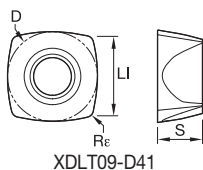
■ XDLT09-D721 • First choice for non-ferrous alloys

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLT090408ERD721	.375	.375	.187	.031	.002	.079	●	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDLT09-D41



XDLT09-D41

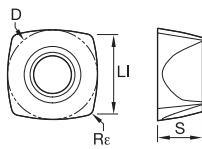
■ XDLT09-D41 • General purpose in soft steels.  
Best fit for face milling, slotting operation

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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.



XDPT09-D41



XDPT09...D41

- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

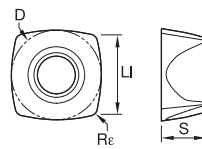
- XDPT09-D41 • Precision pressed. General purpose in soft steels. Best fit for face milling, slotting operation

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500			
<b>NEW!</b> XDPT090408ERD41	.375	.375	.187	.031	.002	.079	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDLT09...D411



XDLT09...D411

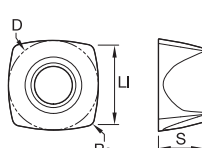
- XDLT09-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general, also in combination with long overhangs

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500			
<b>NEW!</b> 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	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500			
<b>NEW!</b> XDPT090412ERD411	.375	.375	.187	.047	.002	.089	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

**NEW!**

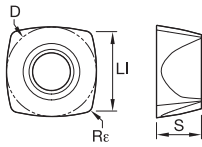
**NEW!**



Indexable Milling



XDLW09-D



XDLW09-D

● first choice  
○ alternate choice

■ XDLW09-D • First choice for roughing alloyed steel and cast iron

	P	M	K	N	S	H	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P	●	○	○	○	○	○														
M	○	●	○	○	○	○														
K	○	○	○	○	○	○														
N	○	○	○	○	○	○														
S	○	○	○	○	○	○														
H	○	○	○	○	○	○														

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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.

Indexable Milling

**Recommended Starting Speeds [SFM]**

Material Group		GH2	KCSM40	SC3025	SC6525	SP6519	X400	X500
P	1	- - -	- - -	- - -	1460 <b>1000</b> 550	1165 <b>845</b> 510	1025 <b>750</b> 475	1060 <b>785</b> 510
	2	- - -	- - -	- - -	1280 <b>890</b> 475	1025 <b>750</b> 450	905 <b>670</b> 415	940 <b>710</b> 450
	3	- - -	- - -	- - -	1140 <b>785</b> 415	905 <b>650</b> 395	785 <b>590</b> 370	830 <b>610</b> 395
	4	- - -	- - -	- - -	830 <b>570</b> 310	690 <b>490</b> 295	590 <b>430</b> 275	630 <b>475</b> 295
	5	- - -	530 <b>390</b> 280	- - -	630 <b>475</b> 310	550 <b>415</b> 275	- - -	510 <b>395</b> 275
	6	- - -	450 <b>730</b> 200	- - -	550 <b>395</b> 235	475 <b>335</b> 200	- - -	430 <b>310</b> 200
M	1	- - -	1020 <b>730</b> 450	- - -	750 <b>610</b> 475	1060 <b>770</b> 450	- - -	985 <b>725</b> 450
	2	- - -	910 <b>675</b> 415	- - -	1025 <b>725</b> 430	925 <b>670</b> 415	- - -	865 <b>630</b> 395
	3	- - -	750 <b>530</b> 340	- - -	830 <b>590</b> 355	770 <b>550</b> 335	- - -	710 <b>510</b> 310
K	1	985 <b>725</b> 475	- - -	1555 <b>1080</b> 590	1535 <b>1060</b> 570	1165 <b>865</b> 550	- - -	1105 <b>785</b> 475
	2	845 <b>630</b> 415	- - -	1320 <b>905</b> 475	1200 <b>830</b> 450	940 <b>690</b> 430	- - -	805 <b>610</b> 415
	3	725 <b>570</b> 395	- - -	1080 <b>750</b> 415	- - -	865 <b>630</b> 395	- - -	670 <b>535</b> 370
N	1	10805 <b>6200</b> 1570	- - -	- - -	- - -	- - -	- - -	- - -
	2	10805 <b>6200</b> 1570	- - -	- - -	- - -	- - -	- - -	- - -
	3	8405 <b>4780</b> 1165	- - -	- - -	- - -	- - -	- - -	- - -
S	1	- - -	240 <b>175</b> 110	- - -	- - -	215 <b>155</b> 90	- - -	185 <b>140</b> 90
	2	- - -	220 <b>160</b> 100	- - -	- - -	185 <b>140</b> 85	- - -	175 <b>140</b> 85
	3	- - -	255 <b>180</b> 115	- - -	- - -	215 <b>155</b> 95	- - -	200 <b>155</b> 95
	4	- - -	355 <b>260</b> 165	- - -	- - -	310 <b>235</b> 145	- - -	290 <b>215</b> 140
H	1	- - -	- - -	- - -	- - -	- - -	370 <b>275</b> 180	- - -
	2	- - -	- - -	- - -	- - -	- - -	310 <b>235</b> 140	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.



Indexable Milling

### ■ Recommended Starting Feeds [IPT] • High-Feed

At .059 Axial Depth of Cut (ap)

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.009	<b>.043</b>	.048	.007	<b>.032</b>	.035	.006	<b>.027</b>	.031	.005	<b>.025</b>	.028	...D721
...D41	-	-	-	.016	<b>.060</b>	.076	.012	<b>.044</b>	.055	.010	<b>.038</b>	.047	.009	<b>.035</b>	.043	...D41
...D411	-	-	-	.017	<b>.063</b>	.079	.013	<b>.046</b>	.057	.011	<b>.040</b>	.049	.010	<b>.036</b>	.045	...D411
...D	-	-	-	.019	<b>.079</b>	.101	.014	<b>.057</b>	.071	.012	<b>.049</b>	.061	.011	<b>.045</b>	.056	...D

At .039 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.011	<b>.053</b>	.059	.008	<b>.039</b>	.043	.007	<b>.034</b>	.037	.007	<b>.031</b>	.034	...D721
...D41	-	-	-	.020	<b>.075</b>	.094	.015	<b>.054</b>	.067	.013	<b>.046</b>	.058	.012	<b>.042</b>	.052	...D41
...D411	-	-	-	.021	<b>.078</b>	.098	.015	<b>.056</b>	.070	.013	<b>.049</b>	.060	.012	<b>.044</b>	.055	...D411
...D	-	-	-	.023	<b>.098</b>	.126	.017	<b>.070</b>	.088	.015	<b>.060</b>	.075	.013	<b>.055</b>	.068	...D

At .029 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.013	<b>.062</b>	.069	.010	<b>.045</b>	.050	.008	<b>.039</b>	.043	.008	<b>.035</b>	.039	...D721
...D41	-	-	-	.023	<b>.087</b>	.111	.017	<b>.062</b>	.078	.015	<b>.054</b>	.067	.013	<b>.049</b>	.061	...D41
...D411	-	-	-	.024	<b>.092</b>	.115	.018	<b>.065</b>	.081	.016	<b>.056</b>	.069	.014	<b>.051</b>	.063	...D411
...D	-	-	-	.026	<b>.115</b>	.149	.020	<b>.081</b>	.102	.017	<b>.069</b>	.087	.016	<b>.063</b>	.079	...D

At .019 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.016	<b>.077</b>	.087	.012	<b>.056</b>	.062	.010	<b>.048</b>	.053	.010	<b>.044</b>	.049	...D721
...D41	-	-	-	.028	<b>.110</b>	.140	.021	<b>.077</b>	.097	.018	<b>.066</b>	.082	.017	<b>.060</b>	.075	...D41
...D411	-	-	-	.030	<b>.116</b>	.147	.022	<b>.081</b>	.100	.019	<b>.069</b>	.086	.017	<b>.063</b>	.078	...D411
...D	-	-	-	.033	<b>.147</b>	.193	.024	<b>.100</b>	.127	.021	<b>.086</b>	.107	.019	<b>.078</b>	.097	...D

### ■ Feed Rate Guide • Plunging • IC 09 • fz [in/tooth]

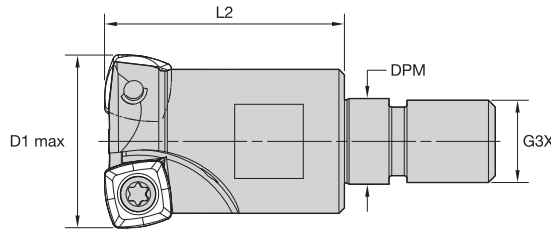
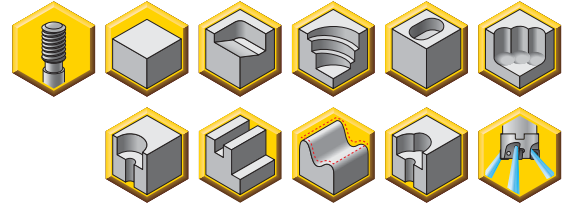
Insert Geometry	Programmed Feed per Tooth (fz) Max .236" insert engagement (ae radial engagement)			Insert Geometry
	...D721	.002		
...D41	.003			...D41
...D411	.003			...D411
...D	.004			...D



NOTE: For further details about using the 7792VX series in plunging operations, please see page E94. Use "Light Machining" values as starting feed rate.



- 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.



Indexable Milling

■ **7792VXD12 Modular Head • Screw-On**

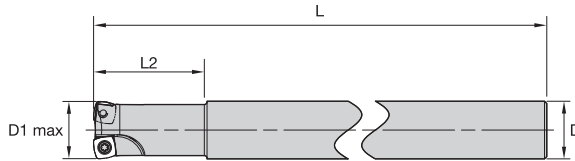
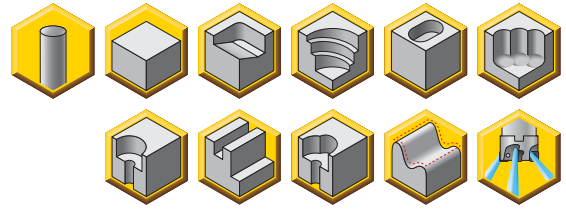
order number	catalog number	D1 max	L2	G3X	DPM	Ap1 max	Z U
5659929	A7792VXD12SA1.25Z2R2	1.250	1.693	M16	.669	.098	2
5667487	A7792VXD12SA1.5Z3R1.7	1.500	1.750	M16	.669	.098	3

■ **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 E94–E96.

- 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

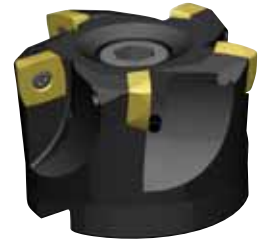
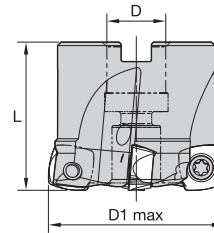
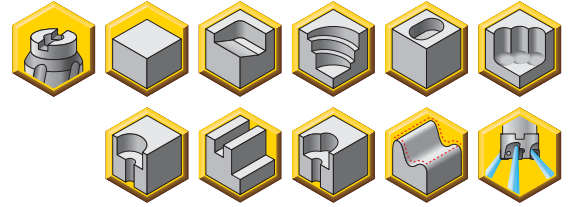
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5666596	C7792VXD12CA1.25Z2R3	1.250	1.250	9.843	2.756	.098	2
6025588	C7792VXD12CA1.25Z3R3	1.250	1.250	10.000	3.000	.098	3
5665832	C7792VXD12CA1.2/1.5Z3	1.500	1.250	9.843	2.755	.098	3
6025589	C7792VXD12CA1.50Z4R3	1.500	1.500	10.000	3.000	.098	4

■ 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 E94–E96.

- 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.



Indexable Milling

■ 7792VXD12 Shell Mill • Coarse, Medium, and Fine Pitch






order number	catalog number	D1 max	D	L	Ap1 max	Z U
<b>NEW!</b> 6025581	C7792VXD12-A1.50Z4R	1.500	.750	1.575	.098	4
5657237	C7792VXD12-A2.00Z3R	2.000	.750	1.575	.098	3
5667404	C7792VXD12-A2.00Z4R	2.000	.750	1.575	.098	4
5656382	C7792VXD12-A2.00Z5R	2.000	.750	1.575	.098	5
<b>NEW!</b> 6025582	C7792VXD12-A2.00Z6R	2.000	.750	1.575	.098	6
5667809	C7792VXD12-A2.50Z4R	2.500	1.000	1.575	.098	4
5656732	C7792VXD12-A2.50Z5R	2.500	1.000	1.575	.098	5
<b>NEW!</b> 6025583	C7792VXD12-A2.50Z7R	2.500	1.000	1.575	.098	7
5665708	C7792VXD12-A3.00Z5R	3.000	1.000	1.969	.098	5
5656919	C7792VXD12-A3.00Z8R	3.000	1.000	1.969	.098	8
<b>NEW!</b> 6025584	C7792VXD12-A3.00Z9R	3.000	1.000	1.969	.098	9
5667833	C7792VXD12-A4.00Z6R	4.000	1.250	1.969	.098	6
5656378	C7792VXD12-A4.00Z9R	4.000	1.250	1.969	.098	9
<b>NEW!</b> 6025585	C7792VXD12-A4.00Z11R	4.000	1.250	1.969	.098	11
5667476	C7792VXD12-A5.00Z8R	5.000	1.500	2.480	.098	8
5658171	C7792VXD12-A5.00Z11R	5.000	1.500	2.480	.098	11
<b>NEW!</b> 6025586	C7792VXD12-A5.00Z13R	5.000	1.500	2.480	.098	13
5656379	C7792VXD12-6.00Z8R	6.000	1.500	2.480	.098	8
5656915	C7792VXD12-6.00Z12R	6.000	1.500	2.480	.098	12
<b>NEW!</b> 6025587	C7792VXD12-6.00Z15R	6.000	1.500	2.480	.098	15
5659736	C7792VXD12-6.30Z8R	6.300	1.500	2.480	.098	8

NOTE: No through coolant for cutters where D1 max = 6.00".

(continued)

(7792VXD12 Shell Mill • Coarse, Medium, and Fine Pitch — continued)

### ■ 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	—
C7792VXD12-6.00Z8R	D4012T	27.4	T15	—	—
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 page E94–E96.

■ Technical Information (in)

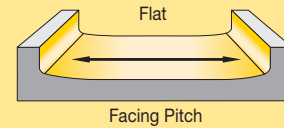
order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole		ap max helical/linear	a <sub>e</sub> max plunging	
				min-max				
5666596	C7792VXD12CA1.25Z2R3	0.526	2.60	1.630	2.420	0.070	0.354	31,500
5665832	C7792VXD12CA1.2/1.5Z3	0.770	1.60	2.130	2.920	0.070	0.354	27,500
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
5656379	C7792VXD12-6.00Z8R	5.270	0.19	11.130	11.920	0.070	0.354	11,500
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



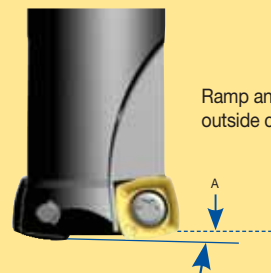
Helical Interpolation



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

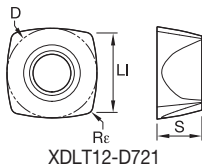
Material Group	Light Machining (Light geometry)		General Purpose		Heavy Machining (Strong geometry)	
	wear resistance ←————→ toughness					
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	...GP	KC522M	...GP	KCPM40	...GP	KCPM40
P3-P4	...GP	KC522M	...D	KC522M	...D	KCPM40
P5-P6	...D411	SP6519	...D411	X500	...D41	X500
M1-M2	...D411	SP6519	...D411	SP6519	...D41	X500
M3	...D411	SP6519	...D411	X500	...D41	X500
K1-K2	...D	KCK15	...D	KCK15	...D	KCPK30
K3	...D	KC522M	...D	KC522M	...D	KCPM40
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	KC522M

Indexable Milling

Milling Inserts



XDLT12-D721



XDLT12-D721

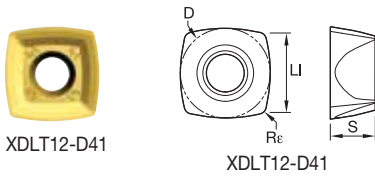
- first choice
- alternate choice

XDLT12-D721 • First choice for non-ferrous alloys

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
							○	○	○	○	○	○	○	○	○	○	○	○	○	○
XDLT120508ERD721	.472	.472	.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.



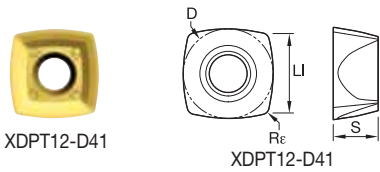
● first choice  
○ alternate choice

■ XDLT12-D41 • General purpose in soft steels. Best fit for face milling, slotting operation

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	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.

- Precision pressed insert; improved cost per edge.
- First choice for machining stainless steel and high-temp alloys.



■ XDPT12-D41 • Precision pressed insert; improved cost per edge. General purpose in soft steels. Best fit for face milling, slotting operation

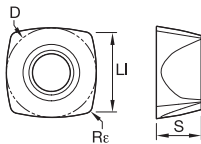
catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500	
<b>NEW!</b> XDPT120508ERD41	.500	.500	.219	.031	.002	.098	-	-	-	-	-	-	-	-	-	-	●	●	-	-	○

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.





XDPT12-D411



XDPT12-D411

- first choice
- alternate choice

P	●	○	○	●	●	●	●	○	●	○	○
M	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

■ 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.

Indexable Milling

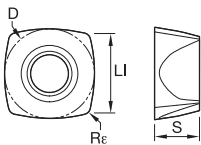
catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
<b>NEW!</b> XDPT120512ERD411	.500	.500	.219	.047	.002	.107	-	-	-	-	-	-	-	-	●	-	-	-	-	-

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

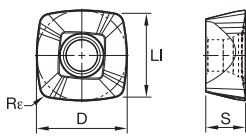
■ XDLT12-D411 • General purpose in stainless steel and high-temp alloys. Best fit for pocketing and profiling operations in general

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
<b>NEW!</b> XDLT120512ERD411	.472	.472	.219	.047	.002	.107	-	-	-	-	-	-	-	-	-	-	-	●	-	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



XDPT12-GP



XDPT12-GP

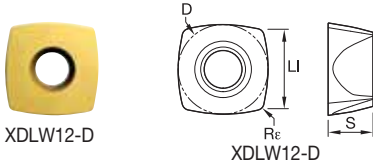
■ XDPT12-GP • Precision pressed insert; improved cost per edge. General use on alloyed steels. Good balance across all machining situations

catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
<b>NEW!</b> XDPT120515SRGP	.500	.500	.219	.059	.009	.109	-	-	●	●	-	●	●	●	-	-	-	-	-	-

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.



- First choice for roughing steel and iron alloys.



- first choice
- alternate choice

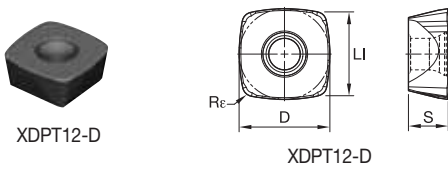
P	●	○	○	●	●	●	○	●	○	●	○
M	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

■ 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	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XDLW120508SRD	.472	.472	.219	.031	.010	.098	-	-	-	-	-	-	-	-	-	●	●	-	●	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

- Precision pressed insert; improved cost per edge.
- Reinforced geometry.
- Particularly suitable for high strength steels, hardened materials, and cast iron.



■ XDPT12-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	KCPM20	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 Speeds [SFM]



Indexable Milling

Material Group		GH2			KC510M			KC522M			KC725M			KCK15			KCPK30			KCPM20		
P	1	-	-	-	-	-	-	1295	<b>1120</b>	1060	1025	<b>905</b>	845	-	-	-	1790	<b>1555</b>	1460	2165	<b>1910</b>	1770
	2	-	-	-	-	-	-	1080	<b>940</b>	785	865	<b>750</b>	630	-	-	-	1105	<b>1000</b>	905	1340	<b>1220</b>	1080
	3	-	-	-	-	-	-	1000	<b>845</b>	690	785	<b>670</b>	550	-	-	-	1000	<b>905</b>	805	1220	<b>1080</b>	1000
	4	-	-	-	965	<b>785</b>	670	890	<b>725</b>	590	710	<b>590</b>	475	-	-	-	750	<b>690</b>	630	905	<b>845</b>	750
	5	-	-	-	-	-	-	725	<b>670</b>	590	590	<b>535</b>	475	-	-	-	1025	<b>905</b>	830	1080	<b>985</b>	905
	6	-	-	-	-	-	-	650	<b>490</b>	395	510	<b>395</b>	310	-	-	-	630	<b>535</b>	-	750	<b>670</b>	570
M	1	-	-	-	-	-	-	805	<b>710</b>	650	670	<b>590</b>	535	-	-	-	805	<b>725</b>	610	890	<b>785</b>	690
	2	-	-	-	-	-	-	725	<b>630</b>	510	610	<b>510</b>	430	-	-	-	725	<b>630</b>	550	805	<b>690</b>	630
	3	-	-	-	-	-	-	550	<b>475</b>	370	450	<b>395</b>	310	-	-	-	570	<b>510</b>	450	630	<b>570</b>	490
K	1	985	<b>725</b>	475	1165	<b>1045</b>	940	905	<b>805</b>	725	-	-	-	1655	<b>1520</b>	1340	-	-	-	1415	<b>1280</b>	1165
	2	845	<b>630</b>	415	905	<b>805</b>	750	710	<b>630</b>	590	-	-	-	1320	<b>1165</b>	1080	-	-	-	1120	<b>1000</b>	925
	3	725	<b>570</b>	395	770	<b>690</b>	630	590	<b>535</b>	475	-	-	-	1105	<b>985</b>	905	-	-	-	940	<b>845</b>	785
N	1	10805	<b>6200</b>	1570	2520	<b>2245</b>	2065	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	10805	<b>6200</b>	1570	2280	<b>2105</b>	1925	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	8405	<b>4780</b>	1165	2280	<b>2105</b>	1925	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	-	-	-	155	<b>140</b>	95	140	<b>120</b>	95	-	-	-	140	<b>120</b>	95	-	-	-
	2	-	-	-	-	-	-	155	<b>140</b>	95	140	<b>120</b>	95	-	-	-	140	<b>120</b>	95	-	-	-
	3	-	-	-	-	-	-	200	<b>155</b>	95	180	<b>140</b>	95	-	-	-	180	<b>140</b>	95	-	-	-
	4	-	-	-	-	-	-	275	<b>200</b>	140	235	<b>180</b>	120	-	-	-	235	<b>180</b>	120	-	-	-
H	1	-	-	-	630	<b>510</b>	355	475	<b>355</b>	275	-	-	-	-	-	-	-	-	-	550	<b>450</b>	370
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Group		KCPM40			KCSM40			SC3025			SC6525			SP6519			X400			X500		
P	1	1165	<b>1025</b>	965	-	-	-	-	-	-	1460	<b>1000</b>	550	1165	<b>845</b>	510	1025	<b>750</b>	475	1060	<b>785</b>	510
	2	985	<b>845</b>	710	-	-	-	-	-	-	1280	<b>890</b>	475	1025	<b>750</b>	450	905	<b>670</b>	415	940	<b>710</b>	450
	3	905	<b>770</b>	630	-	-	-	-	-	-	1140	<b>785</b>	415	905	<b>650</b>	395	785	<b>590</b>	370	830	<b>610</b>	395
	4	805	<b>670</b>	535	-	-	-	-	-	-	830	<b>570</b>	310	690	<b>490</b>	295	590	<b>430</b>	275	630	<b>475</b>	295
	5	670	<b>610</b>	535	530	<b>390</b>	280	-	-	-	630	<b>475</b>	310	550	<b>415</b>	275	-	-	-	510	<b>395</b>	275
	6	590	<b>450</b>	355	450	<b>730</b>	200	-	-	-	550	<b>395</b>	235	475	<b>335</b>	200	-	-	-	430	<b>310</b>	200
M	1	770	<b>670</b>	610	1020	<b>730</b>	450	-	-	-	750	<b>610</b>	475	1060	<b>770</b>	450	-	-	-	985	<b>725</b>	450
	2	690	<b>590</b>	490	910	<b>675</b>	415	-	-	-	1025	<b>725</b>	430	925	<b>670</b>	415	-	-	-	865	<b>630</b>	395
	3	510	<b>450</b>	355	750	<b>530</b>	340	-	-	-	830	<b>590</b>	355	770	<b>550</b>	335	-	-	-	710	<b>510</b>	310
K	1	-	-	-	-	-	-	1555	<b>1080</b>	590	1535	<b>1060</b>	570	1165	<b>865</b>	550	-	-	-	1105	<b>785</b>	475
	2	-	-	-	-	-	-	1320	<b>905</b>	475	1200	<b>830</b>	450	940	<b>690</b>	430	-	-	-	805	<b>610</b>	415
	3	-	-	-	-	-	-	1080	<b>750</b>	415	-	-	-	865	<b>630</b>	395	-	-	-	670	<b>535</b>	370
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	155	<b>140</b>	120	240	<b>175</b>	110	-	-	-	-	-	-	215	<b>155</b>	90	-	-	-	185	<b>140</b>	90
	2	155	<b>140</b>	120	220	<b>160</b>	100	-	-	-	-	-	-	185	<b>140</b>	85	-	-	-	175	<b>140</b>	85
	3	200	<b>155</b>	120	255	<b>180</b>	115	-	-	-	-	-	-	215	<b>155</b>	95	-	-	-	200	<b>155</b>	95
	4	260	<b>200</b>	140	355	<b>260</b>	165	-	-	-	-	-	-	310	<b>235</b>	145	-	-	-	290	<b>215</b>	140
H	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	<b>275</b>	180	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	<b>235</b>	140	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

## ■ Recommended Starting Feeds [IPT] • High-Feed

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

## At .098 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.008	<b>.047</b>	.054	.006	<b>.035</b>	.040	.005	<b>.031</b>	.034	.005	<b>.028</b>	.031	...D721
...D411	-	-	-	.013	<b>.064</b>	.077	.010	<b>.047</b>	.056	.009	<b>.041</b>	.049	.008	<b>.038</b>	.045	...D411
...D41	-	-	-	.013	<b>.062</b>	.074	.010	<b>.046</b>	.055	.009	<b>.040</b>	.047	.008	<b>.036</b>	.043	...D41
...GP	-	-	-	.017	<b>.066</b>	.085	.013	<b>.049</b>	.063	.011	<b>.042</b>	.054	.010	<b>.039</b>	.050	...GP
...D	-	-	-	.017	<b>.080</b>	.098	.013	<b>.059</b>	.072	.011	<b>.051</b>	.062	.010	<b>.047</b>	.057	...D

## At .078 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.009	<b>.053</b>	.060	.007	<b>.039</b>	.044	.006	<b>.034</b>	.038	.005	<b>.031</b>	.035	...D721
...D411	-	-	-	.015	<b>.069</b>	.083	.011	<b>.051</b>	.061	.010	<b>.044</b>	.053	.009	<b>.040</b>	.048	...D411
...D41	-	-	-	.015	<b>.072</b>	.086	.011	<b>.053</b>	.063	.010	<b>.046</b>	.054	.009	<b>.042</b>	.050	...D41
...GP	-	-	-	.019	<b>.074</b>	.096	.014	<b>.054</b>	.070	.013	<b>.047</b>	.061	.012	<b>.043</b>	.055	...GP
...D	-	-	-	.019	<b>.089</b>	.110	.014	<b>.065</b>	.080	.013	<b>.057</b>	.069	.012	<b>.052</b>	.063	...D



## At .060 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.010	<b>.060</b>	.068	.008	<b>.045</b>	.050	.007	<b>.039</b>	.044	.006	<b>.035</b>	.040	...D721
...D411	-	-	-	.017	<b>.079</b>	.095	.012	<b>.058</b>	.069	.011	<b>.050</b>	.060	.010	<b>.046</b>	.055	...D411
...D41	-	-	-	.017	<b>.082</b>	.097	.012	<b>.060</b>	.071	.011	<b>.052</b>	.062	.010	<b>.048</b>	.056	...D41
...GP	-	-	-	.022	<b>.084</b>	.109	.016	<b>.062</b>	.079	.014	<b>.054</b>	.069	.013	<b>.049</b>	.063	...GP
...D	-	-	-	.022	<b>.102</b>	.126	.016	<b>.074</b>	.091	.014	<b>.064</b>	.079	.013	<b>.059</b>	.072	...D

## At .040 Axial Depth of Cut (ap)

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D721	-	-	-	.013	<b>.074</b>	.083	.010	<b>.054</b>	.061	.008	<b>.047</b>	.053	.008	<b>.043</b>	.048	...D721
...D411	-	-	-	.020	<b>.097</b>	.116	.015	<b>.071</b>	.084	.013	<b>.061</b>	.073	.012	<b>.056</b>	.067	...D411
...D41	-	-	-	.020	<b>.100</b>	.120	.015	<b>.073</b>	.087	.013	<b>.063</b>	.075	.012	<b>.058</b>	.069	...D41
...GP	-	-	-	.027	<b>.103</b>	.134	.020	<b>.075</b>	.097	.017	<b>.065</b>	.084	.016	<b>.060</b>	.076	...GP
...D	-	-	-	.027	<b>.125</b>	.155	.020	<b>.091</b>	.111	.017	<b>.078</b>	.096	.016	<b>.072</b>	.088	...D

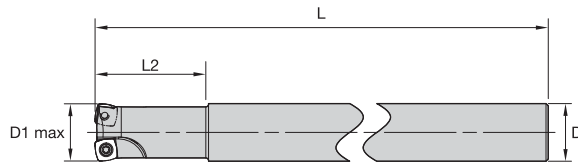
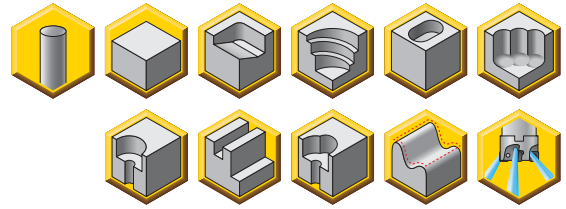
## ■ Feed Rate Guide • Plunging • IC 12 • fz [in/tooth]

Insert Geometry	Programmed Feed per Tooth (fz)			Insert Geometry
	Max .354" insert engagement (ae radial engagement)			
...D721	.002			...D721
...D411	.003			...D411
...D41	.003			...D41
...GP	.004			...GP
...D	.004			...D



NOTE: For further details about using the 7792VX series in plunging operations, please see page E94. Use "Light Machining" values as starting feed rate.

