Holemaking | Tooling

Catalog 8070

KENNAMETAL®

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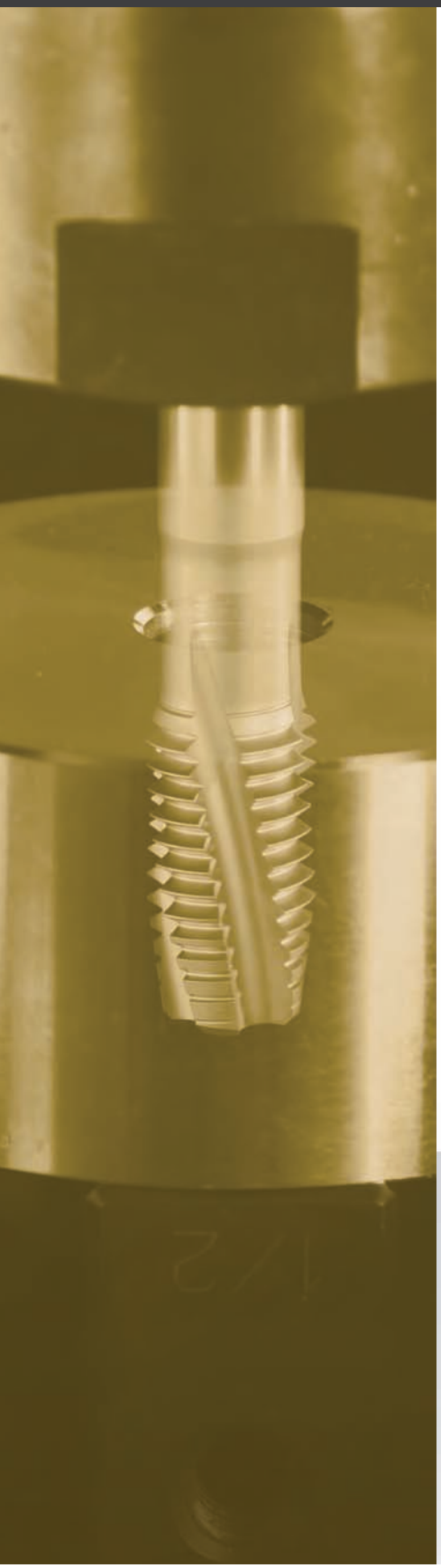


Kennametal is a world leader in the development, manufacture, application, and supply of metalcutting tools and services. No matter what your industry, Kennametal will significantly boost your manufacturing competitiveness!

THE POWER OF THE KENNAMETAL ENTERPRISE

- Documented annual customer cost-savings from 10% to 30%.
- 10,000 new, top-quality products each year.
- More than $45,000,000 spent yearly on new product/process development.
- Nearly $2.3-billion in annual global sales.
- 14,000 employees in more than 60 countries.
- 1,000 highly trained staffers in cutting and wear solutions.

DEVELOPING INNOVATIVE CUSTOMER SOLUTIONS

- Our tooling innovations and process-optimization services enable you to greatly reduce cost-per-part time and expense.
- Globally recognized for our continuous commitment to R&D and breakthrough technology.
- Seven worldwide and highly focused R&D facilities.

KENNAMETAL®

PRESENTING...

Your Hole Story

From Holemaking to Hole Finishing, Kennametal delivers the world's-best tooling and service!

SE-HP Solid-Carbide Drills

FOR STAINLESS STEEL AND HIGH-TEMPERATURE ALLOYS

- For unmatched hole quality – at low cutting forces!
- Advanced PVD coating reduces edge build-up!

FOR ALLOYED AND UNALLOYED STEEL

- Your choice for super high-speed drilling – go twice as fast, with longer tool life, versus conventional styles!

FOR CAST IRONS

- Produce the straightest, roundest holes!
- Double-margin design ensures alignment accuracy and stability – despite inclusions, irregular exits, crossholes, and interrupted cuts!

Flat-Bottom Drills

- Now you can center and drill 180° holes, even at extremely high feeds and speeds, — in just one operation — no other machining required!

Extra-Long Solid-Carbide Drills

- Quadruple your steel and cast iron metal-removal rates, with outstanding performance, exceptional hole quality, and greatly reduced cycle times — in lengths up to 30 x D!

KSEM HPL(M)™ Drills

- Increase your stainless steel metal-removal rates up to 100% — with 200% better tool life!
- Up to 10xD using standard tool bodies!
- Locking mechanism eliminates chip obstruction and securely protects pocket seat!
- No need for tool reconditioning — easily replace worn insert!

New Drill-FIX™ Grades

- **KC7815™ Grade:** Run at ultra-fast speeds — substantially shortening your machining times! Unique polished surface delivers optimum chip flow with virtually no micro cracks. That means superior service life, even in the most demanding applications!

  KC7820™ Grade (for steels) and **KC7140™ Grade** (for stainless steel): For maximum chip control and feed rates, with unsurpassed rigidity — particularly on small-diameter drills!

Solid-Carbide Taps

- Workpiece-specific grades: **KC7542™ Grade** for steels; **KC7512™ Grade** for aluminum!
- Go 4x faster — with 4x the service life — versus conventional HSS offerings!
- Wide array of styles and sizes for through — or blind-hole applications!
- Genuine Kennametal Reconditioning service available!

Straight-Shank ModBORE® System

- Ideal for jobs requiring a long depth-to-diameter ratio! Get highly secure access no matter how lengthy the reach into a part or over a fixture! Available in inch-steel and inch-carbide shanks.

RIQ Reamers

- Easy-to-adjust blade, with four cutting edges per insert!
- Perfectly suited for IT5 tolerance applications!

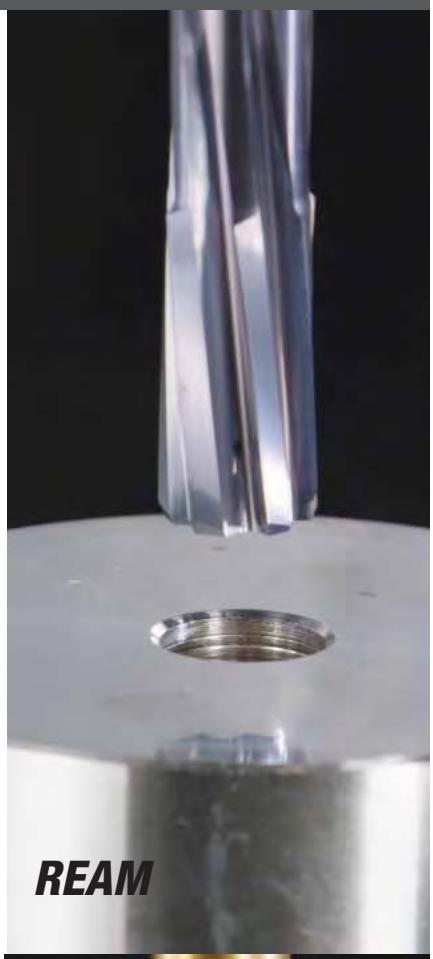
SPF Solid-Carbide Drills

- Drastically minimize delamination in CFRP*!
- Specially engineered 90° point angle vastly improves centering — that means less thrust, superior holes!
- Smooth CVD multi-layer coating delivers exceptional service life!

**Composite Fiber Reinforced Polymers*

BF™ Combination System for KenTIP™ Drills

- Drill and countersink — or drill and chamfer — in a single pass…dramatically reducing your tool changes and overall manufacturing costs!



KENNAMETAL®

Holemaking Tooling

Tool Selection Guide for Holemaking . . . . . IV–XI
Solid Carbide Drills A1–A130
Modular Drills B1–B78
Combination Tools C1–C26
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Indexable Drills E1–E100
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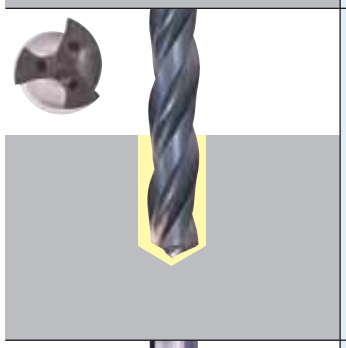
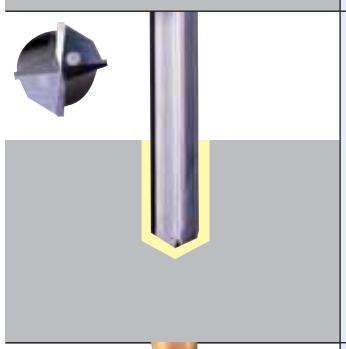
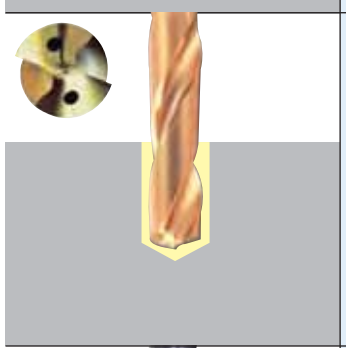
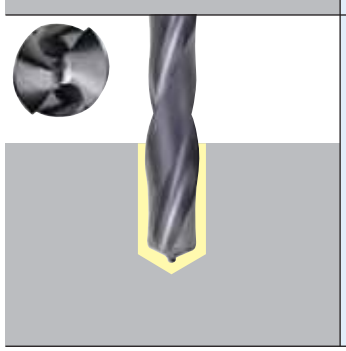
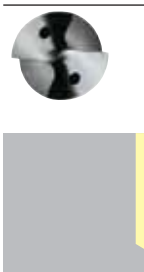
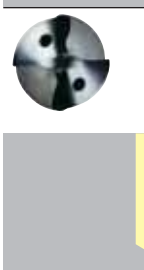
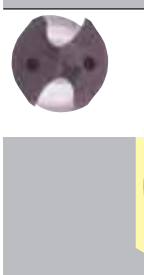
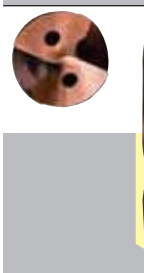
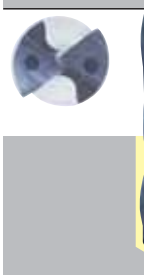
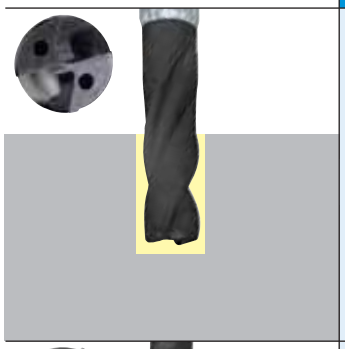
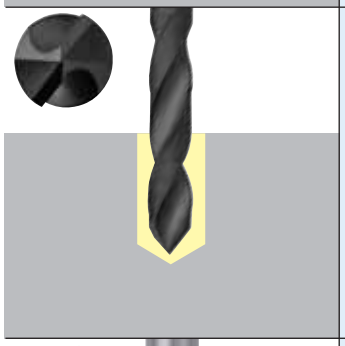
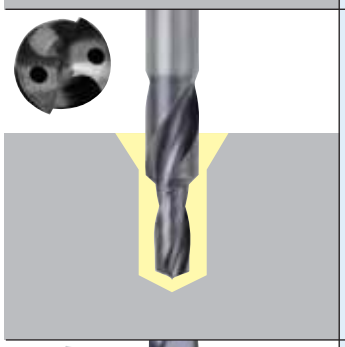
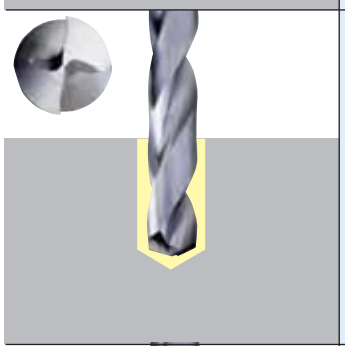
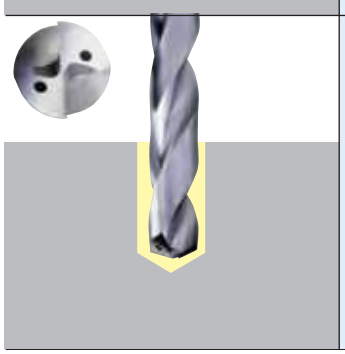
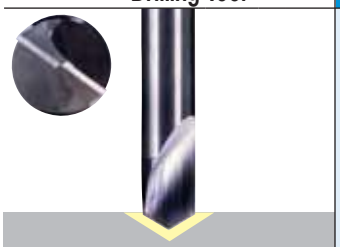
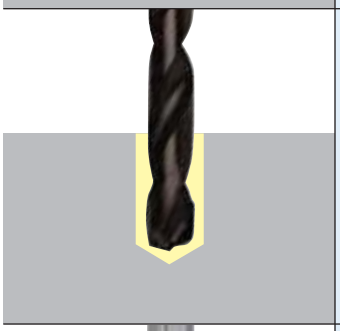
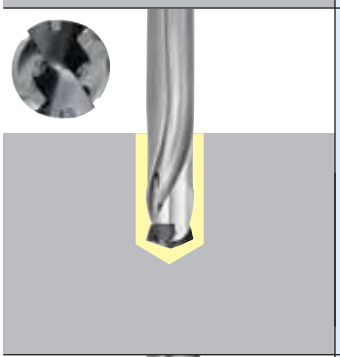
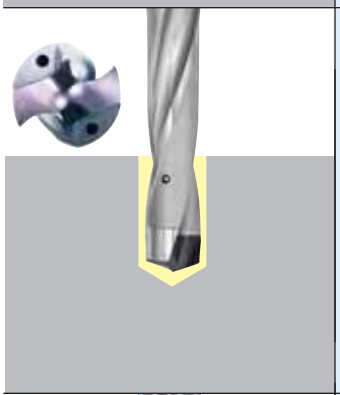
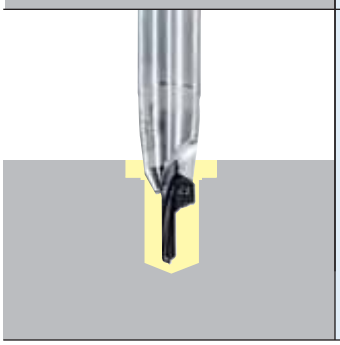
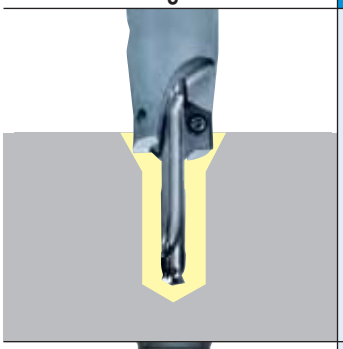
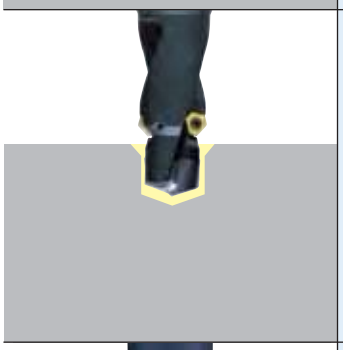
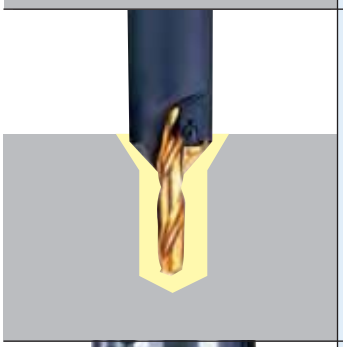
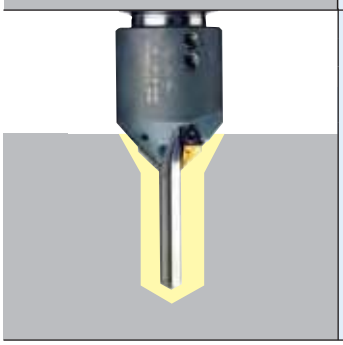
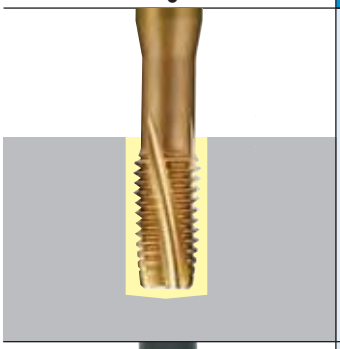
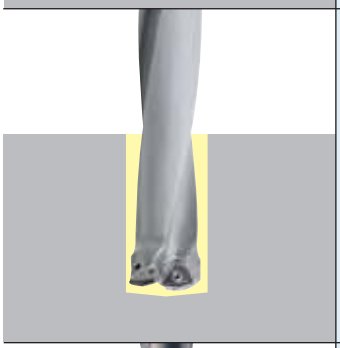
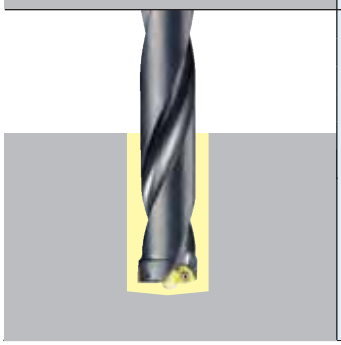
Drilling Tool	P	M	K	N	S	H	Product Range	Grade		Area of Use		Page
							TF-Drill without coolant channel			**IT9 - IT11** d1 metric min - max	d1 inch min - max	
			●	●	○		Regular	**K/B105**	**K10**	3,0 - 21,0	.113 - .810	A9–A15
			●				Regular	**K/B105**	**KC7210**	3,5 - 18,5	.125 - .656	A9–A15
							**TF-Drill** with coolant channel			**IT9 - IT11** d1 metric min - max	d1 inch min - max	
					●		Regular	**K/B125**	**K715**	6,0 - 14,0	.250 - .625	A18
							**TX-Drill** with coolant channel			**IT7 - IT9** d1 metric min - max	d1 inch min - max	
			●	●	○		Regular	**K/B411**	**KF1**	3,2 - 25,0	.125 - .750	A21–A23
							**SE-Drill HP** with coolant channel			**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	○	●			○		Short	**K/B210_HP**	**KC7515**	3,0 - 20,0	.156 - .750	A27–A30
	○	●			○		Regular	**K/B211_HP**	**KC7515**	3,0 - 21,0	.156 - 1.010	A31–A37
	○	●			○		Long	**K/B212_HP**	**KC7515**	3,0 - 16,0	.156 - .758	A38–A39
							**SE-Drill HP** without coolant channel			**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●		○				Short	**B221_HP**	**KC7315**	3,0 - 21,0	.118 - .827	A43–A49
	●		○				Regular	**B222_HP**	**KC7315**	3,0 - 20,0	.118 - .787	A50–A51

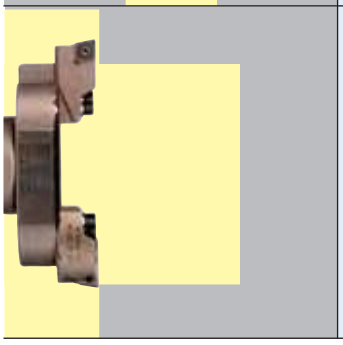
Drilling Tool	P	M	K	N	S	H	Product Range		Grade	Area of Use d1 metric min - max	Area of Use d1 inch min - max	Page
							**SE-Drill HP** with coolant channel			**IT9 - IT11**		
	●		●	○			Short	**B224_HP**	**KC7315**	3,0 - 20,0	.118 - .787	A54–A56
	●		●	○			Regular	**B225_HP**	**KC7315**	3,0 - 21,0	.118 - 827	A57–A63
							**SE-Drill HPC** with coolant channel			**IT9 - IT11**		
			●				Short	**K/B254_HPC**	**KC7315**	3,0 - 20,0	.125 - .875	A66–A69
			●				Regular	**K/B255_HPC**	**KC7315**	3,0 - 20,5	.118 - .875	A70–A75
			●				Long	**K/B256_HPC**	**KC7315**	3,0 - 20,0	.156 - .750	A76–A78
							**SE-Drill** with coolant channel			**IT9 - IT11**		
	●						Long	**B256**	**KC7315**	5,0 - 16,0		A81
							**SE-HPG** with coolant channel			**IT9 - IT11**		
	●		●				**15 x D**	**B271_HPG**	**KC7425**	3,0 - 10,0	.118 - .394	A84
	●		●				**20 x D**	**B272_HPG**	**KC7425**	3,0 - 10,0	.118 - .394	A85
	●		●				**30 x D**	**B274_HPG**	**KC7425**	3,0 - 10,0	.118 - .394	A86
							**SE-Drill** with coolant channel			**IT9 - IT11**		
					●		Short	**K/B284**	**K715**	4,0 - 11,7	.156 - .468	A91–A92
					●		Regular	**K/B285**	**K715**	5,0 - 12,0	.156 - .656	A93–A94

Drilling Tool	P	M	K	N	S	H	Product Range		Grade	Area of Use d1 metric min - max	Area of Use d1 inch min - max	Page
							**FBG-Drill** with coolant channel			**IT9 - IT11**		
	●		●				Short	**B707_FBG**	**KC7315**	3,0 - 20,0	.118 - .787	A97–A98
							**SPF-Drill** without coolant channel			**IT9 - IT11**		
				●			Short	**K/B531_SPF**	**KDF400**	3,2 - 12,7	.172 - .501	A102–A103
				●			Regular	**K/B532_SPF**	**KDF400**	3,2 - 12,7	.172 - .501	A104–A105
							**SE HP-Step Drill** with coolant channel			**IT9 - IT11**		
	●		●				Short	**B731_HP**	**KC7315**	4,2 - 14,0		A108
	●		●				Regular	**B732_HP**	**KC7315**	4,2 - 14,0		A109
							**KU-Drill** without coolant channel			**IT9 - IT11**		
	●		●				Short	**B966**	**KC7315**	5,0 - 20,0		A112–A116
							**KU-Drill** with coolant channel			**IT9 - IT11**		
	●		●				Short	**B976**	**KC7315**	5,0 - 20,0		A118–A121
	●		●				Regular	**B977**	**KC7315**	5,0 - 20,0		A122–A127
	●		●				Long	**B978**	**KC7315**	4,0 - 20,0		A128–A129

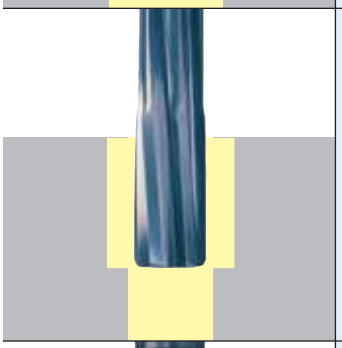
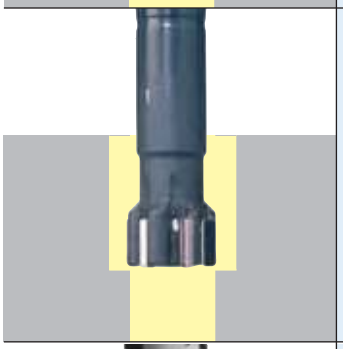
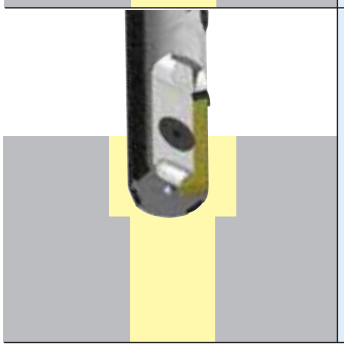
Drilling Tool	P	M	K	N	S	H	Product Range	Grade		Area of Use d1 metric min - max	Area of Use d1 inch min - max	Page
							**Solid Carbide Drill** for NC spot drilling			**IT9 - IT11**		
	●	●	●		●		Short	**B501**	120°	6,0 - 20,0		A130
	●	●	●	●	●		Short	**B505**	90°	6,0 - 20,0		A130
							**Kennametal 2x2™ Drill** with coolant channel			**IT9 - IT11**		
	●		●				Long	**Kennametal 2x2**	**KC7915**	3,1 - 8,5	.122 - .335	B4–B7
							**KenTIP** with coolant channel KenTIP blades			**IT9 - IT11**		
	●		○	○			HP(M)			8,0 - 20,99	.313 - .827	B11–B14
			●	○			HPC(M)			8,0 - 20,99	.313 - .827	B15–B17
		●		○			HPL(M)			8,0 - 20,99	.313 - .827	B18–B20
							Inch Bodies					B21–B23
							Metric Bodies					B24–B29
							**KSEM** with coolant channel KSEM blades			**IT9 - IT11**		
	●			○			HP(M)			12,5 - 40,0	.492 - 1.575	B37–B39
	●			○			HPG(M)			12,5 - 40,0	.492 - 1.575	B40–B42
		●		○			HPL(M)			12,5 - 40,0	.492 - 1.575	B43–B45
			●	○			HPC(M)			12,5 - 32,0	.492 - 1.260	B46–B47
	●	●	●	○			PC			12,5 - 40,0	.492 - 1.575	B48–B49
							Inch Bodies					B52–B64
							Metric Bodies					B65–B73
							**BF-Drill** with coolant channel			**IT9 - IT11**		
	●		●				Short	**K/B343_HP**	**KC7315**	3,4 - 18,0	.134 - .709	C6–C9
							BF Bodies					C13–C15
							BF inserts					C16

Drilling Tool	P	M	K	N	S	H	Product Range	Grade	Area of use		Page
							**KenTIP BF HP** with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	○			3 x D		8,0 - 18,99	.313 - .826	C10
	●	●	●	○			4 x D		8,0 - 18,99	.313 - .826	C11
	●	●	●	○			5 x D		8,0 - 18,99	.313 - .826	C12
							KenTIP Blades		8,0 - 18,99	.313 - .826	B11–B20
							**KSEM 1xD** with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	○			1 x D		12,5 - 40,0	.492 - 1.575	B53–B54, B66
							KSEM Blades		12,5 - 40,0	.492 - 1.575	B37–B49
							TPGX Inserts		12,5 - 40,0	.492 - 1.575	H10
							**SEFAS Compact** with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	●			SEF.. - Inch Round Shank - for use with inch drills			.156 - 1.010	C19
	●	●	●	●			SEF.. - Inch Round Shank - for use with metric drills		4,0 - 18,0		C20
	●	●	●	●			SEF.. - Metric Round Shank - for use with metric drills		4,0 - 18,0		C21
	●	●	●	●			3.370.. - Metric 2 Whistle Notch (WN) - for use with metric drills		4,0 - 18,0		C20
							SEFAS HSK63 with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	●	●		SEF.. - HSK63 Shank - for use with metric drills		4,0 - 20,0		C22
							**SEFAS Chamfer Ring** with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
		●	●	●	●		3.37.. - For use with Kennametal Hydraulic Chucks (Inch or Metric Bores)		4,0 - 20,0		C23
							SEFAS Inserts				C25

Drilling Tool	P	M	K	N	S	H	Product Range	Grade	Area of Use		Page
							**HP- Solid Carbide Taps**		**IT9 - IT11**		
									size inch min - max	size metric min - max	
	●		●	●					1/4 - 3/4		D3–D22
	●		●	●						M4 - M20	
							HP-HSS Taps		**IT9 - IT11**		
									size inch min - max	size metric min - max	
	●	●	●	●					#2 - 1.000		D24–D61
	●		●	●						M2,5 - M18	
							Drill Fix DFR with coolant channel		**IT9 - IT11**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	Inch Bodies (RH)			.500 - 1.039	E16–E20
	●	●	●	●	●	●	Metric Bodies (RH)		12,5 - 25,0		E21–E23
	●	●	●	●	●	●	Metric Bodies (LH)		12,5 - 25,0		E24–E25
							DFR inserts				H2–H3
							**Drill Fix DFT** with coolant channel		**IT9 - IT11**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	Inch Bodies			.625 - 3.250	E26–E31
	●	●	●	●	●	●	Metric Bodies		16,0 - 83,0		E32–E35
	●	●	●	●	●	●	KM Shank		12,5 - 50,0	.500 - 2.000	E36–E49
							DFT inserts				H4–H5
							**HTS-C** with coolant channel		**IT9 - IT11**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	Inch Bodies			.750 - 1.750	E62–E63
	●	●	●	●	●	●	Metric Bodies		20,0 - 45,0		E64–E65
							Pilot Drill				E66
							HTS-C Inserts				H4–H9

Drilling Tool	P	M	K	N	S	H	Product Range	Grade	Area of Use		Page
							HTS-R with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	Adjustable Heads		40,0 - 55,0	1.574 - 2.165	E86
							Cartridges				E86
							Pilot Drill				E87
							HTS-R Inserts				H2–H3
							HTS with coolant channel		**IT9 - IT11** d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	Adjustable Heads		45,0 - 270,0	1.772 - 10.630	E88–E89
							Cartridges				E90–E91
							Pilot Drill				E92
							HTS Inserts				H4–H5
							Shanks and Adapters				E93-E100
							CTR - Counterbore with coolant channel		**IT8 - IT10** d1 metric min - max	d1 inch min - max	
	●	●	●	●	●	●	1xD Inch - Weldon Shank			.813 - 3.125	F2
	●	●	●	●	●	●	1xD S2S - Round Shank Whistle Notch		15,1 - 46,2		F3
							SPHX Inserts				H6–H9
							Kendex Precision Lock with coolant channel		**IT8 - IT10** d1 metric min - max	d1 inch min - max	
	●		●	●			1xD Metric Round Shank BPGX Inserts		5,8 - 25,3	.228 - .972	G123 G123
							**ModBORE** with coolant channel		**IT6 - IT8** d1 metric min - max	d1 inch min - max	
	●	●	●	●			Fine Boring Single Cutters		23,9 - 191,1	.9409 - 7.523	G15-G21
	●	●	●	●			Rough Boring Twin Cutters		23,5 - 153,0	.9252 - 6.0236	G22-G27
							Offset Boring Heads		9,75 - 53,1	.384 - 2.091	G28-G30
							Bridge Tool Components		150,0 - 655	5.9055 - 25.7874	G33-G36
							Inserts				H14–H22

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Drilling Tool	P	M	K	N	S	H	Product Range	Grade	Area of Use		Page
							Romicron		**IT5 - IT7**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●		Fine Boring Inserts		4,0 - 213	.158 - 8.3850	G51–G81 H12–H13
							**Solid Carbide Reamer**		**IT7**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●		RMS	10xD	5,0 - 14,0	.197 - .551	G142–G143
	●		●				RMB	10xD	14,0 - 20,0	.551 - .787	G155
							**Monoblock Reaming Tools**		**IT5 - IT7**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●		RMA	short	5,6 - 45,6	.220 - 1.807	G162
	●	●	●	●	●		RMA	long	5,6 - 32.6	.220 - 1.283	G163
							**Single Blade Padded Reamers**		**IT5**		
									d1 metric min - max	d1 inch min - max	
	●	●	●	●	●		RIR				G168
	●	●	●	●	●	●	RIQ				G169
							Custom Solutions!				

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B/K254_HPC Series with Coolant A64–A78
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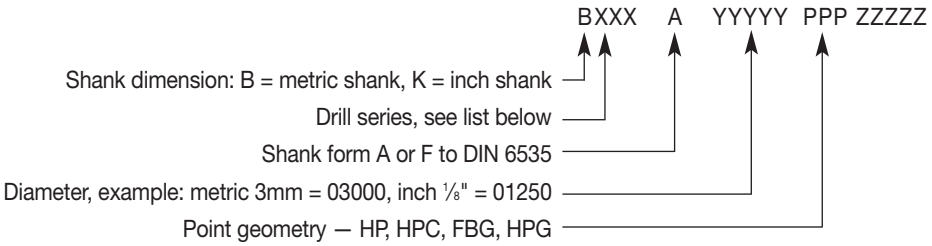
Feed and Speed Chart A117
NC Spot Drills B501/B505 without Coolant A130

Kennametal Number Codes

Number code for **standard products** and for standard versions in accordance with standard:



Number code for semi-special or custom-solution may or may not directly correspond with Standard Products Number Code. For ordering, please contact our Custom Solutions department. Any information regarding the closest standard product will be helpful.

◆ = standard range
◯ = semi-standard range
☐ = on request

designation	KennaPerfect material group	symbol	code	version	internal cooling	page
TF-Drill	cast iron aluminum titanium	◯ ◆ ◯	B104/K104 B105/K105 B106/K106	DIN 6537 K (short) DIN 6537 L (regular) factory standard long		A6
	titanium	◯ ◆ ◯	B124/K124 B125/K125 B106/K126	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A16
TX-Drill	aluminum and cast iron	◯ ◆ ◯	B410/K410 B411/K411 B412/K412	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A19
SE-Drill	high-alloy steel stainless and acid-resistant steel	◆ ◆ ◆	B210_HP/K210_HP B211_HP/K211_HP B212_HP/K212_HP	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A24
	carbon steel alloyed steel	◆ ◯	B221_HP B222_HP	DIN 6537 K (short) DIN 6537 L (regular)		A40
	carbon steel alloyed steel high-alloy steel cast iron	◆ ◆ ◯	B224_HP B225_HP B226_HP	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A52
	cast iron	◆ ◆ ◆	B254_HPC/K254_HPC B255_HPC/K255_HPC B256_HPC/K256_HPC	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A64
	high-alloy steel	◆	B256	factory standard Long	✔	A79
	super-alloys and titanium	◆ ◆ ◯	B284 B285 B286	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A89

(continued on next page)

(continued from previous page)

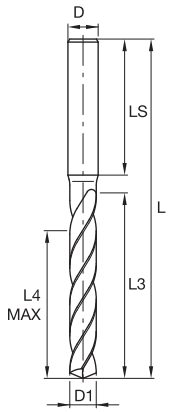
◆ = standard range
◯ = semi-standard range
□ = on request

designation	KennaPerfect material group	symbol	code	version	internal cooling	page
deep-hole drills	carbon steel alloyed steel cast iron	◆ ◆ □ ◆	B271_HPG B272_HPG B273_HPG B274_HPG	15xD 20xD 25xD 30xD	✔ ✔ ✔ ✔	A82
flat-bottom drills	carbon steel alloyed steel cast iron	◆ ◯ ◯	B707_FBG B708_FBG B709_FBG	DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A95
SPF-Drill	carbon fiber reinforced polymer	◆ ◆	B531_SPF/K531_SPF B532_SPF/K532_SPF	DIN 6537 K (short) DIN 6537 L (regular)		A100
Step Drill	carbon steel alloyed steel cast iron	◆ ◆	B731_HP B732_HP	factory standard short factory standard regular	✔ ✔	A106
KU-Drill	carbon steel alloyed steel cast iron	◆ ◆ ◆ ◆	B966 B976 B977 B978	DIN 6537 K (short) DIN 6537 K (short) DIN 6537 L (regular) factory standard long	✔ ✔ ✔	A110
NC-Spot Drill		◆ ◆	B501 B505	factory standard 120° nose angle factory standard 90° nose angle		A130
BF-Drill	carbon steel alloyed steel cast iron	◯ ◯ ◆ ◯	B341_HPG/K341_HPG B342_HPG/K342_HPG B343_HPG/K343_HPG B344_HPG/K344_HPG	factory standard very short factory standard short factory standard medium factory standard long	✔ ✔ ✔ ✔	C6
	cast iron	◯ ◯ ◯ ◯	B326 B327 B328 B329	factory standard very short factory standard short factory standard medium factory standard long		
	aluminum	◯ ◯ ◯	B463 B464 B465	factory standard medium factory standard long factory standard very long	✔ ✔ ✔	

Pre-Selection Drill Recommendation Chart

	Through Coolant	Flood Coolant	MQL	Dry	Deep-Hole	Flat-Bottom
P-Steel	**B224HP, B225HP B226HP, B256**	**B221HP B222HP**	**B221HP, B222HP, B224HP, B225HP, B226HP, B256**	**B221HP B222HP**	**B271, B272, B274**	**B707FBG**
M-Stainless Steel	**B210HP/K210HP B211HP/K211HP B212HP/K212HP**					
K-Cast Iron	**B254HPC/K254HPC B255HPC/K255HPC B256HPC/K256HPC**	B104/K104 **B105/K105** B106/K106		B104/K104 **B105/K105** B106/K106	**B271, B272, B274**	**B707FBG**
N-Non-Ferrous	B410/K410 **B411/K411** B412/K412	B104/K104 **B105/K105** B106/K106				
S-Heat Resistant Alloys, Titanium Alloys	**B284/K284 B285/K285 B125/K125**					

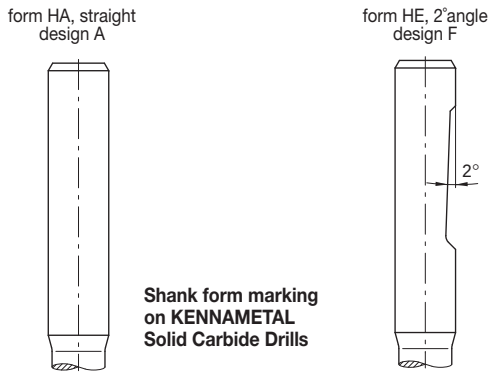
standard = bold
semi-standard = grey



NOTE:
Solid Carbide Drills from KENNAMETAL in short, regular lengths conform to DIN 6537.
Drills with long lengths conform to KENNAMETAL factory standard.

Solid Carbide Drills with diameter d1 > 20 mm (not DIN 6537) are also standardized to factory standard.

shank designs to DIN 6535

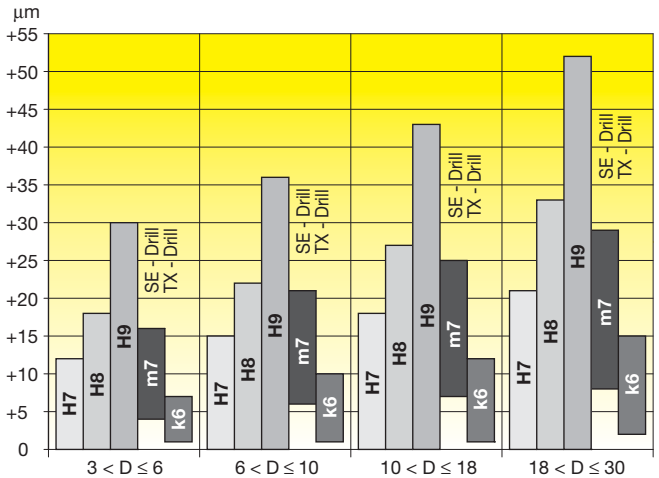


Shank form marking on KENNAMETAL Solid Carbide Drills

Dimensions for Kennametal Solid Carbide Drills

	to DIN 6535		SHORT approx. 3 x D	$d_1 \leq 20$ mm to DIN 6537K $d_1 > 20$ mm to factory standard		REGULAR approx. 5 x D	$d_1 \leq 20$ mm to DIN 6537L $d_1 > 20$ mm to factory standard		LONG approx. 8 x D	to factory standard	
D1	D	LS	L	L3	L4max	L	L3	L4max	L	L3	L4max
-3,75	6	36	62	20	14	66	28	23	78	40	33
-4,75			66	24	17	74	36	29	87	49	41
-6,00				28	20	82	44	35	94	56	48
-7,00	8		79	34	24	91	53	43	105	67	57
-8,00				41	29				110	72	61
-10,00	10	40	89	47	35	103	61	49	122	80	68
-12,00	12	45	102	55	40	118	71	56	141	94	79
-14,00	14		107	60	43	124	77	60	155	108	91
-16,00	16	48	115	65	45	133	83	63	171	121	101
-18,00	18		123	73	51	143	93	71	185	135	113
-20,00	20	50	131	79	55	153	101	77	200	148	124
-22,00	20		141	86	60	167	112	85	217	162	136
-25,00	25	56	153	95	65	184	126	98	238	180	150

Tolerances of Drills and Holes



Solid Carbide Drills with tolerance of m7 (SE Drill, TF Drill, KU Drill) create holes with tolerances of H9. H8 can be achieved in very good conditions.

The TX Drill should be used for holes in H8, in favorable conditions H7 can be achieved.

Solid carbide drills (BF Drill) with h7 create holes in K9 - K11.

Other drilling tolerances require special solid carbide drill versions.

Tolerances of diameter d_1 on:

SE Drill	m7
TF Drill	m7
TX Drill	k6
KU Drill	m7
FBG Drill	m7
HPG Drill	h7
BF Drill	h7

KENNAMETAL

Solid Carbide Drills

TF Drills without Coolant

Primary Application

B/K 105 Solid Carbide Drills are ideal for high metal removal rates and excellent hole quality in short chipping materials such as gray cast iron, ductile iron, and aluminium as well as in short-hole titanium applications.

Features and Benefits

Three Cutting Edges

- Higher feed rates than with two-edged drills.

Three Spacious Flutes

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

Wear-Resistant Carbide Grade

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

TiAlN-Coated KC7210 Grade

- Higher wear resistance at elevated speeds.

Customization

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

TF Drills – B105/K105 Series – Grade K10 – Flood Coolant

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 894 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K1	**Cast and Low-Strength Ductile Irons**							**Tensile Strength RM (MPa)*: 150-400**		**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter								
279	sfm	197 361	ipr	.004 - .008	.005 - .008	.006 - .011	.008 - .014	.009 - .017	.009 - .020	.011 - .024	.012 - .027
85	m/min	60 110	mm/r	0,11 - 0,20	0,12 - 0,20	0,16 - 0,28	0,20 - 0,35	0,22 - 0,42	0,24 - 0,50	0,28 - 0,61	0,30 - 0,68
K2	**Low to Medium Strength CGI and Ductile Irons**							**Tensile Strength RM (MPa)*: 400-600**		**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter								
236	sfm	230 295	ipr	.004 - .008	.005 - .008	.006 - .011	.008 - .014	.009- .017	.009 - .020	.011 - .024	.012 - .027
72	m/min	70 90	mm/r	0,11 - 0,20	0,12 - 0,20	0,16 - 0,28	0,20 - 0,35	0,22 - 0,42	0,24 - 0,50	0,28 - 0,61	0,30 - 0,68
K3	**High Strength Ductile and Austempered Ductile Iron**							**Tensile Strength RM (MPa)*: 600-900**		**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter								
167	sfm	164 230	ipr	.003 - .007	.004 - .007	.005 - .010	.007 - .013	.008- .016	.008 - .019	.010 - .023	.011 - .026
51	m/min	50 70	mm/r	0,09 - 0,18	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,20 - 0,40	0,22 - 0,48	0,26 - 0,59	0,28 - 0,66
N1	**Wrought Aluminum Alloys**							**Tensile Strength RM (MPa)*: <520**			
			Feed rate by diameter								
689	sfm	328 1345	ipr	.003 - .007	.004 - .008	.007 - .013	.008 - .015	.010- .017	.013 - .020	.017 -.023	.025 - .031
210	m/min	100 410	mm/r	0,09 - 0,15	0,10 - 0,20	0,18 - 0,33	0,20 - 0,38	0,25 - 0,43	0,33 - 0,51	0,43 - 0,58	0,64 - 0,79
N2	**Cast Aluminum**	**Content: Si <12.2%**						**Tensile Strength RM (MPa)*: <350**		**Hardness (HB) or HRC: 70-100**	
			Feed rate by diameter								
814	sfm	328 820	ipr	.003 - .007	.004 - .008	.007 - .013	.008 - .015	.010- .017	.013 - .020	.017 - .023	.025 - .031
248	m/min	100 250	mm/r	0,10 - 0,19	0,12 - 0,21	0,18 - 0,33	0,25 - 0,42	0,30 - 0,50	0,35 - 0,58	0,44 - 0,74	0,52 - 0,88
N5	**Copper and Copper Alloys**							**Tensile Strength RM (MPa)*: 200-650**		**Hardness (HB) or HRC: 60-200**	
			Feed rate by diameter								
568	sfm	197 824	ipr	.003 - .006	.005 - .007	.007 - .013	.008 - .014	.009- .015	.013 - .018	.015 - .019	.023 - .030
173	m/min	60 251	mm/r	0,08 - 0,15	0,13- 0,18	0,18 - 0,33	0,20 - 0,36	0,23 - 0,38	0,33 - 0,46	0,38 - 0,48	0,58 - 0,76
S4	**Titanium Alloys**							**Tensile Strength RM (MPa)*: 900-1600**		**Hardness (HB) or HRC: 300-400**	
			Feed rate by diameter								
98	sfm	66 167	ipr	.001 - .002	.002 - .003	.003 - .004	.004 - .005	.004- .006	.005 - .007	.007- .009	.009 - .012
30	m/min	20 51	mm/r	0,03 - 0,05	0,04- 0,07	0,07 - 0,09	0,09 - 0,12	0,11 - 0,15	0,13 - 0,18	0,17 - 0,24	0,22 - 0,30

* 1 MPa = 145 psi

TF Drills – B105/K105 Series – Grade KC7210 – Flood Coolant

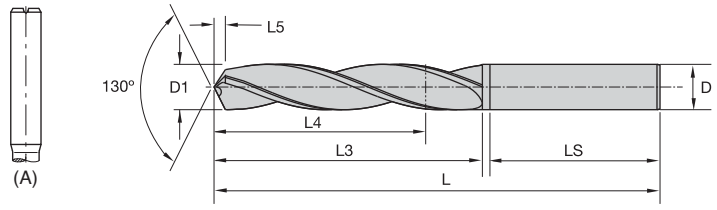
Starting Value	Cutting Speed		49	98	164	262	328	394	492	656	820	984	1148	Tool diameter								
	sfm													inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min		15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K1	**Cast and Low-Strength Ductile Irons**													**Tensile Strength RM (MPa): 150-400**						**Hardness (Hb) or HRC: 120-290**		
														Feed rate by diameter								
459	sfm					262						528		ipr	.005 - .008	.006 - .009	.007 - .012	.008 - .015	.010- .018	.011 - .020	.013 - .024	.014 - .028
140	m/min					80						161		mm/r	0,13 - 0,20	0,14 - 0,24	0,17 - 0,31	0,20 - 0,39	0,25 - 0,45	0,29 - 0,51	0,33 - 0,62	0,36 - 0,70
K2	**Low and Medium Strength CGI and Ductile Irons**													**Tensile Strength RM (MPa): 400-600**						**Hardness (Hb) or HRC: 130-260**		
														Feed rate by diameter								
394	sfm					262						394		ipr	.005 - .008	.006 - .009	.007 - .011	.009 - .013	.010- .015	.011 - .017	.013 - .020	.014 - .021
120	m/min					80						120		mm/r	0,13 - 0,20	0,15 - 0,23	0,19- 0,28	0,23 - 0,34	0,26 - 0,38	0,29 - 0,43	0,34 - 0,50	0,36 - 0,54
K3	**High Strength Ductile and Austempered Ductile Iron**													**Tensile Strength RM (MPa): 600-900**						**Hardness (Hb) or HRC: 180-350**		
														Feed rate by diameter								
276	sfm					197						427		ipr	.004 - .008	.005 - .009	.006 - .010	.008 - .015	.009- .014	.010 - .016	.012 - .019	.013 - .020
84	m/min					60						130		mm/r	0,11- 0,20	0,13 - 0,24	0,17 - 0,26	0,21 - 0,38	0,24 - 0,36	0,27 - 0,41	0,32 - 0,48	0,34 - 0,52
N2	**Cast Aluminum**	**Content: Si <12.2%**												**Tensile Strength RM (MPa): <350**						**Hardness (Hb) or HRC: 70-100**		
														Feed rate by diameter								
978	sfm						328					984		ipr	.003 - .007	.004 - .008	.007 - .013	.008 - .015	.010- .017	.013 - .020	.017 - .023	.025 - .031
298	m/min						100					300		mm/r	0,10 - 0,19	0,12 - 0,21	0,18 - 0,33	0,25 - 0,42	0,30 - 0,50	0,35 - 0,58	0,44 - 0,74	0,52 - 0,88
N5	**Copper and Copper Alloys**													**Tensile Strength RM (MPa): 200-650**						**Hardness (Hb) or HRC: 60-200**		
														Feed rate by diameter								
738	sfm					197						984		ipr	.003 - .006	.005- .007	.007 - .013	.008 - .014	.009- .015	.013 - .018	.015 - .019	.023 - .030
225	m/min					60						300		mm/r	0,08 - 0,15	0,13 - 0,18	0,18 - 0,33	0.20 - 0.36	0,23 - 0,38	0,33 - 0,46	0,38 - 0,48	0,58 - 0,76

* 1 MPa = 145 psi

TF Drills – B105/K105 Series – Grade KC7210 – MQL (Minimum Quantity Lubricant) or Dry Applications

Starting Value	Cutting Speed		49	98	164	262	328	394	492	656	820	984	1148	Tool diameter								
	sfm													inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min		15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
K1	**Cast and Low-Strength Ductile Irons**													**Tensile Strength RM (MPa): 150-400**						**Hardness (HB) or HRC: 120-290**		
														Feed rate by diameter								
361	sfm					197						492		ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.008- .016	.012 - .019	.015 - .023	.020 - .028
110	m/min					60						150		mm/r	0,10 - 0,20	0,13- 0,24	0,16 - 0,31	0,20 - 0,39	0,24 - 0,44	0,27 - 0,51	0,33 - 0,62	0,36 - 0,70
K2	**Low to Medium Strength CGI and Ductile Irons**													**Tensile Strength RM (MPa): 400-600**						**Hardness (HB) or HRC: 130-260**		
														Feed rate by diameter								
308	sfm					197						328		ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.008- .016	.012 - .019	.015 - .023	.020 - .028
94	m/min					60						100		mm/r	0,13 - 0,20	0,16 - 0,23	0,20 - 0,28	0,23 - 0,34	0,26 - 0,38	0,29 - 0,43	0,34 - 0,50	0,36 - 0,54
K3	**High Strength Ductile and Austempered Ductile Iron**													**Tensile Strength RM (MPa): 600-900**						**Hardness (HB) or HRC: 180-350**		
														Feed rate by diameter								
276	sfm					164						361		ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.008- .016	.012 - .019	.015 - .023	.020 - .028
84	m/min					50						110		mm/r	0,10 - 0,19	0,13 - 0,20	0,16 - 0,31	0,20 - 0,37	0,23- 0,44	0,26 - 0,48	0,31 - 0,58	0,33 - 0,64

* 1 MPa = 145 psi



Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005
>.7087 to .7500	.0003/.0011	-	-

● first choice
○ alternate choice

H		
S		○
N		●
K		●
M		
P		

K105

inch	D1 fraction	size	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	K10
.1130	–	33	2,870	1235769	K105A01130	.1875	2.60	1.06	.84	.030	1.44	●
.1250	1/8	–	3,175	1153168	K105A01250	.1875	2.60	1.06	.84	.031	1.44	●
.1285	–	30	3,264	1235378	K105A01285	.1875	2.60	1.06	.84	.032	1.44	●
.1360	–	29	3,454	1235770	K105A01360	.1875	2.60	1.06	.84	.034	1.44	●
.1364	–	–	3,465	1790728	K105A01364	.1875	2.60	1.06	.84	.034	1.44	●
.1395	–	–	3,543	1790729	K105A01395	.1875	2.60	1.06	.84	.035	1.44	●
.1406	9/64	–	3,571	1235379	K105A01406	.1875	2.60	1.06	.84	.035	1.44	●
.1440	–	27	3,658	1235768	K105A01440	.1875	2.60	1.06	.84	.036	1.44	●
.1502	–	–	3,815	1790731	K105A01502	.1875	2.60	1.06	.84	.038	1.44	●
.1517	–	–	3,853	1790732	K105A01517	.1875	2.60	1.06	.84	.038	1.44	●
.1532	–	–	3,891	1790874	K105A01532	.1875	2.60	1.06	.84	.038	1.44	●
.1563	5/32	–	3,970	1153169	K105A01563	.1875	2.60	1.06	.84	.039	1.44	●
.1590	–	21	4,039	1235265	K105A01590	.1875	2.91	1.38	1.13	.040	1.44	●
.1624	–	–	4,125	1790875	K105A01624	.1875	2.91	1.38	1.13	.041	1.44	●
.1660	–	19	4,216	1235736	K105A01660	.1875	2.91	1.38	1.13	.042	1.44	●
.1695	–	18	4,305	1591921	K105A01695	.1875	2.91	1.38	1.13	.042	1.44	●
.1716	–	–	4,359	1790876	K105A01716	.1875	2.91	1.38	1.13	.043	1.44	●
.1719	11/64	–	4,366	1235380	K105A01719	.1875	2.91	1.38	1.13	.043	1.44	●
.1730	–	17	4,394	1591922	K105A01730	.1875	2.91	1.38	1.13	.043	1.44	●
.1762	–	–	4,475	1790878	K105A01762	.1875	2.91	1.38	1.13	.044	1.44	●
.1781	–	–	4,524	1790879	K105A01781	.1875	2.91	1.38	1.13	.045	1.44	●
.1835	–	–	4,661	1790880	K105A01835	.1875	2.91	1.38	1.13	.046	1.44	●
.1875	3/16	–	4,763	1153170	K105A01875	.1875	2.91	1.38	1.13	.047	1.44	●
.1890	–	12	4,801	1591923	K105A01890	.2500	3.23	1.69	1.37	.047	1.44	●
.1910	–	11	4,851	1235701	K105A01910	.2500	3.23	1.69	1.37	.048	1.44	●
.1935	–	10	4,915	1235609	K105A01935	.2500	3.23	1.69	1.37	.048	1.44	●
.1976	–	–	5,019	1790881	K105A01976	.2500	3.23	1.69	1.37	.050	1.44	●
.2002	–	–	5,085	1790882	K105A02002	.2500	3.23	1.69	1.37	.050	1.44	●
.2045	–	–	5,194	1790903	K105A02045	.2500	3.23	1.69	1.37	.051	1.44	●
.2175	–	–	5,525	1790904	K105A02175	.2500	3.23	1.69	1.37	.054	1.44	●
.2188	7/32	–	5,558	1153171	K105A02188	.2500	3.23	1.69	1.37	.055	1.44	●
.2279	–	–	5,789	1790905	K105A02279	.2500	3.23	1.69	1.37	.057	1.44	●
.2280	–	1	5,791	1591924	K105A02280	.2500	3.23	1.69	1.37	.057	1.44	●
.2342	–	–	5,949	1790906	K105A02342	.2500	3.23	1.69	1.37	.059	1.44	●

(continued on next page)

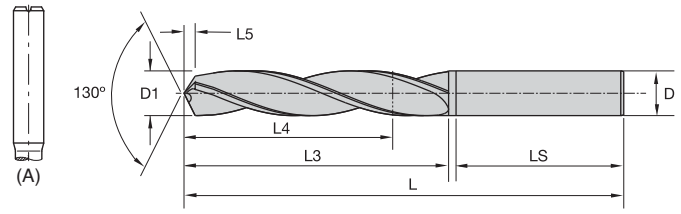
K105

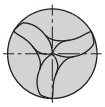
(continued from previous page)

● first choice
○ alternate choice

	D1											
inch	fraction	size	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	K10
.2500	1/4	E	6,350	1153172	K105A02500	.2500	3.23	1.69	1.37	.063	1.44	●
.2530	–	–	6,426	1314013	K105A02530	.3125	3.58	1.97	1.59	.063	1.52	●
.2570	–	F	6,528	1235611	K105A02570	.3125	3.58	1.97	1.59	.064	1.52	●
.2620	–	–	6,655	1790907	K105A02620	.3125	3.58	1.97	1.59	.066	1.52	●
.2656	17/64	–	6,746	1153173	K105A02656	.3125	3.58	1.97	1.59	.067	1.52	●
.2746	–	–	6,975	1790908	K105A02746	.3125	3.58	1.97	1.59	.069	1.52	●
.2813	9/32	–	7,145	1153174	K105A02813	.3125	3.58	1.97	1.59	.070	1.52	●
.2870	–	–	7,290	1591925	K105A02870	.3125	3.58	1.97	1.59	.072	1.52	●
.2879	–	–	7,313	1790909	K105A02879	.3125	3.58	1.97	1.59	.072	1.52	●
.2941	–	–	7,470	1790910	K105A02941	.3125	3.58	1.97	1.59	.074	1.52	●
.2969	19/64	–	7,541	1153175	K105A02969	.3125	3.58	1.97	1.59	.074	1.52	●
.3125	5/16	–	7,938	1153176	K105A03125	.3125	3.58	1.97	1.59	.078	1.52	●
.3281	21/64	–	8,334	1153177	K105A03281	.3750	4.06	2.36	1.92	.082	1.59	●
.3371	–	–	8,562	1790912	K105A03371	.3750	4.06	2.36	1.92	.084	1.59	●
.3438	11/32	–	8,733	1153178	K105A03438	.3750	4.06	2.36	1.92	.086	1.59	●
.3474	–	–	8,824	1790923	K105A03474	.3750	4.06	2.36	1.92	.087	1.59	●
.3566	–	–	9,058	1790924	K105A03566	.3750	4.06	2.36	1.92	.089	1.59	●
.3594	23/64	–	9,129	1153179	K105A03594	.3750	4.06	2.36	1.92	.090	1.59	●
.3750	3/8	–	9,525	1153180	K105A03750	.3750	4.06	2.36	1.92	.094	1.59	●
.3906	25/64	–	9,921	1153181	K105A03906	.4375	4.37	2.60	2.09	.098	1.67	●
.4059	–	–	10,310	1790927	K105A04059	.4375	4.37	2.60	2.09	.102	1.67	●
.4063	13/32	–	10,320	1153182	K105A04063	.4375	4.37	2.60	2.09	.102	1.67	●
.4219	27/64	–	10,716	1153183	K105A04219	.4375	4.37	2.60	2.09	.106	1.67	●
.4375	7/16	–	11,113	1153184	K105A04375	.4375	4.37	2.60	2.09	.110	1.67	●
.4531	29/64	–	11,509	1153185	K105A04531	.5000	4.65	2.76	2.19	.113	1.79	●
.4545	–	–	11,544	1790930	K105A04545	.5000	4.65	2.76	2.19	.114	1.79	●
.4688	15/32	–	11,908	1153186	K105A04688	.5000	4.65	2.76	2.19	.117	1.79	●
.4844	31/64	–	12,304	1153187	K105A04844	.5000	4.65	2.76	2.19	.121	1.79	●
.5000	1/2	–	12,700	1153188	K105A05000	.5000	4.65	2.76	2.19	.125	1.79	●
.5120	–	–	13,005	1790944	K105A05120	.5625	4.88	2.99	2.36	.128	1.79	●
.5379	–	–	13,663	1790946	K105A05379	.5625	4.88	2.99	2.36	.135	1.79	●
.5625	9/16	–	14,288	1153189	K105A05625	.5625	4.88	2.99	2.36	.141	1.79	●
.5745	–	–	14,592	1790948	K105A05745	.6250	5.24	3.23	2.54	.144	1.91	●
.5848	–	–	14,854	1790949	K105A05848	.6250	5.24	3.23	2.54	.146	1.91	●
.6250	5/8	–	15,875	1153190	K105A06250	.6250	5.24	3.23	2.54	.156	1.91	●
.6875	11/16	–	17,463	1153191	K105A06875	.6875	5.63	3.62	2.87	.172	1.91	●
.7224	–	–	18,349	1790964	K105A07224	.7500	5.83	3.74	2.93	.181	1.99	●
.7500	3/4	–	19,050	1153192	K105A07500	.7500	5.83	3.74	2.93	.188	1.99	●
.8101	–	–	20,577	1790966	K105A08101	.8125	6.02	3.94	3.07	.203	1.99	●

Ordering Example:
By catalog number K105A01130 K10, or by order number 1235769.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005
>.7087 to .7500	.0003/.0011	—	—

● first choice
○ alternate choice

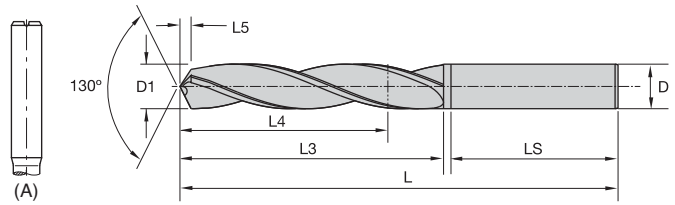
H	
S	
N	
K	●
M	
P	

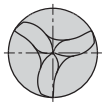
K105

D1 inch	D1 inch	D1 mm	D1 size	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7210
.1250	1/8	3,175	–	1613350	K105A01250	.1875	2.60	1.06	.84	.031	1.44	●
.1285	–	3,264	30	1613337	K105A01285	.1875	2.60	1.06	.84	.032	1.44	●
.1495	–	3,797	25	1773297	K105A01495	.1875	2.60	1.06	.84	.037	1.44	●
.1563	5/32	3,970	–	1613339	K105A01563	.1875	2.60	1.06	.84	.039	1.44	●
.1719	11/64	4,366	–	1613340	K105A01719	.1875	2.91	1.38	1.13	.043	1.44	●
.1820	–	4,623	14	1773298	K105A01820	.1875	2.91	1.38	1.13	.046	1.44	●
.1875	3/16	4,763	–	1613421	K105A01875	.1875	2.91	1.38	1.13	.047	1.44	●
.2130	–	5,410	3	1773299	K105A02130	.2500	3.23	1.69	1.37	.053	1.44	●
.2188	7/32	5,558	–	1613422	K105A02188	.2500	3.23	1.69	1.37	.055	1.44	●
.2500	1/4	6,350	E	1613423	K105A02500	.2500	3.23	1.69	1.37	.063	1.44	●
.2570	–	6,528	F	1773300	K105A02570	.3125	3.58	1.97	1.59	.064	1.52	●
.2656	17/64	6,746	–	1613424	K105A02656	.3125	3.58	1.97	1.59	.067	1.52	●
.2720	–	6,909	I	1773301	K105A02720	.3125	3.58	1.97	1.59	.068	1.52	●
.2813	9/32	7,145	–	1613425	K105A02813	.3125	3.58	1.97	1.59	.070	1.52	●
.2969	19/64	7,541	–	1613426	K105A02969	.3125	3.58	1.97	1.59	.074	1.52	●
.3125	5/16	7,938	–	1613427	K105A03125	.3125	3.58	1.97	1.59	.078	1.52	●
.3281	21/64	8,334	–	1613428	K105A03281	.3750	4.06	2.36	1.92	.082	1.59	●
.3320	–	8,433	Q	1773302	K105A03320	.3750	4.06	2.36	1.92	.083	1.59	●
.3438	11/32	8,733	–	1613429	K105A03438	.3750	4.06	2.36	1.92	.086	1.59	●
.3680	–	9,347	U	1773334	K105A03680	.3750	4.06	2.36	1.92	.092	1.59	●
.3750	3/8	9,525	–	1613431	K105A03750	.3750	4.06	2.36	1.92	.094	1.59	●
.3906	25/64	9,921	–	1613432	K105A03906	.4375	4.37	2.60	2.09	.098	1.67	●
.4063	13/32	10,320	–	1613433	K105A04063	.4375	4.37	2.60	2.09	.102	1.67	●
.4219	27/64	10,716	–	1613434	K105A04219	.4375	4.37	2.60	2.09	.106	1.67	●
.4375	7/16	11,113	–	1613435	K105A04375	.4375	4.37	2.60	2.09	.110	1.67	●
.4844	31/64	12,304	–	1613438	K105A04844	.5000	4.65	2.76	2.19	.121	1.79	●
.5000	1/2	12,700	–	1613439	K105A05000	.5000	4.65	2.76	2.19	.125	1.79	●
.5625	9/16	14,288	–	1613440	K105A05625	.5625	4.88	2.99	2.36	.141	1.79	●
.6562	21/32	16,667	–	1773990	K105A06562	.6875	5.63	3.62	2.87	.164	1.91	●

Ordering Example:
By catalog number K105A01250 KC7210, or by order number 1613350.

TF Drills without Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		○
N		●
K		●
M		
P		

B105

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K10
3,000	.1181	1191414	B105A03000	6	66	28	23	0,8	36	●
3,100	.1220	1191415	B105A03100	6	66	28	23	0,8	36	●
3,200	.1260	1191416	B105A03200	6	66	28	23	0,8	36	●
3,300	.1299	1191417	B105A03300	6	66	28	23	0,8	36	●
3,500	.1378	1191418	B105A03500	6	66	28	23	0,9	36	●
3,700	.1457	1199334	B105A03700	6	66	28	23	0,9	36	●
3,800	.1496	1199337	B105A03800	6	74	36	29	1,0	36	●
4,000	.1575	1191419	B105A04000	6	74	36	29	1,0	36	●
4,100	.1614	1199682	B105A04100	6	74	36	29	1,0	36	●
4,200	.1654	1191420	B105A04200	6	74	36	29	1,1	36	●
4,300	.1693	1230196	B105A04300	6	74	36	29	1,1	36	●
4,500	.1772	1191421	B105A04500	6	74	36	29	1,1	36	●
4,650	.1831	1199348	B105A04650	6	74	36	29	1,2	36	●
4,700	.1850	1199228	B105A04700	6	74	36	29	1,2	36	●
4,800	.1890	1199351	B105A04800	6	82	44	35	1,2	36	●
5,000	.1969	1191422	B105A05000	6	82	44	35	1,3	36	●
5,100	.2008	1191423	B105A05100	6	82	44	35	1,3	36	●
5,200	.2047	1199360	B105A05200	6	82	44	35	1,3	36	●
5,500	.2165	1191424	B105A05500	6	82	44	35	1,4	36	●
5,550	.2185	1199365	B105A05550	6	82	44	35	1,4	36	●
5,700	.2244	1191425	B105A05700	6	82	44	35	1,4	36	●
5,800	.2283	1191426	B105A05800	6	82	44	35	1,5	36	●
6,000	.2362	1191427	B105A06000	6	82	44	35	1,5	36	●
6,100	.2402	1199229	B105A06100	8	91	53	43	1,5	36	●
6,300	.2480	1191428	B105A06300	8	91	53	43	1,6	36	●
6,400	.2520	1191429	B105A06400	8	91	53	43	1,6	36	●
6,500	.2559	1191430	B105A06500	8	91	53	43	1,6	36	●
6,600	.2598	1199380	B105A06600	8	91	53	43	1,7	36	●
6,700	.2638	1191431	B105A06700	8	91	53	43	1,7	36	●
6,800	.2677	1191432	B105A06800	8	91	53	43	1,7	36	●
7,000	.2756	1191433	B105A07000	8	91	53	43	1,8	36	●
7,100	.2795	1191434	B105A07100	8	91	53	43	1,8	36	●
7,400	.2913	1199387	B105A07400	8	91	53	43	1,9	36	●
7,500	.2953	1191435	B105A07500	8	91	53	43	1,9	36	●
7,600	.2992	1199306	B105A07600	8	91	53	43	1,9	36	●
7,800	.3071	1191436	B105A07800	8	91	53	43	2,0	36	●
8,000	.3150	1191437	B105A08000	8	91	53	43	2,0	36	●
8,100	.3189	1199238	B105A08100	10	103	61	49	2,0	40	●
8,300	.3268	1199225	B105A08300	10	103	61	49	2,1	40	●
8,400	.3307	1191438	B105A08400	10	103	61	49	2,1	40	●
8,500	.3346	1191439	B105A08500	10	103	61	49	2,1	40	●
8,600	.3386	1199685	B105A08600	10	103	61	49	2,2	40	●

(continued on next page)

B105

(continued from previous page)

● first choice
○ alternate choice

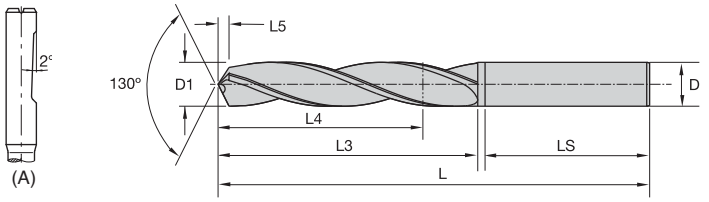
H	
S	○
N	●
K	●
M	
P	

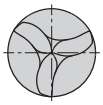
D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K10
8,700	.3425	1191440	B105A08700	10	103	61	49	2,2	40	●
8,800	.3465	1191441	B105A08800	10	103	61	49	2,2	40	●
9,000	.3543	1191442	B105A09000	10	103	61	49	2,3	40	●
9,100	.3583	1199311	B105A09100	10	103	61	49	2,3	40	●
9,300	.3661	1199406	B105A09300	10	103	61	49	2,3	40	●
9,500	.3740	1191443	B105A09500	10	103	61	49	2,4	40	●
9,700	.3819	1191444	B105A09700	10	103	61	49	2,4	40	●
9,800	.3858	1191445	B105A09800	10	103	61	49	2,5	40	●
10,000	.3937	1191446	B105A10000	10	103	61	49	2,5	40	●
10,100	.3976	1199243	B105A10100	12	118	71	56	2,5	45	●
10,200	.4016	1191448	B105A10200	12	118	71	56	2,6	45	●
10,300	.4055	1191449	B105A10300	12	118	71	56	2,6	45	●
10,500	.4134	1191450	B105A10500	12	118	71	56	2,6	45	●
10,700	.4213	1191451	B105A10700	12	118	71	56	2,7	45	●
10,800	.4252	1199251	B105A10800	12	118	71	56	2,7	45	●
11,000	.4331	1191452	B105A11000	12	118	71	56	2,8	45	●
11,100	.4370	1199308	B105A11100	12	118	71	56	2,8	45	●
11,200	.4409	1199421	B105A11200	12	118	71	56	2,8	45	●
11,500	.4528	1199424	B105A11500	12	118	71	56	2,9	45	●
11,700	.4606	1199316	B105A11700	12	118	71	56	2,9	45	●
11,800	.4646	1191453	B105A11800	12	118	71	56	3,0	45	●
12,000	.4724	1191454	B105A12000	12	118	71	56	3,0	45	●
12,100	.4764	1199223	B105A12100	14	124	77	60	3,0	45	●
12,500	.4921	1191455	B105A12500	14	124	77	60	3,1	45	●
12,700	.5000	1191456	B105A12700	14	124	77	60	3,2	45	●
12,800	.5039	1191457	B105A12800	14	124	77	60	3,2	45	●
13,000	.5118	1191458	B105A13000	14	124	77	60	3,3	45	●
13,100	.5157	1199434	B105A13100	14	124	77	60	3,3	45	●
13,500	.5315	1199438	B105A13500	14	124	77	60	3,4	45	●
13,800	.5433	1191459	B105A13800	14	124	77	60	3,5	45	●
14,000	.5512	1191460	B105A14000	14	124	77	60	3,5	45	●
14,200	.5591	1191461	B105A14200	16	133	83	63	3,6	48	●
14,500	.5709	1191462	B105A14500	16	133	83	63	3,6	48	●
15,000	.5906	1191463	B105A15000	16	133	83	63	3,8	48	●
15,100	.5945	1191464	B105A15100	16	133	83	63	3,8	48	●
15,500	.6102	1199455	B105A15500	16	133	83	63	3,9	48	●
15,800	.6220	1191465	B105A15800	16	133	83	63	4,0	48	●
16,000	.6299	1191466	B105A16000	16	133	83	63	4,0	48	●
16,500	.6496	1191467	B105A16500	18	143	93	71	4,1	48	●
17,000	.6693	1199469	B105A17000	18	143	93	71	4,3	48	●
17,500	.6890	1199472	B105A17500	18	143	93	71	4,4	48	●
18,000	.7087	1191468	B105A18000	18	143	93	71	4,5	48	●
18,500	.7283	1199480	B105A18500	20	153	101	77	4,6	50	●
19,000	.7480	1199488	B105A19000	20	153	101	77	4,8	50	●
19,500	.7677	1199492	B105A19500	20	153	101	77	4,9	50	●
20,000	.7874	1191469	B105A20000	20	153	101	77	5,0	50	●
20,500	.8071	1191470	B105A20500	20	167	115	85	5,1	51	●
21,000	.8268	1199675	B105A21000	20	167	115	85	5,3	51	●

Ordering Example:
By catalog number B105A03000 K10, or by order number 1191414.