- 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.



Indexable Milling

■ 7792VXE16 Cylindrical Shank

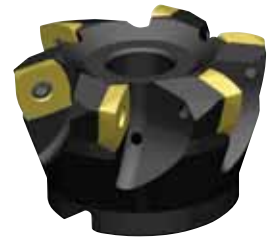
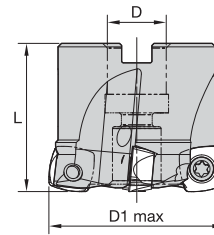
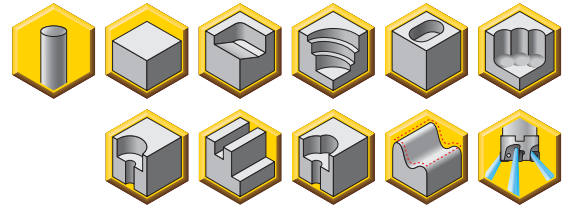
order number	catalog number	D1 max	D	L	L2	Ap1 max	Z U
5659564	C7792VXE16CA1.50Z2R4	1.500	1.500	6.703	4.016	.138	2
5666415	C7792VXE16CA2.00Z3R4	2.000	1.500	6.703	4.016	.138	3

■ Spare Parts

catalog number	insert screw	in. lbs.	Torx driver
C7792VXE16CA1.50Z2R4	DP5013T	53.9	TP20
C7792VXE16CA2.00Z3R4	DP5013T	53.9	TP20

NOTE: For further application recommendation, please see technical information on pages E94–E96.

- 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.



Indexable Milling

■ **7792VXE16 Shell Mill**






order number	catalog number	D1 max	D	L	Ap1 max	Z U
<b>NEW!</b> 6025564	C7792VXE16-A2.00Z4R	2.000	.750	1.772	.138	4
5665812	C7792VXE16-A2.50Z5R	2.500	1.000	1.575	.138	5
<b>NEW!</b> 6025565	C7792VXE16-A2.50Z6R	2.500	1.000	1.575	.138	6
5661029	C7792VXE16-A3.00Z6R	3.000	1.000	1.969	.138	6
<b>NEW!</b> 6025566	C7792VXE16-A3.00Z7R	3.000	1.000	1.969	.138	7
<b>NEW!</b> 6160743	C7792VXE16-A1.5/4.00Z7R	4.000	1.500	2.480	.138	7
<b>NEW!</b> 5667941	C7792VXE16-A4.00Z8R	4.000	1.250	1.969	.138	8
<b>NEW!</b> 6160744	C7792VXE16-A1.5/4.00Z9R	4.000	1.500	2.480	.138	9
<b>NEW!</b> 6025567	C7792VXE16-A4.00Z9R	4.000	1.250	1.969	.138	9
5661030	C7792VXE16-A5.00Z10R	5.000	1.500	2.480	.138	10
<b>NEW!</b> 6025568	C7792VXE16-A5.00Z11R	5.000	1.500	2.480	.138	11
5667570	C7792VXE16-6.00Z12R	6.000	1.500	2.480	.138	12
6025569	C7792VXE16-6.00Z13R	6.000	1.500	2.480	.138	13

NOTE: No through coolant for cutters where D1 max = 6.00".

(continued)

(7792VXE16 Shell Mill – continued)

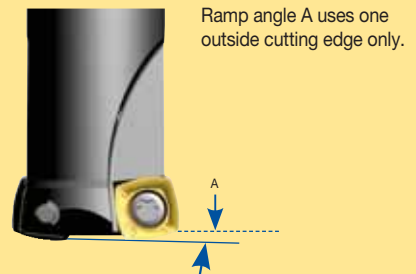
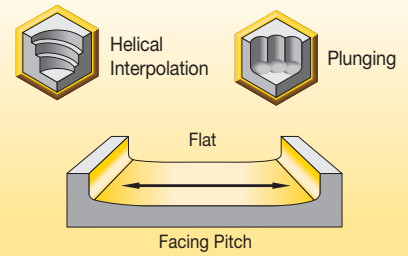
### ■ Spare Parts

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 E94–E96.

**■ Technical Information (in)**

order number	catalog number	dimension						max RPM
		facing pitch	ramping angle	helical hole		ap max helical/linear	ae max plunging	
				min	max			
5659564	C7792VXE16CA1.5Z2R4	3.35	0.56	2	3	0.098	0.512	34,500
5666415	C7792VXE16CA2.0Z3R4	2.85	1.05	3	4	0.098	0.512	27,000
6025564	C7792VXE16-A2.00Z4R	2.85	1.05	3	4	0.098	0.512	27,000
5665812	C7792VXE16-A2.5Z5R	1.00	1.46	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	0.65	1.96	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	0.51	2.96	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	0.37	3.96	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	0.27	4.96	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



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	SC6525	...D	X400
P3-P4	...D41	SC6525	...D41	SC6525	...D	X400
P5-P6	...D41	SP6519	...D41	X500	...D41	X500
M1-M2	...D41	SP6519	...D41	SP6519	...D41	X500
M3	...D41	SP6519	...D41	X500	...D41	X500
K1-K2	...D41	SC6525	...D	SC3025	...D	SC3025
K3	...D41	SC6525	...D	SC3025	...D	SC3025
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	...D41	SP6519	...D41	X500	...D41	KCSM40
S3	...D41	SP6519	...D41	X500	...D41	KCSM40
S4	...D41	SP6519	...D41	SP6519	...D41	KCSM40
H1	-	-	-	-	-	-

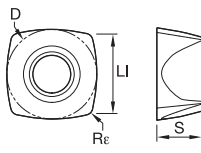
Indexable Milling

Milling Inserts

- First choice for machining stainless steel and high-temp alloys.



XELT16-D41



XELT16-D41

- first choice
- alternate choice

	P	M	K	N	S	H	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P	●	○	○	○	○	○														
M	○	●	○	○	○	○														
K	○	○	●	○	○	○														
N	○	○	○	●	○	○														
S	○	○	○	○	●	○														
H	○	○	○	○	○	○														

- XELT16-D41 • Best fit for face milling and slotting operation. General purpose in soft steels

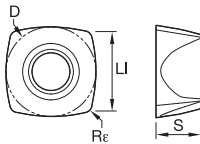
catalog number	D	LI	S	Re	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
XELT160512ERD41	.661	.661	.219	.047	.002	.165	-	-	-	-	-	-	-	-	-	-	●	●	-	●

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.





XEPT-D41



XEPT-D41

● first choice  
○ alternate choice

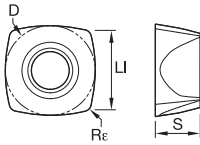
■ XEPT-D41 • Precision pressed insert • Best fit for face milling and slotting operation. General purpose in soft steels.

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500	
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.



XELW16-D



XELW16-D

■ XELW16-D • First choice for machining stainless steel and high-temp alloys

catalog number	D	LI	S	Rε	hm	RT	GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500	
XELW160512SRD	.661	.661	.219	.047	.005	.165	-	-	-	-	-	-	-	-	-	●	-	-	●	-	-

NOTE: RT is the theoretical radius to be used for CAD/CAM programming.

P	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

NEW!

Indexable Milling

Recommended Starting Speeds [SFM]



Material Group		GH2	KC510M	KC522M	KC725M	KCK15	KCPK30	KCPM20
P	1	- - -	- - -	1295 <b>1120</b> 1060	- - -	- - -	1790 <b>1555</b> 1460	- - -
	2	- - -	- - -	1080 <b>940</b> 785	- - -	- - -	1105 <b>1000</b> 905	- - -
	3	- - -	- - -	1000 <b>845</b> 690	- - -	- - -	1000 <b>905</b> 805	- - -
	4	- - -	- - -	890 <b>725</b> 590	- - -	- - -	750 <b>690</b> 630	- - -
	5	- - -	- - -	725 <b>670</b> 590	- - -	- - -	1025 <b>905</b> 830	- - -
	6	- - -	- - -	650 <b>490</b> 395	- - -	- - -	630 <b>535</b> -	- - -
M	1	- - -	- - -	805 <b>710</b> 650	- - -	- - -	805 <b>725</b> 610	- - -
	2	- - -	- - -	725 <b>630</b> 510	- - -	- - -	725 <b>630</b> 550	- - -
	3	- - -	- - -	550 <b>475</b> 370	- - -	- - -	570 <b>510</b> 450	- - -
K	1	985 <b>725</b> 475	- - -	905 <b>805</b> 725	- - -	- - -	1165 <b>1045</b> 940	- - -
	2	845 <b>630</b> 415	- - -	710 <b>630</b> 590	- - -	- - -	925 <b>830</b> 750	- - -
	3	725 <b>570</b> 395	- - -	590 <b>535</b> 475	- - -	- - -	770 <b>690</b> 630	- - -
N	1	10805 <b>6200</b> 1570	- - -	- - -	- - -	- - -	- - -	- - -
	2	10805 <b>6200</b> 1570	- - -	- - -	- - -	- - -	- - -	- - -
	3	8405 <b>4780</b> 1165	- - -	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	155 <b>140</b> 95	- - -	- - -	- - -	- - -
	2	- - -	- - -	155 <b>140</b> 95	- - -	- - -	- - -	- - -
	3	- - -	- - -	200 <b>155</b> 95	- - -	- - -	- - -	- - -
	4	- - -	- - -	275 <b>200</b> 140	- - -	- - -	260 <b>200</b> 130	- - -
H	1	- - -	- - -	475 <b>355</b> 275	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		KCPM40	KCSM40	SC3025	SC6525	SP6519	X400	X500
P	1	1165 <b>1025</b> 965	- - -	- - -	1460 <b>1000</b> 550	1165 <b>845</b> 510	1025 <b>750</b> 475	1060 <b>785</b> 510
	2	985 <b>845</b> 710	- - -	- - -	1280 <b>890</b> 475	1025 <b>750</b> 450	905 <b>670</b> 415	940 <b>710</b> 450
	3	905 <b>770</b> 630	- - -	- - -	1140 <b>785</b> 415	905 <b>650</b> 395	785 <b>590</b> 370	830 <b>610</b> 395
	4	805 <b>670</b> 535	- - -	- - -	830 <b>570</b> 310	690 <b>490</b> 295	590 <b>430</b> 275	630 <b>475</b> 295
	5	670 <b>610</b> 535	530 <b>390</b> 280	- - -	630 <b>475</b> 310	550 <b>415</b> 275	- - -	510 <b>395</b> 275
	6	590 <b>450</b> 355	450 <b>730</b> 200	- - -	550 <b>395</b> 235	475 <b>335</b> 200	- - -	430 <b>310</b> 200
M	1	770 <b>670</b> 610	1020 <b>730</b> 450	- - -	750 <b>610</b> 475	1060 <b>770</b> 450	- - -	985 <b>725</b> 450
	2	690 <b>590</b> 490	910 <b>675</b> 415	- - -	1025 <b>725</b> 430	925 <b>670</b> 415	- - -	865 <b>630</b> 395
	3	510 <b>450</b> 355	750 <b>530</b> 340	- - -	830 <b>590</b> 355	770 <b>550</b> 335	- - -	710 <b>510</b> 310
K	1	- - -	- - -	1555 <b>1080</b> 590	1535 <b>1060</b> 570	1165 <b>865</b> 550	- - -	1105 <b>785</b> 475
	2	- - -	- - -	1320 <b>905</b> 475	1200 <b>830</b> 450	940 <b>690</b> 430	- - -	805 <b>610</b> 415
	3	- - -	- - -	1080 <b>750</b> 415	- - -	865 <b>630</b> 395	- - -	670 <b>535</b> 370
N	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
S	1	155 <b>140</b> 120	240 <b>175</b> 110	- - -	- - -	215 <b>155</b> 90	- - -	185 <b>140</b> 90
	2	155 <b>140</b> 120	220 <b>160</b> 100	- - -	- - -	185 <b>140</b> 85	- - -	175 <b>140</b> 85
	3	200 <b>155</b> 120	255 <b>180</b> 115	- - -	- - -	215 <b>155</b> 95	- - -	200 <b>155</b> 95
	4	260 <b>200</b> 140	355 <b>260</b> 165	- - -	- - -	310 <b>235</b> 145	- - -	290 <b>215</b> 140
H	1	- - -	- - -	- - -	- - -	- - -	370 <b>275</b> 180	- - -
	2	- - -	- - -	- - -	- - -	- - -	310 <b>235</b> 140	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in bold type.  
As the average chip thickness increases, the speed should be decreased.

**■ Recommended Starting Feeds [IPT] • High-Feed**

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

**At .138 Axial Depth of Cut (ap)**

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.012	<b>.046</b>	.055	.009	<b>.034</b>	<b>.041</b>	.008	<b>.030</b>	<b>.036</b>	.007	<b>.027</b>	<b>.033</b>	...D41
...D	-	-	-	.012	<b>.063</b>	<b>.076</b>	.009	<b>.047</b>	<b>.056</b>	.008	<b>.041</b>	<b>.049</b>	.007	<b>.037</b>	<b>.045</b>	...D

**At .100 Axial Depth of Cut (ap)**

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.014	<b>.053</b>	<b>.064</b>	.011	<b>.039</b>	<b>.048</b>	.009	<b>.034</b>	<b>.041</b>	.009	<b>.031</b>	<b>.038</b>	...D41
...D	-	-	-	.014	<b>.074</b>	<b>.089</b>	.011	<b>.055</b>	<b>.065</b>	.009	<b>.047</b>	<b>.057</b>	.009	<b>.043</b>	<b>.052</b>	...D

**At .078 Axial Depth of Cut (ap)**

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.016	<b>.060</b>	<b>.073</b>	.012	<b>.044</b>	<b>.054</b>	.010	<b>.039</b>	<b>.047</b>	.010	<b>.035</b>	<b>.043</b>	...D41
...D	-	-	-	.016	<b>.083</b>	<b>.100</b>	.012	<b>.061</b>	<b>.074</b>	.010	<b>.053</b>	<b>.064</b>	.010	<b>.049</b>	<b>.058</b>	...D

**At .060 Axial Depth of Cut (ap)**

Insert Geometry	Programmed Feed per Tooth (fz) at % Radial Depth of Cut (ae) of Working Diameter (Dw)															Insert Geometry
	5%			10%			20%			30%			40-100%			
...D41	-	-	-	.018	<b>.068</b>	<b>.082</b>	.014	<b>.050</b>	<b>.061</b>	.012	<b>.044</b>	<b>.053</b>	.011	<b>.040</b>	<b>.048</b>	...D41
...D	-	-	-	.018	<b>.095</b>	<b>.114</b>	.014	<b>.070</b>	<b>.084</b>	.012	<b>.060</b>	<b>.073</b>	.011	<b>.055</b>	<b>.066</b>	...D

**■ Feed Rate Guide • Plunging • IC 16 • fz [in/tooth]**

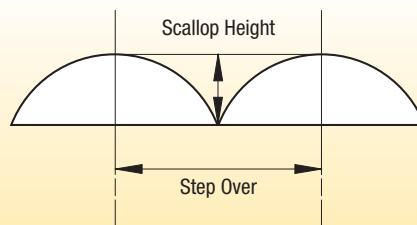
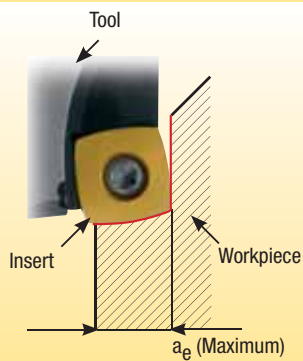
Insert Geometry	Programmed Feed per Tooth (fz)				Insert Geometry
	Max .512" insert engagement (ae radial engagement)				
...D41	.003		.008		...D41
...D	.004		.010		...D



NOTE: For further details about using the 7792VX series in plunging operations, please see page E94. Use "Light Machining" values as starting feed rate.

Indexable Milling

## ■ 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  $a_e$  max is .118"

XD...09 the  $a_e$  max is .236"

XD...12 the  $a_e$  max is .354"

XE...16 the  $a_e$  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.

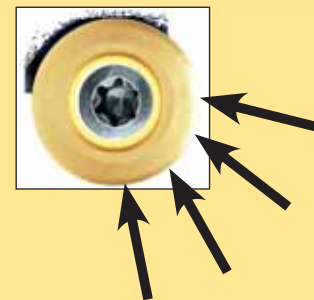
### 7792VX

- 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.

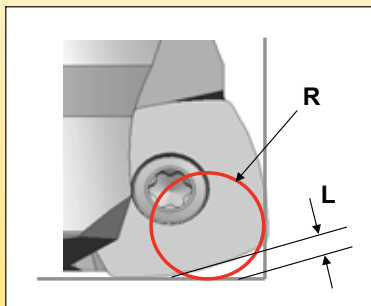
Center clearance      Side wall



■ **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 "

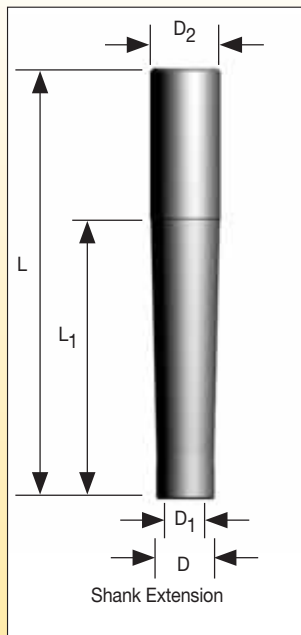


Programming Data (inch)			
Insert corner nose size (IC)	R <sub>ε</sub>	R	L
06	0.750	1.100	1.420
09	0.031	0.079	0.028
	0.047	0.089	0.026
12	0.031	0.098	0.040
	0.047	0.107	0.038
16	0.047	0.164	0.057

**Cylindrical Shank Extensions for Modular Heads**

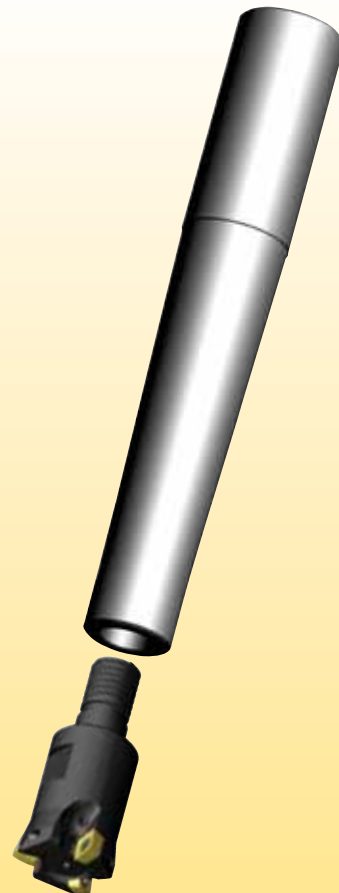
order number	catalog number	dimension					
		L	ramping angle		helical hole		M
			L <sub>1</sub>	D <sub>2</sub>	D	D <sub>1</sub>	
5673704	M-13-M8-CA.625-3.543	3.543	1.600	0.625	0.512	0.335	M8
5673705	M-13-M8-CA.625-4.331	4.331	2.500	0.625	0.512	0.335	M8
5672469	M-13-M8-CA.625-5.118	5.118	3.000	0.625	0.512	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.



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 CAD/CAM

With the addition of NOVO™ 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 not only helps 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 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](http://kennametal.com/novo)



# > Dodeka™ Series

Leader in Advanced Face Milling Applications

## Primary Application

Dodeka and Dodeka Mini 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, you will see up to 30% higher metal removal rates (MRR), 25% lower cutting forces due to real soft cutting action, and up to 35% better tool life in light to heavy machining.

## Features and Benefits

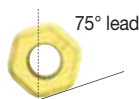
### Dodeka Mini Series • Most comprehensive face milling booster on the market, up to $Ap1$ max = .174"

All different cutter body variations can be loaded with one insert style.

#### Dodeka Mini High-Feed



**12** True Cutting Edges



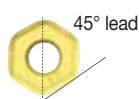
Insert HNGJ43  
HNPJ43  
 $Ap1$  max = .064"

Dodeka Mini HF can be loaded with all Dodeka Mini standard inserts, except wiper inserts.

#### Dodeka Mini 45°



**12** True Cutting Edges



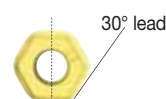
Insert HNGJ43  
HNPJ43  
 $Ap1$  max = .127"

Best-in-class leader in face milling up to  $Ap1$  max = .127". Excellent choice for near net shape strategies and driven tools.

#### Dodeka Mini 60°



**12** True Cutting Edges



Insert HNGJ43  
HNPJ43  
 $Ap1$  max = .174"

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 = .174"  
page E98–E120



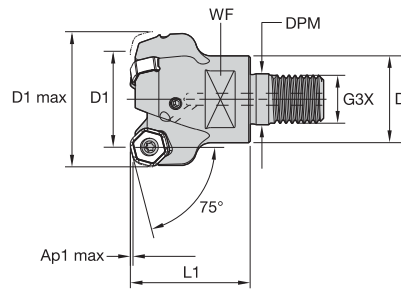
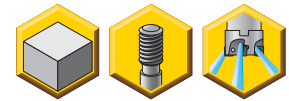
### Dodeka™

insert size HN.J535  
Ap1 max = .178"  
page E121–E133



Capable 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° • Screw-On End Mills

Indexable Milling

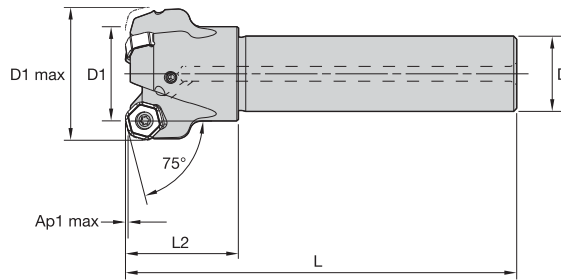
order number	catalog number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	lbs	max RPM
4136401	KSHRHF100D02M16HN43	1.000	1.518	1.142	.669	M16	1.250	.866	.064	2	.39	19800
4136402	KSHRHF100D03M16HN43	1.000	1.518	1.142	.669	M16	1.250	.866	.064	3	.36	19800
4136404	KSHRHF125D04M16HN43	1.250	1.768	1.142	.669	M16	1.500	.866	.065	4	.52	17600
4136405	KSHRHF150D04M16HN43	1.500	2.018	1.142	.669	M16	1.500	.866	.065	4	.58	15800
4136406	KSHRHF150D05M16HN43	1.500	2.018	1.142	.669	M16	1.500	.866	.065	5	.59	15800

### ■ Spare Parts



D1	insert screw	in. lbs.	wrench
1.000	193.492	31	170.025
1.250	193.492	31	170.025
1.500	193.492	31	170.025

- 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
4136409	KSHRHF125D03C100HN43L520	1.250	1.768	1.000	5.200	1.500	.065	3	1.27	17600
4136410	KSHRHF125D04C100HN43L520	1.250	1.768	1.000	5.200	1.500	.065	4	1.28	17600

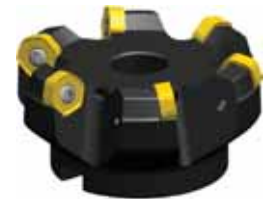
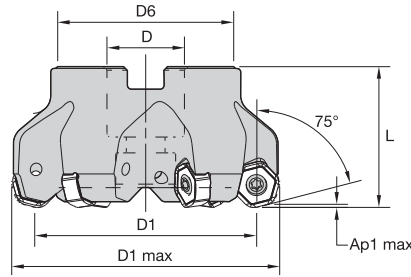
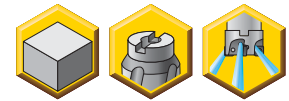
Indexable Milling

■ 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.



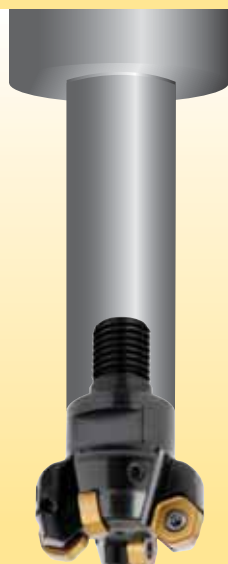
■ Dodeka Mini High-Feed 75° • Shell Mills

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

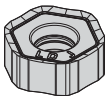
Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
P3-P4	.E..LD	KC522M	.S..GD	KCPM40	.S..HD	KCPM40
P5-P6	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
M3	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..HD	KCPK30
N1-N2	.F..LDJ	K313	.F..LDJ	KC410M	.E..LD	KC510M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
S1-S2	.E..LD	KC522M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM30	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	-	-	-	-	-	-

## Indexable Inserts

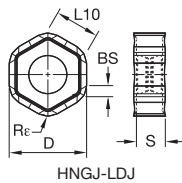


- First choice for machining aluminum.