KENNAMETAL

TF Drills without Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

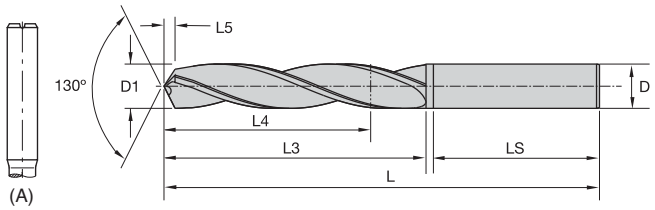
H	
S	
N	
K	●
M	
P	

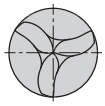
B105

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K10
3,000	.1181	1199497	B105F03000	6	66	28	23	0,8	36	●
3,300	.1299	1199502	B105F03300	6	66	28	23	0,8	36	●
4,000	.1575	1199514	B105F04000	6	74	36	29	1,0	36	●
4,200	.1654	1191471	B105F04200	6	74	36	29	1,1	36	●
5,000	.1969	1191472	B105F05000	6	82	44	35	1,3	36	●
5,500	.2165	1199537	B105F05500	6	82	44	35	1,4	36	●
6,000	.2362	1199543	B105F06000	6	82	44	35	1,5	36	●
6,500	.2559	1191473	B105F06500	8	91	53	43	1,6	36	●
6,800	.2677	1191475	B105F06800	8	91	53	43	1,7	36	●
7,000	.2756	1191476	B105F07000	8	91	53	43	1,8	36	●
8,000	.3150	1199569	B105F08000	8	91	53	43	2,0	36	●
8,500	.3346	1199577	B105F08500	10	103	61	49	2,1	40	●
9,000	.3543	1199579	B105F09000	10	103	61	49	2,3	40	●
9,500	.3740	1199585	B105F09500	10	103	61	49	2,4	40	●
10,200	.4016	1199594	B105F10200	12	118	71	56	2,6	45	●
10,500	.4134	1199596	B105F10500	12	118	71	56	2,6	45	●
11,000	.4331	1199598	B105F11000	12	118	71	56	2,8	45	●
11,500	.4528	1199602	B105F11500	12	118	71	56	2,9	45	●
12,000	.4724	1199608	B105F12000	12	118	71	56	3,0	45	●
13,000	.5118	1199612	B105F13000	14	124	77	60	3,3	45	●
13,500	.5315	1199617	B105F13500	14	124	77	60	3,4	45	●
14,000	.5512	1199622	B105F14000	14	124	77	60	3,5	45	●

Ordering Example:
By catalog number B105F03000 K10, or by order number 1199497.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	

B105

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7210
3,500	.1378	1198992	B105A03500	6	66	28	23	0,9	36	●
4,000	.1575	1198995	B105A04000	6	74	36	29	1,0	36	●
4,200	.1654	1198997	B105A04200	6	74	36	29	1,1	36	●
5,000	.1969	1199003	B105A05000	6	82	44	35	1,3	36	●
5,500	.2165	1199006	B105A05500	6	82	44	35	1,4	36	●
6,000	.2362	1199009	B105A06000	6	82	44	35	1,5	36	●
6,500	.2559	1199011	B105A06500	8	91	53	43	1,6	36	●
6,800	.2677	1199013	B105A06800	8	91	53	43	1,7	36	●
7,000	.2756	1199016	B105A07000	8	91	53	43	1,8	36	●
8,000	.3150	1199019	B105A08000	8	91	53	43	2,0	36	●
8,500	.3346	1199023	B105A08500	10	103	61	49	2,1	40	●
9,000	.3543	1199025	B105A09000	10	103	61	49	2,3	40	●
10,000	.3937	1199029	B105A10000	10	103	61	49	2,5	40	●
10,200	.4016	1199032	B105A10200	12	118	71	56	2,6	45	●
10,500	.4134	1199034	B105A10500	12	118	71	56	2,6	45	●
11,000	.4331	1199038	B105A11000	12	118	71	56	2,8	45	●
11,500	.4528	1199039	B105A11500	12	118	71	56	2,9	45	●
12,000	.4724	1199042	B105A12000	12	118	71	56	3,0	45	●
12,500	.4921	1199044	B105A12500	14	124	77	60	3,1	45	●
13,000	.5118	1199047	B105A13000	14	124	77	60	3,3	45	●
13,500	.5315	1199049	B105A13500	14	124	77	60	3,4	45	●
14,000	.5512	1199051	B105A14000	14	124	77	60	3,5	45	●
15,000	.5906	1199058	B105A15000	16	133	83	63	3,8	48	●
15,500	.6102	1199059	B105A15500	16	133	83	63	3,9	48	●
17,500	.6890	1199069	B105A17500	18	143	93	71	4,4	48	●
18,000	.7087	1199072	B105A18000	18	143	93	71	4,5	48	●
18,500	.7283	1199074	B105A18500	20	153	101	77	4,6	50	●

Ordering Example:
By catalog number B105A03500 KC7210, or by order number 1198992.

KENNAMETAL

Solid Carbide Drills

TF Drills with Through Coolant

Primary Application

B/K 125 Solid Carbide Drills are specifically designed for titanium and titanium alloy workpiece materials.

Features and Benefits

Three Cutting Edges

- Higher feed rates than two-edged drills.

Three-Flute Design

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

Through-Coolant Design

- Improved chip evacuation enables deeper holes.
- More effective cooling of the cutting edges and longer tool life.
- Lubrication of the margin lands and better hole surface quality.

Fine Grained Carbide Grade

- Optimum combination of toughness and wear resistance for titanium drilling applications.

Customization

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

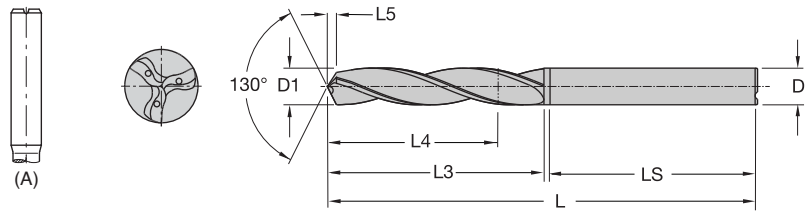
TF Drills – B125/K125 Series – Grade K715 – Through Coolant

Starting Value	Cutting Speed											Tool diameter								
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
S4	Titanium Alloys												Tensile Strength RM (MPa)*: 900-1600						Hardness (HB) or HRC: 300-400		
													Feed rate by diameter								
262	sfm												ipr	–	–	.001 - .003	.001 - .003	.001 - .003	.003 - .006	.003 - .006	–
80	m/min												mm/r	–	–	0,03 - 0,08	0,03 - 0,08	0,03 - 0,08	0,08 - 0,15	0,08 - 0,15	–

230 295 (sfm) / 70 90 (m/min)

* 1 MPa = 145 psi

TF Drills with Coolant



Tolerance

D1	Tolerance m7	D	Tolerance h6
>.2362 to .3937	.0002/.0006	.2500 to .6250	.0000/.0004
>.3937 to .6250	.0003/.0007	-	-

● first choice
○ alternate choice

H		
S		●
N		○
K		○
M		
P		

K125

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
.2500	1/4	6,350	1762620	K125A02500	.2500	3.74	1.69	1.37	.063	1.95	●
.2813	9/32	7,145	1762642	K125A02813	.3125	4.33	1.97	1.59	.070	2.26	●
.2950	–	7,493	1762643	K125A02950	.3125	4.33	1.97	1.59	.074	2.26	●
.3125	5/16	7,938	1762645	K125A03125	.3125	4.33	1.97	1.59	.078	2.26	●
.3438	11/32	8,733	1762646	K125A03438	.3750	4.92	2.36	1.92	.086	2.46	●
.3750	3/8	9,525	1762648	K125A03750	.3750	4.92	2.36	1.92	.094	2.46	●
.4063	13/32	10,320	1762649	K125A04063	.4375	5.24	2.60	2.09	.102	2.54	●
.4219	27/64	10,716	1762650	K125A04219	.4375	5.24	2.60	2.09	.106	2.54	●
.4375	7/16	11,113	1762661	K125A04375	.4375	5.24	2.60	2.09	.109	2.54	●
.4844	31/64	12,304	1762662	K125A04844	.5000	5.63	2.76	2.19	.121	2.78	●
.5000	1/2	12,700	1762665	K125A05000	.5000	5.63	2.76	2.19	.125	2.78	●
.5625	9/16	14,288	1762666	K125A05625	.5625	6.10	2.99	2.36	.141	3.01	●
.6250	5/8	15,875	1762668	K125A06250	.6250	6.73	3.23	2.54	.156	3.41	●

● first choice
○ alternate choice

H		
S		●
N		○
K		○
M		
P		

B125

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
6,000	.2362	1762669	B125A06000	6	94	44	35	1,5	48	●
6,500	.2559	1762670	B125A06500	8	105	53	43	1,6	50	●
6,800	.2677	1762691	B125A06800	8	105	53	43	1,7	50	●
7,000	.2756	1762692	B125A07000	8	105	53	43	1,8	50	●
7,400	.2913	1762693	B125A07400	8	110	53	43	1,9	55	●
7,500	.2953	1762694	B125A07500	8	110	53	43	1,9	55	●
8,000	.3150	1762695	B125A08000	8	110	53	43	2,0	55	●
8,500	.3346	1762696	B125A08500	10	122	61	49	2,1	59	●
9,000	.3543	1762697	B125A09000	10	122	61	49	2,3	59	●
9,500	.3740	1762698	B125A09500	10	122	61	49	2,4	59	●
10,000	.3937	1762700	B125A10000	10	122	61	49	2,5	59	●
10,500	.4134	1762702	B125A10500	12	141	71	56	2,6	68	●
11,000	.4331	1762703	B125A11000	12	141	71	56	2,8	68	●
12,000	.4724	1762704	B125A12000	12	141	71	56	3,0	68	●
14,000	.5512	1762705	B125A14000	14	155	77	60	3,5	76	●

Ordering Example:
By catalog number B125A06000 K715, or by order number 1762669.

Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 14	0,007/0,025	12 to 18	0,000/-0,011

KENNAMETAL

Solid Carbide Drills

TX Drills with Through Coolant

Primary Application

B/K 411 Solid Carbide Drills have an X-shaped free-cutting 130° point design and are designed for grey cast iron, nodular iron, and nonferrous and aluminum alloy materials. Best suited for high-quality, close tolerance holes that require a very good surface finish.

Features and Benefits

Two Cutting Edges with Straight Flutes

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

X-Shaped Drill Point

- Excellent centering capabilities.

Four-Margin Land Design

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

Wear-Resistant Carbide Grade

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

Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- Coated KC7205 grade delivers high wear resistance with very high diameter accuracy.

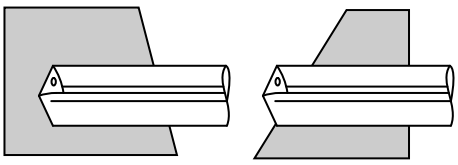
TX Drills – B411 / K411 Series – Grade KF1 – Through Coolant

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787	1
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0	25,4
K1	**Cast and Low-Strength Ductile Irons**		**Tensile Strength RM (MPa)*: 150-400**						**Hardness (HB) or HRC:**			**120-290**
			Feed rate by diameter									
377	sfm	197 – 460	ipr	.004 - .008	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.009 - .017	.012 - .021	.013 - .026	.016 - .03
115	m/min	60 – 140	mm/r	0,11 - 0,20	0,12 - 0,24	0,15 - 0,28	0,18 - 0,33	0,20 - 0,38	0,23 - 0,44	0,30 - 0,53	0,34 - 0,65	0,40 - 0,76
N1	**Wrought Aluminum Alloys**		**Tensile Strength RM (MPa)*: <520**									
			Feed rate by diameter									
820	sfm	328 – 1476	ipr	.006 -.010	.007 - .011	.009 - .014	.011 - .017	.012 -.020	.014 - .022	.017 - .027	.020 - .032	.024 - .038
250	m/min	100 – 450	mm/r	0,16 - 0,25	0,19 -0,29	0,23 - 0,35	0,27 - 0,42	0,31 - 0,50	0,36 - 0,57	0,44 - 0,69	0,52 - 0,82	0,62 - 0,96
N2	**Cast Aluminum**	**Content:Si <12.2%**	**Tensile Strength RM (MPa)*: <350**						**Hardness (HB) or HRC: 70-100**			
			Feed rate by diameter									
656	sfm	328 – 984	ipr	.006 - .009	.007 - .011	.008 - .013	.010 - .015	.012 - .018	.013 - .021	.017 - .026	.020 - .032	.024 - .038
200	m/min	100 – 300	mm/r	0,15 -0,23	0,17 -0,28	0,21 - 0,34	0,25 - 0,39	0,30 - 0,46	0,34 - 0,54	0,42 - 0,67	0,52 - 0,82	0,61 - 0,96
N5	**Copper and Copper Alloys**		**Tensile Strength RM (MPa)*: 200-650**						**Hardness (HB) or HRC: 60-200**			
			Feed rate by diameter									
568	sfm	328 – 820	ipr	.006 - .011	.006 - .013	.007 - .014	.009 - .016	.010 - .017	.011 - .019	.013 - .022	.014 - .025	.017 - .028
173	m/min	100 – 250	mm/r	0,16 - 0,28	0,15 - 0,32	0,19 - 0,36	0,23 - 0,40	0,25 - 0,44	0,28 - 0,48	0,32 - 0,56	0,35 - 0,63	0,42 - 0,72
S4	**Titanium Alloys**		**Tensile Strength RM (MPa)*: 900-1600**						**Hardness (HB) or HRC: 300-400**			
			Feed rate by diameter									
131	sfm	66 – 164	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .004	.004 - .006	.005 - .007	.007 - .010	.009 - .013	.011 - .015
40	m/min	20 – 50	mm/r	0,04 - 0,07	0,04 - 0,07	0,06 - 0,09	0,08 - 0,10	0,10 - 0,14	0,13 - 0,18	0,18 - 0,26	0,22 - 0,32	0,27 - 0,38

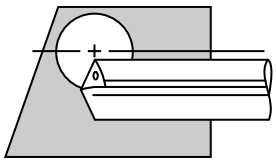
* 1 MPa = 145 psi

TX Drill Applications

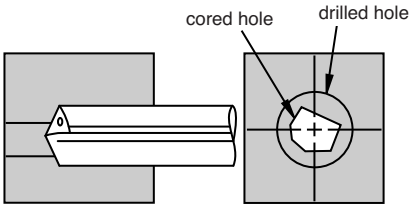
The excellent stability of the TX drill allows it to be used for drilling through inclined planes, intersecting holes, and cored holes.



inclined planes

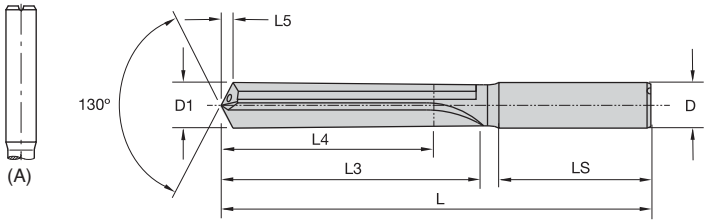


intersecting holes



cored holes

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



Tolerance			
D1	**Tolerance k6**	**D**	**Tolerance h6**
>.1181 to .2362	.0000/.0004	.1875	.0000/-.0003
>.2362 to .3937	.0000/.0004	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0000/.0005	.7500	.0000/-.0005
>.7087 to .7500	.0001/.0006	—	—

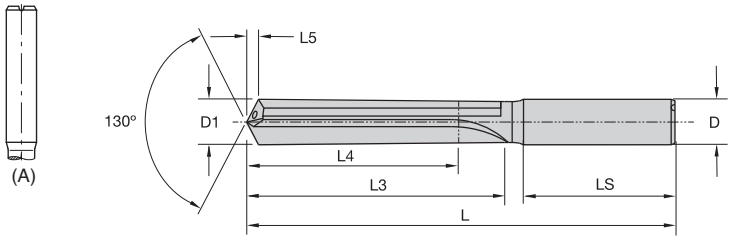
● first choice
○ alternate choice

H	
S	
N	●
K	●
M	
P	

K411

D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KF1
.1250	1/8	3,175	1201023	K411A01250	.1875	2.60	1.08	.84	.029	1.44	●
.1406	9/64	3,571	1201024	K411A01406	.1875	2.60	1.08	.84	.033	1.44	●
.1563	5/32	3,970	1201025	K411A01563	.1875	2.60	1.08	.84	.037	1.44	●
.1719	11/64	4,366	1201026	K411A01719	.1875	2.91	1.40	1.13	.040	1.44	●
.1875	3/16	4,763	1201027	K411A01875	.1875	2.91	1.40	1.13	.044	1.44	●
.2031	13/64	5,159	1201028	K411A02031	.2500	3.23	1.71	1.37	.047	1.44	●
.2188	7/32	5,558	1201029	K411A02188	.2500	3.23	1.71	1.37	.051	1.44	●
.2344	15/64	5,954	1201030	K411A02344	.2500	3.23	1.71	1.37	.055	1.44	●
.2500	1/4	6,350	1201031	K411A02500	.2500	3.23	1.71	1.37	.058	1.44	●
.2656	17/64	6,746	1201032	K411A02656	.3125	3.58	1.99	1.59	.062	1.52	●
.2812	9/32	7,142	1201033	K411A02812	.3125	3.58	1.99	1.59	.066	1.52	●
.2969	19/64	7,541	1201034	K411A02969	.3125	3.58	1.99	1.59	.069	1.52	●
.3125	5/16	7,938	1201035	K411A03125	.3125	3.58	1.99	1.59	.073	1.52	●
.3281	21/64	8,334	1201036	K411A03281	.3750	4.06	2.38	1.92	.077	1.59	●
.3438	11/32	8,733	1201037	K411A03438	.3750	4.06	2.38	1.92	.080	1.59	●
.3594	23/64	9,129	1201038	K411A03594	.3750	4.06	2.38	1.92	.084	1.59	●
.3750	3/8	9,525	1201039	K411A03750	.3750	4.06	2.38	1.92	.088	1.59	●
.3906	25/64	9,921	1201040	K411A03906	.4375	4.37	2.62	2.09	.091	1.67	●
.4063	13/32	10,320	1201041	K411A04063	.4375	4.37	2.62	2.09	.095	1.67	●
.4219	27/64	10,716	1201042	K411A04219	.4375	4.37	2.62	2.09	.098	1.67	●
.4375	7/16	11,113	1201043	K411A04375	.4375	4.37	2.62	2.09	.102	1.67	●
.4531	29/64	11,509	1201044	K411A04531	.5000	4.65	2.78	2.19	.106	1.79	●
.4688	15/32	11,908	1201045	K411A04688	.5000	4.65	2.78	2.19	.109	1.79	●
.4844	31/64	12,304	1201046	K411A04844	.5000	4.65	2.78	2.19	.113	1.79	●
.5000	1/2	12,700	1201047	K411A05000	.5000	4.65	2.78	2.19	.117	1.79	●
.5156	33/64	13,096	1201048	K411A05156	.5625	4.88	3.01	2.36	.120	1.79	●
.5313	17/32	13,495	1201049	K411A05313	.5625	4.88	3.01	2.36	.124	1.79	●
.5469	35/64	13,891	1201050	K411A05469	.5625	4.88	3.01	2.36	.128	1.79	●
.5625	9/16	14,288	1201051	K411A05625	.5625	4.88	3.01	2.36	.131	1.79	●
.5781	37/64	14,684	1201052	K411A05781	.6250	5.24	3.25	2.54	.135	1.91	●
.5938	19/32	15,083	1201053	K411A05938	.6250	5.24	3.25	2.54	.139	1.91	●
.6250	5/8	15,875	1201055	K411A06250	.6250	5.24	3.25	2.54	.146	1.91	●
.6875	11/16	17,463	1796444	K411A06875	.6875	5.63	3.64	2.87	.160	1.91	●
.7500	3/4	19,050	1796445	K411A07500	.7500	5.83	3.76	2.93	.175	1.99	●

Ordering Example:
By catalog number K411A01250 KF1, or by order number 1201023.



Tolerance			
D1	**Tolerance k6**	**D**	**Tolerance h6**
>3 to 6	0,001/0,009	6	0,000/-0,008
>6 to 10	0,001/0,010	8 to 10	0,000/-0,009
>10 to 18	0,001/0,012	12 to 18	0,000/-0,011
>18 to 25	0,002/0,015	20 to 25	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	●
K	●
M	
P	

B411

D1										
mm	inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KF1
3,200	.1260	1198564	B411A03200	6	66	28	23	0,7	36	●
3,300	.1299	1198566	B411A03300	6	66	28	23	0,8	36	●
3,800	.1496	1198568	B411A03800	6	74	36	29	0,9	36	●
4,000	.1575	1198570	B411A04000	6	74	36	29	0,9	36	●
4,200	.1654	1198572	B411A04200	6	74	36	29	1,0	36	●
4,500	.1772	1198574	B411A04500	6	74	36	29	1,1	36	●
4,600	.1811	1198576	B411A04600	6	74	36	29	1,1	36	●
4,650	.1831	1198578	B411A04650	6	74	36	29	1,1	36	●
4,800	.1890	1198580	B411A04800	6	82	44	35	1,1	36	●
4,900	.1929	1198582	B411A04900	6	82	44	35	1,1	36	●
5,000	.1969	1191612	B411A05000	6	82	44	35	1,2	36	●
5,100	.2008	1198586	B411A05100	6	82	44	35	1,2	36	●
5,200	.2047	1198588	B411A05200	6	82	44	35	1,2	36	●
5,500	.2165	1198590	B411A05500	6	82	44	35	1,3	36	●
5,550	.2185	1198592	B411A05550	6	82	44	35	1,3	36	●
5,800	.2283	1198594	B411A05800	6	82	44	35	1,4	36	●
6,000	.2362	1191613	B411A06000	6	82	44	35	1,4	36	●
6,300	.2480	1198597	B411A06300	8	91	53	43	1,5	36	●
6,400	.2520	1198599	B411A06400	8	91	53	43	1,5	36	●
6,500	.2559	1198602	B411A06500	8	91	53	43	1,5	36	●
6,600	.2598	1198606	B411A06600	8	91	53	43	1,5	36	●
6,800	.2677	1198608	B411A06800	8	91	53	43	1,6	36	●
7,000	.2756	1198610	B411A07000	8	91	53	43	1,6	36	●
7,400	.2913	1198613	B411A07400	8	91	53	43	1,7	36	●
7,500	.2953	1198617	B411A07500	8	91	53	43	1,8	36	●
7,800	.3071	1198620	B411A07800	8	91	53	43	1,8	36	●
8,000	.3150	1191614	B411A08000	8	91	53	43	1,9	36	●
8,400	.3307	1198625	B411A08400	10	103	61	49	2,0	40	●
8,500	.3346	1198628	B411A08500	10	103	61	49	2,0	40	●
9,000	.3543	1198630	B411A09000	10	103	61	49	2,1	40	●
9,300	.3661	1198632	B411A09300	10	103	61	49	2,2	40	●
9,500	.3740	1198635	B411A09500	10	103	61	49	2,2	40	●
9,800	.3858	1198640	B411A09800	10	103	61	49	2,3	40	●
10,000	.3937	1191616	B411A10000	10	103	61	49	2,3	40	●

(continued on next page)

B411

(continued from previous page)

● first choice
○ alternate choice

H										
S										
N										●
K										●
M										
P										

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KF1
10,200	.4016	1198644	B411A10200	12	118	71	56	2,4	45	●
10,500	.4134	1198648	B411A10500	12	118	71	56	2,5	45	●
11,000	.4331	1198650	B411A11000	12	118	71	56	2,6	45	●
11,200	.4409	1198652	B411A11200	12	118	71	56	2,6	45	●
11,500	.4528	1198656	B411A11500	12	118	71	56	2,7	45	●
11,800	.4646	1198658	B411A11800	12	118	71	56	2,8	45	●
12,000	.4724	1191617	B411A12000	12	118	71	56	2,8	45	●
12,500	.4921	1198663	B411A12500	14	124	77	60	2,9	45	●
13,000	.5118	1198665	B411A13000	14	124	77	60	3,0	45	●
13,500	.5315	1198667	B411A13500	14	124	77	60	3,1	45	●
13,800	.5433	1198670	B411A13800	14	124	77	60	3,2	45	●
14,000	.5512	1191618	B411A14000	14	124	77	60	3,3	45	●
14,500	.5709	1198679	B411A14500	16	133	83	63	3,4	48	●
15,000	.5906	1198682	B411A15000	16	133	83	63	3,5	48	●
15,500	.6102	1198684	B411A15500	16	133	83	63	3,6	48	●
16,000	.6299	1191619	B411A16000	16	133	83	63	3,7	48	●
16,500	.6496	1198691	B411A16500	18	143	93	71	3,8	48	●
17,000	.6693	1198694	B411A17000	18	143	93	71	4,0	48	●
17,500	.6890	1198697	B411A17500	18	143	93	71	4,1	48	●
18,000	.7087	1198701	B411A18000	18	143	93	71	4,2	48	●
19,000	.7480	1198703	B411A19000	20	153	101	77	4,4	50	●
19,500	.7677	1198704	B411A19500	20	153	101	77	4,5	50	●
20,000	.7874	1198707	B411A20000	20	153	101	77	4,7	50	●
21,000	.8268	1198711	B411A21000	20	167	114	85	4,9	50	●
22,000	.8661	1198714	B411A22000	20	167	114	85	5,1	50	●
23,000	.9055	1198716	B411A23000	25	184	126	98	5,4	56	●
24,000	.9449	1198718	B411A24000	25	184	126	98	5,6	56	●
25,000	.9843	1198721	B411A25000	25	184	126	98	5,8	56	●

Ordering Example:
By catalog number B411A03200 KF1, or by order number 1198564.

Solid Carbide Drills

HP Drills for Stainless Steel with Through Coolant

Primary Application

B/K210_HP Series Solid Carbide Drills are designed specifically for stainless steel applications. They offer high performance and long tool life in regular steel and titanium materials.

Features and Benefits

HP Drill Point Design

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

Unique Flute Design

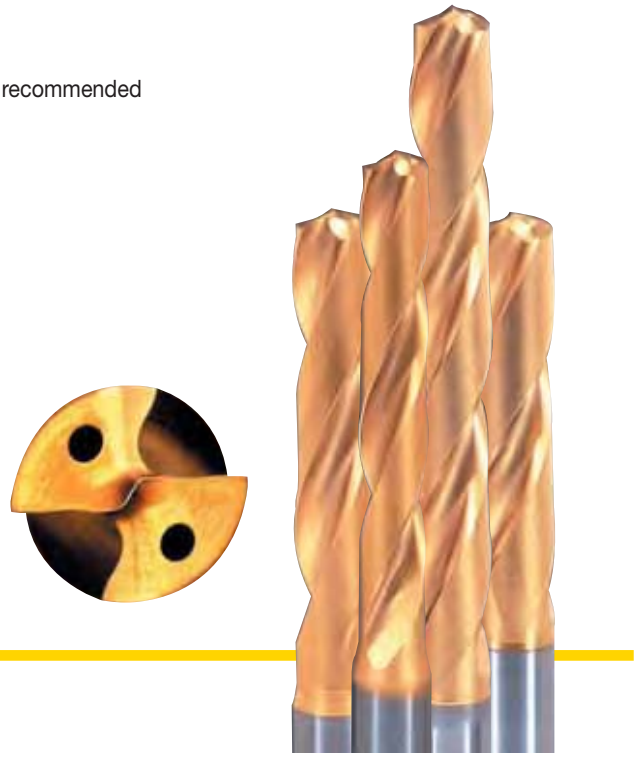
- Drastically improved chip evacuation.
- Capability to drill deeper holes in difficult-to-machine materials.

KC7515 Grade

- A nanolayer, TiAlN-based coating with high wear resistance and low adhesion to stainless steel materials.
- Optimum protection of the margins for easy reconditioning.

Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- High step diameter ratios and very complex step drill geometries are not recommended for austenitic stainless steel.



SE Drills–B210HP, B211HP, B212HP/K210HP, K211HP, K212HP Series–Grade KC7515–Through Coolant

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1	**Low-Carbon Steels, Long chipping**		**Content C <.25%**	**Tensile Strength RM (MPa)*: <530**					**Hardness (HB) or HRC: <125**		
			Feed rate by diameter								
492	sfm	328 – 656	ipr	.002 - .005	.003 - .007	.004 - .009	.005 - .011	.006- .013	.007 - .015	.007 - .017	.009 - .019
150	m/min	100 – 200	mm/r	0,05 - 0,12	0,08 - 0,18	0,10 - 0,23	0,13 - 0,29	0,15 - 0,33	0,17 - 0,37	0,19 - 0,44	0,22 - 0,49
P2	**Low-Carbon Steels, Free Machining and short chipping**		**Content C <.25%**	**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: <220**		
			Feed rate by diameter								
525	sfm	410 – 656	ipr	.002 - .005	.003 - .006	.004 - .007	.005 - .009	.006 - .010	.007 - .012	.007 - .014	.009 - .015
160	m/min	125 – 200	mm/r	0,05 - 0,12	0,08 - 0,16	0,10 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30	0,19 - 0,35	0,22 - 0,39
P3	**Medium & High Plain-Carbon Steels, Low-alloyed**		**Content C >.25%**	**Tensile Strength RM (MPa)*: 600-850**					**Hardness (HB) or HRC: <330**		
			Feed rate by diameter								
459	sfm	328 – 591	ipr	.003 - .005	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.010 - .017	.011 - .019
140	m/min	100 – 180	mm/r	0,08 - 0,12	0,11 - 0,18	0,13 - 0,23	0,16 - 0,29	0,19 - 0,33	0,21 - 0,37	0,25 - 0,44	0,28 - 0,49
P4	**Alloyed and Tempered Carbon Steels, Tool Steels**		**Content C >. 25%**	**Tensile Strength RM (MPa)*: 800-1100**					**Hardness (HB) or HRC: 350-450**		
			Feed rate by diameter								
361	sfm	262 – 459	ipr	.003 - .004	.004 - .007	.004 - .009	.006 - .011	.006- .012	.007 - .014	.008 - .016	.009 - .018
110	m/min	80 – 140	mm/r	0,08 - 0,11	0,10 - 0,17	0,11 - 0,22	0,14 - 0,27	0,16 - 0,31	0,18 - 0,35	0,21 - 0,41	0,24 - 0,46
P5	**Ferritic, Martensitic, and PH Stainless Steels**		**Content 0%-.4%**	**Tensile Strength RM (MPa)*: 600-850**					**Hardness (HB) or HRC: <330**		
			Feed rate by diameter								
246	sfm	197 – 295	ipr	.001 - .004	.002 - .004	.002 - .004	.002 - .005	.003- .006	.004 - .008	.005 - .009	.006 - .010
75	m/min	60 – 90	mm/r	0,03 - 0,10	0,04 - 0,10	0,05 - 0,10	0,05 - 0,13	0,08 - 0,17	0,10 - 0,20	0,13 - 0,23	0,15 - 0,25
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content .1%-6%**	**Tensile Strength RM (MPa)*: 900-1350**					**Hardness (HB) or HRC: 350-450**		
			Feed rate by diameter								
377	sfm	230 – 525	ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .008	.006- .009	.006 - .010	.007 - .012	.008 - .013
115	m/min	70 – 160	mm/r	0,05 - 0,10	0,08 - 0,13	0,10 - 0,16	0,12 - 0,20	0,14 - 0,23	0,16 - 0,26	0,18 - 0,31	0,21 - 0,34

* 1 MPa = 145 psi

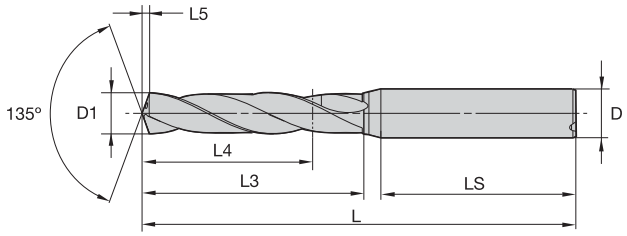
(continued on next page)

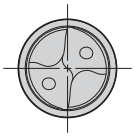
SE Drills–B210HP, B211HP, B212HP/K210HP, K211HP, K212HP Series–Grade KC7515–Through Coolant

(continued from previous page)

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
M1 Austenitic Stainless Steel			**Content C =.05%-.15%**					**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: 130-200**	
			Feed rate by diameter								
246	sfm	197 295	ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005- .008	.005 - .009	.006 - .010	.007 - .011
75	m/min	60 90	mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,12 - 0,22	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28
M2 High Strength Austenitic Stainless and Cast Stainless Steels			**Content C=.05%-.15%**			**Tensile Strength RM (MPa)*: 500-700**				**Hardness (HB) or HRC: 150-230**	
			Feed rate by diameter								
197	sfm	164 262	ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005- .008	.005 - .009	.006 - .010	.007 - .011
60	m/min	50 80	mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,12 - 0,22	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28
M3 Duplex Steel			**Content C=.05-.2%**				**Tensile Strength RM (MPa)*: <900**			**Hardness (HB) or HRC: 135-275**	
			Feed rate by diameter								
180	sfm	131 230	ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005- .008	.005 - .009	.006 - 0.01	.007 - .011
55	m/min	40 70	mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,12 - 0,22	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28
S1 Iron-Based, Heat Resistant Alloys							**Tensile Strength RM (MPa)*: 500-1200**			**Hardness (HB) or HRC: 160-260**	
			Feed rate by diameter								
56	sfm	49 66	ipr	.001 - .003	.002 - .004	.002 - .004	.002 - .004	.003- .005	.004 - .006	.005 - .007	.006 - .008
17	m/min	15 20	mm/r	0,03 - 0,08	0,04 - 0,09	0,05 - 0,10	0,05 - 0,10	0,08 - 0,13	0,10 - 0,15	0,13 - 0,18	0,15 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys							**Tensile Strength RM (MPa)*: 1000-1450**			**Hardness (HB) or HRC: 250-450**	
			Feed rate by diameter								
66	sfm	33 98	ipr	.001 - .004	.002 - .004	.002 - .004	.002 - .004	.003- .005	.004 - .006	.005 - .007	.006 - .008
20	m/min	10 30	mm/r	0,03 - 0,10	0,04 - 0,10	0,05 - 0,10	0,05 - 0,10	0,08 - 0,13	0,10 - 0,15	0,13 - 0,18	0,15 - 0,20
S4 Titanium Alloys							**Tensile Strength RM (MPa)*: 900-1600**			**Hardness (HB) or HRC: 300-400**	
			Feed rate by diameter								
148	sfm	98 180	ipr	.001 - .002	.001 - .002	.002 - .003	.002 - .003	.003- .004	.003 - .004	.004 - .005	.004 - .005
45	m/min	30 55	mm/r	0,02 - 0,04	0,04 - 0,06	0,05 - 0,07	0,05 - 0,07	0,07- 0,10	0,07 - 0,10	0,10 - 0,12	0,10 - 0,12

* 1 MPa = 145 psi





Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005
>.7087 to .7500	.0003/.0011	—	—

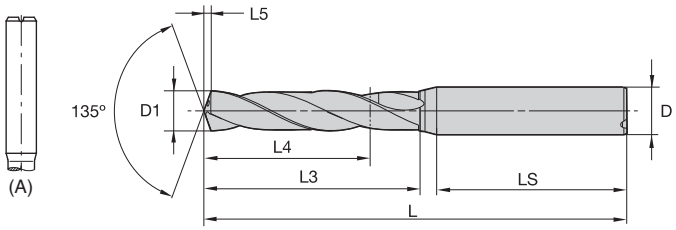
● first choice
○ alternate choice

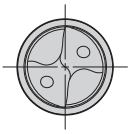
H	
S	●
N	
K	
M	●
P	○

K210_HP

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
.1563	5/32	3,970	2249515	K210A01563HP	.1875	2.48	.91	.69	.029	1.44	●
.1875	3/16	4,760	2249516	K210A01875HP	.1875	2.68	1.14	.89	.035	1.44	●
.2188	—	5,560	2249517	K210A02188HP	.2500	2.87	1.34	1.02	.040	1.44	●
.2500	1/4	6,350	2249518	K210A02500HP	.2500	2.87	1.34	1.02	.046	1.44	●
.2656	17/64	6,750	2249519	K210A02656HP	.3125	3.11	1.50	1.11	.049	1.52	●
.2813	9/32	7,150	2249520	K210A02813HP	.3125	3.11	1.50	1.11	.052	1.52	●
.2969	19/64	7,540	2249521	K210A02969HP	.3125	3.11	1.50	1.11	.055	1.52	●
.3125	5/16	7,940	2249522	K210A03125HP	.3125	3.11	1.50	1.11	.058	1.52	●
.3281	21/64	8,330	2249563	K210A03281HP	.3750	3.50	1.81	1.37	.061	1.59	●
.3438	11/32	8,730	2249564	K210A03438HP	.3750	3.50	1.81	1.37	.064	1.59	●
.3594	23/64	9,130	2249565	K210A03594HP	.3750	3.50	1.81	1.37	.066	1.59	●
.3750	3/8	9,530	2249566	K210A03750HP	.3750	3.50	1.81	1.37	.069	1.59	●
.3906	25/64	9,920	2249567	K210A03906HP	.4375	3.78	2.01	1.50	.072	1.67	●
.4063	13/32	10,320	2249568	K210A04063HP	.4375	3.78	2.01	1.50	.075	1.67	●
.4219	27/64	10,720	2249569	K210A04219HP	.4375	3.78	2.01	1.50	.078	1.67	●
.4375	7/16	11,110	2249570	K210A04375HP	.4375	3.78	2.01	1.50	.081	1.67	●
.4531	29/64	11,510	2249571	K210A04531HP	.5000	4.02	2.13	1.56	.084	1.79	●
.4688	15/32	11,910	2249572	K210A04688HP	.5000	4.02	2.13	1.56	.087	1.79	●
.4844	31/64	12,300	2249573	K210A04844HP	.5000	4.02	2.13	1.56	.090	1.79	●
.5000	1/2	12,700	2249574	K210A05000HP	.5000	4.02	2.13	1.56	.092	1.79	●
.5625	9/16	14,290	2249575	K210A05625HP	.5625	4.21	2.32	1.69	.104	1.79	●
.6250	5/8	15,880	2249576	K210A06250HP	.6250	4.53	2.52	1.83	.115	1.91	●
.6875	11/16	17,460	2249577	K210A06875HP	.6875	4.84	2.84	2.09	.127	1.91	●
.7500	3/4	19,050	2249578	K210A07500HP	.7500	5.08	2.99	2.19	.139	1.99	●

Ordering Example:
By catalog number K210A01563HP KC7515, or by order number 2249515.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	●
N	
K	
M	●
P	○

B210_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
3,000	.1181	2951464	B210A03000HP	6	62	20	14	0,6	36	●
3,175	.1250	2951589	B210A03175HP	6	62	20	14	0,6	36	●
3,300	.1299	2951465	B210A03300HP	6	62	20	14	0,6	36	●
3,500	.1378	2575493	B210A03500HP	6	62	20	14	0,7	36	●
3,700	.1457	2951466	B210A03700HP	6	62	20	14	0,7	36	●
4,000	.1574	2250867	B210A04000HP	6	66	24	17	0,7	36	●
4,200	.1654	2250868	B210A04200HP	6	66	24	17	0,8	36	●
4,500	.1772	2250869	B210A04500HP	6	66	24	17	0,8	36	●
5,000	.1968	2250870	B210A05000HP	6	66	28	20	0,9	36	●
5,100	.2008	2250871	B210A05100HP	6	66	28	20	0,9	36	●
5,200	.2047	2250872	B210A05200HP	6	66	28	20	1,0	36	●
5,400	.2126	2250883	B210A05400HP	6	66	28	20	1,0	36	●
5,500	.2165	2250884	B210A05500HP	6	66	28	20	1,0	36	●
5,800	.2283	2250885	B210A05800HP	6	66	28	20	1,1	36	●
6,000	.2362	2250886	B210A06000HP	6	66	28	20	1,1	36	●
6,100	.2402	2250887	B210A06100HP	8	79	34	24	1,2	36	●
6,300	.2480	2250888	B210A06300HP	8	79	34	24	1,2	36	●
6,500	.2559	2250889	B210A06500HP	8	79	34	24	1,2	36	●
6,800	.2677	2250890	B210A06800HP	8	79	34	24	1,3	36	●
6,900	.2716	2250891	B210A06900HP	8	79	34	24	1,3	36	●
7,000	.2756	2250892	B210A07000HP	8	79	34	24	1,3	36	●
7,100	.2795	2250893	B210A07100HP	8	79	34	24	1,3	36	●
7,500	.2953	2250894	B210A07500HP	8	79	34	24	1,4	36	●
7,800	.3071	2250895	B210A07800HP	8	79	34	24	1,4	36	●
8,000	.3149	2250896	B210A08000HP	8	79	34	24	1,5	36	●
8,100	.3189	2250897	B210A08100HP	10	89	47	35	1,5	40	●
8,200	.3228	2250898	B210A08200HP	10	89	47	35	1,5	40	●
8,400	.3307	2250899	B210A08400HP	10	89	47	35	1,6	40	●
8,500	.3346	2250900	B210A08500HP	10	89	47	35	1,6	40	●
8,600	.3386	2250901	B210A08600HP	10	89	47	35	1,6	40	●
8,700	.3425	2250902	B210A08700HP	10	89	47	35	1,6	40	●
9,000	.3543	2250903	B210A09000HP	10	89	47	35	1,7	40	●
9,500	.3740	2250904	B210A09500HP	10	89	47	35	1,8	40	●
9,700	.3819	2250905	B210A09700HP	10	89	47	35	1,8	40	●

(continued on next page)

B210_HP

(continued from previous page)

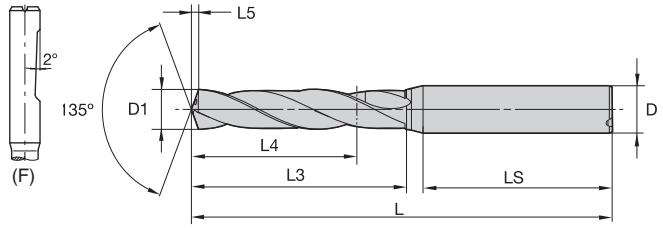
● first choice
○ alternate choice

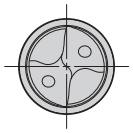
H		
S		●
N		
K		
M		●
P		○

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
9,800	.3858	2250906	B210A09800HP	10	89	47	35	1,8	40	●
10,000	.3937	2250907	B210A10000HP	10	89	47	35	1,9	40	●
10,200	.4016	2250908	B210A10200HP	12	102	55	40	1,9	45	●
10,400	.4094	2250909	B210A10400HP	12	102	55	40	1,9	45	●
10,500	.4134	2250910	B210A10500HP	12	102	55	40	1,9	45	●
11,000	.4331	2250911	B210A11000HP	12	102	55	40	2,0	45	●
11,200	.4409	2250912	B210A11200HP	12	102	55	40	2,1	45	●
11,500	.4528	2250913	B210A11500HP	12	102	55	40	2,1	45	●
12,000	.4724	2250914	B210A12000HP	12	102	55	40	2,2	45	●
12,200	.4803	2250915	B210A12200HP	14	107	60	43	2,3	45	●
12,500	.4921	2250916	B210A12500HP	14	107	60	43	2,3	45	●
12,700	.5000	2250917	B210A12700HP	14	107	60	43	2,3	45	●
13,000	.5118	2250918	B210A13000HP	14	107	60	43	2,4	45	●
13,500	.5315	2250919	B210A13500HP	14	107	60	43	2,5	45	●
14,000	.5512	2250920	B210A14000HP	14	107	60	43	2,6	45	●
14,100	.5551	2250921	B210A14100HP	16	115	65	45	2,6	48	●
14,200	.5590	2250922	B210A14200HP	16	115	65	45	2,6	48	●
14,500	.5709	2250923	B210A14500HP	16	115	65	45	2,7	48	●
15,000	.5906	2250924	B210A15000HP	16	115	65	45	2,8	48	●
15,500	.6102	2250925	B210A15500HP	16	115	65	45	2,9	48	●
16,000	.6299	2250926	B210A16000HP	16	115	65	45	3,0	48	●
16,130	.6350	2250927	B210A16130HP	18	123	73	51	3,0	48	●
16,500	.6496	2250928	B210A16500HP	18	123	73	51	3,1	48	●
17,000	.6693	2250929	B210A17000HP	18	123	73	51	3,1	48	●
17,500	.6889	2250930	B210A17500HP	18	123	73	51	3,2	48	●
18,000	.7087	2250931	B210A18000HP	18	123	73	51	3,3	48	●
18,500	.7283	2250932	B210A18500HP	20	131	79	55	3,4	50	●
19,000	.7480	2250933	B210A19000HP	20	131	79	55	3,5	50	●
19,250	.7579	2250934	B210A19250HP	20	131	79	55	3,6	50	●
19,500	.7678	2250935	B210A19500HP	20	131	79	55	3,6	50	●
20,000	.7874	2250936	B210A20000HP	20	131	79	55	3,7	50	●

Ordering Example:
By catalog number B210A03000HP KC7515, or by order number 2951464.

SE HP Drills with Coolant





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

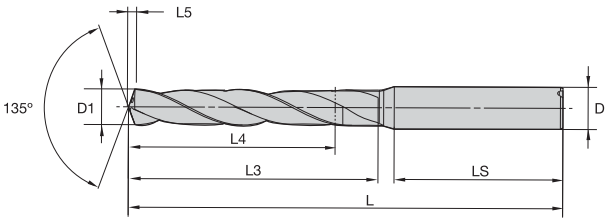
H		
S		●
N		
K		
M		●
P		○

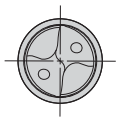
B210_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
5,000	.1968	2250937	B210F05000HP	6	66	28	20	0,9	36	●
5,100	.2008	2250938	B210F05100HP	6	66	28	20	0,9	36	●
5,500	.2165	2250939	B210F05500HP	6	66	28	20	1,0	36	●
6,000	.2362	2250940	B210F06000HP	6	66	28	20	1,1	36	●
6,500	.2559	2250941	B210F06500HP	8	79	34	24	1,2	36	●
6,800	.2677	2250942	B210F06800HP	8	79	34	24	1,3	36	●
6,900	.2716	2250943	B210F06900HP	8	79	34	24	1,3	36	●
7,000	.2756	2250944	B210F07000HP	8	79	34	24	1,3	36	●
7,500	.2953	2250945	B210F07500HP	8	79	34	24	1,4	36	●
7,800	.3071	2250946	B210F07800HP	8	79	34	24	1,4	36	●
8,000	.3149	2250947	B210F08000HP	8	79	34	24	1,5	36	●
8,500	.3346	2250948	B210F08500HP	10	89	47	35	1,6	40	●
8,600	.3386	2250949	B210F08600HP	10	89	47	35	1,6	40	●
8,700	.3425	2250950	B210F08700HP	10	89	47	35	1,6	40	●
9,000	.3543	2250951	B210F09000HP	10	89	47	35	1,7	40	●
9,200	.3622	2250952	B210F09200HP	10	89	47	35	1,7	40	●
9,500	.3740	2250953	B210F09500HP	10	89	47	35	1,8	40	●
9,800	.3858	2250954	B210F09800HP	10	89	47	35	1,8	40	●
10,000	.3937	2250955	B210F10000HP	10	89	47	35	1,9	40	●
10,200	.4016	2250956	B210F10200HP	12	102	55	40	1,9	45	●
10,500	.4134	2250957	B210F10500HP	12	102	55	40	1,9	45	●
11,000	.4331	2250958	B210F11000HP	12	102	55	40	2,0	45	●
11,500	.4528	2250959	B210F11500HP	12	102	55	40	2,1	45	●
12,000	.4724	2250960	B210F12000HP	12	102	55	40	2,2	45	●
12,500	.4921	2250961	B210F12500HP	14	107	60	43	2,3	45	●
12,700	.5000	2250962	B210F12700HP	14	107	60	43	2,3	45	●
13,000	.5118	2250963	B210F13000HP	14	107	60	43	2,4	45	●
13,500	.5315	2250964	B210F13500HP	14	107	60	43	2,5	45	●
14,000	.5512	2250965	B210F14000HP	14	107	60	43	2,6	45	●
14,200	.5590	2250966	B210F14200HP	16	115	65	45	2,6	48	●
14,500	.5709	2250967	B210F14500HP	16	115	65	45	2,7	48	●
15,000	.5906	2250968	B210F15000HP	16	115	65	45	2,8	48	●
15,500	.6102	2250974	B210F15500HP	16	115	65	45	2,9	48	●
16,000	.6299	2250975	B210F16000HP	16	115	65	45	3,0	48	●
16,500	.6496	2250976	B210F16500HP	18	123	73	51	3,1	48	●
17,000	.6693	2250977	B210F17000HP	18	123	73	51	3,1	48	●
17,500	.6889	2250978	B210F17500HP	18	123	73	51	3,2	48	●
17,700	.6968	2250979	B210F17700HP	18	123	73	51	3,3	48	●
18,000	.7087	2250969	B210F18000HP	18	123	73	51	3,3	48	●
18,500	.7283	2250970	B210F18500HP	20	131	79	55	3,4	50	●
19,000	.7480	2250971	B210F19000HP	20	131	79	55	3,5	50	●
19,500	.7678	2250972	B210F19500HP	20	131	79	55	3,6	50	●
20,000	.7874	2250973	B210F20000HP	20	131	79	55	3,7	50	●

Ordering Example:
By catalog number B210F05000HP KC7515, or by order number 2250937.

(A)





Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/.0004
>.3937 to .7087	.0003/.0010	.7500 to 1.0000	.0000/.0004
>.7087 to 1.010	.0003/.0011	—	—

● first choice
○ alternate choice

H		
S		●
N		
K		
M		●
P		○

K211_HP

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
.1563	5/32	3,970	2249579	K211A01563HP	.1875	2.60	1.06	.84	.029	1.44	●
.1636	–	4,160	2249580	K211A01636HP	.1875	2.91	1.38	1.13	.030	1.44	●
.1803	–	4,580	2249581	K211A01803HP	.1875	2.91	1.38	1.13	.033	1.44	●
.1820	–	4,620	2249582	K211A01820HP	.1875	2.91	1.38	1.13	.034	1.44	●
.1854	–	4,710	2249583	K211A01854HP	.1875	2.91	1.38	1.13	.034	1.44	●
.1875	3/16	4,760	2249584	K211A01875HP	.1875	2.91	1.38	1.13	.035	1.44	●
.2071	–	5,260	2249585	K211A02071HP	.2500	3.23	1.69	1.37	.038	1.44	●
.2130	–	5,410	2249586	K211A02130HP	.2500	3.23	1.69	1.37	.039	1.44	●
.2188	7/32	5,560	2249587	K211A02188HP	.2500	3.23	1.69	1.37	.040	1.44	●
.2194	–	5,570	2249588	K211A02194HP	.2500	3.23	1.69	1.37	.041	1.44	●
.2500	1/4	6,350	2249589	K211A02500HP	.2500	3.22	1.69	1.37	.046	1.44	●
.2570	–	6,530	2249590	K211A02570HP	.3125	3.58	1.97	1.59	.048	1.52	●
.2649	–	6,730	2249591	K211A02649HP	.3125	3.58	1.97	1.59	.049	1.52	●
.2656	17/64	6,750	2249592	K211A02656HP	.3125	3.58	1.97	1.59	.049	1.52	●
.2720	–	6,910	2249593	K211A02720HP	.3125	3.58	1.97	1.59	.050	1.52	●
.2768	–	7,030	2249594	K211A02768HP	.3125	3.58	1.97	1.59	.051	1.52	●
.2813	9/32	7,150	2249595	K211A02813HP	.3125	3.58	1.97	1.59	.052	1.52	●
.2969	19/64	7,540	2249596	K211A02969HP	.3125	3.58	1.97	1.59	.055	1.52	●
.3125	5/16	7,940	2249597	K211A03125HP	.3125	3.58	1.97	1.59	.058	1.52	●
.3214	–	8,160	2249598	K211A03214HP	.3750	4.06	2.36	1.92	.059	1.59	●
.3281	21/64	8,330	2249599	K211A03281HP	.3750	4.06	2.36	1.92	.061	1.59	●
.3320	–	8,430	2249600	K211A03320HP	.3750	4.06	2.36	1.92	.061	1.59	●
.3393	–	8,620	2249601	K211A03393HP	.3750	4.06	2.36	1.92	.063	1.59	●
.3438	11/32	8,730	2249602	K211A03438HP	.3750	4.06	2.36	1.92	.064	1.59	●
.3594	23/64	9,130	2249603	K211A03594HP	.3750	4.06	2.36	1.92	.066	1.59	●
.3680	–	9,350	2249604	K211A03680HP	.3750	4.06	2.36	1.92	.068	1.59	●
.3750	3/8	9,530	2249605	K211A03750HP	.3750	4.06	2.36	1.92	.069	1.59	●
.3763	–	9,540	2249606	K211A03763HP	.4375	4.37	2.60	2.09	.070	1.67	●
.3820	–	9,700	2249607	K211A03820HP	.4375	4.37	2.60	2.09	.071	1.67	●
.3906	25/64	9,920	2249608	K211A03906HP	.4375	4.37	2.60	2.09	.072	1.67	●
.3946	–	10,020	2249609	K211A03946HP	.4375	4.37	2.60	2.09	.073	1.67	●
.4063	13/32	10,320	2249610	K211A04063HP	.4375	4.37	2.60	2.09	.075	1.67	●
.4219	27/64	10,720	2249611	K211A04219HP	.4375	4.37	2.60	2.09	.078	1.67	●
.4341	–	11,030	2249612	K211A04341HP	.4375	4.37	2.60	2.09	.080	1.67	●
.4375	7/16	11,110	2249613	K211A04375HP	.4375	4.37	2.60	2.09	.081	1.67	●
.4531	29/64	11,510	2249614	K211A04531HP	.5000	4.65	2.76	2.19	.084	1.79	●

(continued on next page)

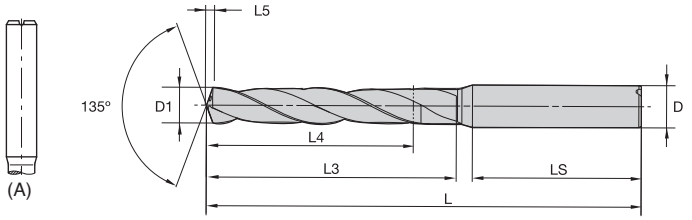
K211_HP

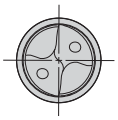
(continued from previous page)

● first choice
○ alternate choice

	D1										H
											S ●
											N
											K
											M ●
											P ○
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
.4571	–	11,610	2249615	K211A04571HP	.5000	4.65	2.76	2.19	.084	1.79	●
.4688	15/32	11,908	2249616	K211A04688HP	.5000	4.65	2.76	2.19	.087	1.79	●
.4844	31/64	12,304	2249617	K211A04844HP	.5000	4.65	2.76	2.19	.090	1.79	●
.4911	–	12,470	2249618	K211A04911HP	.5000	4.65	2.76	2.19	.091	1.79	●
.5000	1/2	12,700	2249619	K211A05000HP	.5000	4.65	2.76	2.19	.092	1.79	●
.5080	–	12,900	2249620	K211A05080HP	.5625	4.88	2.99	2.36	.094	1.79	●
.5149	–	13,080	2249621	K211A05149HP	.5625	4.88	2.99	2.36	.095	1.79	●
.5156	33/64	13,100	2249622	K211A05156HP	.5625	4.88	2.99	2.36	.095	1.79	●
.5471	–	13,900	2249623	K211A05471HP	.5625	4.88	2.99	2.36	.101	1.79	●
.5625	9/16	14,290	2249624	K211A05625HP	.5625	4.88	2.99	2.36	.104	1.79	●
.5774	–	14,670	2249625	K211A05774HP	.6250	5.24	3.23	2.54	.107	1.91	●
.6250	5/8	15,880	2249626	K211A06250HP	.6250	5.24	3.23	2.54	.115	1.91	●
.6330	–	16,080	2249627	K211A06330HP	.6875	5.63	3.62	2.87	.117	1.91	●
.5652	21/32	16,360	2249628	K211A06562HP	.6875	5.63	3.62	2.87	.121	1.91	●
.6643	–	16,873	2249629	K211A06643HP	.6875	5.63	3.62	2.87	.123	1.91	●
.6875	11/16	17,460	2249630	K211A06875HP	.6875	5.63	3.62	2.87	.127	1.91	●
.6964	–	17,690	2249631	K211A06964HP	.7500	5.83	3.74	2.93	.129	1.99	●
.7500	3/4	19,050	2249632	K211A07500HP	.7500	5.83	3.74	2.93	.139	1.99	●
.7580	–	19,250	2249633	K211A07580HP	.8125	6.02	3.94	3.07	.140	1.99	●
.7656	49/64	19,450	2249634	K211A07656HP	.8125	6.02	3.94	3.07	.141	1.99	●
.7797	–	19,800	2249635	K211A07797HP	.8125	6.02	3.94	3.07	.144	1.99	●
.8138	–	20,670	2249636	K211A08138HP	.8750	6.58	4.41	3.49	.150	2.07	●
.8830	–	22,430	2249637	K211A08830HP	.9375	6.93	4.69	3.71	.163	2.15	●
1.0100	–	25,650	2249638	K211A10100HP	1.0000	7.24	4.92	3.88	.187	2.26	●

Ordering Example:
By catalog number K211A01563HP KC7515, or by order number 2249579.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		●
N		
K		
M		●
P		○

B211_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
3,000	.1181	2604029	B211A03000HP	6	66	28	23	0,6	36	●
3,048	.1200	2951590	B211A03048HP	6	66	28	23	0,6	36	●
3,100	.1220	2637792	B211A03100HP	6	66	28	23	0,6	36	●
3,175	.1250	2951591	B211A03175HP	6	66	28	23	0,6	36	●
3,200	.1260	2617153	B211A03200HP	6	66	28	23	0,6	36	●
3,300	.1299	2608658	B211A03300HP	6	66	28	23	0,6	36	●
3,400	.1339	2603515	B211A03400HP	6	66	28	23	0,6	36	●
3,454	.1360	2951592	B211A03454HP	6	66	28	23	0,6	36	●
3,500	.1378	2631415	B211A03500HP	6	66	28	23	0,6	36	●
3,600	.1417	2606701	B211A03600HP	6	66	28	23	0,7	36	●
3,658	.1440	2951643	B211A03658HP	6	66	28	23	0,7	36	●
3,700	.1457	2617154	B211A03700HP	6	66	28	23	0,6	36	●
3,800	.1496	2951467	B211A03800HP	6	74	36	29	0,7	36	●
3,861	.1520	2951644	B211A03861HP	6	71	36	29	0,7	36	●
3,900	.1535	2951468	B211A03900HP	6	74	36	29	0,7	36	●
4,000	.1575	2398381	B211A04000HP	6	74	36	29	0,7	36	●
4,100	.1614	2398382	B211A04100HP	6	74	36	29	0,8	36	●
4,200	.1654	2272185	B211A04200HP	6	74	36	29	0,8	36	●
4,300	.1693	2398593	B211A04300HP	6	74	36	29	0,8	36	●
4,400	.1732	2398594	B211A04400HP	6	74	36	29	0,8	36	●
4,500	.1772	2398595	B211A04500HP	6	74	36	29	0,8	36	●
4,700	.1850	2398596	B211A04700HP	6	74	36	29	0,9	36	●
4,800	.1890	2398597	B211A04800HP	6	82	44	35	0,9	36	●
5,000	.1969	2257371	B211A05000HP	6	82	44	35	0,9	36	●
5,100	.2008	2257372	B211A05100HP	6	82	44	35	0,9	36	●
5,200	.2047	2398598	B211A05200HP	6	82	44	35	1,0	36	●
5,300	.2087	2398599	B211A05300HP	6	82	44	35	1,0	36	●
5,400	.2126	2398600	B211A05400HP	6	82	44	35	1,0	36	●
5,500	.2165	2257403	B211A05500HP	6	82	44	35	1,0	36	●
5,600	.2205	2398601	B211A05600HP	6	82	44	35	1,0	36	●
5,700	.2244	2398602	B211A05700HP	6	82	44	35	1,1	36	●
5,800	.2283	2257404	B211A05800HP	6	82	44	35	1,1	36	●
5,900	.2323	2257405	B211A05900HP	6	82	44	35	1,1	36	●
6,000	.2362	2257406	B211A06000HP	6	82	44	35	1,1	36	●
6,100	.2402	2257407	B211A06100HP	8	91	53	43	1,1	36	●
6,200	.2441	2398603	B211A06200HP	8	91	53	43	1,1	36	●
6,300	.2480	2398604	B211A06300HP	8	91	53	43	1,2	36	●
6,400	.2520	2257408	B211A06400HP	8	91	53	43	1,2	36	●
6,500	.2559	2257409	B211A06500HP	8	91	53	43	1,2	36	●
6,600	.2598	2257410	B211A06600HP	8	91	53	43	1,2	36	●
6,800	.2677	2257411	B211A06800HP	8	91	53	43	1,3	36	●
6,900	.2717	2398605	B211A06900HP	8	91	53	43	1,3	36	●

(continued on next page)

B211_HP

(continued from previous page)

● first choice
○ alternate choice

H	
S	●
N	
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M	●
P	○

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
7,000	.2756	2257412	B211A07000HP	8	91	53	43	1,3	36	●
7,100	.2795	2398606	B211A07100HP	8	91	53	43	1,3	36	●
7,200	.2835	2257413	B211A07200HP	8	91	53	43	1,3	36	●
7,300	.2874	2398607	B211A07300HP	8	91	53	43	1,3	36	●
7,400	.2913	2257414	B211A07400HP	8	91	53	43	1,4	36	●
7,500	.2953	2257415	B211A07500HP	8	91	53	43	1,4	36	●
7,600	.2992	2387337	B211A07600HP	8	91	53	43	1,4	36	●
7,700	.3031	2398608	B211A07700HP	8	91	53	43	1,4	36	●
7,800	.3071	2398609	B211A07800HP	8	91	53	43	1,4	36	●
7,900	.3110	2257416	B211A07900HP	8	91	53	43	1,5	36	●
8,000	.3149	2257417	B211A08000HP	8	91	53	43	1,5	36	●
8,100	.3189	2257418	B211A08100HP	10	103	61	49	1,5	40	●
8,200	.3228	2398610	B211A08200HP	10	103	61	49	1,5	40	●
8,300	.3268	2257419	B211A08300HP	10	103	61	49	1,5	40	●
8,400	.3307	2257420	B211A08400HP	10	103	61	49	1,5	40	●
8,500	.3346	2257421	B211A08500HP	10	103	61	49	1,6	40	●
8,600	.3386	2257422	B211A08600HP	10	103	61	49	1,6	40	●
8,700	.3425	2257423	B211A08700HP	10	103	61	49	1,6	40	●
8,800	.3465	2257424	B211A08800HP	10	103	61	49	1,6	40	●
8,900	.3504	2398611	B211A08900HP	10	103	61	49	1,6	40	●
9,000	.3543	2257425	B211A09000HP	10	103	61	49	1,7	40	●
9,100	.3583	2398612	B211A09100HP	10	103	61	49	1,7	40	●
9,200	.3622	2398613	B211A09200HP	10	103	61	49	1,7	40	●
9,300	.3661	2394121	B211A09300HP	10	103	61	49	1,7	40	●
9,400	.3701	2257426	B211A09400HP	10	103	61	49	1,7	40	●
9,500	.3740	2257427	B211A09500HP	10	103	61	49	1,8	40	●
9,600	.3780	2257428	B211A09600HP	10	103	61	49	1,8	40	●
9,700	.3819	2398614	B211A09700HP	10	103	61	49	1,8	40	●
9,800	.3858	2257429	B211A09800HP	10	103	61	49	1,8	40	●
9,900	.3898	2257430	B211A09900HP	10	103	61	49	1,8	40	●
10,000	.3937	2257431	B211A10000HP	10	103	61	49	1,9	40	●
10,100	.3976	2257432	B211A10100HP	12	11	71	56	1,9	40	●
10,200	.4016	2257433	B211A10200HP	12	118	71	56	1,9	45	●
10,300	.4055	2398615	B211A10300HP	12	118	71	56	1,9	45	●
10,400	.4094	2257434	B211A10400HP	12	118	71	56	1,9	45	●
10,500	.4134	2257435	B211A10500HP	12	118	71	56	1,9	45	●
10,600	.4173	2398616	B211A10600HP	12	118	71	56	2,0	45	●
10,700	.4213	2398617	B211A10700HP	12	118	71	56	2,0	45	●
10,800	.4252	2257436	B211A10800HP	12	118	71	56	2,0	45	●
10,900	.4291	2398618	B211A10900HP	12	118	71	56	2,0	45	●
11,000	.4331	2257437	B211A11000HP	12	118	71	56	2,0	45	●
11,100	.4370	2257438	B211A11100HP	12	118	71	56	2,1	45	●
11,200	.4409	2398619	B211A11200HP	12	118	71	56	2,1	45	●
11,400	.4488	2398620	B211A11400HP	12	118	71	56	2,1	45	●
11,500	.4528	2257439	B211A11500HP	12	118	71	56	2,1	45	●
11,600	.4567	2398621	B211A11600HP	12	118	71	56	2,1	45	●
11,700	.4606	2398622	B211A11700HP	12	118	71	56	2,2	45	●
11,800	.4646	2257440	B211A11800HP	12	118	71	56	2,2	45	●
11,900	.4685	2398623	B211A11900HP	12	118	71	56	2,2	45	●

(continued on next page)

B211_HP

(continued from previous page)

Ordering Example:
By catalog number B211A03000HP KC7515, or by order number 2604029.

● first choice
○ alternate choice

H	
S	●
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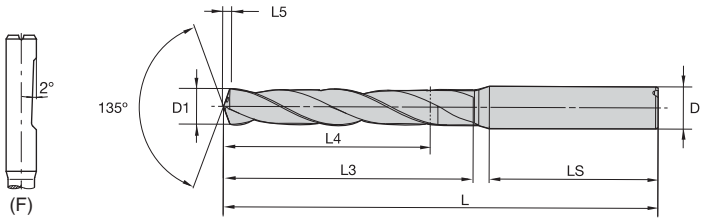
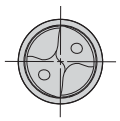
K	
M	●
P	○

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
12,000	.4724	2257441	B211A12000HP	12	118	71	56	2,2	45	●
12,100	.4764	2257442	B211A12100HP	14	124	71	60	2,3	45	●
12,200	.4803	2257443	B211A12200HP	14	124	77	60	2,3	45	●
12,300	.4843	2398624	B211A12300HP	14	124	77	60	2,3	45	●
12,500	.4921	2257444	B211A12500HP	14	124	77	60	2,3	45	●
12,600	.4961	2398625	B211A12600HP	14	124	77	60	2,3	45	●
12,700	.5000	2257445	B211A12700HP	14	124	77	60	2,3	45	●
12,800	.5039	2398626	B211A12800HP	14	124	77	60	2,4	45	●
12,900	.4724	2257446	B211A12900HP	14	124	77	60	2,4	45	●
13,000	.5118	2257447	B211A13000HP	14	124	77	60	2,4	45	●
13,100	.5157	2398627	B211A13100HP	14	124	77	60	2,4	45	●
13,200	.5197	2257448	B211A13200HP	14	124	77	60	2,5	45	●
13,300	.5236	2398628	B211A13300HP	14	124	77	60	2,5	45	●
13,500	.5315	2257449	B211A13500HP	14	124	77	60	2,5	45	●
13,800	.5433	2398629	B211A13800HP	14	124	77	60	2,5	45	●
13,900	.5472	2398630	B211A13900HP	14	124	77	60	2,6	45	●
14,000	.5512	2257450	B211A14000HP	14	124	77	60	2,6	45	●
14,100	.5551	2257451	B211A14100HP	16	133	83	63	2,6	48	●
14,200	.5591	2257452	B211A14200HP	16	133	83	63	2,6	48	●
14,300	.5630	2257453	B211A14300HP	16	133	83	63	2,7	48	●
14,400	.5669	2398631	B211A14400HP	16	133	83	63	2,7	48	●
14,500	.5709	2257454	B211A14500HP	16	133	83	63	2,7	48	●
14,600	.5748	2398632	B211A14600HP	16	133	83	63	2,7	48	●
14,800	.5827	2398633	B211A14800HP	16	133	83	63	2,7	48	●
15,000	.5906	2257455	B211A15000HP	16	133	83	63	2,8	48	●
15,100	.5945	2398634	B211A15100HP	16	133	83	63	2,8	48	●
15,200	.5984	2398635	B211A15200HP	16	133	83	63	2,8	48	●
15,300	.6024	2257456	B211A15300HP	16	133	83	63	2,8	48	●
15,400	.6063	2398636	B211A15400HP	16	133	83	63	2,8	48	●
15,500	.6102	2257457	B211A15500HP	16	133	83	63	2,9	48	●
15,600	.6142	2398637	B211A15600HP	16	133	83	63	2,9	48	●
15,700	.6181	2398638	B211A15700HP	16	133	83	63	2,9	48	●
15,800	.6220	2398639	B211A15800HP	16	133	83	63	2,9	48	●
15,900	.6260	2398640	B211A15900HP	16	133	83	63	2,9	48	●
16,000	.6299	2257458	B211A16000HP	16	133	83	63	3,0	48	●
16,100	.6339	2257459	B211A16100HP	18	143	93	71	3,0	48	●
16,500	.6496	2257460	B211A16500HP	18	143	93	71	3,1	48	●
17,000	.6693	2257461	B211A17000HP	18	143	93	71	3,1	48	●
17,500	.6889	2257462	B211A17500HP	18	143	93	71	3,2	48	●
17,700	.6968	2257463	B211A17700HP	18	143	93	71	3,3	48	●
18,000	.7087	2257464	B211A18000HP	18	143	93	71	3,3	48	●
18,400	.7244	2257465	B211A18400HP	20	153	101	77	3,4	50	●
18,500	.7283	2257466	B211A18500HP	20	153	101	77	3,4	50	●
19,000	.7480	2257467	B211A19000HP	20	153	101	77	3,5	50	●
19,100	.7520	2257468	B211A19100HP	20	153	101	77	3,5	50	●
19,160	.7543	2398642	B211A19160HP	20	153	101	77	3,5	50	●
19,200	.7559	2257469	B211A19200HP	20	153	101	77	3,6	50	●
19,250	.7579	2257470	B211A19250HP	20	153	101	77	3,6	50	●
19,300	.7598	2257471	B211A19300HP	20	153	101	77	3,6	50	●
19,500	.7677	2257473	B211A19500HP	20	153	101	77	3,6	50	●
20,000	.7874	2257474	B211A20000HP	20	153	101	77	3,7	50	●
20,500	.8071	2257475	B211A20500HP	20	167	112	85	3,8	50	●
21,000	.8268	2257476	B211A21000HP	20	167	112	85	3,9	50	●

KENNAMETAL

SE HP Drills with Coolant





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		●
N		
K		
M		●
P		○

B211_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
5,000	.1969	2257477	B211F05000HP	6	82	44	35	0,9	36	●
5,100	.2008	2257478	B211F05100HP	6	82	44	35	0,9	36	●
5,500	.2165	2257479	B211F05500HP	6	82	44	35	1,0	36	●
6,000	.2362	2257480	B211F06000HP	6	82	44	35	1,1	36	●
6,100	.2402	2257481	B211F06100HP	8	91	53	43	1,1	36	●
6,500	.2559	2257482	B211F06500HP	8	91	53	43	1,2	36	●
6,600	.2598	2257483	B211F06600HP	8	91	53	43	1,2	36	●
6,800	.2677	2257484	B211F06800HP	8	91	53	43	1,3	36	●
6,900	.2717	2257485	B211F06900HP	8	91	53	43	1,3	36	●
7,000	.2756	2257486	B211F07000HP	8	91	53	43	1,3	36	●
7,500	.2953	2257487	B211F07500HP	8	91	53	43	1,4	36	●
7,900	.3110	2257488	B211F07900HP	8	91	53	43	1,5	36	●
8,000	.3149	2257489	B211F08000HP	8	91	53	43	1,5	36	●
8,400	.3307	2257490	B211F08400HP	10	103	61	49	1,5	40	●
8,500	.3346	2257491	B211F08500HP	10	103	61	49	1,6	40	●
8,600	.3386	2257492	B211F08600HP	10	103	61	49	1,6	40	●
8,800	.3465	2257493	B211F08800HP	10	103	61	49	1,6	40	●
9,000	.3543	2257494	B211F09000HP	10	103	61	49	1,7	40	●
9,500	.3740	2257495	B211F09500HP	10	103	61	49	1,8	40	●
10,000	.3937	2257496	B211F10000HP	10	103	61	49	1,9	40	●
10,200	.4016	2257497	B211F10200HP	12	118	71	56	1,9	45	●
10,300	.4055	2257498	B211F10300HP	12	118	71	56	1,9	45	●
10,500	.4134	2257499	B211F10500HP	12	118	71	56	1,9	45	●
10,800	.4252	2257500	B211F10800HP	12	118	71	56	2,0	45	●
11,000	.4331	2257501	B211F11000HP	12	118	71	56	2,0	45	●
11,100	.4370	2257502	B211F11100HP	12	118	71	56	2,1	45	●
11,500	.4528	2257503	B211F11500HP	12	118	71	56	2,1	45	●
11,800	.4646	2257504	B211F11800HP	12	118	71	56	2,2	45	●
12,000	.4724	2257505	B211F12000HP	12	118	71	56	2,2	45	●
12,500	.4921	2257506	B211F12500HP	14	124	77	60	2,3	45	●
12,900	.4724	2257507	B211F12900HP	14	124	77	60	2,4	45	●
13,000	.5118	2257508	B211F13000HP	14	124	77	60	2,4	45	●
13,500	.5315	2257509	B211F13500HP	14	124	77	60	2,5	45	●

(continued on next page)

B211_HP

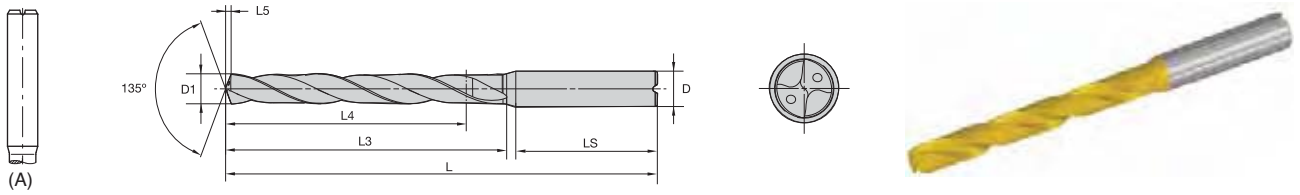
(continued from previous page)

● first choice
○ alternate choice

H	
S	●
N	
K	
M	●
P	●

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
14,000	.5512	2257510	B211F14000HP	14	124	77	60	2,6	45	●
14,100	.5551	2257511	B211F14100HP	16	133	83	63	2,6	48	●
14,500	.5709	2257512	B211F14500HP	16	133	83	63	2,7	48	●
15,000	.5906	2257513	B211F15000HP	16	133	83	63	2,8	48	●
15,300	.6024	2257514	B211F15300HP	16	133	83	63	2,8	48	●
15,500	.6102	2257515	B211F15500HP	16	133	83	63	2,9	48	●
16,000	.6299	2257516	B211F16000HP	16	133	83	63	3,0	48	●
16,500	.6496	2257517	B211F16500HP	18	143	93	71	3,1	48	●
17,000	.6693	2257518	B211F17000HP	18	143	93	71	3,1	48	●
17,500	.6889	2257519	B211F17500HP	18	143	93	71	3,2	48	●
18,000	.7087	2257520	B211F18000HP	18	143	93	71	3,3	48	●
18,500	.7283	2257521	B211F18500HP	20	153	101	77	3,4	50	●
19,000	.7480	2257522	B211F19000HP	20	153	101	77	3,5	50	●
19,500	.7677	2257523	B211F19500HP	20	153	101	77	3,6	50	●
20,000	.7874	2257524	B211F20000HP	20	153	101	77	3,7	50	●

Ordering Example:
By catalog number B211F05000HP KC7515, or by order number 2257477.



Tolerance			
D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005
>.7087 to 1.010	.0003/.0011	—	—

● first choice
○ alternate choice

H		
S		●
N		
K		
M		●
P		○

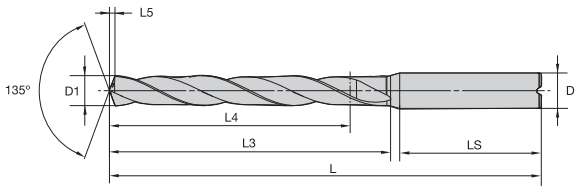
K212_HP

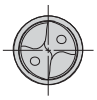
D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
.1563	5/32	3,970	2240231	K212A01563HP	.1875	3.31	1.77	1.52	.029	1.44	●
.1875	3/16	4,760	2240232	K212A01875HP	.1875	3.31	1.77	1.52	.035	1.44	●
.2188	7/32	5,560	2240243	K212A02188HP	.2500	3.74	2.21	1.89	.040	1.44	●
.2500	1/4	6,350	2240244	K212A02500HP	.2500	3.74	2.21	1.89	.046	1.44	●
.2656	17/64	6,750	2240245	K212A02656HP	.3125	4.33	2.72	2.34	.049	1.52	●
.2813	9/32	7,150	2240246	K212A02813HP	.3125	4.33	2.72	2.34	.052	1.52	●
.2969	19/64	7,540	2240247	K212A02969HP	.3125	4.33	2.72	2.34	.055	1.52	●
.3125	5/16	7,940	2240248	K212A03125HP	.3125	4.33	2.72	2.34	.058	1.52	●
.3281	21/64	8,330	2240249	K212A03281HP	.3750	4.92	3.23	2.78	.061	1.59	●
.3438	11/32	8,730	2240250	K212A03438HP	.3750	4.92	3.23	2.78	.064	1.59	●
.3594	23/64	9,130	2240251	K212A03594HP	.3750	4.92	3.23	2.78	.066	1.59	●
.3750	3/8	9,530	2240252	K212A03750HP	.3750	4.92	3.23	2.78	.069	1.59	●
.3906	25/64	9,920	2240253	K212A03906HP	.4375	5.24	3.47	2.96	.072	1.67	●
.4063	13/32	10,320	2240254	K212A04063HP	.4375	5.24	3.47	2.96	.075	1.67	●
.4219	27/64	10,720	2240255	K212A04219HP	.4375	5.24	3.47	2.96	.078	1.67	●
.4375	7/16	11,110	2240256	K212A04375HP	.4375	5.24	3.47	2.96	.081	1.67	●
.4531	29/64	11,510	2240257	K212A04531HP	.5000	5.63	3.74	3.17	.084	1.79	●
.4688	15/32	11,910	2240258	K212A04688HP	.5000	5.63	3.74	3.17	.087	1.79	●
.4844	31/64	12,300	2240259	K212A04844HP	.5000	5.63	3.74	3.17	.090	1.79	●
.5000	1/2	12,700	2240260	K212A05000HP	.5000	5.63	3.74	3.17	.092	1.79	●
.5625	9/16	14,290	2240261	K212A05625HP	.5625	6.10	4.21	3.58	.104	1.79	●
.6250	5/8	15,880	2240262	K212A06250HP	.6250	6.73	4.72	4.04	.115	1.91	●
.6330	—	16,080	2240263	K212A06330HP	.6875	7.32	5.22	4.53	.120	1.91	●
.6875	11/16	17,460	2240264	K212A06875HP	.6875	7.28	5.28	4.53	.127	1.91	●
.7500	3/4	19,050	2240265	K212A07500HP	.7500	7.76	5.67	4.86	.139	1.99	●
.7580	—	19,250	2240266	K212A07580HP	.8125	8.19	6.01	5.20	.140	1.99	●

Ordering Example:
By catalog number K212A01563HP KC7515, or by order number 2240231.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

(A)





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		●
N		
K		
M		●
P		○

B212_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7515
3,000	.1181	2951469	B212A03000HP	6	78	40	33	0,6	36	●
3,175	.1250	2951645	B212A03175HP	6	78	40	33	0,6	36	●
3,300	.1299	2951470	B212A03300HP	6	78	40	33	0,6	36	●
3,500	.1378	2951471	B212A03500HP	6	78	40	33	0,6	36	●
3,700	.1457	2951472	B212A03700HP	6	78	40	33	0,7	36	●
4,000	.1575	2951593	B212A04000HP	6	87	49	41	0,7	36	●
4,100	.1614	2951594	B212A04100HP	6	87	49	41	0,8	36	●
4,200	.1654	2951595	B212A04200HP	6	87	49	41	0,8	36	●
4,500	.1772	2951596	B212A04500HP	6	87	49	41	0,8	36	●
4,800	.1890	2951597	B212A04800HP	6	94	56	48	0,9	36	●
5,000	.1969	2259089	B212A05000HP	6	94	56	48	0,9	36	●
5,100	.2008	2259090	B212A05100HP	6	94	56	48	0,9	36	●
5,500	.2165	2259091	B212A05500HP	6	94	56	48	1,0	36	●
5,800	.2283	2259092	B212A05800HP	6	94	56	48	1,1	36	●
6,000	.2362	2259153	B212A06000HP	6	94	56	48	1,1	36	●
6,500	.2559	2259154	B212A06500HP	8	105	67	57	1,2	36	●
6,800	.2677	2259155	B212A06800HP	8	105	67	57	1,3	36	●
7,000	.2756	2259156	B212A07000HP	8	105	67	57	1,3	36	●
7,800	.3071	2259157	B212A07800HP	8	110	72	61	1,5	36	●
8,000	.3150	2259158	B212A08000HP	8	110	72	61	1,5	36	●
8,400	.3307	2259159	B212A08400HP	10	122	80	68	1,5	40	●
8,500	.3346	2259160	B212A08500HP	10	122	80	68	1,6	40	●
8,800	.3465	2259161	B212A08800HP	10	122	80	68	1,6	40	●
9,000	.3543	2259162	B212A09000HP	10	122	80	68	1,7	40	●
9,500	.3740	2259163	B212A09500HP	10	122	80	68	1,8	40	●
10,000	.3937	2259164	B212A10000HP	10	122	80	68	1,9	40	●
10,200	.4016	2259165	B212A10200HP	12	141	94	79	1,9	45	●
10,500	.4134	2259166	B212A10500HP	12	141	94	79	1,9	45	●
11,000	.4331	2259167	B212A11000HP	12	141	94	79	2,0	45	●
11,800	.4646	2259168	B212A11800HP	12	141	94	79	2,2	45	●
12,000	.4724	2259169	B212A12000HP	12	141	94	79	2,2	45	●
12,500	.4921	2259170	B212A12500HP	14	155	108	91	2,3	45	●
13,000	.5118	2259171	B212A13000HP	14	155	108	91	2,4	45	●
13,500	.5315	2259172	B212A13500HP	14	155	108	91	2,5	45	●
14,000	.5512	2259173	B212A14000HP	14	155	108	91	2,6	45	●
16,000	.6299	2259175	B212A16000HP	16	171	121	101	3,0	48	●

Ordering Example:
By catalog number B212A03000HP KC7515, or by order number 2951469.

Solid Carbide Drills

HP Drills without Coolant

New Expanded Inch Diameters!

Primary Application

B221_HP Series Solid Carbide Drills offer the highest metal removal rates and longest tool life in steel and iron materials when dry cutting or using external flood coolant. Dry drilling up to 5xD possible.

Features and Benefits

HP Drill Point Design

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

Unique Flute Design

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

KC7315™ Grade

- A multilayer, TiAlN-based coating with high hot hardness enables 30% higher cutting speeds.
- Optimized tool surface finish ensures chip evacuation, even without coolant.

Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- For holes deeper than 5xD, internal coolant is recommended.
- Using Kennametal Slimline Hydraulic Chucks together with standard B221_HP or B222_HP Drills is recommended if workpiece contours need to be bypassed.

SE Drills – B221HP, B222HP, Series – Grade KC7315 – Flood Coolant

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1	**Low Carbon Steels, Long chipping**		**Content: C= < .25%**	**Tensile Strength Rm (MPa)*: <530**					**Hardness (Hb) or HRC: <125**		
			Feed rate by diameter								
354	sfm	230 – 459	ipr	.003 - 0.006	.003 - .006	.003 - .009	.003 - .011	.004- .013	.004 - .016	.009 - .020	.012 - .025
105	m/min	70 – 140	mm/r	0,08 - 0,15	0,07 - 0,16	0,08 - 0,23	0,08 - 0,28	0,09 - 0,33	0,11 - 0,40	0,24 - 0,52	0,31 - 0,64
P2	**Low Carbon Steels, Free Machining and short chipping**		**Content: C= < .25%**	**Tensile Strength Rm (MPa)*: <650**					**Hardness (Hb) or HRC: <220**		
			Feed rate by diameter								
361	sfm	295 – 492	ipr	.003 - .006	.003 - .005	.004 - .009	.005 - .011	.006- .011	.007 - .015	.009 - .019	.012 - .022
110	m/min	90 – 150	mm/r	0,08 - 0,14	0,07 - 0,13	0,11 - 0,22	0,13 - 0,28	0,15 - 0,27	0,18 - 0,38	0,24 - 0,48	0,31 - 0,57
P3	**Medium & High Plain-Carbon Steels, Low Alloyed**		**Content: C= < .25%**	**Tensile Strength Rm (MPa)*: 600-850**					**Hardness (Hb) or HRC: <330**		
			Feed rate by diameter								
295	sfm	197 – 377	ipr	.004 - .006	.004 - .006	.006 - .010	.007 - .012	.007- .013	.009 - .017	.012 - .020	.014 - .025
90	m/min	60 – 115	mm/r	0,09 - 0,15	0,09 - 0,16	0,14 - 0,26	0,17 - 0,31	0,19 - 0,33	0,24 - 0,42	0,31 - 0,52	0,35 - 0,64
P4	**Alloyed and Tempered Carbon Steels, Tool Steels**		**Content: C= > .25%**	**Tensile Strength Rm (MPa)*: 800-1100**					**Hardness (Hb) or HRC: 350-450**		
			Feed rate by diameter								
262	sfm	164 – 377	ipr	.003 - .006	.003 - .006	.005 - .010	.006 - .012	.006- .012	.008 - .017	.010 - .020	.012 - .023
80	m/min	50 – 115	mm/r	0,08 - 0,15	0,08 - 0,16	0,12 - 0,26	0,15 - 0,31	0,16 - 0,31	0,20 - 0,42	0,25 - 0,51	0,30 - 0,59
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content: C= .1%-.6%**	**Tensile Strength Rm (MPa)*: 900-1350**					**Hardness (Hb) or HRC: 350-450**		
			Feed rate by diameter								
262	sfm	164 – 377	ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .009	.006- .009	.007 - .011	.009 - .015	.011 - .019
80	m/min	50 – 115	mm/r	0,06 - 0,10	0,07 - 0,12	0,09 - 0,16	0,12 - 0,23	0,14 - 0,23	0,17 - 0,29	0,22 - 0,38	0,27 - 0,47
K1	**Cast and Low-Strength Ductile Irons**			**Tensile Strength Rm (MPa)*: 150-400**					**Hardness (Hb) or HRC: 120-290**		
			Feed rate by diameter								
312	sfm	230 – 377	ipr	.004 - .008	.004 - .007	.005 - .011	.006 - .014	.007- .014	.008 - .017	.011 - .022	.013 - .027
95	m/min	70 – 115	mm/r	0,10 - 0,20	0,09 - 0,17	0,13 - 0,27	0,15 - 0,35	0,18 - 0,35	0,21 - 0,43	0,27 - 0,55	0,34 - 0,68
K2	**Low to Medium Strength CGI and Ductile Irons**			**Tensile Strength Rm (MPa)*: 400-600**					**Hardness (Hb) or HRC: 130-260**		
			Feed rate by diameter								
377	sfm	230 – 394	ipr	.004 - .007	.004 - .006	.005 - .009	.006 - .012	.007- .012	.008 - .014	.011 - .018	.013 - .022
115	m/min	70 – 115	mm/r	0,10 - 0,18	0,09 - 0,15	0,13 - 0,22	0,15 - 0,30	0,18 - 0,30	0,21 - 0,35	0,27 - 0,45	0,34 - 0,57
K3	**High Strength Ductile and Austempered Ductile Iron**			**Tensile Strength Rm (MPa)*: 600-900**					**Hardness (Hb) or HRC: 180-350**		
			Feed rate by diameter								
279	sfm	164 – 394	ipr	.003 - .006	.003 - .005	.004 - .009	.005 - .010	.006- .011	.007 - .015	.009 - .018	.011 - .022
85	m/min	50 – 120	mm/r	0,08 - 0,16	0,07 - 0,13	0,11 - 0,24	0,12 - 0,26	0,15 - 0,28	0,17 - 0,37	0,24 - 0,46	0,28 - 0,55

* 1 MPa = 145 psi

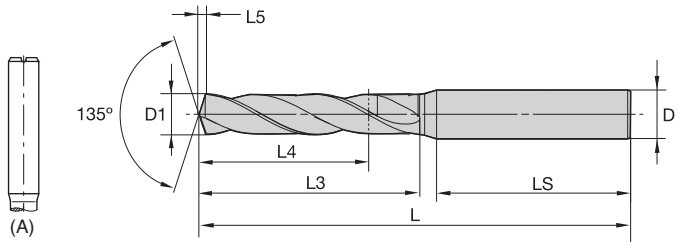
(continued on next page)

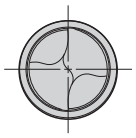
SE Drills - B221HP, B222HP, Series - Grade KC7315 - Dry Applications

(continued from previous page)

Starting Value	Cutting Speed											Tool diameter								
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,	12,0	16,0	20,0
P1 Low Carbon Steels, Long chipping													**Content: C < .25%**		**Tensile Strength Rm (MPa)*: <530**				**Hardness (Hb) or HRC: <125**		
													Feed rate by diameter								
279	sfm							197				361	ipr	.003 - .004	.003 - .005	.005 - .008	.006 - .011	.007 - .013	.009 - .016	.013 - .019	.016 - .026
85	m/min							60				110	mm/r	0,07 - 0,11	0,07- 0,13	0,12 - 0,20	0,16 - 0,27	0,19 - 0,33	0,24 - 0,40	0,32 - 0,48	0,40 - 0,66
P2 Low Carbon Steels, Free Machining and short chipping													**Content: C < .25%**		**Tensile Strength Rm (MPa)*: <650**				**Hardness (Hb) or HRC: <220**		
													Feed rate by diameter								
279	sfm							197				361	ipr	.003 - .005	.003 - .005	.005 - .008	.006 - .011	.007 - .013	.009 - .016	.013 - .019	.016 - .026
85	m/min							60				110	mm/r	0,07 - 0,12	0,07 - 0,13	0,12 - 0,20	0,16 - 0,27	0,19 - 0,33	0,24 - 0,40	0,32 - 0,48	0,40 - 0,66
P3 Medium & High Plain-Carbon Steels, Low Alloyed													**Content: C < .25%**		**Tensile Strength Rm (MPa)*: 600-850**				**Hardness (Hb) or HRC: <330**		
													Feed rate by diameter								
246	sfm							197				295	ipr	.002 - .003	.003 - .005	.004 - .007	.005 - .008	.007 - .011	.008 - .012	.011 - .016	.013 - .020
75	m/min							60				90	mm/r	0,05 - 0,07	0,07 - 0,12	0,10 - 0,18	0,13 - 0,20	0,17 - 0,27	0,20 - 0,31	0,27 - 0,40	0,34 - 0,50
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels													**Content: C= .1%-.6%**		**Tensile Strength Rm (MPa)*: 900-1350**				**Hardness (Hb) or HRC: 350-450**		
													Feed rate by diameter								
247	sfm							197				296	ipr	.002 - .003	.003 - .005	.004 - .007	.005 - .008	.007 - .011	.008 - .012	.011 - .016	.013 - .020
75	m/min							60				90	mm/r	0,05 - 0,07	0,07 - 0,12	0,10 - 0,18	0,13 - 0,20	0,17 - 0,27	0,20 - 0,31	0,27 - 0,40	0,34 - 0,50

* 1 MPa = 145 psi





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B221_HP

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1181	–	3,000	3043594	B221A03000HP	6	62	20	14	0,6	36	●
.1220	–	3,100	3043595	B221A03100HP	6	62	20	14	0,6	36	●
.1250	1/8	3,175	3576157	B221A03175HP	6	62	20	14	0,6	36	●
.1260	–	3,200	3043596	B221A03200HP	6	62	20	14	0,6	36	●
.1299	–	3,300	3043597	B221A03300HP	6	62	20	14	0,6	36	●
.1339	–	3,400	3043598	B221A03400HP	6	62	20	14	0,6	36	●
.1378	–	3,500	3043599	B221A03500HP	6	62	20	14	0,6	36	●
.1406	9/64	3,571	3576158	B221A03571HP	6	62	20	14	0,7	36	●
.1417	–	3,600	3043600	B221A03600HP	6	62	20	14	0,7	36	●
.1457	–	3,700	3043601	B221A03700HP	6	62	20	14	0,7	36	●
.1496	–	3,800	3043602	B221A03800HP	6	66	24	17	0,7	36	●
.1535	–	3,900	3043713	B221A03900HP	6	66	24	17	0,7	36	●
.1563	5/32	3,970	3576159	B221A03970HP	6	66	24	17	0,7	36	●
.1575	–	4,000	3043714	B221A04000HP	6	66	24	17	0,7	36	●
.1614	–	4,100	3043715	B221A04100HP	6	66	24	17	0,8	36	●
.1654	–	4,200	3043716	B221A04200HP	6	66	24	17	0,8	36	●
.1693	–	4,300	3043717	B221A04300HP	6	66	24	17	0,8	36	●
.1719	11/64	4,366	3576160	B221A04366HP	6	66	24	17	0,8	36	●
.1732	–	4,400	3043718	B221A04400HP	6	66	24	17	0,8	36	●
.1772	–	4,500	3043719	B221A04500HP	6	66	24	17	0,8	36	●
.1811	–	4,600	3043720	B221A04600HP	6	66	24	17	0,8	36	●
.1850	–	4,700	3043721	B221A04700HP	6	66	24	17	0,9	36	●
.1875	3/16	4,763	3576161	B221A04763HP	6	66	28	20	0,9	36	●
.1890	–	4,800	3043722	B221A04800HP	6	66	28	20	0,9	36	●
.1929	–	4,900	3043723	B221A04900HP	6	66	28	20	0,9	36	●
.1969	–	5,000	3043724	B221A05000HP	6	66	28	20	0,9	36	●
.2008	–	5,100	3043725	B221A05100HP	6	66	28	20	0,9	36	●
.2031	13/64	5,159	3576162	B221A05159HP	6	66	28	20	1,0	36	●
.2047	–	5,200	3043726	B221A05200HP	6	66	28	20	1,0	36	●
.2087	–	5,300	3043727	B221A05300HP	6	66	28	20	1,0	36	●
.2126	–	5,400	3043728	B221A05400HP	6	66	28	20	1,0	36	●
.2165	–	5,500	3043729	B221A05500HP	6	66	28	20	1,0	36	●
.2188	7/32	5,558	3576223	B221A05558HP	6	66	28	20	1,0	36	●
.2205	–	5,600	3043730	B221A05600HP	6	66	28	20	1,0	36	●
.2244	–	5,700	3043731	B221A05700HP	6	66	28	20	1,1	36	●
.2283	–	5,800	3043732	B221A05800HP	6	66	28	20	1,1	36	●
.2323	–	5,900	3043733	B221A05900HP	6	66	28	20	1,1	36	●
.2344	15/64	5,953	3576224	B221A05953HP	6	66	28	20	1,1	36	●
.2362	–	6,000	3043734	B221A06000HP	6	66	28	20	1,1	36	●
.2402	–	6,100	3043735	B221A06100HP	8	79	34	24	1,1	36	●
.2441	–	6,200	3043736	B221A06200HP	8	79	34	24	1,1	36	●
.2480	–	6,300	3043737	B221A06300HP	8	79	34	24	1,2	36	●

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B221_HP

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● first choice
○ alternate choice

	D1										H S N K M P
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.2500	1/4	6,350	3576225	B221A06350HP	8	79	34	24	1,2	36	●
.2520	–	6,400	3043738	B221A06400HP	8	79	34	24	1,2	36	●
.2559	–	6,500	3043739	B221A06500HP	8	79	34	24	1,2	36	●
.2598	–	6,600	3043740	B221A06600HP	8	79	34	24	1,2	36	●
.2638	–	6,700	3043741	B221A06700HP	8	79	34	24	1,2	36	●
.2656	17/64	6,746	3576226	B221A06746HP	8	79	34	24	1,2	36	●
.2677	–	6,800	3043742	B221A06800HP	8	79	34	24	1,3	36	●
.2717	–	6,900	3043743	B221A06900HP	8	79	34	24	1,3	36	●
.2756	–	7,000	3043744	B221A07000HP	8	79	34	24	1,3	36	●
.2795	–	7,100	3043745	B221A07100HP	8	79	41	29	1,3	36	●
.2813	9/32	7,145	3576227	B221A07145HP	8	79	41	29	1,3	36	●
.2835	–	7,200	3043746	B221A07200HP	8	79	41	29	1,3	36	●
.2874	–	7,300	3043747	B221A07300HP	8	79	41	29	1,3	36	●
.2913	–	7,400	3043748	B221A07400HP	8	79	41	29	1,4	36	●
.2953	–	7,500	3043749	B221A07500HP	8	79	41	29	1,4	36	●
.2969	19/64	7,541	3576228	B221A07541HP	8	79	41	29	1,4	36	●
.2992	–	7,600	3043750	B221A07600HP	8	79	41	29	1,4	36	●
.3031	–	7,700	3043751	B221A07700HP	8	79	41	29	1,4	36	●
.3071	–	7,800	3043752	B221A07800HP	8	79	41	29	1,4	36	●
.3110	–	7,900	3043753	B221A07900HP	8	79	41	29	1,5	36	●
.3125	5/16	7,938	3576229	B221A07938HP	8	79	41	29	1,5	36	●
.3150	–	8,000	3043754	B221A08000HP	8	79	41	29	1,5	36	●
.3189	–	8,100	3043755	B221A08100HP	10	89	47	35	1,5	40	●
.3228	–	8,200	3043756	B221A08200HP	10	89	47	35	1,5	40	●
.3268	–	8,300	3043757	B221A08300HP	10	89	47	35	1,5	40	●
.3281	21/64	8,334	3576230	B221A08334HP	10	89	47	35	1,5	40	●
.3307	–	8,400	3043758	B221A08400HP	10	89	47	35	1,6	40	●
.3346	–	8,500	3043759	B221A08500HP	10	89	47	35	1,6	40	●
.3386	–	8,600	3043760	B221A08600HP	10	89	47	35	1,6	40	●
.3425	–	8,700	3043761	B221A08700HP	10	89	47	35	1,6	40	●
.3438	11/32	8,733	3576231	B221A08733HP	10	89	47	35	1,6	40	●
.3465	–	8,800	3043762	B221A08800HP	10	89	47	35	1,6	40	●
.3504	–	8,900	3043763	B221A08900HP	10	89	47	35	1,6	40	●
.3543	–	9,000	3043764	B221A09000HP	10	89	47	35	1,7	40	●
.3583	–	9,100	3043765	B221A09100HP	10	89	47	35	1,7	40	●
.3594	23/64	9,129	3576232	B221A09129HP	10	89	47	35	1,7	40	●
.3622	–	9,200	3043766	B221A09200HP	10	89	47	35	1,7	40	●
.3661	–	9,300	3043767	B221A09300HP	10	89	47	35	1,7	40	●
.3701	–	9,400	3043768	B221A09400HP	10	89	47	35	1,7	40	●
.3740	–	9,500	3043769	B221A09500HP	10	89	47	35	1,8	40	●
.3750	3/8	9,525	3576233	B221A09525HP	10	89	47	35	1,8	40	●
.3780	–	9,600	3043770	B221A09600HP	10	89	47	35	1,8	40	●
.3819	–	9,700	3043771	B221A09700HP	10	89	47	35	1,8	40	●
.3858	–	9,800	3043772	B221A09800HP	10	89	47	35	1,8	40	●
.3898	–	9,900	3043773	B221A09900HP	10	89	47	35	1,8	40	●
.3906	25/64	9,921	3576234	B221A09921HP	10	89	47	35	1,8	40	●
.3937	–	10,000	3043774	B221A10000HP	10	89	47	35	1,8	40	●
.3976	–	10,100	3043775	B221A10100HP	12	102	55	40	1,9	45	●
.4016	–	10,200	3043776	B221A10200HP	12	102	55	40	1,9	45	●

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B221_HP

(continued from previous page)

● first choice
○ alternate choice

	D1										H
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	S
.4055	–	10,300	3043777	B221A10300HP	12	102	55	40	1,9	45	N
.4063	13/32	10,320	3576235	B221A10320HP	12	102	55	40	1,9	45	K
.4094	–	10,400	3043778	B221A10400HP	12	102	55	40	1,9	45	M
.4134	–	10,500	3043779	B221A10500HP	12	102	55	40	1,9	45	P
.4173	–	10,600	3043780	B221A10600HP	12	102	55	40	2,0	45	KC7315
.4213	–	10,700	3043781	B221A10700HP	12	102	55	40	2,0	45	●
.4219	27/64	10,716	3576236	B221A10716HP	12	102	55	40	2,0	45	●
.4252	–	10,800	3043782	B221A10800HP	12	102	55	40	2,0	45	●
.4291	–	10,900	3043783	B221A10900HP	12	102	55	40	2,0	45	●
.4331	–	11,000	3043784	B221A11000HP	12	102	55	40	2,0	45	●
.4370	–	11,100	3043785	B221A11100HP	12	102	55	40	2,0	45	●
.4375	7/16	11,111	3576237	B221A11111HP	12	102	55	40	2,1	45	●
.4409	–	11,200	3043786	B221A11200HP	12	102	55	40	2,1	45	●
.4449	–	11,300	3043787	B221A11300HP	12	102	55	40	2,1	45	●
.4488	–	11,400	3043788	B221A11400HP	12	102	55	40	2,1	45	●
.4528	–	11,500	3043789	B221A11500HP	12	102	55	40	2,1	45	●
.4531	29/64	11,509	3576238	B221A11509HP	12	102	55	40	2,1	45	●
.4567	–	11,600	3043790	B221A11600HP	12	102	55	40	2,1	45	●
.4606	–	11,700	3043791	B221A11700HP	12	102	55	40	2,2	45	●
.4646	–	11,800	3043792	B221A11800HP	12	102	55	40	2,2	45	●
.4685	–	11,900	3043793	B221A11900HP	12	102	55	40	2,2	45	●
.4688	15/32	11,908	3576239	B221A11908HP	12	102	55	40	2,2	45	●
.4724	–	12,000	3043794	B221A12000HP	12	102	55	40	2,2	45	●
.4764	–	12,100	3043795	B221A12100HP	14	107	60	43	2,2	45	●
.4803	–	12,200	3043796	B221A12200HP	14	107	60	43	2,3	45	●
.4843	–	12,300	3043797	B221A12300HP	14	107	60	43	2,3	45	●
.4882	–	12,400	3043798	B221A12400HP	14	107	60	43	2,3	45	●
.4921	–	12,500	3043799	B221A12500HP	14	107	60	43	2,3	45	●
.4961	–	12,600	3043800	B221A12600HP	14	107	60	43	2,3	45	●
.5000	1/2	12,700	3043801	B221A12700HP	14	107	60	43	2,3	45	●
.5039	–	12,800	3043802	B221A12800HP	14	107	60	43	2,4	45	●
.5079	–	12,900	3043803	B221A12900HP	14	107	60	43	2,4	45	●
.5118	–	13,000	3043804	B221A13000HP	14	107	60	43	2,4	45	●
.5157	–	13,100	3043805	B221A13100HP	14	107	60	43	2,4	45	●
.5197	–	13,200	3043806	B221A13200HP	14	107	60	43	2,4	45	●
.5236	–	13,300	3043807	B221A13300HP	14	107	60	43	2,5	45	●
.5315	–	13,500	3043808	B221A13500HP	14	107	60	43	2,5	45	●
.5354	–	13,600	3043809	B221A13600HP	14	107	60	43	2,5	45	●
.5394	–	13,700	3043810	B221A13700HP	14	107	60	43	2,5	45	●
.5433	–	13,800	3043811	B221A13800HP	14	107	60	43	2,5	45	●
.5469	35/64	13,891	3576240	B221A13891HP	14	107	60	43	2,6	45	●
.5472	–	13,900	3043812	B221A13900HP	14	107	60	43	2,6	45	●
.5512	–	14,000	3043813	B221A14000HP	14	107	60	43	2,6	45	●
.5551	–	14,100	3043814	B221A14100HP	16	115	65	45	2,6	48	●
.5591	–	14,200	3043815	B221A14200HP	16	115	65	45	2,6	48	●
.5625	9/16	14,288	3576241	B221A14288HP	16	115	65	45	2,6	48	●
.5630	–	14,300	3043816	B221A14300HP	16	115	65	45	2,6	48	●
.5669	–	14,400	3043817	B221A14400HP	16	115	65	45	2,7	48	●

(continued on next page)

B221_HP

(continued from previous page)

● first choice
○ alternate choice

	D1										H
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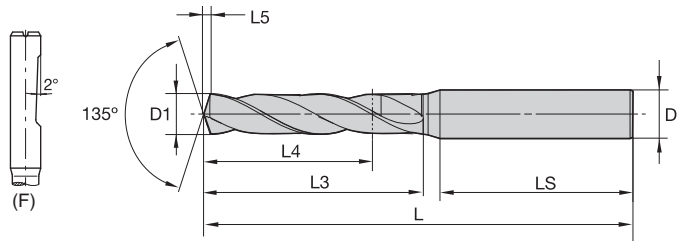
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.5709	–	14,500	3043818	B221A14500HP	16	115	65	45	2,7	48	●
.5748	–	14,600	3043819	B221A14600HP	16	115	65	45	2,7	48	●
.5781	37/64	14,684	3576242	B221A14684HP	16	115	65	45	2,7	48	●
.5787	–	14,700	3043820	B221A14700HP	16	115	65	45	2,7	48	●
.5827	–	14,800	3043821	B221A14800HP	16	115	65	45	2,7	48	●
.5866	–	14,900	3043822	B221A14900HP	16	115	65	45	2,8	48	●
.5906	–	15,000	3043833	B221A15000HP	16	115	65	45	2,8	48	●
.5938	19/32	15,083	3576243	B221A15083HP	16	115	65	45	2,8	48	●
.5945	–	15,100	3043834	B221A15100HP	16	115	65	45	2,8	48	●
.5984	–	15,200	3043835	B221A15200HP	16	115	65	45	2,8	48	●
.6024	–	15,300	3043836	B221A15300HP	16	115	65	45	2,8	48	●
.6063	–	15,400	3043837	B221A15400HP	16	115	65	45	2,8	48	●
.6094	39/64	15,479	3576244	B221A15479HP	16	115	65	45	2,9	48	●
.6102	–	15,500	3043838	B221A15500HP	16	115	65	45	2,9	48	●
.6142	–	15,600	3043839	B221A15600HP	16	115	65	45	2,9	48	●
.6181	–	15,700	3043840	B221A15700HP	16	115	65	45	2,9	48	●
.6220	–	15,800	3043841	B221A15800HP	16	115	65	45	2,9	48	●
.6250	5/8	15,875	3576245	B221A15875HP	16	115	65	45	2,9	48	●
.6260	–	15,900	3043842	B221A15900HP	16	115	65	45	2,9	48	●
.6299	–	16,000	3043843	B221A16000HP	16	115	65	45	3,0	48	●
.6496	–	16,500	3043844	B221A16500HP	18	123	73	51	3,0	48	●
.6693	–	17,000	3043845	B221A17000HP	18	123	73	51	3,1	48	●
.6875	11/16	17,463	3576246	B221A17463HP	18	123	73	51	3,2	48	●
.6890	–	17,500	3043846	B221A17500HP	18	123	73	51	3,2	48	●
.6969	–	17,700	3043847	B221A17700HP	18	123	73	51	3,3	48	●
.7087	–	18,000	3043848	B221A18000HP	18	123	73	51	3,3	48	●
.7283	–	18,500	3043849	B221A18500HP	20	131	79	55	3,4	50	●
.7480	–	19,000	3043850	B221A19000HP	20	131	79	55	3,5	50	●
.7500	3/4	19,050	3576247	B221A19050HP	20	131	79	55	3,5	50	●
.7677	–	19,500	3043851	B221A19500HP	20	131	79	55	3,6	50	●
.7874	–	20,000	3043852	B221A20000HP	20	131	79	55	3,7	50	●
.8071	–	20,500	3043853	B221A20500HP	20	141	86	60	3,8	50	●
.8268	–	21,000	3043854	B221A21000HP	20	141	86	60	3,9	50	●

Ordering Example:
By catalog number B221A03000HP KC7315, or by order number 3043594.



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
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B221_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	.1181	3044373	B221F03000HP	6,000	62	20	14	0,6	36	●
3,100	.1220	3044374	B221F03100HP	6,000	62	20	14	0,6	36	●
3,300	.1299	3044375	B221F03300HP	6,000	62	20	14	0,6	36	●
3,400	.1339	3044376	B221F03400HP	6,000	62	20	14	0,6	36	●
3,500	.1378	3044377	B221F03500HP	6,000	62	20	14	0,6	36	●
3,800	.1496	3044378	B221F03800HP	6,000	66	24	17	0,7	36	●
4,000	.1575	3044379	B221F04000HP	6,000	66	24	17	0,7	36	●
4,100	.1614	3044380	B221F04100HP	6,000	66	24	17	0,8	36	●
4,200	.1654	3044381	B221F04200HP	6,000	66	24	17	0,8	36	●
4,300	.1693	3044382	B221F04300HP	6,000	66	24	17	0,8	36	●
4,500	.1772	3044383	B221F04500HP	6,000	66	24	17	0,8	36	●
4,800	.1890	3044384	B221F04800HP	6,000	66	28	20	0,9	36	●
4,900	.1929	3044385	B221F04900HP	6,000	66	28	20	0,9	36	●
5,000	.1969	3044386	B221F05000HP	6,000	66	28	20	0,9	36	●
5,100	.2008	3044387	B221F05100HP	6,000	66	28	20	0,9	36	●
5,200	.2047	3044388	B221F05200HP	6,000	66	28	20	1,0	36	●
5,500	.2165	3044389	B221F05500HP	6,000	66	28	20	1,0	36	●
5,800	.2283	3044390	B221F05800HP	6,000	66	28	20	1,1	36	●
5,900	.2323	3044391	B221F05900HP	6,000	66	28	20	1,1	36	●
6,000	.2362	3044392	B221F06000HP	6,000	66	28	20	1,1	36	●
6,200	.2441	3044393	B221F06200HP	8,000	79	34	24	1,1	36	●
6,300	.2480	3044394	B221F06300HP	8,000	79	34	24	1,2	36	●
6,500	.2559	3044395	B221F06500HP	8,000	79	34	24	1,2	36	●
6,600	.2598	3044396	B221F06600HP	8,000	79	34	24	1,2	36	●
6,800	.2677	3044397	B221F06800HP	8,000	79	34	24	1,3	36	●
6,900	.2717	3044398	B221F06900HP	8,000	79	34	24	1,3	36	●
7,000	.2756	3044399	B221F07000HP	8,000	79	34	24	1,3	36	●
7,400	.2913	3044400	B221F07400HP	8,000	79	41	29	1,4	36	●
7,500	.2953	3044401	B221F07500HP	8,000	79	41	29	1,4	36	●
7,800	.3071	3044402	B221F07800HP	8,000	79	41	29	1,4	36	●
7,900	.3110	3044403	B221F07900HP	8,000	79	41	29	1,5	36	●
8,000	.3150	3044404	B221F08000HP	8,000	79	41	29	1,5	36	●
8,100	.3189	3044405	B221F08100HP	10,000	89	47	35	1,5	40	●
8,200	.3228	3044406	B221F08200HP	10,000	89	47	35	1,5	40	●
8,300	.3268	3044407	B221F08300HP	10,000	89	47	35	1,5	40	●
8,500	.3346	3044408	B221F08500HP	10,000	89	47	35	1,6	40	●
8,600	.3386	3044409	B221F08600HP	10,000	89	47	35	1,6	40	●
8,700	.3425	3044410	B221F08700HP	10,000	89	47	35	1,6	40	●
8,800	.3465	3044411	B221F08800HP	10,000	89	47	35	1,6	40	●
9,000	.3543	3044412	B221F09000HP	10,000	89	47	35	1,7	40	●
9,100	.3583	3044413	B221F09100HP	10,000	89	47	35	1,7	40	●
9,500	.3740	3044414	B221F09500HP	10,000	89	47	35	1,8	40	●

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B221_HP

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● first choice
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D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
9,700	.3819	3044415	B221F09700HP	10,000	89	47	35	1,8	40	●
9,800	.3858	3044416	B221F09800HP	10,000	89	47	35	1,8	40	●
9,900	.3898	3044417	B221F09900HP	10,000	89	47	35	1,8	40	●
10,000	.3937	3044418	B221F10000HP	10,000	89	47	35	1,8	40	●
10,100	.3976	3044419	B221F10100HP	12,000	102	55	40	1,9	45	●
10,200	.4016	3044420	B221F10200HP	12,000	102	55	40	1,9	45	●
10,300	.4055	3044421	B221F10300HP	12,000	102	55	40	1,9	45	●
10,400	.4094	3044422	B221F10400HP	12,000	102	55	40	1,9	45	●
10,500	.4134	3044423	B221F10500HP	12,000	102	55	40	1,9	45	●
10,600	.4173	3044424	B221F10600HP	12,000	102	55	40	2,0	45	●
10,700	.4213	3044425	B221F10700HP	12,000	102	55	40	2,0	45	●
10,800	.4252	3044426	B221F10800HP	12,000	102	55	40	2,0	45	●
11,000	.4331	3044427	B221F11000HP	12,000	102	55	40	2,0	45	●
11,100	.4370	3044428	B221F11100HP	12,000	102	55	40	2,0	45	●
11,200	.4409	3044429	B221F11200HP	12,000	102	55	40	2,1	45	●
11,500	.4528	3044430	B221F11500HP	12,000	102	55	40	2,1	45	●
11,700	.4606	3044431	B221F11700HP	12,000	102	55	40	2,2	45	●
11,800	.4646	3044432	B221F11800HP	12,000	102	55	40	2,2	45	●
12,000	.4724	3044433	B221F12000HP	12,000	102	55	40	2,2	45	●
12,100	.4764	3044434	B221F12100HP	14,000	107	60	43	2,2	45	●
12,200	.4803	3044435	B221F12200HP	14,000	107	60	43	2,3	45	●
12,300	.4843	3044436	B221F12300HP	14,000	107	60	43	2,2	45	●
12,500	.4921	3044437	B221F12500HP	14,000	107	60	43	2,3	45	●
12,700	.5000	3044438	B221F12700HP	14,000	107	60	43	2,3	45	●
12,800	.5039	3044439	B221F12800HP	14,000	107	60	43	2,4	45	●
13,000	.5118	3044440	B221F13000HP	14,000	107	60	43	2,4	45	●
13,200	.5197	3044441	B221F13200HP	14,000	107	60	43	2,4	45	●
13,500	.5315	3044442	B221F13500HP	14,000	107	60	43	2,5	45	●
13,700	.5394	3044443	B221F13700HP	14,000	107	60	43	2,5	45	●
13,800	.5433	3044444	B221F13800HP	14,000	107	60	43	2,5	45	●
14,000	.5512	3044445	B221F14000HP	14,000	107	60	43	2,6	45	●
14,100	.5551	3044446	B221F14100HP	16,000	115	65	45	2,6	48	●
14,200	.5591	3044447	B221F14200HP	16,000	115	65	45	2,6	48	●
14,300	.5630	3044448	B221F14300HP	16,000	115	65	45	2,6	48	●
14,500	.5709	3044449	B221F14500HP	16,000	115	65	45	2,7	48	●
14,600	.5748	3044450	B221F14600HP	16,000	115	65	45	2,7	48	●
14,800	.5827	3044451	B221F14800HP	16,000	115	65	45	2,7	48	●
15,000	.5906	3044452	B221F15000HP	16,000	115	65	45	2,8	48	●
15,300	.6024	3044453	B221F15300HP	16,000	115	65	45	2,8	48	●
15,500	.6102	3044454	B221F15500HP	16,000	115	65	45	2,9	48	●
15,800	.6220	3044455	B221F15800HP	16,000	115	65	45	2,9	48	●
16,000	.6299	3044456	B221F16000HP	16,000	115	65	45	3,0	48	●

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B221_HP

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● first choice
○ alternate choice

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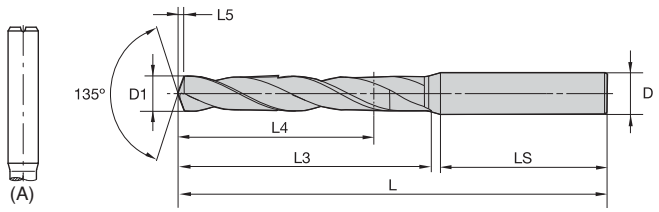
D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
16,500	.6496	3044457	B221F16500HP	18,000	123	73	51	3,0	48	●
17,000	.6693	3044458	B221F17000HP	18,000	123	73	51	3,1	48	●
17,500	.6890	3044459	B221F17500HP	18,000	123	73	51	3,2	48	●
17,700	.6969	3044460	B221F17700HP	18,000	123	73	51	3,3	48	●
18,000	.7087	3044461	B221F18000HP	18,000	123	73	51	3,3	48	●
18,500	.7283	3044462	B221F18500HP	20,000	131	79	55	3,4	50	●
19,000	.7480	3044463	B221F19000HP	20,000	131	79	55	3,5	50	●
19,500	.7677	3044464	B221F19500HP	20,000	131	79	55	3,6	50	●
20,000	.7874	3044465	B221F20000HP	20,000	131	79	55	3,7	50	●
20,500	.8071	3044466	B221F20500HP	20,000	141	86	60	3,8	50	●
21,000	.8268	3044467	B221F21000HP	20,000	141	86	60	3,9	50	●

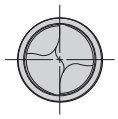
B/K221_HP and B/K222_HP Drill Features:

- ***Drill dry or with flood coolant in steel and iron applications!***
- ***Go twice as fast, with longer tool life, versus conventional solid carbide drills!***
- ***Exceptionally smooth, advanced multi-layer coating for optimum chip evacuation!***
- ***Revolutionary point geometry produces lower cutting forces!***

Ordering Example:
By catalog number B221F03000HP KC7315, or by order number 3044373.

SE HP Drills without Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
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K	●
M	
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B222_HP

D1 inch	D1 fraction	D1 size mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	–	.1181	3006617	B222A03000HP	6	66	28	23	0,6	36	●
3,175	1/8	.1250	3006392	B222A03175HP	6	66	28	23	0,6	36	●
3,300	–	.1299	3576248	B222A03300HP	6	66	28	23	0,6	36	●
3,500	–	.1378	3006618	B222A03500HP	6	66	28	23	0,6	36	●
3,571	9/64	.1406	3576249	B222A03571HP	6	66	28	23	0,7	36	●
3,700	–	.1457	3576250	B222A03700HP	6	66	28	23	0,7	36	●
3,800	–	.1496	3576251	B222A03800HP	6	74	36	29	0,7	36	●
3,970	5/32	.1563	3006593	B222A03970HP	6	74	36	29	0,7	36	●
4,000	–	.1575	3006619	B222A04000HP	6	74	36	29	0,7	36	●
4,200	–	.1654	3576252	B222A04200HP	6	74	36	29	0,8	36	●
4,366	11/64	.1719	3576253	B222A04366HP	6	74	36	29	0,8	36	●
4,500	–	.1772	3006620	B222A04500HP	6	74	36	29	0,8	36	●
4,600	–	.1811	3576254	B222A04600HP	6	74	36	29	0,8	36	●
4,763	3/16	.1875	3006594	B222A04763HP	6	82	44	35	0,9	36	●
4,800	–	.1890	3576255	B222A04800HP	6	82	44	35	0,9	36	●
5,000	–	.1969	3006621	B222A05000HP	6	82	44	35	0,9	36	●
5,100	–	.2008	3576256	B222A05100HP	6	82	44	35	0,9	36	●
5,159	13/64	.2031	3576257	B222A05159HP	6	82	44	35	1,0	36	●
5,500	–	.2165	3006622	B222A05500HP	6	82	44	35	1,0	36	●
5,558	7/32	.2188	3006595	B222A05558HP	6	82	44	35	1,0	36	●
5,800	–	.2283	3576258	B222A05800HP	6	82	44	35	1,1	36	●
5,953	15/64	.2344	3576259	B222A05953HP	6	82	44	35	1,1	36	●
6,000	–	.2362	3006623	B222A06000HP	6	82	44	35	1,1	36	●
6,350	1/4	.2500	3006596	B222A06350HP	8	91	53	43	1,2	36	●
6,500	–	.2559	3006624	B222A06500HP	8	91	53	43	1,2	36	●
6,746	17/64	.2656	3006597	B222A06746HP	8	91	53	43	1,2	36	●
6,800	–	.2677	3576260	B222A06800HP	8	91	53	43	1,3	36	●
7,000	–	.2756	3006625	B222A07000HP	8	91	53	43	1,3	36	●
7,145	9/32	.2813	3006598	B222A07145HP	8	91	53	43	1,3	36	●
7,500	–	.2953	3006626	B222A07500HP	8	91	53	43	1,4	36	●
7,541	19/64	.2969	3006599	B222A07541HP	8	91	53	43	1,4	36	●
7,800	–	.3071	3576261	B222A07800HP	8	91	53	43	1,4	36	●
7,938	5/16	.3125	3006600	B222A07938HP	8	91	53	43	1,5	36	●
8,000	–	.3150	3006627	B222A08000HP	8	91	53	43	1,5	36	●
8,200	–	.3228	3576262	B222A08200HP	10	103	61	49	1,5	40	●
8,334	21/64	.3281	3006601	B222A08334HP	10	103	61	49	1,5	40	●
8,500	–	.3346	3006628	B222A08500HP	10	103	61	49	1,6	40	●
8,733	11/32	.3438	3006602	B222A08733HP	10	103	61	49	1,6	40	●
8,800	–	.3465	3576263	B222A08800HP	10	103	61	49	1,6	40	●
9,000	–	.3543	3006629	B222A09000HP	10	103	61	49	1,7	40	●

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B222_HP

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● first choice
○ alternate choice

	D1										H
inch	fraction	size mm	order number	catalog number	D	L	L3	L4 max	L5	LS	S
9,129	23/64	.3594	3006603	B222A09129HP	10	103	61	49	1,7	40	N
9,300	–	.3661	3576264	B222A09300HP	10	103	61	49	1,7	40	K
9,500	–	.3740	3006630	B222A09500HP	10	103	61	49	1,8	40	M
9,525	3/8	.3750	3006604	B222A09525HP	10	103	61	49	1,8	40	P
9,800	–	.3858	3576265	B222A09800HP	10	103	61	49	1,8	40	KC7315
9,921	25/64	.3906	3006605	B222A09921HP	10	103	61	49	1,8	40	●
10,000	–	.3937	3006631	B222A10000HP	10	103	61	49	1,8	40	●
10,200	–	.4016	3576266	B222A10200HP	12	118	71	56	1,9	45	●
10,320	13/32	.4063	3006606	B222A10320HP	12	118	71	56	1,9	45	●
10,500	–	.4134	3006632	B222A10500HP	12	118	71	56	1,9	45	●
10,716	27/64	.4219	3006607	B222A10716HP	12	118	71	56	2,0	45	●
10,800	–	.4252	3576267	B222A10800HP	12	118	71	56	2,0	45	●
11,000	–	.4331	3006633	B222A11000HP	12	118	71	56	2,0	45	●
11,111	7/16	.4375	3006608	B222A11111HP	12	118	71	56	2,1	45	●
11,500	–	.4528	3006634	B222A11500HP	12	118	71	56	2,1	45	●
11,509	29/64	.4531	3006609	B222A11509HP	12	118	71	56	2,1	45	●
11,908	15/32	.4688	3006610	B222A11908HP	12	118	71	56	2,2	45	●
12,000	–	.4724	3006635	B222A12000HP	12	118	71	56	2,2	45	●
12,304	31/64	.4844	3006611	B222A12304HP	14	124	77	60	2,3	45	●
12,500	–	.4921	3006636	B222A12500HP	14	124	77	60	2,3	45	●
12,700	1/2	.5000	3006612	B222A12700HP	14	124	77	60	2,3	45	●
13,000	–	.5118	3006637	B222A13000HP	14	124	77	60	2,4	45	●
13,500	–	.5315	3006638	B222A13500HP	14	124	77	60	2,5	45	●
14,000	–	.5512	3006639	B222A14000HP	14	124	77	60	2,6	45	●
14,288	9/16	.5625	3006613	B222A14288HP	16	133	83	63	2,6	48	●
14,500	–	.5709	3006640	B222A14500HP	16	133	83	63	2,7	48	●
15,000	–	.5906	3006641	B222A15000HP	16	133	83	63	2,8	48	●
15,500	–	.6102	3006642	B222A15500HP	16	133	83	63	2,9	48	●
15,875	5/8	.6250	3006614	B222A15875HP	16	133	83	63	2,9	48	●
16,000	–	.6299	3006643	B222A16000HP	16	133	83	63	3,0	48	●
16,500	–	.6496	3006644	B222A16500HP	18	143	93	71	3,0	48	●
17,000	–	.6693	3006645	B222A17000HP	18	143	93	71	3,1	48	●
17,463	11/16	.6875	3006615	B222A17463HP	18	143	93	71	3,2	48	●
17,500	–	.6890	3006646	B222A17500HP	18	143	93	71	3,2	48	●
18,000	–	.7087	3006647	B222A18000HP	18	143	93	71	3,3	48	●
18,500	–	.7283	3006648	B222A18500HP	20	153	101	77	3,4	50	●
19,000	–	.7480	3006649	B222A19000HP	20	153	101	77	3,5	50	●
19,050	3/4	.7500	3006616	B222A19050HP	20	153	101	77	3,5	50	●
20,000	–	.7874	3576268	B222A20000HP	20	153	101	77	3,7	50	●

Ordering Example:
By catalog number B222A03000HP KC7315, or by order number 3006617.

KENNAMETAL

Solid Carbide Drills

HP Drills for Steel with Through Coolant

Primary Application

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

Features and Benefits

HP Drill Point Design

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

Unique Flute Design

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

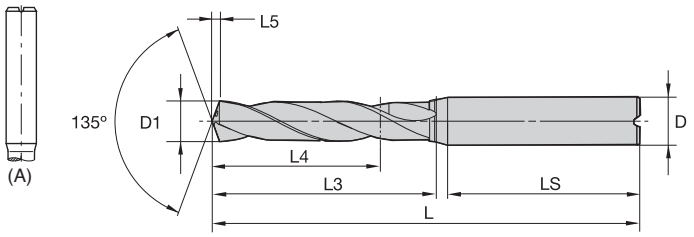
KC7315™ Grade

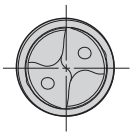
- A multilayer, TiAlN-based coating with high hot hardness allows 100% higher cutting speeds.
- Optimized surface finish of the tool ensures chip evacuation in high-speed drilling and MQL applications.

SE Drills - B224HP, B225HP / K224HP, K225HP, Series - Grade KC7315 - Through Coolant or MQL (Minimum Quantity Lubricant)

Starting Value	Cutting Speed		49	98	164	262	328	394	492	656	820	984	1148	Tool diameter								
	sfm													inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min		15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1	**Low Carbon Steels, Long chipping**													**Content C < .25%**			**Tensile Strength RM (MPa): <530**				**Hardness (HB) or HRC: <125**	
														Feed rate by diameter								
755	sfm									656			833	ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .011	.006 - .013	007 - .015	.007 - .017	.009 - .019
230	m/min									200			260	mm/r	0,07 - 0,13	0,08- 0,16	0,10 - 0,19	0,13 - 0,29	0,15 - 0,33	0,17 - 0,37	0,19 - 0,44	022 - 0,49
P2	**Low Carbon Steels, Free Machining and short chipping**													**Content C < .25%**			**Tensile Strength RM (MPa): <650**				**Hardness (HB) or HRC: <220**	
														Feed rate by diameter								
722	sfm								591				853	ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .011	.006 - .013	.007 - .015	.007 - .017	.009 - .019
220	m/min								180				260	mm/r	0,07 - 0,13	0,08 - 0,16	0,10 - 0,19	0,13 - 0,29	0,15 - 0,33	0,17 - 0,37	0,19 - 0,44	0,22 - 0,49
P3	**Medium & High Plain-Carbon Steels, Low Alloyed**													**Content C < .25%**			**Tensile Strength RM (MPa): 600-850**				**Hardness (HB) or HRC: <330**	
														Feed rate by diameter								
492	sfm							394					591	ipr	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.010 - .017	.011 - .019
150	m/min							120					180	mm/r	0,010 - 0,16	0,11 - 0,20	0,13 - 0,23	0,16 - 0,29	0,19 - 0,24	0,21 - 0,37	0,25 - 0,44	0,28 - 0,49
P4	**Alloyed and Tempered Carbon Steels, Tool Steels**													**Content C > .25%**			**Tensile Strength RM (MPa): 800-1100**				**Hardness (HB) or HRC: 350-450**	
														Feed rate by diameter								
459	sfm							328					525	ipr	.003 - .006	.004 - .007	.004 - .007	.006 - .011	.006 - .012	.007 - .014	.008 - .016	.009 - .018
140	m/min							100					160	mm/r	0,07 - 0,14	0,09 - 0,17	0,11 - 0,19	0,14 - 0,27	0,16 - 0,31	0,18 - 0,35	0,21 - 0,41	0,24 - 0,46
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**													**Content C .1%–.6%**			**Tensile Strength RM (MPa): 900-1350**				**Hardness (HB) or HRC: 350-450**	
														Feed rate by diameter								
459	sfm							328					591	ipr	.003 - .005	.003 - .006	.004 - .006	.005 - .009	.006 - .009	.006 - .010	.007 - .014	.008 - .015
140	m/min							100					180	mm/r	0,07 - 0,12	0,108 - 0,14	0,10 - 0,16	0,12 - 0,23	0,14 - 0,24	0,16 - 0,26	0,18 - 0,35	0,21 - 0,39

* 1 MPa = 145 psi





Tolerance			
D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

	KC7315
H	
S	
N	
K	●
M	
P	●

B224_HP

D1 mm	D1 fraction	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	–	.1181	2888036	B224A03000HP	6	62	20	14	0,6	36	●
3,100	–	.1220	2888037	B224A03100HP	6	62	20	14	0,6	36	●
3,175	1/8	.1250	3576132	B224A03175HP	6	62	20	14	0,6	36	●
3,200	–	.1260	2888038	B224A03200HP	6	62	20	14	0,6	36	●
3,300	–	.1299	2888039	B224A03300HP	6	62	20	14	0,6	36	●
3,400	–	.1339	2888040	B224A03400HP	6	62	20	14	0,6	36	●
3,500	–	.1378	2888041	B224A03500HP	6	62	20	14	0,6	36	●
3,571	9/64	.1406	3576173	B224A03571HP	6	62	20	14	0,7	36	●
3,600	–	.1417	2888042	B224A03600HP	6	62	20	14	0,7	36	●
3,700	–	.1457	2450383	B224A03700HP	6	62	20	14	0,7	36	●
3,800	–	.1496	2888093	B224A03800HP	6	66	24	17	0,7	36	●
3,900	–	.1535	2888094	B224A03900HP	6	66	24	17	0,7	36	●
3,970	5/32	.1563	3576174	B224A03970HP	6	66	24	17	0,7	36	●
4,000	–	.1575	2262396	B224A04000HP	6	66	24	17	0,7	36	●
4,200	–	.1654	2262397	B224A04200HP	6	66	24	17	0,8	36	●
4,366	11/64	.1719	3576175	B224A04366HP	6	66	24	17	0,8	36	●
4,763	3/16	.1875	3576176	B224A04763HP	6	66	28	20	0,9	36	●
5,000	–	.1969	2261011	B224A05000HP	6	66	28	20	0,9	36	●
5,100	–	.2008	2262398	B224A05100HP	6	66	28	20	0,9	36	●
5,159	13/64	.2031	3576177	B224A05159HP	6	66	28	20	1,0	36	●
5,500	–	.2165	2262399	B224A05500HP	6	66	28	20	1,0	36	●
5,558	7/32	.2188	3576178	B224A05558HP	6	66	28	20	1,0	36	●
5,949	15/64	.2342	3576179	B224A05949HP	6	66	28	20	1,1	36	●
6,000	–	.2362	2262400	B224A06000HP	6	66	28	20	1,1	36	●
6,350	1/4	.2500	3576180	B224A06350HP	8	79	34	24	1,2	36	●
6,500	–	.2559	2262401	B224A06500HP	8	79	34	24	1,2	36	●
6,746	17/64	.2656	3576181	B224A06746HP	8	79	34	24	1,2	36	●
6,800	–	.2677	2245928	B224A06800HP	8	79	34	24	1,3	36	●
7,000	–	.2756	2262402	B224A07000HP	8	79	34	24	1,3	36	●
7,145	9/32	.2813	3576182	B224A07145HP	8	79	41	29	1,3	36	●
7,500	–	.2953	2262403	B224A07500HP	8	79	41	29	1,4	36	●
7,541	19/64	.2969	3576183	B224A07541HP	8	79	41	29	1,4	36	●
7,938	5/16	.3125	3576184	B224A07938HP	8	79	41	29	1,5	36	●
8,000	–	.3150	2261012	B224A08000HP	8	79	41	29	1,5	36	●
8,200	–	.3228	2262404	B224A08200HP	10	89	47	35	1,5	40	●
8,334	21/64	.3281	3576185	B224A08334HP	10	89	47	35	1,5	40	●
8,500	–	.3346	2262405	B224A08500HP	10	89	47	35	1,6	40	●
8,700	–	.3425	2262406	B224A08700HP	10	89	47	35	1,6	40	●

(continued on next page)

B224_HP

(continued from previous page)

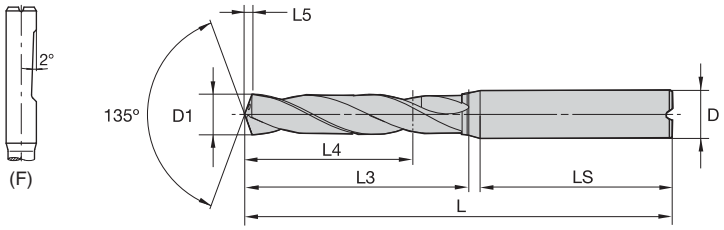
● first choice
○ alternate choice

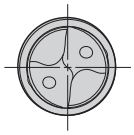
	D1										H
mm	fraction	inch	order number	catalog number	D	L	L3	L4 max	L5	LS	S
8,733	11/32	.3438	3576186	B224A08733HP	10	89	47	35	1,6	40	N
8,800	–	.3465	2262407	B224A08800HP	10	89	47	35	1,6	40	K
9,000	–	.3543	2262408	B224A09000HP	10	89	47	35	1,7	40	M
9,129	23/64	.3594	3576187	B224A09129HP	10	89	47	35	1,7	40	P
9,500	–	.3740	2262409	B224A09500HP	10	89	47	35	1,8	40	KC7315
9,525	3/8	.3750	3576188	B224A09525HP	10	89	47	35	1,8	40	●
9,921	25/64	.3906	3576189	B224A09921HP	10	89	47	35	1,8	40	●
10,000	–	.3937	2262410	B224A10000HP	10	89	47	35	1,8	40	●
10,200	–	.4016	2262411	B224A10200HP	12	102	55	40	1,9	45	●
10,300	–	.4055	2262412	B224A10300HP	12	102	55	40	1,9	45	●
10,320	13/32	.4063	3576190	B224A10320HP	12	102	55	40	1,9	45	●
10,400	–	.4094	2262413	B224A10400HP	12	102	55	40	1,9	45	●
10,500	–	.4134	2262414	B224A10500HP	12	102	55	40	1,9	45	●
10,716	27/64	.4219	3576191	B224A10716HP	12	102	55	40	2,0	45	●
10,800	–	.4252	2262415	B224A10800HP	12	102	55	40	2,0	45	●
11,000	–	.4331	2262416	B224A11000HP	12	102	55	40	2,0	45	●
11,111	7/16	.4374	3576192	B224A11111HP	12	102	55	40	2,1	45	●
11,500	–	.4528	2262417	B224A11500HP	12	102	55	40	2,1	45	●
11,509	29/64	.4531	3576193	B224A11509HP	12	102	55	40	2,1	45	●
11,908	15/32	.4688	3576194	B224A11908HP	12	102	55	40	2,2	45	●
12,000	–	.4724	2261053	B224A12000HP	12	102	55	40	2,2	45	●
12,300	31/64	.4843	2497660	B224A12300HP	14	107	60	43	2,3	45	●
12,500	–	.4921	2245932	B224A12500HP	14	107	60	43	2,3	45	●
12,700	1/2	.5000	3576195	B224A12700HP	14	107	60	43	2,3	45	●
13,000	–	.5118	2262418	B224A13000HP	14	107	60	43	2,4	45	●
13,100	33/64	.5157	3576196	B224A13100HP	14	107	60	43	2,4	45	●
13,500	–	.5315	2262419	B224A13500HP	14	107	60	43	2,5	45	●
13,891	35/64	.5469	3576197	B224A13891HP	14	107	60	43	2,6	45	●
14,000	–	.5512	2262420	B224A14000HP	14	107	60	43	2,6	45	●
14,288	9/16	.5625	3576198	B224A14288HP	16	115	65	45	2,6	48	●
14,684	37/64	.5781	3576199	B224A14684HP	16	115	65	45	2,7	48	●
15,083	19/32	.5938	3576200	B224A15083HP	16	115	65	45	2,8	48	●
15,479	39/64	.6094	3576201	B224A15479HP	16	115	65	45	2,9	48	●
15,500	–	.6102	2262421	B224A15500HP	16	115	65	45	2,9	48	●
15,600	–	.6142	2262422	B224A15600HP	16	115	65	45	2,9	48	●
15,875	5/8	.6250	3576202	B224A15875HP	16	115	65	45	2,9	48	●
16,000	–	.6299	2262423	B224A16000HP	16	115	65	45	3,0	48	●
16,500	–	.6496	2262424	B224A16500HP	18	123	73	51	3,0	48	●
17,000	–	.6693	2262425	B224A17000HP	18	123	73	51	3,1	48	●
17,463	11/16	.6875	3576203	B224A17463HP	18	123	73	51	3,2	48	●
17,500	–	.6890	2262426	B224A17500HP	18	123	73	51	3,2	48	●
18,000	–	.7087	2262427	B224A18000HP	18	123	73	51	3,3	48	●
19,000	–	.7480	2262428	B224A19000HP	20	131	79	55	3,5	50	●
19,050	3/4	.7500	3576204	B224A19050HP	20	131	79	55	3,5	50	●
20,000	–	.7874	2245993	B224A20000HP	20	131	79	55	3,7	50	●

Ordering Example:
By catalog number B224A03000HP KC7315, or by order number 2888036.