- first choice
- alternate choice



HNGJ-LDJ



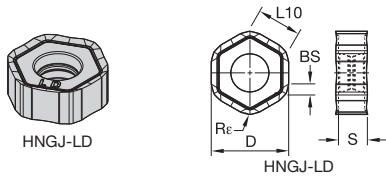
HNGJ-LDJ

## ■ HNGJ-LDJ

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	-	-	-	-	-	-	-	-	-	-	-	-

P	●							○	●	●	●	●	●	●	●	●	●	●	●	○	○
M	●								●	●	●	●	●	●	●	●	○	○	○	○	●
K									●	●	○	○	○	○	○	○	○	○	○	○	○
N	●	●	○																		
S									●	●	○								●	●	
H																					

- First choice for light machining.



■ HNGJ-LD

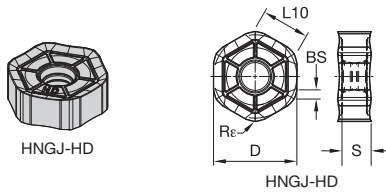
- first choice
- alternate choice

P	●	●	○	●	●	●	●	●	○	○	○	○
M	●	●	○	●	●	●	●	●	○	○	○	○
K	●	●	○	●	●	●	●	●	○	○	○	○
N	●	●	○	●	●	●	●	●	○	○	○	○
S	●	●	○	●	●	●	●	●	○	○	○	○
H	●	●	○	●	●	●	●	●	○	○	○	○

Indexable Milling

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	-	-	●	●	●	●	●	-	●	●	●	●	-	-
HNGJ438ANENLD	.472	-	.253	.126	.177	.002	12	-	-	●	●	●	●	●	-	●	●	●	●	-	-

- First choice for high-performance heavy roughing.

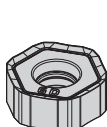


■ HNGJ-HD

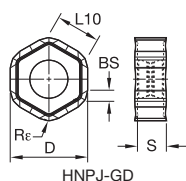
**NEW!**

<b>NEW!</b> HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	●	-	●	●	●	-	●	●	-	●	●
--------------------------	------	------	------	------	------	------	----	---	---	---	---	---	---	---	---	---	---	---	---	---	---

- First choice for general purpose.



HNPJ-GD



HNPJ-GD

- first choice
- alternate choice

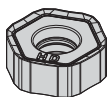
P														○	●									
M															●	●	●	●	●	○	○	○	○	●
K															●	○	○							
N	●	●	○																					
S													●	●		○							●	●
H																								

### ■ HNPJ-GD

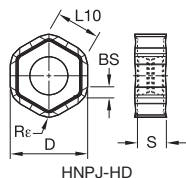
catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KGK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40				
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	-	-	-	●	●	●	●	-	●	●	●	●	●	●	●	●	



- First choice for heavy roughing.



HNPJ-HD



HNPJ-HD

### ■ HNPJ-HD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KGK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40				
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	●	●	●	●	●	●	●	●	-	●	●	●	●	
HNPJ438ANSNHD	.472	-	.253	.126	.174	.004	12	-	-	●	●	●	●	●	-	●	●	●	-	●	●	●	●	



Indexable Milling

■ Recommended Starting Speeds [SFM]



Indexable Milling

Material Group		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15
P	1	- - -	- - -	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -
	2	- - -	- - -	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -
	3	- - -	- - -	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -
	4	- - -	- - -	965 <b>785</b> 670	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -
	5	- - -	- - -	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -
	6	- - -	- - -	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -
M	1	- - -	- - -	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -
	2	- - -	- - -	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -
	3	- - -	- - -	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -
K	1	750 <b>670</b> 590	- - -	1165 <b>1045</b> 940	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340
	2	- - -	- - -	905 <b>805</b> 750	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080
	3	- - -	- - -	770 <b>690</b> 630	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905
N	1	3130 <b>2735</b> 2365	4780 <b>4250</b> 3920	2520 <b>2245</b> 2065	- - -	- - -	- - -	- - -
	2	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
	3	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	2	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	3	- - -	- - -	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -
	4	- - -	- - -	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -
H	1	- - -	- - -	630 <b>510</b> 355	- - -	475 <b>355</b> 275	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
P	1	1790 <b>1555</b> 1460	1790 <b>1555</b> 1460	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -
	2	1105 <b>1000</b> 905	1105 <b>1000</b> 905	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -
	3	1000 <b>905</b> 805	1000 <b>905</b> 805	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -
	4	750 <b>690</b> 630	750 <b>690</b> 630	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -
	5	1025 <b>905</b> 830	1025 <b>905</b> 830	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280
	6	630 <b>535</b> -	630 <b>535</b> -	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200
M	1	805 <b>725</b> 610	805 <b>725</b> 610	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450
	2	725 <b>630</b> 550	725 <b>630</b> 550	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415
	3	570 <b>510</b> 450	570 <b>510</b> 450	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340
K	1	- - -	1165 <b>1045</b> 940	1415 <b>1280</b> 1165	- - -	- - -	- - -
	2	- - -	925 <b>830</b> 750	1120 <b>1000</b> 925	- - -	- - -	- - -
	3	- - -	770 <b>690</b> 630	940 <b>845</b> 785	- - -	- - -	- - -
N	1	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -
S	1	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110
	2	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100
	3	180 <b>140</b> 95	- - -	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115
	4	235 <b>180</b> 120	260 <b>200</b> 130	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165
H	1	- - -	- - -	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.



■ 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	.013	<b>.027</b>	.055	.010	<b>.019</b>	.039	.008	<b>.017</b>	.034	.008	<b>.016</b>	.032	.008	<b>.015</b>	.031	.F..LDJ
.E..LD	.013	<b>.040</b>	.086	.010	<b>.029</b>	.060	.008	<b>.025</b>	.051	.008	<b>.024</b>	.047	.008	<b>.023</b>	.046	.E..LD
.S..GD	.027	<b>.060</b>	.104	.019	<b>.043</b>	.071	.017	<b>.037</b>	.060	.016	<b>.034</b>	.056	.015	<b>.033</b>	.054	.S..GD
.S..HD	.027	<b>.070</b>	.121	.019	<b>.049</b>	.081	.017	<b>.042</b>	.068	.016	<b>.040</b>	.063	.015	<b>.039</b>	.062	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.

# On the Web

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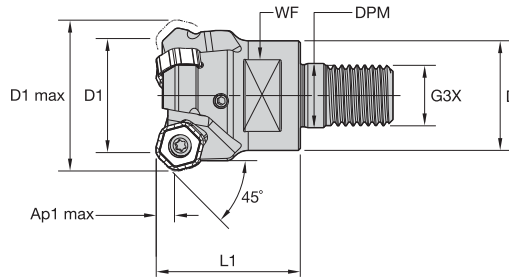
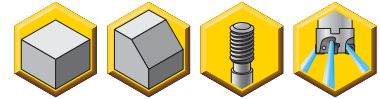


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- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.



■ **Dodeka Mini 45° • Screw-On End Mills**

Indexable Milling

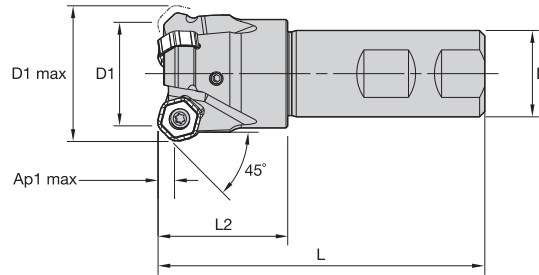
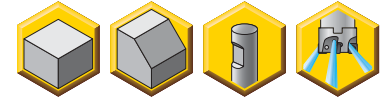
order number	catalog number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	lbs	max RPM
4130384	KSHR125D03M16HN06	1.250	1.572	1.142	.669	M16	1.500	.866	.127	3	.43	17600
4130385	KSHR125D04M16HN06	1.250	1.572	1.142	.669	M16	1.500	.866	.127	4	.42	17600

■ **Spare Parts**



D1	insert screw	in. lbs.	wrench
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° • 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

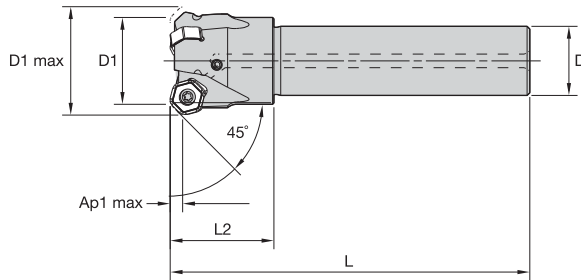
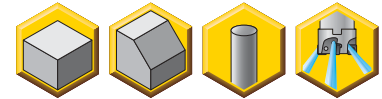
■ Spare Parts



D1	insert screw	in. lbs.	wrench
1.000	193.492	31	170.025
1.250	193.492	31	170.025

Indexable Milling

- Twelve cutting edges per insert.
- Maximum number of teeth per diameter.
- Productivity booster in all materials.



Indexable Milling

■ Dodeka Mini 45° • Cylindrical End Mills

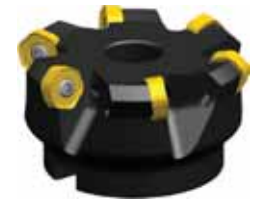
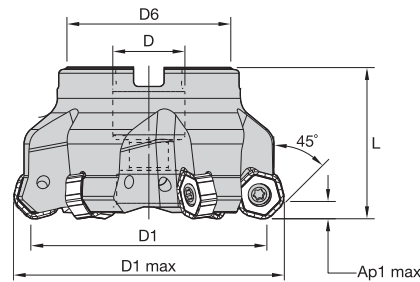
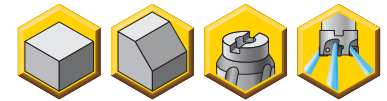
order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130518	KSHR100D02C075HN06L480	1.000	1.322	.750	4.800	1.250	.127	2	.64	19800
4130519	KSHR100D03C075HN06L480	1.000	1.322	.750	4.800	1.250	.127	3	.62	19800
4130522	KSHR100D02C100HN06L800	1.000	1.322	1.000	8.000	1.250	.127	2	1.66	19800
4130533	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	—	—
5.000	193.492	31	170.025	—	S2163C

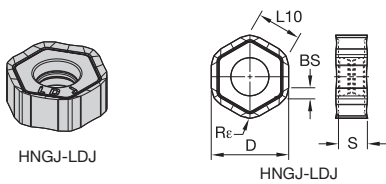
Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
P3-P4	.E..LD	KC522M	.S..GD	KCPM40	.S..HD	KCPM40
P5-P6	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
M3	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..HD	KCPK30
N1-N2	.F..LDJ	K313	.F..LDJ	KC410M	.E..LD	KC510M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
S1-S2	.E..LD	KC522M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM30	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KC510M	.S..GD	KC522M	-	-

Indexable Milling

Indexable Inserts

- First choice for machining aluminum.



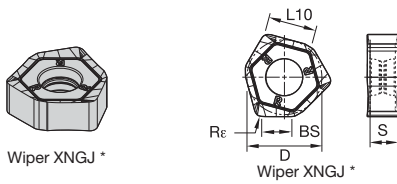
- first choice
- alternate choice

P					○	•	•	•	•	•	•	•	•	•	○
M						•	•	•	•	•	•	•	•	•	•
K						•	•	•	•	•	•	•	•	•	•
N	•	•	○												
S						•	•	•	•	•	•	•	•	•	•
H															

HNGJ-LDJ

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	•	•	-	-	-	-	-	-	-	-	-	-	-	-

- Wiper insert for fine finishing aluminum.



- first choice
- alternate choice

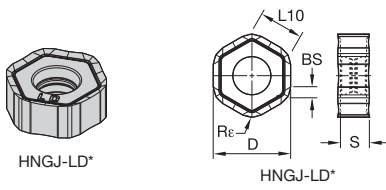
P	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H																				

### XNGJ-LDJ3W

catalog number	D	BS	L10	Re	S	hm	cutting edges
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.

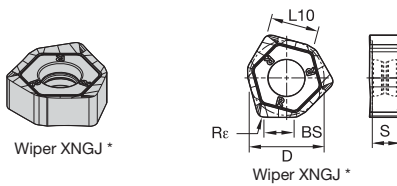


### HNGJ-LD

catalog number	D	BS	L10	Re	S	hm	cutting edges
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.



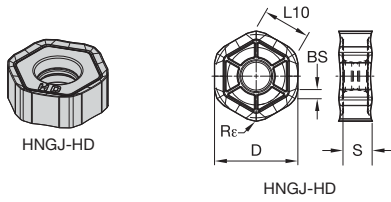
### XNGJ-LD3W

catalog number	D	BS	L10	Re	S	hm	cutting edges
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.

cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
XNGJ43ANFNLDJ3W	●	●	—	—	—	—	—	—	—	—	—	—	—
HNGJ43ANENLD	—	—	●	●	●	●	●	—	●	●	●	●	—
HNGJ438ANENLD	—	—	●	●	●	●	●	—	●	●	●	—	—
XNGJ43ANENLD3W	—	—	●	●	●	●	●	—	●	●	●	—	●

**NEW!**



- first choice
- alternate choice

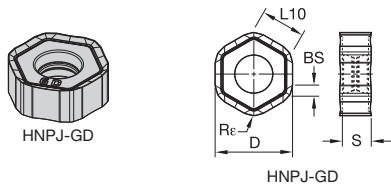
P	●	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

**HNGJ-HD**

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
<b>NEW!</b> HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	●	-	●	●	-	●	-	●	-	●

**NEW!**

- First choice for general purpose.

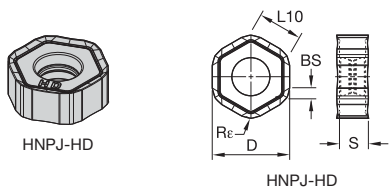


**HNPJ-GD**

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
HNPJ43ANSNGD	.472	.057	.254	.039	.175	.003	12	-	-	-	●	●	●	-	-	●	●	●	●	●

**NEW!**

- First choice for heavy roughing.



**HNPJ-HD**

catalog number	D	BS	L10	Rε	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	●	●	●	●	-	●	●	●	-	●
HNPJ438ANSNHD	.472	-	.253	.126	.174	.004	12	-	-	-	●	●	●	●	-	●	●	●	-	●

**NEW!**

Indexable Milling



■ Recommended Starting Speeds [SFM]

Material Group		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15
P	1	- - -	- - -	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -
	2	- - -	- - -	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -
	3	- - -	- - -	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -
	4	- - -	- - -	965 <b>785</b> 670	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -
	5	- - -	- - -	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -
	6	- - -	- - -	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -
M	1	- - -	- - -	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -
	2	- - -	- - -	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -
	3	- - -	- - -	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -
K	1	750 <b>670</b> 590	- - -	1165 <b>1045</b> 940	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340
	2	- - -	- - -	905 <b>805</b> 750	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080
	3	- - -	- - -	770 <b>690</b> 630	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905
N	1	3130 <b>2735</b> 2365	4780 <b>4250</b> 3920	2520 <b>2245</b> 2065	- - -	- - -	- - -	- - -
	2	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
	3	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	2	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	3	- - -	- - -	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -
	4	- - -	- - -	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -
H	1	- - -	- - -	630 <b>510</b> 355	- - -	475 <b>355</b> 275	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -



Material Group		KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
P	1	1790 <b>1555</b> 1460	1790 <b>1555</b> 1460	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -
	2	1105 <b>1000</b> 905	1105 <b>1000</b> 905	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -
	3	1000 <b>905</b> 805	1000 <b>905</b> 805	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -
	4	750 <b>690</b> 630	750 <b>690</b> 630	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -
	5	1025 <b>905</b> 830	1025 <b>905</b> 830	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280
	6	630 <b>535</b> -	630 <b>535</b> -	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200
M	1	805 <b>725</b> 610	805 <b>725</b> 610	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450
	2	725 <b>630</b> 550	725 <b>630</b> 550	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415
	3	570 <b>510</b> 450	570 <b>510</b> 450	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340
K	1	- - -	1165 <b>1045</b> 940	1415 <b>1280</b> 1165	- - -	- - -	- - -
	2	- - -	925 <b>830</b> 750	1120 <b>1000</b> 925	- - -	- - -	- - -
	3	- - -	770 <b>690</b> 630	940 <b>845</b> 785	- - -	- - -	- - -
N	1	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -
S	1	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110
	2	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100
	3	180 <b>140</b> 95	- - -	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115
	4	235 <b>180</b> 120	260 <b>200</b> 130	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165
H	1	- - -	- - -	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in bold type.  
As the average chip thickness increases, the speed should be decreased.

■ 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	.018	.029	.006	.015	.025	.006	.014	.023	.006	.014	.023	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.



Indexable Milling

## Looking for a product that's not shown in this catalog?

## Check the Kennametal website!

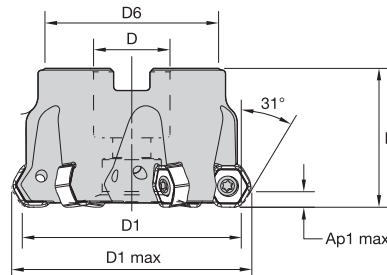
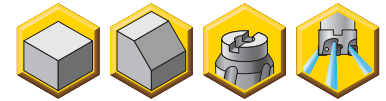
### Online product catalog available 24/7

Visit [kennametal.com/IndexableMilling](http://kennametal.com/IndexableMilling) to browse our electronic catalog any time you're looking for the best Kennametal tooling solutions.

It's fast, free, and always available. The online e-catalog is updated weekly with products and solutions for milling, turning, holemaking, and tooling systems applications.



- 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
4136393	KSHRHD250HN43C3	2.500	2.750	.750	1.750	1.575	.171	4	1.17	10000
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
4136398	KSHRHD400HN43M6	4.000	4.249	1.500	3.661	1.750	.171	9	3.51	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	—	—
5.000	193.492	31	170.025	—	S2163C

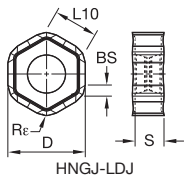
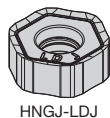
**Insert Selection Guide**

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
P3-P4	.E..LD	KC522M	.S..GD	KCPM40	.S..HD	KCPM40
P5-P6	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
M3	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..HD	KCPK30
N1-N2	.F..LDJ	K313	.F..LDJ	KC410M	.E..LD	KC510M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KC510M
S1-S2	.E..LD	KC522M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM30	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	-	-	-	-	-	-

Indexable Milling

**Indexable Inserts**

- First choice for machining aluminum.



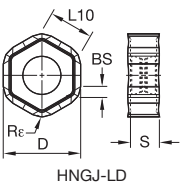
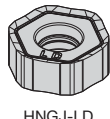
- first choice
- alternate choice

P															
M															
K															
N															
S															
H															

**HNGJ-LDJ**

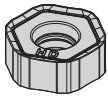
catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNGJ43ANFNLDJ	.472	.060	.254	.039	.176	.001	12	●	●	-	-	-	-	-	-	-	-	-	-	-	-

- First choice for light machining.

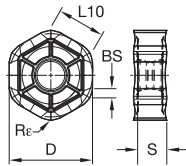


**HNGJ-LD**

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
HNGJ43ANENLD	.472	.060	.254	.039	.176	.002	12	-	-	●	●	●	●	●	-	-	●	●	●	-	-
HNGJ438ANENLD	.472	-	.253	.126	.177	.002	12	-	-	-	-	●	●	●	●	●	●	-	-	-	-



HNGJ-HD

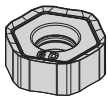


HNGJ-HD

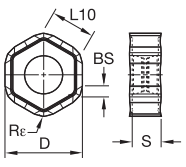
■ HNGJ-HD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	
<b>NEW!</b> HNGJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	-	●	-	●	-	●	-	●	-	●	●

- First choice for general purpose.



HNPJ-GD

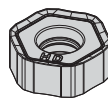


HNPJ-GD

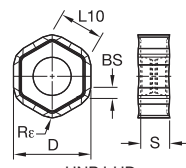
■ HNPJ-GD

catalog number	D	BS	L10	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	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	Re	S	hm	cutting edges	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
HNPJ43ANSNHD	.472	.057	.254	.039	.173	.006	12	-	-	-	-	●	●	●	●	●	●	●	-	●
HNPJ438ANSNHD	.472	-	.253	.126	.174	.004	12	-	-	-	●	●	●	●	-	●	●	●	-	●

P	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**NEW!**



Indexable Milling

**NEW!**

■ Recommended Starting Speeds [SFM]



Indexable Milling

Material Group		K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15
P	1	- - -	- - -	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -
	2	- - -	- - -	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -
	3	- - -	- - -	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -
	4	- - -	- - -	965 <b>785</b> 670	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -
	5	- - -	- - -	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -
	6	- - -	- - -	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -
M	1	- - -	- - -	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -
	2	- - -	- - -	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -
	3	- - -	- - -	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -
K	1	750 <b>670</b> 590	- - -	1165 <b>1045</b> 940	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340
	2	- - -	- - -	905 <b>805</b> 750	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080
	3	- - -	- - -	770 <b>690</b> 630	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905
N	1	3130 <b>2735</b> 2365	4780 <b>4250</b> 3920	2520 <b>2245</b> 2065	- - -	- - -	- - -	- - -
	2	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
	3	- - -	4250 <b>3920</b> 3600	2280 <b>2105</b> 1925	- - -	- - -	- - -	- - -
S	1	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	2	- - -	- - -	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -
	3	- - -	- - -	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -
	4	- - -	- - -	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -
H	1	- - -	- - -	630 <b>510</b> 355	- - -	475 <b>355</b> 275	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

Material Group		KCMP30	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40
P	1	1790 <b>1555</b> 1460	1790 <b>1555</b> 1460	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -
	2	1105 <b>1000</b> 905	1105 <b>1000</b> 905	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -
	3	1000 <b>905</b> 805	1000 <b>905</b> 805	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -
	4	750 <b>690</b> 630	750 <b>690</b> 630	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -
	5	1025 <b>905</b> 830	1025 <b>905</b> 830	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280
	6	630 <b>535</b> -	630 <b>535</b> -	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200
M	1	805 <b>725</b> 610	805 <b>725</b> 610	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450
	2	725 <b>630</b> 550	725 <b>630</b> 550	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415
	3	570 <b>510</b> 450	570 <b>510</b> 450	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340
K	1	- - -	1165 <b>1045</b> 940	1415 <b>1280</b> 1165	- - -	- - -	- - -
	2	- - -	925 <b>830</b> 750	1120 <b>1000</b> 925	- - -	- - -	- - -
	3	- - -	770 <b>690</b> 630	940 <b>845</b> 785	- - -	- - -	- - -
N	1	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -
S	1	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110
	2	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100
	3	180 <b>140</b> 95	- - -	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115
	4	235 <b>180</b> 120	260 <b>200</b> 130	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165
H	1	- - -	- - -	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

■ 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	.004	.008	.016	.003	.006	.012	.003	.005	.010	.002	.005	.009	.002	.005	.009	.F..LDJ
.E..LD	.004	.012	.024	.003	.009	.017	.003	.008	.015	.002	.007	.014	.002	.007	.014	.E..LD
.S..GD	.008	.017	.028	.006	.013	.021	.005	.011	.018	.005	.010	.017	.005	.010	.016	.S..GD
.S..HD	.008	.020	.032	.006	.015	.023	.005	.013	.020	.005	.012	.019	.005	.012	.018	.S..HD

Use "Light Machining" values as starting feed rate.

## Looking for a product that's not shown in this catalog?

## Check the Kennametal website!

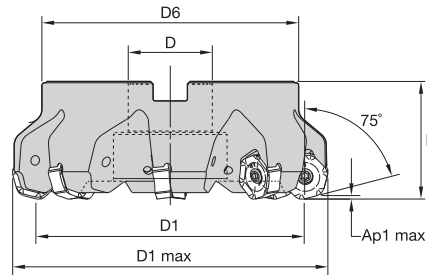
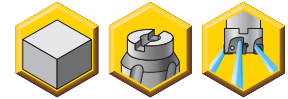
**Online product catalog available 24/7**

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It's fast, free, and always available. The online e-catalog is updated weekly with products and solutions for milling, turning, holmaking, and tooling systems applications.



- High feed rates for rough face milling.
- .08" depth-of-cut capability.
- Twelve cutting edges per insert.



■ Dodeka High-Feed 75° • Shell Mills

Indexable Milling

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

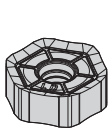
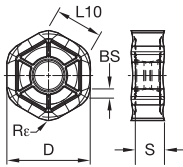


**Insert Selection Guide**

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
P3-P4	.E..LD	KC522M	.S..GD	KCPM40	.S..HD	KCPM40
P5-P6	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
M3	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..HD	KCPK30
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	KC522M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM30	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	-	-	-	-	-	-

**Indexable Inserts**

- First choice for light machining and aluminum.


 HNGJ-LD  
HNGJ-LDJ

 HNGJ-LD  
HNGJ-LDJ

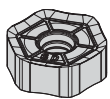
- first choice
- alternate choice

	P	M	K	N	S	H
●	●	●	●	●	●	●
○	○	○	○	○	○	○

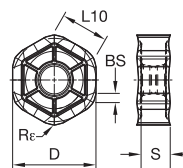
**HNGJ-LDJ and -LD**

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	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



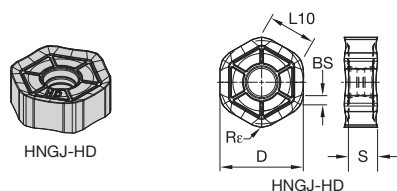
HNGJ-GD

**HNGJ-GD**

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	-	-	-	●	●	●	●	●	●	●	-

- First choice for heavy roughing.

**beyond**



- first choice
- alternate choice

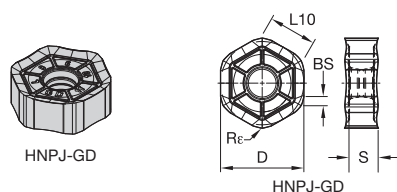
P	●		○	●	●	●	○
M	●	○	●	○	○	○	●
K	●	○	○	○	○	○	●
N	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○

■ HNGJ-HD

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	●	●	●	●	●	●	●	●	○	○	○
HNGJ53511ANSNHD	.625	.214	.334	—	.171	.008	12	●	●	●	●	●	●	●	●	○	○	○

**NEW!**

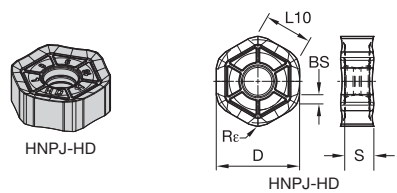
- First choice for general purpose.



■ HNPJ-GD

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNPJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	○	○	○	○	○	○	○	○	○	○	○

- First choice for heavy roughing.