KENNAMETAL

SE HP Drills with Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

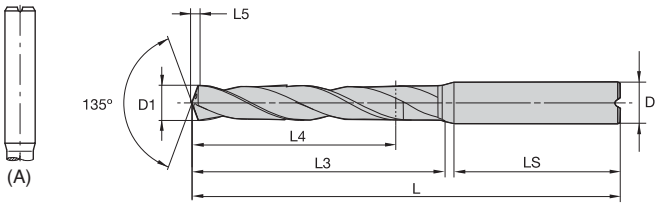
	KC7315
H	
S	
N	
K	●
M	
P	●

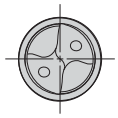
B224_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
4,000	.1575	2262429	B224F04000HP	6	66	24	17	0,7	36	●
4,200	.1654	2262430	B224F04200HP	6	66	24	17	0,8	36	●
5,000	.1969	2262431	B224F05000HP	6	66	28	20	0,9	36	●
5,500	.2165	2262432	B224F05500HP	6	66	28	20	1,0	36	●
6,000	.2362	2262433	B224F06000HP	6	66	28	20	1,1	36	●
6,800	.2677	2262434	B224F06800HP	8	79	34	24	1,3	36	●
7,000	.2756	2262435	B224F07000HP	8	79	34	24	1,3	36	●
7,400	.2913	2262436	B224F07400HP	8	79	41	29	1,4	36	●
8,000	.3150	2262437	B224F08000HP	8	79	41	29	1,5	36	●
8,400	.3307	2262438	B224F08400HP	10	89	47	35	1,6	40	●
8,500	.3346	2262439	B224F08500HP	10	89	47	35	1,6	40	●
9,000	.3543	2262440	B224F09000HP	10	89	47	35	1,7	40	●
9,500	.3740	2262441	B224F09500HP	10	89	47	35	1,8	40	●
10,000	.3937	2262442	B224F10000HP	10	89	47	35	1,8	40	●
10,200	.4016	2262443	B224F10200HP	12	102	55	40	1,9	45	●
10,300	.4055	2262444	B224F10300HP	12	102	55	40	1,9	45	●
10,500	.4134	2262445	B224F10500HP	12	102	55	40	1,9	45	●
11,000	.4331	2262446	B224F11000HP	12	102	55	40	2,0	45	●
11,500	.4528	2262447	B224F11500HP	12	102	55	40	2,1	45	●
12,000	.4724	2262448	B224F12000HP	12	102	55	40	2,2	45	●
12,500	.4921	2262449	B224F12500HP	14	107	60	43	2,3	45	●
13,000	.5118	2262450	B224F13000HP	14	107	60	43	2,4	45	●
13,500	.5315	2262451	B224F13500HP	14	107	60	43	2,5	45	●
14,000	.5512	2262452	B224F14000HP	14	107	60	43	2,6	45	●
14,500	.5709	2262453	B224F14500HP	16	115	65	45	2,7	48	●
15,000	.5906	2262454	B224F15000HP	16	115	65	45	2,8	48	●
16,500	.6496	2262455	B224F16500HP	18	123	73	51	3,0	48	●
17,000	.6693	2262456	B224F17000HP	18	123	73	51	3,1	48	●
17,500	.6890	2262457	B224F17500HP	18	123	73	51	3,2	48	●
18,000	.7087	2262458	B224F18000HP	18	123	73	51	3,3	48	●
19,000	.7480	2262459	B224F19000HP	20	131	79	55	3,5	50	●
20,000	.7874	2262460	B224F20000HP	20	131	79	55	3,7	50	●

Ordering Example:
By catalog number B224F04000HP KC7315, or by order number 2262429.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		
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K		●
M		
P		●

B225_HP

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1181	–	3,000	2450238	B225A03000HP	6	66	28	23	0,6	36	●
.1220	–	3,100	2888096	B225A03100HP	6	66	28	23	0,6	36	●
.1250	1/8	3,175	3576205	B225A03175HP	6	66	28	23	0,6	36	●
.1260	–	3,200	2888097	B225A03200HP	6	66	28	23	0,6	36	●
.1299	–	3,300	2450239	B225A03300HP	6	66	28	23	0,6	36	●
.1339	–	3,400	2450240	B225A03400HP	6	66	28	23	0,6	36	●
.1378	–	3,500	2450241	B225A03500HP	6	66	28	23	0,7	36	●
.1406	9/64	3,571	3576206	B225A03571HP	6	66	28	23	0,7	36	●
.1417	–	3,600	2888098	B225A03600HP	6	66	28	23	0,7	36	●
.1457	–	3,700	2404845	B225A03700HP	6	66	28	23	0,7	36	●
.1496	–	3,800	2450263	B225A03800HP	6	74	36	29	0,7	36	●
.1535	–	3,900	2888099	B225A03900HP	6	74	36	29	0,7	36	●
.1563	–	3,970	2955550	B225A03970HP	6	74	36	29	0,7	36	●
.1575	–	4,000	2245994	B225A04000HP	6	74	36	29	0,7	36	●
.1614	–	4,100	2262538	B225A04100HP	6	74	36	29	0,8	36	●
.1654	–	4,200	2262539	B225A04200HP	6	74	36	29	0,8	36	●
.1693	–	4,300	2262540	B225A04300HP	6	74	36	29	0,8	36	●
.1719	11/64	4,366	3576207	B225A04366HP	6	74	36	29	0,8	36	●
.1732	–	4,400	2262541	B225A04400HP	6	74	36	29	0,8	36	●
.1772	–	4,500	2262542	B225A04500HP	6	74	36	29	0,8	36	●
.1811	–	4,600	2262553	B225A04600HP	6	74	36	29	0,8	36	●
.1850	–	4,700	2262554	B225A04700HP	6	74	36	29	0,9	36	●
.1874	–	4,760	2955551	B225A04760HP	6	82	44	35	0,9	36	●
.1890	–	4,800	2262555	B225A04800HP	6	82	44	35	0,9	36	●
.1929	–	4,900	2262556	B225A04900HP	6	82	44	35	0,9	36	●
.1969	–	5,000	2261055	B225A05000HP	6	82	44	35	0,9	36	●
.2008	–	5,100	2262557	B225A05100HP	6	82	44	35	0,9	36	●
.2031	13/64	5,159	3576208	B225A05159HP	6	82	44	35	1,0	36	●
.2047	–	5,200	2262558	B225A05200HP	6	82	44	35	1,0	36	●
.2087	–	5,300	2262559	B225A05300HP	6	82	44	35	1,0	36	●
.2126	–	5,400	2262560	B225A05400HP	6	82	44	35	1,0	36	●
.2165	–	5,500	2262561	B225A05500HP	6	82	44	35	1,0	36	●
.2189	–	5,560	2955552	B225A05560HP	6	82	44	35	1,0	36	●
.2205	–	5,600	2262562	B225A05600HP	6	82	44	35	1,0	36	●
.2244	–	5,700	2262563	B225A05700HP	6	82	44	35	1,1	36	●
.2283	–	5,800	2262564	B225A05800HP	6	82	44	35	1,1	36	●
.2323	–	5,900	2262565	B225A05900HP	6	82	44	35	1,1	36	●
.2342	15/64	5,949	3576209	B225A05949HP	6	82	44	35	1,1	36	●
.2362	–	6,000	2262566	B225A06000HP	6	82	44	35	1,1	36	●
.2402	–	6,100	2262567	B225A06100HP	8	91	53	43	1,1	36	●

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B225_HP

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● first choice
○ alternate choice

											H
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	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.2441	–	6,200	2262568	B225A06200HP	8	91	53	43	1,1	36	●
.2480	–	6,300	2262569	B225A06300HP	8	91	53	43	1,2	36	●
.2500	1/4	6,350	2955633	B225A06350HP	8	91	53	43	1,2	36	●
.2520	–	6,400	2262570	B225A06400HP	8	91	53	43	1,2	36	●
.2559	–	6,500	2262571	B225A06500HP	8	91	53	43	1,2	36	●
.2570	–	6,527	2955634	B225A06527HP	8	91	53	43	1,2	36	●
.2598	–	6,600	2262572	B225A06600HP	8	91	53	43	1,2	36	●
.2638	–	6,700	2262573	B225A06700HP	8	91	53	43	1,2	36	●
.2657	–	6,750	2955642	B225A06750HP	8	91	53	43	1,2	36	●
.2677	–	6,800	2262574	B225A06800HP	8	91	53	43	1,3	36	●
.2717	–	6,900	2262575	B225A06900HP	8	91	53	43	1,3	36	●
.2756	–	7,000	2262576	B225A07000HP	8	91	53	43	1,3	36	●
.2795	–	7,100	2262577	B225A07100HP	8	91	53	43	1,3	36	●
.2815	–	7,150	2955635	B225A07150HP	8	91	53	43	1,3	36	●
.2835	–	7,200	2262578	B225A07200HP	8	91	53	43	1,3	36	●
.2874	–	7,300	2262579	B225A07300HP	8	91	53	43	1,3	36	●
.2913	–	7,400	2262580	B225A07400HP	8	91	53	43	1,4	36	●
.2953	–	7,500	2262581	B225A07500HP	8	91	53	43	1,4	36	●
.2969	19/64	7,541	3576210	B225A07541HP	8	91	53	43	1,4	36	●
.2992	–	7,600	2262582	B225A07600HP	8	91	53	43	1,4	36	●
.3031	–	7,700	2262583	B225A07700HP	8	91	53	43	1,4	36	●
.3071	–	7,800	2262584	B225A07800HP	8	91	53	43	1,4	36	●
.3110	–	7,900	2262585	B225A07900HP	8	91	53	43	1,5	36	●
.3126	–	7,940	2955636	B225A07940HP	8	91	53	43	1,5	36	●
.3150	–	8,000	2261056	B225A08000HP	8	91	53	43	1,5	36	●
.3189	–	8,100	2262586	B225A08100HP	10	103	61	49	1,5	40	●
.3228	–	8,200	2262587	B225A08200HP	10	103	61	49	1,5	40	●
.3268	–	8,300	2262588	B225A08300HP	10	103	61	49	1,5	40	●
.3280	–	8,330	2955649	B225A08330HP	10	103	61	49	1,5	40	●
.3307	–	8,400	2262589	B225A08400HP	10	103	61	49	1,6	40	●
.3346	–	8,500	2245995	B225A08500HP	10	103	61	49	1,6	40	●
.3386	–	8,600	2262590	B225A08600HP	10	103	61	49	1,6	40	●
.3425	–	8,700	2262591	B225A08700HP	10	103	61	49	1,6	40	●
.3465	–	8,800	2262592	B225A08800HP	10	103	61	49	1,6	40	●
.3504	–	8,900	2262593	B225A08900HP	10	103	61	49	1,6	40	●
.3543	–	9,000	2262594	B225A09000HP	10	103	61	49	1,7	40	●
.3583	–	9,100	2262595	B225A09100HP	10	103	61	49	1,7	40	●
.3594	23/64	9,130	2955639	B225A09130HP	10	103	61	49	1,7	40	●
.3622	–	9,200	2262596	B225A09200HP	10	103	61	49	1,7	40	●
.3661	–	9,300	2262597	B225A09300HP	10	103	61	49	1,7	40	●
.3701	–	9,400	2262598	B225A09400HP	10	103	61	49	1,7	40	●
.3740	–	9,500	2262599	B225A09500HP	10	103	61	49	1,8	40	●
.3752	–	9,530	2955637	B225A09530HP	10	103	61	49	1,8	40	●
.3780	–	9,600	2262600	B225A09600HP	10	103	61	49	1,8	40	●
.3819	–	9,700	2262601	B225A09700HP	10	103	61	49	1,8	40	●
.3858	–	9,800	2262602	B225A09800HP	10	103	61	49	1,8	40	●
.3898	–	9,900	2262603	B225A09900HP	10	103	61	49	1,8	40	●
.3906	25/64	9,920	2955645	B225A09920HP	10	103	61	49	1,8	40	●
.3937	–	10,000	2262604	B225A10000HP	10	103	61	49	1,8	40	●
.3976	–	10,100	2262605	B225A10100HP	12	118	71	56	1,9	45	●

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B225_HP

(continued from previous page)

● first choice
○ alternate choice

	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.4016	–	10,200	2262606	B225A10200HP	12	118	71	56	1,9	45	●
.4055	–	10,300	2262607	B225A10300HP	12	118	71	56	1,9	45	●
.4063	13/32	10,320	2955643	B225A10320HP	12	118	71	56	1,9	45	●
.4094	–	10,400	2262608	B225A10400HP	12	118	71	56	1,9	45	●
.4134	–	10,500	2262609	B225A10500HP	12	118	71	56	1,9	45	●
.4173	–	10,600	2262610	B225A10600HP	12	118	71	56	2,0	45	●
.4213	–	10,700	2262611	B225A10700HP	12	118	71	56	2,0	45	●
.4220	–	10,720	2955638	B225A10720HP	12	118	71	56	2,0	45	●
.4252	–	10,800	2262612	B225A10800HP	12	118	71	56	2,0	45	●
.4291	–	10,900	2262613	B225A10900HP	12	118	71	56	2,0	45	●
.4331	–	11,000	2262614	B225A11000HP	12	118	71	56	2,0	45	●
.4370	–	11,100	2262615	B225A11100HP	12	118	71	56	2,0	45	●
.4374	7/16	11,111	3576211	B225A11111HP	12	118	71	56	2,1	45	●
.4409	–	11,200	2262616	B225A11200HP	12	118	71	56	2,1	45	●
.4449	–	11,300	2262617	B225A11300HP	12	118	71	56	2,1	45	●
.4488	–	11,400	2262618	B225A11400HP	12	118	71	56	2,1	45	●
.4528	–	11,500	2262619	B225A11500HP	12	118	71	56	2,1	45	●
.4531	29/64	11,510	2955650	B225A11510HP	12	118	71	56	2,1	45	●
.4567	–	11,600	2262620	B225A11600HP	12	118	71	56	2,1	45	●
.4606	–	11,700	2262621	B225A11700HP	12	118	71	56	2,2	45	●
.4646	–	11,800	2262622	B225A11800HP	12	118	71	56	2,2	45	●
.4685	–	11,900	2262623	B225A11900HP	12	118	71	56	2,2	45	●
.4688	15/32	11,908	3576212	B225A11908HP	12	118	71	56	2,2	45	●
.4724	–	12,000	2261057	B225A12000HP	12	118	71	56	2,2	45	●
.4764	–	12,100	2262624	B225A12100HP	14	124	77	60	2,2	45	●
.4803	–	12,200	2262625	B225A12200HP	14	124	77	60	2,3	45	●
.4843	–	12,300	2262626	B225A12300HP	14	124	77	60	2,3	45	●
.4882	–	12,400	2262627	B225A12400HP	14	124	77	60	2,3	45	●
.4921	–	12,500	2262628	B225A12500HP	14	124	77	60	2,3	45	●
.4961	–	12,600	2262629	B225A12600HP	14	124	77	60	2,3	45	●
.5000	1/2	12,700	2262630	B225A12700HP	14	124	77	60	2,3	45	●
.5039	–	12,800	2262631	B225A12800HP	14	124	77	60	2,4	45	●
.5079	–	12,900	2262632	B225A12900HP	14	124	77	60	2,4	45	●
.5118	–	13,000	2262633	B225A13000HP	14	124	77	60	2,4	45	●
.5157	–	13,100	2262634	B225A13100HP	14	124	77	60	2,4	45	●
.5197	–	13,200	2262635	B225A13200HP	14	124	77	60	2,4	45	●
.5236	–	13,300	2262636	B225A13300HP	14	124	77	60	2,5	45	●
.5276	–	13,400	2262637	B225A13400HP	14	124	77	60	2,5	45	●
.5315	–	13,500	2262638	B225A13500HP	14	124	77	60	2,5	45	●
.5354	–	13,600	2262639	B225A13600HP	14	124	77	60	2,5	45	●
.5394	–	13,700	2262640	B225A13700HP	14	124	77	60	2,5	45	●
.5433	–	13,800	2262641	B225A13800HP	14	124	77	60	2,5	45	●
.5469	35/64	13,891	3576213	B225A13891HP	14	124	77	60	2,6	45	●
.5472	–	13,900	2262642	B225A13900HP	14	124	77	60	2,6	45	●
.5512	–	14,000	2262643	B225A14000HP	14	124	77	60	2,6	45	●
.5551	–	14,100	2262644	B225A14100HP	16	133	83	63	2,6	48	●
.5591	–	14,200	2262645	B225A14200HP	16	133	83	63	2,6	48	●
.5625	9/16	14,288	3576214	B225A14288HP	16	133	83	63	2,6	48	●
.5630	–	14,300	2262646	B225A14300HP	16	133	83	63	2,6	48	●
.5669	–	14,400	2262647	B225A14400HP	16	133	83	63	2,7	48	●

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B225_HP

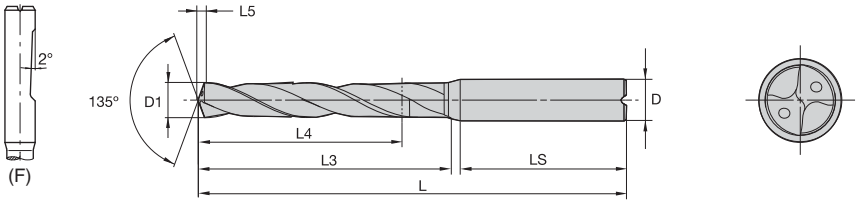
(continued from previous page)

● first choice
○ alternate choice

	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.5709	–	14,500	2245996	B225A14500HP	16	133	83	63	2,7	48	●
.5748	–	14,600	2262648	B225A14600HP	16	133	83	63	2,7	48	●
.5781	37/64	14,684	3576215	B225A14684HP	16	133	83	63	2,7	48	●
.5787	–	14,700	2262649	B225A14700HP	16	133	83	63	2,7	48	●
.5827	–	14,800	2262650	B225A14800HP	16	133	83	63	2,7	48	●
.5866	–	14,900	2262651	B225A14900HP	16	133	83	63	2,8	48	●
.5906	–	15,000	2262652	B225A15000HP	16	133	83	63	2,8	48	●
.5938	19/32	15,083	3576216	B225A15083HP	16	133	83	63	2,8	48	●
.5945	–	15,100	2262653	B225A15100HP	16	133	83	63	2,8	48	●
.5984	–	15,200	2262654	B225A15200HP	16	133	83	63	2,8	48	●
.6024	–	15,300	2262655	B225A15300HP	16	133	83	63	2,8	48	●
.6063	–	15,400	2262656	B225A15400HP	16	133	83	63	2,8	48	●
.6094	39/64	15,479	3576217	B225A15479HP	16	133	83	63	2,9	48	●
.6102	–	15,500	2262657	B225A15500HP	16	133	83	63	2,9	48	●
.6142	–	15,600	2262658	B225A15600HP	16	133	83	63	2,9	48	●
.6181	–	15,700	2262659	B225A15700HP	16	133	83	63	2,9	48	●
.6220	–	15,800	2262660	B225A15800HP	16	133	83	63	2,9	48	●
.6252	–	15,880	2955647	B225A15880HP	16	133	83	63	2,9	48	●
.6260	–	15,900	2262661	B225A15900HP	16	133	83	63	2,9	48	●
.6299	–	16,000	2262662	B225A16000HP	16	133	83	63	3,0	48	●
.6339	–	16,100	2262663	B225A16100HP	18	143	93	71	3,0	48	●
.6496	–	16,500	2262664	B225A16500HP	18	143	93	71	3,0	48	●
.6563	21/32	16,670	2955648	B225A16670HP	18	143	93	71	3,1	48	●
.6693	–	17,000	2262665	B225A17000HP	18	143	93	71	3,1	48	●
.6875	11/16	17,463	3576218	B225A17463HP	18	143	93	71	3,2	48	●
.6890	–	17,500	2262666	B225A17500HP	18	143	93	71	3,2	48	●
.6969	–	17,700	2262667	B225A17700HP	18	143	93	71	3,3	48	●
.7087	–	18,000	2262668	B225A18000HP	18	143	93	71	3,3	48	●
.7283	–	18,500	2262669	B225A18500HP	20	153	101	77	3,4	50	●
.7480	–	19,000	2262670	B225A19000HP	20	153	101	77	3,5	50	●
.7500	3/4	19,050	2955640	B225A19050HP	20	153	101	77	3,5	50	●
.7559	–	19,200	2262671	B225A19200HP	20	153	101	77	3,5	50	●
.7579	–	19,250	2955641	B225A19250HP	20	153	101	77	3,6	50	●
.7598	–	19,300	2262672	B225A19300HP	20	153	101	77	3,6	50	●
.7677	–	19,500	2262673	B225A19500HP	20	153	101	77	3,6	50	●
.7874	–	20,000	2261058	B225A20000HP	20	153	101	77	3,7	50	●
.8071	–	20,500	2262674	B225A20500HP	20	167	115	85	3,8	51	●
.8268	–	21,000	2262675	B225A21000HP	20	167	115	85	3,9	51	●
.6875	11/16	17,463	2955646	B255A17460HP	18	143	93	71	3,2	48	●

Ordering Example:
By catalog number B225A14500HP KC7315, or by order number 2245996.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B225_HP

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
4,000	.1575	2262676	B225F04000HP	6	74	36	29	0,7	36	●
4,100	.1614	2262677	B225F04100HP	6	74	36	29	0,8	36	●
4,200	.1654	2262678	B225F04200HP	6	74	36	29	0,8	36	●
4,300	.1693	2262679	B225F04300HP	6	74	36	29	0,8	36	●
4,400	.1732	2262680	B225F04400HP	6	74	36	29	0,8	36	●
4,500	.1772	2262681	B225F04500HP	6	74	36	29	0,8	36	●
4,600	.1811	2262682	B225F04600HP	6	74	36	29	0,8	36	●
4,700	.1850	2262683	B225F04700HP	6	74	36	29	0,9	36	●
4,800	.1890	2262684	B225F04800HP	6	82	44	35	0,9	36	●
4,900	.1929	2262685	B225F04900HP	6	82	44	35	0,9	36	●
5,000	.1969	2262686	B225F05000HP	6	82	44	35	0,9	36	●
5,100	.2008	2262687	B225F05100HP	6	82	44	35	0,9	36	●
5,200	.2047	2262688	B225F05200HP	6	82	44	35	1,0	36	●
5,300	.2087	2262689	B225F05300HP	6	82	44	35	1,0	36	●
5,400	.2126	2262690	B225F05400HP	6	82	44	35	1,0	36	●
5,500	.2165	2262691	B225F05500HP	6	82	44	35	1,0	36	●
5,600	.2205	2262692	B225F05600HP	6	82	44	35	1,0	36	●
5,700	.2244	2262693	B225F05700HP	6	82	44	35	1,1	36	●
5,800	.2283	2262694	B225F05800HP	6	82	44	35	1,1	36	●
5,900	.2323	2262695	B225F05900HP	6	82	44	35	1,1	36	●
6,000	.2362	2262696	B225F06000HP	6	82	44	35	1,1	36	●
6,100	.2402	2262697	B225F06100HP	8	91	53	43	1,1	36	●
6,200	.2441	2262698	B225F06200HP	8	91	53	43	1,1	36	●
6,300	.2480	2262699	B225F06300HP	8	91	53	43	1,2	36	●
6,400	.2520	2262700	B225F06400HP	8	91	53	43	1,2	36	●
6,500	.2559	2262701	B225F06500HP	8	91	53	43	1,2	36	●
6,600	.2598	2262702	B225F06600HP	8	91	53	43	1,2	36	●
6,700	.2638	2262703	B225F06700HP	8	91	53	43	1,2	36	●
6,800	.2677	2262704	B225F06800HP	8	91	53	43	1,3	36	●
6,900	.2717	2262705	B225F06900HP	8	91	53	43	1,3	36	●
7,000	.2756	2262706	B225F07000HP	8	91	53	43	1,3	36	●
7,100	.2795	2262707	B225F07100HP	8	91	53	43	1,3	36	●
7,200	.2835	2262708	B225F07200HP	8	91	53	43	1,3	36	●
7,300	.2874	2262709	B225F07300HP	8	91	53	43	1,3	36	●
7,400	.2913	2262710	B225F07400HP	8	91	53	43	1,4	36	●
7,500	.2953	2262711	B225F07500HP	8	91	53	43	1,4	36	●
7,600	.2992	2262712	B225F07600HP	8	91	53	43	1,4	36	●
7,700	.3031	2262713	B225F07700HP	8	91	53	43	1,4	36	●
7,800	.3071	2262714	B225F07800HP	8	91	53	43	1,4	36	●
7,900	.3110	2262715	B225F07900HP	8	91	53	43	1,5	36	●

(continued on next page)

B225_HP

(continued from previous page)

● first choice
○ alternate choice

H	S	N	K	M	P
			●		●

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
8,000	.3150	2262716	B225F08000HP	8	91	53	43	1,5	36	●
8,100	.3189	2262717	B225F08100HP	10	103	61	49	1,5	40	●
8,200	.3228	2262718	B225F08200HP	10	103	61	49	1,5	40	●
8,300	.3268	2262719	B225F08300HP	10	103	61	49	1,5	40	●
8,400	.3307	2262720	B225F08400HP	10	103	61	49	1,6	40	●
8,500	.3346	2262721	B225F08500HP	10	103	61	49	1,6	40	●
8,600	.3386	2262722	B225F08600HP	10	103	61	49	1,6	40	●
8,700	.3425	2262723	B225F08700HP	10	103	61	49	1,6	40	●
8,800	.3465	2262724	B225F08800HP	10	103	61	49	1,6	40	●
8,900	.3504	2262725	B225F08900HP	10	103	61	49	1,6	40	●
9,000	.3543	2262726	B225F09000HP	10	103	61	49	1,7	40	●
9,100	.3583	2262727	B225F09100HP	10	103	61	49	1,7	40	●
9,200	.3622	2262728	B225F09200HP	10	103	61	49	1,7	40	●
9,300	.3661	2262729	B225F09300HP	10	103	61	49	1,7	40	●
9,400	.3701	2262730	B225F09400HP	10	103	61	49	1,7	40	●
9,500	.3740	2262731	B225F09500HP	10	103	61	49	1,8	40	●
9,600	.3780	2262732	B225F09600HP	10	103	61	49	1,8	40	●
9,700	.3819	2262733	B225F09700HP	10	103	61	49	1,8	40	●
9,800	.3858	2262734	B225F09800HP	10	103	61	49	1,8	40	●
9,900	.3898	2262735	B225F09900HP	10	103	61	49	1,8	40	●
10,000	.3937	2262736	B225F10000HP	10	103	61	49	1,8	40	●
10,100	.3976	2262737	B225F10100HP	12	118	71	56	1,9	45	●
10,200	.4016	2262738	B225F10200HP	12	118	71	56	1,9	45	●
10,300	.4055	2262739	B225F10300HP	12	118	71	56	1,9	45	●
10,400	.4094	2262740	B225F10400HP	12	118	71	56	1,9	45	●
10,500	.4134	2262741	B225F10500HP	12	118	71	56	1,9	45	●
10,600	.4173	2262742	B225F10600HP	12	118	71	56	2,0	45	●
10,700	.4213	2262743	B225F10700HP	12	118	71	56	2,0	45	●
10,800	.4252	2262744	B225F10800HP	12	118	71	56	2,0	45	●
10,900	.4291	2262745	B225F10900HP	12	118	71	56	2,0	45	●
11,000	.4331	2262746	B225F11000HP	12	118	71	56	2,0	45	●
11,100	.4370	2262747	B225F11100HP	12	118	71	56	2,0	45	●
11,200	.4409	2262748	B225F11200HP	12	118	71	56	2,1	45	●
11,300	.4449	2262749	B225F11300HP	12	118	71	56	2,1	45	●
11,400	.4488	2262750	B225F11400HP	12	118	71	56	2,1	45	●
11,500	.4528	2262751	B225F11500HP	12	118	71	56	2,1	45	●
11,600	.4567	2262752	B225F11600HP	12	118	71	56	2,1	45	●
11,700	.4606	2262753	B225F11700HP	12	118	71	56	2,2	45	●
11,800	.4646	2262754	B225F11800HP	12	118	71	56	2,2	45	●
11,900	.4685	2262755	B225F11900HP	12	118	71	56	2,2	45	●
12,000	.4724	2262756	B225F12000HP	12	118	71	56	2,2	45	●
12,100	.4764	2262757	B225F12100HP	14	124	77	60	2,2	45	●
12,200	.4803	2262758	B225F12200HP	14	124	77	60	2,3	45	●
12,300	.4843	2262759	B225F12300HP	14	124	77	60	2,3	45	●
12,400	.4882	2262760	B225F12400HP	14	124	77	60	2,3	45	●
12,500	.4921	2262761	B225F12500HP	14	124	77	60	2,3	45	●
12,600	.4961	2262762	B225F12600HP	14	124	77	60	2,3	45	●
12,700	.5000	2262763	B225F12700HP	14	124	77	60	2,3	45	●
12,800	.5039	2262764	B225F12800HP	14	124	77	60	2,4	45	●
12,900	.5079	2262765	B225F12900HP	14	124	77	60	2,4	45	●

(continued on next page)

B225_HP

(continued from previous page)

● first choice
○ alternate choice

H	S	N	K	M	P
			●		●

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
13,000	.5118	2262766	B225F13000HP	14	124	77	60	2,4	45	●
13,100	.5157	2262767	B225F13100HP	14	124	77	60	2,4	45	●
13,200	.5197	2262768	B225F13200HP	14	124	77	60	2,4	45	●
13,300	.5236	2262769	B225F13300HP	14	124	77	60	2,5	45	●
13,400	.5276	2262770	B225F13400HP	14	124	77	60	2,5	45	●
13,500	.5315	2262771	B225F13500HP	14	124	77	60	2,5	45	●
13,600	.5354	2262772	B225F13600HP	14	124	77	60	2,5	45	●
13,700	.5394	2262773	B225F13700HP	14	124	77	60	2,5	45	●
13,800	.5433	2262774	B225F13800HP	14	124	77	60	2,5	45	●
13,900	.5472	2262775	B225F13900HP	14	124	77	60	2,6	45	●
14,000	.5512	2262776	B225F14000HP	14	124	77	60	2,6	45	●
14,100	.5551	2262777	B225F14100HP	16	133	83	63	2,6	48	●
14,200	.5591	2263037	B225F14200HP	16	133	83	63	2,6	48	●
14,300	.5630	2263038	B225F14300HP	16	133	83	63	2,6	48	●
14,400	.5669	2263039	B225F14400HP	16	133	83	63	2,7	48	●
14,500	.5709	2263040	B225F14500HP	16	133	83	63	2,7	48	●
14,600	.5748	2263041	B225F14600HP	16	133	83	63	2,7	48	●
14,700	.5787	2263042	B225F14700HP	16	133	83	63	2,7	48	●
14,800	.5827	2263093	B225F14800HP	16	133	83	63	2,7	48	●
14,900	.5866	2263094	B225F14900HP	16	133	83	63	2,8	48	●
15,000	.5906	2263095	B225F15000HP	16	133	83	63	2,8	48	●
15,100	.5945	2263096	B225F15100HP	16	133	83	63	2,8	48	●
15,200	.5984	2263097	B225F15200HP	16	133	83	63	2,8	48	●
15,300	.6024	2263098	B225F15300HP	16	133	83	63	2,8	48	●
15,400	.6063	2263099	B225F15400HP	16	133	83	63	2,8	48	●
15,500	.6102	2263101	B225F15500HP	16	133	83	63	2,9	48	●
15,600	.6142	2263102	B225F15600HP	16	133	83	63	2,9	48	●
15,700	.6181	2263103	B225F15700HP	16	133	83	63	2,9	48	●
15,800	.6220	2263104	B225F15800HP	16	133	83	63	2,9	48	●
15,900	.6260	2263105	B225F15900HP	16	133	83	63	2,9	48	●
16,000	.6299	2263106	B225F16000HP	16	133	83	63	3,0	48	●
16,500	.6496	2263107	B225F16500HP	18	143	93	71	3,0	48	●
17,000	.6693	2263108	B225F17000HP	18	143	93	71	3,1	48	●
17,500	.6890	2263109	B225F17500HP	18	143	93	71	3,2	48	●
17,700	.6969	2263110	B225F17700HP	18	143	93	71	3,3	48	●
18,000	.7087	2263111	B225F18000HP	18	143	93	71	3,3	48	●
18,500	.7283	2263112	B225F18500HP	20	153	101	77	3,4	50	●
19,000	.7480	2263113	B225F19000HP	20	153	101	77	3,5	50	●
19,500	.7677	2263114	B225F19500HP	20	153	101	77	3,6	50	●
20,000	.7874	2263115	B225F20000HP	20	153	101	77	3,7	50	●
20,500	.8071	2263116	B225F20500HP	20	167	115	85	3,8	51	●

Ordering Example:
By catalog number B225F13000HP KC7315, or by order number 2262766.

KENNAMETAL

Solid Carbide Drills

HPC Drills for Iron Materials with Through Coolant

Primary Application

B/K254_HPC Series Solid Carbide Drills are specifically engineered to deliver the highest metal removal rates and longest tool life in cast iron, ductile iron, CGI, and ADI. Operate these drills with standard through coolant or MQL.

Features and Benefits

HP Drill Point Design

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

Four-Margin Lands

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

Corner Chamfer

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

KC7315™ Grade

- Multilayer, TiAlN-based coating with high hot hardness allows 30% higher cutting speeds.
- Optimized tool surface finish ensures chip evacuation in high-speed drilling and MQL applications.

Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.
- Using Kennametal Slimline Hydraulic Chucks together with standard B254_HPC or B255_HPC Drills is recommended if workpiece contours need to be bypassed.

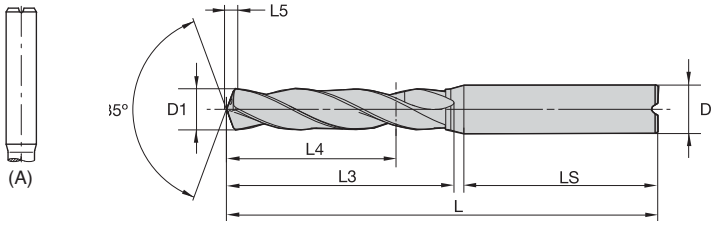
SE Drills – B254HPC, B255HPC, B256HPC / K254HPC, K255HPC, K256HPC
Grade KC7315 – Through Coolant

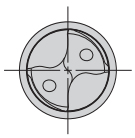
Starting Value	Cutting Speed												Tool diameter								
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8, 0	10,0	12,0	16,0	20,0
K1	**Cast and Low-Strength Ductile Irons**												**Tensile Strength RM (MPa): 150-400**						**Hardness (HB) or HRC: 120-290**		
													Feed rate by diameter								
492	sfm						394		656				ipr	.003 - .004	.006 - .008	.008 - .011	.010 - .014	.011- .016	.013 - .017	.014 - .020	.016 - .021
150	m/min						120		200				mm/r	0,08 - 0,11	0,14- 0,20	0,20 - 0,28	0,25 - 0,35	0,29 - 0,40	0,32 - 0,43	0,36 - 0,50	0,40 - 0,55
K2	**Low and Medium Strength CGI and Ductile Irons**												**Tensile Strength RM (MPa):400-600**						**Hardness (HB) or HRC: 130-260**		
													Feed rate by diameter								
394	sfm						263		525				ipr	.003 - .004	.005 - .007	.007 - .010	.009 - .012	.010- .014	.012 - .016	.013 - .018	.015 - .020
120	m/min						80		160				mm/r	0,08 - 0,11	0,13 - 0,17	0,19 - 0,26	0,23 - 0,30	0,25 - 0,36	0,30 - 0,40	0,34 - 0,46	0,37 - 0,50
K3	**High Strength Ductile and Austempered Ductile Iron**												**Tensile Strength RM (MPa): 600-900**						**Hardness (HB) or HRC: 180-350**		
													Feed rate by diameter								
263	sfm						197		394				ipr	.003 - .004	.004 - .006	.006 - .008	.007 - .010	.009- .012	.009 - .013	.011 - .015	.012 - .016
80	m/min						60		120				mm/r	0,07 - 0,10	0,10 - 0,14	0,15 - 0,21	0,19 - 0,26	0,22 - 0,30	0,24 - 0,33	0,28 - 0,38	0,30 - 0,41

* 1 MPa = 145 psi

KENNAMETAL

SE HPC Drills with Coolant





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/.0004
>.3937 to .7087	.0003/.0010	.7500 to 1.0000	.0000/.0004
>.7087 to 1.010	.0003/.0011	—	—

● first choice
○ alternate choice

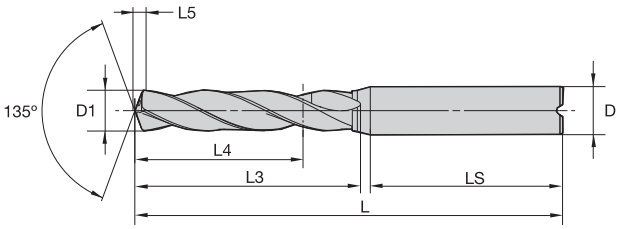
H		
S		
N		
K		●
M		
P		○

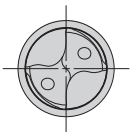
K254_HPC

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1250	1/8	3,180	2259241	K254A01250HPC	.1875	2.48	.91	.69	.023	1.44	●
.1563	5/32	3,970	2259242	K254A01563HPC	.1875	2.48	.91	.69	.029	1.44	●
.1875	3/16	4,760	2259243	K254A01875HPC	.1875	2.68	1.14	.89	.035	1.44	●
.2188	7/32	5,560	2259244	K254A02188HPC	.2500	2.87	1.34	1.02	.040	1.44	●
.2500	1/4	6,350	2259245	K254A02500HPC	.2500	2.87	1.34	1.02	.046	1.44	●
.2656	17/64	6,750	2259246	K254A02656HPC	.3125	3.11	1.50	1.11	.049	1.52	●
.2813	9/32	7,150	2259247	K254A02813HPC	.3125	3.11	1.50	1.11	.052	1.52	●
.2969	19/64	7,540	2259248	K254A02969HPC	.3125	3.11	1.50	1.11	.055	1.52	●
.3125	5/16	7,940	2259249	K254A03125HPC	.3125	3.11	1.50	1.11	.058	1.52	●
.3281	21/64	8,330	2259250	K254A03281HPC	.3750	3.50	1.81	1.37	.061	1.59	●
.3438	11/32	8,730	2259251	K254A03438HPC	.3750	3.50	1.81	1.37	.064	1.59	●
.3594	23/64	9,130	2259252	K254A03594HPC	.3750	3.50	1.81	1.37	.066	1.59	●
.3750	3/8	9,530	2259253	K254A03750HPC	.3750	3.50	1.81	1.37	.069	1.59	●
.4063	13/32	10,320	2259255	K254A04063HPC	.4375	3.78	2.01	1.50	.075	1.67	●
.4219	27/64	10,720	2259256	K254A04219HPC	.4375	3.78	2.01	1.50	.078	1.67	●
.4375	7/16	11,110	2259257	K254A04375HPC	.4375	3.78	2.01	1.50	.081	1.67	●
.4531	29/64	11,510	2259258	K254A04531HPC	.5000	4.02	2.13	1.56	.084	1.79	●
.4688	15/32	11,910	2259259	K254A04688HPC	.5000	4.02	2.13	1.56	.087	1.79	●
.4844	31/64	12,300	2259260	K254A04844HPC	.5000	4.02	2.13	1.56	.090	1.79	●
.5000	1/2	12,700	2259261	K254A05000HPC	.5000	4.02	2.13	1.56	.092	1.79	●
.5625	9/16	14,290	2259262	K254A05625HPC	.5625	4.21	2.32	1.83	.104	1.79	●
.6250	5/8	15,880	2259263	K254A06250HPC	.6250	4.21	2.52	1.83	.115	1.91	●
.6875	11/16	17,460	2259264	K254A06875HPC	.6875	4.84	2.83	2.09	.127	1.91	●
.7500	3/4	19,050	2259265	K254A07500HPC	.7500	5.08	2.99	2.19	.139	1.99	●
.7656	49/64	19,450	2259266	K254A07656HPC	.8125	5.32	3.23	2.36	.141	1.99	●
.8125	13/16	20,640	2259267	K254A08125HPC	.8125	5.32	3.23	2.36	.150	1.99	●
.8750	7/8	22,230	2259268	K254A08750HPC	.8750	5.55	3.39	2.46	.161	2.07	●

Ordering Example:
By catalog number K254A01250HPC KC7315, or by order number 2259241.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance			
D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	○

B254_HPC

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.0117	–	3,000	2652959	B254A03000HPC	6	62	20	14	0,7	36	●
.1250	1/8	3,175	3559640	B254A03175HPC	6	62	20	14	0,8	36	●
.1406	9/64	3,571	3559641	B254A03571HPC	6	62	20	14	0,9	36	●
.1563	5/32	3,970	3559642	B254A03970HPC	6	66	24	17	1,0	36	●
.1575	–	4,000	2264331	B254A04000HPC	6	66	24	17	0,7	36	●
.1614	–	4,100	2264333	B254A04100HPC	6	66	24	17	0,8	36	●
.1654	–	4,200	2264335	B254A04200HPC	6	66	24	17	0,8	36	●
.1719	11/64	4,366	3560413	B254A04366HPC	6	66	24	17	1,1	36	●
.1772	–	4,500	2264337	B254A04500HPC	6	66	24	17	0,8	36	●
.1890	–	4,800	2264339	B254A04800HPC	6	66	28	20	0,9	36	●
.1969	–	5,000	2264341	B254A05000HPC	6	66	28	20	0,9	36	●
.2008	–	5,100	2264343	B254A05100HPC	6	66	28	20	0,9	36	●
.2031	13/64	5,159	3560414	B254A05159HPC	6	66	28	20	1,2	36	●
.2165	–	5,500	2264344	B254A05500HPC	6	66	28	20	1,0	36	●
.2283	–	5,800	2264345	B254A05800HPC	6	66	28	20	1,1	36	●
.2344	15/64	5,953	3560415	B254A05953HPC	6	66	28	20	1,4	36	●
.2362	–	6,000	2264347	B254A06000HPC	6	66	28	20	1,1	36	●
.2441	–	6,200	2264349	B254A06200HPC	8	79	34	24	1,1	36	●
.2559	–	6,500	2264351	B254A06500HPC	8	79	34	24	1,2	36	●
.2677	–	6,800	2264353	B254A06800HPC	8	79	34	24	1,3	36	●
.2756	–	7,000	2264355	B254A07000HPC	8	79	34	24	1,3	36	●
.2953	–	7,500	2264357	B254A07500HPC	8	79	41	29	1,4	36	●
.2969	19/64	7,541	3116956	B254A07541HPC	8	79	41	29	1,7	36	●
.3071	–	7,800	2264359	B254A07800HPC	8	79	41	29	1,4	36	●
.3150	–	8,000	2264361	B254A08000HPC	8	79	41	29	1,5	36	●
.3228	–	8,200	2450816	B254A08200HPC	10	89	47	35	1,5	40	●
.3346	–	8,500	2264363	B254A08500HPC	10	89	47	35	1,6	40	●
.3425	–	8,700	2447648	B254A08700HPC	10	89	47	35	1,6	40	●
.3465	–	8,800	2264365	B254A08800HPC	10	89	47	35	1,6	40	●
.3543	–	9,000	2264367	B254A09000HPC	10	89	47	35	1,7	40	●
.3740	–	9,500	2264368	B254A09500HPC	10	89	47	35	1,8	40	●
.3858	–	9,800	2264369	B254A09800HPC	10	89	47	35	1,8	40	●
.3937	–	10,000	2264370	B254A10000HPC	10	89	47	35	1,8	40	●
.4016	–	10,200	2264371	B254A10200HPC	12	102	55	40	1,9	45	●
.4055	–	10,300	2648883	B254A10300HPC	12	102	55	40	1,9	45	●
.4094	–	10,400	2264372	B254A10400HPC	12	102	55	40	1,9	45	●
.4134	–	10,500	2264373	B254A10500HPC	12	102	55	40	1,9	45	●
.4252	–	10,800	2264374	B254A10800HPC	12	102	55	40	2,0	45	●
.4331	–	11,000	2264375	B254A11000HPC	12	102	55	40	2,0	45	●
.4375	7/16	11,111	3560416	B254A11111HPC	12	102	55	40	2,5	45	●

(continued on next page)

B254_HPC

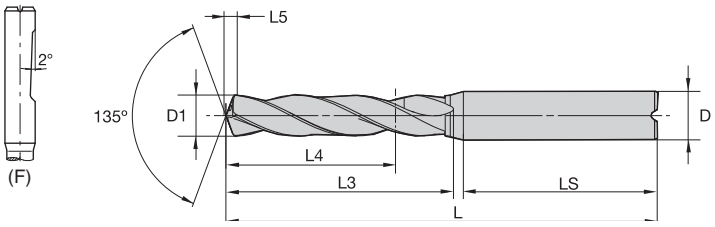
(continued from previous page)

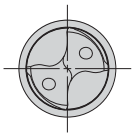
● first choice
○ alternate choice

	D1										H
											S
											N
											K
											M
											P
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.4528	–	11,500	2264376	B254A11500HPC	12	102	55	40	2,1	45	●
.4646	–	11,800	2264377	B254A11800HPC	12	102	55	40	2,2	45	●
.4688	15/32	11,908	3560417	B254A11908HPC	12	102	55	40	2,6	45	●
.4724	–	12,000	2264378	B254A12000HPC	12	102	55	40	2,2	45	●
.4803	–	12,200	2264379	B254A12200HPC	14	107	60	43	2,3	45	●
.4921	–	12,500	2264380	B254A12500HPC	14	107	60	43	2,3	45	●
.5039	–	12,800	2264381	B254A12800HPC	14	107	60	43	2,4	45	●
.5118	–	13,000	2264382	B254A13000HPC	14	107	60	43	2,4	45	●
.5315	–	13,500	2264383	B254A13500HPC	14	107	60	43	2,5	45	●
.5469	35/64	13,891	3560418	B254A13891HPC	14	107	60	43	3,0	45	●
.5512	–	14,000	2264384	B254A14000HPC	14	107	60	43	2,6	45	●
.5625	9/16	14,288	3560419	B254A14288HPC	16	115	65	45	3,1	48	●
.5709	–	14,500	2264385	B254A14500HPC	16	115	65	45	2,7	48	●
.5781	37/64	14,684	3560420	B254A14684HPC	16	115	65	45	3,2	48	●
.5906	–	15,000	2264387	B254A15000HPC	16	115	65	45	2,8	48	●
.5938	19/32	15,083	3560421	B254A15083HPC	16	115	65	45	3,3	48	●
.6094	39/64	15,479	3560422	B254A15479HPC	16	115	65	45	3,3	48	●
.6142	–	15,600	3052249	B254A15600HPC	16	115	65	45	2,9	48	●
.6220	–	15,800	2264389	B254A15800HPC	16	115	65	45	2,9	48	●
.6299	–	16,000	2264390	B254A16000HPC	16	115	65	45	3,0	48	●
.6496	–	16,500	2264391	B254A16500HPC	18	123	73	51	3,0	48	●
.6614	–	16,800	2264392	B254A16800HPC	18	123	73	51	3,1	48	●
.6693	–	17,000	2264393	B254A17000HPC	18	123	73	51	3,1	48	●
.6875	11/16	17,463	3560423	B254A17463HPC	18	123	73	51	3,7	48	●
.6890	–	17,500	2264394	B254A17500HPC	18	123	73	51	3,2	48	●
.7008	–	17,800	2264395	B254A17800HPC	18	123	73	51	3,3	48	●
.7087	–	18,000	2264396	B254A18000HPC	18	123	73	51	3,3	48	●
.7283	–	18,500	2264397	B254A18500HPC	20	131	79	55	3,4	50	●
.7402	–	18,800	2264398	B254A18800HPC	20	131	79	55	3,5	50	●
.7480	–	19,000	2264399	B254A19000HPC	20	131	79	55	3,5	50	●
.7677	–	19,500	2264400	B254A19500HPC	20	131	79	55	3,6	50	●
.7795	–	19,800	2264401	B254A19800HPC	20	131	79	55	3,7	50	●
.7874	–	20,000	2264402	B254A20000HPC	20	131	79	55	3,7	50	●

Ordering Example:
By catalog number B254A03000HPC KC7315, or by order number 2652959.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

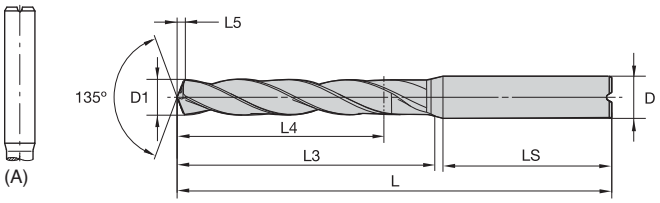
H		
S		
N		
K		●
M		
P		○

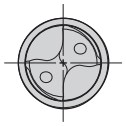
B254_HPC

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
4,200	.1654	2264405	B254F04200HPC	6	66	24	17	0,8	36	●
4,800	.1890	2264407	B254F04800HPC	6	66	28	20	0,9	36	●
5,000	.1969	2264408	B254F05000HPC	6	66	28	20	0,9	36	●
6,500	.2559	2264414	B254F06500HPC	8	79	34	24	1,2	36	●
6,800	.2677	2264415	B254F06800HPC	8	79	34	24	1,3	36	●
8,500	.3346	2264420	B254F08500HPC	10	89	47	35	1,6	40	●
9,000	.3543	2264422	B254F09000HPC	10	89	47	35	1,7	40	●
9,500	.3740	2264423	B254F09500HPC	10	89	47	35	1,8	40	●
9,800	.3858	2264424	B254F09800HPC	10	89	47	35	1,8	40	●
10,200	.4016	2264426	B254F10200HPC	12	102	55	40	1,9	45	●
10,500	.4134	2264428	B254F10500HPC	12	102	55	40	1,9	45	●
11,000	.4331	2264430	B254F11000HPC	12	102	55	40	2,0	45	●
11,800	.4646	2264432	B254F11800HPC	12	102	55	40	2,2	45	●
12,000	.4724	2264433	B254F12000HPC	12	102	55	40	2,2	45	●
12,200	.4803	2264434	B254F12200HPC	14	107	60	43	2,3	45	●
13,000	.5118	2264437	B254F13000HPC	14	107	60	43	2,4	45	●
14,000	.5512	2264439	B254F14000HPC	14	107	60	43	2,6	45	●
15,500	.6102	2264443	B254F15500HPC	16	115	65	45	2,9	48	●
17,000	.6693	2264448	B254F17000HPC	18	123	73	51	3,1	48	●
17,500	.6890	2264449	B254F17500HPC	18	123	73	51	3,2	48	●
18,000	.7087	2264451	B254F18000HPC	18	123	73	51	3,3	48	●
18,500	.7283	2264452	B254F18500HPC	20	131	79	55	3,4	50	●

Ordering Example:
By catalog number B254F04200HPC KC7315, or by order number 2264405.

SE HPC Drills with Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/.0004
>.3937 to .7087	.0003/.0010	.7500 to 1.0000	.0000/.0004
>.7087 to 1.010	.0003/.0011	—	—

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		○

K255_HPC

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1181	–	3,000	2259100	K255A01181HPC	.1875	2.60	1.06	.84	.022	1.44	●
.1250	1/8	3,180	2259240	K255A01250HPC	.1875	2.60	1.06	.84	.023	1.44	●
.1378	–	3,500	2259101	K255A01378HPC	.1875	2.60	1.06	.84	.026	1.44	●
.1406	9/64	3,570	2259102	K255A01406HPC	.1875	2.60	1.06	.84	.026	1.44	●
.1495	–	3,800	2259183	K255A01495HPC	.1875	2.60	1.06	.84	.028	1.44	●
.1624	–	4,120	2259185	K255A01624HPC	.1875	2.91	1.38	1.13	.030	1.44	●
.1820	–	4,620	2259187	K255A01820HPC	.1875	2.91	1.38	1.13	.034	1.44	●
.1875	3/16	4,760	2259189	K255A01875HPC	.1875	2.91	1.38	1.13	.035	1.44	●
.2045	–	5,190	2259190	K255A02045HPC	.2500	3.23	1.69	1.37	.038	1.44	●
.2130	–	5,410	2259191	K255A02130HPC	.2500	3.23	1.69	1.37	.039	1.44	●
.2188	7/32	5,560	2259193	K255A02188HPC	.2500	3.23	1.69	1.37	.040	1.44	●
.2500	1/4	6,350	2259194	K255A02500HPC	.2500	3.23	1.69	1.37	.046	1.44	●
.2570	–	6,530	2259195	K255A02570HPC	.3125	3.58	1.97	1.59	.048	1.52	●
.2620	–	6,650	2259196	K255A02620HPC	.3125	3.58	1.97	1.59	.048	1.52	●
.2656	17/64	6,750	2259197	K255A02656HPC	.3125	3.58	1.97	1.59	.049	1.52	●
.2813	9/32	7,150	2259200	K255A02813HPC	.3125	3.58	1.97	1.59	.052	1.52	●
.2969	19/64	7,540	2259201	K255A02969HPC	.3125	3.58	1.97	1.59	.055	1.52	●
.3125	5/16	7,940	2259202	K255A03125HPC	.3125	3.58	1.97	1.59	.058	1.52	●
.3182	–	8,080	2259203	K255A03182HPC	.3750	4.06	2.36	1.92	.058	1.59	●
.3281	21/64	8,330	2259204	K255A03281HPC	.3750	4.06	2.36	1.92	.061	1.59	●
.3320	–	8,430	2259205	K255A03320HPC	.3750	4.06	2.36	1.92	.061	1.59	●
.3371	–	8,560	2259206	K255A03371HPC	.3750	4.06	2.36	1.92	.062	1.59	●
.3438	11/32	8,730	2259207	K255A03438HPC	.3750	4.06	2.36	1.92	.064	1.59	●
.3594	23/64	9,130	2259208	K255A03594HPC	.3750	4.06	2.36	1.92	.066	1.59	●
.3680	–	9,350	2259209	K255A03680HPC	.3750	4.06	2.36	1.92	.068	1.59	●
.3726	–	9,460	2259210	K255A03726HPC	.3750	4.06	2.36	1.92	.069	1.59	●
.3750	3/8	9,530	2259211	K255A03750HPC	.3750	4.06	2.36	1.92	.069	1.59	●
.3920	–	9,960	2259213	K255A03920HPC	.4375	4.37	2.60	2.09	.075	1.67	●
.4063	13/32	10,320	2259214	K255A04063HPC	.4375	4.37	2.60	2.09	.078	1.67	●
.4219	27/64	10,720	2259215	K255A04219HPC	.4375	4.37	2.60	2.09	.078	1.67	●
.4301	–	10,920	2259216	K255A04301HPC	.4375	4.37	2.60	2.09	.080	1.67	●
.4375	7/16	11,110	2259217	K255A04375HPC	.4375	4.37	2.60	2.09	.081	1.67	●
.4531	29/64	11,510	2259218	K255A04531HPC	.5000	4.65	2.76	2.19	.084	1.79	●
.4688	15/32	11,910	2259220	K255A04688HPC	.5000	4.65	2.76	2.19	.087	1.79	●
.4844	31/64	12,300	2259221	K255A04844HPC	.5000	4.65	2.76	2.19	.090	1.79	●
.4867	–	12,360	2259222	K255A04867HPC	.5000	4.65	2.76	2.19	.090	1.79	●

(continued on next page)

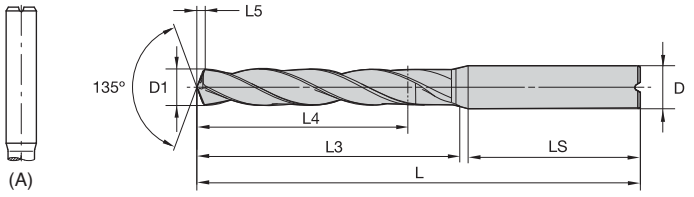
K255_HPC

(continued from previous page)

● first choice
○ alternate choice

	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.5000	1/2	12,700	2259223	K255A05000HPC	.5000	4.65	2.76	2.19	.092	1.79	●
.5120	–	13,000	2259224	K255A05120HPC	.5625	4.88	2.99	2.36	.094	1.79	●
.5156	33/64	13,100	2259225	K255A05156HPC	.5625	4.88	2.99	2.36	.095	1.79	●
.5423	–	13,770	2259226	K255A05423HPC	.5625	4.88	2.99	2.36	.100	1.79	●
.5625	9/16	14,290	2259227	K255A05625HPC	.5625	4.88	2.99	2.36	.104	1.79	●
.5745	–	14,590	2259228	K255A05745HPC	.6250	5.24	3.23	2.54	.106	1.91	●
.6250	5/8	15,880	2259229	K255A06250HPC	.6250	5.24	3.23	2.54	.115	1.91	●
.6562	21/32	16,670	2259230	K255A06562HPC	.6875	5.63	3.62	2.87	.121	1.91	●
.6591	–	16,740	2259231	K255A06591HPC	.6875	5.63	3.62	2.87	.122	1.91	●
.6875	11/16	17,460	2259232	K255A06875HPC	.6875	5.63	3.62	2.87	.127	1.91	●
.6932	–	17,610	2259233	K255A06932HPC	.7500	5.83	3.74	2.93	.128	1.99	●
.7500	3/4	19,050	2259234	K255A07500HPC	.7500	5.83	3.74	2.93	.139	1.99	●
.7656	49/64	19,450	2259235	K255A07656HPC	.8125	6.02	3.94	3.07	.141	1.99	●
.8125	13/16	20,640	2259238	K255A08125HPC	.8125	6.02	3.94	3.07	.150	1.99	●
.8750	7/8	22,230	2259239	K255A08750HPC	.8750	6.57	4.41	3.49	.162	2.07	●

Ordering Example:
By catalog number K255A01181HPC KC7315, or by order number 2259100.



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	○

B255_HPC

D1 mm	D1 fraction	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	–	.0117	2652961	B255A03000HPC	6	66	28	23	0,7	36	●
3,180	1/8	.1250	3052250	B255A03180HPC	6	66	28	23	0,6	36	●
3,260	–	.1285	3052251	B255A03260HPC	6	66	28	23	0,6	36	●
3,300	–	.0129	2652962	B255A03300HPC	6	66	28	23	0,8	36	●
3,400	–	.0133	2654513	B255A03400HPC	6	66	28	23	0,8	36	●
3,500	–	.0137	2654514	B255A03500HPC	6	66	28	23	0,8	36	●
3,571	9/64	.1406	3560424	B255A03571HPC	6	66	28	23	0,9	36	●
3,600	–	.1417	3052252	B255A03600HPC	6	66	28	23	0,7	36	●
3,700	–	.0144	2654515	B255A03700HPC	6	66	28	23	0,8	36	●
3,800	–	.0148	2654516	B255A03800HPC	6	74	36	29	0,9	36	●
3,970	5/32	.1563	3052343	B255A03970HPC	6	74	36	29	0,7	36	●
4,000	–	.1575	2264178	B255A04000HPC	6	74	36	29	0,7	36	●
4,100	–	.1614	2264179	B255A04100HPC	6	74	36	29	0,8	36	●
4,200	–	.1654	2264180	B255A04200HPC	6	74	36	29	0,8	36	●
4,300	–	.1693	3052344	B255A04300HPC	6	74	36	29	0,8	36	●
4,366	11/64	.1719	3560425	B255A04366HPC	6	74	36	29	1,1	36	●
4,500	–	.1772	2264181	B255A04500HPC	6	74	36	29	0,8	36	●
4,600	–	.1811	3052345	B255A04600HPC	6	74	36	29	0,8	36	●
4,700	–	.1850	3052346	B255A04700HPC	6	74	36	29	0,9	36	●
4,800	–	.1890	2264182	B255A04800HPC	6	82	44	35	0,9	36	●
4,900	–	.1929	3052347	B255A04900HPC	6	82	44	35	0,9	36	●
5,000	–	.1969	2261059	B255A05000HPC	6	82	44	35	0,9	36	●
5,100	–	.2008	2264193	B255A05100HPC	6	82	44	35	0,9	36	●
5,159	13/64	.2031	3560426	B255A05159HPC	6	82	44	35	1,2	36	●
5,200	–	.2047	3052348	B255A05200HPC	6	82	44	35	1,0	36	●
5,300	–	.2087	3052349	B255A05300HPC	6	82	44	35	1,0	36	●
5,400	–	.2126	3052350	B255A05400HPC	6	82	44	35	1,0	36	●
5,500	–	.2165	2264194	B255A05500HPC	6	82	44	35	1,0	36	●
5,600	–	.2205	3052351	B255A05600HPC	6	82	44	35	1,0	36	●
5,700	–	.2244	2386195	B255A05700HPC	6	82	44	35	1,1	36	●
5,800	–	.2283	2264195	B255A05800HPC	6	82	44	35	1,1	36	●
5,953	15/64	.2344	3560427	B255A05953HPC	6	82	44	35	1,4	36	●
6,000	–	.2362	2264196	B255A06000HPC	6	82	44	35	1,1	36	●
6,100	–	.2402	3052352	B255A06100HPC	8	91	53	43	1,1	36	●
6,200	–	.2441	2264197	B255A06200HPC	8	91	53	43	1,1	36	●
6,300	–	.2480	3052353	B255A06300HPC	8	91	53	43	1,2	36	●
6,350	1/4	.2500	3052354	B255A06350HPC	8	91	53	43	1,2	36	●
6,400	–	.2520	3052355	B255A06400HPC	8	91	53	43	1,2	36	●
6,500	–	.2559	2264198	B255A06500HPC	8	91	53	43	1,2	36	●
6,600	–	.2598	3052356	B255A06600HPC	8	91	53	43	1,2	36	●

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B255_HPC

(continued from previous page)

● first choice
○ alternate choice

	D1										
mm	fraction	inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
6,800	–	.2677	2264199	B255A06800HPC	8	91	53	43	1,3	36	●
6,900	–	.2717	3052357	B255A06900HPC	8	91	53	43	1,3	36	●
7,000	–	.2756	2264200	B255A07000HPC	8	91	53	43	1,3	36	●
7,150	9/32	.2813	3052358	B255A07150HPC	8	91	53	43	1,3	36	●
7,200	–	.2835	3052359	B255A07200HPC	8	91	53	43	1,3	36	●
7,400	–	.2913	3052360	B255A07400HPC	8	91	53	43	1,4	36	●
7,500	–	.2953	2264201	B255A07500HPC	8	91	53	43	1,4	36	●
7,541	19/64	.2969	3560428	B255A07541HPC	8	91	53	43	1,7	36	●
7,600	–	.2992	3052361	B255A07600HPC	8	91	53	43	1,4	36	●
7,700	–	.3031	2455729	B255A07700HPC	8	91	53	43	1,4	36	●
7,800	–	.3071	2264202	B255A07800HPC	8	91	53	43	1,4	36	●
7,900	–	.3110	3052362	B255A07900HPC	8	91	53	43	1,5	36	●
7,940	5/16	.3125	3052363	B255A07940HPC	8	91	53	43	1,5	36	●
8,000	–	.3150	2261060	B255A08000HPC	8	91	53	43	1,5	36	●
8,200	–	.3228	2497121	B255A08200HPC	10	103	61	49	1,5	40	●
8,500	–	.3346	2264203	B255A08500HPC	10	103	61	49	1,6	40	●
8,600	–	.3386	3052364	B255A08600HPC	10	103	61	49	1,6	40	●
8,700	–	.3425	3050929	B255A08700HPC	10	103	61	49	1,6	40	●
8,730	11/32	.3438	3052365	B255A08730HPC	10	103	61	49	1,6	40	●
8,800	–	.3465	2264204	B255A08800HPC	10	103	61	49	1,6	40	●
9,000	–	.3543	2264205	B255A09000HPC	10	103	61	49	1,7	40	●
9,100	–	.3583	3052366	B255A09100HPC	10	103	61	49	1,7	40	●
9,300	–	.3661	3052367	B255A09300HPC	10	103	61	49	1,7	40	●
9,500	–	.3740	2264206	B255A09500HPC	10	103	61	49	1,8	40	●
9,530	3/8	.3750	3052368	B255A09530HPC	10	103	61	49	1,8	40	●
9,800	–	.3858	2264207	B255A09800HPC	10	103	61	49	1,8	40	●
9,920	25/64	.3906	3052369	B255A09920HPC	10	103	61	49	1,8	40	●
10,000	–	.3937	2264208	B255A10000HPC	10	103	61	49	1,8	40	●
10,200	–	.4016	2264209	B255A10200HPC	12	118	71	56	1,9	45	●
10,300	–	.4055	3052370	B255A10300HPC	12	118	71	56	1,9	45	●
10,320	13/32	.4063	3052371	B255A10320HPC	12	118	71	56	1,9	45	●
10,400	–	.4094	2264210	B255A10400HPC	12	118	71	56	1,9	45	●
10,500	–	.4134	2264211	B255A10500HPC	12	118	71	56	1,9	45	●
10,720	27/64	.4219	3052372	B255A10720HPC	12	118	71	56	2,0	45	●
10,800	–	.4252	2264212	B255A10800HPC	12	118	71	56	2,0	45	●
11,000	–	.4331	2264213	B255A11000HPC	12	118	71	56	2,0	45	●
11,100	–	.4370	3052373	B255A11100HPC	12	118	71	56	2,0	45	●
11,110	7/16	.4375	3052374	B255A11110HPC	12	118	71	56	2,1	45	●
11,200	–	.4409	3052375	B255A11200HPC	12	118	71	56	2,1	45	●
11,500	–	.4528	2264214	B255A11500HPC	12	118	71	56	2,1	45	●
11,700	–	.4606	2452751	B255A11700HPC	12	118	71	56	2,2	45	●
11,800	–	.4646	2264215	B255A11800HPC	12	118	71	56	2,2	45	●
11,900	–	.4685	3052376	B255A11900HPC	12	118	71	56	2,2	45	●
11,908	15/32	.4688	3560429	B255A11908HPC	12	118	71	56	2,6	45	●
12,000	–	.4724	2261061	B255A12000HPC	12	118	71	56	2,2	45	●
12,100	–	.4764	2385999	B255A12100HPC	14	124	77	60	2,2	45	●
12,200	–	.4803	2264216	B255A12200HPC	14	124	77	60	2,3	45	●
12,300	31/64	.4844	3052377	B255A12300HPC	14	124	77	60	2,3	45	●
12,500	–	.4921	2264217	B255A12500HPC	14	124	77	60	2,3	45	●
12,700	1/2	.5000	3052378	B255A12700HPC	14	124	77	60	2,3	45	●

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B255_HPC

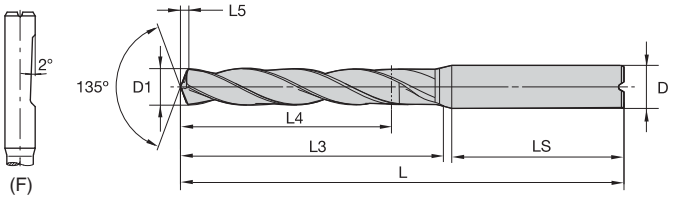
(continued from previous page)

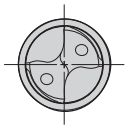
● first choice
○ alternate choice

	D1										H
											S
											N
											K
											M
											P
mm	fraction	inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
12,800	–	.5039	2264218	B255A12800HPC	14	124	77	60	2,4	45	●
13,000	–	.5118	2264219	B255A13000HPC	14	124	77	60	2,4	45	●
13,500	–	.5315	2264220	B255A13500HPC	14	124	77	60	2,5	45	●
13,891	35/64	.5469	3560430	B255A13891HPC	14	124	77	60	3,0	45	●
14,000	–	.5512	2264221	B255A14000HPC	14	124	77	60	2,6	45	●
14,290	9/16	.5625	3052379	B255A14290HPC	16	133	83	63	2,6	48	●
14,500	–	.5709	2264222	B255A14500HPC	16	133	83	63	2,7	48	●
14,600	–	.5748	3052380	B255A14600HPC	16	133	83	63	2,7	48	●
14,684	37/64	.5781	3560431	B255A14684HPC	16	133	83	63	3,2	48	●
14,800	–	.5827	2264223	B255A14800HPC	16	133	83	63	2,7	48	●
15,000	–	.5906	2264224	B255A15000HPC	16	133	83	63	2,8	48	●
15,083	19/32	.5938	3560432	B255A15083HPC	16	133	83	63	3,3	48	●
15,479	39/64	.6094	3560433	B255A15479HPC	16	133	83	63	3,3	48	●
15,500	–	.6102	2264225	B255A15500HPC	16	133	83	63	2,9	48	●
15,800	–	.6220	2264226	B255A15800HPC	16	133	83	63	2,9	48	●
15,880	5/8	.6250	3052381	B255A15880HPC	16	133	83	63	2,9	48	●
16,000	–	.6299	2264227	B255A16000HPC	16	133	83	63	3,0	48	●
16,500	–	.6496	2264228	B255A16500HPC	18	143	93	71	3,0	48	●
16,800	–	.6614	2264229	B255A16800HPC	18	143	93	71	3,1	48	●
17,000	–	.6693	2264230	B255A17000HPC	18	143	93	71	3,1	48	●
17,500	–	.6890	2264231	B255A17500HPC	18	143	93	71	3,2	48	●
17,800	–	.7008	2264232	B255A17800HPC	18	143	93	71	3,3	48	●
18,000	–	.7087	2264233	B255A18000HPC	18	143	93	71	3,3	48	●
18,500	–	.7283	2264234	B255A18500HPC	20	153	101	77	3,4	50	●
18,800	–	.7402	2264235	B255A18800HPC	20	153	101	77	3,5	50	●
19,000	–	.7480	2264236	B255A19000HPC	20	153	101	77	3,5	50	●
19,140	–	.7535	3052382	B255A19140HPC	20	153	101	77	3,5	50	●
19,500	–	.7677	2264237	B255A19500HPC	20	153	101	77	3,6	50	●
19,800	–	.7795	2264238	B255A19800HPC	20	153	101	77	3,7	50	●
20,000	–	.7874	2261062	B255A20000HPC	20	153	101	77	3,7	50	●
20,500	–	.0800	2507441	B255A20500HPC	20	167	115	85	4,2	51	●

Ordering Example:
By catalog number B255A03000HPC KC7315, or by order number 2652961.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		○

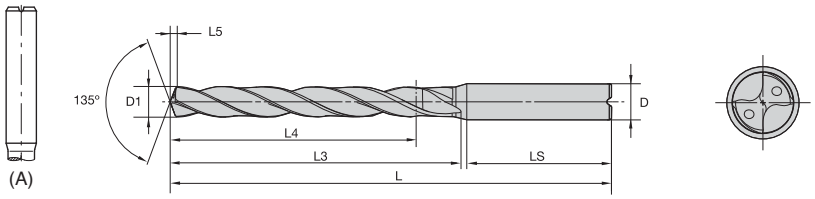
B255_HPC

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
5,000	.1969	2264244	B255F05000HPC	6	82	44	35	0,9	36	●
6,000	.2362	2264248	B255F06000HPC	6	82	44	35	1,1	36	●
6,800	.2677	2264251	B255F06800HPC	8	91	53	43	1,3	36	●
7,800	.3071	2264254	B255F07800HPC	8	91	53	43	1,4	36	●
8,000	.3150	2264255	B255F08000HPC	8	91	53	43	1,5	36	●
8,500	.3346	2264256	B255F08500HPC	10	103	61	49	1,6	40	●
9,000	.3543	2264258	B255F09000HPC	10	103	61	49	1,7	40	●
9,500	.3740	2264259	B255F09500HPC	10	103	61	49	1,8	40	●
9,800	.3858	2264260	B255F09800HPC	10	103	61	49	1,8	40	●
10,000	.3937	2264261	B255F10000HPC	10	103	61	49	1,8	40	●
10,200	.4016	2264262	B255F10200HPC	12	118	71	56	1,9	45	●
10,400	.4094	2264263	B255F10400HPC	12	118	71	56	1,9	45	●
10,500	.4134	2264264	B255F10500HPC	12	118	71	56	1,9	45	●
11,000	.4331	2264266	B255F11000HPC	12	118	71	56	2,0	45	●
11,800	.4646	2264268	B255F11800HPC	12	118	71	56	2,2	45	●
12,000	.4724	2264269	B255F12000HPC	12	118	71	56	2,2	45	●
12,200	.4803	2264270	B255F12200HPC	14	124	77	60	2,3	45	●
12,500	.4921	2264271	B255F12500HPC	14	124	77	60	2,3	45	●
13,000	.5118	2264273	B255F13000HPC	14	124	77	60	2,4	45	●
13,500	.5315	2264274	B255F13500HPC	14	124	77	60	2,5	45	●
13,800	.5433	2401072	B255F13800HPC	14	124	77	60	2,6	45	●
14,000	.5512	2264275	B255F14000HPC	14	124	77	60	2,6	45	●
14,500	.5709	2264276	B255F14500HPC	16	133	83	63	2,7	48	●
15,000	.5906	2264278	B255F15000HPC	16	133	83	63	2,8	48	●
15,500	.6102	2264279	B255F15500HPC	16	133	83	63	2,9	48	●
16,000	.6299	2264281	B255F16000HPC	16	133	83	63	3,0	48	●
16,500	.6496	2264282	B255F16500HPC	18	143	93	71	3,0	48	●
17,000	.6693	2264284	B255F17000HPC	18	143	93	71	3,1	48	●
17,500	.6890	2264285	B255F17500HPC	18	143	93	71	3,2	48	●
18,000	.7087	2264287	B255F18000HPC	18	143	93	71	3,3	48	●
18,800	.7402	2264289	B255F18800HPC	20	153	101	77	3,5	50	●
19,000	.7480	2264290	B255F19000HPC	20	153	101	77	3,5	50	●

Ordering Example:
By catalog number B255F05000HPC KC7315, or by order number 2264244.

KENNAMETAL

SE HPC Drills with Coolant



Tolerance			
D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/.0004
>.3937 to .7087	.0003/.0010	.7500 to 1.0000	.0000/.0004

● first choice
○ alternate choice

H		
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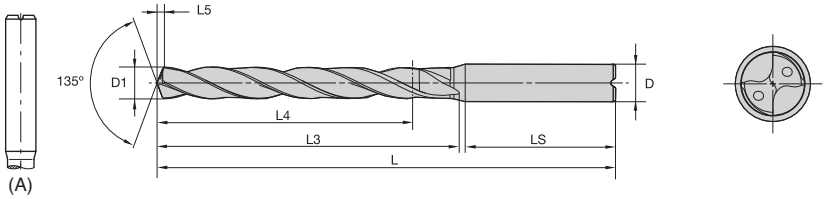
K		●
M		
P		○

K256_HPC

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1563	1/64	3,970	2259177	K256A01563HPC	.1875	3.07	1.54	1.28	.029	1.44	●
.1875	3/16	4,760	2259178	K256A01875HPC	.1875	3.31	1.77	1.52	.035	1.44	●
.2188	7/32	5,560	2259179	K256A02188HPC	.2500	3.74	2.21	1.88	.040	1.44	●
.2500	1/4	6,350	2259180	K256A02500HPC	.2500	3.74	2.21	1.88	.046	1.44	●
.2656	17/64	6,750	2259181	K256A02656HPC	.3125	4.33	2.72	2.33	.049	1.52	●
.2813	9/32	7,150	2259182	K256A02813HPC	.3125	4.33	2.72	2.33	.052	1.52	●
.2969	19/64	7,540	2259283	K256A02969HPC	.3125	4.33	2.72	2.33	.055	1.52	●
.3125	5/16	7,940	2259284	K256A03125HPC	.3125	4.33	2.72	2.33	.058	1.52	●
.3281	21/64	8,330	2259285	K256A03281HPC	.3750	4.92	3.23	2.78	.061	1.59	●
.3438	11/32	8,730	2259286	K256A03438HPC	.3750	4.92	3.23	2.78	.064	1.59	●
.3594	23/64	9,130	2259287	K256A03594HPC	.3750	4.91	3.22	2.78	.066	1.59	●
.3750	3/8	9,520	2259288	K256A03750HPC	.3750	4.91	3.22	2.78	.069	1.59	●
.3906	25/64	9,920	2259289	K256A03906HPC	.4375	5.23	3.46	2.95	.072	1.67	●
.4063	13/32	10,320	2259290	K256A04063HPC	.4375	5.23	3.46	2.95	.075	1.67	●
.4219	27/64	10,720	2259291	K256A04219HPC	.4375	5.23	3.46	2.95	.078	1.67	●
.4375	7/16	11,110	2259292	K256A04375HPC	.4375	5.23	3.46	2.95	.081	1.67	●
.4531	29/64	11,510	2259293	K256A04531HPC	.5000	5.62	3.73	3.17	.084	1.79	●
.4688	15/32	11,910	2259294	K256A04688HPC	.5000	5.62	3.73	3.17	.087	1.79	●
.4844	31/64	12,300	2259295	K256A04844HPC	.5000	5.62	3.73	3.17	.090	1.79	●
.5000	1/2	12,700	2259296	K256A05000HPC	.5000	5.62	3.73	3.17	.092	1.79	●
.5625	9/16	14,290	2259297	K256A05625HPC	.5625	6.09	4.20	3.58	.104	1.79	●
.6250	5/8	15,870	2259298	K256A06250HPC	.6250	6.72	4.71	4.03	.115	1.91	●
.6875	13/16	17,460	2259299	K256A06875HPC	.6875	7.27	5.27	4.52	.127	1.91	●
.7500	3/4	19,050	2259300	K256A07500HPC	.7500	7.75	5.66	4.85	.139	1.99	●

Ordering Example:
By catalog number K256A01563HPC KC7315, or by order number 2259177.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

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B256_HPC

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	.0117	2654517	B256A03000HPC	6	78	40	33	0,7	36	●
3,500	.0137	2654518	B256A03500HPC	6	78	40	33	0,8	36	●
4,000	.1575	2253027	B256A04000HPC	6	87	49	41	0,7	36	●
4,100	.1614	2264081	B256A04100HPC	6	87	49	41	0,8	36	●
4,200	.1654	2264082	B256A04200HPC	6	87	49	41	0,8	36	●
4,500	.1772	2264293	B256A04500HPC	6	87	49	41	0,8	36	●
4,800	.1890	2264294	B256A04800HPC	6	94	56	48	0,9	36	●
5,000	.1969	2261074	B256A05000HPC	6	94	56	48	0,9	36	●
5,100	.2008	2264295	B256A05100HPC	6	94	56	48	0,9	36	●
5,500	.2165	2264296	B256A05500HPC	6	94	56	48	1,0	36	●
5,800	.2283	2264297	B256A05800HPC	6	94	56	48	1,1	36	●
5,900	.2323	2497122	B256A05900HPC	6	94	56	48	1,1	36	●
6,000	.2362	2264298	B256A06000HPC	6	94	56	48	1,1	36	●
6,200	.2441	2264299	B256A06200HPC	8	105	67	57	1,1	36	●
6,500	.2559	2264300	B256A06500HPC	8	105	67	57	1,2	36	●
6,800	.2677	2264301	B256A06800HPC	8	105	67	57	1,3	36	●
7,000	.2756	2264302	B256A07000HPC	8	105	67	57	1,3	36	●
7,500	.2953	2264313	B256A07500HPC	8	110	72	61	1,4	36	●
7,800	.3071	2264314	B256A07800HPC	8	110	72	61	1,4	36	●
8,000	.3150	2261075	B256A08000HPC	8	110	72	61	1,5	36	●
8,200	.3228	2460798	B256A08200HPC	10	122	80	68	1,5	40	●
8,500	.3346	2253028	B256A08500HPC	10	122	80	68	1,6	40	●
8,800	.3465	2264315	B256A08800HPC	10	122	80	68	1,6	40	●
9,000	.3543	2264316	B256A09000HPC	10	122	80	68	1,7	40	●
9,500	.3740	2264317	B256A09500HPC	10	122	80	68	1,8	40	●
9,800	.3858	2264318	B256A09800HPC	10	122	80	68	1,8	40	●
10,000	.3937	2264319	B256A10000HPC	10	122	80	68	1,8	40	●
10,200	.4016	2253029	B256A10200HPC	12	141	94	79	1,9	45	●
10,400	.4094	2264320	B256A10400HPC	12	141	94	79	1,9	45	●
10,500	.4134	2264321	B256A10500HPC	12	141	94	79	1,9	45	●
10,800	.4252	2264322	B256A10800HPC	12	141	94	79	2,0	45	●
11,000	.4331	2264323	B256A11000HPC	12	141	94	79	2,0	45	●
11,500	.4528	2264324	B256A11500HPC	12	141	94	79	2,1	45	●
11,800	.4646	2264325	B256A11800HPC	12	141	94	79	2,2	45	●
12,000	.4724	2261077	B256A12000HPC	12	141	94	79	2,2	45	●
12,200	.4803	2264326	B256A12200HPC	14	155	108	91	2,3	45	●
12,500	.4921	2264327	B256A12500HPC	14	155	108	91	2,3	45	●
12,800	.5039	2264328	B256A12800HPC	14	155	108	91	2,4	45	●
13,000	.5118	2264329	B256A13000HPC	14	155	108	91	2,4	45	●
13,500	.5315	2264330	B256A13500HPC	14	155	108	91	2,5	45	●

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B256_HPC

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● first choice
○ alternate choice

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D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
14,000	.5512	2264332	B256A14000HPC	14	155	108	91	2,6	45	●
14,500	.5709	2253030	B256A14500HPC	16	171	121	101	2,7	48	●
14,800	.5827	2264334	B256A14800HPC	16	171	121	101	2,7	48	●
15,000	.5906	2264336	B256A15000HPC	16	171	121	101	2,8	48	●
15,500	.6102	2264338	B256A15500HPC	16	171	121	101	2,9	48	●
15,800	.6220	2264340	B256A15800HPC	16	171	121	101	2,9	48	●
16,000	.6299	2264342	B256A16000HPC	16	171	121	101	3,0	48	●
16,500	.6496	2264346	B256A16500HPC	18	185	135	113	3,0	48	●
16,800	.6614	2264348	B256A16800HPC	18	185	135	113	3,1	48	●
17,000	.6693	2264350	B256A17000HPC	18	185	135	113	3,1	48	●
17,500	.6890	2264352	B256A17500HPC	18	185	135	113	3,2	48	●
17,800	.7008	2264354	B256A17800HPC	18	185	135	113	3,3	48	●
18,000	.7087	2264356	B256A18000HPC	18	185	135	113	3,3	48	●
18,500	.7283	2264358	B256A18500HPC	20	200	148	124	3,4	50	●
18,800	.7402	2264360	B256A18800HPC	20	200	148	124	3,5	50	●
19,000	.7480	2264362	B256A19000HPC	20	200	148	124	3,5	50	●
19,500	.7677	2264364	B256A19500HPC	20	200	148	124	3,6	50	●
19,800	.7795	2264366	B256A19800HPC	20	200	148	124	3,7	50	●
20,000	.7874	2253031	B256A20000HPC	20	200	148	124	3,7	50	●

Ordering Example:
By catalog number B256A03000HPC KC7315, or by order number 2654517.

KENNAMETAL

Solid Carbide Drills

SE Drills for Steel with Through Coolant

Primary Application

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

Features and Benefits

SE Drill Point Design

- Sculptured edge enables high feed rates.

Four Margin Lands

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

KC7315 Grade

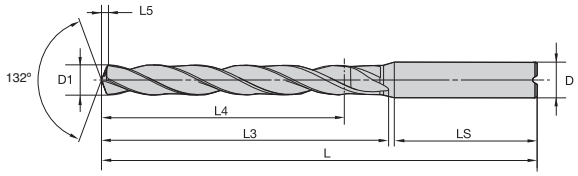
- Multilayer, TiAlN-based coating with high hot hardness enables 30% higher cutting speeds and constant tool life.
- Optimized tool surface finish ensures chip evacuation when drilling deeper holes.

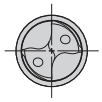
Customization

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

SE Drills – B256 Series – Grade KC7315 – Through Coolant

Starting Value	Cutting Speed		Tool diameter							
sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1 Low-Carbon Steels, Long Chipping		Content: C <.25%	Tensile Strength RM (MPa)*: <530					Hardness (HB) or HRC: <125		
		Feed rate by diameter								
440 sfm / 145 m/min	394 – 575 / 120 – 175	ipr	.003 - .004	.004 - .006	.004 - .006	.005 - .007	.005 - .009	.006 - .011	.007 - .013	.009 - .015
		mm/r	0,08 - 0,11	0,09 - 0,15	0,11 - 0,15	0,13 - 0,19	0,13 - 0,22	0,15 - 0,27	0,18 - 0,33	0,22 - 0,37
P2 Low-Carbon Steels, Free Machining, and Short Chipping		Content: C <.25%	Tensile Strength RM (MPa)*: <650					Hardness (HB) or HRC: <220		
		Feed rate by diameter								
329 sfm / 100 m/min	263 – 394 / 80 – 120	ipr	.003 - .004	.003 -.005	.004 - .007	.006 - .008	.006- .010	.007 - .013	.009 - .017	.010 - .020
		mm/r	0,08 - 0,11	0,08 - 0,13	0,09 - 0,17	0,15 - 0,21	0,16 - 0,25	0,18 - 0,33	0,22 - 0,42	0,26 - 0,50
P3 Medium to High Plain-Carbon Steels and Alloy Steels		Content: C >.25%	Tensile Strength RM (MPa)*: 600-850					Hardness (HB) or HRC: <330		
		Feed rate by diameter								
296 sfm / 90 m/min	230 – 361 / 70 – 110	ipr	.003 - .004	.004 - .006	.004 - .006	.005 - .007	.005- .009	.006 - .011	.007 - .013	.009 - .015
		mm/r	0,08 - 0,11	0,09 - 0,15	0,11 - 0,15	0,13 - 0,19	0,13 - 0,22	0,15 - 0,27	0,18 - 0,33	0,22 - 0,37
P4 Alloy Steels and Tool Steels		Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100					Hardness (HB) or HRC: 350-450		
		Feed rate by diameter								
230 sfm / 70 m/min	197 – 263 / 60 – 80	ipr	.002 - .004	.003 - .005	.004 - .005	.004 - .006	.004- .007	.005 - .009	.006 - .011	.007 - .012
		mm/r	0,06 - 0,09	0,07 - 0,13	0,09 - 0,13	0,11 - 0,15	0,11- 0,17	0,13 - 0,22	0,15 - 0,27	0,17 - 0,30





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

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B256

D1 mm	D1 inch	catalog number	order number	D	L	L3	L4max	L5	LS	KC7315
5,000	0.1969	B256A05000	3638615	6	94	56	48	1,0	36	●
5,1000	0.2008	B256A05100	2623553	6	94	56	48	1,0	36	●
5,500	0.2165	B256A05500	3638616	6	94	56	48	1,1	36	●
5,800	0.2283	B256A05800	3638617	6	94	56	48	1,2	36	●
6,000	0.2362	B256A06000	3638618	6	94	56	48	1,2	36	●
6,500	0.2559	B256A06500	3638619	8	105	67	57	1,3	36	●
6,800	0.2677	B256A06800	3638620	8	105	67	57	1,4	36	●
7,000	0.2756	B256A07000	2625682	8	105	67	57	1,4	36	●
7,800	0.3071	B256A07800	3638621	8	110	72	61	1,6	36	●
8,000	0.3150	B256A08000	2625743	8	110	72	61	1,6	36	●
8,400	0.3307	B256A08400	2658054	10	122	80	68	1,7	40	●
8,500	0.3346	B256A08500	3638622	10	122	80	68	1,7	40	●
8,800	0.3465	B256A08800	2229393	10	122	80	68	1,8	40	●
9,000	0.3543	B256A09000	3638623	10	122	80	68	1,8	40	●
9,500	0.3740	B256A09500	2257646	10	122	80	68	1,9	40	●
10,000	0.3937	B256A10000	3638624	10	122	80	68	2,0	40	●
10,200	0.4016	B256A10200	3598160	12	141	94	79	2,0	45	●
10,500	0.4134	B256A10500	2257597	12	141	94	79	2,1	45	●
11,000	0.4331	B256A11000	2229365	12	141	94	79	2,2	45	●
11,800	0.4646	B256A11800	3638625	12	141	94	79	2,4	45	●
12,000	0.4724	B256A12000	3638626	12	141	94	79	2,4	45	●
12,500	0.4921	B256A12500	3135660	14	155	108	91	2,6	45	●
13,000	0.5118	B256A13000	3638627	14	155	108	91	2,8	45	●
13,500	0.5315	B256A13500	2229364	14	155	108	91	2,8	45	●
14,000	0.5512	B256A14000	2229366	14	155	108	91	2,8	45	●
15,000	0.5906	B256A15000	3638628	16	171	121	101	3,0	48	●
16,000	0.6299	B256A16000	2229362	16	171	121	101	3,2	48	●

Ordering Example:
By catalog number: B256A05000 KC7315, or by order number 3638615.

KENNAMETAL

Solid Carbide Drills

HP Drills for Deep Holes

Primary Application

B271_HPG Series Solid Carbide Drills are the optimum platform for drilling holes up to 30xD deep in steel, cast iron, and stainless steel materials. Drill deep holes up to 4x faster than conventional HSS and gun drills. Application of MQL is possible in steel and iron materials.

Features and Benefits

HP Drill Point Design

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

Four Margin Lands

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

Unique Flute Design

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

KC7425™ Grade

- New ultra-fine grain carbide ensures process reliability at high feed rates.
- A multilayer, high-performance PVD coating provides outstanding wear resistance.
- High-end tool surface finish ensures chip evacuation even when low-pressure coolant or MQL is applied.

Customization

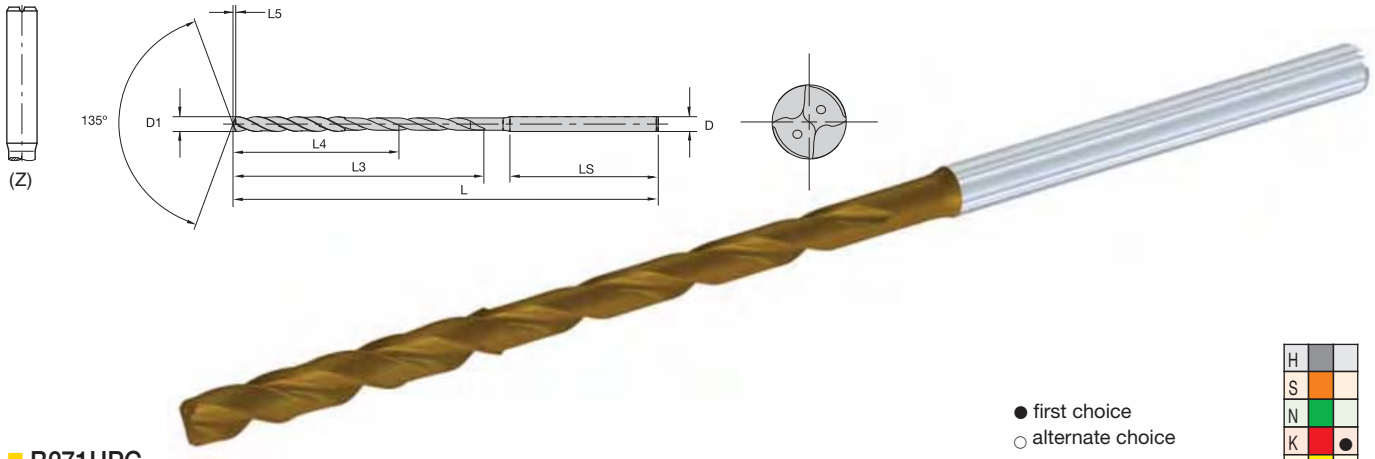
- Intermediate diameters available as semi-standards.
- Length variations available as custom solutions.

SE Drills – B271HPG, B272HPG, B274HPG – Grade KC7425 – with Coolant

Starting Value	Cutting Speed		Tool diameter					
	sfm	49 98 164 262 328 394 492 655 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0
P1	**Low-Carbon Steels, Long chipping**		**Content C < .25%**	**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**	
			Feed rate by diameter					
262	sfm	230 295	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
80	m/min	70 90	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22- 0,30	0,30 - 0,40
P2	**Low-Carbon Steels Free Machining and short chipping**		**Content C < .25%**	**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**	
			Feed rate by diameter					
262	sfm	230 295	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
80	m/min	70 90	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	0,30 - 0,40
P3	**Medium & High Plain-Carbon Steels, Low-alloyed**		**Content C > .25%**	**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter					
246	sfm	197 295	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
75	m/min	60 90	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	0,30 - 0,40
P4	**Alloyed and Tempered Carbon Steels, Tool Steels**		**Content C > .25%**	**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter					
230	sfm	197 262	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
70	m/min	60 80	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	0,30 - 0,40
K1	**Cast and Low-Strength Ductile Irons**			**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter					
262	sfm	197 328	ipr	.007 - .008	.007 - .008	.008 - .011	.010 - .013	.013 - .017
80	m/min	60 100	mm/r	0,17 - 0,20	0,18 - 0,21	0,21 - 0,27	0,25 - 0,33	0,33 - 0,44
K2	**Low and Medium Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter					
230	sfm	197 262	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
70	m/min	60 80	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	0,30 - 0,40
K3	**High Strength Ductile and Austempered Ductile Iron**			**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter					
230	sfm	131 328	ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	.012 - .016
70	m/min	40 100	mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	0,30 - 0,40

* 1 MPa = 145 psi

SE Deep-Hole Drills with Coolant — 15xD



● first choice
○ alternate choice

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B271HPG

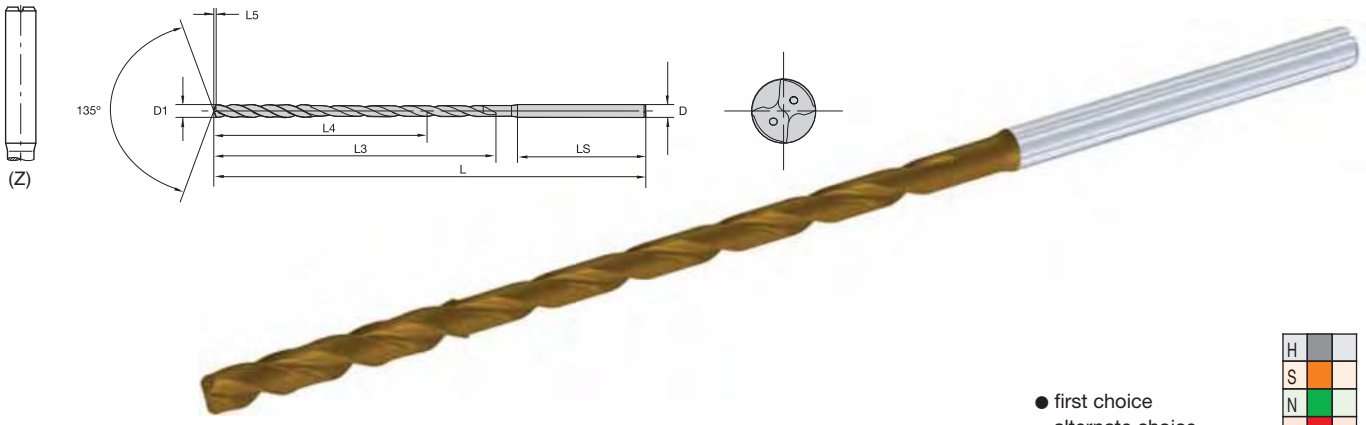
D1 inch	D1 fraction	D1 mm	order number	catalog number	Pilot Hole	D	L	L3	L4 max	L5	LS	KC7425
.1181	–	3,000	3123835	B271Z03000HPG	B976A03000	3	86	53	48	0,6	30	●
.1250	1/8	3,175	3128364	B271Z03175HPG	B976A03180	4	105	67	62	0,6	32	●
.1378	–	3,500	3124769	B271Z03500HPG	B976A03500	4	105	68	63	0,6	32	●
.1563	5/32	3,970	3128365	B271Z03970HPG	B976A03970	4	105	70	64	0,7	32	●
.1575	–	4,000	3043632	B271Z04000HPG	B976A04000	4	105	70	64	0,7	32	●
.1772	–	4,500	3128366	B271Z04500HPG	B976A04500	5	124	85	79	0,8	34	●
.1820	–	4,623	3128367	B271Z04623HPG	B976A04620	5	124	86	79	0,9	34	●
.1875	3/16	4,763	3128368	B271Z04763HPG	B976A04763	5	124	86	79	0,9	34	●
.1969	–	5,000	3038531	B271Z05000HPG	B976A05000	5	124	87	80	0,9	34	●
.2071	–	5,260	3128369	B271Z05260HPG	B976A05250	6	143	102	94	1,0	36	●
.2130	–	5,410	3128370	B271Z05410HPG	B976A05500	6	143	102	94	1,0	36	●
.2165	–	5,500	3128371	B271Z05500HPG	B976A05500	6	143	102	95	1,0	36	●
.2188	7/32	5,558	3128372	B271Z05558HPG	B976A05575	6	143	102	95	1,0	36	●
.2283	–	5,800	3128503	B271Z05800HPG	B976A05800	6	143	103	95	1,1	36	●
.2362	–	6,000	3128504	B271Z06000HPG	B976A06000	6	143	104	96	1,1	36	●
.2441	–	6,200	3128505	B271Z06200HPG	B976A06200	7	162	118	110	1,1	38	●
.2500	1/4	6,350	3128506	B271Z06350HPG	B976A06350	7	162	119	110	1,2	38	●
.2559	–	6,500	3128507	B271Z06500HPG	B976A06500	7	162	119	111	1,2	38	●
.2570	–	6,528	3128508	B271Z06528HPG	B976A06530	7	162	119	111	1,2	38	●
.2656	17/64	6,746	3128509	B271Z06746HPG	B976A06750	7	162	120	111	1,2	38	●
.2720	–	6,909	3128510	B271Z06909HPG	B976A06910	7	162	121	112	1,3	38	●
.2756	–	7,000	3092981	B271Z07000HPG	B976A07000	7	162	121	112	1,3	38	●
.2813	9/32	7,145	3128511	B271Z07145HPG	B976A07145	8	181	135	125	1,3	40	●
.2953	–	7,500	3128512	B271Z07500HPG	B976A07500	8	181	136	127	1,4	40	●
.2969	19/64	7,541	3128513	B271Z07541HPG	B976A07541	8	181	136	127	1,4	40	●
.3125	5/16	7,938	3128514	B271Z07938HPG	B976A07938	8	181	138	128	1,5	40	●
.3150	–	8,000	3123257	B271Z08000HPG	B976A08000	8	181	138	128	1,5	40	●
.3281	21/64	8,334	3128515	B271Z08334HPG	B976A08334	9	200	153	142	1,5	42	●
.3320	–	8,433	3128516	B271Z08433HPG	B976A08430	9	200	153	142	1,6	42	●
.3346	–	8,500	3128517	B271Z08500HPG	B976A08500	9	200	153	143	1,6	42	●
.3438	11/32	8,733	3128518	B271Z08733HPG	B976A08733	9	200	154	143	1,6	42	●
.3543	–	9,000	3128519	B271Z09000HPG	B976A09000	9	200	155	144	1,7	42	●
.3740	–	9,500	3128520	B271Z09500HPG	B976A09500	10	219	170	159	1,8	44	●
.3750	3/8	9,525	3128521	B271Z09525HPG	B976A09525	10	219	170	159	1,8	44	●
.3839	–	9,750	3128522	B271Z09750HPG	B976A09750	10	219	171	159	1,8	44	●
.3937	–		3128523	B271Z10000HPG	B976A10000	10	219	172	160	1,8	44	●

Ordering Example:

By catalog number B271Z03000HPG KC7425, or by order number 3123835.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	>3 to 6	0,000/-0,008
>6 to 10	0,000/-0,015	>6 to 10	0,000/-0,009



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B272_HPG

inch	D1 fraction	mm	order number	catalog number	Pilot Hole	D	L	L3	L4 max	L5	LS	KC7425
.1181	–	3,000	3022444	B272Z03000HPG	B976A03000	3	101	68	63	0,6	30	●
.1250	1/8	3,175	3033484	B272Z03175HPG	B976A03180	4	125	83	77	0,6	32	●
.1378	–	3,500	3124771	B272Z03500HPG	B976A03500	4	125	86	80	0,6	32	●
.1562	5/32	3,970	3196323	B272Z03970HPG	B976A03970	4	125	89	84	0,7	32	●
.1575	–	4,000	3030983	B272Z04000HPG	B976A04000	4	125	90	84	0,7	32	●
.1772	–	4,500	3196324	B272Z04500HPG	B976A04500	5	149	108	101	0,8	34	●
.1823	–	4,632	3196325	B272Z04623HPG	B976A04620	5	149	109	102	0,9	34	●
.1875	3/16	4,763	3196326	B272Z04763HPG	B976A04763	5	149	110	103	0,9	34	●
.1969	–	5,000	3097537	B272Z05000HPG	B976A05000	5	149	112	105	0,9	34	●
.2071	–	5,260	3196327	B272Z05260HPG	B976A05250	6	173	128	120	1,0	36	●
.2130	–	5,410	3196328	B272Z05410HPG	B976A05500	6	173	129	121	1,0	36	●
.2165	–	5,500	3196329	B272Z05500HPG	B976A05500	6	173	130	122	1,0	36	●
.2188	7/32	5,558	3196330	B272Z05558HPG	B976A05575	6	173	130	123	1,0	36	●
.2283	–	5,800	3196331	B272Z05800HPG	B976A05800	6	173	132	124	1,1	36	●
.2362	–	6,000	3122777	B272Z06000HPG	B976A06000	6	173	134	126	1,1	36	●
.2441	–	6,200	3044233	B272Z06200HPG	B976A06200	7	197	149	141	1,1	38	●
.2500	1/4	6,350	3196332	B272Z06350HPG	B976A06350	7	197	151	142	1,2	38	●
.2559	–	6,500	3196333	B272Z06500HPG	B976A06500	7	197	152	143	1,2	38	●
.2570	–	6,528	3196334	B272Z06528HPG	B976A06530	7	197	152	143	1,2	38	●
.2656	17/64	6,746	3196335	B272Z06746HPG	B976A06750	7	197	154	145	1,2	38	●
.2720	–	6,909	3196336	B272Z06909HPG	B976A06910	7	197	155	146	1,3	38	●
.2756	–	7,000	3196337	B272Z07000HPG	B976A07000	7	197	156	147	1,3	38	●
.2813	9/32	7,145	3196338	B272Z07145HPG	B976A07145	8	221	171	161	1,3	40	●
.2951	–	7,500	3196339	B272Z07500HPG	B976A07500	8	221	174	164	1,4	40	●
.2969	19/64	7,541	3196340	B272Z07541HPG	B976A07541	8	221	174	164	1,4	40	●
.3125	5/16	7,938	3196341	B272Z07938HPG	B976A07938	8	221	177	168	1,5	40	●
.3150	–	8,000	3038519	B272Z08000HPG	B976A08000	8	221	178	168	1,5	40	●
.3281	21/64	8,334	3196342	B272Z08334HPG	B976A08334	9	245	195	184	1,5	42	●
.3320	–	8,433	3196343	B272Z08433HPG	B976A08430	9	245	195	184	1,6	42	●
.3346	–	8,500	3196344	B272Z08500HPG	B976A08500	9	245	196	185	1,6	42	●
.3438	11/32	8,733	3196349	B272Z08733HPG	B976A08733	9	245	198	187	1,6	42	●
.3543	–	9,000	3196345	B272Z09000HPG	B976A09000	9	245	200	189	1,7	42	●
.3740	–	9,500	3196346	B272Z09500HPG	B976A09500	10	269	218	206	1,8	44	●
.3750	3/8	9,525	3196347	B272Z09525HPG	B976A09525	10	269	218	206	1,8	44	●
.3839	–	9,750	3196348	B272Z09750HPG	B976A09750	10	269	220	208	1,8	44	●
.3937	–	10,000	3022447	B272Z10000HPG	B976A10000	10	269	222	210	1,8	44	●

Ordering Example:

By catalog number B272Z03000HPG KC7425, or by order number 3022444.

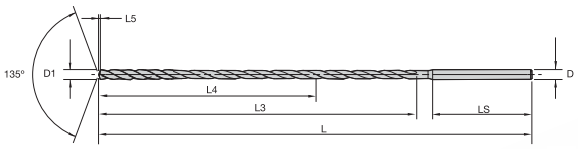
Tolerance

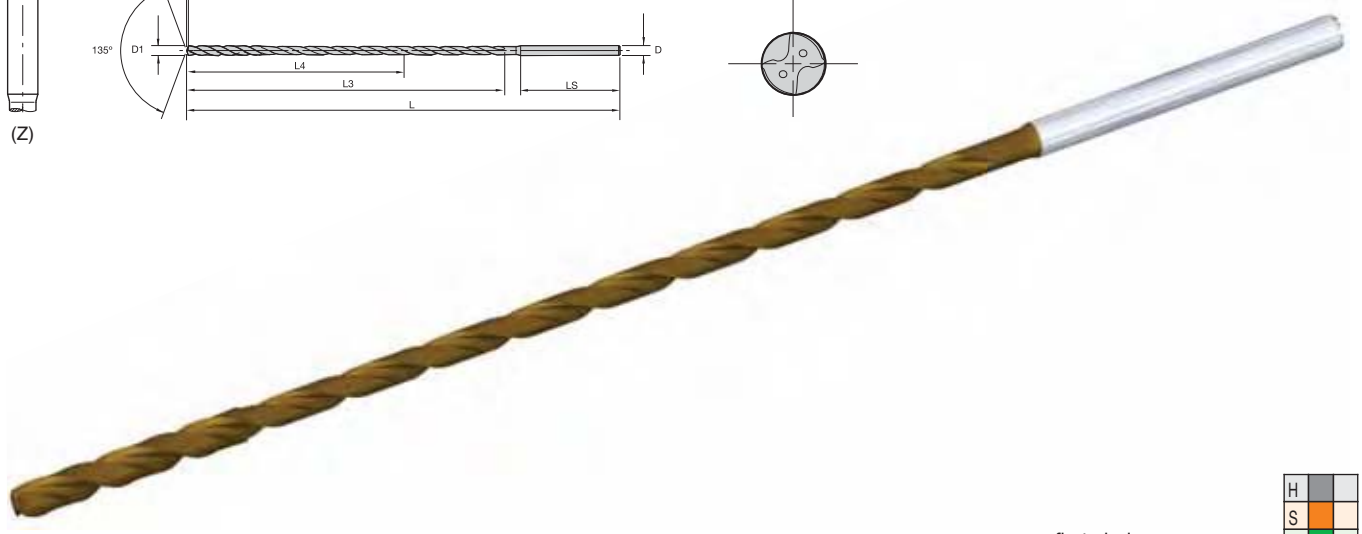
D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	>3 to 6	0,000/-0,008
>6 to 10	0,000/-0,015	>6 to 10	0,000/-0,009

KENNAMETAL

SE Deep-Hole Drills with Coolant — 30xD

(Z)





● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B274_HPG

D1 inch	D1 fraction	D1 mm	order number	catalog number	Pilot Hole	D	L	L3	L4 max	L5	LS	KC7425
.1181	–	3,000	3022445	B274Z03000HPG	B976A03000	3	131	98	93	0,6	30	●
.1250	1/8	3,175	3580468	B274Z03175HPG	B976A03180	4	165	115	109	0,6	32	●
.1378	–	3,500	3580465	B274Z03500HPG	B976A03500	4	165	121	115	0,6	32	●
.1563	5/32	3,970	3580469	B274Z03970HPG	B976A03970	4	165	129	124	0,7	32	●
.1575	–	4,000	3043631	B274Z04000HPG	B976A04000	4	165	130	124	0,7	32	●
.1693	–	4,300	3386151	B274Z04300HPG	B976A04300	5	199	149	142	0,8	34	●
.1772	–	4,500	3580466	B274Z04500HPG	B976A04500	5	199	153	146	0,8	34	●
.1875	3/16	4,763	3580470	B274Z04763HPG	B976A04763	5	199	157	151	0,9	34	●
.1969	–	5,000	3107753	B274Z05000HPG	B976A05000	5	199	162	155	0,9	34	●
.2165	–	5,500	3022446	B274Z05500HPG	B976A05500	6	233	185	177	1,0	36	●
.2362	–	6,000	3137122	B274Z06000HPG	B976A06000	6	233	194	186	1,1	36	●
.2500	1/4	6,350	3546083	B274Z06350HPG	B976A06350	7	267	214	205	1,2	38	●
.2559	–	6,500	3580467	B274Z06500HPG	B976A06500	7	267	217	208	1,2	38	●
.2677	–	6,800	3380734	B274Z06800HPG	B976A06800	7	267	222	213	1,3	38	●
.2756	–	7,000	3343145	B274Z07000HPG	B976A07000	7	267	226	217	1,3	38	●
.3125	5/16	7,938	3580471	B274Z07938HPG	B976A07938	8	301	257	247	1,5	40	●
.3150	–	8,000	3374890	B274Z08000HPG	B976A08000	8	301	258	248	1,5	40	●
.3281	21/64	8,334	3580472	B274Z08334HPG	B976A08334	9	335	278	267	1,5	42	●
.3346	–	8,500	3580166	B274Z08500HPG	B976A08500	9	335	281	270	1,6	42	●
.3543	–	9,000	3478222	B274Z09000HPG	B976A09000	9	335	290	279	1,7	42	●
.3750	3/8	9,525	3580493	B274Z09525HPG	B976A09525	10	369	313	302	1,8	44	●
.3937	–	10,000	3022448	B274Z10000HPG	B976A10000	10	369	322	310	1,8	44	●

Ordering Example:

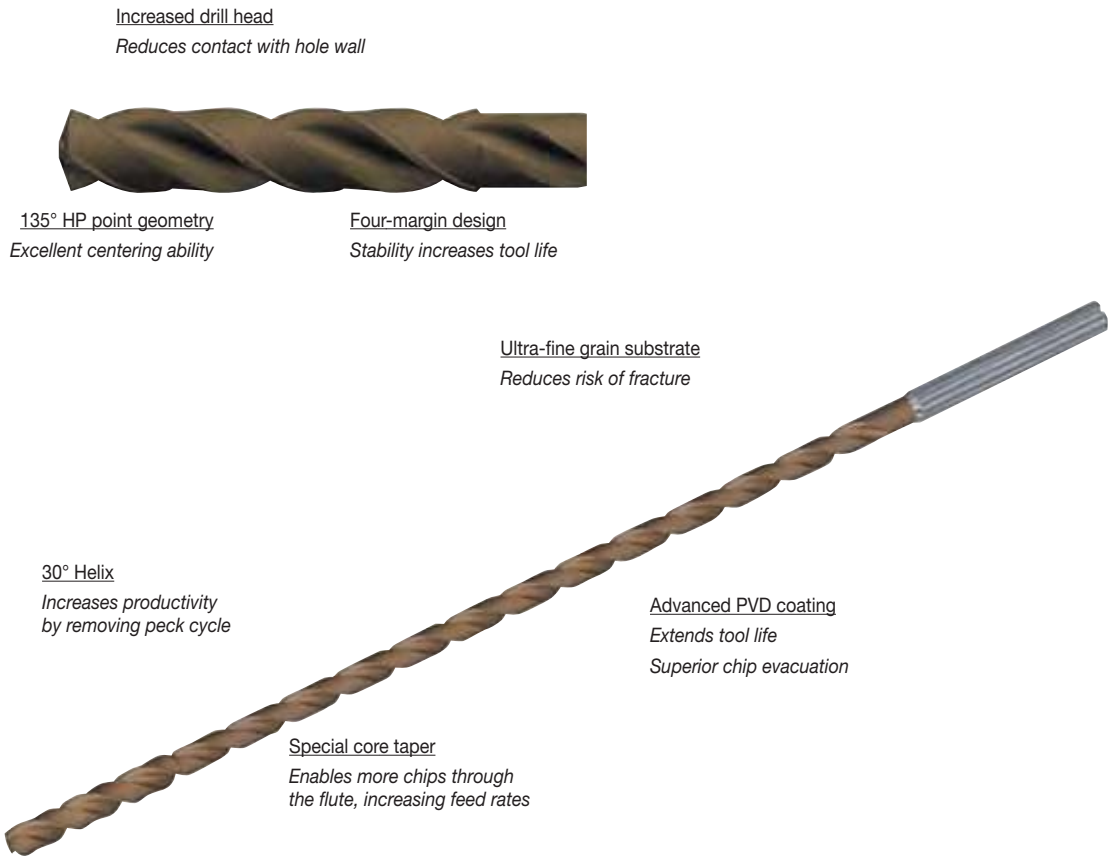
By catalog number B274Z03000HPG KC7425, or by order number 3022445.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	>3 to 6	0,000/-0,008
>6 to 10	0,000/-0,015	>6 to 10	0,000/-0,009

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

The B271_HPG deep hole drill series offer up to 100% increase in metal removal rates (MRR) compared to competitive gun and HSS drills. It also enables up to 20% to 30% increased MRR compared to competitive solid carbide products. This MRR increase means bottom-line savings to customers just like you in through-put, machine time, and personnel hours.

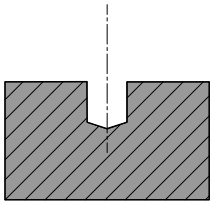


To achieve the best tool performance, we recommend using the deep-hole drill with a hydraulic chuck.
Reduction sleeves are available to hold the drill shank with the hydraulic chuck.

	12mm hydraulic reducer sleeve		20mm hydraulic reducer sleeve		25mm hydraulic reducer sleeve		32mm hydraulic reducer sleeve	
drill shank Ø	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number
3	3026450	12MHC030M	3026648	20MHC030M	3026662	25MHC030M	–	–
4	3026451	12MHC040M	3026649	20MHC040M	3026663	25MHC040M	–	–
5	3026452	12MHC050M	3026650	20MHC050M	3026664	25MHC050M	–	–
6	3026643	12MHC060M	3026651	20MHC060M	3026665	25MHC060M	3026675	32MHC060M
7	3026644	12MHC070M	3026652	20MHC070M	3026666	25MHC070M	3026676	32MHC070M
8	3026645	12MHC080M	3026653	20MHC080M	3026667	25MHC080M	3026677	32MHC080M
9	3026646	12MHC090M	3026654	20MHC090M	3026668	25MHC090M	3026678	32MHC090M
10	3026647	12MHC100M	3026655	20MHC100M	3026669	25MHC100M	3026679	32MHC100M

	.500" hydraulic reducer sleeve		.750" hydraulic reducer sleeve	
drill shank Ø	order number	catalog number	order number	catalog number
3	2248993	50HC030M	2248995	75HC030M
4	1606050	50HC040M	2248996	75HC040M
5	2248994	50HC050M	2248997	75HC050M
6	1606061	50HC060M	1093271	75HC060M
7	–	–	–	–
8	1606062	50HC080M	1093272	75HC080M
9	–	–	–	–
10	1606064	50HC100M	1093273	75HC100M

Application Tips — Deep-Hole Drills

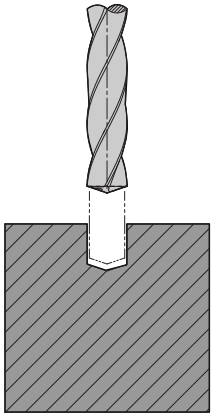


1) Pilot/Pre-Drill Hole

- Drill: B976A.....KC7315 or another drill with a 140° point angle.
- Depth of Pilot: 3 x D.
- Drill Ø = nominal Ø up to nominal + 0,010 mm (+.0004").
- Cutting Parameters: Catalog recommended feeds and speeds on page A90.

Recommendations:

- Use only a conical (B976A) or split-point drill to pilot (not an SE-HP drill).
- Do not use a flat-bottom end mill or drill to pilot.
- Use a hydraulic chuck to achieve minimum TIR.
- Be sure the machine tool and setup are rigid.
- Check the pilot drill for wear. Excessive wear can lead to premature wear on the B27_Z cutting edge and possibly catastrophic failure.



2) Feed B27_Z Into Pilot Hole:

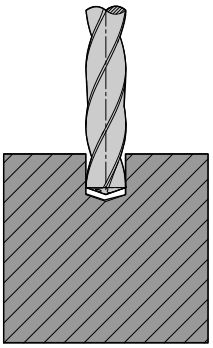
- Drill: B27_Z.
- Cutting Parameters: 1,000 RPM and recommended feed rate (no rapid traverse).
- Depth: to 0,25-0,30 mm (.010-.012") above the bottom of pilot hole.

Recommendations:

The coolant channels of the B272Z are smaller than typical Kennametal drills. Be sure that a steady supply of coolant is delivered through the coolant channels to the cutting edges. If coolant supply is not steady or is unequal through both channels, check:

1. Coolant filtering system.
2. Sealing of adapter/spindle.
3. Chips blocking the coolant hole on the drill shank.

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



3) Drill Hole:

Cutting Parameters: Start recommended speed and feed rate at 0,25-0,30 mm (.010-.012") from the bottom of the pilot hole.

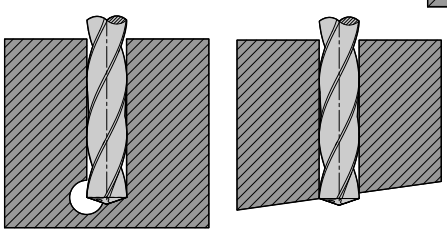
NOTE: *Feed recommendations are usually higher than with conventional solid carbide drills!*

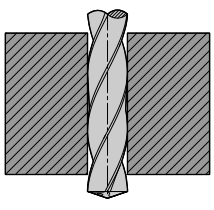
Recommendations:

DO NOT PECK OR DWELL!

With long-chipping materials, it may be necessary to increase feed rate by 10%-20% to provide optimal chip control.

Reduce feed rate on angled exits and crossholes by 50%-60%.





4) Drill Retraction:

Cutting Parameters:1,000 RPM and recommended feed rates.

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

KENNAMETAL

Solid Carbide Drills

HP Drills for High-Temperature-Resistant Alloys with Through Coolant

Primary Application

B/K284 Series Solid Carbide Drills offer a material-specific design and grade for machining high-temperature-resistant alloys such as titanium alloys and nickel-based alloys in Aerospace applications. This drill minimizes subsurface deformation.

Features and Benefits

HP Drill Point Design

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

Straight Cutting Edge

- Optimized chip formation with less stress and heat generation.
- Rigid wedge at the cutting corner to withstand high thermal and mechanical stress.

Unique Flute Design

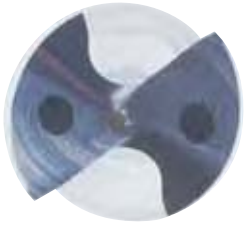
- Drastically improved chip evacuation.

K715™ Grade

- Specified, uncoated 9%Co fine grain carbide.

Customization

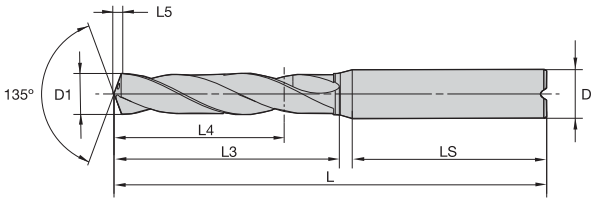
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.

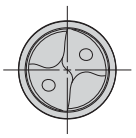


SE Drills - B284, B285 Series – Grade K715 – Through Coolant

Starting Value	Cutting Speed												Tool diameter								
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0
S1	**Iron-Based, Heat-Resistant Alloys**												**Tensile Strength RM (MPa)*: 500-1200**						**Hardness (Hb) or HRC: 160-260**		
													Feed rate by diameter								
82	sfm		66								98		ipr	.001 - .002	.002 - .002	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.006 - .007	.006 - .009
25	m/min		20								30		mm/r	0,03 - 0,05	0,04- 0,06	0,06 - 0,09	0,08 - 0,12	0,10 - 0,14	0,11 - 0,16	0,14 - 0,19	0,16 - 0,23
S2	**Nickel-Based or Cobalt-Based, Heat-Resistant Alloys**												**Tensile Strength RM (MPa)*: 1000-1450**						**Hardness (Hb) or HRC: 250-450**		
													Feed rate by diameter								
49	sfm		33								66		ipr	.001 - .001	.002 - .002	.002 - .003	.003 - .004	.004 - .005	.004 - .005	.005 - .006	.006 - .007
15	m/min		10								20		mm/r	0,03 - 0,04	0,04 - 0,05	0,06 - 0,08	0,08 - 0,10	0,10 - 0,12	0,11 - 0,13	0,12 - 0,16	0,14 - 0,18
S4	**Titanium Alloys**												**Tensile Strength RM (MPa)*: 900-1600**						**Hardness (Hb) or HRC: 300-400**		
													Feed rate by diameter								
115	sfm		66								164		ipr	.001 - .001	.002 - .002	.002 - .003	.003 - .004	.004 - .005	.005 - .006	.005 - .007	.006 - .008
35	m/min		20								50		mm/r	0,03 - 0,04	0,04 - 0,05	0,06 - 0,08	0,08 - 0,10	0,11- 0,13	0,13 - 0,15	0,14 - 0,18	0,16 - 0,21

* 1 MPa = 145 psi





Tolerance

D1	Tolerance m7	D	Tolerance h6
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005

● first choice
○ alternate choice

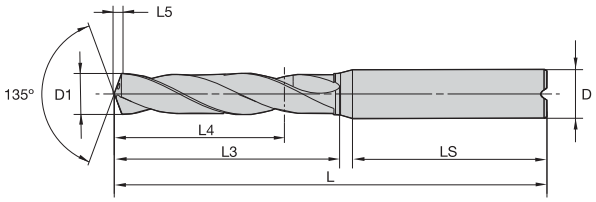
H		
S		●
N		○
K		
M		
P		

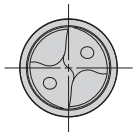
K284

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
.1563	5/32	3,970	1961384	K284A01563	.1875	2.48	.91	.69	.029	1.44	●
.1875	3/16	4,763	1961385	K284A01875	.1875	2.68	1.14	.89	.035	1.44	●
.2188	7/32	5,558	1961386	K284A02188	.2500	2.87	1.34	1.02	.040	1.44	●
.2500	1/4	6,350	1961387	K284A02500	.2500	2.87	1.34	1.02	.046	1.44	●
.2649	9/34	6,728	1961388	K284A02649	.3125	3.11	1.50	1.11	.049	1.52	●
.2656	17/64	6,746	1961389	K284A02656	.3125	3.11	1.50	1.11	.049	1.52	●
.2813	9/32	7,145	1961390	K284A02813	.3125	3.11	1.50	1.11	.052	1.52	●
.2913	7/24	7,399	1961391	K284A02913	.3125	3.11	1.50	1.11	.054	1.52	●
.3594	23/64	9,129	1961406	K284A03594	.3750	3.50	1.81	1.37	.066	1.59	●
.3906	25/64	9,921	1961408	K284A03906	.4375	3.78	2.01	1.50	.072	1.67	●
.4531	29/64	11,509	1961413	K284A04531	.5000	4.02	2.13	1.56	.084	1.79	●
.4688	15/32	11,908	1961414	K284A04688	.5000	4.02	2.13	1.56	.087	1.79	●

Ordering Example:
By catalog number K284A01563 K715, or by order number 1961384.

SE Drills with Coolant





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016194	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

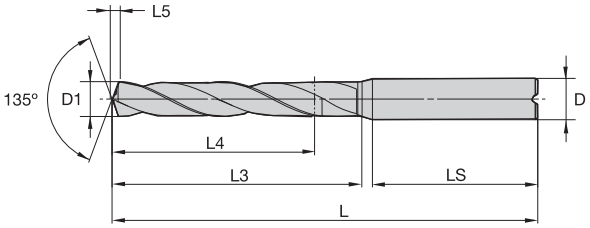
H		
S		●
N		○
K		
M		
P		

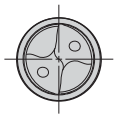
B284

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
4,000	.1575	1907359	B284A04000	6	66	24	17	0,7	36	●
4,200	.1654	1920527	B284A04200	6	66	24	17	0,8	36	●
4,500	.1772	1920528	B284A04500	6	66	24	17	0,8	36	●
5,000	.1969	1920529	B284A05000	6	66	28	20	0,9	36	●
5,100	.2008	1920530	B284A05100	6	66	28	20	0,9	36	●
5,500	.2165	1920531	B284A05500	6	66	28	20	1,0	36	●
6,000	.2362	1902606	B284A06000	6	66	28	20	1,1	36	●
6,800	.2677	1920543	B284A06800	8	79	34	24	1,3	36	●
7,000	.2756	1920544	B284A07000	8	79	34	24	1,3	36	●
8,800	.3465	1920550	B284A08800	10	89	47	35	1,6	40	●
11,700	.4606	1897992	B284A11700	12	102	55	40	2,2	45	●
25,000	.9843	1920574	B284A25000	25	153	95	65	4,6	56	●

Ordering Example:
By catalog number B284A04000 K715, or by order number 1907359.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>.1181 to .2362	.0002/.0006	.1875	.0000/-.0003
>.2362 to .3937	.0002/.0008	.2500 to .6875	.0000/-.0004
>.3937 to .7087	.0003/.0010	.7500	.0000/-.0005

● first choice
○ alternate choice

H		
S		●
N		○
K		
M		
P		

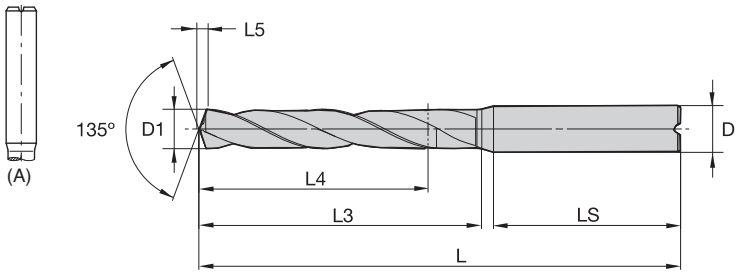
K285

D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
.1563	5/32	3,970	1961422	K285A01563	.1875	2.60	1.06	.84	.029	1.44	●
.1590	–	4,039	1961423	K285A01590	.1875	2.91	1.38	1.13	.029	1.44	●
.1875	3/16	4,763	1961565	K285A01875	.1875	2.91	1.38	1.13	.035	1.44	●
.2090	–	5,309	1961430	K285A02090	.2500	3.23	1.69	1.37	.039	1.44	●
.2194	–	5,573	1961433	K285A02194	.2500	3.23	1.69	1.37	.041	1.44	●
.2210	–	5,613	1961434	K285A02210	.2500	3.23	1.69	1.37	.041	1.44	●
.2420	–	6,147	1961435	K285A02420	.2500	3.23	1.69	1.37	.045	1.44	●
.2500	1/4	6,350	1961436	K285A02500	.2500	3.23	1.69	1.37	.046	1.44	●
.2720	–	6,909	1961440	K285A02720	.3125	3.58	1.97	1.59	.050	1.52	●
.3125	5/16	7,938	1961444	K285A03125	.3125	3.58	1.97	1.59	.058	1.52	●
.3750	3/8	9,525	1961452	K285A03750	.3750	4.06	2.36	1.92	.069	1.59	●
.4375	7/16	11,113	1961460	K285A04375	.4375	4.37	2.60	2.09	.081	1.67	●
.4688	15/32	11,908	1961463	K285A04688	.5000	4.65	2.76	2.19	.087	1.79	●
.5000	1/2	12,700	1961466	K285A05000	.5000	4.65	2.76	2.19	.092	1.79	●
.6562	21/32	16,667	1961474	K285A06562	.6875	5.63	5.63	2.87	.121	1.91	●

Ordering Example:
By catalog number K285A01563 K715, or by order number 1961422.

KENNAMETAL

SE Drills with Coolant



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		●
N		○
K		
M		
P		

B285

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	K715
5,000	.1969	1920575	B285A05000	6	82	44	35	0,9	36	●
5,500	.2165	1920576	B285A05500	6	82	44	35	1,0	36	●
5,900	.2323	1920577	B285A05900	6	82	44	35	1,1	36	●
6,000	.2362	1920578	B285A06000	6	82	44	35	1,1	36	●
6,350	.2500	1920579	B285A06350	8	91	53	43	1,2	36	●
8,000	.3150	1920584	B285A08000	8	91	53	43	1,5	36	●
9,540	.3756	1920588	B285A09540	10	103	61	49	1,8	40	●
10,000	.3937	1920589	B285A10000	10	103	61	49	1,8	40	●
10,500	.4134	1920591	B285A10500	12	118	71	56	1,9	45	●
12,000	.4724	1920594	B285A12000	12	118	71	56	2,2	45	●

Ordering Example:
By catalog number B285A05000 K715, or by order number 1920575.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

KENNAMETAL

Solid Carbide Drills

FBG Drills for Flat-Bottom Applications with Through Coolant

Primary Application

B707_FBG Series Solid Carbide Drills are productivity tools that combine two operations in one: Eliminate the 180° end mill in flat-bottom drilling or when preparing an inclined or curved surface for drilling. After full cylindrical engagement, the drill runs at normal solid carbide drilling parameters.

Features and Benefits

Unique FBG Drill Point Design

- Two effective cutting edges over center enable high feed rates.
- Creates a “true” flat-bottom hole from OD to center.

Straight Cutting Edge

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

Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment even when drilling through cross holes.

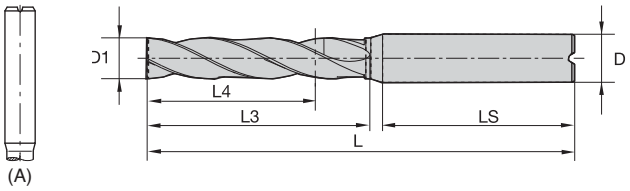
KC7315 Grade

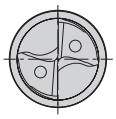
- Enable high “drill-like” penetration rates and superior tool life.

Flat-Bottom Drills – B707FBG Series – Grade KC7315 – Through Coolant

Starting Value	Cutting Speed		Tool diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1	**Low Carbon Steels, Long chipping**		**Content C < .25%**			**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**		
			Feed rate by diameter								
436	sfm	322 551	ipr	.003 - .006	.005 - .008	.004 - .009	.005 - .011	.008 - .013	.007 - .015	.007 - .017	.009 - .019
133	m/min	98 168	mm/r	0,07 - 0,16	0,12- 0,20	0,10 - 0,23	0,13 - 0,29	0,21 - 0,33	0,17 - 0,37	0,19 - 0,44	0,22 - 0,49
P2	**Low Carbon Steels, Free Machining and short chipping**		**Content C < .25%**			**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**		
			Feed rate by diameter								
505	sfm	413 597	ipr	.003 - .005	.004 - .006	.006 - .007	.005 - .009	.007 - .010	.007 - .012	.007 - .014	.009 - .015
154	m/min	126 182	mm/r	0,07 - 0,13	0,10 - 0,16	0,16 - 0,19	0,13 - 0,23	0,18 - 0,27	0,17 - 0,30	0,19 - 0,35	0,22 - 0,39
P3	**Medium & High Plain-Carbon Steels, Low Alloyed**		**Content C < .25%**			**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**		
			Feed rate by diameter								
348	sfm	282 413	ipr	.004 - .006	.005 - .008	.005 - .009	.006 - .009	.008 - .012	.008 - .015	.010 - .017	.011 - .018
106	m/min	86 126	mm/r	0,09 - 0,16	0,13 - 0,20	0,13 - 0,23	0,16 - 0,24	0,20 - 0,31	0,21 - 0,37	0,25 - 0,44	0,28 - 0,46
P4	**Alloyed and Tempered Carbon Steels, Tool Steels**		**Content C > .25%**			**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**		
			Feed rate by diameter								
322	sfm	230 413	ipr	.003 - .006	.005 - .007	.004 - .009	.006 - .011	.008 - .012	.007 - .014	.008 - .016	.009 - .018
98	m/min	70 126	mm/r	0,08 - 0,16	0,12 - 0,19	0,11 - 0,22	0,14 - 0,27	0,21 - 0,31	0,18 - 0,35	0,21 - 0,41	0,24 - 0,46
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content C .1%–.6%**			**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**		
			Feed rate by diameter								
322	sfm	230 413	ipr	.003 - .005	.004 - .006	.004 - .006	.005 - .008	.006 - .009	.006 - .010	.007 -.012	.008 - .013
98	m/min	70 126	mm/r	0,07 - 0,12	0,10 - 0,14	0,10 - 0,16	0,12 - 0,20	0,16 - 0,23	0,16 - 0,26	0,18 - 0,31	0,21 - 0,34
K1	**Cast and Low-Strength Ductile Irons**					**Tensile Strength RM (MPa)*: 150-400**			**Hardness (Hb): 120-290**		
			Feed rate by diameter								
279	sfm	230 322	ipr	.004 - .007	.005 - .008	.005 - .010	.006 - .012	.009 - .014	.008 - .015	.009 - .018	.010 - .020
85	m/min	70 98	mm/r	0,09 - 0,17	0,13 - 0,21	0,12 - 0,25	0,15 - 0,31	0,23 - 0,35	0,20 - 0,39	0,23 - 0,46	0,26 - 0,52
K2	**Low to Medium Strength Compacted Graphite and Ductile Irons**					**Tensile Strength RM (Mpa)*: 400-600**			**Hardness (Hb): 130-260**		
			Feed rate by diameter								
371	sfm	322 413	ipr	.004 - .006	.005 - .007	.005 - .008	.006 - .010	.008 - .012	.008 - .013	.009 - .015	.010 - .017
113	m/min	98 126	mm/r	0,09 - 0,15	0,12 - 0,18	0,12 - 0,21	0,15 - 0,26	0,21 - 0,30	0,20 - 0,33	0,23 - 0,39	0,26 - 0,44
K3	**High Strength Ductile and Austempered Ductile Iron**					**Tensile Strength RM (MPa)*: 600-900**			**Hardness (Hb): 180-350**		
			Feed rate by diameter								
345	sfm	230 459	ipr	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.007 - .010	.007 - .012	.008 - .014	.009 - .015
105	m/min	70 140	mm/r	0,07 - 0,13	0,10 - 0,16	0,11 - 0,19	0,13 - 0,23	0,18 - 0,27	0,17 - 0,30	0,20 - 0,35	0,22 - 0,37

* 1 MPa = 145 psi





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

	KC7315
H	
S	
N	
K	●
M	
P	●

B707_FBG

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	LS	KC7315
.1181	–	3,000	2887724	B707A03000FBG	6	62	20	14	36	●
.1250	1/8	3,175	3505052	B707A03175FBG	6	62	20	14	36	●
.1378	–	3,500	2985272	B707A03500FBG	6	62	20	14	36	●
.1563	5/32	3,970	3505133	B707A03970FBG	6	66	24	17	36	●
.1575	–	4,000	2450291	B707A04000FBG	6	66	24	17	36	●
.1654	–	4,200	3098071	B707A04200FBG	6	66	24	17	36	●
.1732	–	4,400	3058984	B707A04400FBG	6	66	24	17	36	●
.1772	–	4,500	2985333	B707A04500FBG	6	66	24	17	36	●
.1875	3/16	4,763	3505134	B707A04763FBG	6	66	28	20	36	●
.1890	–	4,800	2655963	B707A04800FBG	6	66	28	20	36	●
.1929	–	4,900	2629032	B707A04900FBG	6	66	28	20	36	●
.1969	–	5,000	2450292	B707A05000FBG	6	66	28	20	36	●
.2188	7/32	5,560	2619033	B707A05560FBG	6	66	28	20	36	●
.2323	–	5,900	2660384	B707A05900FBG	6	66	28	20	36	●
.2362	–	6,000	2450343	B707A06000FBG	6	66	28	20	36	●
.2500	1/4	6,350	3505135	B707A06350FBG	8	79	34	24	36	●
.2559	–	6,500	2985334	B707A06500FBG	8	79	34	24	36	●
.2756	–	7,000	2541133	B707A07000FBG	8	79	34	24	36	●
.2813	9/32	7,145	3505136	B707A07145FBG	8	79	41	29	36	●
.2953	–	7,500	2634568	B707A07500FBG	8	79	41	29	36	●
.3125	5/16	7,938	3505137	B707A07938FBG	8	79	41	29	36	●
.3150	–	8,000	2450344	B707A08000FBG	8	79	41	29	36	●
.3281	21/64	8,334	3505138	B707A08334FBG	10	89	47	35	40	●
.3346	–	8,500	2650038	B707A08500FBG	10	89	47	35	40	●
.3465	–	8,800	2658030	B707A08800FBG	10	89	47	35	40	●
.3543	–	9,000	2652755	B707A09000FBG	10	89	47	35	40	●
.3594	23/64	9,129	3505139	B707A09129FBG	10	89	47	35	40	●
.3740	–	9,500	2985335	B707A09500FBG	10	89	47	35	40	●
.3750	3/8	9,525	3505140	B707A09525FBG	10	89	47	35	40	●
.3937	–	10,000	2607377	B707A10000FBG	10	89	47	35	40	●
.4063	13/32	10,320	3505141	B707A10320FBG	12	102	55	40	45	●
.4134	–	10,500	3322050	B707A10500FBG	12	102	55	40	45	●
.4331	–	11,000	2499516	B707A11000FBG	12	102	55	40	45	●
.4375	7/16	11,111	3505142	B707A11111FBG	12	102	55	40	45	●
.4531	29/64	11,509	3505143	B707A11509FBG	12	102	55	40	45	●
.4555	–	11,570	2628928	B707A11570FBG	12	102	55	40	45	●

(continued on next page)

Tolerance			
D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 21	0,008/0,029	20	0,000/-0,013

B707_FBG

(continued from previous page)

● first choice
○ alternate choice

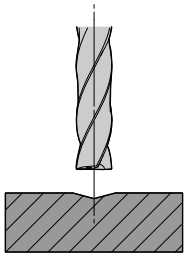
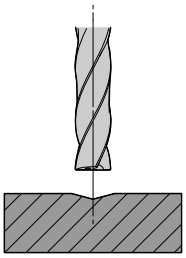
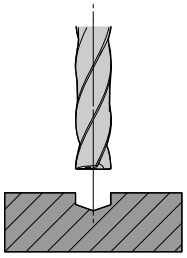
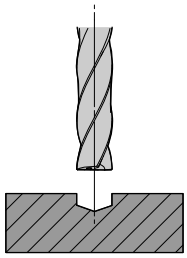
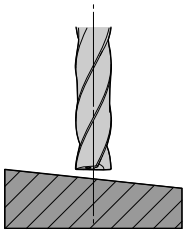
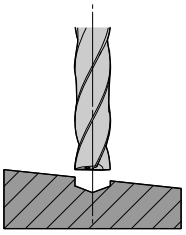
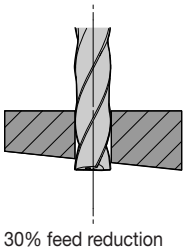
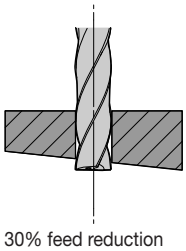
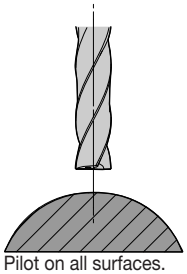
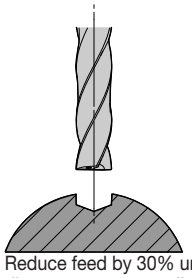
	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	LS	KC7315	
.4606	–	11,700	2657603	B707A11700FBG	12	102	55	40	45	●	H
.4646	–	11,800	2639052	B707A11800FBG	12	102	55	40	45	●	S
.4688	15/32	11,908	3505144	B707A11908FBG	12	102	55	40	45	●	N
.4724	–	12,000	2629368	B707A12000FBG	12	102	55	40	45	●	K
.4764	–	12,100	3382970	B707A12100FBG	14	107	60	43	45	●	M
.4921	–	12,500	2885009	B707A12500FBG	14	107	60	43	45	●	P
.5039	–	12,800	2636514	B707A12800FBG	14	107	60	43	45	●	
.5118	–	13,000	2450345	B707A13000FBG	14	107	60	43	45	●	
.5512	–	14,000	2985336	B707A14000FBG	14	107	60	43	45	●	
.5625	9/16	14,288	3505145	B707A14288FBG	16	115	65	45	48	●	
.5709	–	14,500	2957497	B707A14500FBG	16	115	65	45	48	●	
.5906	–	15,000	2646000	B707A15000FBG	16	115	65	45	48	●	
.6004	–	15,250	2639144	B707A15250FBG	16	115	65	45	48	●	
.6102	–	15,500	3505149	B707A15500FBG	16	115	65	45	48	●	
.6250	5/8	15,875	3505146	B707A15875FBG	16	115	65	45	48	●	
.6299	–	16,000	2623070	B707A16000FBG	16	115	65	45	48	●	
.6496	–	16,500	3505150	B707A16500FBG	18	123	73	51	48	●	
.6693	–	17,000	2582790	B707A17000FBG	18	123	73	51	48	●	
.6875	11/16	17,463	3505147	B707A17463FBG	18	123	73	51	48	●	
.6890	–	17,500	3505151	B707A17500FBG	18	123	73	51	48	●	
.7087	–	18,000	2633016	B707A18000FBG	18	123	73	51	48	●	
.7283	–	18,500	3505152	B707A18500FBG	20	131	79	55	50	●	
.7480	–	19,000	2896948	B707A19000FBG	20	131	79	55	50	●	
.7500	3/4	19,050	3505148	B707A19050FBG	20	131	79	55	50	●	
.7874	–	20,000	2450346	B707A20000FBG	20	131	79	55	50	●	
.8268	–	21,000	2594849	B707A21000FBG	20	141	86	60	50	●	

Ordering Example:
By catalog number B707A03000FBG KC7315, or by order number 2887724.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

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

Workpiece/Application

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

KENNAMETAL

Solid Carbide Drills

SPF Drills for Composite (CFRP) Materials

Primary Application

B/K531 Series Solid Carbide Drills offer a material-specific design and grade to machine carbon fiber-reinforced polymer (CFRP) composite materials by minimizing delamination and increasing tool life.

Features and Benefits

SPF Drill Point Design

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

Unique Geometry

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

KDF400™ Grade

- CVD multi-layer diamond coating provides more wear resistance and reduced friction which increases tool life and improves chip flow.

Customization

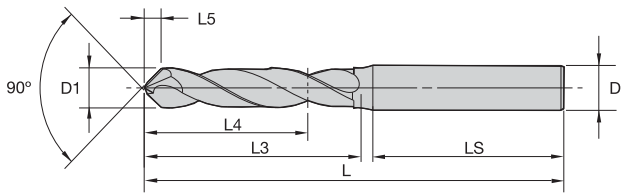
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.