■ HNPJ-HD

catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	○	○	○	○	○	○	○	○	○	○	○
HNPJ53511ANSNHD	.625	.214	.334	—	.171	.005	12	○	○	○	○	○	○	○	○	○	○	○

**NEW!**

■ Recommended Starting Speeds [SFM]

Material Group		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30
P	1	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -	1790 <b>1555</b> 1460
	2	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -	1105 <b>1000</b> 905
	3	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -	1000 <b>905</b> 805
	4	- - -	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -	750 <b>690</b> 630
	5	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -	1025 <b>905</b> 830
	6	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -	630 <b>535</b> -
M	1	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -	805 <b>725</b> 610
	2	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -	725 <b>630</b> 550
	3	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -	570 <b>510</b> 450
K	1	- - -	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340	1165 <b>1045</b> 940
	2	- - -	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080	925 <b>830</b> 750
	3	- - -	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905	770 <b>690</b> 630
N	1	4780 <b>4250</b> 3920	- - -	- - -	- - -	- - -	- - -
	2	4250 <b>3920</b> 3600	- - -	- - -	- - -	- - -	- - -
	3	4250 <b>3920</b> 3600	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -
	2	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -
	3	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -	- - -
	4	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -	260 <b>200</b> 130
H	1	- - -	- - -	475 <b>355</b> 275	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	1	- - -	- - -	- - -	- - -	- - -	- - -



Material Group		KCPM20	KCPM40	KCSM30	KCSM40	KY3500
P	1	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -	- - -
	2	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -	- - -
	3	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -	- - -
	4	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -	- - -
	5	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280	- - -
	6	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200	- - -
M	1	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450	- - -
	2	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415	- - -
	3	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340	- - -
K	1	1415 <b>1280</b> 1165	- - -	- - -	- - -	3170 <b>2875</b> 2555
	2	1120 <b>1000</b> 925	- - -	- - -	- - -	2500 <b>2245</b> 2090
	3	940 <b>845</b> 785	- - -	- - -	- - -	2105 <b>1870</b> 1710
N	1	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -
S	1	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110	- - -
	2	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100	- - -
	3	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115	- - -
	4	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165	- - -
H	1	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
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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	.013	<b>.027</b>	.055	.010	<b>.019</b>	.039	.008	<b>.017</b>	.034	.008	<b>.016</b>	.032	.008	<b>.015</b>	.031	.F..LDJ
.E..LD	.013	<b>.040</b>	.086	.010	<b>.029</b>	.060	.008	<b>.025</b>	.051	.008	<b>.024</b>	.047	.008	<b>.023</b>	.046	.E..LD
.S..GD	.022	<b>.058</b>	.106	.017	<b>.041</b>	.072	.014	<b>.036</b>	.061	.013	<b>.033</b>	.057	.013	<b>.032</b>	.056	.S..GD
.S..HD	.022	<b>.070</b>	.121	.017	<b>.049</b>	.081	.014	<b>.042</b>	.068	.013	<b>.040</b>	.063	.013	<b>.039</b>	.062	.S..HD

NOTE: Use "Light Machining" values as starting feed rate.



Indexable Milling

# Carbide Recycling

Help preserve and protect our planet!



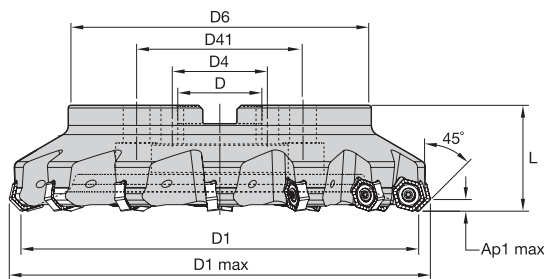
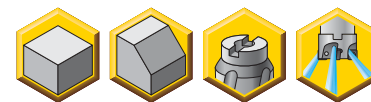
It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

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.



Program is not currently available in all geographical areas.  
For more information, please visit [kennametal.com/carbiderecycling](http://kennametal.com/carbiderecycling).

- 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.

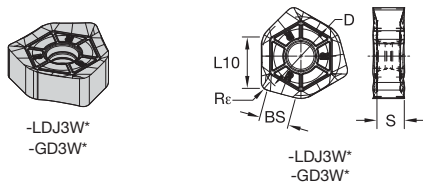
### Insert Selection Guide

Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
P3-P4	.E..LD	KC522M	.S..GD	KCPM40	.S..HD	KCPM40
P5-P6	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
M3	.E..LD	KC522M	.S..GD	KCPK30	.S..HD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..HD	KCPK30
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	KC522M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM30	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	-	-	-	-	-	-

Indexable Milling

### Inserts

- Wiper insert for excellent surface floor finish.



- first choice
- alternate choice

	P	M	K	N	S	H
P	●	○	○	○	○	○
M	○	●	○	○	○	○
K	○	○	●	○	○	○
N	○	○	○	●	○	○
S	○	○	○	○	●	○
H	○	○	○	○	○	○

### XNGJ-LDJ3W and -GD3W

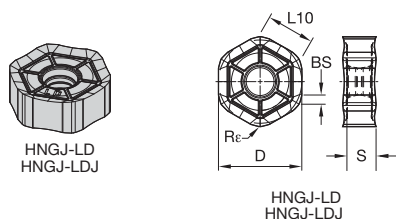
catalog number	D	S	L10	BS	Re	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
XNGJ535ANFNLDJ3W	.625	.217	.377	.230	.063	.001	3	●	-	-	-	-	-	-	-	-	-	-
XNGJ535ANSNGD3W	.625	.217	.377	.230	.063	.004	3	-	-	●	●	●	●	●	-	-	-	-



\*3 left-hand (LH) and 3 right-hand (RH) wiper edges per insert.



- First choice for light machining and aluminum.



■ HNGJ-LDJ and -LD

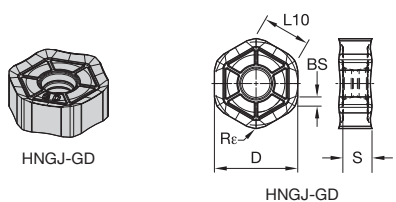
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANFNLDJ	.625	.219	.338	.071	.047	.001	12	●	-	-	-	-	-	-	-	-	-	-
HNGJ535ANENLD	.625	.219	.338	.071	.047	.002	12	-	●	●	●	●	●	●	-	●	●	-

- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○



- First choice for general purpose.

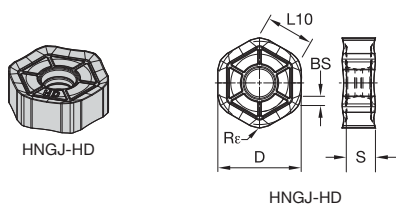


■ HNGJ-GD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	-	-	-	●	●	●	●	●	●	●	-



- First choice for heavy roughing.



■ HNGJ-HD

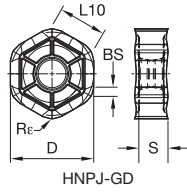
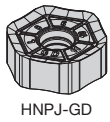
catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNGJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	-	-	-	●	●	●	●	●	-	●	-
HNGJ53511ANSNHD	.625	.214	.334	-	.171	.008	12	-	●	-	●	●	●	●	-	-	●	-



Indexable Milling

beyond

- First choice for general purpose.



- first choice
- alternate choice

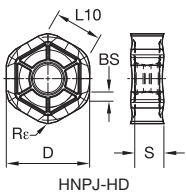
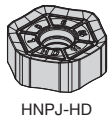
P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**HNPJ-GD**

Indexable Milling

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500	
HNPJ535ANSNGD	.625	.219	.338	.071	.047	.004	12	-	●	●	●	●	●	-	●	-	-	-	-

- First choice for heavy roughing.

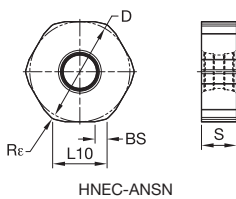


**NEW!**

**HNPJ-HD**

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
HNPJ535ANSNHD	.625	.215	.338	.065	.047	.007	12	-	●	●	●	●	●	-	●	-	-	-
HNPJ53511ANSNHD	.625	.214	.334	-	.171	.005	12	-	-	●	●	●	●	-	●	-	-	-

- Ceramic KYON 3500 for machining grey cast iron with high cutting speed.



- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

**HNEC-ANSN Ceramic insert**

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC410M	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM20	KCPM40	KCSM30	KCSM40	KY3500
<b>NEW!</b> HNEC535ANSN	.625	.219	.361	.077	.047	.008	12	-	-	-	-	-	-	-	-	-	-	●



■ Recommended Starting Speeds [SFM]

Material Group		KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30
P	1	- - -	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -	1790 <b>1555</b> 1460
	2	- - -	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -	1105 <b>1000</b> 905
	3	- - -	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -	1000 <b>905</b> 805
	4	- - -	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -	750 <b>690</b> 630
	5	- - -	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -	1025 <b>905</b> 830
	6	- - -	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -	630 <b>535</b> -
M	1	- - -	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -	805 <b>725</b> 610
	2	- - -	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -	725 <b>630</b> 550
	3	- - -	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -	570 <b>510</b> 450
K	1	- - -	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340	1165 <b>1045</b> 940
	2	- - -	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080	925 <b>830</b> 750
	3	- - -	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905	770 <b>690</b> 630
N	1	4780 <b>4250</b> 3920	- - -	- - -	- - -	- - -	- - -
	2	4250 <b>3920</b> 3600	- - -	- - -	- - -	- - -	- - -
	3	4250 <b>3920</b> 3600	- - -	- - -	- - -	- - -	- - -
S	1	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -
	2	- - -	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -
	3	- - -	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -	- - -
	4	- - -	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -	260 <b>200</b> 130
H	1	- - -	- - -	475 <b>355</b> 275	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -
	1	- - -	- - -	- - -	- - -	- - -	- - -



Material Group		KCPM20	KCPM40	KCSM30	KCSM40	KY3500
P	1	2165 <b>1910</b> 1770	1165 <b>1025</b> 965	1460 <b>1260</b> 1180	- - -	- - -
	2	1340 <b>1220</b> 1080	985 <b>845</b> 710	1200 <b>1060</b> 865	- - -	- - -
	3	1220 <b>1080</b> 1000	905 <b>770</b> 630	1120 <b>940</b> 770	- - -	- - -
	4	905 <b>845</b> 750	805 <b>670</b> 535	985 <b>805</b> 650	- - -	- - -
	5	1080 <b>985</b> 905	670 <b>610</b> 535	805 <b>750</b> 650	530 <b>390</b> 280	- - -
	6	750 <b>670</b> 570	590 <b>450</b> 355	725 <b>550</b> 430	450 <b>730</b> 200	- - -
M	1	890 <b>785</b> 690	770 <b>670</b> 610	890 <b>785</b> 725	1020 <b>730</b> 450	- - -
	2	805 <b>690</b> 630	690 <b>590</b> 490	805 <b>710</b> 570	910 <b>675</b> 415	- - -
	3	630 <b>570</b> 490	510 <b>450</b> 355	610 <b>535</b> 415	750 <b>530</b> 340	- - -
K	1	1415 <b>1280</b> 1165	- - -	- - -	- - -	3170 <b>2875</b> 2555
	2	1120 <b>1000</b> 925	- - -	- - -	- - -	2500 <b>2245</b> 2090
	3	940 <b>845</b> 785	- - -	- - -	- - -	2105 <b>1870</b> 1710
N	1	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -
S	1	- - -	155 <b>140</b> 120	180 <b>155</b> 120	240 <b>175</b> 110	- - -
	2	- - -	155 <b>140</b> 120	180 <b>155</b> 120	220 <b>160</b> 100	- - -
	3	- - -	200 <b>155</b> 120	215 <b>180</b> 120	255 <b>180</b> 115	- - -
	4	- - -	260 <b>200</b> 140	335 <b>235</b> 155	355 <b>260</b> 165	- - -
H	1	550 <b>450</b> 370	- - -	535 <b>395</b> 295	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

■ 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	<b>.010</b>	.019	.004	<b>.007</b>	.014	.003	<b>.006</b>	.012	.003	<b>.006</b>	.012	.003	<b>.006</b>	.011	.F..LDJ
.E..LD	.005	<b>.014</b>	.029	.004	<b>.011</b>	.021	.003	<b>.009</b>	.019	.003	<b>.009</b>	.017	.003	<b>.008</b>	.017	.E..LD
.S..GD	.008	<b>.020</b>	.035	.006	<b>.015</b>	.026	.005	<b>.013</b>	.022	.005	<b>.012</b>	.021	.005	<b>.012</b>	.020	.S..GD
.S..HD	.008	<b>.024</b>	.039	.006	<b>.018</b>	.029	.005	<b>.015</b>	.025	.005	<b>.014</b>	.023	.005	<b>.014</b>	.023	.S..HD
.S..Ceramic	.005	<b>.009</b>	.014	.004	<b>.007</b>	.011	.003	<b>.001</b>	.009	.003	<b>.006</b>	.009	.003	<b>.006</b>	.008	.S..Ceramic

NOTE: Use "Light Machining" values as starting feed rate.



Indexable Milling

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NOVO: The Digital Source for Delivering Smart Machining Solutions

## NOVO KNOWS SEARCH

Searching for a tool by using the outdated method of a catalog has been replaced with the Advise and Select functions from NOVO™ — 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 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](http://kennametal.com/novo)

# ➤ MEGA 45° • MEGA 60° • MEGA 90°

## Superior Heavy-Duty Milling

### Primary Application

**The real performance booster in heavy-duty milling.** With four true cutting edges per heavy-duty insert, you know 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 platform for all of your steel and cast iron indexable milling needs.

## Features and Benefits

### Features

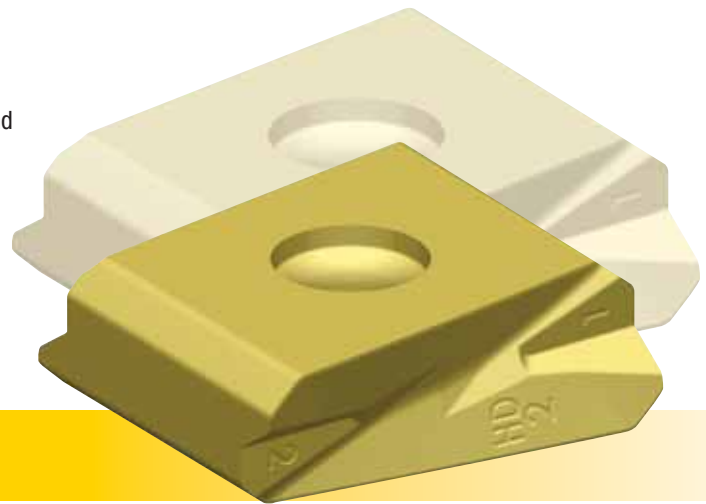
- Four true cutting edges per heavy-duty MEGA insert.
- Soft cutting edge design.
- Up to 30% increased metal removal rates (MRR).
- Carbide pocket shims (LH — left handed).
- Cutting edge numbering system.
- HD2 geometry (LH — left handed).
- New milling grades with KCPM40™.

### Benefits

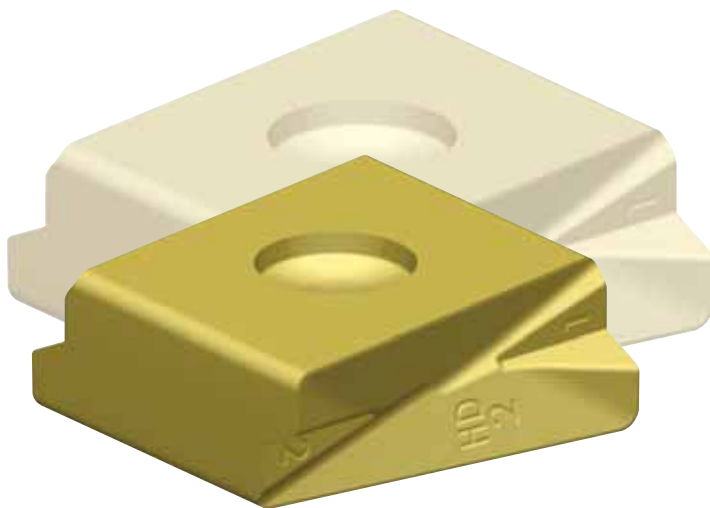
- Low cost per edge and high productivity.
- 30% lower cutting forces.
- Performance leader in steel and cast iron materials.
- Excellent cutter body protection.
- Improved runout for better tool life and floor finish.
- Stronger edge protection to handle the toughest milling jobs, especially with scale and surfaces with varying thicknesses.
- Breakthrough in grade technology to boost performance.

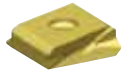
## Left handed inserts and shims are now available as standard line items.

MEGA 45 – LH Left Hand

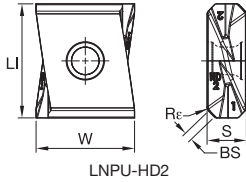


MEGA 60 and MEGA 90 – LH Left Hand





LNP-UHD2



LNP-UHD2

● first choice  
○ alternate choice

P	●	●	●	○
M	○	○	○	○
K	●	●	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

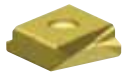
■ LNP-UHD • MEGA 45 Left Hand

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KGK15	KCPK30	KCPM40	KCSM40
LNP863ANSLHD2	1.142	.088	.986	.047	.394	.009	4	●	-	●	●	○	-

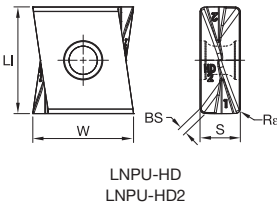
Indexable Milling

MEGA 15°/60°/90° • Heavy Duty Face Milling • Inserts

• MEGA 60 and MEGA 90 Heavy Duty Face Milling Indexable Inserts.



LNP-UHD  
LNP-UHD2



LNP-UHD  
LNP-UHD2

● first choice  
○ alternate choice

P	●	●	●	○
M	○	○	○	○
K	●	●	○	○
N	○	○	○	○
S	○	○	○	○
H	○	○	○	○

■ LNP-UHD/-HD2 • MEGA 60 and MEGA 90 Left Hand

catalog number	LI	BS	W	Rε	S	hm	cutting edges	KC520M	KC725M	KGK15	KCPK30	KCPM40	KCSM40
LNP763PNLHD2	1.043	.091	.984	.047	.394	.009	4	●	-	-	●	●	-

■ 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 Innovations 2016 Catalog A-15-04498 (Page D60) for the Insert Selection Guide and Cutting Data Recommendation.

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# KSSM8+<sup>TM</sup> Face Milling Platform

## Primary Application

KSSM 8+ is a first-choice face milling platform for customers seeking **versatility** and a **reduced cost per edge**. This just got better with the latest pressing technology from Kennametal, which delivers press and sintered to size (PSTS) inserts ideal for general machining in **cast iron and steel**. With our latest KCPM40<sup>TM</sup> grade offering, PSTS inserts deliver exceptional performance. Now more than ever, KSSM8+ is the economical solution for applications requiring a **near-90° shoulder**.

## Features and Benefits

### Features

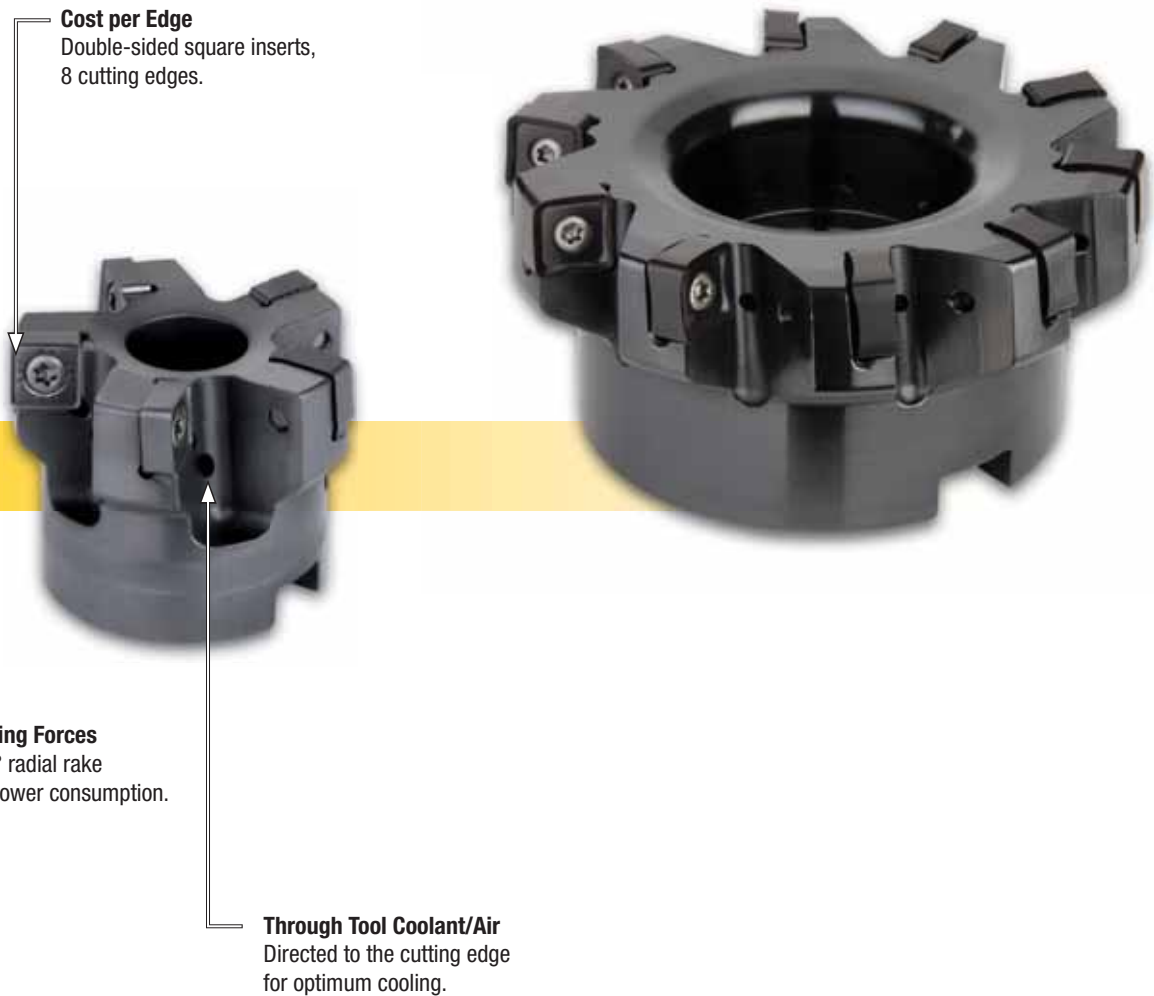
- Double-sided insert with 8 cutting edges.
- Face mill with close to a 90° shoulder.
  - IC 10 (88° lead)
  - IC 12,7 (87° lead)
- Medium and fine density cutters.
- -LD and -GD geometry inserts.

### Benefits

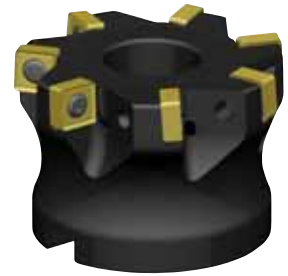
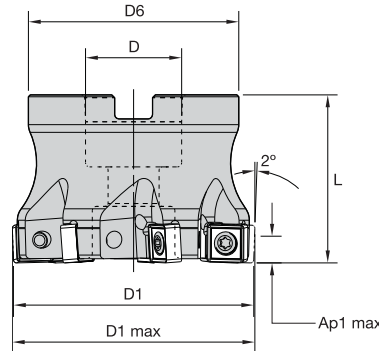
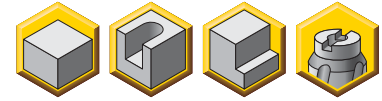
- Maximized number of cutting edges.
- Offering a lower cost-per-edge.
- Near-90° shoulder.
- Reduced power consumption.
- Reduced deformation/chatter.
- Supports roughing and productivity.
- Full range of standard tool bodies.
- Versatility in speeds and DOC.
- Exceptional surface finish.
- Stronger edge for roughing.
- Reduced cutting forces.



## Versatile Platform with Multiple Insert Options and Grades



- 88° lead angle cutter.
- Double-sided insert.
- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.
- Excellent choice for long tool reach and weak fixture setup.



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
5420253	KSSM88D250SN3125S100Z05	2.500	2.525	1.000	2.190	1.750	.361	5	1.39	28400
5420254	KSSM88D250SN3125S100Z07	2.500	2.525	1.000	2.190	1.750	.361	7	1.42	28400
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
5420259	KSSM88D400SN3125S150Z11	4.000	4.025	1.500	3.380	2.000	.361	11	3.72	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	—
2.500	193.492	35.000	DT15	S458	—
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-pressure coolant.

**Insert Selection Guide**

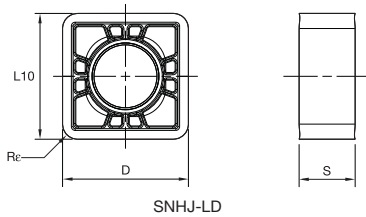
Material Group	Light Machining		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KC725M	.S..GD	KCPM40	-	-
P3-P4	.E..LD	KC725M	.S..GD	KCPM40	-	-
P5-P6	.E..LD	KCPK30	.S..GD	KCPK30	-	-
M1-M2	.E..LD	KC725M	.S..GD	KC725M	-	-
M3	.E..LD	KCPK30	.S..GD	KCPK30	-	-
K1-K2	.E..LD	KCK15	.S..GD	KCK15	-	-
K3	.E..LD	KC520M	.S..GD	KCPK30	-	-
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	.E..LD	KC725M	.S..GD	KCPM40	-	-
S3	.E..LD	KC725M	.S..GD	KCPM40	-	-
S4	.E..LD	KC725M	.S..GD	KCPM40	-	-
H1	-	-	-	-	-	-

**Indexable Inserts**

- First choice for light machining of cast iron and steel.
- Low cutting forces.



SNHJ-LD



SNHJ-LD

**SNHJ-LD**

catalog number	D	S	L10	Re	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
SNHJ31252ENLD	.394	.157	.394	.031	.002	8	●	-	●	●	●	-	-
SNHJ31253ENLD	.394	.157	.394	.047	.002	8	-	●	●	-	-	-	-

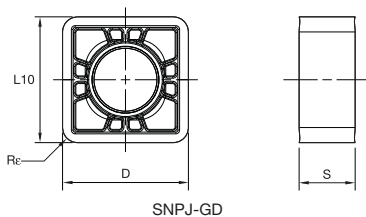
- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○	○	○	○	○
M	●	●	●	○	○	○	○	○	○	○	○	○	○
K	●	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○

- First choice for general purpose machining.



SNPJ-GD



SNPJ-GD

**SNPJ-GD**

catalog number	D	S	L10	Re	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
SNPJ31252SNGD	.394	.157	.394	.031	.003	8	●	-	●	●	●	-	-
SNPJ31253SNGD	.394	.157	.394	.047	.003	8	-	●	●	-	-	-	-

■ Recommended Starting Speeds [SFM]

Material Group		KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
P	1	- - -	1295 <b>1120</b> 1060	1025 <b>905</b> 845	- - -	1790 <b>1555</b> 1460	1165 <b>1025</b> 965	- - -
	2	- - -	1080 <b>940</b> 785	865 <b>750</b> 630	- - -	1105 <b>1000</b> 905	985 <b>845</b> 710	- - -
	3	- - -	1000 <b>845</b> 690	785 <b>670</b> 550	- - -	1000 <b>905</b> 805	905 <b>770</b> 630	- - -
	4	- - -	890 <b>725</b> 590	710 <b>590</b> 475	- - -	750 <b>690</b> 630	805 <b>670</b> 535	- - -
	5	- - -	725 <b>670</b> 590	590 <b>535</b> 475	- - -	1025 <b>905</b> 830	670 <b>610</b> 535	530 <b>390</b> 280
	6	- - -	650 <b>490</b> 395	510 <b>395</b> 310	- - -	630 <b>535</b> -	590 <b>450</b> 355	450 <b>730</b> 200
M	1	- - -	805 <b>710</b> 650	670 <b>590</b> 535	- - -	805 <b>725</b> 610	770 <b>670</b> 610	1020 <b>730</b> 450
	2	- - -	725 <b>630</b> 510	610 <b>510</b> 430	- - -	725 <b>630</b> 550	690 <b>590</b> 490	910 <b>675</b> 415
	3	- - -	550 <b>475</b> 370	450 <b>395</b> 310	- - -	570 <b>510</b> 450	510 <b>450</b> 355	750 <b>530</b> 340
K	1	1060 <b>965</b> 845	905 <b>805</b> 725	- - -	1655 <b>1520</b> 1340	1165 <b>1045</b> 940	- - -	- - -
	2	830 <b>750</b> 690	710 <b>630</b> 590	- - -	1320 <b>1165</b> 1080	925 <b>830</b> 750	- - -	- - -
	3	690 <b>630</b> 570	590 <b>535</b> 475	- - -	1105 <b>985</b> 905	770 <b>690</b> 630	- - -	- - -
N	1	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -
S	1	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	240 <b>175</b> 110
	2	- - -	155 <b>140</b> 95	140 <b>120</b> 95	- - -	- - -	155 <b>140</b> 120	220 <b>160</b> 100
	3	- - -	200 <b>155</b> 95	180 <b>140</b> 95	- - -	- - -	200 <b>155</b> 120	255 <b>180</b> 115
	4	- - -	275 <b>200</b> 140	235 <b>180</b> 120	- - -	260 <b>200</b> 130	260 <b>200</b> 140	355 <b>260</b> 165
H	1	- - -	475 <b>355</b> 275	- - -	- - -	- - -	- - -	- - -
	2	- - -	- - -	- - -	- - -	- - -	- - -	- - -
	3	- - -	- - -	- - -	- - -	- - -	- - -	- - -

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

Recommended Starting Feeds

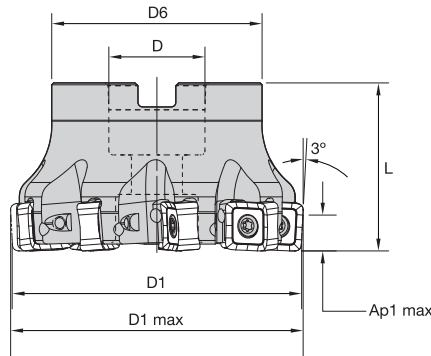
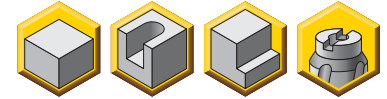
■ Recommended Starting Feeds [IPT]

Light Machining	General Purpose	Heavy Machining
-----------------	-----------------	-----------------

Insert Geometry	Programmed Feed per Tooth (fz) as a % of Radial Depth of Cut (ae)															Insert Geometry
	10%			20%			30%			40%			50-100%			
.E..LD	.003	<b>.007</b>	.012	.003	<b>.005</b>	.009	.002	<b>.004</b>	.008	.002	<b>.004</b>	.007	.002	<b>.004</b>	.007	.E..LD
.S..GD	.008	<b>.011</b>	.016	.006	<b>.009</b>	.012	.005	<b>.007</b>	.010	.005	<b>.007</b>	.010	.005	<b>.007</b>	.010	.S..GD

NOTE: Use "Light Machining" values as starting feed rate.

- 87° lead angle cutter.
- Double-sided insert.
- Eight cutting edges offer a lower cost per edge.
- Soft cutting action with low cutting forces.



### ■ 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
5420152	KSSM87D250SN440S100Z05	2.500	2.545	1.000	2.190	1.750	.236	5	1.36	19500
5420153	KSSM87D250SN440S100Z07	2.500	2.545	1.000	2.190	1.750	.236	7	1.35	19500
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
5420158	KSSM87D500SN440S150Z09	5.000	5.045	1.500	3.380	2.380	.236	9	5.68	13000
5420159	KSSM87D500SN440S150Z14	5.000	5.045	1.500	3.380	2.380	.236	14	5.61	13000
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.

### ■ 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	—
2.500	193.492	35.000	DT15	S458	—
3.000	193.492	35.000	DT15	S458	—
4.000	193.492	35.000	DT15	—	S2165C
5.000	193.492	35.000	DT15	—	S2163C
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		General Purpose		Heavy Machining	
	Geometry	Grade	Geometry	Grade	Geometry	Grade
P1-P2	.E..LD	KC725M	.S..GD	KCPM40	.S..GD	KCPM40
P3-P4	.E..LD	KC725M	.S..GD	KCPM40	.S..GD	KCPM40
P5-P6	.E..LD	KCPK30	.S..GD	KCPK30	.S..GD	KCPK30
M1-M2	.E..LD	KC725M	.S..GD	KC725M	.S..GD	KC725M
M3	.E..LD	KCPK30	.S..GD	KCPK30	.S..GD	KCPK30
K1-K2	.E..LD	KCK15	.S..GD	KCK15	.S..GD	KCK15
K3	.E..LD	KC520M	.S..GD	KCPK30	.S..GD	KCPK30
N1-N2	-	-	-	-	-	-
N3	-	-	-	-	-	-
S1-S2	.E..LD	KC725M	.S..GD	KC725M	.S..GD	KC725M
S3	.E..LD	KC725M	.S..GD	KCSM40	.S..GD	KCSM40
S4	.E..LD	KC725M	.S..GD	KCSM40	.S..GD	KCSM40
H1	-	-	-	-	-	-

Indexable Milling

Indexable Inserts

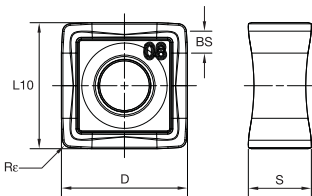
- First choice for light machining of cast iron and steel.

- first choice
- alternate choice

P	●	○	○	○	○	○	○	○	○
M	●	●	○	○	○	○	○	○	○
K	●	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○



SNHJ-LD

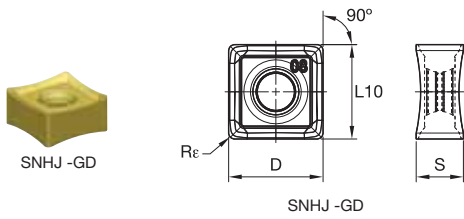


SNHJ-LD

SNHJ-LD

catalog number	D	S	L10	BS	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KGK15	KCPK30	KCPM40	KCSM40
SNHJ442ENLD	.500	.250	.500	.086	.031	.002	8	●	-	●	●	●	-	-
SNHJ444ENLD	.500	.250	.500	.059	.063	.002	8	●	-	●	●	●	-	-

- First choice for high-performance roughing.



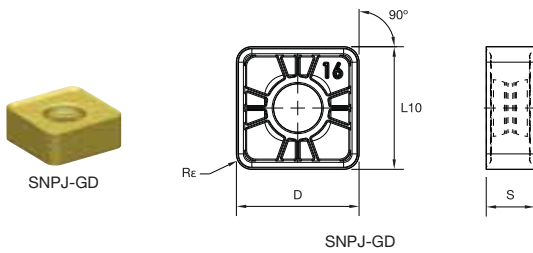
- first choice
- alternate choice

P	●	○	○	○	○	○	○
M	●	●	●	○	○	○	○
K	●	○	○	○	○	○	○
N	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○

■ SNHJ -GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
<b>NEW!</b> SNHJ442SNGD	.500	.250	.500	.031	.005	8	●	-	●	●	●	●	●

- First choice for regular roughing.



■ SNPJ-GD

catalog number	D	S	L10	Rε	hm	cutting edges	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
SNPJ442SNGD	.500	.178	.500	.031	.005	8	●	-	-	●	●	●	-
SNPJ444SNGD	.500	.178	.500	.063	.005	8	●	-	-	●	●	●	-



■ Recommended Starting Speeds [SFM]

Material Group		KC520M			KC522M			KC725M			KCK15			KCPK30			KCPM40			KCSM40		
P	1	-	-	-	1295	<b>1120</b>	1060	1025	<b>905</b>	845	-	-	-	1790	<b>1555</b>	1460	1165	<b>1025</b>	965	-	-	-
	2	-	-	-	1080	<b>940</b>	785	865	<b>750</b>	630	-	-	-	1105	<b>1000</b>	905	985	<b>845</b>	710	-	-	-
	3	-	-	-	1000	<b>845</b>	690	785	<b>670</b>	550	-	-	-	1000	<b>905</b>	805	905	<b>770</b>	630	-	-	-
	4	-	-	-	890	<b>725</b>	590	710	<b>590</b>	475	-	-	-	750	<b>690</b>	630	805	<b>670</b>	535	-	-	-
	5	-	-	-	725	<b>670</b>	590	590	<b>535</b>	475	-	-	-	1025	<b>905</b>	830	670	<b>610</b>	535	530	<b>390</b>	280
	6	-	-	-	650	<b>490</b>	395	510	<b>395</b>	310	-	-	-	630	<b>535</b>	-	590	<b>450</b>	355	450	<b>730</b>	200
M	1	-	-	-	805	<b>710</b>	650	670	<b>590</b>	535	-	-	-	805	<b>725</b>	610	770	<b>670</b>	610	1020	<b>730</b>	450
	2	-	-	-	725	<b>630</b>	510	610	<b>510</b>	430	-	-	-	725	<b>630</b>	550	690	<b>590</b>	490	910	<b>675</b>	415
	3	-	-	-	550	<b>475</b>	370	450	<b>395</b>	310	-	-	-	570	<b>510</b>	450	510	<b>450</b>	355	750	<b>530</b>	340
K	1	1060	<b>965</b>	845	905	<b>805</b>	725	-	-	-	1655	<b>1520</b>	1340	1165	<b>1045</b>	940	-	-	-	-	-	-
	2	830	<b>750</b>	690	710	<b>630</b>	590	-	-	-	1320	<b>1165</b>	1080	925	<b>830</b>	750	-	-	-	-	-	-
	3	690	<b>630</b>	570	590	<b>535</b>	475	-	-	-	1105	<b>985</b>	905	770	<b>690</b>	630	-	-	-	-	-	-
N	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	1	-	-	-	155	<b>140</b>	95	140	<b>120</b>	95	-	-	-	-	-	-	155	<b>140</b>	120	240	<b>175</b>	110
	2	-	-	-	155	<b>140</b>	95	140	<b>120</b>	95	-	-	-	-	-	-	155	<b>140</b>	120	220	<b>160</b>	100
	3	-	-	-	200	<b>155</b>	95	180	<b>140</b>	95	-	-	-	-	-	-	200	<b>155</b>	120	255	<b>180</b>	115
	4	-	-	-	275	<b>200</b>	140	235	<b>180</b>	120	-	-	-	260	<b>200</b>	130	260	<b>200</b>	140	355	<b>260</b>	165
H	1	-	-	-	475	<b>355</b>	275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Indexable Milling

NOTE: FIRST choice starting speeds are in **bold** type.  
As the average chip thickness increases, the speed should be decreased.

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
	10%			20%			30%			40%			50-100%			
.E..LD	.003	<b>.007</b>	.012	.003	<b>.005</b>	.009	.002	<b>.004</b>	.008	.002	<b>.004</b>	.007	.002	<b>.004</b>	.007	.E..LD
.S..GD	.008	<b>.012</b>	.017	.006	<b>.009</b>	.013	.005	<b>.008</b>	.011	.005	<b>.007</b>	.010	.005	<b>.007</b>	.010	.S..GD

NOTE: Use "Light Machining" values as starting feed rate.





# 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](https://www.kennametal.com/carbiderecycling).



[kennametal.com](https://www.kennametal.com)



# Tooling Systems

Hydraulic Chuck Reducer Sleeves ..... F2-F7

ERICKSON NG (New Generation) Shrink Fit Unit..... F8-F11

# ➤ Hydraulic Chuck Reducer Sleeves

with ERICKSON™ SAFE-LOCK® Smart Coolant

## Primary Application

ERICKSON™ Safe-Lock™ Smart Coolant reducer sleeves are specially designed for high precision and secure clamping of 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 pullout during extreme machining conditions. The Smart Coolant feature enhances efficient cooling and easy chip evacuation, which leads to increased tool life. In addition, the rear locking feature, which engages with a basic holder, provides bonus security for reducer sleeves against slippage and pullout.

Low vibration, in combination with pullout protection, excellent runout accuracy, and the hydraulic system's dampening property, results in very efficient machining with reduced and uniform tool wear. Due to the increased cutting depths and feeds, the metal removal rates can be increased up to the maximum limits of the tool and machine.

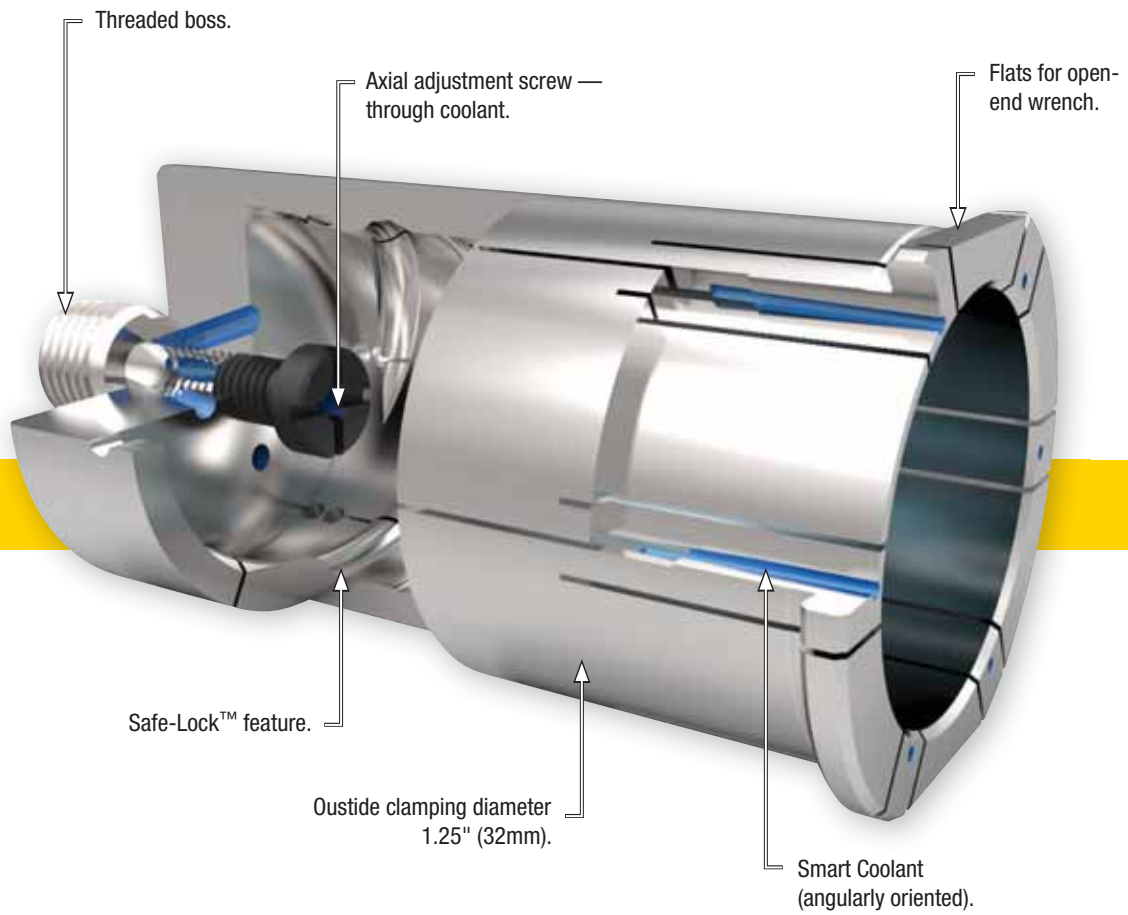
We are the first in the market to introduce the Safe-Lock™ with Smart Coolant feature in the high torque hydraulic chuck portfolio.

## Features and Benefits

### Stay Safe with Safe-Lock™ Smart Coolant

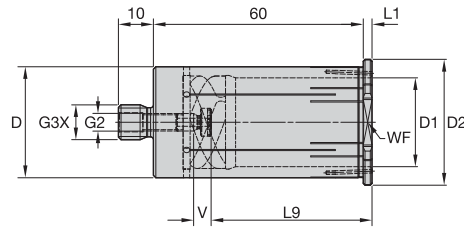
- For High-Performance Cutting (HPC).
- Highly accurate clamping due to hydraulic technology.
- High torque due to form-closed clamping.
- Highest stiffness by robust construction of HydroForce™.
- No loss of accuracy.
- No pullout of the tool.
- No spinning of the tool.
- No damage on workpiece or machine.
- Easy and quick clamping and unclamping cycles.
- Safe-Lock™ Smart Coolant reducer sleeves are available for shank diameters .5, .625, .75, and 1" (12, 14, 16, 20, and 25mm).







- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have the Safe-Lock™ grooves on the shank.
- Sleeve must be screwed completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tool shank holding requirement at least to L9 dimension.



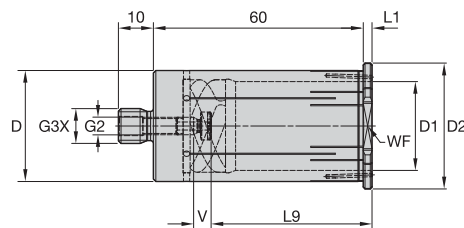
### ERICKSON™

#### MHCSFC • Metric

order number	catalog number	D1	D2	D	L1	L9	V	G3X	G2	WF
5998607	32MHCSFC120M	12	36	32	2,5	41	4	M12	M6	32
5998608	32MHCSFC140M	14	36	32	2,5	41	4	M12	M6	32
5998609	32MHCSFC160M	16	36	32	2,5	44	4	M12	M6	32
5998610	32MHCSFC200M	20	36	32	2,5	46	4	M12	M6	32
5998751	32MHCSFC250M	25	36	32	2,5	47	4	M12	M6	32

NOTE: Inserting the cutting tool less than the gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Recommended to clean coolant holes periodically with air.

- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have the Safe-Lock™ grooves on the shank.
- Sleeve must be screwed completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tool shank holding requirement at least to L9 dimension.



### ERICKSON™

#### HCSFC • Inch

order number	catalog number	D1	D2	D	L1	L9	V	G3X	G2	WF
5998754	12HCSFC0500	.500	1.417	1.250	.098	1.614	.154	M12	M6	1.260
5998755	12HCSFC0625	.625	1.417	1.250	.098	1.732	.154	M12	M6	1.260
5998756	12HCSFC0750	.750	1.417	1.250	.098	1.811	.154	M12	M6	1.260
5998757	12HCSFC1000	1.000	1.417	1.250	.098	1.850	.154	M12	M6	1.260

NOTE: Inserting the cutting tool less than the gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Recommended to clean coolant holes periodically with air.

### ■ Safe-Lock™ Smart Coolant

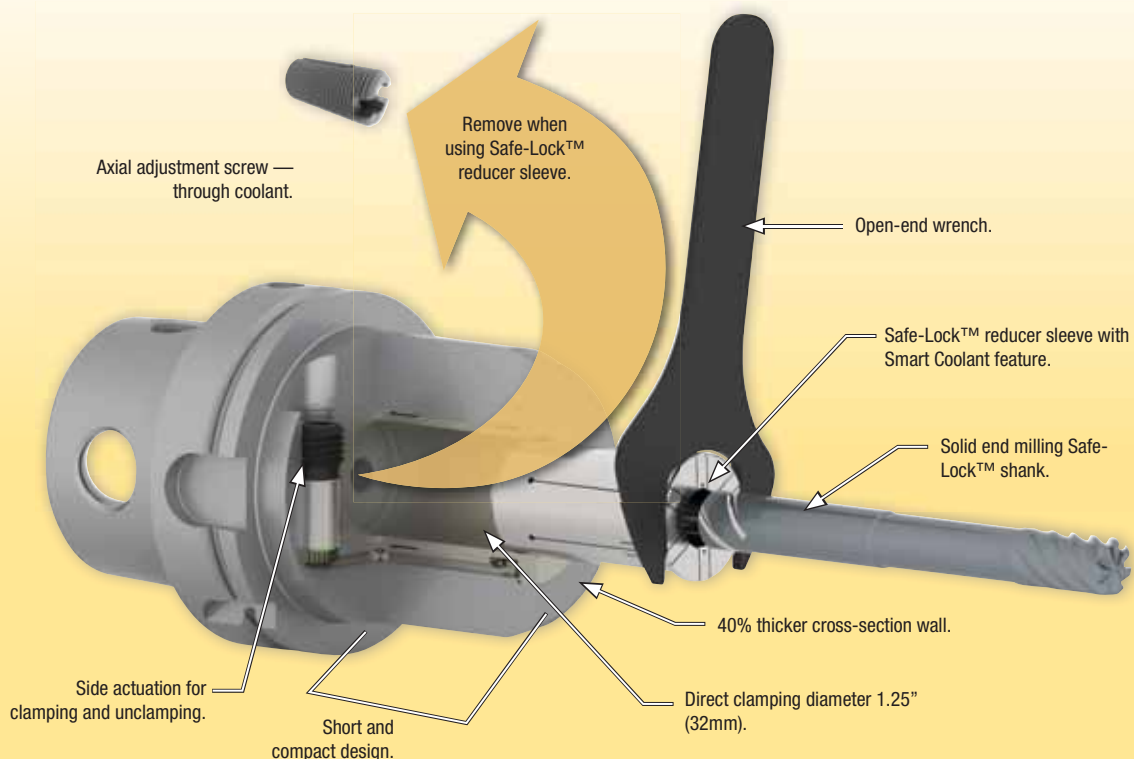
The Safe-Lock™ Smart Coolant feature is a pullout protection system with an effective cooling feature for high-performance machining, in particular for heavy-duty machining. This is achieved by helical grooves that are ground into the tool shank. These, in combination with the drive feature in a Safe-Lock™ Smart Coolant reducer sleeve, prevent the tool from being pulled out during extreme machining conditions.

In addition, the rear-locking feature, which engages with a basic holder, provides bonus security for reducer sleeves against slippage and pullout.

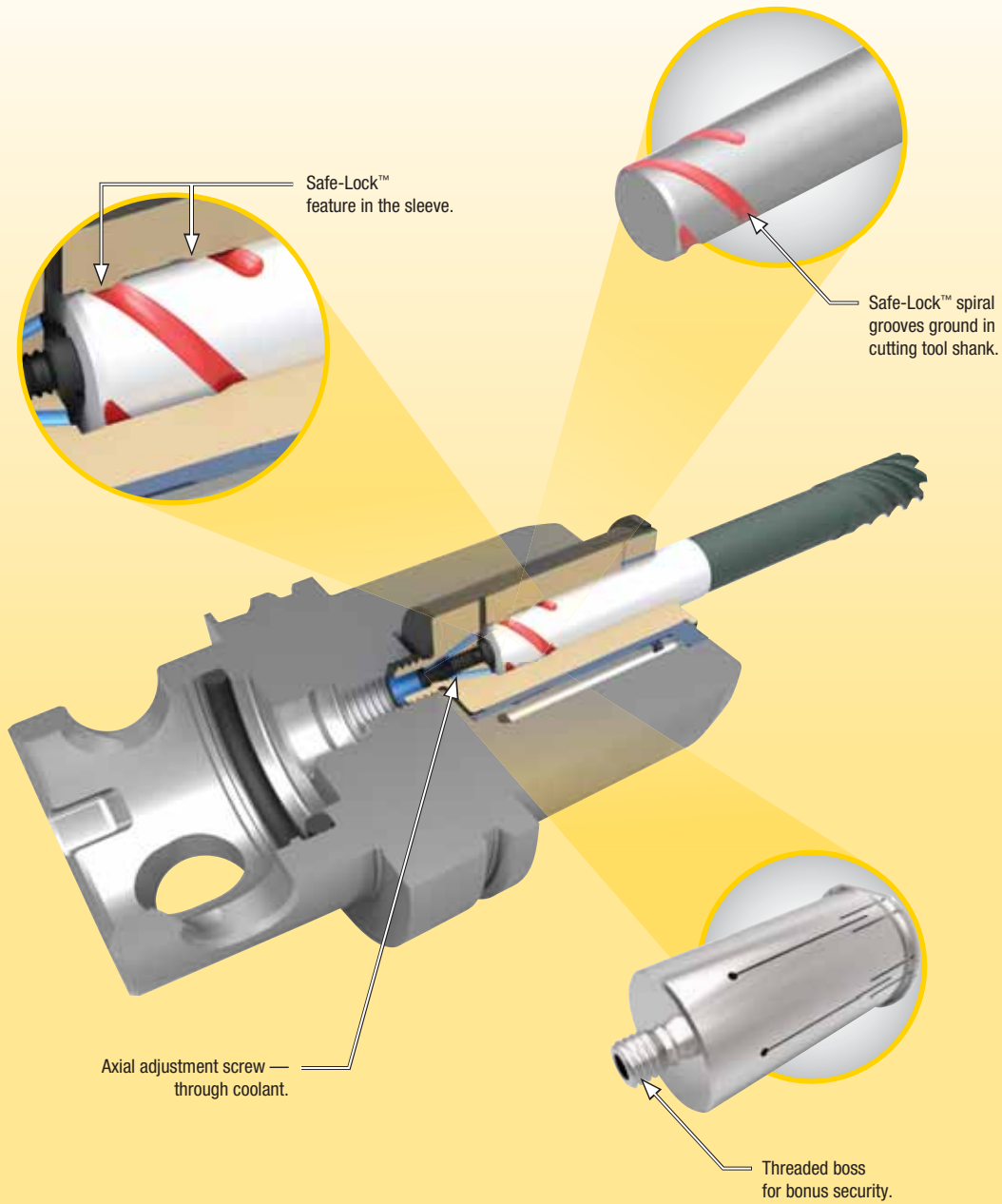
By locking the cutting tool in the Safe-Lock™ Smart Coolant reducer sleeve, the pullout security ensures optimum process reliability in conjunction with the HydroForce™ HT, which has benefits such as runout accuracy, excellent torque, and a unique dampening property. This makes for longer tool life, higher productivity, and excellent part accuracy for our customers.

- Optimum process reliability and security.
- Higher productivity.
- Greater cutting depths and higher feed rates.
- Time-saving and longer cutting tool life.
- Less vibration.
- Optimizes the cutting edge technology.
- Able to fully utilize potential of machine tool.
- Minimizes potential scrap.
- High accuracy clamping.
- Excellent runout.
- Helical grooves.
- Adjustable clamping length.
- No need to change NC program after regrinding.