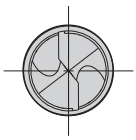
SPF Drills – B531, B532 / K531, K532 Series – Grade KDF400 – Dry Applications

Starting Value	Cutting Speed												Tool diameter						
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0
N6 Carbon and Graphite Composites													Tensile Strength RM (MPa)*: 600-1500						
													Feed rate by diameter						
394	sfm						295	492					ipr	.001 - .008	.001 - .008	.001 - .008	.001 - .008	.001 - .008	.001 - .008
120	m/min						90	150					mm/r	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20

* 1 MPa = 145 psi

SPF Drills without Coolant





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

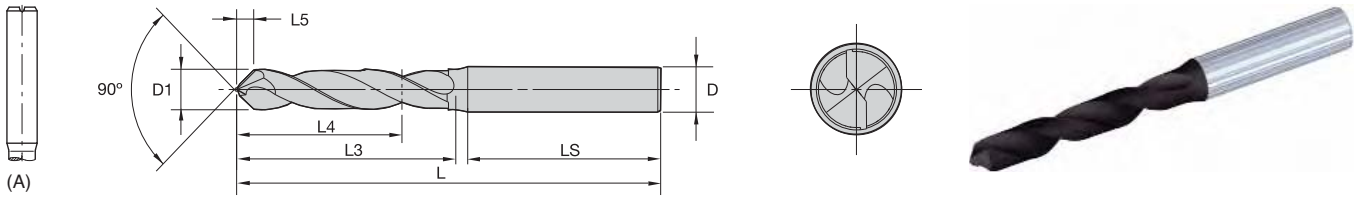
● first choice
○ alternate choice

H		
S		
N		●
K		
M		
P		

K531_SPF

D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	LS	L5	KDF400
.1719	11/64	4,366	3367363	K531A01719SPF	.2500	2.68	1.14	.89	1.44	.08	●
.1915	–	4,864	3367364	K531A01915SPF	.2500	2.87	1.34	1.02	1.44	.09	●
.2510	–	6,375	3367365	K531A02510SPF	.2500	2.87	1.34	1.02	1.44	.11	●
.3125	5/16	7,938	3367366	K531A03125SPF	.3125	3.11	1.50	1.11	1.52	.14	●
.3760	–	9,550	3367367	K531A03760SPF	.3750	3.78	2.01	1.50	1.59	.17	●
.3765	–	9,563	3367368	K531A03765SPF	.4375	3.78	2.01	1.50	1.67	.17	●
.4380	–	11,125	3367369	K531A04380SPF	.4375	4.02	2.13	1.56	1.79	.20	●
.5010	–	12,725	3367370	K531A05010SPF	.5000	4.21	2.32	1.69	1.79	.23	●

Ordering Example:
By catalog number K531A01719SPF KDF400, or by order number 3367363.



Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		
N		●
K		
M		
P		

B531_SPF

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	LS	L5	KDF400
3,200	.1260	3367371	B531A03200SPF	6	62	20	14	36	1,45	●
3,300	.1299	3585206	B531A03300SPF	6	62	20	14	36	1,50	●
3,600	.1417	3585207	B531A03600SPF	6	62	20	14	36	1,64	●
4,000	.1575	3585208	B531A04000SPF	6	66	24	17	36	1,82	●
4,366	.1719	3585209	B531A04366SPF	6	66	24	17	36	1,98	●
4,851	.1910	3585210	B531A04851SPF	6	66	28	20	36	2,20	●
4,864	.1915	3585211	B531A04864SPF	6	66	28	20	36	2,21	●
5,100	.2008	3367372	B531A05100SPF	6	66	28	20	36	2,32	●
5,200	.2047	3585212	B531A05200SPF	6	66	28	20	36	2,36	●
6,000	.2362	3367385	B531A06000SPF	6	66	28	20	36	2,73	●
6,375	.2510	3585213	B531A06375SPF	8	79	34	24	36	2,90	●
6,400	.2520	3585214	B531A06400SPF	8	79	34	24	36	2,91	●
6,500	.2559	3367373	B531A06500SPF	8	79	34	24	36	2,95	●
7,938	.3125	3585215	B531A07938SPF	8	79	41	29	36	3,61	●
8,153	.3210	3585216	B531A08153SPF	10	89	47	35	40	3,70	●
9,550	.3760	3585217	B531A09550SPF	10	89	47	35	40	4,34	●
9,563	.3765	3585218	B531A09563SPF	10	89	47	35	40	4,34	●
11,125	.4380	3585219	B531A11125SPF	12	102	55	40	45	5,05	●
12,725	.5010	3585220	B531A12725SPF	14	107	60	43	45	5,78	●

Ordering Example:
By catalog number B531A03200SPF KDF400, or by order number 3367371.

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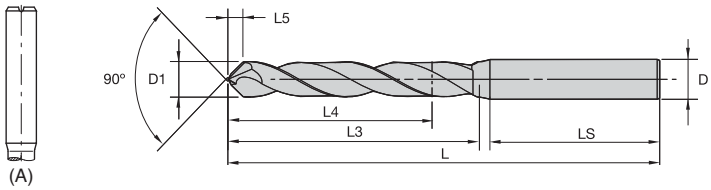
SPF Drills without Coolant



Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

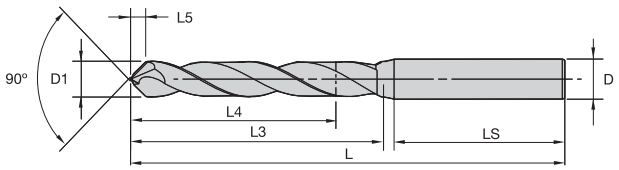
H	
S	
N	●
K	
M	
P	

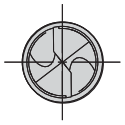
K532_SPF

D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	LS	L5	KDF400
.1719	11/64	4,366	3367374	K532A01719SPF	.2500	2.91	1.38	1.13	1.44	.08	●
.1915	–	4,864	3367375	K532A01915SPF	.2500	3.23	1.69	1.37	1.44	.09	●
.2510	–	6,375	3367376	K532A02510SPF	.2500	3.58	1.97	1.59	1.52	.11	●
.3125	5/16	7,938	3367377	K532A03125SPF	.3125	3.58	1.97	1.59	1.52	.14	●
.3760	–	9,550	3367378	K532A03760SPF	.3750	4.37	2.60	2.09	1.59	.17	●
.3765	–	9,563	3367379	K532A03765SPF	.4375	4.37	2.60	2.09	1.67	.17	●
.4380	–	11,125	3367380	K532A04380SPF	.4375	4.65	2.75	2.19	1.67	.20	●
.5010	–	12,725	3367381	K532A05010SPF	.5000	4.88	2.99	2.36	1.79	.23	●

Ordering Example:
By catalog number K532A01719SPF KDF400, or by order number 3367374.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		
N		●
K		
M		
P		

B532_SPF

D1											
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	LS	L5	KDF400
3,200	–	.1260	3367382	B532A03200SPF	6	66	28	23	36	1,45	●
3,300	–	.1299	3585221	B532A03300SPF	6	66	28	23	36	1,50	●
3,600	–	.1417	3585222	B532A03600SPF	6	66	28	23	36	1,64	●
4,000	–	.1575	3585223	B532A04000SPF	6	74	36	29	36	1,82	●
4,366	11/64	.1719	3585224	B532A04366SPF	6	74	36	29	36	1,98	●
4,851	–	.1910	3585225	B532A04851SPF	6	82	44	35	36	2,20	●
4,864	–	.1915	3585226	B532A04864SPF	6	82	44	35	36	2,21	●
5,100	–	.2008	3367383	B532A05100SPF	6	82	44	35	36	2,32	●
5,200	–	.2047	3585227	B532A05200SPF	6	82	44	35	36	2,36	●
6,000	–	.2362	3367386	B532A06000SPF	6	82	44	35	36	2,73	●
6,375	–	.2510	3585228	B532A06375SPF	8	91	53	43	36	2,90	●
6,400	–	.2520	3585229	B532A06400SPF	8	91	53	43	36	2,91	●
6,500	–	.2559	3367384	B532A06500SPF	8	91	53	43	36	2,95	●
7,938	5/16	.3125	3585230	B532A07938SPF	8	91	53	43	36	3,61	●
8,153	–	.3210	3585231	B532A08153SPF	10	103	61	49	40	3,70	●
9,550	–	.3760	3585232	B532A09550SPF	10	103	61	49	40	4,34	●
9,563	–	.3765	3585233	B532A09563SPF	10	103	61	49	40	4,34	●
11,125	7/16	.4380	3585234	B532A11125SPF	12	118	71	56	45	5,05	●
12,725	–	.5010	3585235	B532A12725SPF	14	124	77	60	45	5,78	●

Ordering Example:
By catalog number B532A03200SPF KDF400, or by order number 3367382.

KENNAMETAL

Solid Carbide Drills

SE-_HP Step Drills with Through Coolant

Primary Application

Most tapped holes require a chamfer. The B731_HP and B732_HP Step Drills offer a one-pass solution in steels and irons in traditional tap sizes to reduce cycle time and increase productivity.

Features and Benefits

HP Drill Point Design

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

Unique Flute Design

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

KC7315 Grade

- A multilayer, TiAlN-based coating with high hot hardness enables 100% higher cutting speeds.
- Optimized tool surface finish ensures chip evacuation in high-speed drilling and MQL applications.

Customization

- Intermediate diameters available as semi-standards.
- Using Kennametal Slimline Hydraulic Chucks together with standard B731_HP or B732_HP Drills is recommended if workpiece contours need to be bypassed.

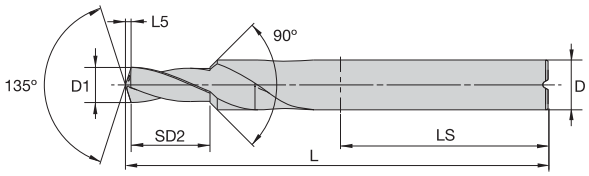
SE Drills – B731HP, B732HP Series – Grade KC7315 – Through Coolant

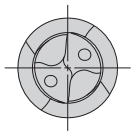
Starting Value	Cutting Speed		Tool diameter							
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3.0	4.0	6.0	8.0	10.0	12.0	16.0
P1	**Low-Carbon Steels, Long chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**					**Hardness (HB) or HRC: <125**	
			Feed rate by diameter							
722	sfm	424 727	ipr	.003 - .006	.003 - .008	.004 - .009	.005 - .011	.006- .013	.007 - .015	.007 - .017
220	m/min	140 240	mm/r	0,07 - 0,16	0,09 - 0,20	0,10 - 0,23	0,13 - 0,29	0,15 - 0,33	0,17 - 0,37	0,19 - 0,44
P2	**Low-Carbon Steels, Free Machining and Short Chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: <220**	
			Feed rate by diameter							
689	sfm	591 787	ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .009	.006- .010	.007 - .012	.007 - .014
210	m/min	180 240	mm/r	0,07 - 0,13	0,09 - 0,16	0,10 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30	0,19 - 0,35
P3	**Medium and High Plain-Carbon Steels, Low-alloyed**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**					**Hardness (HB) or HRC: <330**	
			Feed rate by diameter							
492	sfm	394 591	ipr	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.007- .013	.008 - .015	.010 - .017
150	m/min	120 180	mm/r	0,09 - 0,16	0,11 - 0,20	0,13 - 0,23	0,16- 0,29	0,19 - 0,33	0,21 - 0,37	0,25 - 0,44
P4	**Alloyed and Tempered Carbon Steels, Tool**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**					**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter							
459	sfm	328 591	ipr	.003 - .006	.004 - .007	.004 - .009	.006 - .011	.006- .012	.007 - .014	.008 - .016
140	m/min	100 180	mm/r	0,08 - 0,16	0,10 - 0,19	0,11 - 0,22	0,14 - 0,27	0,16 - 0,31	0,18 - 0,35	0,21 - 0,41
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content: C =.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**					**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter							
459	sfm	328 591	ipr	.003 - .005	.003 - .006	.004 - .006	.005 - .008	.006- .009	.006 - .010	.007 - .012
140	m/min	100 180	mm/r	0,07 - 0,12	0,09 - 0,14	0,10 - 0,16	0,12 - 0,20	0,14 - 0,23	0,16 - 0,26	0,18 - 0,31
K1	**Cast and Low-Strength Ductile Irons**			**Tensile Strength RM (MPa)*: 150-400**					**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter							
525	sfm	459 591	ipr	.004 - .007	.004 - .008	.005 - .010	.006 - .012	.007- .014	.008 - .015	.009 - .018
160	m/min	140 180	mm/r	0,09 - 0,17	0,11 - 0,21	0,12 - 0,25	0,15 - 0,31	0,18 - 0,35	0,20 - 0,39	0,23 - 0,46
K2	**Low and Medium Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**					**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter							
492	sfm	328 656	ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007- .012	.008 - .013	.009 - .015
150	m/min	100 200	mm/r	0,09 - 0,15	0,11 - 0,18	0,12 - 0,21	0,15 - 0,26	0,18 - 0,30	0,20 - 0,33	0,23 - 0,39
K3	**High Strength Ductile and Austempered Ductile Iron**			**Tensile Strength RM (MPa)*: 600-900**					**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter							
459	sfm	328 591	ipr	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.006- .010	.007 - .012	.008 - .014
140	m/min	100 180	mm/r	0,07 - 0,13	0,09 - 0,16	0,11 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30	0,20 - 0,35

* 1 MPa = 145 psi

Step Drills with Coolant

(A)





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 14	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

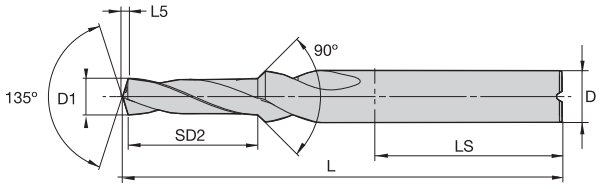
H		
S		
N		
K		●
M		
P		●

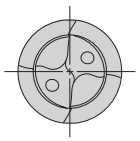
B731_HP

D1 mm	D1 inch	order number	catalog number	D	L	SD2	L5	LS	KC7315
4,200	.1654	3022101	B731A04200HP	6	66	13	0,7	36	●
5,000	.1969	3022102	B731A05000HP	8	79	15	0,8	36	●
6,800	.2677	3022383	B731A06800HP	10	89	18	1,1	40	●
8,500	.3346	3022384	B731A08500HP	12	102	21	1,4	45	●
10,200	.4016	3022385	B731A10200HP	14	107	25	1,7	45	●
10,500	.4134	3022386	B731A10500HP	14	107	25	1,7	45	●
12,000	.4724	3022387	B731A12000HP	16	115	30	1,9	48	●
12,500	.4921	3022388	B731A12500HP	16	115	30	2,0	48	●
14,000	.5512	3022389	B731A14000HP	18	123	33	2,3	48	●

Ordering Example:
By catalog number B731A04200HP KC7315, or by order number 3022101.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 14	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B732_HP

D1 mm	D1 inch	order number	catalog number	D	L	SD2	L5	LS	KC7315
4,20	.1654	3022390	B732A04200HP	6	66	18	0,7	36	●
5,00	.1969	3022391	B732A05000HP	8	79	22	0,8	36	●
6,80	.2677	3022392	B732A06800HP	10	89	27	1,1	40	●
8,50	.3346	3022393	B732A08500HP	12	102	32	1,4	45	●
10,20	.4016	3022394	B732A10200HP	14	107	38	1,7	45	●
10,50	.4134	3022395	B732A10500HP	14	107	38	1,7	45	●
12,00	.4724	3022396	B732A12000HP	16	115	43	1,9	48	●
12,50	.4921	3022397	B732A12500HP	16	115	43	2,0	48	●
14,00	.5512	3022398	B732A14000HP	18	123	47	2,3	48	●

Ordering Example:
By catalog number B732A04200HP KC7315, or by order number 3022390.

KENNAMETAL

Solid Carbide Drills

KENNA UNIVERSAL™ Drills

Primary Application

B966 & B976 Series Solid Carbide Drills are specifically engineered to deliver superior performance in steel, cast iron, and stainless steel applications. This universal application profile makes the drill ideal for small and medium sized shops.

Features and Benefits

KENNA UNIVERSAL Drill Point Design

- Low thrust.
- Excellent centering capabilities.

Four-Margin Land Design

- Improves hole straightness and roundness.
- Provides good alignment even when drilling through cross holes.

KC7315™ Grade

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

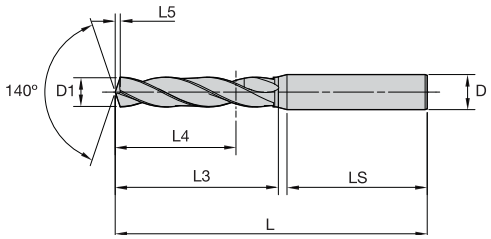
Customization

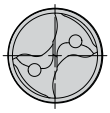
- Intermediate diameters available as semi-standards.
- Length variations and step drills available as custom solutions.

Kenna Universal Drills – B966 Series – Grade KC7315 – Flood Coolant

Starting Value	Cutting Speed												Tool diameter								
	sfm	49	98	164	262	328	394	492	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	30	50	80	100	120	150	200	250	300	350	mm	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P1	**Low-Carbon Steels, Long chipping**												**Content: C <.25%**			**Tensile Strength RM (MPa)*: <530**				**Hardness (HB) or HRC: <125**		
													Feed rate by diameter								
312	sfm				262				427				ipr	.002 - .005	.004 - .007	.005 - .009	.006 - .011	.007- .013	.008 - .015	.009 - .019	.012 - .024
95	m/min				80				130				mm/r	0,6 - 0,12	0,10- 0,18	0,12 - 0,24	0,14 - 0,29	0,17 - 0,34	0,2 - 0,39	0,24 - 0,47	0,31 - 0,60
P2	**Low-Carbon Steels, Free Machining and Short Chipping**												**Content: C <.25%**			**Tensile Strength RM (MPa)*: <650**				**Hardness (HB) or HRC: <220**		
													Feed rate by diameter								
377	sfm						328		427				ipr	.003 - .005	.004 - .007	.005 - .009	.006 - .011	.007- .013	.009 - .015	.011 - .019	.013 - .023
115	m/min						100		130				mm/r	0,07 - 0,12	0,09 - 0,18	0,13 - 0,24	0,16 - 0,29	0,19 - 0,34	0,22 - 0,39	0,27 - 0,47	0,34 - 0,59
P3	**Medium and High Plain-Carbon Steels, Low-alloyed**												**Content: C >.25%**			**Tensile Strength RM (MPa)*: 600-850**				**Hardness (HB) or HRC: <330**		
													Feed rate by diameter								
295	sfm					197				394			ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .012	.008- .014	.009 - .017	.011 - 0.020	.015 - .026
90	m/min					60				120			mm/r	0,07 - 0,13	0,10 - 0,19	0,14 - 0,25	0,17 - 0,31	0,21 - 0,37	0,24 - 0,42	0,29 - 0,52	0,38 - 0,65
P4	**Alloyed and Tempered Carbon Steels, Tool**												**Content: C >.25%**			**Tensile Strength RM (MPa)*: 800-1100**				**Hardness (HB) or HRC: 350-450**		
													Feed rate by diameter								
295	sfm					197				394			ipr	.003 - .005	.004 - .007	.005 - .01	.006 - .012	.007- .014	.008 - .017	.010 - .020	.013 - .026
90	m/min					60				120			mm/r	0,07 - 0,13	0,09 - 0,19	0,13 - 0,25	0,16 - 0,31	0,19- 0,37	0,21 - 0,42	0,26 - 0,52	0,32 - 0,65
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**												**Content: C =.1-.6%**			**Tensile Strength RM (MPa)*: 900-1350**				**Hardness (HB) or HRC: 350-450**		
													Feed rate by diameter								
180	sfm						131			230			ipr	.002 - .003	.002 - .004	.004 - .006	.004 - .008	.005- .009	.006 - .011	.008 - .014	.010 - .018
55	m/min						40			70			mm/r	0,05 - 0,08	0,06 - 0,11	0,09 - 0,16	0,11 - 0,2	0,13- 0,24	0,15 - 0,27	0,20 - 0,35	0,26 - 0,45
K1	**Cast and Low-Strength Ductile Irons**																**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**		
													Feed rate by diameter								
558	sfm							427				689	ipr	.003 - .006	.005 - .009	.006 - .012	.006 - .015	.009- .017	.010 - .019	.012 - .024	.015 - .029
170	m/min							100				210	mm/r	0,08 - 0,16	0,12 - 0,24	0,16 - 0,31	0,2 - 0,38	0,23- 0,44	0,25 - 0,49	0,31 - 0,6	0,38 - 0,74
K2	**Low and Medium Strength CGI and Ductile Irons**																**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**		
													Feed rate by diameter								
476	sfm							427			525		ipr	.003 - .005	.005 - .007	.006 - .010	.008 - .012	.009- .014	.010 - .016	.012 - .019	.015 - .024
145	m/min							130			160		mm/r	0,08 - 0,13	0,12 - 0,19	0,16 - 0,25	0,20 - 0,31	0,23- 0,36	0,25 - 0,40	0,31 - 0,48	0,38 - 0,60
K3	**High Strength Ductile and Austempered Ductile Iron**																**Tensile Strength RM (MPa)*: 600-900**				**Hardness (HB) or HRC: 180-350**		
													Feed rate by diameter								
443	sfm							328			558		ipr	.002 - .005	.004 - .007	.005 - .010	.006 - .012	.006- .014	.007 - .016	.010 - .019	.012 - .024
135	m/min							100			170		mm/r	0,06 - 0,13	0,09- 0,19	0,12 - 0,25	0,14 - 0,30	0,17- 0,35	0,19 - 0,40	0,25 - 0,48	0,30 - 0,60

* 1 MPa = 145 psi





Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

B966

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	.1181	1913052	B966A03000	6	62	20	14	0,5	36	●
3,100	.1220	2273318	B966A03100	6	62	20	14	0,5	36	●
3,200	.1260	1961108	B966A03200	6	62	20	14	0,5	36	●
3,300	.1300	2213696	B966A03300	6	62	20	14	0,5	36	●
3,400	.1339	2408266	B966A03400	6	62	20	14	0,6	36	●
3,500	.1378	1913458	B966A03500	6	62	20	14	0,6	36	●
3,600	.1417	2425117	B966A03600	6	62	20	14	0,6	36	●
3,700	.1457	1913459	B966A03700	6	62	20	14	0,6	36	●
3,800	.1496	1913460	B966A03800	6	66	24	17	0,6	36	●
3,900	.1535	2040682	B966A03900	6	66	24	17	0,6	36	●
4,000	.1575	1913461	B966A04000	6	66	24	17	0,7	36	●
4,100	.1614	2425113	B966A04100	6	66	24	17	0,7	36	●
4,200	.1654	1913462	B966A04200	6	66	24	17	0,7	36	●
4,300	.1693	2213700	B966A04300	6	66	24	17	0,7	36	●
4,400	.1732	2213701	B966A04400	6	66	24	17	0,7	36	●
4,500	.1772	1913473	B966A04500	6	66	24	17	0,7	36	●
4,600	.1811	1913474	B966A04600	6	66	24	17	0,8	36	●
4,700	.1850	2256916	B966A04700	6	66	24	17	0,8	36	●
4,800	.1890	1913475	B966A04800	6	66	28	20	0,8	36	●
4,900	.1929	2425114	B966A04900	6	66	28	20	0,8	36	●
5,000	.1969	1913476	B966A05000	6	66	28	20	0,8	36	●
5,100	.2007	1995000	B966A05100	6	66	28	20	0,8	36	●
5,200	.2047	2250824	B966A05200	6	66	28	20	0,9	36	●
5,300	.2087	2045222	B966A05300	6	66	28	20	0,9	36	●
5,400	.2126	2425115	B966A05400	6	66	28	20	0,9	36	●
5,500	.2165	1913477	B966A05500	6	66	28	20	0,9	36	●
5,600	.2205	2242390	B966A05600	6	66	28	20	0,9	36	●
5,700	.2244	1913478	B966A05700	6	66	28	20	1,0	36	●
5,800	.2283	1913479	B966A05800	6	66	28	20	1,0	36	●
5,900	.2322	1957789	B966A05900	6	66	28	20	1,0	36	●
6,000	.2362	1913480	B966A06000	6	66	28	20	1,0	36	●
6,100	.2402	2220855	B966A06100	8	79	34	24	1,0	36	●
6,200	.2441	1982397	B966A06200	8	79	34	24	1,0	36	●
6,300	.2480	2404438	B966A06300	8	79	34	24	1,1	36	●
6,400	.2520	2037058	B966A06400	8	79	34	24	1,1	36	●
6,500	.2559	1913481	B966A06500	8	79	34	24	1,1	36	●
6,600	.2598	2220856	B966A06600	8	79	34	24	1,1	36	●
6,700	.2638	1985037	B966A06700	8	79	34	24	1,1	36	●
6,800	.2677	1913482	B966A06800	8	79	34	24	1,1	36	●
6,900	.2717	1988099	B966A06900	8	79	34	24	1,2	36	●
7,000	.2756	1913483	B966A07000	8	79	34	24	1,2	36	●
7,100	.2795	2425118	B966A07100	8	79	41	29	1,2	36	●

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B966

(continued from previous page)

● first choice
○ alternate choice

										H
										S
										N
										K
										M
										P

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
7,200	.2835	2231579	B966A07200	8	79	41	29	1,2	36	●
7,300	.2874	2425119	B966A07300	8	79	41	29	1,2	36	●
7,400	.2913	1913484	B966A07400	8	79	41	29	1,3	36	●
7,500	.2953	1913485	B966A07500	8	79	41	29	1,3	36	●
7,600	.2992	2425120	B966A07600	8	79	41	29	1,3	36	●
7,700	.3031	2217005	B966A07700	8	79	41	29	1,3	36	●
7,800	.3071	1913486	B966A07800	8	79	41	29	1,3	36	●
7,900	.3110	1988100	B966A07900	8	79	41	29	1,3	36	●
8,000	.3150	1913487	B966A08000	8	79	41	29	1,4	36	●
8,100	.3189	1997389	B966A08100	10	89	47	35	1,4	40	●
8,200	.3228	1985038	B966A08200	10	89	47	35	1,4	40	●
8,300	.3268	2403807	B966A08300	10	89	47	35	1,4	40	●
8,400	.3307	2203486	B966A08400	10	89	47	35	1,4	40	●
8,500	.3346	1913488	B966A08500	10	89	47	35	1,4	40	●
8,600	.3386	1995002	B966A08600	10	89	47	35	1,5	40	●
8,700	.3425	2425143	B966A08700	10	89	47	35	1,5	40	●
8,800	.3465	1913489	B966A08800	10	89	47	35	1,5	40	●
8,900	.3504	2425145	B966A08900	10	89	47	35	1,5	40	●
9,000	.3543	1913490	B966A09000	10	89	47	35	1,5	40	●
9,100	.3583	2425146	B966A09100	10	89	47	35	1,6	40	●
9,200	.3622	2273321	B966A09200	10	89	47	35	1,6	40	●
9,300	.3661	1913491	B966A09300	10	89	47	35	1,6	40	●
9,400	.3701	1995073	B966A09400	10	89	47	35	1,6	40	●
9,500	.3740	1913492	B966A09500	10	89	47	35	1,6	40	●
9,600	.3780	1998947	B966A09600	10	89	47	35	1,6	40	●
9,700	.3819	2425149	B966A09700	10	89	47	35	1,7	40	●
9,800	.3858	1913493	B966A09800	10	89	47	35	1,7	40	●
9,900	.3898	2256252	B966A09900	10	89	47	35	1,7	40	●
10,000	.3937	1913494	B966A10000	10	89	47	35	1,7	40	●
10,100	.3976	1995074	B966A10100	12	102	55	40	1,7	45	●
10,200	.4016	1913495	B966A10200	12	102	55	40	1,7	45	●
10,300	.4055	2227338	B966A10300	12	102	55	40	1,8	45	●
10,400	.4094	1992232	B966A10400	12	102	55	40	1,8	45	●
10,500	.4134	1913496	B966A10500	12	102	55	40	1,8	45	●
10,600	.4173	2043136	B966A10600	12	102	55	40	1,8	45	●
10,700	.4213	1913497	B966A10700	12	102	55	40	1,8	45	●
10,800	.4252	2229055	B966A10800	12	102	55	40	1,9	45	●
10,900	.4291	2425151	B966A10900	12	102	55	40	1,9	45	●
11,000	.4331	1913498	B966A11000	12	102	55	40	1,9	45	●
11,100	.4370	2425173	B966A11100	12	102	55	40	1,9	45	●
11,200	.4409	1913499	B966A11200	12	102	55	40	1,9	45	●
11,300	.4449	2214926	B966A11300	12	102	55	40	1,9	45	●
11,400	.4488	1995075	B966A11400	12	102	55	40	2,0	45	●
11,500	.4528	1913500	B966A11500	12	102	55	40	2,0	45	●
11,600	.4567	2043137	B966A11600	12	102	55	40	2,0	45	●
11,700	.4606	1913501	B966A11700	12	102	55	40	2,0	45	●
11,800	.4646	1997391	B966A11800	12	102	55	40	2,0	45	●
11,900	.4685	2425176	B966A11900	12	102	55	40	2,0	45	●

(continued on next page)

B966

(continued from previous page)

● first choice
○ alternate choice

H	
S	
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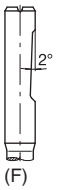
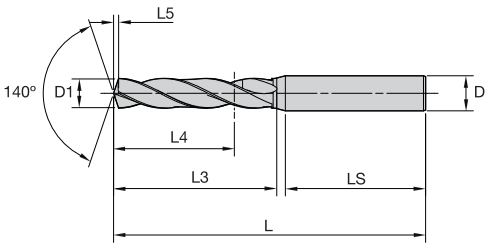
K	●
M	
P	●

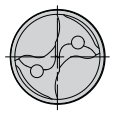
D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
12,000	.4724	1913502	B966A12000	12	102	55	40	2,1	45	●
12,100	.4764	1995076	B966A12100	14	107	60	43	2,1	45	●
12,200	.4803	2425178	B966A12200	14	107	60	43	2,1	45	●
12,300	.4843	2231830	B966A12300	14	107	60	43	2,1	45	●
12,400	.4882	2425203	B966A12400	14	107	60	43	2,1	45	●
12,500	.4921	1913503	B966A12500	14	107	60	43	2,2	45	●
12,600	.4961	1991229	B966A12600	14	107	60	43	2,2	45	●
12,700	.5000	1913504	B966A12700	14	107	60	43	2,2	45	●
12,800	.5039	2425205	B966A12800	14	107	60	43	2,2	45	●
12,900	.5079	2425206	B966A12900	14	107	60	43	2,2	45	●
13,000	.5118	1913505	B966A13000	14	107	60	43	2,2	45	●
13,100	.5157	3024745	B966A13100	14	107	60	43	2,3	45	●
13,200	.5157	1972376	B966A13200	14	107	60	43	2,3	45	●
13,300	.5236	2204116	B966A13300	14	107	60	43	2,3	45	●
13,500	.5315	1913506	B966A13500	14	107	60	43	2,3	45	●
13,700	.5394	1913507	B966A13700	14	107	60	43	2,4	45	●
14,000	.5512	1913508	B966A14000	14	107	60	43	2,4	45	●
14,200	.5591	2425233	B966A14200	16	115	65	45	2,5	48	●
14,300	.5630	2248306	B966A14300	16	115	65	45	2,5	48	●
14,500	.5709	1913509	B966A14500	16	115	65	45	2,5	48	●
14,700	.5787	1913510	B966A14700	16	115	65	45	2,5	48	●
14,800	.5827	2220857	B966A14800	16	115	65	45	2,6	48	●
15,000	.5906	1913511	B966A15000	16	115	65	45	2,6	48	●
15,500	.6102	1913512	B966A15500	16	115	65	45	2,7	48	●
15,700	.6181	1913513	B966A15700	16	115	65	45	2,7	48	●
16,000	.6299	1913514	B966A16000	16	115	65	45	2,8	48	●

Ordering Example:
By catalog number B966A03000 KC7315, or by order number 1913052.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.







Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011

● first choice
○ alternate choice

H		
S		
N		
K		●
M		○
P		●

B966

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,000	.1181	1913652	B966F03000	6	62	20	14	0,5	36	●
3,300	.1299	2428793	B966F03300	6	62	20	14	0,5	36	●
3,400	.1339	2264867	B966F03400	6	62	20	14	0,6	36	●
3,500	.1378	1913653	B966F03500	6	62	20	14	0,6	36	●
3,600	.1417	2264869	B966F03600	6	62	20	14	0,6	36	●
3,900	.1535	2264900	B966F03900	6	66	24	17	0,6	36	●
4,000	.1575	1913656	B966F04000	6	66	24	17	0,7	36	●
4,200	.1654	1913657	B966F04200	6	66	24	17	0,7	36	●
5,000	.1969	1913661	B966F05000	6	66	28	20	0,8	36	●
5,100	.2008	2264973	B966F05100	6	66	28	20	0,8	36	●
5,200	.2047	2264992	B966F05200	6	66	28	20	0,9	36	●
5,300	.2087	2251799	B966F05300	6	66	28	20	0,9	36	●
5,500	.2165	1913662	B966F05500	6	66	28	20	0,9	36	●
5,600	.2205	2265006	B966F05600	6	66	28	20	0,9	36	●
5,900	.2323	2265007	B966F05900	6	66	28	20	1,0	36	●
6,000	.2362	1913665	B966F06000	6	66	28	20	1,0	36	●
6,300	.2480	2265002	B966F06300	8	79	34	24	1,1	36	●
6,400	.2520	1969942	B966F06400	8	79	34	24	1,1	36	●
6,500	.2559	1913666	B966F06500	8	79	34	24	1,1	36	●
6,700	.2638	2264990	B966F06700	8	79	34	24	1,1	36	●
6,800	.2677	1913667	B966F06800	8	79	34	24	1,1	36	●
7,000	.2756	1913668	B966F07000	8	79	34	24	1,2	36	●
7,100	.2795	2265022	B966F07100	8	79	41	29	1,2	36	●
7,300	.2874	2265003	B966F07300	8	79	41	29	1,2	36	●
7,400	.2913	1913669	B966F07400	8	79	41	29	1,3	36	●
7,600	.2992	2265023	B966F07600	8	79	41	29	1,3	36	●
8,000	.3150	1913672	B966F08000	8	79	41	29	1,4	36	●
8,200	.3228	2251802	B966F08200	10	89	47	35	1,4	40	●
8,400	.3307	1970003	B966F08400	10	89	47	35	1,4	40	●
8,500	.3346	1913673	B966F08500	10	89	47	35	1,4	40	●
8,700	.3425	2264891	B966F08700	10	89	47	35	1,5	40	●
9,000	.3543	1913675	B966F09000	10	89	47	35	1,5	40	●

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B966

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● first choice
○ alternate choice

										H
										S
										N
										K
										M
										P
D1										KC7315
mm	inch	order number	catalog number	D	L	L3	L4 max	L5	LS	
9,100	.3583	2264958	B966F09100	10	89	47	35	1,5	40	●
9,500	.3740	1913677	B966F09500	10	89	47	35	1,6	40	●
10,000	.3937	1913679	B966F10000	10	89	47	35	1,7	40	●
10,200	.4016	1913680	B966F10200	12	102	55	40	1,7	45	●
10,400	.4094	2264985	B966F10400	12	102	55	40	1,8	45	●
10,500	.4134	1913681	B966F10500	12	102	55	40	1,8	45	●
10,600	.4173	2264986	B966F10600	12	102	55	40	1,8	45	●
10,700	.4213	1913682	B966F10700	12	102	55	40	1,8	45	●
10,800	.4252	2264936	B966F10800	12	102	55	40	1,8	45	●
11,000	.4331	1913683	B966F11000	12	102	55	40	1,9	45	●
11,800	.4646	2264988	B966F11800	12	102	55	40	2,0	45	●
12,000	.4724	1913687	B966F12000	12	102	55	40	2,1	45	●
12,100	.4764	2428802	B966F12100	14	107	60	43	2,1	45	●
12,200	.4803	2428856	B966F12200	14	107	60	43	2,1	45	●
12,500	.4921	1913688	B966F12500	14	107	60	43	2,2	45	●
12,700	.5000	1913689	B966F12700	14	107	60	43	2,2	45	●
13,000	.5118	1913690	B966F13000	14	107	60	43	2,2	45	●
13,500	.5315	1913691	B966F13500	14	107	60	43	2,3	45	●
14,000	.5512	1913693	B966F14000	14	107	60	43	2,4	45	●
14,500	.5709	1913694	B966F14500	16	115	65	45	2,5	48	●
15,000	.5906	1913696	B966F15000	16	115	65	45	2,6	48	●
16,000	.6299	1913699	B966F16000	16	115	65	45	2,8	48	●
16,500	.6496	2264918	B966F16500	18	123	73	51	2,9	48	●
17,000	.6693	2264892	B966F17000	18	123	73	51	2,9	48	●
17,500	.6890	2264920	B966F17500	18	123	73	51	3,0	48	●
18,000	.7087	2264893	B966F18000	18	123	73	51	3,1	48	●

Ordering Example:
By catalog number B966F03000 KC7315, or by order number 1913652.

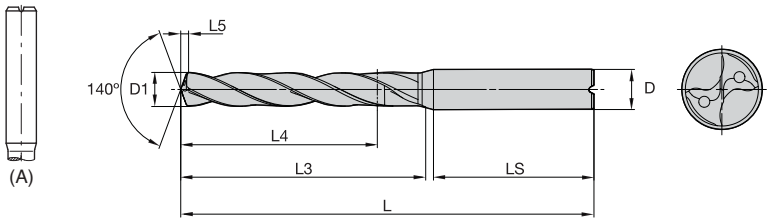
To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Kenna Universal Drills – B976, B977, B978 – Grade KC7315 Series – Through Coolant

Starting Value	Cutting Speed			Tool diameter								
	sfm	49 98 164 242 328 394 462 656 820 984 1148		inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350		mm	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0
P1	**Low-Carbon Steels, Long chipping**			**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**				**Hardness (HB) or HRC: <125**		
				Feed rate by diameter								
427	sfm	295	558	ipr	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.009 - .019	.012 - .024
130	m/min	90	170	mm/r	0,08 - 0,16	0,09 - 0,18	0,12 - 0,24	0,14 - 0,29	0,17 - 0,34	0,20 - 0,39	0,24 - 0,47	0,31 - 0,60
P2	**Low-Carbon Steels, Free Machining and Short Chipping**			**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**				**Hardness (HB) or HRC: <220**		
				Feed rate by diameter								
476	sfm	361	591	ipr	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.009 - .015	.011 - .019	.013 - .023
145	m/min	110	180	mm/r	0,08 - 0,16	0,09 - 0,18	0,13 - 0,24	0,16 - 0,29	0,19 - 0,34	0,22 - 0,39	0,27 - 0,47	0,34 - 0,59
P3	**Medium and High Plain-Carbon Steels, Low-alloyed**			**Content: C >.25%**		**Tensile Strength RM (MPa)*: 600-850**				**Hardness (HB) or HRC: <330**		
				Feed rate by diameter								
328	sfm	262	394	ipr	.004 - .007	.004 - .007	.005 - .010	.007 - .012	.008 - .014	.009 - .017	.011 - .020	.015 - .026
100	m/min	80	120	mm/r	0,09 - 0,17	0,10 - 0,19	0,14 - 0,25	0,17 - 0,31	0,21 - 0,37	0,24 - 0,42	0,29 - 0,52	0,38 - 0,65
P4	**Alloyed and Tempered Carbon Steels, Tool**			**Content: C >.25%**		**Tensile Strength RM (MPa)*: 800-1100**				**Hardness (HB) or HRC: 350-450**		
				Feed rate by diameter								
312	sfm	230	394	ipr	.003 - .007	.004 - .007	.005 - .010	.006 - .012	0.07 - .014	.008 - .017	.010 - .020	.013 - .026
95	m/min	70	120	mm/r	0,08 - 0,17	0,09 - 0,19	0,13 - 0,25	0,16 - 0,31	0,19 - 0,37	0,21 - 0,42	0,26 - 0,52	0,32 - 0,65
P6	**High Strength Ferritic, Martensitic, and PH Stainless Steels**			**Content: C =.1-.6%**		**Tensile Strength RM (MPa)*: 900-1350**				**Hardness (HB) or HRC: 350-450**		
				Feed rate by diameter								
213	sfm	164	262	ipr	.002 - .004	.002 - .004	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .014	.010 - .018
65	m/min	50	80	mm/r	0,05 - 0,09	0,06 - 0,11	0,09 - 0,16	0,11 - 0,20	0,14 - 0,24	0,15 - 0,27	0,20 - 0,35	0,26 - 0,45
K1	**Cast and Low-Strength Ductile Irons**					**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**		
				Feed rate by diameter								
509	sfm	328	689	ipr	.004 - .009	.005 - .009	.006 - .012	.008 - .015	.009 - .017	.010 - .019	.012 - .024	.015 - .029
155	m/min	100	210	mm/r	0,11 - 0,22	0,12 - 0,24	0,16 - 0,31	0,20 - 0,38	0,23 - 0,44	0,25 - 0,49	0,31 - 0,60	0,38 - 0,74
K2	**Low and Medium Strength CGI and Ductile Irons**					**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**		
				Feed rate by diameter								
459	sfm	328	591	ipr	.004 - .007	.005 - .007	.006 - .010	.008 - .012	.009 - .014	.010 - .016	.012 - .019	.015 - .024
140	m/min	100	180	mm/r	0,11 - 0,17	0,12 - 0,19	0,16 - 0,25	0,20 - 0,31	0,23 - 0,36	0,25 - 0,40	0,31 - 0,48	0,38 - 0,60
K3	**High Strength Ductile and Austempered Ductile Iron**					**Tensile Strength RM (MPa)*: 600-900**				**Hardness (HB) or HRC: 180-350**		
				Feed rate by diameter								
427	sfm	328	525	ipr	.003 - .007	.004 - .007	.005 - .010	.006 - .012	.006 - .014	.007 - .016	.009 - .019	.012 - .024
130	m/min	100	160	mm/r	0,08 - 0,17	0,09 - 0,19	0,12 - 0,25	0,14 - 0,30	0,17 - 0,35	0,19 - 0,40	0,24 - 0,48	0,30 - 0,60

* 1 MPa = 145 psi

Kenna Universal Drills with Coolant



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

B976

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1181	–	3,000	2878592	B976A03000	6	62	20	14	0,5	36	●
.1220	–	3,100	3005956	B976A03100	6	62	20	14	0,5	36	●
.1260	–	3,200	3110522	B976A03200	6	62	20	14	0,5	36	●
.1417	–	3,600	3110544	B976A03600	6	62	20	14	0,6	36	●
.1563	5/32	3,970	2649363	B976A03970	6	66	24	17	0,7	36	●
.1575	–	4,000	1913515	B976A04000	6	66	24	17	0,7	36	●
.1654	–	4,200	1913516	B976A04200	6	66	24	17	0,7	36	●
.1693	–	4,300	2276088	B976A04300	6	66	24	17	0,7	36	●
.1772	–	4,500	1913517	B976A04500	6	66	24	17	0,7	36	●
.1811	–	4,600	1913518	B976A04600	6	66	24	17	0,8	36	●
.1875	3/16	4,763	2649364	B976A04763	6	66	28	20	0,8	36	●
.1890	–	4,800	1913519	B976A04800	6	66	28	20	0,8	36	●
.1929	–	4,900	2397687	B976A04900	6	66	28	20	0,8	36	●
.1969	–	5,000	1913520	B976A05000	6	66	28	20	0,8	36	●
.2008	–	5,100	2385356	B976A05100	6	66	28	20	0,9	36	●
.2047	–	5,200	1984183	B976A05200	6	66	28	20	0,9	36	●
.2087	–	5,300	1988932	B976A05300	6	66	28	20	0,9	36	●
.2126	–	5,400	2264538	B976A05400	6	66	28	20	0,9	36	●
.2165	–	5,500	1913521	B976A05500	6	66	28	20	0,9	36	●
.2188	7/32	5,575	2649365	B976A05575	6	66	28	20	0,9	36	●
.2205	–	5,600	2224587	B976A05600	6	66	28	20	0,9	36	●
.2244	–	5,700	1913522	B976A05700	6	66	28	20	1,0	36	●
.2283	–	5,800	1913523	B976A05800	6	66	28	20	1,0	36	●
.2362	–	6,000	1913524	B976A06000	6	66	28	20	1,0	36	●
.2441	–	6,200	1986773	B976A06200	8	79	34	24	1,0	36	●
.2500	1/4	6,350	2649366	B976A06350	8	79	34	24	1,1	36	●
.2559	–	6,500	1913525	B976A06500	8	79	34	24	1,1	36	●
.2598	–	6,600	2231776	B976A06600	8	79	34	24	1,1	36	●
.2656	17/64	6,747	2649367	B976A06746	8	79	34	24	1,1	36	●
.2677	–	6,800	1913526	B976A06800	8	79	34	24	1,1	36	●
.2756	–	7,000	1913527	B976A07000	8	79	34	24	1,2	36	●
.2813	9/32	7,145	2649368	B976A07145	8	79	41	29	1,2	36	●
.2835	–	7,200	3110545	B976A07200	8	79	41	29	1,2	36	●
.2913	–	7,400	1913528	B976A07400	8	79	41	29	1,3	36	●
.2953	–	7,500	1913529	B976A07500	8	79	41	29	1,3	36	●
.2969	19/64	7,541	2649369	B976A07541	8	79	41	29	1,3	36	●

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B976

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● first choice
○ alternate choice

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	H S N K M P KC7315
.3071	–	7,800	1913530	B976A07800	8	79	41	29	1,3	36	●
.3110	–	7,900	2397689	B976A07900	8	79	41	29	1,3	36	●
.3125	5/16	7,938	2649370	B976A07938	8	79	41	29	1,3	36	●
.3150	–	8,000	1913531	B976A08000	8	79	41	29	1,4	36	●
.3189	–	8,100	2036154	B976A08100	10	89	47	35	1,4	40	●
.3228	–	8,200	2390961	B976A08200	10	89	47	35	1,4	40	●
.3268	–	8,300	2231777	B976A08300	10	89	47	35	1,4	40	●
.3281	21/64	8,334	2649371	B976A08334	10	89	47	35	1,4	40	●
.3346	–	8,500	1913532	B976A08500	10	89	47	35	1,4	40	●
.3386	–	8,600	2222651	B976A08600	10	89	47	35	1,5	40	●
.3425	–	8,700	1988983	B976A08700	10	89	47	35	1,5	40	●
.3438	11/32	8,733	2649372	B976A08733	10	89	47	35	1,5	40	●
.3465	–	8,800	1913533	B976A08800	10	89	47	35	1,5	40	●
.3543	–	9,000	1913534	B976A09000	10	89	47	35	1,5	40	●
.3583	–	9,100	2224588	B976A09100	10	89	47	35	1,6	40	●
.3594	23/64	9,129	2649373	B976A09129	10	89	47	35	1,6	40	●
.3622	–	9,200	2408308	B976A09200	10	89	47	35	1,6	40	●
.3661	–	9,300	1913535	B976A09300	10	89	47	35	1,6	40	●
.3740	–	9,500	1913536	B976A09500	10	89	47	35	1,6	40	●
.3750	3/8	9,525	2649374	B976A09525	10	89	47	35	1,6	40	●
.3780	–	9,600	2231778	B976A09600	10	89	47	35	1,6	40	●
.3819	–	9,700	1961106	B976A09700	10	89	47	35	1,7	40	●
.3858	–	9,800	1913537	B976A09800	10	89	47	35	1,7	40	●
.3906	25/64	9,921	2649375	B976A09921	10	89	47	35	1,7	40	●
.3937	–	10,000	1913538	B976A10000	10	89	47	35	1,7	40	●
.4016	–	10,200	1913539	B976A10200	12	102	55	40	1,7	45	●
.4063	13/32	10,320	2649376	B976A10320	12	102	55	40	1,8	45	●
.4134	–	10,500	1913540	B976A10500	12	102	55	40	1,8	45	●
.4213	–	10,700	1913541	B976A10700	12	102	55	40	1,8	45	●
.4219	27/64	10,716	2649377	B976A10716	12	102	55	40	1,8	45	●
.4252	–	10,800	2388784	B976A10800	12	102	55	40	1,9	45	●
.4331	–	11,000	1913542	B976A11000	12	102	55	40	1,9	45	●
.4375	7/16	11,113	2649378	B976A11113	12	102	55	40	1,9	45	●
.4409	–	11,200	1913543	B976A11200	12	102	55	40	1,9	45	●
.4528	–	11,500	1913544	B976A11500	12	102	55	40	2,0	45	●
.4531	29/64	11,509	2649379	B976A11509	12	102	55	40	2,0	45	●

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● first choice
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	D1										H
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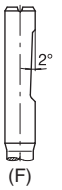
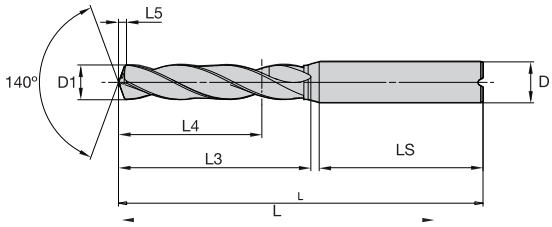
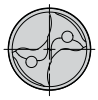
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.4606	–	11,700	1913545	B976A11700	12	102	55	40	2,0	45	●
.4688	15/32	11,908	2649380	B976A11908	12	102	55	40	2,0	45	●
.4724	–	12,000	1913546	B976A12000	12	102	55	40	2,1	45	●
.4843	–	12,300	2419790	B976A12300	14	107	60	43	2,1	45	●
.4844	31/64	12,304	2649381	B976A12304	14	107	60	43	2,1	45	●
.4921	–	12,500	1913547	B976A12500	14	107	60	43	2,2	45	●
.5000	–	12,700	1913548	B976A12700	14	107	60	43	2,2	45	●
.5039	–	12,800	2227984	B976A12800	14	107	60	43	2,2	45	●
.5118	–	13,000	1913549	B976A13000	14	107	60	43	2,2	45	●
.5236	–	13,300	2217898	B976A13300	14	107	60	43	2,3	45	●
.5315	–	13,500	1913550	B976A13500	14	107	60	43	2,3	45	●
.5394	–	13,700	1913551	B976A13700	14	107	60	43	2,4	45	●
.5512	–	14,000	1913552	B976A14000	14	107	60	43	2,4	45	●
.5551	–	14,100	2226630	B976A14100	16	115	65	45	2,4	48	●
.5591	–	14,200	2404108	B976A14200	16	115	65	45	2,5	48	●
.5625	9/16	14,288	2649382	B976A14288	16	115	65	45	2,5	48	●
.5709	–	14,500	1913553	B976A14500	16	115	65	45	2,5	48	●
.5787	–	14,700	1913554	B976A14700	16	115	65	45	2,5	48	●
.5906	–	15,000	1913555	B976A15000	16	115	65	45	2,6	48	●
.6102	–	15,500	1913556	B976A15500	16	115	65	45	2,7	48	●
.6250	5/8	15,875	2649383	B976A15875	16	115	65	45	2,7	48	●
.6299	–	16,000	1913558	B976A16000	16	115	65	45	2,8	48	●
.6496	–	16,500	1913559	B976A16500	18	123	73	51	2,9	48	●
.6614	–	16,800	2045867	B976A16800	18	123	73	51	2,9	48	●
.6693	–	17,000	1913560	B976A17000	18	123	73	51	2,9	48	●
.6732	–	17,100	2397289	B976A17100	18	123	73	51	3,0	48	●
.6875	11/16	17,463	2649384	B976A17463	18	123	73	51	3,0	48	●
.6890	–	17,500	1913561	B976A17500	18	123	73	51	3,0	48	●
.7087	–	18,000	1913562	B976A18000	18	123	73	51	3,1	48	●
.7480	–	19,000	1913564	B976A19000	20	131	79	55	3,3	50	●
.7500	3/4	19,050	2649385	B976A19050	20	131	79	55	3,3	50	●
.7756	–	19,700	2044834	B976A19700	20	131	79	55	3,4	50	●
.7874	–	20,000	1913566	B976A20000	20	131	79	55	3,5	50	●

Ordering Example:
By catalog number B976A03000 KC7315, or by order number 2878592.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.







Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

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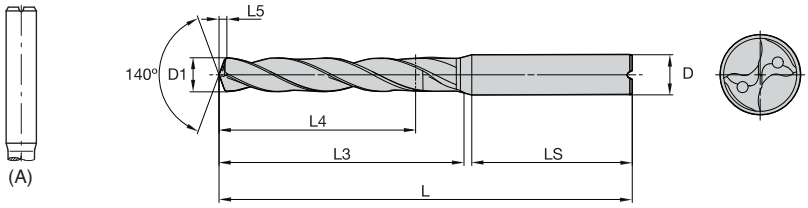
B976

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
4,200	.1654	1913701	B976F04200	6	66	24	17	0,7	36	●
5,000	.1969	1913705	B976F05000	6	66	28	20	0,8	36	●
5,800	.2283	1913708	B976F05800	6	66	28	20	1,0	36	●
6,000	.2362	1913709	B976F06000	6	66	28	20	1,0	36	●
6,300	.2480	2264976	B976F06300	8	79	34	24	1,1	36	●
6,400	.2520	2264977	B976F06400	8	79	34	24	1,1	36	●
6,800	.2677	1913711	B976F06800	8	79	34	24	1,1	36	●
7,000	.2756	1913712	B976F07000	8	79	34	24	1,2	36	●
7,300	.2874	2264980	B976F07300	8	79	41	29	1,2	36	●
8,000	.3150	1913716	B976F08000	8	79	41	29	1,4	36	●
8,300	.3268	2264941	B976F08300	10	89	47	35	1,4	40	●
8,500	.3346	1913717	B976F08500	10	89	47	35	1,4	40	●
8,700	.3425	2264898	B976F08700	10	89	47	35	1,5	40	●
8,800	.3465	1913718	B976F08800	10	89	47	35	1,5	40	●
9,000	.3543	1913719	B976F09000	10	89	47	35	1,5	40	●
10,000	.3937	1913723	B976F10000	10	89	47	35	1,7	40	●
10,200	.4016	1913724	B976F10200	12	102	55	40	1,7	45	●
10,700	.4213	1913726	B976F10700	12	102	55	40	1,8	45	●
10,800	.4252	2264912	B976F10800	12	102	55	40	1,8	45	●
11,000	.4331	1913727	B976F11000	12	102	55	40	1,9	45	●
11,700	.4606	1913730	B976F11700	12	102	55	40	2,0	45	●
12,000	.4724	1913731	B976F12000	12	102	55	40	2,1	45	●
12,500	.4921	1913732	B976F12500	14	107	60	43	2,2	45	●
12,700	.5000	1913733	B976F12700	14	107	60	43	2,2	45	●
13,000	.5118	1913734	B976F13000	14	107	60	43	2,2	45	●
13,700	.5394	1913736	B976F13700	14	107	60	43	2,4	45	●
14,000	.5512	1913737	B976F14000	14	107	60	43	2,4	45	●
17,000	.6693	1913745	B976F17000	18	123	73	51	2,9	48	●
18,000	.7087	1913747	B976F18000	18	123	73	51	3,1	48	●

Ordering Example:
By catalog number B976F04200 KC7315, or by order number 1913701.

Kenna Universal Drills with Coolant



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
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B977

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1181	–	3,000	2425285	B977A03000	6	66	28	23	0,5	36	●
.1220	–	3,100	2425288	B977A03100	6	66	28	23	0,5	36	●
.1260	–	3,200	2425290	B977A03200	6	66	28	23	0,5	36	●
.1299	–	3,300	1959665	B977A03300	6	66	28	23	0,5	36	●
.1339	–	3,400	2425292	B977A03400	6	66	28	23	0,6	36	●
.1378	–	3,500	2425303	B977A03500	6	66	28	23	0,6	36	●
.1417	–	3,600	2425304	B977A03600	6	66	28	23	0,6	36	●
.1457	–	3,700	2425305	B977A03700	6	66	28	23	0,6	36	●
.1496	–	3,800	2425306	B977A03800	6	74	36	29	0,6	36	●
.1535	–	3,900	2203489	B977A03900	6	74	36	29	0,6	36	●
.1563	5/32	3,970	2649386	B977A03970	6	74	36	29	0,7	36	●
.1575	–	4,000	1913567	B977A04000	6	74	36	29	0,7	36	●
.1614	–	4,100	2416279	B977A04100	6	74	36	29	0,7	36	●
.1654	–	4,200	1913568	B977A04200	6	74	36	29	0,7	36	●
.1693	–	4,300	2040680	B977A04300	6	74	36	29	0,7	36	●
.1732	–	4,400	2425309	B977A04400	6	74	36	29	0,7	36	●
.1772	–	4,500	1913569	B977A04500	6	74	36	29	0,7	36	●
.1803	–	4,580	2649387	B977A04580	6	74	36	29	0,8	36	●
.1811	–	4,600	1913570	B977A04600	6	74	36	29	0,8	36	●
.1820	–	4,623	2649388	B977A04623	6	74	36	29	0,8	36	●
.1850	–	4,700	2425310	B977A04700	6	74	36	29	0,8	36	●
.1875	3/16	4,763	2649389	B977A04763	6	82	44	35	0,8	36	●
.1890	–	4,800	1913571	B977A04800	6	82	44	35	0,8	36	●
.1929	–	4,900	2396971	B977A04900	6	82	44	35	0,8	36	●
.1969	–	5,000	1913572	B977A05000	6	82	44	35	0,8	36	●
.2008	–	5,100	2049487	B977A05100	6	82	44	35	0,9	36	●
.2047	–	5,200	1975006	B977A05200	6	82	44	35	0,9	36	●
.2087	–	5,300	2202510	B977A05300	6	82	44	35	0,9	36	●
.2126	–	5,400	2425311	B977A05400	6	82	44	35	0,9	36	●
.2130	–	5,410	2649390	B977A05410	6	82	44	35	0,9	36	●
.2165	–	5,500	1913573	B977A05500	6	82	44	35	0,9	36	●
.2188	7/32	5,558	2649391	B977A05558	6	82	44	35	0,9	36	●
.2205	–	5,600	1959664	B977A05600	6	82	44	35	0,9	36	●
.2244	–	5,700	1988931	B977A05700	6	82	44	35	1,0	36	●
.2283	–	5,800	1913574	B977A05800	6	82	44	35	1,0	36	●
.2323	–	5,900	2228362	B977A05900	6	82	44	35	1,0	36	●
.2362	–	6,000	1913575	B977A06000	6	82	44	35	1,0	36	●
.2402	–	6,100	2043779	B977A06100	8	91	53	43	1,0	36	●
.2441	–	6,200	2425323	B977A06200	8	91	53	43	1,0	36	●
.2480	–	6,300	2425324	B977A06300	8	91	53	43	1,1	36	●
.2500	1/4	6,350	2383552	B977A06350	8	91	53	43	1,1	36	●
.2520	–	6,400	2383778	B977A06400	8	91	53	43	1,1	36	●

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● first choice
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	D1										
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.2559	–	6,500	1913576	B977A06500	8	91	53	43	1,1	36	●
.2570	–	6,528	2658213	B977A06528	8	91	53	43	1,1	36	●
.2598	–	6,600	2425325	B977A06600	8	91	53	43	1,1	36	●
.2638	–	6,700	2230539	B977A06700	8	91	53	43	1,1	36	●
.2677	–	6,800	1913577	B977A06800	8	91	53	43	1,1	36	●
.2717	–	6,900	1959666	B977A06900	8	91	53	43	1,2	36	●
.2720	–	6,909	2658215	B977A06909	8	91	53	43	1,2	36	●
.2756	–	7,000	1913578	B977A07000	8	91	53	43	1,2	36	●
.2795	–	7,100	2203579	B977A07100	8	91	53	43	1,2	36	●
.2813	9/32	7,145	2658216	B977A07145	8	91	53	43	1,2	36	●
.2835	–	7,200	2264019	B977A07200	8	91	53	43	1,2	36	●
.2874	–	7,300	2425326	B977A07300	8	91	53	43	1,2	36	●
.2913	–	7,400	1913579	B977A07400	8	91	53	43	1,3	36	●
.2953	–	7,500	1913580	B977A07500	8	91	53	43	1,3	36	●
.2969	19/64	7,541	2658217	B977A07541	8	91	53	43	1,3	36	●
.2992	–	7,600	2425330	B977A07600	8	91	53	43	1,3	36	●
.3031	–	7,700	1992230	B977A07700	8	91	53	43	1,3	36	●
.3071	–	7,800	1913581	B977A07800	8	91	53	43	1,3	36	●
.3110	–	7,900	2425328	B977A07900	8	91	53	43	1,3	36	●
.3125	5/16	7,938	2658218	B977A07938	8	91	53	43	1,3	36	●
.3150	–	8,000	1913582	B977A08000	8	91	53	43	1,4	36	●
.3189	–	8,100	2244229	B977A08100	10	103	61	49	1,4	40	●
.3228	–	8,200	1986652	B977A08200	10	103	61	49	1,4	40	●
.3268	–	8,300	2390123	B977A08300	10	103	61	49	1,4	40	●
.3281	21/64	8,334	2658219	B977A08334	10	103	53	49	1,4	40	●
.3307	–	8,400	2236065	B977A08400	10	103	61	49	1,4	40	●
.3320	–	8,433	2658220	B977A08433	10	103	61	49	1,4	40	●
.3346	–	8,500	1913583	B977A08500	10	103	61	49	1,4	40	●
.3386	–	8,600	2425331	B977A08600	10	103	61	49	1,5	40	●
.3425	–	8,700	2203834	B977A08700	10	103	61	49	1,5	40	●
.3438	11/32	8,733	2658221	B977A08733	10	103	61	49	1,5	40	●
.3465	–	8,800	1913584	B977A08800	10	103	61	49	1,5	40	●
.3504	–	8,900	1971763	B977A08900	10	103	61	49	1,5	40	●
.3543	–	9,000	1913585	B977A09000	10	103	61	49	1,5	40	●
.3583	–	9,100	2425332	B977A09100	10	103	61	49	1,6	40	●
.3594	23/64	9,129	2658222	B977A09129	10	103	61	49	1,6	40	●
.3622	–	9,200	2218492	B977A09200	10	103	61	49	1,6	40	●
.3661	–	9,300	1913586	B977A09300	10	103	61	49	1,6	40	●
.3680	–	9,347	2658223	B977A09347	10	103	61	49	1,6	40	●
.3701	–	9,400	2408209	B977A09400	10	103	61	49	1,6	40	●
.3740	–	9,500	1913587	B977A09500	10	103	61	49	1,6	40	●
.3750	3/8	9,525	2658224	B977A09525	10	103	61	49	1,6	40	●
.3780	–	9,600	2425344	B977A09600	10	103	61	49	1,6	40	●
.3819	–	9,700	1939528	B977A09700	10	103	61	49	1,7	40	●
.3820	–	9,703	2658225	B977A09703	10	103	61	49	1,7	40	●
.3837	–	9,746	2658214	B977A09746	10	103	61	49	1,7	40	●
.3858	–	9,800	1913588	B977A09800	10	103	61	49	1,7	40	●
.3898	–	9,900	2245191	B977A09900	10	103	61	49	1,7	40	●
.3906	25/64	9,921	2658226	B977A09921	10	103	61	49	1,7	40	●
.3937	–	10,000	1913589	B977A10000	10	103	61	49	1,7	40	●

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B977

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● first choice
○ alternate choice

	D1										H S N K M P
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.3976	–	10,100	2407294	B977A10100	12	118	71	56	1,7	45	●
.4016	–	10,200	1913590	B977A10200	12	118	71	56	1,7	45	●
.4055	–	10,300	2240351	B977A10300	12	118	71	56	1,8	45	●
.4063	13/32	10,320	2658227	B977A10320	12	118	71	56	1,8	45	●
.4094	–	10,400	2425455	B977A10400	12	118	71	56	1,8	45	●
.4134	–	10,500	1913591	B977A10500	12	118	71	56	1,8	45	●
.4173	–	10,600	2043417	B977A10600	12	118	71	56	1,8	45	●
.4213	–	10,700	1913592	B977A10700	12	118	71	56	1,8	45	●
.4219	27/64	10,716	2658228	B977A10716	12	118	71	56	1,8	45	●
.4252	–	10,800	2256918	B977A10800	12	118	71	56	1,9	45	●
.4291	–	10,900	2425457	B977A10900	12	118	71	56	1,9	45	●
.4331	–	11,000	1913593	B977A11000	12	118	71	56	1,9	45	●
.4370	–	11,100	2264020	B977A11100	12	118	71	56	1,9	45	●
.4375	7/16	11,113	2658229	B977A11113	12	118	71	56	1,9	45	●
.4409	–	11,200	1913594	B977A11200	12	118	71	56	1,9	45	●
.4449	–	11,300	2425456	B977A11300	12	118	71	56	1,9	45	●
.4488	–	11,400	2425381	B977A11400	12	118	71	56	2,0	45	●
.4528	–	11,500	1913595	B977A11500	12	118	71	56	2,0	45	●
.4531	29/64	11,509	2658230	B977A11509	12	118	71	56	2,0	45	●
.4567	–	11,600	2045822	B977A11600	12	118	71	56	2,0	45	●
.4606	–	11,700	1913596	B977A11700	12	118	71	56	2,0	45	●
.4646	–	11,800	2049488	B977A11800	12	118	71	56	2,0	45	●
.4685	–	11,900	2272493	B977A11900	12	118	71	56	2,0	45	●
.4688	15/32	11,908	2658231	B977A11908	12	118	71	56	2,0	45	●
.4724	–	12,000	1913597	B977A12000	12	118	71	56	2,1	45	●
.4764	–	12,100	2384430	B977A12100	14	124	77	60	2,1	45	●
.4803	–	12,200	2049489	B977A12200	14	124	77	60	2,1	45	●
.4843	–	12,300	2045820	B977A12300	14	124	77	60	2,1	45	●
.4844	31/64	12,304	2658232	B977A12304	14	124	77	60	2,1	45	●
.4882	–	12,400	2425380	B977A12400	14	124	77	60	2,1	45	●
.4921	–	12,500	1913598	B977A12500	14	124	77	60	2,2	45	●
.4961	–	12,600	2203577	B977A12600	14	124	77	60	2,2	45	●
.5000	1/2	12,700	1913599	B977A12700	14	124	77	60	2,2	45	●
.5039	–	12,800	1941189	B977A12800	14	124	77	60	2,2	45	●
.5079	–	12,900	2226662	B977A12900	14	124	77	60	2,2	45	●
.5080	–	12,903	2658233	B977A12903	14	124	77	60	2,2	45	●
.5118	–	13,000	1913600	B977A13000	14	124	77	60	2,2	45	●
.5156	33/64	13,096	2658234	B977A13096	14	124	77	60	2,3	45	●
.5157	–	13,100	2401853	B977A13100	14	124	77	60	2,3	45	●
.5236	–	13,300	2229138	B977A13300	14	124	77	60	2,3	45	●
.5315	–	13,500	1913601	B977A13500	14	124	77	60	2,3	45	●
.5394	–	13,700	1913602	B977A13700	14	124	77	60	2,4	45	●
.5433	–	13,800	2251639	B977A13800	14	124	77	60	2,4	45	●
.5512	–	14,000	1913603	B977A14000	14	124	77	60	2,4	45	●
.5591	–	14,200	2230406	B977A14200	16	133	83	63	2,5	48	●
.5625	9/16	14,288	2658235	B977A14288	16	133	83	63	2,5	48	●
.5709	–	14,500	1913604	B977A14500	16	133	83	63	2,5	48	●
.5748	–	14,600	2043418	B977A14600	16	133	83	63	2,5	48	●
.5787	–	14,700	1913605	B977A14700	16	133	83	63	2,5	48	●
.5866	–	14,900	1960078	B977A14900	16	133	83	63	2,6	48	●

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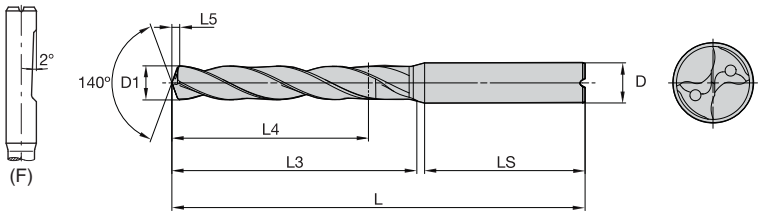
(continued from previous page)

● first choice
○ alternate choice

	D1										H S N K M P
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.5906	–	15,000	1913606	B977A15000	16	133	83	63	2,6	48	●
.5945	–	15,100	1960079	B977A15100	16	133	83	63	2,6	48	●
.6102	–	15,500	1913607	B977A15500	16	133	83	63	2,7	48	●
.6181	–	15,700	1913608	B977A15700	16	133	83	63	2,7	48	●
.6220	–	15,800	1941190	B977A15800	16	133	83	63	2,7	48	●
.6250	5/8	15,875	2658236	B977A15875	16	133	83	63	2,7	48	●
.6260	–	15,900	2245263	B977A15900	16	133	83	63	2,8	48	●
.6299	–	16,000	1913609	B977A16000	16	133	83	63	2,8	48	●
.6330	–	16,078	2658237	B977A16078	18	143	93	71	2,7	48	●
.6378	–	16,200	2203787	B977A16200	18	143	93	71	2,8	48	●
.6457	–	16,400	2416198	B977A16400	18	143	93	71	2,8	48	●
.6496	–	16,500	1913610	B977A16500	18	143	93	71	2,9	48	●
.6535	–	16,600	2233364	B977A16600	18	143	93	71	2,9	48	●
.6562	21/32	16,667	2658238	B977A16667	18	143	93	71	2,9	48	●
.6575	–	16,700	2264017	B977A16700	18	143	93	71	2,9	48	●
.6693	–	17,000	1913611	B977A17000	18	143	93	71	2,9	48	●
.6875	11/16	17,463	2658239	B977A17463	18	143	93	71	3,0	48	●
.6890	–	17,500	1913612	B977A17500	18	143	93	71	3,0	48	●
.6969	–	17,700	2391872	B977A17700	18	143	93	71	3,1	48	●
.7087	–	18,000	1913613	B977A18000	18	143	93	71	3,1	48	●
.7244	–	18,400	2276090	B977A18400	20	153	101	77	3,2	50	●
.7283	–	18,500	1913614	B977A18500	20	153	101	77	3,2	50	●
.7323	–	18,600	2276698	B977A18600	20	153	101	77	3,2	50	●
.7402	–	18,800	2244276	B977A18800	20	153	101	77	3,3	50	●
.7480	–	19,000	1913615	B977A19000	20	153	101	77	3,3	50	●
.7500	3/4	19,050	2658240	B977A19050	20	153	101	77	3,3	50	●
.7559	–	19,200	2229054	B977A19200	20	153	101	77	3,3	50	●
.7580	–	19,253	2658241	B977A19253	20	153	101	77	3,3	50	●
.7656	49/64	19,446	2658242	B977A19446	20	153	101	77	3,4	50	●
.7677	–	19,500	1913616	B977A19500	20	153	101	77	3,4	50	●
.7756	–	19,700	2386665	B977A19700	20	153	101	77	3,4	50	●
.7874	–	20,000	1913617	B977A20000	20	153	101	77	3,5	50	●

Ordering Example:
By catalog number B977A03000 KC7315, or by order number 2425285.



Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		
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K		●
M		
P		●

B977

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
3,300	.1299	1962706	B977F03300	6	66	28	23	0,5	36	●
4,000	.1575	1913752	B977F04000	6	74	36	29	0,7	36	●
4,100	.1614	2264981	B977F04100	6	74	36	29	0,7	36	●
4,200	.1654	1913753	B977F04200	6	74	36	29	0,7	36	●
4,300	.1693	2264903	B977F04300	6	74	36	29	0,7	36	●
4,500	.1772	1913754	B977F04500	6	74	36	29	0,7	36	●
4,600	.1811	1913755	B977F04600	6	74	36	29	0,8	36	●
4,800	.1890	1913756	B977F04800	6	82	44	35	0,8	36	●
5,000	.1969	1913757	B977F05000	6	82	44	35	0,8	36	●
5,100	.2008	1970761	B977F05100	6	82	44	35	0,9	36	●
5,200	.2047	2264921	B977F05200	6	82	44	35	0,9	36	●
5,300	.2087	2213726	B977F05300	6	82	44	35	0,9	36	●
5,500	.2165	1913758	B977F05500	6	82	44	35	0,9	36	●
5,600	.2205	1962705	B977F05600	6	82	44	35	0,9	36	●
5,800	.2283	1913759	B977F05800	6	82	44	35	1,0	36	●
5,900	.2323	2264952	B977F05900	6	82	44	35	1,0	36	●
6,000	.2362	1913760	B977F06000	6	82	44	35	1,0	36	●
6,100	.2402	2001853	B977F06100	8	91	53	43	1,0	36	●
6,500	.2559	1913761	B977F06500	8	91	53	43	1,1	36	●
6,600	.2598	2263756	B977F06600	8	91	53	43	1,1	36	●
6,700	.2638	2204114	B977F06700	8	91	53	43	1,1	36	●
6,800	.2677	1913762	B977F06800	8	91	53	43	1,1	36	●
6,900	.2717	1962704	B977F06900	8	91	53	43	1,2	36	●
7,000	.2756	1913763	B977F07000	8	91	53	43	1,2	36	●
7,400	.2913	1913764	B977F07400	8	91	53	43	1,3	36	●
7,500	.2953	1913765	B977F07500	8	91	53	43	1,3	36	●
7,800	.3071	1913766	B977F07800	8	91	53	43	1,3	36	●
8,000	.3150	1913767	B977F08000	8	91	53	43	1,4	36	●
8,100	.3189	1988291	B977F08100	10	103	61	49	1,4	40	●
8,200	.3228	2227264	B977F08200	10	103	61	49	1,4	40	●
8,500	.3346	1913768	B977F08500	10	103	61	49	1,4	40	●
8,600	.3386	2047751	B977F08600	10	103	61	49	1,5	40	●
8,700	.3425	2260660	B977F08700	10	103	61	49	1,5	40	●
8,800	.3465	1913769	B977F08800	10	103	61	49	1,5	40	●
9,000	.3543	1913770	B977F09000	10	103	61	49	1,5	40	●
9,100	.3583	2251337	B977F09100	10	103	61	49	1,5	40	●
9,300	.3661	1913771	B977F09300	10	103	61	49	1,6	40	●
9,500	.3740	1913772	B977F09500	10	103	61	49	1,6	40	●
9,800	.3858	1913773	B977F09800	10	103	61	49	1,7	40	●
9,900	.3898	2264915	B977F09900	10	103	61	49	1,7	40	●

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B977

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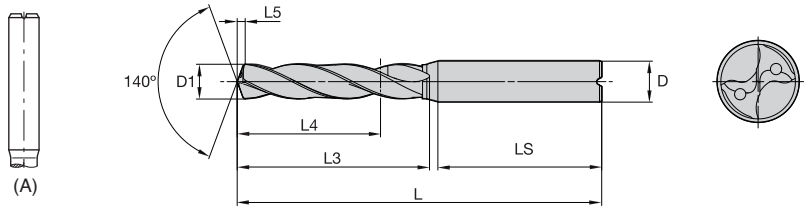
● first choice
○ alternate choice

H										
S										
N										
K										●
M										
P										●

D1 mm	D1 inch	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
10,000	.3937	1913774	B977F10000	10	103	61	49	1,7	40	●
10,200	.4016	1913775	B977F10200	12	118	71	56	1,7	45	●
10,300	.4055	2264876	B977F10300	12	118	71	56	1,8	45	●
10,400	.4094	2264905	B977F10400	12	118	71	56	1,8	45	●
10,500	.4134	1913776	B977F10500	12	118	71	56	1,8	45	●
10,700	.4213	1913777	B977F10700	12	118	71	56	1,8	45	●
10,800	.4252	1989874	B977F10800	12	118	71	56	1,9	45	●
11,000	.4331	1913778	B977F11000	12	118	71	56	1,9	45	●
11,200	.4409	1913779	B977F11200	12	118	71	56	1,9	45	●
11,500	.4528	1913780	B977F11500	12	118	71	56	2,0	45	●
11,800	.4646	1959586	B977F11800	12	118	71	56	2,0	45	●
12,000	.4724	1913782	B977F12000	12	118	71	56	2,1	45	●
12,500	.4921	1913783	B977F12500	14	124	77	60	2,2	45	●
12,700	.5000	1913784	B977F12700	14	124	77	60	2,2	45	●
13,000	.5118	1913785	B977F13000	14	124	77	60	2,2	45	●
13,500	.5315	1913786	B977F13500	14	124	77	60	2,3	45	●
14,000	.5512	1913788	B977F14000	14	124	77	60	2,4	45	●
14,200	.5591	2046287	B977F14200	16	133	83	63	2,5	48	●
14,500	.5709	1913789	B977F14500	16	133	83	63	2,5	48	●
15,000	.5906	1913791	B977F15000	16	133	83	63	2,6	48	●
15,500	.6102	1913792	B977F15500	16	133	83	63	2,7	48	●
15,700	.6181	1913793	B977F15700	16	133	83	63	2,7	48	●
15,800	.6220	2264864	B977F15800	16	133	83	63	2,7	48	●
16,000	.6299	1913794	B977F16000	16	133	83	63	2,8	48	●
16,500	.6496	1913795	B977F16500	18	143	93	71	2,9	48	●
17,000	.6693	1913796	B977F17000	18	143	93	71	2,9	48	●
17,500	.6890	1913797	B977F17500	18	143	93	71	3,0	48	●
18,000	.7087	1913798	B977F18000	18	143	93	71	3,1	48	●
19,000	.7480	1913800	B977F19000	20	153	101	77	3,3	50	●
20,000	.7874	1913802	B977F20000	20	153	101	77	3,5	50	●

Ordering Example:
By catalog number B977F03300 KC7315, or by order number 1962706.

Kenna Universal Drills with Coolant



Tolerance			
D1	**Tolerance m7**	**D**	**Tolerance h6**
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

B978

D1 inch	D1 fraction	D1 mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.1563	5/32	3,970	2658393	B978A03970	6	87	49	41,0	1	36	●
.1875	3/16	4,763	2658394	B978A04763	6	94	56	48,0	1	36	●
.1969	–	5,000	1913618	B978A05000	6	94	56	48,0	1	36	●
.2008	–	5,100	2264933	B978A05100	6	94	56	48,0	1	36	●
.2047	–	5,200	2264934	B978A05200	6	94	56	48,0	1	36	●
.2087	–	5,300	2264889	B978A05300	6	94	56	48,0	1	36	●
.2165	–	5,500	1913619	B978A05500	6	94	56	48,0	1	36	●
.2188	7/32	5,558	2658395	B978A05558	6	94	56	48,0	1	36	●
.2244	–	5,700	2043415	B978A05700	6	94	56	48,0	1	36	●
.2362	–	6,000	1913620	B978A06000	6	94	56	48,0	1	36	●
.2402	–	6,100	2261701	B978A06100	8	105	67	57,0	1	36	●
.2441	–	6,200	2264928	B978A06200	8	105	67	57,0	1	36	●
.2480	–	6,300	2264970	B978A06300	8	105	67	57,0	1	36	●
.2500	1/4	6,350	2658396	B978A06350	8	105	67	57,0	1	36	●
.2520	–	6,400	2264971	B978A06400	8	105	67	57,0	1	36	●
.2559	–	6,500	1913621	B978A06500	8	105	67	57,0	1	36	●
.2598	–	6,600	2242780	B978A06600	8	105	67	57,0	1	36	●
.2638	–	6,700	2264972	B978A06700	8	105	67	57,0	1	36	●
.2656	17/64	6,746	2658397	B978A06746	8	105	67	57,0	1	36	●
.2677	–	6,800	1913622	B978A06800	8	105	67	57,0	1	36	●
.2756	–	7,000	1913623	B978A07000	8	105	67	57,0	1	36	●
.2813	9/32	7,145	2658398	B978A07145	8	110	72	61,0	1	36	●
.2953	–	7,500	1913624	B978A07500	8	110	72	61,0	2	36	●
.2969	19/64	7,541	2658399	B978A07541	8	110	72	61,0	2	36	●
.3031	–	7,700	2407297	B978A07700	8	110	72	61,0	2	36	●
.3071	–	7,800	1913625	B978A07800	8	110	72	61,0	2	36	●
.3125	5/16	7,938	2658400	B978A07938	8	110	72	61,0	2	36	●
.3150	–	8,000	1913626	B978A08000	8	110	72	61,0	2	36	●
.3189	–	8,100	2264953	B978A08100	10	122	80	68,0	2	40	●
.3281	21/64	8,334	2658401	B978A08334	10	122	80	68,0	2	40	●
.3346	–	8,500	1913627	B978A08500	10	122	80	68,0	2	40	●
.3386	–	8,600	2264954	B978A08600	10	122	80	68,0	2	40	●
.3425	–	8,700	2264955	B978A08700	10	122	80	68,0	2	40	●
.3438	11/32	8,733	2658402	B978A08733	10	122	80	68,0	2	40	●
.3465	–	8,800	2255896	B978A08800	10	122	80	68,0	2	40	●
.3543	–	9,000	1913628	B978A09000	10	122	80	68,0	2	40	●
.3583	–	9,100	2442642	B978A09100	10	122	80	68,0	2	40	●
.3594	23/64	9,129	2658403	B978A09129	10	122	80	68,0	2	40	●
.3740	–	9,500	1913629	B978A09500	10	122	80	68,0	2	40	●
.3750	3/8	9,525	2658404	B978A09525	10	122	80	68,0	2	40	●
.3819	–	9,700	2249180	B978A09700	10	122	80	68,0	2	40	●
.3858	–	9,800	2050230	B978A09800	10	122	80	68,0	2	40	●
.3898	–	9,900	2264956	B978A09900	10	122	80	68,0	2	40	●
.3906	25/64	9,921	2658405	B978A09921	10	122	80	68,0	2	40	●

(continued on next page)

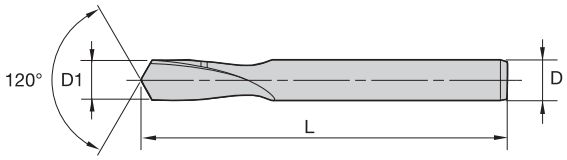
B978

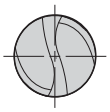
(continued from previous page)

● first choice
○ alternate choice

	D1										H S N K M P
inch	fraction	mm	order number	catalog number	D	L	L3	L4 max	L5	LS	KC7315
.3937	–	10,000	1913630	B978A10000	10	122	80	68,0	2	40	●
.3976	–	10,100	2264938	B978A10100	12	141	94	79,0	2	45	●
.4016	–	10,200	1913631	B978A10200	12	141	94	79,0	2	45	●
.4055	–	10,300	2264939	B978A10300	12	141	94	79,0	2	45	●
.4063	13/32	10,320	2658406	B978A10320	12	141	94	79,0	2	45	●
.4134	–	10,500	1913632	B978A10500	12	141	94	79,0	2	45	●
.4219	27/64	10,716	2658407	B978A10716	12	141	94	79,0	2	45	●
.4252	–	10,800	1985985	B978A10800	12	141	94	79,0	2	45	●
.4331	–	11,000	1913633	B978A11000	12	141	94	79,0	2	45	●
.4375	7/16	11,113	2658408	B978A11113	12	141	94	79,0	2	45	●
.4409	–	11,200	1984545	B978A11200	12	141	94	79,0	2	45	●
.4449	–	11,300	2436719	B978A11300	12	141	94	79,0	2	45	●
.4488	–	11,400	2045616	B978A11400	12	141	94	79,0	2	45	●
.4528	–	11,500	1913634	B978A11500	12	141	94	79,0	2	45	●
.4531	29/64	11,509	2658409	B978A11509	12	141	94	79,0	2	45	●
.4606	–	11,700	2404433	B978A11700	12	141	94	79,0	2	45	●
.4646	–	11,800	2044606	B978A11800	12	141	94	79,0	3	45	●
.4688	15/32	11,908	2658410	B978A11908	12	141	94	79,0	3	45	●
.4724	–	12,000	1913635	B978A12000	12	141	94	79,0	3	45	●
.4844	31/64	12,304	2658411	B978A12304	14	155	108	91,0	3	45	●
.4921	–	12,500	1913636	B978A12500	14	155	108	91,0	3	45	●
.5000	1/2	12,700	2658412	B978A12700	14	155	108	91,0	3	45	●
.5039	–	12,800	1942450	B978A12800	14	155	108	91,0	3	45	●
.5118	–	13,000	1913637	B978A13000	14	155	108	91,0	3	45	●
.5315	–	13,500	1913638	B978A13500	14	155	108	91,0	3	45	●
.5512	–	14,000	1913639	B978A14000	14	155	108	91,0	3	45	●
.5625	9/16	14,288	2658413	B978A14288	16	171	121	101,0	3	48	●
.5709	–	14,500	1913640	B978A14500	16	171	121	101,0	3	48	●
.5906	–	15,000	1913641	B978A15000	16	171	121	101,0	3	48	●
.5945	–	15,100	2263727	B978A15100	16	171	121	101,0	3	48	●
.5984	–	15,200	2214237	B978A15200	16	171	121	101,0	3	48	●
.6024	–	15,300	2428744	B978A15300	16	171	121	101,0	3	48	●
.6102	–	15,500	1913642	B978A15500	16	171	121	101,0	3	48	●
.6220	–	15,800	2264901	B978A15800	16	171	121	101,0	3	48	●
.6250	5/8	15,875	2658414	B978A15875	16	171	121	101,0	3	48	●
.6299	–	16,000	1913643	B978A16000	16	171	121	101,0	3	48	●
.6330	–	16,078	2658415	B978A16078	18	185	135	113,0	3	48	●
.6378	–	16,200	2436798	B978A16200	18	185	135	113,0	3	48	●
.6496	–	16,500	1913644	B978A16500	18	185	135	113,0	4	48	●
.6693	–	17,000	1913645	B978A17000	18	185	135	113,0	4	48	●
.6875	11/16	17,463	2658416	B978A17463	18	185	135	113,0	4	48	●
.6890	–	17,500	1913646	B978A17500	18	185	135	113,0	4	48	●
.7087	–	18,000	1913647	B978A18000	18	185	135	113,0	4	48	●
.7283	–	18,500	1913648	B978A18500	20	200	148	124,0	4	50	●
.7480	–	19,000	1913649	B978A19000	20	200	148	124,0	4	50	●
.7500	3/4	19,050	2658417	B978A19050	20	200	148	124,0	4	50	●
.7580	–	19,253	2658418	B978A19253	20	200	148	124,0	4	50	●
.7795	–	19,800	2275452	B978A19800	20	200	148	124,0	4	50	●
.7874	–	20,000	1913651	B978A20000	20	200	148	124,0	4	50	●

Ordering Example:
By catalog number B978A03970 KC7315, or by order number 2658393.





Tolerance

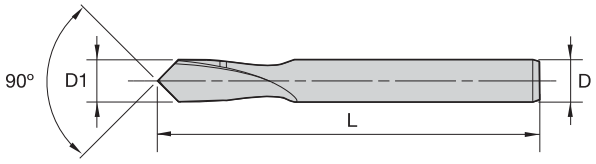
D1	Tolerance h8	D	Tolerance h6
>3 to 6	0,000/-0,018	6	0,000/-0,008
>6 to 10	0,000/-0,022	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,027	12 to 18	0,000/-0,011
>18 to 21	0,000/-0,033	20	0,000/-0,013

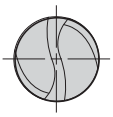
● first choice
○ alternate choice

	K10
H	
S	
N	
K	●
M	
P	●

B501 — Z-Shank

D1 mm	D1 inch	order number	catalog number	D	L	L4 max	LS	K10
6,000	.2362	1191620	B501Z06000	6	54	9	33	●
10,000	.3937	1198733	B501Z10000	10	66	12	45	●
12,000	.4724	1198753	B501Z12000	12	73	14	52	●





Tolerance

D1	Tolerance h8	D	Tolerance h6
>3 to 6	0,000/-0,018	6	0,000/-0,008
>6 to 10	0,000/-0,022	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,027	12 to 18	0,000/-0,011
>18 to 21	0,000/-0,033	20	0,000/-0,013

● first choice
○ alternate choice

	K10
H	
S	
N	
K	●
M	
P	●

B505 — Z-Shank

D1 mm	D1 inch	order number	catalog number	D	L	L4 max	LS	K10
6,000	.2362	1191629	B505Z06000	6	54	9	33	●
8,000	.3150	1198743	B505Z08000	8	58	11	37	●
10,000	.3937	1191630	B505Z10000	10	66	12	45	●
12,000	.4724	1191631	B505Z12000	12	73	14	52	●
16,000	.6299	1191632	B505Z16000	16	82	16	61	●
20,000	.7874	1191633	B505Z20000	20	92	18	71	●

Ordering Example:
By catalog number B501Z06000 K10, or by order number 1191620.

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KENNAMETAL

Modular Drills

Kennametal 2x2™ Drill Double-Ended Disposable Solid Carbide Drill

Primary Application

Kennametal 2x2™ HP Series Drills enable drilling at accelerated speeds. The drill point geometry offers exceptional penetration rates in steel and cast irons where breakout is not a consideration. This product is disposable and requires no reconditioning.

Features and Benefits

HP Drill Point Design

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

Four-Margin Lands

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

Disposable

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

KC7915™ Grade

- PVD alumina-based coating with high hot hardness increases cutting speeds by 50% to 70%.
- Improves tool life by 50% to 100% over traditional PVD coatings.

Customization

- Intermediate diameters available as semi-standards.

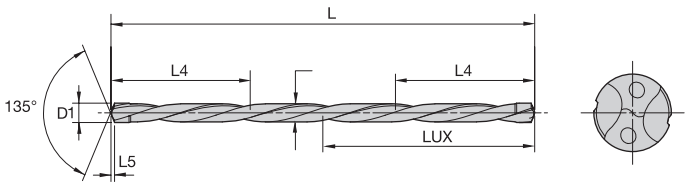
Modular Drills - Kennametal 2x2™ Drill HPG(M) - Grade KC7915 - Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.197	0.236	0.276	0.315
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	3,0	4,0	5,0	6,0	7,0	8,0
P1	**Low-Carbon Steels, Long chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**				**Hardness (HB) or HRC: <125**	
			Feed rate by diameter						
427	sfm	328 – 525	ipr	.003 - .006	.003 - .007	.004 - .008	.004 - .009	.005 - .010	.005 - .011
130	m/min	100 – 160	mm/r	0,07 - 0,15	0,08 - 0,18	0,09 - 0,21	0,11 - 0,23	0,12 - 0,26	0,13 - 0,29
P2	**Low-Carbon Steels, Free Machining and Short Chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**				**Hardness (HB) or HRC: <220**	
			Feed rate by diameter						
427	sfm	328 – 525	ipr	.003 - .005	.003 - .006	.004 - .007	.004 - .007	0.005 - .008	.005 - .009
130	m/min	100 – 160	mm/r	0,07 - 0,13	0,08 - 0,15	0,09 - 0,17	0,11 - 0,19	0,12 - 0,21	0,13 - 0,23
P3	**Medium and High Plain-Carbon Steels, Low-alloyed**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**				**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
394	sfm	262 – 525	ipr	.003 - .006	.004 - .007	.005 - .008	.005 - 0.009	.006 - .010	.007 - .011
120	m/min	80 – 160	mm/r	0,08 - 0,15	0,10 - 0,18	0,12 - 0,21	0,13 - 0,23	0,15 - 0,26	0,17 - 0,29
P4	**Alloyed and Tempered Carbon Steels, Tool**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**				**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
328	sfm	197 – 459	ipr	.003 - .006	.004 - .006	.004 - .007	.005 - .009	.005 - .010	.006 - .011
100	m/min	60 – 140	mm/r	0,08 - 0,14	0,09 - 0,16	0,10 - 0,19	0,12 - 0,23	0,13 - 0,26	0,14 - 0,29
K1	**Cast and Low-Strength Ductile Irons**			**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter						
443	sfm	328 – 558	ipr	.004 - .006	.004 - .008	.004 - .009	.005 - .011	.006 - .012	.006 - 0.013
135	m/min	100 – 170	mm/r	0,09 - 0,15	0,10 - 0,20	0,11 - 0,24	0,13 - 0,27	0,14 - 0,31	0,15 - 0,34
K2	**Low and Medium Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
394	sfm	262 – 525	ipr	.004 - .006	.004 - .007	.004 - .007	.005 - .009	.006 - .009	.006 - .010
120	m/min	80 – 160	mm/r	0,09 - 0,15	0,10 - 0,17	0,11 - 0,19	0,13 - 0,22	0,14 - 0,24	0,15 - 0,26
K3	**High Strength Ductile and Austempered Ductile Iron**			**Tensile Strength RM (MPa)*: 600-900**				**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter						
361	sfm	262 – 459	ipr	.003 - .006	.004 - .007	.004 - .008	.005 - .008	.005 -.010	.006 - .011
110	m/min	80 – 140	mm/r	0,08 - 0,14	0,09 - 0,17	0,10 - 0,20	0,12 - 0,22	0,13 - 0,25	0,14 - 0,28

* 1 Mpa = 145 psi

KENNAMETAL

Kennametal 2x2™ Drill



Tolerance			
D1 metric	Tolerance m7	D1 inch	Tolerance m7
>3 to 6	0,004/0,016	>.1181 to .2362	0.0002/0.0006
>6 to 8,5	0,006/0,021	>.2362 to .3346	0.0002/0.0008

● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

Kennametal 2x2™ Drill Kennametal

D1					L4								KC7915
mm	fraction	inch	order number	catalog number	L	max.	max.	L5	LUX	clamping sleeve	drill sealing cap	clamping size	
3,100	–	.1220	3006773	2X2D03100R7HPGM	70	23,1	.909	0,57	32,8	280.488	360.685	AA	●
3,170	1/8	.1250	3006829	2X2D03170R7HPGM	70	23,1	.909	0,58	32,8	280.488	360.685	AA	●
3,200	–	.1260	3006774	2X2D03200R7HPGM	70	23,1	.909	0,59	32,8	280.488	360.685	AA	●
3,300	–	.1299	2631709	2X2D03300R7HPGM	70	23,1	.909	0,61	32,8	280.488	360.685	AA	●
3,400	–	.1339	3006775	2X2D03400R7HPGM	70	23,1	.909	0,63	32,8	280.488	360.685	AA	●
3,500	–	.1378	3006776	2X2D03500R7HPGM	70	25,9	1.020	0,65	35,6	280.489	360.686	BB	●
3,570	9/64	.1406	3006830	2X2D03570R7HPGM	70	25,9	1.020	0,66	35,6	280.489	360.686	BB	●
3,600	–	.1417	3006777	2X2D03600R7HPGM	70	25,9	1.020	0,66	35,6	280.489	360.686	BB	●
3,700	–	.1457	3006778	2X2D03700R7HPGM	70	25,9	1.020	0,68	35,6	280.489	360.686	BB	●
3,800	–	.1496	3006779	2X2D03800R7HPGM	70	28,7	1.130	0,70	39,5	280.490	360.687	CC	●
3,900	–	.1535	3006780	2X2D03900R7HPGM	70	28,7	1.130	0,72	39,5	280.490	360.687	CC	●
3,970	5/32	.1563	3006781	2X2D03970R7HPGM	70	28,7	1.130	0,73	39,5	280.490	360.687	CC	●
4,000	–	.1575	3006782	2X2D04000R7HPGM	70	28,7	1.130	0,74	39,5	280.490	360.687	CC	●
4,100	–	.1614	3006783	2X2D04100R7HPGM	70	28,7	1.130	0,76	39,5	280.490	360.687	CC	●
4,200	–	.1654	3006784	2X2D04200R7HPGM	79	29,4	1.158	0,78	40,2	280.491	360.688	DD	●
4,300	–	.1693	3006785	2X2D04300R7HPGM	79	29,4	1.158	0,79	40,2	280.491	360.688	DD	●
4,400	–	.1732	3006786	2X2D04400R7HPGM	79	29,4	1.158	0,81	40,2	280.491	360.688	DD	●
4,500	–	.1772	3006787	2X2D04500R7HPGM	79	29,4	1.158	0,83	40,2	280.491	360.688	DD	●
4,620	–	.1820	3006788	2X2D04620R7HPGM	79	34,3	1.350	0,85	45,3	280.492	360.689	EE	●
4,760	3/16	.1874	3006789	2X2D04760R7HPGM	79	34,3	1.350	0,88	45,3	280.492	360.689	EE	●
4,800	–	.1890	3006790	2X2D04800R7HPGM	79	34,3	1.350	0,89	45,3	280.492	360.689	EE	●
5,000	–	.1969	2631710	2X2D05000R7HPGM	79	35,0	1.378	0,92	46,0	280.493	360.690	FF	●
5,100	–	.2008	3006791	2X2D05100R7HPGM	79	35,0	1.378	0,94	46,0	280.493	360.690	FF	●
5,200	–	.2047	3006792	2X2D05200R7HPGM	79	35,0	1.378	0,96	46,0	280.493	360.690	FF	●
5,300	–	.2087	3006793	2X2D05300R7HPGM	79	35,0	1.378	0,98	46,0	280.493	360.690	FF	●
5,400	–	.2126	3006794	2X2D05400R7HPGM	79	35,0	1.378	1,00	46,0	280.493	360.690	FF	●
5,410	–	.2130	3006795	2X2D05410R7HPGM	95	41,3	1.626	1,00	52,5	280.494	360.691	GG	●
5,500	–	.2165	3006796	2X2D05500R7HPGM	95	41,3	1.626	1,02	52,5	280.494	360.691	GG	●
5,560	7/32	.2188	3006797	2X2D05560R7HPGM	95	41,3	1.626	1,03	52,5	280.494	360.691	GG	●
5,800	–	.2283	3006798	2X2D05800R7HPGM	95	41,3	1.626	1,07	52,5	280.494	360.691	GG	●

(continued on next page)

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

● first choice
○ alternate choice

Kennametal 2x2™ Drill Kennametal

(continued from previous page)

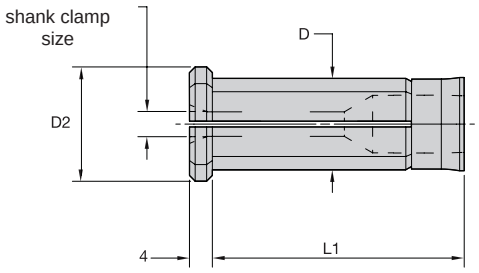
D1					L4								
mm	fraction	inch	order number	catalog number	L	max.	max.	L5	LUX	clamping sleeve	drill sealing cap	clamping size	KC7915
6,000	–	.2362	3006799	2X2D06000R7HPGM	102	45,5	1.791	1,11	58,8	280.495	360.692	HH	●
6,100	–	.2402	3006800	2X2D06100R7HPGM	102	45,5	1.791	1,13	58,8	280.495	360.692	HH	●
6,200	–	.2441	3006801	2X2D06200R7HPGM	102	45,5	1.791	1,14	58,8	280.495	360.692	HH	●
6,300	–	.2480	3006802	2X2D06300R7HPGM	102	45,5	1.791	1,16	58,8	280.495	360.692	HH	●
6,350	1/4	.2500	3006803	2X2D06350R7HPGM	102	45,5	1.791	1,17	58,8	280.495	360.692	HH	●
6,400	–	.2520	3006804	2X2D06400R7HPGM	102	45,5	1.791	1,18	58,8	280.495	360.692	HH	●
6,500	–	.2559	3006805	2X2D06500R7HPGM	102	45,5	1.791	1,20	58,8	280.495	360.692	HH	●
6,530	–	.2570	3006806	2X2D06530R7HPGM	105	47,6	1.874	1,20	61,0	280.496	360.693	JJ	●
6,600	–	.2598	3006807	2X2D06600R7HPGM	105	47,6	1.874	1,22	61,0	280.496	360.693	JJ	●
6,750	17/64	.2656	3006808	2X2D06750R7HPGM	105	47,6	1.874	1,25	61,0	280.496	360.693	JJ	●
6,800	–	.2677	3006809	2X2D06800R7HPGM	105	47,6	1.874	1,26	61,0	280.496	360.693	JJ	●
6,900	–	.2717	3006810	2X2D06900R7HPGM	105	47,6	1.874	1,27	61,0	280.496	360.693	JJ	●
6,910	–	.2720	3006811	2X2D06910R7HPGM	105	47,6	1.874	1,28	61,0	280.496	360.693	JJ	●
7,000	–	.2756	3006812	2X2D07000R7HPGM	105	47,6	1.874	1,29	61,0	280.496	360.693	JJ	●
7,100	–	.2795	3006813	2X2D07100R7HPGM	115	53,2	2.095	1,31	67,7	280.497	360.694	KK	●
7,150	9/32	.2813	3006814	2X2D07150R7HPGM	115	53,2	2.095	1,32	67,7	280.497	360.694	KK	●
7,200	–	.2835	3006815	2X2D07200R7HPGM	115	53,2	2.095	1,33	67,7	280.497	360.694	KK	●
7,400	–	.2913	3006816	2X2D07400R7HPGM	115	53,2	2.095	1,37	67,7	280.497	360.694	KK	●
7,500	–	.2953	3006817	2X2D07500R7HPGM	115	53,2	2.095	1,38	67,7	280.497	360.694	KK	●
7,540	19/64	.2969	3006818	2X2D07540R7HPGM	115	53,2	2.095	1,39	67,7	280.497	360.694	KK	●
7,700	–	.3031	3006819	2X2D07700R7HPGM	120	56,7	2.232	1,42	72,3	280.498	360.695	MM	●
7,800	–	.3071	3006820	2X2D07800R7HPGM	120	56,7	2.232	1,44	72,3	280.498	360.695	MM	●
7,900	–	.3110	3006821	2X2D07900R7HPGM	120	56,7	2.232	1,46	72,3	280.498	360.695	MM	●
7,940	5/16	.3125	3006822	2X2D07940R7HPGM	120	56,7	2.232	1,47	72,3	280.498	360.695	MM	●
8,000	–	.3150	3006823	2X2D08000R7HPGM	120	56,7	2.232	1,48	72,3	280.498	360.695	MM	●
8,100	–	.3189	3006824	2X2D08100R7HPGM	120	56,7	2.232	1,50	72,3	280.498	360.695	MM	●
8,200	–	.3228	3006825	2X2D08200R7HPGM	122	59,5	2.343	1,51	75,2	280.499	360.696	NN	●
8,300	–	.3268	3006826	2X2D08300R7HPGM	122	59,5	2.343	1,53	75,2	280.499	360.696	NN	●
8,330	21/64	.3281	3006827	2X2D08330R7HPGM	122	59,5	2.343	1,54	75,2	280.499	360.696	NN	●
8,430	–	.3319	3006828	2X2D08430R7HPGM	122	59,5	2.343	1,56	75,2	280.499	360.696	NN	●
8,500	–	.3346	2631711	2X2D08500R7HPGM	122	59,5	2.343	1,57	75,2	280.499	360.696	NN	●

Sealing cap included with drill.
**LUX is overhang length identified in diagram on page B6.*

NOTE: *Match shank clamp size to clamping sleeve on page B6.*

Ordering Example:
By catalog number 2X2D006000R7HPGM, or order number 3006799.

Clamping Sleeve

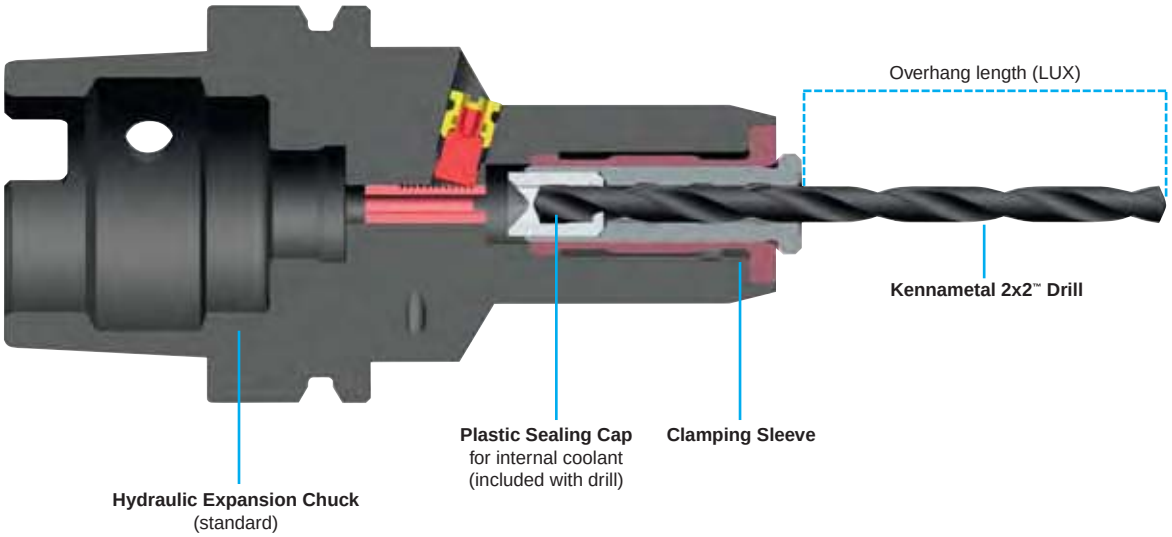


• Clamping sleeves are sold separately.

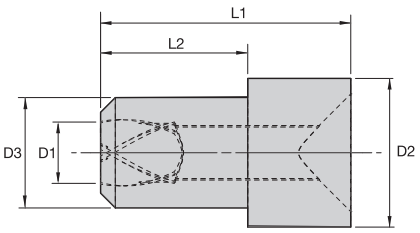
mm	inch	order number	catalog number	D	D2	L1	shank clamp size
3,10-3,40	.122-.134	3579370	16MHC2X2AA034M	16	20	44	AA
>3,40-3,70	>.134-.146	3579371	16MHC2X2BB037M	16	20	44	BB
>3,70-4,10	>.146-.161	3579372	16MHC2X2CC041M	16	20	44	CC
>4,10-4,50	>.161-.177	3579403	16MHC2X2DD045M	16	20	44	DD
>4,50-4,90	>.177-.193	3579404	16MHC2X2EE049M	16	20	44	EE
>4,90-5,40	>.193-.213	3579405	16MHC2X2FF054M	16	20	44	FF
>5,40-5,90	>.213-.232	3579406	16MHC2X2GG059M	16	20	44	GG
>5,90-6,50	>.232-.256	3579407	16MHC2X2HH065M	16	20	45	HH
>6,50-7,05	>.256-.278	3579408	16MHC2X2JJ071M	16	20	45	JJ
>7,05-7,60	>.278-.299	3579409	16MHC2X2KK076M	16	20	45	KK
>7,60-8,10	>.299-.319	3579410	16MHC2X2MM081M	16	20	45	MM
>8,10-8,60	>.319-.339	3579411	16MHC2X2NN086M	16	20	45	NN

NOTE: *Match clamping sleeve to drill by the shank clamp size.*

The New Kennametal 2x2™ Drill



Ordering Example:
By catalog number 16MHC2X2AA034M, or by order number 3579370.



- One sealing cap shipped with each Kennametal 2x2™ Drill.

D1 range		order number	catalog number	D2	D3	L1	L2	shank clamp size
3.100-3.400	.1220-.1339	2982429	360.685	10,1	7,5	17	10	AA
>3.400-3.700	>.1339-.1457	2982430	360.686	10,1	7,5	17	10	BB
>3.700-4.100	>.1457-.1614	2982431	360.687	10,1	7,5	17	10	CC
>4.100-4.500	>.1614-.1772	2982432	360.688	10,1	7,5	17	10	DD
>4.500-4.900	>.1772-.1929	2982543	360.689	10,1	–	15	–	EE
>4.900-5.400	>.1929-.2126	2982544	360.690	10,1	–	15	–	FF
>5.400-5.900	>.2126-.2323	2982545	360.691	10,1	–	15	–	GG
>5.900-6.500	>.2323-.2559	2982546	360.692	10,1	–	15	–	HH
>6.500-7.050	>.2559-.2776	2982547	360.693	10,1	–	15	–	JJ
>7.050-7.600	>.2776-.2992	2982548	360.694	10,1	–	15	–	KK
>7.600-8.100	>.2992-.3189	2982549	360.695	10,1	–	15	–	MM
>8.100-8.600	>.3189-.3386	2982550	360.696	10,1	–	15	–	NN

Ordering Example:
By catalog number 360.685, or by order number 2982429.

KENNAMETAL

Modular Drills

KenTIP™ Modular Drill System

Primary Application

The KenTIP Modular Drill System offers performance levels commonly achieved with solid carbide drills. The patented locking system enables inserts to be changed inside the machine tool. Use KenTIP in steel, cast iron, ductile iron, and stainless steel applications.

Features and Benefits

HP Drill Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.
- NEW HPC(M) for cast iron applications.
- NEW HPL(M) for stainless steel.

Easy Insert Change

- Unique locking method requires no screws or clamps.
- Insert blades can be changed using a simple provided tool.
- Drill body does not require removal from the machine or holder to change the insert blade.

Disposable

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

Tailored Grades and Geometries

- KC7315™ grade is a TiAlN-based PVD grade offering superior performance in all steel applications.
- KC7320™ grade is an AlTiN-based PVD coating developed for the demands of drilling stainless steels.
- KC7410™ grade contains multiple layers of PVD coating offering outstanding wear resistance for the drilling of cast irons. The geometry prevents breakout when drilling through holes.

Customization

- Intermediate diameters available as semi-standards.
- Close tolerance tips available for precision holes.
- Chamfering insert pockets available.
- Multiple steps possible.

Modular Drill Carbide Insert Blades – KenTIP – HP(M) Geometry – Grade KC7315 – Though Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.315	0.394	0.472	0.551	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	8,0	10,0	12,0	14,0	16,0	20,0
P1	**Low-Carbon Steels, Long chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**				**Hardness (HB) or HRC: <125**	
			Feed rate by diameter						
410	sfm	262 – 558	ipr	.004 - .008	.005 - .010	.006 - .012	.007 - .015	.007 - .018	.010 - .019
125	m/min	90 – 170	mm/r	0,11 - 0,20	0,13 - 0,25	0,14 - 0,31	0,17 -0,39	0,19 -0,45	0,25 - 0,48
P2	**Low-Carbon Steels, Free Machining and Short Chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**				**Hardness (HB) or HRC: <220**	
			Feed rate by diameter						
459	sfm	345 – 591	ipr	.004 - .009	.005 - .011	.006 - .013	.007 - .014	.007 - .018	.010 - .019
140	m/min	105 – 180	mm/r	0,11 - 0,24	0,13 - 0,29	0,14 - 0,33	0,17 -0,36	0,19 -0,45	0,25 - 0,48
P3	**Medium and High Plain-Carbon Steels, Low-alloyed**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**				**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
246	sfm	164 – 328	ipr	.004 - .011	.005 - .014	.006 - .015	.008 - .018	.009 - .018	.012 - .020
75	m/min	50 – 100	mm/r	0,11 - 0,28	0,12 - 0,35	0,16 - 0,37	0,21 -0,46	0,23 -0,46	0,30 - 0,51
P4	**Alloyed and Tempered Carbon Steels, Tool**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**				**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
246	sfm	164 – 328	ipr	.004 - .011	.005 - .014	.006 - .015	.007 - .018	.007 - .018	.009 - .018
75	m/min	50 – 100	mm/r	0,11 - 0,28	0,12 - 0,35	0,16 - 0,37	0,17 -0,46	0,18 -0,46	0,23 - 0,46
K1	**Cast and Low-Strength Ductile Irons**			**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter						
312	sfm	197 – 558	ipr	.006 - .011	.006 - .013	.007 - .014	.008 - .017	.010 - .019	.012 - .023
95	m/min	60 – 170	mm/r	0,15 - 0,29	0,16 - 0,32	0,17 - 0,35	0,21 -0,42	0,25 -0,48	0,31 - 0,59
K2	**Low and Medium Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
246	sfm	197 – 295	ipr	.006 - .011	.006 - .012	.007 - .013	.008 - .016	.010 - .019	.012 - .023
75	m/min	60 – 90	mm/r	0,15 - 0,29	0,16 - 0,30	0,17 - 0,33	0,21 -0,41	0,25 -0,48	0,31 - 0,59
K3	**Low and Medium Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
213	sfm	131 – 295	ipr	.006 - .012	.007 - .013	.007 - .014	.008 - .016	.008 - .017	.009 - .019
65	m/min	40 – 90	mm/r	0,16 - 0,30	0,17 - 0,33	0,18 - 0,36	0,20 -0,41	0,21 -0,44	0,23 - 0,48

* 1 MPa = 145 psi

*NOTE: HP(M) is second choice to new HPC(M) geometry for Iron Applications K1, K2, K3. See B15

Feed and Speed Chart

Modular Drill Carbide Insert Blades – KenTip – HPC(M) Geometry – Grade KC7410 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.315	0.394	0.472	0.551	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	8,0	10,0	12,0	14,0	16,0	20,0
K1	**Cast and Low-Strength Ductile Irons**		**Tensile Strength RM (MPa)*: 150-400**					**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter						
574	sfm	328 – 656	ipr	.006 - .013	.006 - .015	.007 -.017	.009 - .019	.010 - .022	.012 - .024
175	m/min	100 – 200	mm/r	0,14 - 0,32	0,16 - 0,37	0,19 - 0,43	0,23 - 0,48	0,26 - 0,55	0,30 - 0,61
K2	**Low and Medium Strength CGI and Ductile Irons**		**Tensile Strength RM (MPa)*: 400-600**					**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
525	sfm	328 – 591	ipr	.006 - .013	.006 - .015	.007 -.017	.009 - .019	.010 - .022	.012 - .024
160	m/min	100 – 180	mm/r	0,14 - 0,32	0,16 - 0,37	0,19 - 0,43	0,23 - 0,48	0,26 - 0,55	0,30 - 0,61
K3	**High Strength Ductile and Austempered Ductile Iron**		**Tensile Strength RM (MPa)*: 600-900**					**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter						
279	sfm	230 – 328	ipr	.005 - .010	.006 - .012	.007- .014	.007 - .016	.008 - .017	.011 - .020
85	m/min	70 – 100	mm/r	0,13 - 0,26	0,15 - 0,31	0,17 - 0,35	0,19 - 0,40	0,21 - 0,44	0,28 - 0,51

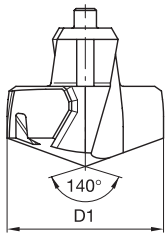
* 1 Mpa = 145 psi

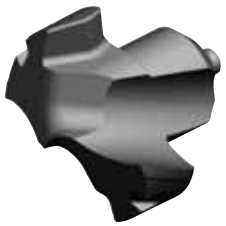
Modular Drill Carbide Insert Blades – KenTIP – HPL(M) Geometry - Grade KC7320 - Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.315	0.394	0.472	0.551	0.630	0.787
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	8,0	10,0	12,0	14,0	16,0	20,0
M1	**Austenitic Stainless Steel**	**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: 130-200**	
			Feed rate by diameter						
182	sfm	164 – 295	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.004 - .007	.005 - .008
60	m/min	50 – 90	mm/r	0,06 - 0,11	0,08 - 0,13	0,09 - 0,14	0,10 -0,15	0,11 - 0,17	0,13 - 0,20
M2	**High Strength Austenitic Stainless and Cast Stainless Steels**	**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: 500-700**					**Hardness (HB) or HRC: 150-230**	
			Feed rate by diameter						
152	sfm	98 – 295	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.004 - .007	.005 - .008
50	m/min	30 – 90	mm/r	0,06 - 0,11	0,08 - 0,13	0,09 - 0,14	0,10 -0,15	0,11 - 0,17	0,13 - 0,20
M3	**Duplex Steel**	**Content: C=.05-.2%**	**Tensile Strength RM (MPa)*: <900**					**Hardness (HB) or HRC: 135-275**	
			Feed rate by diameter						
121	sfm	66 – 197	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .006	.004 - .007	.005 - .008
40	m/min	20 – 60	mm/r	0,06 - 0,11	0,08 - 0,13	0,09 - 0,14	0,10 -0,15	0,11 - 0,17	0,13 - 0,20

* 1 MPa = 145 psi

Tolerances			
D1 metric	**Tolerance k8**	**D1 inch**	**Tolerance k8**
8 to 10	0,000/+0,022	.3125 to .3906	.000/+.0009
>10 to 17	0,000/+0,027	>.3906 to .6250	.000/+.0011
>17 to 18	0,000/+0,027	>.6692 to .7090	.000/+.0010
>18 to 21	0,000/+0,033	>.7090 to .8228	.000/+.0013





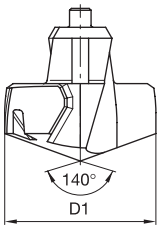
● first choice
○ alternate choice

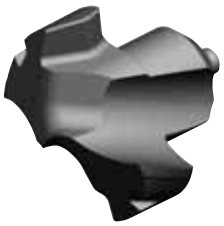
H	
S	
N	
K	○
M	
P	●

KTIP HP(M)

D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7315
7,94	.3125	2269793	KTIP0794HPM	KTIP03125HP	F	●
8,00	.3150	2258306	KTIP0800HPM	KTIP0800HPM	F	●
8,10	.3189	2268550	KTIP0810HPM	KTIP0810HPM	F	●
8,16	.3214	2269753	KTIP0816HPM	KTIP03214HP	F	●
8,20	.3230	2269754	KTIP0820HPM	KTIP03230HP	F	●
8,30	.3268	2268551	KTIP0830HPM	KTIP0830HPM	F	●
8,33	.3281	2269755	KTIP0833HPM	KTIP03281HP	F	●
8,40	.3307	2268552	KTIP0840HPM	KTIP0840HPM	F	●
8,43	.3320	2269756	KTIP0843HPM	KTIP03320HP	F	●
8,50	.3346	2268973	KTIP0850HPM	KTIP0850HPM	G	●
8,60	.3386	2268974	KTIP0860HPM	KTIP0860HPM	G	●
8,61	.3390	2269757	KTIP0861HPM	KTIP03390HP	G	●
8,70	.3425	2268975	KTIP0870HPM	KTIP0870HPM	G	●
8,73	.3438	2269758	KTIP0873HPM	KTIP03438HP	G	●
8,80	.3465	2268976	KTIP0880HPM	KTIP0880HPM	G	●
8,84	.3480	2269759	KTIP0884HPM	KTIP03480HP	G	●
8,90	.3504	2268977	KTIP0890HPM	KTIP0890HPM	G	●
9,00	.3543	2268978	KTIP0900HPM	KTIP0900HPM	H	●
9,09	.3580	2269760	KTIP0909HPM	KTIP03580HP	H	●
9,10	.3583	2268979	KTIP0910HPM	KTIP0910HPM	H	●
9,13	.3594	2269761	KTIP0913HPM	KTIP03594HP	H	●
9,20	.3622	2268980	KTIP0920HPM	KTIP0920HPM	H	●
9,30	.3661	2268981	KTIP0930HPM	KTIP0930HPM	H	●
9,35	.3680	2269762	KTIP0935HPM	KTIP03680HP	H	●
9,40	.3701	2268982	KTIP0940HPM	KTIP0940HPM	H	●
9,50	.3740	2268983	KTIP0950HPM	KTIP0950HPM	I	●
9,53	.3750	2269763	KTIP0953HPM	KTIP03750HP	I	●
9,56	.3763	2269764	KTIP0956HPM	KTIP03763HP	I	●
9,58	.3770	2269765	KTIP0958HPM	KTIP03770HP	I	●
9,60	.3780	2268984	KTIP0960HPM	KTIP0960HPM	I	●
9,70	.3819	2269766	KTIP0970HPM	KTIP03820HP	I	●
9,80	.3858	2269767	KTIP0980HPM	KTIP03860HP	I	●
9,90	.3898	2268985	KTIP0990HPM	KTIP0990HPM	I	●
9,92	.3906	2269768	KTIP0992HPM	KTIP03906HP	I	●
10,00	.3937	2258307	KTIP1000HPM	KTIP1000HPM	J	●
10,02	.3946	2269769	KTIP1002HPM	KTIP03946HP	J	●
10,08	.3970	2269770	KTIP1008HPM	KTIP03970HP	J	●
10,10	.3976	2268986	KTIP1010HPM	KTIP1010HPM	J	●
10,20	.4016	2268987	KTIP1020HPM	KTIP1020HPM	J	●
10,26	.4040	2269771	KTIP1026HPM	KTIP04040HP	J	●
10,30	.4055	2268988	KTIP1030HPM	KTIP1030HPM	J	●
10,32	.4062	2269772	KTIP1032HPM	KTIP04062HP	J	●

(continued on next page)





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KTIP HP(M)

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D1			ISO	ANSI		KC7315
mm	inch	order number	catalog number	catalog number	seat size/series	
10,40	.4094	2240041	KTIP1040HPM	KTIP1040HPM	J	●
10,49	.4130	2269773	KTIP1049HPM	KTIP04130HP	J	●
10,50	.4134	2268989	KTIP1050HPM	KTIP1050HPM	K	●
10,60	.4173	2268990	KTIP1060HPM	KTIP1060HPM	K	●
10,70	.4213	2268991	KTIP1070HPM	KTIP1070HPM	K	●
10,72	.4219	2269774	KTIP1072HPM	KTIP04219HP	K	●
10,80	.4252	2268992	KTIP1080HPM	KTIP1080HPM	K	●
10,90	.4291	2268993	KTIP1090HPM	KTIP1090HPM	K	●
11,00	.4331	2268994	KTIP1100HPM	KTIP1100HPM	L	●
11,10	.4370	2268995	KTIP1110HPM	KTIP1110HPM	L	●
11,11	.4375	2269775	KTIP1111HPM	KTIP04375HP	L	●
11,20	.4409	2268996	KTIP1120HPM	KTIP1120HPM	L	●
11,30	.4449	2254192	KTIP1130HPM	KTIP1130HPM	L	●
11,40	.4488	2268997	KTIP1140HPM	KTIP1140HPM	L	●
11,50	.4528	2268998	KTIP1150HPM	KTIP1150HPM	M	●
11,51	.4531	2269776	KTIP1151HPM	KTIP04531HP	M	●
11,60	.4567	2268999	KTIP1160HPM	KTIP1160HPM	M	●
11,61	.4571	2269777	KTIP1161HPM	KTIP04571HP	M	●
11,70	.4606	2269000	KTIP1170HPM	KTIP1170HPM	M	●
11,80	.4646	2269001	KTIP1180HPM	KTIP1180HPM	M	●
11,90	.4685	2269002	KTIP1190HPM	KTIP1190HPM	M	●
11,91	.4688	2269778	KTIP1191HPM	KTIP04688HP	M	●
12,00	.4724	2258308	KTIP1200HPM	KTIP1200HPM	N	●
12,10	.4764	2269003	KTIP1210HPM	KTIP1210HPM	N	●
12,20	.4803	2269004	KTIP1220HPM	KTIP1220HPM	N	●
12,30	.4843	2269779	KTIP1230HPM	KTIP04844HP	N	●
12,40	.4882	2269005	KTIP1240HPM	KTIP1240HPM	N	●
12,47	.4911	2269780	KTIP1247HPM	KTIP04911HP	N	●
12,50	.4921	2269006	KTIP1250HPM	KTIP1250HPM	O	●
12,60	.4961	2269007	KTIP1260HPM	KTIP1260HPM	O	●
12,70	.5000	2269781	KTIP1270HPM	KTIP05000HP	O	●
12,80	.5039	2491380	KTIP1280HPM	KTIP1280HPM	O	●
12,90	.5080	2269782	KTIP1290HPM	KTIP05080HP	O	●
13,00	.5118	2266152	KTIP1300HPM	KTIP1300HPM	P	●
13,10	.5156	2269783	KTIP1310HPM	KTIP05156HP	P	●
13,20	.5197	2610194	KTIP1320HPM	KTIP1320HPM	P	●
13,30	.5236	2269008	KTIP1330HPM	KTIP1330HPM	P	●
13,40	.5276	2641557	KTIP1340HPM	KTIP1340HPM	P	●
13,49	.5312	2269784	KTIP1349HPM	KTIP05312HP	P	●
13,50	.5315	2269009	KTIP1350HPM	KTIP1350HPM	Q	●
13,60	.5354	2630538	KTIP1360HPM	KTIP1360HPM	Q	●
13,70	.5394	2396961	KTIP1370HPM	KTIP1370HPM	Q	●
13,80	.5433	2419341	KTIP1380HPM	KTIP1380HPM	Q	●
13,89	.5469	2269785	KTIP1389HPM	KTIP05469HP	Q	●
13,90	.5471	2269786	KTIP1390HPM	KTIP05471HP	Q	●
14,00	.5512	2269010	KTIP1400HPM	KTIP1400HPM	R	●
14,10	.5551	2401860	KTIP1410HPM	KTIP1410HPM	R	●
14,20	.5591	2269011	KTIP1420HPM	KTIP1420HPM	R	●
14,29	.5625	2269787	KTIP1429HPM	KTIP05625HP	R	●
14,30	.5630	2269012	KTIP1430HPM	KTIP1430HPM	R	●

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KTIP HP(M)

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D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7315
14,40	.5669	2401211	KTIP1440HPM	KTIP1440HPM	R	●
14,50	.5709	2269013	KTIP1450HPM	KTIP1450HPM	S	●
14,60	.5748	2398855	KTIP1460HPM	KTIP1460HPM	S	●
14,67	.5774	2269788	KTIP1467HPM	KTIP05774HP	S	●
14,68	.5781	2269789	KTIP1468HPM	KTIP05781HP	S	●
14,70	.5787	2269014	KTIP1470HPM	KTIP1470HPM	S	●
14,80	.5827	2269015	KTIP1480HPM	KTIP1480HPM	S	●
14,90	.5866	2646798	KTIP1490HPM	KTIP1490HPM	S	●
15,00	.5906	2269016	KTIP1500HPM	KTIP1500HPM	T	●
15,08	.5938	2269790	KTIP1508HPM	KTIP05938HP	T	●
15,10	.5945	2646799	KTIP1510HPM	KTIP1510HPM	T	●
15,20	.5984	2646800	KTIP1520HPM	KTIP1520HPM	T	●
15,30	.6024	2269017	KTIP1530HPM	KTIP1530HPM	T	●
15,40	.6063	2488572	KTIP1540HPM	KTIP1540HPM	T	●
15,48	.6094	2269791	KTIP1548HPM	KTIP06094HP	T	●
15,50	.6102	2269018	KTIP1550HPM	KTIP1550HPM	T	●
15,60	.6142	2459124	KTIP1560HPM	KTIP1560HPM	T	●
15,70	.6181	2269019	KTIP1570HPM	KTIP1570HPM	T	●
15,80	.6220	2269020	KTIP1580HPM	KTIP1580HPM	T	●
15,88	.6250	2269792	KTIP1588HPM	KTIP06250HP	T	●
16,00	.6300	2258309	KTIP1600HPM	KTIP1600HPM	U	●
16,03	.6310	2646801	KTIP1603HPM	KTIP06310HP	U	●
16,08	.6330	2646802	KTIP1608HPM	KTIP06330HP	U	●
16,10	.6339	2448304	KTIP1610HPM	KTIP1610HPM	U	●
16,20	.6378	2496158	KTIP1620HPM	KTIP1620HPM	U	●
16,27	.6406	2646923	KTIP1627HPM	KTIP06406HP	U	●
16,30	.6417	2611859	KTIP1630HPM	KTIP1630HPM	U	●
16,40	.6457	2646924	KTIP1640HPM	KTIP1640HPM	U	●
16,50	.6496	2504824	KTIP1650HPM	KTIP1650HPM	U	●
16,60	.6535	2619484	KTIP1660HPM	KTIP1660HPM	U	●
16,67	.6562	2611860	KTIP1667HPM	KTIP06562HP	U	●
16,70	.6575	2623676	KTIP1670HPM	KTIP1670HPM	U	●
16,80	.6614	2646925	KTIP1680HPM	KTIP1680HPM	U	●
16,87	.6643	2646926	KTIP1687HPM	KTIP06643HP	U	●
16,90	.6654	2646927	KTIP1690HPM	KTIP1690HPM	U	●
17,00	.6692	2983124	KTIP1700HPM	KTIP1700HPM	V	●
17,07	.6719	2983125	KTIP1707HPM	KTIP06719HP	V	●
17,10	.6732	2983126	KTIP1710HPM	KTIP1710HPM	V	●
17,20	.6772	2983127	KTIP1720HPM	KTIP1720HPM	V	●
17,30	.6811	2983128	KTIP1730HPM	KTIP1730HPM	V	●
17,40	.6850	2983129	KTIP1740HPM	KTIP1740HPM	V	●
17,46	.6875	2983130	KTIP1748HPM	KTIP06875HP	V	●
17,50	.6890	2983131	KTIP1750HPM	KTIP1750HPM	V	●
17,60	.6929	2983132	KTIP1760HPM	KTIP1760HPM	V	●
17,70	.6969	2983283	KTIP1770HPM	KTIP1770HPM	V	●
17,80	.7008	2983284	KTIP1780HPM	KTIP1780HPM	V	●
17,86	.7031	2983285	KTIP1786HPM	KTIP07031HP	V	●
17,90	.7047	2983286	KTIP1790HPM	KTIP1790HPM	V	●
18,00	.7087	2983287	KTIP1800HPM	KTIP1800HPM	W	●
18,10	.7126	2983288	KTIP1810HPM	KTIP1810HPM	W	●

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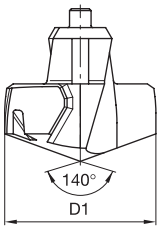

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KTIP HP(M)

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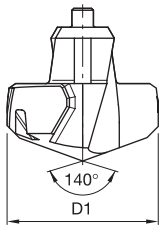
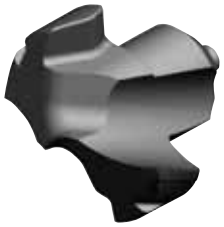
D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7315
18,20	.7165	2983289	KTIP1820HPM	KTIP1820HPM	W	●
18,26	.7188	2983290	KTIP1826HPM	KTIP07188HP	W	●
18,30	.7205	2983291	KTIP1830HPM	KTIP1830HPM	W	●
18,40	.7244	2983292	KTIP1840HPM	KTIP1840HPM	W	●
18,50	.7283	2983293	KTIP1850HPM	KTIP1850HPM	W	●
18,60	.7323	2983294	KTIP1860HPM	KTIP1860HPM	W	●
18,65	.7344	2983295	KTIP1864HPM	KTIP07344HP	W	●
18,70	.7362	2983296	KTIP1870HPM	KTIP1870HPM	W	●
18,80	.7402	2983297	KTIP1880HPM	KTIP1880HPM	W	●
18,90	.7441	2983298	KTIP1890HPM	KTIP1890HPM	W	●
19,00	.7480	2983299	KTIP1900HPM	KTIP1900HPM	X	●
19,05	.7500	2983300	KTIP1905HPM	KTIP07500HP	X	●
19,10	.7520	2983301	KTIP1910HPM	KTIP1910HPM	X	●
19,20	.7559	2983302	KTIP1920HPM	KTIP1920HPM	X	●
19,23	.7570	2983326	KTIP1923HPM	KTIP07570HP	X	●
19,25	.7580	2983303	KTIP1925HPM	KTIP07580HP	X	●
19,28	.7590	2983304	KTIP1928HPM	KTIP07590HP	X	●
19,30	.7598	2983305	KTIP1930HPM	KTIP1930HPM	X	●
19,35	.7620	2983327	KTIP1935HPM	KTIP07620HP	X	●
19,40	.7638	2983306	KTIP1940HPM	KTIP1940HPM	X	●
19,45	.7656	2983307	KTIP1946HPM	KTIP07656HP	X	●
19,50	.7677	2983308	KTIP1950HPM	KTIP1950HPM	X	●
19,60	.7717	2983309	KTIP1960HPM	KTIP1960HPM	X	●
19,70	.7756	2983310	KTIP1970HPM	KTIP1970HPM	X	●
19,80	.7795	2983311	KTIP1980HPM	KTIP1980HPM	X	●
19,84	.7812	2983312	KTIP1984HPM	KTIP07812HP	X	●
19,90	.7835	2983313	KTIP1990HPM	KTIP1990HPM	X	●
20,00	.7874	2983314	KTIP2000HPM	KTIP2000HPM	Y	●
20,10	.7913	2983315	KTIP2010HPM	KTIP2010HPM	Y	●
20,20	.7953	2983316	KTIP2020HPM	KTIP2020HPM	Y	●
20,24	.7969	2983317	KTIP2024HPM	KTIP07969HP	Y	●
20,30	.7992	2983318	KTIP2030HPM	KTIP2030HPM	Y	●
20,40	.8031	2983319	KTIP2040HPM	KTIP2040HPM	Y	●
20,50	.8071	2983320	KTIP2050HPM	KTIP2050HPM	Y	●
20,60	.8110	2983321	KTIP2060HPM	KTIP2060HPM	Y	●
20,64	.8125	2983322	KTIP2064HPM	KTIP08125HP	Y	●
20,70	.8150	2983323	KTIP2070HPM	KTIP2070HPM	Y	●
20,80	.8189	2983324	KTIP2080HPM	KTIP2080HPM	Y	●
20,90	.8228	2983325	KTIP2090HPM	KTIP2090HPM	Y	●
20,99	.8264	3124442	KTIP2099HPM	KTIP2099HPM	Y	●

Ordering Example:
By catalog number KTIP03125HPM KC7315, or by order number 2269793.

Tolerances

D1 metric	Tolerance k8	D1 inch	Tolerance k8
8 to 10	0,000/+0,022	.3125 to .3906	.000/+.0009
>10 to 17	0,000/+0,027	>.3906 to .6250	.000/+.0011
>17 to 18	0,000/+0,027	>.6692 to .7090	.000/+.0010
>18 to 21	0,000/+0,033	>.7090 to .8228	.000/+.0013





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KTIP HPC(M)

D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7410
7,94	0.3125	3578835	KTIP0794HPCM	KTIP03125HPC	F	●
8,00	0.3150	3579265	KTIP0800HPCM	KTIP0800HPCM	F	●
8,10	0.3189	3579266	KTIP0810HPCM	KTIP0810HPCM	F	●
8,20	0.3230	3578836	KTIP0820HPCM	KTIP03230HPC	F	●
8,30	0.3268	3579267	KTIP0830HPCM	KTIP0830HPCM	F	●
8,33	0.3281	3578837	KTIP0833HPCM	KTIP03281HPC	F	●
8,40	0.3307	3579268	KTIP0840HPCM	KTIP0840HPCM	F	●
8,50	0.3346	3579269	KTIP0850HPCM	KTIP0850HPCM	G	●
8,60	0.3386	3579270	KTIP0860HPCM	KTIP0860HPCM	G	●
8,70	0.3425	3579271	KTIP0870HPCM	KTIP0870HPCM	G	●
8,73	0.3438	3578838	KTIP0873HPCM	KTIP03438HPC	G	●
8,80	0.3465	3579272	KTIP0880HPCM	KTIP0880HPCM	G	●
8,90	0.3504	3579273	KTIP0890HPCM	KTIP0890HPCM	G	●
9,00	0.3543	3579274	KTIP0900HPCM	KTIP0900HPCM	H	●
9,10	0.3583	3579275	KTIP0910HPCM	KTIP0910HPCM	H	●
9,13	0.3594	3578839	KTIP0913HPCM	KTIP03594HPC	H	●
9,20	0.3622	3579276	KTIP0920HPCM	KTIP0920HPCM	H	●
9,30	0.3661	3579277	KTIP0930HPCM	KTIP0930HPCM	H	●
9,40	0.3701	3579278	KTIP0940HPCM	KTIP0940HPCM	H	●
9,50	0.3740	3579279	KTIP0950HPCM	KTIP0950HPCM	I	●
9,53	0.3750	3578840	KTIP0953HPCM	KTIP03750HPC	I	●
9,56	0.3763	3578841	KTIP0956HPCM	KTIP03763HPC	I	●
9,60	0.3780	3579280	KTIP0960HPCM	KTIP0960HPCM	I	●
9,70	0.3820	3578842	KTIP0970HPCM	KTIP03820HPC	I	●
9,80	0.3860	3578913	KTIP0980HPCM	KTIP03860HPC	I	●
9,90	0.3898	3579281	KTIP0990HPCM	KTIP0990HPCM	I	●
9,92	0.3906	3578914	KTIP0992HPCM	KTIP03906HPC	I	●
10,00	0.3937	3579282	KTIP1000HPCM	KTIP1000HPCM	J	●
10,02	0.3946	3578915	KTIP1002HPCM	KTIP03946HPC	J	●
10,10	0.3976	3579283	KTIP1010HPCM	KTIP1010HPCM	J	●
10,20	0.4016	3579284	KTIP1020HPCM	KTIP1020HPCM	J	●
10,26	0.4040	3578916	KTIP1026HPCM	KTIP04040HPC	J	●
10,30	0.4055	3579285	KTIP1030HPCM	KTIP1030HPCM	J	●
10,32	0.4062	3578917	KTIP1032HPCM	KTIP04062HPC	J	●
10,40	0.4094	3579286	KTIP1040HPCM	KTIP1040HPCM	J	●
10,49	0.4130	3578918	KTIP1049HPCM	KTIP04130HPC	J	●
10,50	0.4134	3579287	KTIP1050HPCM	KTIP1050HPCM	K	●
10,60	0.4173	3579288	KTIP1060HPCM	KTIP1060HPCM	K	●
10,70	0.4213	3579289	KTIP1070HPCM	KTIP1070HPCM	K	●
10,72	0.4219	3578919	KTIP1072HPCM	KTIP04219HPC	K	●
10,80	0.4252	3579290	KTIP1080HPCM	KTIP1080HPCM	K	●
10,90	0.4291	3579291	KTIP1090HPCM	KTIP1090HPCM	K	●

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KTIP HPC(M)

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D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7410
11,00	0.4331	3579292	KTIP1100HPCM	KTIP1100HPCM	L	●
11,10	0.4370	3579293	KTIP1110HPCM	KTIP1110HPCM	L	●
11,11	0.4375	3578920	KTIP1111HPCM	KTIP04375HPC	L	●
11,20	0.4409	3579294	KTIP1120HPCM	KTIP1120HPCM	L	●
11,30	0.4449	3579295	KTIP1130HPCM	KTIP1130HPCM	L	●
11,40	0.4488	3579296	KTIP1140HPCM	KTIP1140HPCM	L	●
11,50	0.4528	3579297	KTIP1150HPCM	KTIP1150HPCM	M	●
11,51	0.4531	3578921	KTIP1151HPCM	KTIP04531HPC	M	●
11,60	0.4567	3579298	KTIP1160HPCM	KTIP1160HPCM	M	●
11,70	0.4606	3579299	KTIP1170HPCM	KTIP1170HPCM	M	●
11,80	0.4646	3579300	KTIP1180HPCM	KTIP1180HPCM	M	●
11,90	0.4685	3579301	KTIP1190HPCM	KTIP1190HPCM	M	●
11,91	0.4688	3578922	KTIP1191HPCM	KTIP04688HPC	M	●
12,00	0.4724	3579302	KTIP1200HPCM	KTIP1200HPCM	N	●
12,10	0.4764	3579303	KTIP1210HPCM	KTIP1210HPCM	N	●
12,20	0.4803	3579304	KTIP1220HPCM	KTIP1220HPCM	N	●
12,30	0.4844	3578923	KTIP1230HPCM	KTIP04844HPC	N	●
12,40	0.4882	3579305	KTIP1240HPCM	KTIP1240HPCM	N	●
12,50	0.4921	3579306	KTIP1250HPCM	KTIP1250HPCM	O	●
12,60	0.4961	3579307	KTIP1260HPCM	KTIP1260HPCM	O	●
12,70	0.5000	3578924	KTIP1270HPCM	KTIP05000HPC	O	●
12,80	0.5039	3579308	KTIP1280HPCM	KTIP1280HPCM	O	●
12,90	0.5080	3578925	KTIP1290HPCM	KTIP05080HPC	O	●
13,00	0.5118	3579309	KTIP1300HPCM	KTIP1300HPCM	P	●
13,10	0.5156	3578926	KTIP1310HPCM	KTIP05156HPC	P	●
13,20	0.5197	3579310	KTIP1320HPCM	KTIP1320HPCM	P	●
13,30	0.5236	3579311	KTIP1330HPCM	KTIP1330HPCM	P	●
13,40	0.5276	3579312	KTIP1340HPCM	KTIP1340HPCM	P	●
13,49	0.5312	3578927	KTIP1349HPCM	KTIP05312HPC	P	●
13,50	0.5315	3579313	KTIP1350HPCM	KTIP1350HPCM	Q	●
13,60	0.5354	3579314	KTIP1360HPCM	KTIP1360HPCM	Q	●
13,70	0.5394	3579315	KTIP1370HPCM	KTIP1370HPCM	Q	●
13,80	0.5433	3579316	KTIP1380HPCM	KTIP1380HPCM	Q	●
13,89	0.5469	3578928	KTIP1389HPCM	KTIP05469HPC	Q	●
14,00	0.5512	3579317	KTIP1400HPCM	KTIP1400HPCM	R	●
14,10	0.5551	3579318	KTIP1410HPCM	KTIP1410HPCM	R	●
14,20	0.5591	3579319	KTIP1420HPCM	KTIP1420HPCM	R	●
14,29	0.5625	3578929	KTIP1429HPCM	KTIP05625HPC	R	●
14,30	0.5630	3579320	KTIP1430HPCM	KTIP1430HPCM	R	●
14,40	0.5669	3579321	KTIP1440HPCM	KTIP1440HPCM	R	●
14,50	0.5709	3579322	KTIP1450HPCM	KTIP1450HPCM	S	●
14,60	0.5748	3579323	KTIP1460HPCM	KTIP1460HPCM	S	●
14,68	0.5781	3578930	KTIP1468HPCM	KTIP05781HPC	S	●
14,70	0.5787	3579324	KTIP1470HPCM	KTIP1470HPCM	S	●
14,80	0.5827	3579325	KTIP1480HPCM	KTIP1480HPCM	S	●
15,00	0.5906	3579326	KTIP1500HPCM	KTIP1500HPCM	T	●
15,08	0.5938	3578931	KTIP1508HPCM	KTIP05938HPC	T	●
15,10	0.5945	3579327	KTIP1510HPCM	KTIP1510HPCM	T	●
15,20	0.5984	3579328	KTIP1520HPCM	KTIP1520HPCM	T	●
15,30	0.6024	3579329	KTIP1530HPCM	KTIP1530HPCM	T	●

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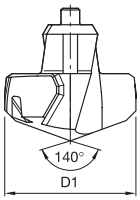


● first choice
○ alternate choice

H	S	N	K	M	P
			●		

KTIP HPC(M)

(continued from previous page)

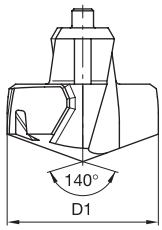
D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7410
15,40	0.6063	3579330	KTIP1540HPCM	KTIP1540HPCM	T	●
15,50	0.6102	3579331	KTIP1550HPCM	KTIP1550HPCM	T	●
15,60	0.6142	3579332	KTIP1560HPCM	KTIP1560HPCM	T	●
15,70	0.6181	3579333	KTIP1570HPCM	KTIP1570HPCM	T	●
15,80	0.6220	3579334	KTIP1580HPCM	KTIP1580HPCM	T	●
15,88	0.6250	3578932	KTIP1588HPCM	KTIP06250HPC	T	●
16,00	0.6299	3579335	KTIP1600HPCM	KTIP1600HPCM	U	●
16,08	0.6330	3578933	KTIP1608HPCM	KTIP06330HPC	U	●
16,10	0.6339	3579336	KTIP1610HPCM	KTIP1610HPCM	U	●
16,20	0.6378	3579337	KTIP1620HPCM	KTIP1620HPCM	U	●
16,30	0.6417	3579338	KTIP1630HPCM	KTIP1630HPCM	U	●
16,40	0.6457	3579339	KTIP1640HPCM	KTIP1640HPCM	U	●
16,50	0.6496	3579340	KTIP1650HPCM	KTIP1650HPCM	U	●
16,60	0.6535	3579341	KTIP1660HPCM	KTIP1660HPCM	U	●
16,67	0.6562	3578934	KTIP1667HPCM	KTIP06562HPC	U	●
16,70	0.6575	3579342	KTIP1670HPCM	KTIP1670HPCM	U	●
16,80	0.6614	3579343	KTIP1680HPCM	KTIP1680HPCM	U	●
16,90	0.6654	3579344	KTIP1690HPCM	KTIP1690HPCM	U	●
17,00	0.6693	3579345	KTIP1700HPCM	KTIP1700HPCM	V	●
17,10	0.6732	3579346	KTIP1710HPCM	KTIP1710HPCM	V	●
17,20	0.6772	3579347	KTIP1720HPCM	KTIP1720HPCM	V	●
17,30	0.6811	3579348	KTIP1730HPCM	KTIP1730HPCM	V	●
17,50	0.689	3579349	KTIP1750HPCM	KTIP1750HPCM	V	●
17,60	0.6929	3579350	KTIP1760HPCM	KTIP1760HPCM	V	●
17,70	0.6969	3579351	KTIP1770HPCM	KTIP1770HPCM	V	●
17,80	0.7008	3579352	KTIP1780HPCM	KTIP1780HPCM	V	●
18,00	0.7087	3579353	KTIP1800HPCM	KTIP1800HPCM	W	●
18,10	0.7126	3579354	KTIP1810HPCM	KTIP1810HPCM	W	●
18,50	0.7283	3579355	KTIP1850HPCM	KTIP1850HPCM	W	●
18,80	0.7402	3579356	KTIP1880HPCM	KTIP1880HPCM	W	●
18,90	0.7441	3579357	KTIP1890HPCM	KTIP1890HPCM	W	●
19,00	0.748	3579358	KTIP1900HPCM	KTIP1900HPCM	X	●
19,05	0.75	3578935	KTIP1905HPCM	KTIP07500HPC	X	●
19,20	0.7559	3579359	KTIP1920HPCM	KTIP1920HPCM	X	●
19,50	0.7677	3579360	KTIP1950HPCM	KTIP1950HPCM	X	●
19,60	0.7717	3579361	KTIP1960HPCM	KTIP1960HPCM	X	●
19,70	0.7756	3579362	KTIP1970HPCM	KTIP1970HPCM	X	●
19,80	0.7795	3579363	KTIP1980HPCM	KTIP1980HPCM	X	●
20,00	0.7874	3579364	KTIP2000HPCM	KTIP2000HPCM	Y	●
20,10	0.7913	3579365	KTIP2010HPCM	KTIP2010HPCM	Y	●
20,30	0.7992	3579366	KTIP2030HPCM	KTIP2030HPCM	Y	●
20,50	0.8071	3579367	KTIP2050HPCM	KTIP2050HPCM	Y	●
20,60	0.811	3579368	KTIP2060HPCM	KTIP2060HPCM	Y	●
20,99	0.8264	3579369	KTIP2099HPCM	KTIP2099HPCM	Y	●

Ordering Example:
By catalog numbers KTIP1540HPCM, or by order number 3579330.