### ■ HydroForce – Conversion from Standard to Safe-Lock™

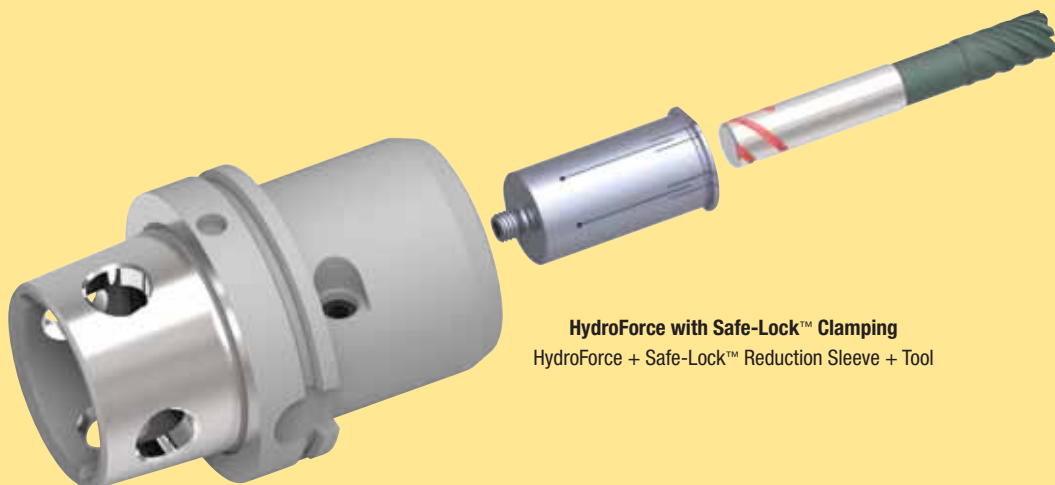
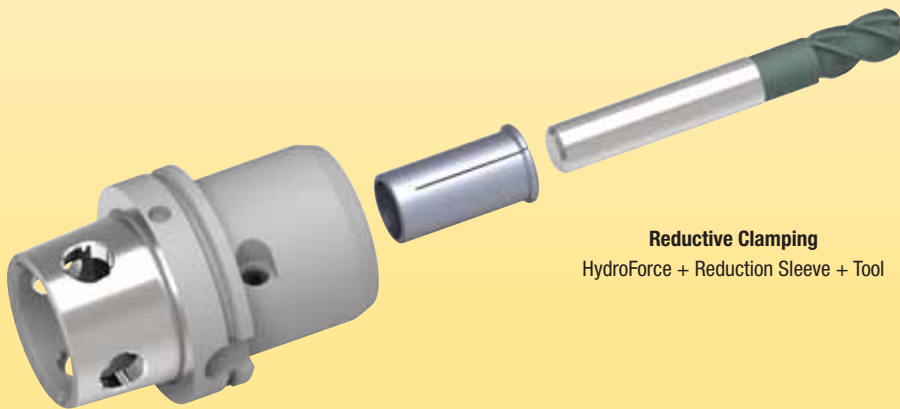
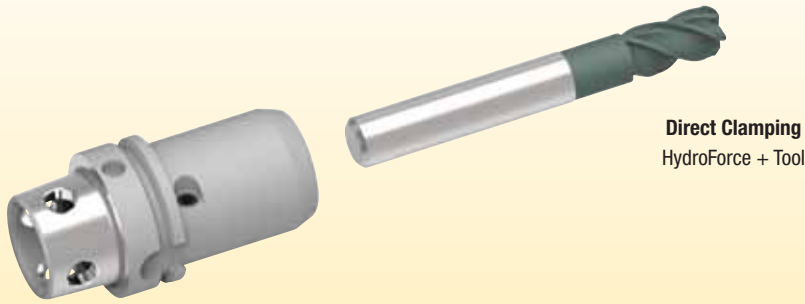


■ Product Construction and Assembly





■ Clamping Combinations with HydroForce™



# ➤ ERICKSON™ NG Induction Shrink Fit Unit

A complete Shrink Fit unit to fully support your thermo-tool needs!

- High-performance shrink fit machine for all tools.
- With intelligent new generation coil.
- With integrated contact cooling system.

## Features and Benefits

- Tool exchanges in 3–5 seconds.
- Complete tool cooling in 30 seconds.
- Simultaneous shrinking and cooling in record time (3 stations).
- Reduction of tool assembly cost.
- Adaptable to multi-clamping.

### Delivery Includes:

- Intelligent NG coil VS32-h.
- Integrated contact cooling.
- Speed cooler.
- Cooling manager.
- Rotary table with 3 stations.
- 2 chuck supports for rotary table for your selection.
- Craning boxes.
- System cart.
- Inserts for system cart.
- TME Cooling System for safe handling.
  - 2 cooling adapters for Shrink Fit extensions.
  - 1 cooling body for Shrink Fit chucks.
- Protection gloves.
- Safe packaging.



**ERICKSON NG Induction Shrink Fit Unit comes complete, ready to work!**



### Enhanced Coil Technology

- Coil is flexible and adjustable by diameter.
- Coils can be set to the size of the diameter with one turn.
- Stop disks are no longer necessary.
- Chucks are only heated where it is intended.
- Intelligent coil to protect from overheating of the chuck.

Select the back ends of the holders you need to shrink and the pots you need will be included with your unit.

**Technical Details**

- Power: 13 kW
- Main voltage: 3 x 400–480 V, 16 A
- Tools: solid carbide and HSS from Ø 12–1.25"
- Maximum length of shrink fit chuck = 22.4"
- Dimensions W x D x H = 33.86" x 23.62" x 39"
- Weight 70 kg
- HD kit for diameters up to 50 mm/2"

**US Version**

- Order No. **5905657**
- Cat No. **TPWCNGNA**

**EU Version**

- Order No. **5906168**
- Cat No. **TPWCNGEU**



**Single-Hand Operation**

- Positioning of coil and starting of shrink process with one hand.

**Cooling Bodies for Rapid Cooling with TME Cooling System**

- Patented temperature control system with LED.
- Chucks remain dry.
- No rust.
- Hot spots always covered, no danger of injury.
- Hot parts need not to be taken into the hand.

**Rotary Table**

- Work fast and efficient.
- Heating and cooling at the same time on 3 stations.
- No idle periods.

**Tool Tray**

- For laying down cutting tools.
- Integrated in base plate.

**Craning Boxes**

- For accessories.
- Everything close at hand.

**Display**

- User-friendly operating panel.
- Clear, compact, and easy to handle.

**Drawer**

- Profiled inserts for accessories.
- Everything in its place.

**System Cart**

- For a clearly arranged and ergonomic work place.

**Your first choice for fast, reliable heating and cooling of your Shrink Fit tools.**



■ Shrink Fit Unit Complete

order number	catalog number	description
5905657	TTPWCNGNA	POWER CLAMP NEW GEN SHRINK FIT (UL and CSA approved) for North America
5906168	TTPWCNGEU	POWER CLAMP NEXT GEN SHRINK FIT (CE and FC approved) for Europe/ROW



Tooling Systems

Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)	Order No.	Catalog No.	Page(s)
1020977	MS1273	A54-57	1182008	TNGA334T0820 KY3500	A129	1724878	NG3047RK KC5010	A105	1817965	NG3M425RK KC5025	A106
1021419	MS1285	A54-57	1182009	TNGA434T KY3500	A129	1732924	MS1944	A40-43	1817970	NG4125RK KC5010	A106
1021593	FT8	B37, B39-40	1182875	SNG553T0820 KY3500	A132	1748698	NG3062RK KC5010	A105	1817972	NG4189LK KC5010	A107
1022315	TT15	B37-40	1182877	SNG322T0820 KY3500	A132	1762299	NG3062LK KC5010	A107	1817975	NG2047LK KC5025	A106
1022493	DT15	E140, E143	1182878	SNG432T0820 KY3500	A132	1762381	NG3125RK KC5010	A105	1817977	NG2047RK KC5010	A105
1022519	TT25	B37-40	1182879	SNG433T0820 KY3500	A132	1764146	NG4250LK KC5010	A107	1817979	NG2047RK KC5025	A105
1022521	TT30	B37-40	1182880	SNG434T0820 KY3500	A132	1764148	NG4250LK KC5025	A107	1817993	NG4189LK KC5025	A107
1023315	S458	E7, E102, E111, E117, E122, E127, E140, E143	1182881	SNG436T0820 KY3500	A132	1771602	NG3125RK KT315	A105	1817994	NG4189RK KC5025	A106
1094300	MS1595	A36-43, A48-49, A51-52, A54-57	1182882	SNG438T0820 KY3500	A132	1775033	NG3125RK KC5025	A105	1818000	NG4250RK KC5010	A106
1099645	MS1160	A36-47, A54-59	1182883	SNG453T0820 KY3500	A132	1775034	NG3125LK KC5010	A107	1818001	NG4250RK KC5025	A106
1099651	FT10	B37, B39-40	1182884	SNG454T0820 KY3500	A132	1775035	NG3125LK KC5025	A107	1818005	NG2062LK KC5010	A106
1106668	MS1970	A36-43, A48-53	1182886	SNG634T0820 KY3500	A132	1775036	NG3047RK KC5025	A105	1818006	NG2062LK KC5025	A106
1124104	MS1163	A69-72, A74-75, A77-78	1183232	TNG332T0820 KY3500	A133	1775037	NG3062RK KC5025	A105	1818007	NG2062RK KC5010	A105
1127019	MS1162	A54-59, A69-74, A76-78	1183234	TNG432T0820 KY3500	A133	1785086	NG2M300RK KC5025	A105	1818008	NG2062RK KC5025	A105
1132523	191.916	A44-47	1183236	TNG434T0820 KY3500	A133	1785501	NG2M300LK KC5025	A106	1818009	NG2094LK KC5010	A106
1136633	121.616	A111	1183237	TPG322T0820 KY3500	A135	1787513	WNGX453T0820 KY3500	A133	1818010	NG2094LK KC5025	A106
1138307	170.003	A111	1183238	TPG323T0820 KY3500	A135	1794406	NG3M225RK KC5025	A105	1818011	NG2094RK KC5010	A105
1138438	170.025	E100-102, E108-111, E117, E122, E127	1183239	TPG432T0820 KY3500	A135	1801017	NG3M400LK KC5025	A107	1818037	NG2094RK KC5025	A105
1156247	ADKT2328PDER5GB KC725M	E45	1183428	CNG554T0820 KY3500	A130	1808487	NG2031RK KC5010	A105	1818039	NG2125LK KC5010	A106
1180737	TPG433T0820 KY3500	A135	1183433	ENG453T0820 KY3500	A131	1808488	NG4189RK KC5010	A106	1818041	NG2125LK KC5025	A106
1180917	SDET43PDR8GB KC725M	E42	1183435	CNG432T0820 KY3500	A130	1817618	NG3189RK KC5025	A106	1818042	NG2125RK KC5010	A105
1181980	DNGA442T0820 KY3500	A129	1183436	CNG433T0820 KY3500	A130	1817619	NG3M100LK KC5025	A106	1818050	NG4M400RK KC5010	A106
1181981	DNGA444T0820 KY3500	A129	1183437	CNG434T0820 KY3500	A130	1817620	NG3M100RK KC5025	A105	1818051	NG4M400RK KC5025	A106
1181982	SNGA643T0820 KY3500	A129	1183439	CNG453T0820 KY3500	A130	1817623	NG3M120LK KC5025	A107	1818052	NG4M450LK KC5025	A107
1181983	SNGA644T0820 KY3500	A129	1183553	DNGX120708T02020 KY3500	A134	1817626	NG3M120RK KC5025	A105	1818054	NG4M500LK KC5010	A107
1181984	TNGA332T0820 KY3500	A129	1183554	DNGX120712T02020 KY3500	A134	1817627	NG3M150LK KC5025	A107	1818060	NG4M500RK KC5025	A106
1181985	TNGA333T0820 KY3500	A129	1183555	DNGX120716T02020 KY3500	A134	1817629	NG3M150RK KC5025	A105	1818073	NG2125RK KC5025	A105
1181986	WNGA432T0820 KY3500	A130	1183556	SNGX452T0820 KY3500	A132	1817630	NG3M175LK KC5025	A107	1818075	NG2M080LK KC5025	A106
1181987	WNGA433T0820 KY3500	A130	1183557	SNGX453T0820 KY3500	A132	1817631	NG3M175RK KC5025	A105	1818077	NG2M080RK KC5025	A105
1181988	WNGA434T0820 KY3500	A130	1183558	SNGX454T0820 KY3500	A132	1817632	NG3M200LK KC5025	A107	1818078	NG2M100LK KC5010	A106
1181989	CNGA432T0820 KY3500	A128	1183560	RNG65T0820 KY3500	A132	1817635	NG3M200RK KC5025	A105	1818079	NG2M100LK KC5025	A106
1181990	CNGA433T0820 KY3500	A128	1183562	DNGX452T0820 KY3500	A134	1817636	NG3M220LK KC5025	A107	1818080	NG2M100RK KC5010	A105
1181991	CNGA434T0820 KY3500	A128	1183563	DNGX453T0820 KY3500	A134	1817637	NG3M220RK KC5025	A105	1818081	NG2M100RK KC5025	A105
1181992	CNGA543T0820 KY3500	A128	1183564	DNGX454T0820 KY3500	A134	1817640	NG3M225RK KC5010	A105	1818082	NG2M120LK KC5010	A106
1181993	CNGA544T0820 KY3500	A128	1183567	ENGX454T0820 KY3500	A131	1817675	NG3M250LK KC5025	A107	1818083	NG2M120LK KC5025	A106
1181994	CNGA643T0820 KY3500	A128	1183572	SNGX556T0820 KY3500	A132	1817676	NG3M250RK KC5025	A105	1818094	NG2M120RK KC5010	A105
1181995	CNGA644T0820 KY3500	A128	1183574	RNG43T0820 KY3500	A132	1817678	NG3M275LK KC5025	A107	1818095	NG2M120RK KC5025	A105
1181996	SNGA432T0820 KY3500	A129	1183575	RNG45T0820 KY3500	A132	1817679	NG3M275RK KC5010	A105	1818097	NG2M140LK KC5025	A106
1181997	SNGA433T0820 KY3500	A129	1186677	SNGX554T0820 KY3500	A132	1817680	NG3M275RK KC5025	A105	1818098	NG2M140RK KC5010	A105
1181998	SNGA434T0820 KY3500	A129	1329168	S424	E7, E111, E117	1817681	NG3M300LK KC5010	A107	1818099	NG2M140RK KC5025	A105
1181999	SNGA543T KY3500	A129	1535836	SDET433PDR8GB KC725M	E42	1817682	NG3M300LK KC5025	A107	1818366	NG2M300RK KC5010	A105
1182000	SNGA544T KY3500	A129	1536224	SDET43PDR8GB KC520M	E42	1817703	NG3M300RK KC5010	A105	1818368	NG2M325RK KC5025	A105
1182002	DNGA432T0820 KY3500	A129	1566361	ADKT2328PDER5GB KC520M	E45	1817704	NG3M300RK KC5025	A105	1818369	NG3047LK KC5010	A107
1182003	DNGA433T0820 KY3500	A129	1566362	ADKT2328PDER5GB KC525M	E45	1817705	NG3M320LK KC5025	A107	1818370	NG3047LK KC5025	A107
1182004	DNGA434T0820 KY3500	A129	1566365	ADKT2328PDER5GB KC520M	E45	1817706	NG3M320RK KC5025	A105	1818371	NG3062LK KC5025	A107
1182005	DNGA443T0820 KY3500	A129	1566366	ADKT2328PDER5GB KC525M	E45	1817707	NG3M325LK KC5025	A107	1818372	NG3072LK KC5010	A107
1182006	VNGA332T0820 KY3500	A128	1596127	ADKT2328PDR5GB KC520M	E45	1817708	NG3M325RK KC5025	A106	1818455	NG2M170LK KC5010	A106
			1596157	ADKT2328PDR5GB KC725M	E45	1817709	NG3M350LK KC5025	A107	1818456	NG2M170LK KC5025	A106
			1612009	RCGT86ELF KC725M	E44	1817710	NG3M350RK KC5025	A106	1818457	NG2M170RK KC5010	A105
			1621087	MS2002	A69-74, A76-78	1817713	NG2031LK KC5010	A106	1818461	NG2M170RK KC5025	A105
			1712730	NG2M150LK KC5025	A106	1817718	NG2031LK KC5025	A106	1818474	NG2M175LK KC5025	A106
			1712734	NG2M150RK KC5025	A105	1817719	NG2031RK KC5025	A105	1818476	NG2M195LK KC5010	A106
			1723607	NG3094RK KC5010	A105	1817722	NG2047LK KC5010	A106	1818479	NG2M195RK KC5010	A105
						1817740	NG3M400RK KC5010	A106	1818480	NG2M195RK KC5025	A105
						1817741	NG3M400RK KC5025	A106	1818482	NG2M200LK KC5010	A106





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1818483	NG2M200LK KC5025	A106	1855506	NG2094RK KT315	A105	2250684	KTIP0492R5SS056	B5	2270973	RCGT86SHF KC725M	E44
1818484	NG2M200RK KC5010	A105	1855508	NG2125RK KT315	A105	2250685	KTIP0512R5SS056	B5	2271064	EP1816E KC725M	E26
1818485	NG2M200RK KC5025	A105	1855515	NG3M350RK KT315	A106	2250686	KTIP0532R5SS056	B5	2271067	EP1816E KC522M	E26
1818487	NG2M220RK KC5025	A105	1855556	NG2M200RK KT315	A105	2250687	KTIP0551R5SS056	B5	2271068	EP1816E KC520M	E26
1818489	NG2M225LK KC5025	A106	1855576	NG3062RK KT315	A105	2250688	KTIP0571R5SS063	B5	2271071	EP1816E KCPK30	E26
1818490	NG2M225RK KC5010	A105	1855577	NG3094LK KT315	A107	2250689	KTIP0591R5SS063	B5	2271072	EP1832E KC725M	E26
1818491	NG2M225RK KC5025	A105	1855578	NG3094RK KT315	A105	2250690	KTIP0630R5SS069	B5	2271097	EP1824E KC725M	E26
1818492	NG2M250LK KC5025	A106	1866310	CNMX453T0820 KY3500	A131	2250704	KTIP0313R3SS038	B5	2271115	EP1832E KC522M	E26
1818493	NG2M250RK KC5025	A105	1866311	CNMX454T0820 KY3500	A131	2250705	KTIP0335R3SS038	B5	2271116	EP1832E KC520M	E26
1818494	NG2M275LK KC5010	A106	1866356	SNMX453T0820 KY3500	A133	2250706	KTIP0354R3SS038	B5	2271118	EP1832E KCPK30	E26
1818497	NG2M275RK KC5025	A105	1866357	SNMX454T0820 KY3500	A133	2250707	KTIP0374R3SS038	B5	2271119	EP1808E KC725M	E26
1818498	NG2M300LK KC5010	A106	1866358	SNMX554T0820 KY3500	A133	2250708	KTIP0374R3SS044	B5	2271120	EP1808E KC525M	E26
1818503	NG3072LK KC5025	A107	1882046	CNMX452T0820 KY3500	A131	2250709	KTIP0394R3SS044	B5	2271122	EP1808E KC520M	E26
1818504	NG3072RK KC5010	A105	1884629	420.241	E122, E127	2250710	KTIP0413R3SS044	B5	2271135	EP1808E KCPK30	E26
1818505	NG3072RK KC5025	A105	1884630	470.240	E122, E127	2250711	KTIP0433R3SS044	B5	2271155	EP1864E KC725M	E26
1818506	NG3078LK KC5010	A107	1884631	470.241	E122, E127	2250712	KTIP0453R3SS050	B5	2271157	EP1864E KC522M	E26
1818507	NG3078LK KC5025	A107	1884632	470.242	E127	2250723	KTIP0472R3SS050	B5	2271158	EP1864E KCPK30	E26
1818508	NG3078RK KC5010	A105	1931147	MS2091	A36-43	2250724	KTIP0492R3SS050	B5	2271159	EP1812E KC725M	E26
1818509	NG3078RK KC5025	A105	2008288	12748601000 W	E16	2250725	KTIP0492R3SS056	B5	2273388	EP1848E KC725M	E26
1818766	NG3094LK KC5010	A107	2029553	12148044900	E16	2250726	KTIP0512R3SS056	B5	2273390	EP1848E KC522M	E26
1818768	NG3094LK KC5025	A107	2035688	OFPT64AFSNGHB KC725M	E35	2250727	KTIP0532R3SS056	B5	2383555	SDCT431PDER8LD2 KC725M	E41
1818769	NG3094RK KC5025	A105	2047698	OFPT64AFSNGHB KC522M	E35	2250728	KTIP0551R3SS056	B5	2383558	SDCT433PDER8LD2 KC725M	E41
1818891	NG3156LK KC5010	A107	2209971	ADKT2328PDER5GB KCPK30	E45	2250729	KTIP0571R3SS063	B5	2383560	SDCT434ENLD2 KC725M	E41
1818892	NG3156LK KC5025	A107	2209972	ADKT2328PDR5GB KCPK30	E45	2250730	KTIP0591R3SS063	B5	2383561	SDCT435ENLD2 KC725M	E41
1818913	NG3156RK KC5010	A106	2210095	SDET43PDR8GB KCPK30	E42	2250731	KTIP0630R3SS069	B5	2383562	SDCT436ENLD2 KC725M	E41
1818914	NG3156RK KC5025	A106	2210766	OFPT64AFSNGHB KCPK30	E35	2258040	KTIP080R5SS10M	B4	2383583	SDCT438ENLD2 KC725M	E41
1818919	NG3189LK KC5010	A107	2212773	OFKT64AFSNGHB KC522M	E34	2258041	KTIP100R5SS12M	B4	2390253	SDCT43PDER8LD2 KC725M	E41
1818920	NG3189LK KC5025	A107	2216894	ADCT2328PDER5LD KC725M	E45	2258042	KTIP120R5SS14M	B4	2390281	SDET43PDEL8GB2 KC520M	E43
1818921	NG3189RK KC5010	A106	2221945	OFPT64AFSNGHB KCK15	E35	2258053	KTIP160R5SS18M	B4	2390282	SDET43PDEL8GB2 KCK15	E43
1823871	MS1982	A59	2227374	OFKT64AFEN6GB KC520M	E34	2259958	170.306	B4-5	2390283	SDET43PDEL8GB2 KCPK30	E43
1826709	S445	E7, E102, E111, E117, E122, E127, E140, E143	2227376	OFKT64AFSNGHB KCK15	E34	2259959	170.307	B4-5	2390284	SDET43PDEL8GB2 KC725M	E43
1833500	SPHX1205PCERGNT1WB KB1340	A124	2227380	OFKT64AFSNGHB KC520M	E34	2259960	170.308	B4-5	2390285	SDET43PDER8GB2 KC520M	E43
1833501	SPHX1205ZCERGNT1W KB1340	A124	2229377	ADCT2328PDR5LD KC725M	E45	2259961	170.309	B4-5	2390286	SDET43PDER8GB2 KCK15	E43
1845775	470.243	E127	2229379	ADCT2328PDR5LD KC522M	E45	2263299	MS1490	A36-39, A41-43, A49-50, A52-53	2390287	SDET43PDER8GB2 KCPK30	E43
1845807	420.201	E122, E127	2229380	ADCT2328PDR5LD KCPK30	E45	2268303	KTIP080R3SS10M	B4	2390288	SDET43PDER8GB2 KC725M	E43
1847935	CNGA433T0420FW KY3500	A128	2229381	ADCT2328PDR5LD KC410M	E45	2268304	KTIP085R3SS10M	B4	2390289	SDET43PDR8GB2 KC520M	E43
1851263	CNGA432T0420FW KY3500	A128	2229412	OFKT64AFSNGHB KCPK30	E34	2268305	KTIP090R3SS10M	B4	2390290	SDET43PDR8GB2 KCK15	E43
1851264	CNGA434T0420FW KY3500	A128	2229415	ADCT2328PDR5LD KC725M	E45	2268306	KTIP095R3SS10M	B4	2390291	SDET43PDR8GB2 KCPK30	E43
1851265	WNGA432T0420FW KY3500	A130	2229416	ADCT2328PDR5LD KC725M	E45	2268307	KTIP100R3SS12M	B4	2390292	SDET43PDR8GB2 KC725M	E43
1851266	WNGA433T0420FW KY3500	A130	2229418	ADCT2328PDR5LD KC725M	E45	2268308	KTIP105R3SS12M	B4	2390293	SDET433PDEL8GB2 KC520M	E43
1851268	CNGX452T0420FW KY3500	A131	2229419	ADCT2328PDR5LD KC725M	E45	2268309	KTIP110R3SS12M	B4	2390294	SDET433PDEL8GB2 KCK15	E43
1851269	CNGX453T0420FW KY3500	A131	2229420	ADCT2328PDR5LD KC725M	E45	2268310	KTIP115R3SS12M	B4	2390296	SDET433PDEL8GB2 KC725M	E43
1851270	CNGX454T0420FW KY3500	A131	2229422	ADCT2328PDR5LD KC725M	E45	2268311	KTIP120R3SS14M	B4	2390297	SDET433PDR8GB2 KC520M	E43
1851274	SNGX453T0420FW KY3500	A133	2229543	OFKT64AFEN6GB KC522M	E34	2268312	KTIP125R3SS14M	B4	2390298	SDET433PDR8GB2 KCK15	E43
1851278	WNGX452T0820 KY3500	A133	2234423	OFKT64AFEN6GB KCPK30	E34	2268313	KTIP130R3SS14M	B4	2390299	SDET433PDR8GB2 KCPK30	E43
1851304	SGG332FW KY3500	A135	2250674	KTIP0335R5SS038	B5	2268314	KTIP135R3SS14M	B4	2390300	SDET433PDR8GB2 KC725M	E43
1855439	NG3M200RK KT315	A105	2250675	KTIP0354R5SS038	B5	2268315	KTIP140R3SS16M	B4	2402283	KTIP085R5SS10M	B4
1855476	NG2031RK KT315	A105	2250676	KTIP0374R5SS038	B5	2268316	KTIP145R3SS16M	B4	2402284	KTIP090R5SS10M	B4
1855479	NG2047RK KT315	A105	2250677	KTIP0374R5SS044	B5	2268317	KTIP150R3SS16M	B4	2402285	KTIP095R5SS10M	B4
1855484	NG3M250RK KT315	A105	2250678	KTIP0394R5SS044	B5	2268318	KTIP150R3SS16M	B4	2402286	KTIP105R5SS12M	B4
1855504	NG2062RK KT315	A105	2250679	KTIP0413R5SS044	B5	2268318	KTIP160R3SS18M	B4	2402287	KTIP110R5SS12M	B4
			2250680	KTIP0433R5SS044	B5	2269611	KTIP0313R5SS038	B5	2402288	KTIP115R5SS12M	B4
			2250681	KTIP0453R5SS050	B5	2269913	DT9IP	E4-7	2402289	KTIP125R5SS14M	B4
			2250682	KTIP0472R5SS050	B5	2270351	114.305	A111	2402290	KTIP130R5SS14M	B4
			2250683	KTIP0492R5SS050	B5	2270901	RCGT86SHF KCPK30	E44	2402291	KTIP135R5SS14M	B4



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2402293	KTIP145R5SS16M	B4	2509328	EP1808S KCK15	E27				2984773	EC1416EGD KC725M	E24
2402294	KTIP150R5SS16M	B4	2509387	EP1816S KC725M	E27	2658422	A4G0600M06P08T01025 KY3500	A136	3017663	KTIP170R3SS18M	B4
2405384	SDPT43PDER8GB2 KC725M	E43	2509388	EP1816S KCPK30	E27				3017664	KTIP180R3SS20M	B4
2405385	SDPT43PDER8GB2 KCK15	E43	2509389	EP1816S KCK15	E27	2659233	A4G0800M08P08T01025 KY3500	A136	3017665	KTIP190R3SS20M	B4
2405386	SDPT43PDER8GB2 KCPK30	E43	2509408	EP1832S KC725M	E27				3017666	KTIP200R3SS25M	B4
2405387	SDPT43PDSR8GB2 KC725M	E43	2509410	EP1832S KCPK30	E27	2659234	A4G125I03P1T0425 KY3500	A136	3017671	KTIP170R5SS18M	B4
2405388	SDPT43PDSR8GB2 KCK15	E43	2520268	KTIP0313R8SS038	B5	2659235	A4G187I04P2T0425 KY3500	A136	3017672	KTIP180R5SS20M	B4
2405389	SDPT43PDSR8GB2 KCPK30	E43	2520269	KTIP0335R8SS038	B5	2659236	A4G250I06P2T0425 KY3500	A136	3017673	KTIP190R5SS20M	B4
2412903	RCGT86ELF KCPK30	E44	2520271	KTIP0354R8SS038	B5	2659238	A4R0300M03P00T01025 KY3500	A136	3017674	KTIP200R5SS25M	B4
2426876	SDET43PDSL8GB2 KC520M	E43	2520272	KTIP0374R8SS038	B5				3018928	KTIP0669R3SS069	B5
2426877	SDET43PDSL8GB2 KCK15	E43	2520283	KTIP0374R8SS044	B5	2659240	A4R0600M06P00T01025 KY3500	A136	3018929	KTIP0709R3SS075	B5
2426878	SDET43PDSL8GB2 KCPK30	E43	2520284	KTIP0394R8SS044	B5				3018930	KTIP0748R3SS075	B5
2426879	SDET43PDSL8GB2 KC725M	E43	2520285	KTIP0413R8SS044	B5	2659241	A4R0800M08P00T01025 KY3500	A136	3018931	KTIP0787R3SS081	B5
2434886	RCGT64ELF KC725M	E44	2520286	KTIP0433R8SS044	B5				3018932	KTIP0669R5SS069	B5
2440526	KTIP085R8SS10M	B4	2520287	KTIP0453R8SS050	B5	2659242	A4R125I03P00T0425 KY3500	A136	3018933	KTIP0709R5SS075	B5
2440527	KTIP160R8SS18M	B4	2520288	KTIP0492R8SS050	B5	2659243	A4R187I04P00T0425 KY3500	A136	3018934	KTIP0748R5SS075	B5
2442348	RCGT64SHF KCPK30	E44	2520289	KTIP0492R8SS056	B5	2659244	A4R250I06P00T0425 KY3500	A136	3018935	KTIP0787R5SS081	B5
2443608	KTIP0472R8SS050	B5	2520290	KTIP0512R8SS056	B5	2877454	EP1808EHD KC725M	E26	3023165	EP1848EHD KC725M	E26
2452135	OFKT64AFEN6GB KC725M	E34	2520291	KTIP0532R8SS056	B5	2877455	EP1808EHD KCPK30	E26	3023166	EP1848EHD KCPK30	E26
2452136	OFKT64AFSN6HB KC725M	E34	2520292	KTIP0551R8SS056	B5	2877456	EP1812EHD KC725M	E26	3032732	EP1412EHD KC520M	E24
2453686	OFPT53AFSN4HB KC725M	E33	2520293	KTIP0571R8SS063	B5	2877457	EP1812EHD KCPK30	E26	3033024	KTIP0669R8SS069	B5
2453687	OFKT53AFEN4GB KC725M	E32	2520294	KTIP0591R8SS063	B5	2877458	EP1816EHD KC725M	E26	3033025	KTIP0709R8SS075	B5
2453688	OFKT53AFSN4HB KC725M	E33	2520295	KTIP0630R8SS069	B5	2877459	EP1816EHD KCPK30	E26	3033026	KTIP0748R8SS075	B5
2455430	A4R0500M05P00T01025 KY3500	A136	2544413	SDCT43PDER8LD2 KC520M	E41	2877460	EP1832EHD KC725M	E26	3033027	KTIP0787R8SS081	B5
2455802	OFPT53AFSN4HB KCK15	E33	2545095	OFKT64AFEN6LB KCPK30	E34	2877461	EP1832EHD KCPK30	E26	3033723	EP1412EHD KC522M	E24
2455814	OFKT53AFEN4GB KCK15	E32	2545097	OFKT64AFSN6LB KCPK30	E34	2886972	SDET438XENGB2 KC725M	E43	3033724	EP1412EHD KC725M	E24
2455818	OFPT53AFSN4HB KCPK30	E33	2548776	KTIP080R8SS10M	B4	2889261	SDCT438ENLD2 KC522M	E41	3033725	EP1412EHD KCK15	E24
2455819	OFKT53AFEN4GB KCPK30	E32	2548777	KTIP090R8SS10M	B4	2956333	VNGX353T0820 KY3500	A134	3033726	EP1412EHD KCPK30	E24
2455820	OFKT53AFSN4HB KCPK30	E33	2548778	KTIP095R8SS10M	B4	2956334	VNGX354T0820 KY3500	A134	3033727	EP1408EHD KC520M	E24
2455822	OFPT53AFSN4HB KC520M	E33	2548779	KTIP100R8SS12M	B4	2980526	EP1412SGD KCPK30	E25	3033728	EP1408EHD KC522M	E24
2455854	OFKT53AFEN4GB KC520M	E32	2548780	KTIP105R8SS12M	B4	2980527	EP1412SGD KC520M	E25	3033729	EP1408EHD KC725M	E24
2458790	OFKT53AFEN4GB KC522M	E32	2548781	KTIP110R8SS12M	B4	2980530	EP1408SGD KC520M	E25	3033730	EP1408EHD KCK15	E24
2458791	OFKT53AFSN4HB KC522M	E33	2548782	KTIP115R8SS12M	B4	2980531	EP1408SGD KCPK30	E25	3033731	EP1408EHD KCPK30	E24
2458914	SDET434SNGB2 KCPK30	E43	2548913	KTIP120R8SS14M	B4	2980568	EP1412SGD KC725M	E25	3033750	EP1416EHD KC520M	E24
2458915	SDET434SNGB2 KC725M	E43	2548914	KTIP125R8SS14M	B4	2981644	EP1408SGD KC725M	E25	3033751	EP1416EHD KC522M	E24
2458916	SDET434SNGB2 KCK15	E43	2548915	KTIP130R8SS14M	B4	2982018	OFKT64AFSN6LB KC725M	E34	3033752	EP1416EHD KC725M	E24
2458917	SDET434SNGB2 KC520M	E43	2548916	KTIP135R8SS14M	B4	2982019	OFKT64AFEN6LB KC725M	E34	3033953	EP1416EHD KCK15	E24
2458918	SDET435SNGB2 KCPK30	E43	2548917	KTIP140R8SS16M	B4	2982020	OFKT53AFSN6LB KC725M	E32	3033954	EP1416EHD KCPK30	E24
2458919	SDET435SNGB2 KC725M	E43	2548918	KTIP145R8SS16M	B4	2982021	OFKT53AFEN6LB KC725M	E32	3045801	S467	E7
2458920	SDET435SNGB2 KCK15	E43	2548919	KTIP150R8SS16M	B4	2982065	OFKT64AFEN6LB KC522M	E34	3051244	EP1420EHD KC522M	E24
2458921	SDET435SNGB2 KC520M	E43	2549979	OFPT64AFSN6HB KC520M	E35	2982066	OFKT64AFEN6LB KC520M	E34	3051245	EP1420EHD KC725M	E24
2458922	SDET436SNGB2 KCPK30	E43	2605981	RCGT64ELF KC522M	E44	2982067	OFKT64AFEN6LB KCK15	E34	3051246	EP1420EHD KCPK30	E24
2458923	SDET436SNGB2 KC725M	E43	2605982	RCGT64ELF KCPK30	E44	2982069	OFKT53AFSN6LB KC522M	E32	3051247	EP1431EHD KC522M	E24
2458933	SDET436SNGB2 KCK15	E43	2606186	RCGT64SHF KC725M	E44	2982070	OFKT53AFSN6LB KC520M	E32	3051248	EP1431EHD KC725M	E24
2458934	SDET436SNGB2 KCPK30	E43	2606479	RCGT86ELF KC522M	E44	2982072	OFKT53AFSN6LB KCPK30	E32	3051249	EP1431EHD KCPK30	E24
2458935	SDET436SNGB2 KC520M	E43	2618743	170.314	B4-5	2982077	EP1416SGD KC725M	E25	3051250	EP1440EHD KC522M	E24
2458936	SDET438SNGB2 KCPK30	E43	2636819	S2162C	E122, E127	2982084	OFKT53AFEN6LB KC522M	E32	3051251	EP1440EHD KC725M	E24
2458937	SDET438SNGB2 KC725M	E43	2636820	S2163C	E111, E117, E143	2982086	OFKT53AFEN6LB KCK15	E32	3051252	EP1440EHD KCPK30	E24
2458938	SDET438SNGB2 KCK15	E43	2636822	S445CG	E122, E127	2982087	OFKT53AFEN6LB KCPK30	E32	3051549	EP1424EHD KC522M	E24
2458939	SDET438SNGB2 KC520M	E43	2636823	S458CG	E122, E127	2982090	EP1416SGD KC520M	E25	3051550	EP1424EHD KC725M	E24
2460124	EP1812S KC725M	E27	2658419	A4G0300M03P04T01025 KY3500	A136	2982091	EP1416SGD KCPK30	E25	3051551	EP1424EHD KCPK30	E24
2460125	EP1812S KCPK30	E27				2983331	EC1408EGD KC725M	E24	3051552	EP1404EHD KC522M	E24
2460185	EP1812S KCK15	E27	2658420	A4G0400M04P04T01025 KY3500	A136	2983890	EC1404EGD KC725M	E24	3051863	EP1404EHD KC725M	E24
2509326	EP1808S KC725M	E27				2983891	EC1431EGD KC725M	E24	3051864	EP1404EHD KCK15	E24





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3051866	EP1404EHD KC520M	E24	3547022	XNGJ535ANSNGD3W KCK15	E40, E128	3682656	EC1012ELD KCPK30	E22	3763632	HNPJ535ANSNHD KC520M	E39, E124, E130
3093561	HNGJ535ANENLD KC522M	E39, E123, E129	3547033	XNGJ535ANSNGD3W KC725M	E40, E128	3682779	EC1016ELD KC520M	E22	3763723	HNPJ535ANSNHD KC725M	E39, E124, E130
3093719	HNGJ535ANSNGD KCPK30	E39, E123, E129	3547035	XNGJ535ANSNGD3W KCPK30	E40, E128	3682780	EC1016ELD KC522M	E22	3763724	HNPJ535ANSNHD KCPK30	E39, E124, E130
3114313	KTIP170R8SS18M	B4	3556330	HNGJ535ANSNHD KCK15	E40, E124, E129	3684826	EC1031ELD KC520M	E22	3763725	HNPJ535ANSNGD KCK15	E124, E130
3114314	KTIP180R8SS20M	B4	3556331	HNGJ535ANSNHD KC725M	E40, E124, E129	3684827	EC1031ELD KC522M	E22	3763726	HNPJ535ANSNGD KC520M	E124, E130
3114315	KTIP190R8SS20M	B4	3556332	HNGJ535ANSNHD KCPK30	E40, E124, E129	3684828	EC1031ELD KC725M	E22	3763727	HNPJ535ANSNGD KC725M	E124, E130
3114316	KTIP200R8SS25M	B4	3556373	HNGJ53511ANSNHD KCK15	E40, E124, E129	3684829	EC1031ELD KCPK30	E22	3763728	HNPJ535ANSNGD KCPK30	E124, E130
3121225	193.492	E100-102, E108-111, E117, E122, E127, E140, E143	3556374	HNGJ53511ANSNHD KC725M	E40, E124, E129	3733337	CNGA433S0420MT KB5630	A125	3763729	HNPJ53511ANSNHD KCK15	E39, E124, E130
3124468	EP1848S KC725M	E27	3556375	HNGJ53511ANSNHD KCPK30	E40, E124, E129	3733417	DNGA431S0425MT KB5630	A125	3763730	HNPJ53511ANSNHD KC725M	E39, E124, E130
3124699	EP1864S KC725M	E27	3560480	SDCT4316ENLD2 KC725M	E41	3734711	EP1010EHD KC522M	E22	3763731	HNPJ53511ANSNHD KCPK30	E39, E124, E130
3136330	EP1840EHD KCPK30	E26	3560482	SDET4316SNGB2 KCPK30	E43	3747113	EP1010EHD KC725M	E22	3763732	HNPJ53511ANSNHD KC725M	E39, E124, E130
3136510	EP1840EHD KC725M	E26	3637582	NG4M600RK KCK20	A106	3747114	EP1010EHD KCK15	E22	3763733	HNPJ53511ANSNHD KC725M	E39, E124, E130
3322370	CFM0402R45RHP KCU40	B10	3637596	NG4M600LK KCK20	A107	3747115	EP1010EHD KCPK30	E22	3763734	HNPJ53511ANSNHD KCK15	E39, E124, E130
3326850	KSHR200HN5345C3	E127	3641712	EP1008EHD KC522M	E22	3747124	KSHR250HN5345XC3	E127	3763735	HNPJ53511ANSNHD KCK15	E39, E124, E130
3326851	KSHR200HN5345M3	E127	3641734	EP1008EHD KC725M	E22	3747125	KSHR300HN5345XC4	E127	3763736	HNPJ53511ANSNHD KC725M	E39, E124, E130
3326852	KSHR250HN5345C3	E127	3641735	EP1008EHD KCK15	E22	3747126	KSHR400HN5345XC5	E127	3763737	HNPJ53511ANSNHD KC725M	E39, E124, E130
3326923	KSHR250HN5345M3	E127	3641736	EP1008EHD KCPK30	E22	3747127	KSHR500HN5345XC6	E127	3763738	HNPJ53511ANSNHD KCPK30	E39, E124, E130
3326924	KSHR300HN5345C4	E127	3641740	EP1004EHD KC522M	E22	3747128	KSHR600HN5345XC8	E127	3763739	HNPJ53511ANSNHD KC725M	E39, E124, E130
3326925	KSHR300HN5345M4	E127	3641741	EP1004EHD KC725M	E22	3747140	CNGA431S0425MT KB5630	A125	3764792	CNMA432S0820 KB1340	A124
3326926	KSHR400HN5345C5	E127	3641742	EP1004EHD KCK15	E22	3747141	CNGA432S0425MT KB5630	A125	3764833	CNMA433S0820 KB1340	A124
3326927	KSHR400HN5345M5	E127	3641783	EP1004EHD KCPK30	E22	3747142	CNGA433S0425MT KB5630	A125	3764834	CNM322S0820 KB1340	A119
3326928	KSHR500HN5345C6	E127	3642028	EP1012EHD KC522M	E22	3747223	CNGA431S0425PMMT KB5630	A125	3764836	CNM432S0820 KB1340	A119
3326929	KSHR500HN5345M6	E127	3642029	EP1012EHD KC725M	E22	3747224	CNGA432S0425PMMT KB5630	A125	3764837	CNM433S0820 KB1340	A119
3326930	KSHR600HN5345C8	E127	3642030	EP1012EHD KCK15	E22	3747225	DNGA432S0425MT KB5630	A125	3764838	DNMA332S0820 KB1340	A124
3326931	KSHR600HN5345M8	E127	3642031	EP1012EHD KCPK30	E22	3747226	VNGA331S0425MT KB5630	A126	3764839	DNMA333S0820 KB1340	A124
3330952	HNGJ535ANENLD KCK15	E39, E123, E129	3642093	EP1016EHD KC522M	E22	3747227	VNGA332S0425MT KB5630	A126	3764840	RNM32S0820 KB1340	A119
3331173	HNGJ535ANSNGD KCK15	E39, E123, E129	3642094	EP1016EHD KC725M	E22	3747231	COGW2150S0415C KB5630	A127	3764841	RNM42S0820 KB1340	A119
3331174	HNGJ535ANENLD KC520M	E39, E123, E129	3642096	EP1016EHD KCPK30	E22	3747232	COGW2151S0415C KB5630	A127	3764842	RNM43S0820 KB1340	A119
3331175	HNGJ535ANENLD KC725M	E39, E123, E129	3642097	EP1020EHD KC725M	E22	3747233	COGW3251S0415MT KB5630	A126	3764844	SNMA433S0820 KB1340	A124
3331176	HNGJ535ANSNGD KC725M	E39, E123, E129	3642098	EP1020EHD KCPK30	E22	3747234	COGW3252S0415MT KB5630	A126	3764845	SNM322S0820 KB1340	A120
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5876871	2CH0218L062A KC633M	D41	5876926	2CH1000R225B KC633M	D43	5939470	EVSML160416C	A37	5941708	EVBSN26J1B15	A60
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5876873	2CH0250R075A KC633M	D41	5876928	2CH1000X400B KC633M	D43	5939472	EVSML200426C	A37	5941710	EVBSN26M0230	A60
5876874	2CH0250L112A KC633M	D41	5879813	XNGJ43ANENLD3W KCPM40	E38,	5941056	EG0312M03U02GUP KCU25	A18	5941721	EVBSN26J0340	A60
5876875	2CH0250X150A KC633M	D41			E113	5941057	EG0312M03U04GUP KCU25	A18	5941722	EVBSN26M0340	A60
5876876	2CH0281R075A KC633M	D41	5879814	LNPU863ANSLHD2 KCPM40	E36,	5941058	EG0312M03U02GUN KCU25	A22	5941723	EVBSN26J0440	A60
5876877	2CH0312S050A KC633M	D41			E136	5941059	EG0312M03U04GUN KCU25	A22	5941724	EVBSN32M0250	A60
5876878	2CH0312R081A KC633M	D41	5879815	LNPU863ANSLHD2 KC520M	E36,	5941071	EG0412M04U04GUP KCU25	A18	5941725	EVBSN32M0350	A60
5876879	2CH0312L112A KC633M	D41			E136	5941072	EG0412M04U04GUN KCU25	A22	5941726	EVBSN32M0450	A60
5876880	2CH0312X162A KC633M	D41	5879816	LNPU863ANSLHD2 KCPK30	E36,	5941073	EC030M03N00CF02 KCU25	A24	5945156	T624NC#06-32RH3-DA KSP27	C7
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5876884	2CH0375L112A KC633M	D42	5905657	TTPWCNGNA	F11	5941077	EC040M04L06CF02 KCU25	A24	5945160	T624NC#10-24RH4-DA KSP27	C7
5876885	2CH0375X175A KC633M	D42	5906168	TTPWCNGEU	F11	5941078	EC040M04R06CF02 KCU25	A24	5945323	T625NC02500-20RH4-DA KSP27	C10
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5876917	2CH0562X225B KC633M	D42	5939461	EVSML120322C	A36	5941111	EG125I03P1GUP KCU25	A20	5945367	T624NC05000-13RH7-DA KSP27	C7
5876918	2CH0625L125B KC633M	D42	5939462	EVSML120316C	A36	5941112	EG187I04P1GUP KCU25	A20	5945368	T624NF05000-20RH5-DA KSP27	C7
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5953958	EVSMLR2525M0216	A38	5954286	A20QEVEML0307M	A57	5955463	EVSML120622C	A37	5967744	NG2031LK KCP10B	A106
5953959	EVSMLR2020K0222	A38	5954287	A25REVEML0310M	A57	5955464	EVSML160616C	A37	5967745	NG2031RK KCP10B	A105
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6097189	EVM50R0320A350999C	A63	6116580	EVSBL2525M0426100180C	A53	6117262	EVSBR160526075100C	A49	6123613	KTIP180R12SS20M	B4
6097190	EVM50L0312A035040C	A64	6116581	EVSBR2525M0426180250C	A51	6117263	EVSBL160526075100C	A50	6123614	KTIP190R12SS20M	B4
6097191	EVM50L0312A040050C	A64	6116582	EVSBL2525M0426180250C	A53	6117264	EVSBR160516100180C	A49	6123615	KTIP200R12SS25M	B4
6097192	EVM50L0312A050060C	A64	6116587	EVSBR2525M0416100180C	A51	6117265	EVSBL160516100180C	A50	6123616	KTIP210R12SS25M	B4
6097193	EVM50L0312A060075C	A64	6116588	EVSBL2525M0416100180C	A52	6117268	EVSBR160516180250C	A49	6123617	KTIP220R12SS25M	B4
6097194	EVM50L0320A075100C	A64	6116589	EVSBR2525M0416180250C	A51	6117269	EVSBL160516180250C	A50	6123618	KTIP230R12SS25M	B4
6097195	EVM50L0320A100180C	A64	6116590	EVSBL2525M0416180250C	A52	6117272	EVSBR160516250350C	A49	6123619	KTIP240R12SS25M	B4
6097196	EVM50L0320A180250C	A64	6116789	EVM50R0312A075100C	A63	6117273	EVSBL160516250350C	A50	6123620	KTIP250R12SS32M	B4
6097197	EVM50L0320A250350C	A64	6116790	EVM50L0312A075100C	A64	6117276	EVSBR160516350999C	A49	6123621	KTIP260R12SS32M	B4
6097198	EVM50L0320A350999C	A64	6117061	EVM50R0312B075100C	A66	6117277	EVSBL160516350999C	A50	6123622	KTIP270R12SS32M	B4
6102279	LNPU763PNSLHD2 KCPM40	E36, E136	6117062	EVM50L0312B075100C	A67	6117280	EVSBR200532100180C	A49	6123766	KTIP0313R12SS038	B5
6109122	SDCT4316ENLD2 KCSM40	E41	6117063	EVM50R0312A100180C	A63	6117281	EVSBL200532100180C	A50	6123767	KTIP0335R12SS038	B5
6109124	SDET4316SNGB KCSM40	E42	6117064	EVM50L0312A100180C	A64	6117282	EVSBR200532180250C	A49	6123768	KTIP0354R12SS038	B5
6109130	SDET436ENGB KCSM40	E42	6117065	EVM50R0312B100180C	A66	6117283	EVSBL200532180250C	A50	6123769	KTIP0945R12SS100	B5
6109265	SDET436SNGB KCSM40	E42	6117066	EVM50L0312B100180C	A67	6117284	EVSBR200532250350C	A49	6123770	KTIP0984R12SS100	B5
6111468	OFKT53AFEN4GB KCPM40	E32	6117067	EVM50R0312A180250C	A63	6117285	EVSBL200532250350C	A50	6123791	KTIP0787R12SS081	B5
			6117068	EVM50L0312A180250C	A64	6117286	EVSBR200532350999C	A49	6123792	KTIP0394R12SS044	B5



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6123794	KTIP0433R12SS044	B5	6124673	EVSBR2525M0616100180C	A52	6131606	LNGU432SRGEM KCPM40	E10	6139898	M4D062L1102C062L600	E6
6123795	KTIP0453R12SS050	B5	6124674	EVSBL2525M0616100180C	A53	6132022	LNGU432SRGE KC522M	E9, E29	6139899	M4D075L1103C075L600	E6
6123796	KTIP0472R12SS050	B5	6124677	EVSBR2525M0616180250C	A52	6132023	LNGU432SRGE KCPM40	E9, E29	6139900	M4D100L1104C100L700	E6
6123797	KTIP0492R12SS056	B5	6124678	EVSBL2525M0616180250C	A53	6132024	LNGU432SRGE KC725M	E9, E29	6139921	M4D125L1104C125L800	E6
6123798	KTIP0512R12SS056	B5	6124681	EVSBR2525M0616250350C	A52	6132025	LNGU432SRGE KCPK30	E9, E29	6139922	M4D150L1106S050L157	E7
6123799	KTIP0532R12SS056	B5	6124682	EVSBL2525M0616250350C	A53	6132026	LNGU432SRGE KCK15	E9, E29	6139923	M4D250L1107S100L157	E7
6123800	KTIP0551R12SS056	B5	6124685	EVSBR2525M0616350999C	A52	6134103	MILL16E300Z080N08W	E16	6139924	M4D300L1108S125L175	E7
6123801	KTIP0571R12SS063	B5	6124686	EVSBL2525M0616350999C	A53	6134104	MILL16E400Z100N08W	E16	6139928	M4D062L1102W062L100	E5, E13
6123802	KTIP0374R12SS044	B5	6124689	EVSBR3232P0632100180C	A52	6134105	MILL16E500Z140N08W	E16	6139929	M4D075L1102W075L110	E5, E13
6123803	KTIP0906R12SS094	B5	6124690	EVSBL3232P0632100180C	A53	6134106	MILL16E600Z160N08W	E16	6139930	M4D075L1103W075L110	E5, E13
6123804	KTIP0591R12SS063	B5	6124691	EVSBR3232P0632180250C	A52	6134107	MILL16E800Z200N08W	E16	6140051	M4D100L1103W100L175	E5, E13
6123805	KTIP0630R12SS069	B5	6124692	EVSBL3232P0632180250C	A53	6134108	MILL16E1000Z240N08W	E16	6140052	M4D125L1104W125L225	E5, E13
6123806	KTIP0669R12SS069	B5	6124693	EVSBR3232P0632250350C	A52	6135412	TWDLTMSSET	D22	6140053	M4D062L1102C062L400	E6, E13
6123807	KTIP0709R12SS075	B5	6124694	EVSBL3232P0632250350C	A53	6135413	TWDLTM	D22	6140054	M4D075L1103C075L400	E6, E13
6123808	KTIP0748R12SS075	B5	6124695	EVSBR3232P0632350999C	A52	6135414	TWTMINSERTDL10	D22	6140055	M4D075L1102C075L600	E6
6123809	KTIP1024R12SS125	B5	6124696	EVSBL3232P0632350999C	A53	6135415	TWTMINSERTDL12	D22	6140056	M4D100L1104C100L450	E6, E13
6123810	KTIP1063R12SS125	B5	6127885	EP1004SGE KCPM40	E23	6135416	TWTMINSERTDL16	D22	6140057	M4D100L1103C100L700	E6
6123811	KTIP0492R12SS050	B5	6127886	EP1008SGE KCPM40	E23	6135417	TWTMINSERTDL20	D22	6140058	M4D125L1105C125L500	E6, E13
6123812	KTIP0374R12SS038	B5	6127887	EP1012EHD KCPM40	E22	6135418	TWTMINSERTDL25	D22	6140059	M4D150L1105S050L157	E7, E13
6123813	KTIP0827R12SS088	B5	6127888	EP1016EHD KCPM40	E22	6135419	TWTMINSERTDL32	D22	6140060	M4D200L1105S075L157	E7, E13
6123814	KTIP0866R12SS088	B5	6127889	EP1020EHD KCPM40	E22	6135420	TWTMINSERTDL10W	D22	6140061	M4D200L1107S075L157	E7, E13
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6124199	EVSBL2525M0526050060C	A53	6131424	LNGU433SRGEM KCPK30	E10	6135422	TWTMEXT	D22	6140063	M4D300L1108S100L175	E7
6124200	EVSBR2525M0516060075C	A51	6131425	LNGU433SRGEM KC520M	E10	6135423	TWTMBC	D22	6140064	HNEC535ANSN KY3500	E130
6124211	EVSBL2525M0516060075C	A53	6131426	LNGU433SRGEM KCPM40	E10	6136874	SS062SLDL160250	D21	6140065	T839M030X050RD3-A KSP39	C28
6124212	EVSBR2525M0526060075C	A52	6131428	LNPU433SRGE KC522M	E10	6136876	SSSF075DL160325	D21	6140066	T839M035X060RD4-A KSP39	C28
6124213	EVSBL2525M0526060075C	A53	6131429	LNPU433SRGE KCPM40	E10	6136878	SS100SLDL160450	D21	6140067	T839M040X070RD4-A KSP39	C28
6124214	EVSBR2525M0516075100C	A52	6131430	LNPU433SRGE KC725M	E10	6136880	SSSF075DL200275	D21	6140068	T839M050X080RD4-A KSP39	C28
6124215	EVSBL2525M0516075100C	A53	6131502	LNPU432SRGE KC522M	E10	6136882	SS100SLDL200375	D21	6140069	T839M060X100RD5-A KSP39	C28
6124216	EVSBR2525M0526075100C	A52	6131503	LNPU432SRGE KCPM40	E10	6136884	SS100SLDL250300	D21	6140070	T839M070X100RD5-A KSP39	C28
6124217	EVSBL2525M0526075100C	A53	6131504	LNPU432SRGE KC725M	E10	6136886	SS125SLDL250425	D21	6140131	T839MF080X100RD5-A KSP39	C28
6124218	EVSBR2525M0516100180C	A52	6131505	LNPU432SRGE KCPK30	E10	6136888	SS125SLDL320350	D21	6140132	T839M080X125RD5-A KSP39	C28
6124219	EVSBL2525M0516100180C	A53	6131506	LNPU432SRGE KC520M	E10	6136890	SS150SLDL320550	D21	6140133	T839MF100X125RD5-A KSP39	C28
6124222	EVSBR2525M0516180250C	A52	6131507	LNPU432SRGE KCK15	E10	6136892	SS200SLDL320750	D21	6140134	T839M100X150RD6-A KSP39	C28
6124223	EVSBL2525M0516180250C	A53	6131508	LNPU432SRGE KCPM20	E10	6136897	HSK63ADL16225	D19	6140135	T839MF120X125RD5-A KSP39	C28
6124226	EVSBR2525M0516250350C	A52	6131511	LNPU433SRGE KCPK30	E10	6136898	HSK63ADL20225	D19	6140136	T839MF120X150RD5-A KSP39	C28
6124227	EVSBL2525M0516250350C	A53	6131512	LNPU433SRGE KC520M	E10	6136899	HSK63ADL25250	D19	6140137	T839M120X175RD6-A KSP39	C28
6124230	EVSBR2525M0516350999C	A52	6131513	LNPU433SRGE KCK15	E10	6136900	HSK63ADL32288	D19	6140138	T839MF140X150RD6-A KSP39	C28
6124232	EVSBL2525M0516350999C	A53	6131514	LNGU431ERGE KC725M	E9	6136933	PSC63DL16225	D19	6140139	T839M140X200RD7-A KSP39	C28
6124235	EVSBR3232P0532100180C	A52	6131515	LNGU431ERGE KC522M	E9	6136934	PSC63DL20225	D19	6140140	T839MF160X150RD6-A KSP39	C28
6124236	EVSBL3232P0532100180C	A53	6131516	LNGU431ERGE KCPM40	E9	6136935	PSC63DL25238	D19	6140141	T839M160X200RD7-A KSP39	C28
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6124238	EVSBL3232P0532180250C	A53	6131542	LNGU432ERGE KC522M	E9	6136939	CV40BDL16200	D20	6140594	T838NC#02-56RH2-A KSP39	C22
6124239	EVSBR3232P0532250350C	A52	6131543	LNGU432ERGE KCPM40	E9	6136940	CV40BDL20200	D20	6140596	T838NC#03-48RH2-A KSP39	C22
6124240	EVSBL3232P0532250350C	A53	6131544	LNGU432ERGE KCSM30	E9	6136941	CV40BDL25225	D20	6140598	T838NC#04-40RH2-A KSP32	C22
6124241	EVSBR3232P0532350999C	A52	6131556	LNGU432ERLEJ KC422M	E8	6136942	CV40BDL32250	D20	6140600	T838NC#04-40RH2-A KSP39	C22
6124242	EVSBL3232P0532350999C	A53	6131557	LNPU434SRGE KC522M	E10	6136945	BT40BDL16225	D20	6140601	T838NC#04-40RH3-A KSP39	C22
6124605	EVSBR2525M0616060075C	A52	6131558	LNPU434SRGE KCPM40	E10	6136946	BT40BDL20225	D20	6140602	T838NC#04-40RH4-A KSP39	C22
6124606	EVSBL2525M0616060075C	A53	6131559	LNPU434SRGE KC725M	E10	6136947	BT40BDL25238	D20	6140603	T838NC#04-40RH5-A KSP39	C22
6124607	EVSBR2525M0626060075C	A52	6131560	LNPU434SRGE KCPK30	E10	6136948	BT40BDL32275	D20	6140604	T838NF#04-48RH2-A KSP39	C22
6124608	EVSBL2525M0626060075C	A53	6131601	LNPU434SRGE KC520M	E10	6139893	M4D075L1103M10L110	E4	6140605	T838NC#05-40RH2-A KSP39	C22
6124609	EVSBR2525M0616075100C	A52	6131602	LNGU432SRGEM KCK15	E10	6139894	M4D100L1104M12L125	E4	6140606	T838NC#06-32RH2-A KSP39	C22
6124610	EVSBL2525M0616075100C	A53	6131603	LNGU432SRGEM KCPK30	E10	6139895	M4D125L1105M16L175	E4	6140607	T838NC#06-32RH3-A KSP32	C22
6124671	EVSBR2525M0626075100C	A52	6131604	LNGU432SRGEM KC520M	E10	6139896	M4D100L1103W075L175	E5	6140608	T838NC#06-32RH3-A KSP39	C22



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6140612	T838NF#06-40RH2-A KSP39	C22	6140699	T838NF05625-18RH5-A KSP39	C24	6140794	T839NF#10-32RH5-A KSP39	C26	6140859	T838M180X250RD7-A KSP39	C25
6140613	T838NF#06-40RH3-A KSP39	C22	6140700	T838NC03750-16RH3-A KSP32	C23	6140795	T839NC02500-20RH3-A KSP39	C26	6143903	3SE0031IR007A KC633M	D50
6140614	T838NC#08-32RH2-A KSP39	C22	6140701	T838NC06250-11RH3-A KSP32	C24	6140796	T839NC02500-20RH5-A KSP39	C26	6143904	3SE0047IR011A KC633M	D50
6140615	T838NC#08-32RH3-A KSP32	C22	6140702	T838NC03750-16RH3-A KSP39	C23	6140797	T839NF02500-28RH3-A KSP39	C26	6143905	3SE0062IR019A KC633M	D50
6140616	T838NC#08-32RH3-A KSP39	C22	6140703	T838NC06250-11RH3-A KSP39	C24	6140798	T839NF02500-28RH5-A KSP39	C26	6143906	3SE0078IR011A KC633M	D50
6140617	T838NC#08-32RH4-A KSP39	C22	6140704	T838NC03750-16RH5-A KSP39	C23	6140799	T839NC03125-18RH3-A KSP39	C26	6143907	3SE0094IR037A KC633M	D50
6140618	T838NC#08-32RH5-A KSP39	C22	6140705	T838NC06250-11RH5-A KSP39	C24	6140800	T839NC03125-18RH5-A KSP39	C26	6143908	3SE0109IR037A KC633M	D50
6140619	T838NC#08-32RH6-A KSP39	C22	6140706	T838NC03750-16RH7-A KSP39	C23	6140801	T839NF03125-24RH3-A KSP39	C26	6143909	3SE0125IR025A KC633M	D50
6140620	T838NC#08-32RH7-A KSP39	C22	6140707	T838NC06250-11RH7-A KSP39	C24	6140802	T839NF03125-24RH5-A KSP39	C26	6143910	3SE0125IL050A KC633M	D50
6140621	T838NC#10-24RH2-A KSP39	C22	6140708	T838NF03750-24RH3-A KSP32	C23	6140803	T839NC03750-16RH3-A KSP39	C26	6143941	3SE0125IX062A KC633M	D50
6140622	T838NC#10-24RH3-A KSP32	C22	6140709	T838NF06250-18RH3-A KSP32	C24	6140804	T839NC03750-16RH5-A KSP39	C26	6143943	3SE0156IR056A KC633M	D50
6140623	T838NC#10-24RH3-A KSP39	C22	6140710	T838NF03750-24RH3-A KSP39	C23	6140805	T838M030X050RD3-A KSP32	C25	6143944	3SE0188IS031A KC633M	D50
6140624	T838NC#10-24RH4-A KSP39	C22	6140711	T838NF06250-18RH3-A KSP39	C24	6140806	T839NF03750-24RH3-A KSP39	C26	6143945	3SE0188IR056A KC633M	D50
6140625	T838NC#10-24RH5-A KSP39	C22	6140712	T838NF03750-24RH4-A KSP39	C23	6140807	T838M030X050RD3-A KSP39	C25	6143946	3SE0188IL062A KC633M	D50
6140626	T838NC#10-24RH7-A KSP39	C22	6140713	T838NF06250-18RH5-A KSP39	C24	6140808	T839NF03750-24RH4-A KSP39	C26	6143947	3SE0188IX100A KC633M	D50
6140627	T838NF#10-32RH2-A KSP39	C22	6140714	T838NF03750-24RH5-A KSP39	C23	6140809	T838M035X060RD4-A KSP39	C25	6143949	3SE0219IR062A KC633M	D50
6140628	T838NF#10-32RH3-A KSP32	C22	6140715	T838NF06250-18RH6-A KSP39	C24	6140810	T839NF03750-24RH5-A KSP39	C27	6143950	3SE0219IL075A KC633M	D50
6140629	T838NF#10-32RH3-A KSP39	C22	6140716	T838NF03750-24RH6-A KSP39	C23	6140811	T838M040X070RD4-A KSP32	C25	6143951	3SE0250IS050A KC633M	D50
6140630	T838NF#10-32RH4-A KSP39	C23	6140717	T838NF06250-18RH7-A KSP39	C24	6140812	T839NC04375-14RH3-A KSP39	C27	6143952	3SE0250IR075A KC633M	D50
6140631	T838NF#10-32RH5-A KSP39	C23	6140718	T838NC04375-14RH3-A KSP32	C23	6140813	T838M040X070RD4-A KSP39	C25	6143953	3SE0250IL100A KC633M	D50
6140632	T838NF#10-32RH6-A KSP39	C23	6140719	T838NC07500-10RH3-A KSP32	C24	6140814	T839NC04375-14RH5-A KSP39	C27	6143954	3SE0250IX150A KC633M	D50
6140633	T838NF#10-32RH7-A KSP39	C23	6140720	T838NC04375-14RH3-A KSP39	C23	6140815	T838M050X080RD4-A KSP32	C25	6143955	3SE0281IR075A KC633M	D50
6140634	T838NC#12-24RH3-A KSP39	C23	6140721	T838NC07500-10RH3-A KSP39	C24	6140816	T839NF04375-20RH3-A KSP39	C27	6143956	3SE0281IL081A KC633M	D50
6140635	T838NF#12-28RH3-A KSP39	C23	6140722	T838NC04375-14RH5-A KSP39	C23	6140817	T838M050X080RD4-A KSP39	C25	6143957	3SE0312IR050A KC633M	D50
6140636	T838NC02500-20RH2-A KSP39	C23	6140723	T838NC07500-10RH5-A KSP39	C24	6140818	T839NF04375-20RH5-A KSP39	C27	6143958	3SE0312IL081A KC633M	D50
6140637	T838NC02500-20RH3-A KSP32	C23	6140724	T838NC04375-14RH7-A KSP39	C23	6140819	T838M060X100RD5-A KSP32	C25	6143962	3SE0375IS050A KC633M	D50
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LNUX301960RRP KCP25B	A110	M4D125L1104C125L800	E6	NG2031RK KCU25	A105	NG2M050LK KCU25	A106
LS103	E50	M4D125L1104W125L225	E5, E13	NG2031RK KT315	A105	NG2M050RK KC5010	A105
M-13-M8-CA.625-3.543 S	E96	M4D125L1105C100L500	E6	NG2047LK KC5010	A106	NG2M050RK KCP25B	A105
M-13-M8-CA.625-4.331 S	E96	M4D125L1105C125L500	E6, E13	NG2047LK KC5025	A106	NG2M050RK KCU10	A105
M-13-M8-CA.625-5.118 S	E96	M4D125L1105M16L175	E4	NG2047LK KCP10B	A106	NG2M050RK KCU25	A105
M-13-M8-CA.625-6.693 S	E96	M4D150L1105S050L157	E7, E13	NG2047LK KCP25B	A106	NG2M080LK KC5025	A106
M-18-M10-CA.750-4.331 S	E96	M4D150L1105W125L225	E5	NG2047LK KCU10	A106	NG2M080LK KCP10B	A106
M-18-M10-CA.750-5.118 S	E96	M4D150L1106S050L157	E7	NG2047LK KCU25	A106	NG2M080LK KCP25B	A106
M-18-M10-CA.750-6.693 S	E96	M4D200L1105S075L157	E7, E13	NG2047RK KC5010	A105	NG2M080LK KCU10	A106
M-21-M12-CA1-5.157 S	E96	M4D200L1107S075L157	E7, E13	NG2047RK KC5025	A105	NG2M080LK KCU25	A106
M-21-M12-CA1-6.142 S	E96	M4D250L1107S075L157	E7	NG2047RK KCP10B	A105	NG2M080RK KC5025	A105
M-21-M12-CA1-7.126 S	E96	M4D250L1107S100L157	E7	NG2047RK KCP25B	A105	NG2M080RK KCP10B	A105
M-21-M12-CA1-8.110 S	E96	M4D300L1108S100L175	E7	NG2047RK KCU10	A105	NG2M080RK KCP25B	A105
M-21-M12-CA1-9.094 S	E96	M4D300L1108S125L175	E7	NG2047RK KCU25	A105	NG2M080RK KCU10	A105
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M-29-M16-CA1.25-12.2 S	E96	MILL16E1000Z340N08W	E16	NG2062LK KC5010	A106	NG2M100LK KC5010	A106
M-29-M16-CA1.25-6.3 S	E96	MILL16E200Z050N08W	E16	NG2062LK KC5025	A106	NG2M100LK KC5025	A106
M-29-M16-CA1.25-8.27 S	E96	MILL16E250Z060N08W	E16	NG2062LK KCP10B	A106	NG2M100LK KCP10B	A106
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M4-11KTD100Z4C100SGEKCPM40	E13	MS1162	A54-59, A69-74, A76-78	NG2094LK KC5025	A106	NG2M120LK KCP10B	A106
M4-11KTD100Z4C100SGEKCPM40	E13	MS1163	A69-72, A74-75, A77-78	NG2094LK KCP10B	A106	NG2M120LK KCP25B	A106
M4-11KTD125Z4W125SGEKCPM40	E13	MS1273	A54-57	NG2094LK KCP25B	A106	NG2M120LK KCU10	A106
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M4-11KTD125Z5C125SGEKCPM40	E13	MS1490	A36-39, A41-43, A49-50, A52-53	NG2094RK KC5010	A105	NG2M120RK KC5010	A105
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M4-11KTD150Z5S050SGEKCPM40	E13	MS1595	A36-43, A48-49, A51-52, A54-57	NG2094RK KCP10B	A105	NG2M120RK KCP10B	A105
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UKDV1250Y4CU KCPM15.....	D4	WNGA434T0820 KY3500.....	A130	XNGJ43ANENLD3W KC510M.....	E38, E113
UKDV1250Y4CV KCPM15.....	D4	WNGA434T0820 KYK25.....	A130	XNGJ43ANENLD3W KC520M.....	E38, E113
ULDV0625Y4CQA KCSM15.....	D5	WNGX452T0820 KY3500.....	A133	XNGJ43ANENLD3W KC522M.....	E38, E113
ULDV0625Y4CQB KCSM15.....	D5	WNGX452T0820 KYK25.....	A133	XNGJ43ANENLD3W KC725M.....	E38, E113
ULDV0625Y4CQC KCSM15.....	D5	WNGX453T0820 KY3500.....	A133	XNGJ43ANENLD3W KCK15.....	E38, E113
ULDV0625Y4CQD KCSM15.....	D5	WNGX453T0820 KYK10.....	A133	XNGJ43ANENLD3W KCPK30.....	E38, E113
ULDV0625Y4CQE KCSM15.....	D5	WNGX453T0820 KYK25.....	A133	XNGJ43ANENLD3W KCPM20.....	E38, E113
ULDV0750Y4CQB KCSM15.....	D5	WNGX454T0820 KYK25.....	A133	XNGJ43ANENLD3W KCPM40.....	E38, E113
ULDV0750Y4CQC KCSM15.....	D5	XDLT090408ERD41 SC6525.....	E70	XNGJ43ANENLD3W KCSM40.....	E38, E113
ULDV0750Y4CQD KCSM15.....	D5	XDLT090408ERD41 SP6519.....	E70	XNGJ43ANFNLDJ3W K313.....	E113
ULDV0750Y4CQE KCSM15.....	D5	XDLT090408ERD41 X500.....	E70	XNGJ43ANFNLDJ3W KC410M.....	E113
ULDV1000Y4CQB KCSM15.....	D5	XDLT090408ERD721 GH2.....	E70	XNGJ535ANFNLDJ3W KC410M.....	E40, E128
ULDV1000Y4CQC KCSM15.....	D5	XDLT090412ERD411 SP6519.....	E71	XNGJ535ANSNGD3W KC725M.....	E40, E128
ULDV1000Y4CQD KCSM15.....	D5	XDLT090412ERD411 X500.....	E71	XNGJ535ANSNGD3W KCK15.....	E40, E128
ULDV1000Y4CQE KCSM15.....	D5	XDLT120508ERD41 SC6525.....	E81	XNGJ535ANSNGD3W KCPK30.....	E40, E128
ULDV1000Y4CQF KCSM15.....	D5	XDLT120508ERD41 SP6519.....	E81	XNGJ535ANSNGD3W KCPM20.....	E40, E128
ULDV1250Y4CQD KCSM15.....	D5	XDLT120508ERD41 X500.....	E81	XNGJ535ANSNGD3W KCSM40.....	E40, E128
ULDV1250Y4CQF KCSM15.....	D5	XDLT120508ERD721 GH2.....	E80	XPLT060308ERD41 SC6525.....	E61
VBGW331S0415MT KB5630.....	A127	XDLT120512ERD411 SP6519.....	E82	XPLT060308ERD41 SP6519.....	E61
VBGW332S0415MT KB5630.....	A127	XDLT120512ERD411 X500.....	E82	XPLT060308ERD41 X400.....	E61
VDIB1M302040C.....	A81	XDLW090408SRD SC3025.....	E72	XPLT060308ERD41 X500.....	E61
VDIB1M402544C.....	A81	XDLW090408SRD SC6525.....	E72	XPPT060308ERD41 KCSM40.....	E62
VDIB2M302040C.....	A81	XDLW090408SRD X400.....	E72	XPPW060310SRD KC510M.....	E62
VDIB2M402544C.....	A81	XDLW090408SRD X500.....	E72	XPPW060310SRD KC522M.....	E62
VDIB3M302040C.....	A82	XDLW120508SRD SC3025.....	E83	XPPW060310SRD KCPK30.....	E62
VDIB3M402544C.....	A82	XDLW120508SRD SC6525.....	E83	XPPW060310SRD KCPM40.....	E62
VDIB4M302040C.....	A82	XDLW120508SRD X400.....	E83		
VDIB4M402544C.....	A82	XDLW120508SRD X500.....	E83		
VDIB5M302040C.....	A83	XDPT090408ERD41 KCSM40.....	E71		
VDIB5M402544C.....	A83	XDPT090408ERD41 SC6525.....	E71		
VDIB6M302040C.....	A83	XDPT090408ERD41 SP6519.....	E71		
VDIB6M402544C.....	A83	XDPT090408ERD41 X500.....	E71		
VDIC1M302070C.....	A84	XDPT090412ERD411 KCSM40.....	E71		
VDIC1M402585C.....	A84	XDPT120508ERD41 KCSM40.....	E81		
VDIC2M302070C.....	A84	XDPT120508ERD41 SC6525.....	E81		
VDIC2M402585C.....	A84	XDPT120508ERD41 SP6519.....	E81		
VDIC3M302070C.....	A85	XDPT120508ERD41 X500.....	E81		
VDIC3M402585C.....	A85	XDPT120512ERD411 KCSM40.....	E82		
VDIC4M302070C.....	A85	XDPT120515SRGP KC522M.....	E82		
VDIC4M402585C.....	A85	XDPT120515SRGP KC725M.....	E82		
VNGA331S0425MT KB5630.....	A126	XDPT120515SRGP KCPK30.....	E82		
VNGA332S0425MT KB5630.....	A126	XDPT120515SRGP KCPM20.....	E82		
VNGA332T0820 KY3500.....	A128	XDPT120515SRGP KCPM40.....	E82		
VNGA432T0820 KYK25.....	A128	XDPW120515SRD KC510M.....	E83		
VNGX353T0820 KY3500.....	A134	XDPW120515SRD KC522M.....	E83		
VNGX354T0820 KY3500.....	A134	XDPW120515SRD KCK15.....	E83		
WLJNL32CA19S.....	A111	XDPW120515SRD KCPK30.....	E83		
WLJNL32CA30S.....	A111	XDPW120515SRD KCPM40.....	E83		
WLJNR32CA19S.....	A111	XELT160512ERD41 SC6525.....	E90		
WLJNR32CA30S.....	A111	XELT160512ERD41 SP6519.....	E90		
WNGA432T0420FW KY3500.....	A130	XELT160512ERD41 X500.....	E90		
WNGA432T0820 KY3500.....	A130	XELW160512SRD SC3025.....	E91		
WNGA432T0820 KYK25.....	A130	XELW160512SRD X400.....	E91		
WNGA433T0420FW KY3500.....	A130	XEPT160512ERD41 KCSM40.....	E91		
WNGA433T0820 KY3500.....	A130	XEPT160516ERD41 KC522M.....	E91		
WNGA433T0820 KYK10.....	A130	XEPT160516ERD41 KCPK30.....	E91		



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Turning Icons

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	Turning	Profiling
Facing	Face Grooving	Chamfering	Grooving	Cut-Off
I.D. Turning	I.D. Chamfering	I.D. Facing	I.D. Grooving	I.D. Face Grooving
Deep Grooving				

Holemaking Icons

Shank: Cylindrical Plain	Shank: Cylindrical Plain sh6	Shank: HSK: A	Through Coolant: Radial: Drilling	Through Coolant: Radial: Reaming
Through Coolant: Axial: Drilling	Through Coolant: Axial: Reaming	Reaming: Through Hole	Reaming: Blind Hole	Reaming: Through and Cross Holes
Reaming: Blind and Cross Holes				

Tapping Icons

Tapping Through Hole	Tapping Blind Hole	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)	Chamfer Form C 2-3
Chamfer Form E (1.5-2)	Tapping Helix Angle: 45°	Tension/Compression	DIN ANSI	Flood Coolant: Tapping
Through Coolant: Axial: Tapping	American National Standards Institute	Class of Fit: 2B	Class of Fit: 3B	Class of Fit: 6H
Unified Fine Thread	Unified Coarse Thread	ISO Metric Coarse Thread	ISO Metric Fine Thread	

**Solid End Milling Icons**

Plunge Milling	Ramping: Blank	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: 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	3D Profiling	Corner Style: Ball Nose
Corner Style: Corner Chamfer	Corner Style: Radius	Corner Style: Square End	Shank: Cylindrical Plain	Shank: SK BT JIS B 6339
Shank: HSK: CAT: Drawbar Thread: 5/8-11 UNC	Shank: HSK A/ DIN 69893	Shank: Safe-Lock™	Shank: PSC Shank	Duo-Lock™ Connection
Helix Angle: 30°	Helix Angle: 36°	Helix Angle: 35°/38°	Helix Angle: 37°/39°	Balance (G 2.5/25,000)
Through Coolant	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	ISO 26622	

**Indexable Milling Icons**

Counterboring	Spiral Circular	Face Milling	Helical Milling	Plunge Milling
Plunge Milling: Ball Nose	Ramping: Blank	Slotting: Square End	Side Milling/ Shoulder Milling: Square End	Side Milling/ Shoulder Milling: Eased Chamfer
Slotting: Shoulder	Copy 3D	PCD Tool	Pocketing	Shank: Cylindrical Plain
Shank: Cylindrical Weldon®	Shank: Screw-On	Shank: Shell Mill	Through Coolant: Radial Indexable Milling	

**Tooling Systems Icons**

Shank: Safe-Lock™ Shank sh6	Axial Adjustments: End	DIN Number 69880	Through Coolant: 100 Bar	Through Coolant: 1500 psi
Through Coolant: Through Adapter Face				

DIN — German Institute for Standardization  
 ANSI — American National Standards Institute



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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
<b>P0</b>	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
<b>P1</b>	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
<b>P2</b>	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
<b>P3</b>	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
<b>P4</b>	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
<b>P5</b>	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
<b>P6</b>	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
<b>M1</b>	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
<b>M2</b>	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
<b>M3</b>	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
<b>K1</b>	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
<b>K2</b>	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, ASTM A842: Grade 250, 300, 350, 400, 450
<b>K3</b>	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
<b>N1</b>	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
<b>N2</b>	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
<b>N3</b>	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
<b>N4</b>	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
<b>N5</b>	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
<b>N6</b>	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
<b>N7</b>	Metal Matrix Composites (MMC)	–	–	–	–	C63000
<b>S1</b>	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
<b>S2</b>	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
<b>S3</b>	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®
<b>S4</b>	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
<b>H1</b>	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H2</b>	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H3</b>	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>H4</b>	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
<b>C1</b>	CFRP, CFRP/CFRP	–	–	–	–	–
<b>C2</b>	CFRP/Non-Ferrous	–	–	–	–	–
<b>C3</b>	CFRP/High-Temp	–	–	–	–	–
<b>C4</b>	CFRP/Stainless Steel	–	–	–	–	–
<b>C5</b>	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

<b>P</b>	Steel
<b>M</b>	Stainless Steel
<b>K</b>	Cast Iron

<b>N</b>	Non-Ferrous
<b>S</b>	High-Temp Alloys

<b>H</b>	Hardened Materials
<b>C</b>	CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
<b>P0</b>	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	-	-
<b>P1</b>	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	-	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
<b>P2</b>	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
<b>P3</b>	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
<b>P4</b>	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
<b>P5</b>	Ferritic, Martensitic, and PH Stainless Steels	-	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
<b>P6</b>	High-Strength Ferritic, Martensitic, and PH Stainless Steels	-	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
<b>M1</b>	Austenitic Stainless Steel	-	<600	130–200	-	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
<b>M2</b>	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
<b>M3</b>	Duplex Stainless Steel	-	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
<b>K1</b>	Gray Cast Iron	-	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
<b>K2</b>	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	-	<600	130–260	<28	GGG40, GTS35
<b>K3</b>	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	-	>600	180–350	<43	GGG60, GTW55, GTS65
<b>N1</b>	Wrought Aluminum	-	-	-	-	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
<b>N2</b>	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	-	-	-	GAISiCu4, GDAISi10Mg
<b>N3</b>	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	-	-	-	G-ALSi12, G-ALSi17Cu4, G-ALSi21CuNiMg
<b>N4</b>	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	-	-	-	-	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
<b>N5</b>	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	-	-	-	-	Lexan®, Hostalen™, Polystyrol, Makralon®
<b>N6</b>	Carbon, Graphite Composites, CFRP	-	-	-	-	CFK, GFK
<b>N7</b>	Metal Matrix Composites (MMC)	-	-	-	-	-
<b>S1</b>	Iron-Based, Heat-Resistant Alloys	-	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
<b>S2</b>	Cobalt-Based, Heat-Resistant Alloys	-	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
<b>S3</b>	Nickel-Based, Heat-Resistant Alloys	-	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, Nimonic® 75
<b>S4</b>	Titanium and Titanium Alloys	-	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
<b>H1</b>	Hardened Materials	-	-	-	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
<b>H2</b>	Hardened Materials	-	-	-	48–55	-
<b>H3</b>	Hardened Materials	-	-	-	56–60	-
<b>H4</b>	Hardened Materials	-	-	-	>60	-
<b>C1</b>	CFRP, CFRP/CFRP	-	-	-	-	-
<b>C2</b>	CFRP/Non-Ferrous	-	-	-	-	-
<b>C3</b>	CFRP/High Temp	-	-	-	-	-
<b>C4</b>	CFRP/Stainless Steel	-	-	-	-	-
<b>C5</b>	CFRP/Non-Ferrous/High-Temp	-	-	-	-	-

# 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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