KenTIP Carbide Inserts — Metric and Inch

Tolerances

D1 metric	Tolerance k8	D1 inch	Tolerance k8
8 to 10	0,000/+0,022	.3125 to .3906	.000/+.0009
>10 to 17	0,000/+0,027	>.3906 to .6250	.000/+.0011
>17 to 18	0,000/+0,027	>.6692 to .7090	.000/+.0010
>18 to 21	0,000/+0,033	>.7090 to .8228	.000/+.0013



● first choice
○ alternate choice

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KTIP HPL(M)

D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7320
7,94	0.3125	3557766	KTIP0794HPLM	KTIP03125HPL	F	●
8,00	0.3150	3548607	KTIP0800HPLM	KTIP0800HPLM	F	●
8,10	0.3189	3556387	KTIP0810HPLM	KTIP0810HPLM	F	●
8,16	0.3214	3557767	KTIP0816HPLM	KTIP03214HPL	F	●
8,20	0.3230	3557795	KTIP0820HPLM	KTIP03230HPL	F	●
8,30	0.3268	3556388	KTIP0830HPLM	KTIP0830HPLM	F	●
8,33	0.3281	3557768	KTIP0833HPLM	KTIP03281HPL	F	●
8,40	0.3307	3556389	KTIP0840HPLM	KTIP0840HPLM	F	●
8,50	0.3346	3556390	KTIP0850HPLM	KTIP0850HPLM	G	●
8,60	0.3386	3556391	KTIP0860HPLM	KTIP0860HPLM	G	●
8,70	0.3425	3556392	KTIP0870HPLM	KTIP0870HPLM	G	●
8,80	0.3465	3557623	KTIP0880HPLM	KTIP0880HPLM	G	●
8,90	0.3504	3557624	KTIP0890HPLM	KTIP0890HPLM	G	●
9,00	0.3543	3557625	KTIP0900HPLM	KTIP0900HPLM	H	●
9,10	0.3583	3557626	KTIP0910HPLM	KTIP0910HPLM	H	●
9,20	0.3622	3557627	KTIP0920HPLM	KTIP0920HPLM	H	●
9,30	0.3661	3557628	KTIP0930HPLM	KTIP0930HPLM	H	●
9,40	0.3701	3557629	KTIP0940HPLM	KTIP0940HPLM	H	●
9,50	0.3740	3557630	KTIP0950HPLM	KTIP0950HPLM	I	●
9,56	0.3763	3557769	KTIP0956HPLM	KTIP03763HPL	I	●
9,58	0.3770	3557770	KTIP0958HPLM	KTIP03770HPL	I	●
9,60	0.3780	3557631	KTIP0960HPLM	KTIP0960HPLM	I	●
9,70	0.3820	3557758	KTIP0970HPLM	KTIP03820HPL	I	●
9,80	0.3860	3557759	KTIP0980HPLM	KTIP03860HPL	I	●
9,90	0.3898	3557632	KTIP0990HPLM	KTIP0990HPLM	I	●
10,00	0.3937	3557633	KTIP1000HPLM	KTIP1000HPLM	J	●
10,02	0.3946	3557771	KTIP1002HPLM	KTIP03946HPL	J	●
10,10	0.3976	3557634	KTIP1010HPLM	KTIP1010HPLM	J	●
10,20	0.4016	3557635	KTIP1020HPLM	KTIP1020HPLM	J	●
10,30	0.4055	3557636	KTIP1030HPLM	KTIP1030HPLM	J	●
10,32	0.4062	3557772	KTIP1032HPLM	KTIP04062HPL	J	●
10,40	0.4094	3557637	KTIP1040HPLM	KTIP1040HPLM	J	●
10,50	0.4134	3557638	KTIP1050HPLM	KTIP1050HPLM	K	●
10,60	0.4173	3557639	KTIP1060HPLM	KTIP1060HPLM	K	●
10,70	0.4213	3557640	KTIP1070HPLM	KTIP1070HPLM	K	●
10,80	0.4252	3557641	KTIP1080HPLM	KTIP1080HPLM	K	●
10,90	0.4291	3557642	KTIP1090HPLM	KTIP1090HPLM	K	●
11,00	0.4331	3557643	KTIP1100HPLM	KTIP1100HPLM	L	●

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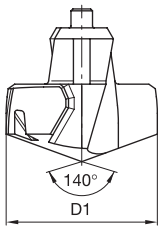

KTIP HPL(M)

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● first choice
○ alternate choice

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D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7320
11,10	0.4370	3557644	KTIP1110HPLM	KTIP1110HPLM	L	●
11,11	0.4375	3557773	KTIP1111HPLM	KTIP04375HPL	L	●
11,20	0.4409	3557645	KTIP1120HPLM	KTIP1120HPLM	L	●
11,40	0.4488	3557646	KTIP1140HPLM	KTIP1140HPLM	L	●
11,50	0.4528	3557647	KTIP1150HPLM	KTIP1150HPLM	M	●
11,60	0.4567	3557648	KTIP1160HPLM	KTIP1160HPLM	M	●
11,61	0.4571	3557774	KTIP1161HPLM	KTIP04571HPL	M	●
11,80	0.4646	3557649	KTIP1180HPLM	KTIP1180HPLM	M	●
11,90	0.4685	3557650	KTIP1190HPLM	KTIP1190HPLM	M	●
11,91	0.4688	3557775	KTIP1191HPLM	KTIP04688HPL	M	●
12,00	0.4724	3557651	KTIP1200HPLM	KTIP1200HPLM	N	●
12,10	0.4764	3557652	KTIP1210HPLM	KTIP1210HPLM	N	●
12,20	0.4803	3557653	KTIP1220HPLM	KTIP1220HPLM	N	●
12,30	0.4844	3557760	KTIP1230HPLM	KTIP04844HPL	N	●
12,50	0.4921	3557654	KTIP1250HPLM	KTIP1250HPLM	O	●
12,70	0.5000	3557761	KTIP1270HPLM	KTIP05000HPL	O	●
12,80	0.5039	3557655	KTIP1280HPLM	KTIP1280HPLM	O	●
12,90	0.5080	3557762	KTIP1290HPLM	KTIP05080HPL	O	●
13,00	0.5118	3557656	KTIP1300HPLM	KTIP1300HPLM	P	●
13,10	0.5156	3557763	KTIP1310HPLM	KTIP05156HPL	P	●
13,20	0.5197	3557657	KTIP1320HPLM	KTIP1320HPLM	P	●
13,49	0.5312	3557776	KTIP1349HPLM	KTIP05312HPL	P	●
13,50	0.5315	3557658	KTIP1350HPLM	KTIP1350HPLM	Q	●
13,80	0.5433	3557659	KTIP1380HPLM	KTIP1380HPLM	Q	●
13,89	0.5469	3557777	KTIP1389HPLM	KTIP05469HPL	Q	●
13,90	0.5471	3557764	KTIP1390HPLM	KTIP05471HPL	Q	●
13,90	0.5471	3557764	KTIP1390HPLM	KTIP05471HPL	Q	●
14,00	0.5512	3557660	KTIP1400HPLM	KTIP1400HPLM	R	●
14,10	0.5551	3557661	KTIP1410HPLM	KTIP1410HPLM	R	●
14,20	0.5591	3557662	KTIP1420HPLM	KTIP1420HPLM	R	●
14,29	0.5625	3557778	KTIP1429HPLM	KTIP05625HPL	R	●
14,30	0.5630	3557663	KTIP1430HPLM	KTIP1430HPLM	R	●
14,40	0.5669	3557664	KTIP1440HPLM	KTIP1440HPLM	R	●
14,50	0.5709	3557665	KTIP1450HPLM	KTIP1450HPLM	S	●
14,67	0.5774	3557779	KTIP1467HPLM	KTIP05774HPL	S	●
14,68	0.5781	3557780	KTIP1468HPLM	KTIP05781HPL	S	●
14,80	0.5827	3557666	KTIP1480HPLM	KTIP1480HPLM	S	●

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KTIP HPL(M)

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● first choice
○ alternate choice

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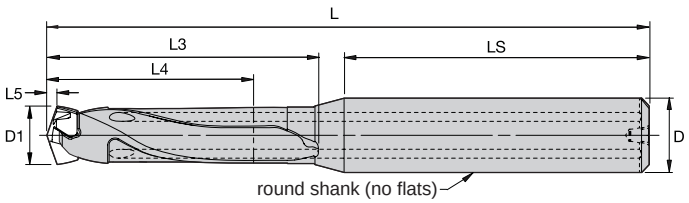
D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7320
15,00	0.5906	3548608	KTIP1500HPLM	KTIP1500HPLM	T	●
15,10	0.5945	3557667	KTIP1510HPLM	KTIP1510HPLM	T	●
15,20	0.5984	3557668	KTIP1520HPLM	KTIP1520HPLM	T	●
15,50	0.6102	3557669	KTIP1550HPLM	KTIP1550HPLM	T	●
15,88	0.6250	3557781	KTIP1588HPLM	KTIP06250HPL	T	●
16,00	0.6299	3557670	KTIP1600HPLM	KTIP1600HPLM	U	●
16,08	0.6330	3557782	KTIP1608HPLM	KTIP06330HPL	U	●
16,10	0.6339	3557671	KTIP1610HPLM	KTIP1610HPLM	U	●
16,50	0.6496	3557672	KTIP1650HPLM	KTIP1650HPLM	U	●
16,67	0.6562	3557783	KTIP1667HPLM	KTIP06562HPL	U	●
17,00	0.6693	3557673	KTIP1700HPLM	KTIP1700HPLM	V	●
17,48	0.6875	3557784	KTIP1748HPLM	KTIP06875HPL	V	●
17,50	0.6890	3557674	KTIP1750HPLM	KTIP1750HPLM	V	●
17,70	0.6969	3557675	KTIP1770HPLM	KTIP1770HPLM	V	●
18,00	0.7087	3557676	KTIP1800HPLM	KTIP1800HPLM	W	●
18,40	0.7244	3557677	KTIP1840HPLM	KTIP1840HPLM	W	●
18,50	0.7283	3557678	KTIP1850HPLM	KTIP1850HPLM	W	●
18,64	0.7344	3557785	KTIP1864HPLM	KTIP07344HPL	W	●
19,00	0.7480	3557679	KTIP1900HPLM	KTIP1900HPLM	X	●
19,05	0.7500	3557786	KTIP1905HPLM	KTIP07500HPL	X	●
19,10	0.7520	3557680	KTIP1910HPLM	KTIP1910HPLM	X	●
19,20	0.7559	3557681	KTIP1920HPLM	KTIP1920HPLM	X	●
19,23	0.7570	3557787	KTIP1923HPLM	KTIP07570HPL	X	●
19,25	0.7580	3557765	KTIP1925HPLM	KTIP07580HPL	X	●
19,28	0.7590	3557788	KTIP1928HPLM	KTIP07590HPL	X	●
19,35	0.7620	3557789	KTIP1935HPLM	KTIP07620HPL	X	●
19,46	0.7656	3557790	KTIP1946HPLM	KTIP07656HPL	X	●
19,50	0.7677	3557682	KTIP1950HPLM	KTIP1950HPLM	X	●
19,84	0.7812	3557791	KTIP1984HPLM	KTIP07812HPL	X	●
20,00	0.7874	3548609	KTIP2000HPLM	KTIP2000HPLM	Y	●
20,24	0.7969	3557792	KTIP2024HPLM	KTIP07969HPL	Y	●
20,50	0.8071	3557683	KTIP2050HPLM	KTIP2050HPLM	Y	●
20,64	0.8125	3557793	KTIP2064HPLM	KTIP08125HPL	Y	●
20,99	0.8264	3557684	KTIP2099HPLM	KTIP2099HPLM	Y	●

Ordering Example:
By catalog number KTIP1500HPLM KC7320, or by order number 3548608.



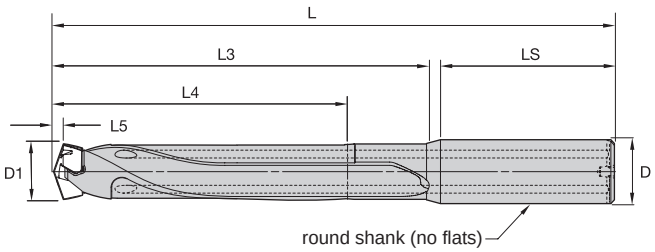
- Tool body shipped with insert wrench.

3xD Round Shank — Inch

inch		mm											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
.3125	.3343	7,94	8,49	2250704	KTIP0313R3SS038	F	.3750	3.13	1.29	1.00	.054	1.59	170.306
.3346	.3539	8,50	8,99	2250705	KTIP0335R3SS038	G	.3750	3.25	1.38	1.06	.058	1.59	170.306
.3543	.3736	9,00	9,49	2250706	KTIP0354R3SS038	H	.3750	3.38	1.46	1.12	.062	1.59	170.306
.3740	.3933	9,50	9,99	2250707	KTIP0374R3SS038	I	.3750	3.38	1.54	1.18	.065	1.59	170.306
.3740	.3933	9,50	9,99	2250708	KTIP0374R3SS044	I	.4375	3.38	1.54	1.18	.065	1.67	170.306
.3937	.4130	10,00	10,49	2250709	KTIP0394R3SS044	J	.4375	3.63	1.63	1.24	.068	1.67	170.307
.4134	.4327	10,50	10,99	2250710	KTIP0413R3SS044	K	.4375	3.75	1.71	1.30	.073	1.67	170.307
.4331	.4524	11,00	11,49	2250711	KTIP0433R3SS044	L	.4375	3.88	1.79	1.36	.075	1.67	170.307
.4528	.4720	11,50	11,99	2250712	KTIP0453R3SS050	M	.5000	3.88	1.87	1.42	.078	1.79	170.307
.4724	.4917	12,00	12,49	2250723	KTIP0472R3SS050	N	.5000	4.00	1.95	1.48	.084	1.79	170.308
.4921	.5114	12,50	12,99	2250725	KTIP0492R3SS056	O	.5625	4.13	2.04	1.54	.086	1.79	170.308
.4921	.5114	12,50	12,99	2250724	KTIP0492R3SS050	O	.5000	4.13	2.04	1.54	.086	1.79	170.308
.5118	.5311	13,00	13,49	2250726	KTIP0512R3SS056	P	.5625	4.25	2.11	1.60	.089	1.79	170.308
.5315	.5508	13,50	13,99	2250727	KTIP0532R3SS056	Q	.5625	4.25	2.19	1.65	.094	1.79	170.308
.5512	.5705	14,00	14,49	2250728	KTIP0551R3SS056	R	.5625	4.50	2.27	1.71	.097	1.79	170.309
.5709	.5902	14,50	14,99	2250729	KTIP0571R3SS063	S	.6250	4.50	2.34	1.77	.100	1.91	170.309
.5906	.6295	15,00	15,99	2250730	KTIP0591R3SS063	T	.6250	4.75	2.43	1.89	.102	1.91	170.309
.6299	.6689	16,00	16,99	2250731	KTIP0630R3SS069	U	.6875	4.88	2.59	2.01	.109	1.91	170.309
.6693	.7083	17,00	17,99	3018928	KTIP0669R3SS069	V	.6875	5.00	2.98	2.12	.120	1.91	170.314
.7087	.7476	18,00	18,99	3018929	KTIP0709R3SS075	W	.7500	5.25	3.13	2.24	.120	2.00	170.314
.7480	.7870	19,00	19,99	3018930	KTIP0748R3SS075	X	.7500	5.50	3.39	2.36	.130	2.00	170.314
.7874	.8264	20,00	20,99	3018931	KTIP0787R3SS081	Y	.8125	5.75	3.63	2.48	.140	2.00	170.314

Ordering Example:
By catalog number KTIP0313R3SS038, or by order number 2250704.

KenTIP Round Shank Bodies — Inch

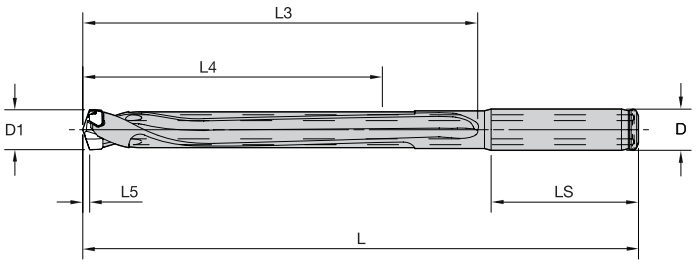


- Tool body shipped with insert wrench.

5xD Round Shank — Inch

inch		mm											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
.3125	.3343	7,94	8,49	2269611	KTIP0313R5SS038	F	.3750	3.88	2.05	1.67	.054	1.59	170.306
.3346	.3539	8,50	8,99	2250674	KTIP0335R5SS038	G	.3750	4.00	2.16	1.77	.058	1.59	170.306
.3543	.3736	9,00	9,49	2250675	KTIP0354R5SS038	H	.3750	4.13	2.28	1.87	.062	1.59	170.306
.3740	.3933	9,50	9,99	2250676	KTIP0374R5SS038	I	.3750	4.25	2.44	1.97	.063	1.59	170.306
.3740	.3933	9,50	9,99	2250677	KTIP0374R5SS044	I	.4375	4.38	2.44	1.97	.063	1.67	170.306
.3937	.4130	10,00	10,49	2250678	KTIP0394R5SS044	J	.4375	4.63	2.55	2.07	.068	1.67	170.307
.4134	.4327	10,50	10,99	2250679	KTIP0413R5SS044	K	.4375	4.75	2.67	2.16	.073	1.67	170.307
.4331	.4524	11,00	11,49	2250680	KTIP0433R5SS044	L	.4375	4.88	2.78	2.26	.075	1.67	170.307
.4528	.4720	11,50	11,99	2250681	KTIP0453R5SS050	M	.5000	5.00	2.90	2.36	.078	1.79	170.307
.4724	.4917	12,00	12,49	2250682	KTIP0472R5SS050	N	.5000	5.00	3.01	2.46	.084	1.79	170.308
.4921	.5114	12,50	12,99	2250683	KTIP0492R5SS050	O	.5000	5.13	3.13	2.56	.086	1.79	170.308
.4921	.5114	12,50	12,99	2250684	KTIP0492R5SS056	O	.5625	5.13	3.13	2.56	.086	1.79	170.308
.5118	.5311	13,00	13,49	2250685	KTIP0512R5SS056	P	.5625	5.25	3.24	2.66	.089	1.79	170.308
.5315	.5508	13,50	13,99	2250686	KTIP0532R5SS056	Q	.5625	5.50	3.39	2.75	.094	1.79	170.308
.5512	.5705	14,00	14,49	2250687	KTIP0551R5SS056	R	.5625	5.75	3.50	2.85	.097	1.79	170.309
.5709	.5902	14,50	14,99	2250688	KTIP0571R5SS063	S	.6250	5.75	3.61	2.95	.100	1.91	170.309
.5906	.6295	15,00	15,99	2250689	KTIP0591R5SS063	T	.6250	6.00	3.76	3.15	.102	1.91	170.309
.6299	.6689	16,00	16,99	2250690	KTIP0630R5SS069	U	.6875	6.25	4.06	3.34	.109	1.91	170.309
.6693	.7083	17,00	17,99	3018932	KTIP0669R5SS069	V	.6875	6.50	4.47	3.54	.120	1.91	170.314
.7087	.7476	18,00	18,99	3018933	KTIP0709R5SS075	W	.7500	6.88	4.76	3.74	.120	2.00	170.314
.7480	.7870	19,00	19,99	3018934	KTIP0748R5SS075	X	.7500	7.13	5.01	3.94	.130	2.00	170.314
.7874	.8264	20,00	20,99	3018935	KTIP0787R5SS081	Y	.8125	7.50	5.38	4.13	.140	2.00	170.314

Ordering Example:
By catalog number KTIP0313R5SS038, or by order number 2269611.



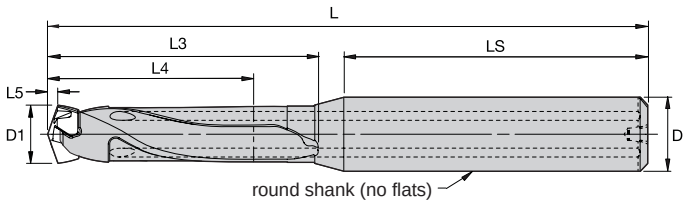
- Tool body shipped with insert wrench.

8xD Round Shank — Inch

inch		mm											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
.3125	.3343	7,94	8,49	2542068	KTIP0313R8SS038	F	.3750	4.88	3.10	2.68	.055	1.59	170.306
.3346	.3539	8,50	8,99	2542069	KTIP0335R8SS038	G	.3750	5.13	3.36	2.83	.059	1.59	170.306
.3543	.3736	9,00	9,49	2542071	KTIP0354R8SS038	H	.3750	5.25	3.47	2.99	.063	1.59	170.306
.3740	.3933	9,50	9,99	2542072	KTIP0374R8SS038	I	.3750	5.38	3.60	3.15	.063	1.59	170.306
.3740	.3933	9,50	9,99	2542083	KTIP0374R8SS044	I	.4375	5.38	3.52	3.15	.063	1.67	170.306
.3937	.4130	10,00	10,49	2542084	KTIP0394R8SS044	J	.4375	5.75	3.89	3.31	.067	1.67	170.307
.4134	.4327	10,50	10,99	2542085	KTIP0413R8SS044	K	.4375	6.00	4.14	3.46	.071	1.67	170.307
.4331	.4524	11,00	11,49	2542086	KTIP0433R8SS044	L	.4375	6.25	4.38	3.62	.075	1.67	170.307
.4528	.4720	11,50	11,99	2542087	KTIP0453R8SS050	M	.5000	6.50	4.52	3.78	.079	1.79	170.307
.4724	.4917	12,00	12,49	2443608	KTIP0472R8SS050	N	.5000	6.75	4.76	3.94	.083	1.79	170.308
.4921	.5114	12,50	12,99	2542088	KTIP0492R8SS050	O	.5000	7.00	5.02	4.09	.087	1.79	170.308
.4921	.5114	12,50	12,99	2542089	KTIP0492R8SS056	O	.5625	7.00	5.02	4.09	.087	1.79	170.308
.5118	.5311	13,00	13,49	2542090	KTIP0512R8SS056	P	.5625	7.13	5.13	4.25	.091	1.79	170.308
.5315	.5508	13,50	13,99	2542091	KTIP0532R8SS056	Q	.5625	7.25	5.26	4.41	.095	1.79	170.308
.5512	.5705	14,00	14,49	2542092	KTIP0551R8SS056	R	.5625	7.38	5.37	4.57	.098	1.79	170.309
.5512	.5705	14,00	14,49	2542093	KTIP0571R8SS063	S	.6250	7.50	5.39	4.72	.098	1.91	170.309
.5906	.8295	15,00	15,99	2542094	KTIP0591R8SS063	T	.6250	7.75	5.65	5.04	.102	1.91	170.309
.6299	.6899	16,00	16,99	2542095	KTIP0630R8SS069	U	.6875	8.00	5.87	5.36	.110	1.91	170.309
.6693	.7083	17,00	17,99	3033024	KTIP0669R8SS069	V	.6875	8.75	6.72	5.67	.120	1.91	170.314
.7087	.7476	18,00	18,99	3033025	KTIP0709R8SS075	W	.7500	9.25	7.13	5.98	.120	2.00	170.314
.7480	.7870	19,00	19,99	3033026	KTIP0748R8SS075	X	.7500	9.63	7.51	6.30	.130	2.00	170.314
.7874	.8264	20,00	20,99	3033027	KTIP0787R8SS081	Y	.8125	10.00	7.88	6.61	.140	2.00	170.314

Ordering Example:
By catalog number KTIP0313R8SS038, or by order number 2542068.

KenTIP Round Shank Bodies — Metric



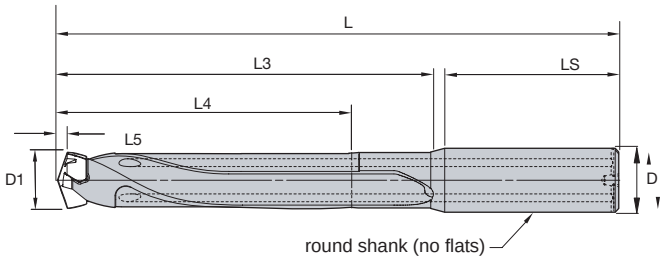
- Tool body shipped with insert wrench.

3xD Round Shank — Metric

mm		inch											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3125	.3343	2268303	KTIP080R3SS10M	F	10	79	35	26	1,4	41	170.306
8,50	8,99	.3346	.3539	2268304	KTIP085R3SS10M	G	10	81	37	27	1,5	41	170.306
9,00	9,49	.3543	.3736	2268305	KTIP090R3SS10M	H	10	83	39	29	1,6	41	170.306
9,50	9,99	.3740	.3933	2268306	KTIP095R3SS10M	I	10	85	41	30	1,6	41	170.306
10,00	10,49	.3937	.4130	2268307	KTIP100R3SS12M	J	12	92	43	32	1,7	46	170.307
10,50	10,99	.4134	.4327	2268308	KTIP105R3SS12M	K	12	94	45	33	1,8	46	170.307
11,00	11,49	.4331	.4524	2268309	KTIP110R3SS12M	L	12	96	47	35	1,9	46	170.307
11,50	11,99	.4528	.4720	2268310	KTIP115R3SS12M	M	12	98	49	36	2,0	46	170.307
12,00	12,49	.4724	.4917	2268311	KTIP120R3SS14M	N	14	101	52	38	2,1	46	170.308
12,50	12,99	.4921	.5114	2268312	KTIP125R3SS14M	O	14	103	54	39	2,2	46	170.308
13,00	13,49	.5118	.5311	2268313	KTIP130R3SS14M	P	14	105	56	41	2,2	46	170.308
13,50	13,99	.5315	.5508	2268314	KTIP135R3SS14M	Q	14	107	58	42	2,3	46	170.308
14,00	14,49	.5512	.5705	2268315	KTIP140R3SS16M	R	16	112	60	44	2,4	49	170.309
14,50	14,99	.5709	.5902	2268316	KTIP145R3SS16M	S	16	114	62	45	2,5	49	170.309
15,00	15,99	.5906	.6295	2268317	KTIP150R3SS16M	T	16	118	66	48	2,6	49	170.309
16,00	16,99	.6299	.6689	2268318	KTIP160R3SS18M	U	18	122	70	51	2,8	49	170.309
17,00	17,99	.6693	.7083	3017663	KTIP170R3SS18M	V	18	127	75	54	2,9	49	170.314
18,00	18,99	.7087	.7476	3017664	KTIP180R3SS20M	W	20	133	79	57	3,1	51	170.314
19,00	19,99	.7480	.7870	3017665	KTIP190R3SS20M	X	20	137	83	60	3,3	51	170.314
20,00	20,99	.7874	.8264	3017666	KTIP200R3SS25M	Y	25	147	87	63	3,4	57	170.314

Ordering Example:
By catalog number KTIP080R3SS10M, or by order number 2268303.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



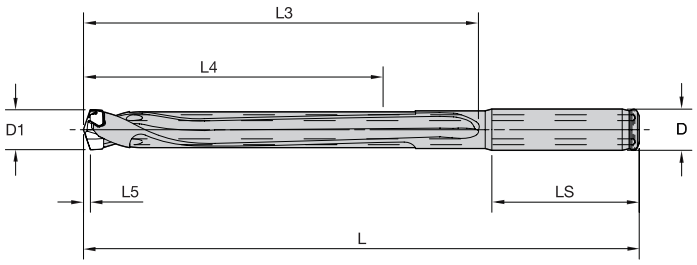
- Tool body shipped with insert wrench.

5xD Round Shank — Metric

mm		inch											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3125	.3343	2258040	KTIP080R5SS10M	F	10	97	53	43	1,4	41	170.306
8,50	8,99	.3346	.3539	2402283	KTIP085R5SS10M	G	10	100	56	45	1,5	41	170.306
9,00	9,49	.3543	.3736	2402284	KTIP090R5SS10M	H	10	103	59	48	1,6	41	170.306
9,50	9,99	.3740	.3933	2402285	KTIP095R5SS10M	I	10	107	63	50	1,6	41	170.306
10,00	10,49	.3937	.4130	2258041	KTIP100R5SS12M	J	12	115	66	53	1,7	46	170.307
10,50	10,99	.4134	.4327	2402286	KTIP105R5SS12M	K	12	118	69	55	1,8	46	170.307
11,00	11,49	.4331	.4524	2402287	KTIP110R5SS12M	L	12	121	72	58	1,9	46	170.307
11,50	11,99	.4528	.4720	2402288	KTIP115R5SS12M	M	12	124	75	60	2,0	46	170.307
12,00	12,49	.4724	.4917	2258042	KTIP120R5SS14M	N	14	127	78	63	2,1	46	170.308
12,50	12,99	.4921	.5114	2402289	KTIP125R5SS14M	O	14	130	81	65	2,2	46	170.308
13,00	13,49	.5118	.5311	2402290	KTIP130R5SS14M	P	14	133	84	68	2,2	46	170.308
13,50	13,99	.5315	.5508	2402291	KTIP135R5SS14M	Q	14	137	88	70	2,3	46	170.308
14,00	14,49	.5512	.5705	2402292	KTIP140R5SS16M	R	16	143	91	73	2,4	49	170.309
14,50	14,99	.5709	.5902	2402293	KTIP145R5SS16M	S	16	146	94	75	2,5	49	170.309
15,00	15,99	.5906	.6295	2402294	KTIP150R5SS16M	T	16	152	100	80	2,6	49	170.309
16,00	16,99	.6299	.6689	2258053	KTIP160R5SS18M	U	18	158	106	85	2,8	49	170.309
17,00	17,99	.6693	.7083	3017671	KTIP170R5SS18M	V	18	165	113	90	2,9	49	170.314
18,00	18,99	.7087	.7476	3017672	KTIP180R5SS20M	W	20	173	119	95	3,1	51	170.314
19,00	19,99	.7480	.7870	3017673	KTIP190R5SS20M	X	20	179	125	100	3,3	51	170.314
20,00	20,99	.7874	.8264	3017674	KTIP200R5SS25M	Y	25	191	131	105	3,4	57	170.314

Ordering Example:
By catalog number KTIP080R5SS10M, or by order number 2258040.

KenTIP Round Shank Bodies — Metric

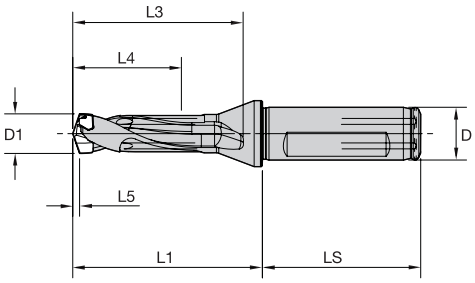


- Tool body shipped with insert wrench.

8xD Round Shank — Metric

mm		inch											
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3150	.3343	2548776	KTIP080R8SS10M	F	10	123	78	68	1,4	41	170.306
8,50	8,99	.3346	.3539	2440526	KTIP085R8SS10M	G	10	127	83	72	1,5	41	170.306
9,00	9,49	.3543	.3736	2548777	KTIP090R8SS10M	H	10	132	87	76	1,6	41	170.306
9,50	9,99	.3740	.3933	2548778	KTIP095R8SS10M	I	10	137	92	80	1,6	41	170.306
10,00	10,49	.3937	.4130	2548779	KTIP100R8SS12M	J	12	147	97	84	1,7	46	170.307
10,50	10,99	.4134	.4327	2548780	KTIP105R8SS12M	K	12	151	101	88	1,8	46	170.307
11,00	11,49	.4331	.4524	2548781	KTIP110R8SS12M	L	12	156	105	92	1,9	46	170.307
11,50	11,99	.4528	.4720	2548782	KTIP115R8SS12M	M	12	160	110	96	2,0	46	170.307
12,00	12,49	.4724	.4917	2548913	KTIP120R8SS14M	N	14	165	115	100	2,1	46	170.308
12,50	12,99	.4921	.5114	2548914	KTIP125R8SS14M	O	14	169	119	104	2,2	46	170.308
13,00	13,49	.5118	.5311	2548915	KTIP130R8SS14M	P	14	174	123	108	2,2	46	170.308
13,50	13,99	.5315	.5508	2548916	KTIP135R8SS14M	Q	14	179	129	112	2,3	46	170.308
14,00	14,49	.5512	.5705	2548917	KTIP140R8SS16M	R	16	187	133	116	2,4	49	170.309
14,50	14,99	.5709	.5902	2548918	KTIP145R8SS16M	S	16	191	138	120	2,5	49	170.309
15,00	15,99	.5906	.6295	2548919	KTIP150R8SS16M	T	16	200	147	128	2,6	49	170.309
16,00	16,99	.6299	.6689	2440527	KTIP160R8SS18M	U	18	209	155	136	2,8	49	170.309
17,00	17,99	.6690	.7083	3114313	KTIP170R8SS18M	V	18	219	166	144	2,9	49	170.314
18,00	18,99	.7090	.7476	3114314	KTIP180R8SS20M	W	20	230	175	152	3,1	51	170.314
19,00	19,99	.7480	.7870	3114315	KTIP190R8SS20M	X	20	239	184	160	3,3	51	170.314
20,00	20,99	.7870	.8264	3114316	KTIP200R8SS25M	Y	25	254	196	168	3,4	57	170.314

Ordering Example:
By catalog number KTIP080R8SS10M, or by order number 2548776.



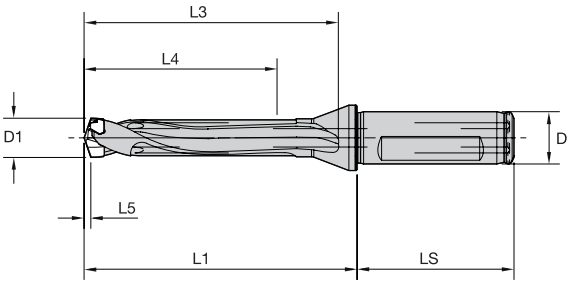
- Tool body shipped with insert wrench.

3xD Flange Shank — Metric

mm		inch												
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3125	.3343	2405161	KTIP080R3SCF12M	F	12	86	41	35	26	1,4	45	170.306
8,50	8,99	.3346	.3539	2405162	KTIP085R3SCF12M	G	12	88	43	37	27	1,5	45	170.306
9,00	9,49	.3543	.3736	2405203	KTIP090R3SCF12M	H	12	90	45	39	29	1,6	45	170.306
9,50	9,99	.3740	.3933	2405204	KTIP095R3SCF12M	I	12	92	47	41	30	1,6	45	170.306
10,00	10,49	.3937	.4130	2405205	KTIP100R3SCF16M	J	16	97	49	43	32	1,7	48	170.307
10,50	10,99	.4134	.4327	2405206	KTIP105R3SCF16M	K	16	99	51	45	33	1,8	48	170.307
11,00	11,49	.4331	.4524	2405207	KTIP110R3SCF16M	L	16	101	53	47	35	1,9	48	170.307
11,50	11,99	.4528	.4720	2405208	KTIP115R3SCF16M	M	16	103	55	49	36	2,0	48	170.307
12,00	12,49	.4724	.4917	2405209	KTIP120R3SCF16M	N	16	106	58	52	38	2,1	48	170.308
12,50	12,99	.4921	.5114	2405210	KTIP125R3SCF16M	O	16	108	60	54	39	2,2	48	170.308
13,00	13,49	.5118	.5311	2405211	KTIP130R3SCF16M	P	16	110	62	56	41	2,2	48	170.308
13,50	13,99	.5315	.5508	2405212	KTIP135R3SCF16M	Q	16	112	64	58	42	2,3	48	170.308
14,00	14,49	.5512	.5705	2405213	KTIP140R3SCF16M	R	16	114	66	60	44	2,4	48	170.309
14,50	14,99	.5709	.5902	2405214	KTIP145R3SCF16M	S	16	116	68	62	45	2,5	48	170.309
15,00	15,99	.5906	.6295	2405215	KTIP150R3SCF20M	T	20	122	72	66	48	2,6	50	170.309
16,00	16,99	.6299	.6689	2405216	KTIP160R3SCF20M	U	20	126	76	70	51	2,8	50	170.309
17,00	17,99	.6693	.7083	3017667	KTIP170R3SCF20M	V	20	131	81	75	54	2,9	50	170.314
18,00	18,99	.7087	.7476	3017668	KTIP180R3SCF25M	W	25	141	85	79	57	3,1	56	170.314
19,00	19,99	.7480	.7870	3017669	KTIP190R3SCF25M	X	25	144	89	83	60	3,3	56	170.314
20,00	20,99	.7874	.8264	3017670	KTIP200R3SCF25M	Y	25	149	93	87	63	3,4	56	170.314

Ordering Example:
By catalog number KTIP080R3SCF12M, or by order number 2405161.

KenTIP Flanged Shank Bodies — Metric



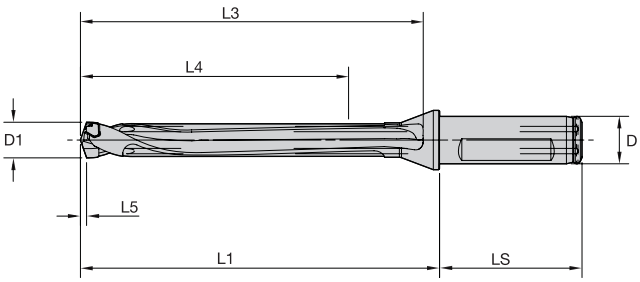
- Tool body shipped with insert wrench.

5xD Flange Shank — Metric

mm		inch												
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3125	.3343	2405248	KTIP080R5SCF12M	F	12	104	59	53	43	1,4	45	170.306
8,50	8,99	.3346	.3539	2405249	KTIP085R5SCF12M	G	12	107	62	56	45	1,5	45	170.306
9,00	9,49	.3543	.3736	2405250	KTIP090R5SCF12M	H	12	110	65	59	48	1,6	45	170.306
9,50	9,99	.3740	.3933	2405251	KTIP095R5SCF12M	I	12	114	69	63	50	1,6	45	170.306
10,00	10,49	.3937	.4130	2405252	KTIP100R5SCF16M	J	16	120	72	66	53	1,7	48	170.307
10,50	10,99	.4134	.4327	2405273	KTIP105R5SCF16M	K	16	123	75	69	55	1,8	48	170.307
11,00	11,49	.4331	.4524	2405274	KTIP110R5SCF16M	L	16	126	78	72	58	1,9	48	170.307
11,50	11,99	.4528	.4720	2405275	KTIP115R5SCF16M	M	16	129	81	75	60	2,0	48	170.307
12,00	12,49	.4724	.4917	2405276	KTIP120R5SCF16M	N	16	132	84	78	63	2,1	48	170.308
12,50	12,99	.4921	.5114	2405277	KTIP125R5SCF16M	O	16	135	87	81	65	2,2	48	170.308
13,00	13,49	.5118	.5311	2405278	KTIP130R5SCF16M	P	16	138	90	84	68	2,2	48	170.308
13,50	13,99	.5315	.5508	2405279	KTIP135R5SCF16M	Q	16	142	94	88	70	2,3	48	170.308
14,00	14,49	.5512	.5705	2405280	KTIP140R5SCF16M	R	16	145	97	91	73	2,4	48	170.309
14,50	14,99	.5709	.5902	2405281	KTIP145R5SCF16M	S	16	148	100	94	75	2,5	48	170.309
15,00	15,99	.5906	.6295	2405282	KTIP150R5SCF20M	T	20	156	106	100	80	2,6	50	170.309
16,00	16,99	.6299	.6689	2405283	KTIP160R5SCF20M	U	20	162	112	106	85	2,8	50	170.309
17,00	17,99	.6693	.7083	3017675	KTIP170R5SCF20M	V	20	169	119	113	90	2,9	50	170.314
18,00	18,99	.7087	.7476	3017676	KTIP180R5SCF25M	W	25	181	125	119	95	3,1	56	170.314
19,00	19,99	.7480	.7870	3017677	KTIP190R5SCF25M	X	25	187	131	125	100	3,3	56	170.314
20,00	20,99	.7874	.8264	3017678	KTIP200R5SCF25M	Y	25	193	137	131	105	3,4	56	170.314

Ordering Example:
By catalog number KTIP080R5SCF12M, or by order number 2405248.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



- Tool body shipped with insert wrench.

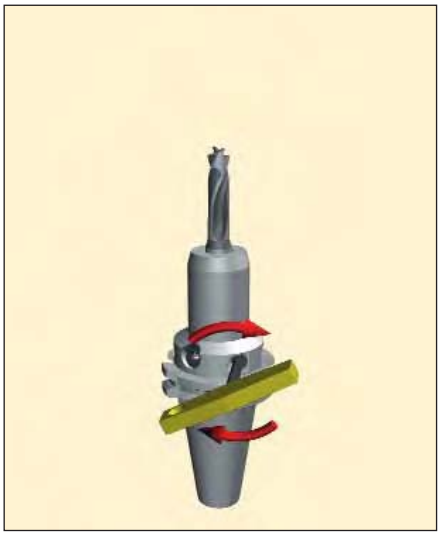
8xD Flange Shank — Metric

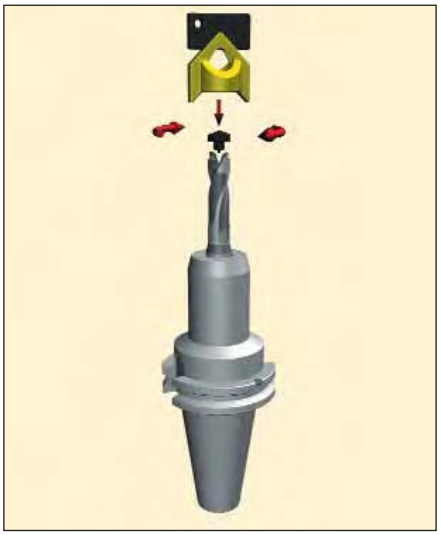
mm		inch												
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	insert wrench
8,00	8,49	.3150	.3343	2548920	KTIP080R8SCF12M	F	12	129	84	79	68	1,4	45	170.306
8,50	8,99	.3346	.3539	2548921	KTIP085R8SCF12M	G	12	134	89	83	72	1,5	45	170.306
9,00	9,49	.3543	.3736	2548922	KTIP090R8SCF12M	H	12	138	93	88	76	1,6	45	170.306
9,50	9,99	.3740	.3933	2548923	KTIP095R8SCF12M	I	12	144	99	93	80	1,6	45	170.306
10,00	10,49	.3937	.4130	2548924	KTIP100R8SCF16M	J	16	151	103	97	84	1,7	48	170.307
10,50	10,99	.4134	.4327	2548925	KTIP105R8SCF16M	K	16	156	108	102	88	1,8	48	170.307
11,00	11,49	.4331	.4524	2548926	KTIP110R8SCF16M	L	16	160	112	107	92	1,9	48	170.307
11,50	11,99	.4528	.4720	2548927	KTIP115R8SCF16M	M	16	165	117	111	96	2,0	48	170.307
12,00	12,49	.4724	.4917	2548928	KTIP120R8SCF16M	N	16	169	121	116	100	2,1	48	170.308
12,50	12,99	.4921	.5114	2548929	KTIP125R8SCF16M	O	16	174	126	120	104	2,2	48	170.308
13,00	13,49	.5118	.5311	2548930	KTIP130R8SCF16M	P	16	178	130	124	108	2,2	48	170.308
13,50	13,99	.5315	.5508	2548931	KTIP135R8SCF16M	Q	16	184	136	130	112	2,3	48	170.308
14,00	14,49	.5512	.5705	2548932	KTIP140R8SCF16M	R	16	188	140	134	116	2,4	48	170.309
14,50	14,99	.5709	.5902	2548933	KTIP145R8SCF16M	S	16	193	145	139	120	2,5	48	170.309
15,00	15,99	.5906	.6295	2548934	KTIP150R8SCF20M	T	20	204	154	148	128	2,6	50	170.309
16,00	16,99	.6299	.6689	2548935	KTIP160R8SCF20M	U	20	213	163	157	136	2,8	50	170.309
17,00	17,99	.6690	.7083	3114317	KTIP170R8SCF20M	V	20	223	173	167	144	2,9	50	170.314
18,00	18,99	.7090	.7476	3114318	KTIP180R8SCF25M	W	25	238	182	176	152	3,1	56	170.314
19,00	19,99	.7480	.7870	3114319	KTIP190R8SCF25M	X	25	247	191	185	160	3,3	56	170.314
20,00	20,99	.7870	.8264	3114320	KTIP200R8SCF25M	Y	25	256	200	194	168	3,4	56	170.314

Ordering Example:
By catalog number KTIP080R8SCF12M, or by order number 2548920.

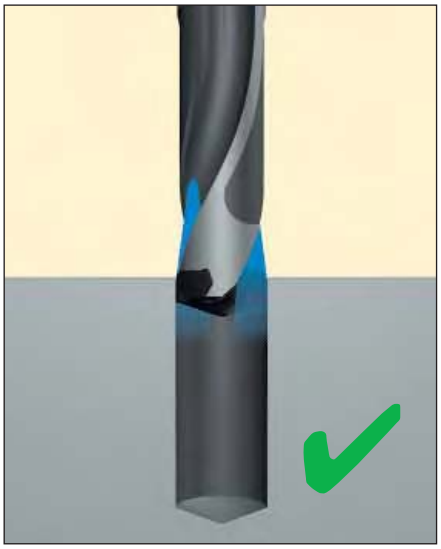
KenTIP – Application Guidelines

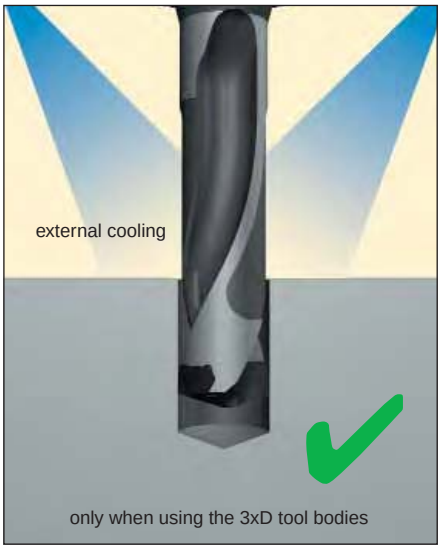
Mounting the KenTIP Inserts

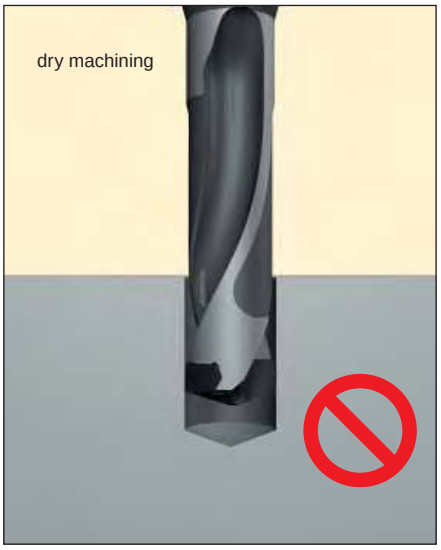




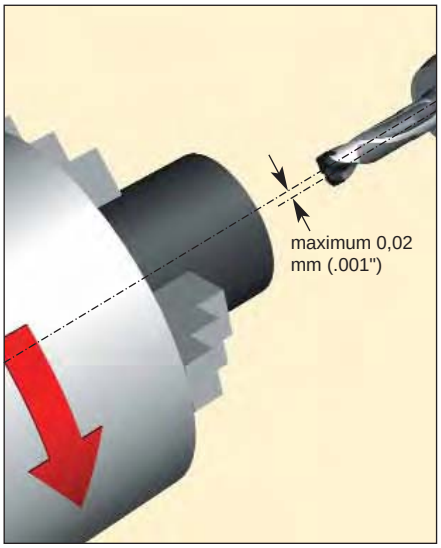
Cooling the KenTIP Drill

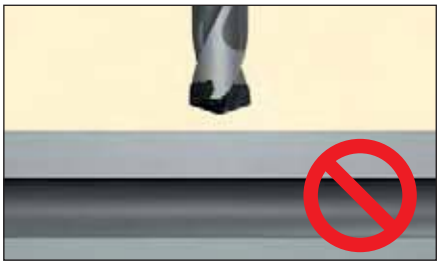






Note





KENNAMETAL

Modular Drills

KSEM Modular Drill System

Primary Application

The KSEM Modular Drill System offers extended length and drilling diameters beyond the KenTIP Modular Drill System. Hole depths of 10xD up to 40 mm or 1.575" drilling diameter are standard. Various grades are available for your most demanding applications.

Features and Benefits

HP Drill Point Design

- Low thrust prevents workpiece flexing.
- Excellent centering capabilities.
- HP(M) and HPG(M) for all steel applications.
- NEW HPC(M) for cast iron applications.
- NEW HPL(M) for austenitic stainless steel.

Easy Insert Change

- Robust pocket design requires only a simple wrench for blade removal.
- Selection of grade/geometries available.

Strength of Design

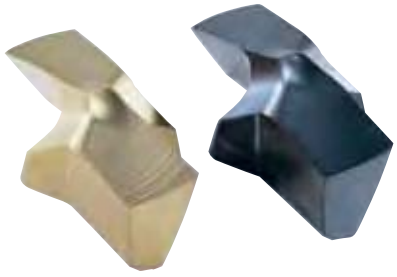
- Accelerated feed rates offer increased productivity.
- Four-wall pocket provides insert stability.
- All geometries except HPL(M) can be reconditioned by Kennametal for added economy.
- Through coolant standard for improved tool life, hole finish, and chip removal.

Tailored Grades and Geometries

- KC7315 grade is a TiAlN-based PVD grade offering superior performance in all steel applications.
- KC7320 grade is an AlTiN-based PVD coating developed for the demands of drilling stainless steels.
- KC7410 grade contains multiple layers of PVD coating offering outstanding wear resistance when drilling cast irons. The geometry prevents breakout when drilling through holes.

Customization

- Intermediate diameters available as semi-standards.
- Chamfering insert pockets available.
- Multiple steps possible.



Modular Drill Carbide Insert Blades – KSEM – HP(M) Geometry – Grade KC7235 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.462	0.630	0.787	1.000	1.260	1.575
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12.5	16.0	20.0	25.4	32.0	40.0
P1	**Low-Carbon Steels, Long Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**	
			Feed rate by diameter						
361	sfm	328 394	ipr	.006 - .012	.007 - .014	.007 - .016	.010 - .021	.011 - .024	.013 - .027
110	m/min	100 120	mm/r	0,15 - 0,31	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,29 - 0,60	0,33 - 0,69
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**	
			Feed rate by diameter						
312	sfm	262 360	ipr	.006 - .012	.007 - .014	.007 - .016	.010 - .021	.011 - .024	.013 - .027
95	m/min	80 110	mm/r	0,15 - 0,31	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,29 - 0,60	0,33 - 0,69
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**		**Content: C >.25%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
230	sfm	213 262	ipr	.006 - .012	.007 - .014	.007 - .016	.010 - .021	.011 - 0.024	.013 - .027
70	m/min	65 80	mm/r	0,15 - 0,31	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,29 - 0,60	0,33 - 0,69

* 1 MPa = 145 psi

Modular Drill Carbide Insert Blades – KSEM – HP(M) Geometry – Grade KC7315 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.492	0.630	0.787	1.000	1.260	1.575
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12,5	16,0	20,0	25,4	32,0	40,0
P1	**Low-Carbon Steels, Long Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**	
			Feed rate by diameter						
295	sfm	230 361	ipr	.006 - .012	.007 - .014	.007 - .016	.010 - .021	.011 - .024	.013 - .027
90	m/min	70 110	mm/r	0,15 - 0,31	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,29 - 0,60	0,33 - 0,69
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**	
			Feed rate by diameter						
328	sfm	262 394	ipr	.006 - .012	.007 - .014	.007 - .016	.010 - .021	.014 - .024	.016 - .027
100	m/min	80 120	mm/r	0,15 - 0,31	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,36 - 0,60	0,41 - 0,69
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**		**Content: C >.25%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
246	sfm	213 262	ipr	.006 - .011	.007 - .012	.007 - .014	.010 - .018	.009 - .021	.013 - .024
75	m/min	65 80	mm/r	0,15 - 0,28	0,17 - 0,31	0,19 - 0,36	0,25 - 0,46	0,23 - 0,53	0,33 - 0,60
P4	**Alloy Steels and Tool Steels**		**Content: C >.25%**		**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
213	sfm	164 246	ipr	.005 - .011	.006 - .012	.006 - .014	.008 - .018	.009 - .021	.012 - .024
65	m/min	50 75	mm/r	0,12 - 0,28	0,14 - 0,31	0,16 - 0,36	0,20 - 0,46	0,23 - 0,53	0,30 - 0,60
P5	**Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=0-.4%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
164	sfm	148 213	ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .013
50	m/min	45 65	mm/r	0,09 - 0,15	0,11 - 0,18	0,12 - 0,21	0,15 -0,25	0,17 - 0,29	0,20 - 0,33
P6	**High-Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=.1-.6%**		**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
164	sfm	148 213	ipr	.005 - .009	.006 - .010	.006 - .011	.008 - .015	.009 - .017	.010 - .021
50	m/min	45 65	mm/r	0,12 - 0,23	0,14 - 0,26	0,16 - 0,29	0,20 -0,38	0,23 -0,43	0,26 - 0,54

* 1 MPa = 145 psi

Modular Drill Carbide Insert Blades – KSEM – HPG(M) Geometry – Grade KC7315 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.492	0.630	0.787	1.000	1.260	1.575
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12,5	16,0	20,0	25,4	32,0	40,0
P1	**Low-Carbon Steels, Long Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**	
			Feed rate by diameter						
361	sfm	246 – 459	ipr	.006 - .013	.007 - .016	.007 - .018	.010 - .023	.011 - .026	.013 - .030
110	m/min	75 – 140	mm/r	0,15 - 0,34	0,17 - 0,40	0,19 - 0,45	0,25 - 0,58	0,29 - 0,66	0,33 - 0,76
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**	
			Feed rate by diameter						
394	sfm	295 – 492	ipr	.006 - .013	.007 - .016	.007 - .018	.010 - .023	.011 - .026	.013 - .030
120	m/min	90 – 150	mm/r	0,15 - 0,34	0,17 - 0,40	0,19 - 0,45	0,25 - 0,58	0,29 - 0,66	0,33 - 0,76
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**		**Content: C >.25%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
246	sfm	164 – 328	ipr	.006 - .011	.007 - .013	.007 - .016	.010 - .020	.011 - .023	.013 - .026
75	m/min	50 – 100	mm/r	0,15 - 0,28	0,17 - 0,34	0,19 - 0,40	0,25 - 0,51	0,29 - 0,58	0,33 - 0,66
P4	**Alloy Steels and Tool Steels**		**Content: C >.25%**		**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
246	sfm	180 – 312	ipr	.005 - .012	.006 - .011	.006 - .016	.008 - .020	.009 - .023	.010 - .026
75	m/min	55 – 95	mm/r	0,12 - 0,31	0,14 - 0,34	0,16 - 0,40	0,20 - 0,51	0,23 - 0,58	0,26 - 0,66
P5	**Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=0-.4%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter						
213	sfm	164 – 262	ipr	.004 - .007	.004 - .008	.005 - .009	.006 - .011	.007 - .013	.008 - .014
65	m/min	50 – 80	mm/r	0,09 - 0,17	0,11 - 0,20	0,12 - 0,23	0,15 - 0,28	0,17 - 0,32	0,20 - 0,36
P6	**High-Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=.1-.6%**		**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter						
213	sfm	164 – 262	ipr	.005 - .010	.006 - .011	.006 - .013	.008 - .017	.009 - .019	.010 - .021
65	m/min	50 – 80	mm/r	0,12 - 0,25	0,14 - 0,29	0,16 - 0,32	0,20 - 0,42	0,23 - 0,47	0,26 - 0,54
K1	**Gray Cast Irons and Low-Strength Ductile Irons**				**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter						
443	sfm	295 – 574	ipr	.007 - .014	.008 - .017	.010 - .019	.012 - .023	.015 - .028	.017 - .032
135	m/min	90 – 175	mm/r	0,17 - 0,35	0,21 - 0,42	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81
K2	**Low- and Medium-Strength CGI and Ductile Irons**				**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
361	sfm	295 – 410	ipr	.007 - .013	.008 - .016	.010 - .019	.012 - .023	.015 - .028	.017 - .032
110	m/min	90 – 125	mm/r	0,17 - 0,33	0,21 - 0,41	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81
K3	**High-Strength Ductile and Austempered Ductile Irons**				**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter						
312	sfm	121 – 410	ipr	.007 - .014	.008 - .016	.008 - .017	.009 - .019	.010 - .021	.011 - .022
95	m/min	40 – 125	mm/r	0,18 - 0,36	0,20 - 0,41	0,21 - 0,44	0,23 - 0,48	0,25 - 0,53	0,27 - 0,57

* 1 Mpa = 145 psi

*NOTE: HPG(M) is second choice to new HPC(M) geometry for Iron Application K1, K2, K3. See page B46.

Modular Drill Carbide Insert Blades – KSEM – HPC(M) Geometry – Grade KC7410 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.492	0.630	0.787	1.000	1.260	1.575
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12,5	16,0	20,0	25,4	32,0	40,0
K1	**Gray Cast Irons and Low-Strength Ductile Irons**		**Tensile Strength RM (MPa)*: 150-400**					**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter						
574	sfm	328 656	ipr	.007 - .014	.008 - .017	.010 - .019	.012 - .023	.015 - .028	.017 - .032
175	m/min	100 200	mm/r	0,17 - 0,35	0,21 - 0,42	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81
K2	**Low- and Medium-Strength CGI and Ductile Irons**		**Tensile Strength RM (MPa)*: 400-600**					**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter						
525	sfm	328 591	ipr	.007 - .014	.008 - .017	.010 - .019	.012 - .023	.015 - .028	.017 - .032
160	m/min	100 180	mm/r	0,17 - 0,35	0,21 - 0,42	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81
K3	**High-Strength Ductile and Austempered Ductile Irons**		**Tensile Strength RM (MPa)*: 600-900**					**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter						
297	sfm	230 328	ipr	.006 - .014	.008 - .016	.008- .017	.009 - .019	.010 - .021	.011 - .022
85	m/min	70 100	mm/r	0,16 - 0,36	0,20 - 0,41	0,21 - 0,44	0,23 - 0,48	0,25 - 0,53	0,27 - 0,57

* 1 Mpa = 145 psi

Modular Drill Carbide Insert Blades – KSEM – HPL(M) Geometry – Grade KC7320 – Through Coolant

Starting Value	Cutting Speed		Tool diameter						
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.492	0.630	0.787	1.000	1.260	1.575
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12,5	16,0	20,0	25,4	32,0	40,0
M1	**Austenitic Stainless Steels**		**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: 130-200**	
			Feed rate by diameter						
197	sfm	98 295	ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012
60	m/min	30 90	mm/r	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31
M2	**High-Strength Austenitic Stainless and Cast Stainless Steels**		**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: 500-700**			**Hardness (HB) or HRC: 150-230**	
			Feed rate by diameter						
164	sfm	98 295	ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012
50	m/min	30 90	mm/r	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31
M3	**Duplex Steels**		**Content: C=.05-.2%**		**Tensile Strength RM (MPa)*: <900**			**Hardness (HB) or HRC: 135-275**	
			Feed rate by diameter						
131	sfm	66 197	ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012
40	m/min	20 60	mm/r	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31

* 1 MPa = 145 psi

Modular Drill Carbide Insert Blades – KSEM – PC(M) Geometry – Grade KC7135 – Through Coolant

Starting Value	Cutting Speed		Tool diameter					
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.492	0.630	0.787	1.000	1.260
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm	12,5	16,0	20,0	25,4	32,0
P1	**Low-Carbon Steels, Long Chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**	
			Feed rate by diameter					
328	sfm	295 – 361	ipr	.006 - .009	.007 - .010	.007 - .011	.009 - .015	.010 - .017
100	m/min	90 – 110	mm/r	0,14 - 0,23	0,17 - 0,25	0,19 - 0,29	0,23 - 0,38	0,26 - 0,43
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**		**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**	
			Feed rate by diameter					
295	sfm	262 – 328	ipr	.007 - .009	.007 - .010	.009 - .011	.011 - .015	.013 - .017
90	m/min	80 – 100	mm/r	0,17 - 0,23	0,19 - 0,25	0,22 - 0,29	0,29 - 0,38	0,32 - 0,43
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter					
213	sfm	180 – 246	ipr	.006 - .008	.006 - .009	.007 - .010	.009 - .013	.010 - .015
65	m/min	55 – 75	mm/r	0,14 - 0,20	0,15 - 0,23	0,17 - 0,25	0,23 - 0,34	0,26 - 0,38
P4	**Alloy Steels and Tool Steels**		**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter					
197	sfm	164 – 230	ipr	.004 - .008	.005 - .009	.006 - .010	.007 - .013	.008 - .015
60	m/min	50 – 70	mm/r	0,11 - 0,20	0,13 - 0,23	0,14 - 0,25	0,18 - 0,34	0,21 - 0,38
P5	**Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=0-.4%**	**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**	
			Feed rate by diameter					
164	sfm	148 – 197	ipr	.003 - .004	.004 - .005	.004 - .006	.006 - .007	.006 - .008
50	m/min	45 – 60	mm/r	0,08 - 0,11	0,10 - 0,13	0,11 - 0,14	0,14 - 0,18	0,15 - 0,20
P6	**High-Strength Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**	
			Feed rate by diameter					
180	sfm	148 – 213	ipr	.004 - .007	.005 - .007	.006 - .008	.007 - .011	.008 - .012
55	m/min	45 – 65	mm/r	0,11 - 0,17	0,13 - 0,18	0,14 - 0,20	0,18 - 0,28	0,21 - 0,31
K1	**Gray Cast Irons and Low-Strength Ductile Irons**			**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**	
			Feed rate by diameter					
246	sfm	197 – 295	ipr	.003 - .009	.004 - .011	.004 - .012	.006 - .017	.006 - .019
75	m/min	60 – 90	mm/r	0,08 - 0,24	0,09 - 0,28	0,11 - 0,31	0,14 - 0,43	0,15 - 0,48
K2	**Low- and Medium-Strength CGI and Ductile Irons**			**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**	
			Feed rate by diameter					
213	sfm	197 – 246	ipr	.007 - .009	.008 - .011	.009 - .012	.011 - .015	.013 - .017
65	m/min	60 – 75	mm/r	0,18 - 0,24	0,21 - 0,28	0,23 - 0,31	0,28 - 0,37	0,32 - 0,42
K3	**High-Strength Ductile and Austempered Ductile Irons**			**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**	
			Feed rate by diameter					
180	sfm	131 – 246	ipr	.006 - .009	.007 - .010	.008 - .011	.009 - .015	.010 - .017
55	m/min	40 – 75	mm/r	0,15 - 0,24	0,18 - 0,26	0,21 - 0,29	0,23 - 0,37	0,25 - 0,42

* 1 Mpa = 145 psi

Note: The KSEM PC(M) is used in pilot-drilling and pre-centering applications, but may be used in other materials as well.

Please consult your local Kennametal Sales Representative regarding materials not shown above.

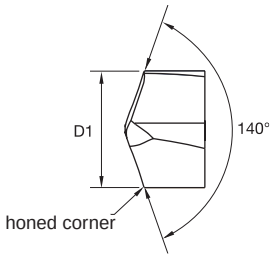
KSEM Grade and Geometry Descriptions

● See page I18 for technical information.
● See page I19 for insert blade reconditioning information.

KSEM Carbide Grades and Geometry

grade	geometry	composition and application	ISO class
KC7320	HPL (M)	PVD-high Al content TIAlN coated universal fine grain grade: • excellent oxidation stability and adjusted toughness. • high level of wear resistance. • used for modular drilling of austenitic stainless steel.	M20
KC7410	HPC (M)	PVD-high multi-layer AlCr-based coating over fine grain carbide: • newly developed unique coating. • extraordinary wear resistance in drilling of cast iron materials. • high hot hardness allows for elevated speeds.	K15
KC7135	PC (M)	PVD-TiCN-TiN coated carbide: • highly wear-resistant grade. • for universal application in steel, stainless steel and irons. • specifically used for KSEM PCM precentering inserts.	P40 K35
KC7315	HPG (M)	PVD-TiAlN coated universal fine grain grade: • highest level of wear resistance for higher cutting speeds. • more efficient than PVD-TiN grades. • first choice for alloyed and high-alloy steel as well as cast iron.	K20 M15 P30
KC7235	HP (M)	PVD-TiAlN coated fine grain carbide: • tough substrate. • highly wear-resistant coating. • suitable for machining steel even in difficult conditions.	K35 M30 P40
KC7315	HP (M)	PVD-TiAlN coated universal fine grain grade: • highest level of wear resistance for higher cutting speeds. • more efficient than PVD-TiN grades. • first choice for alloyed and high-alloy steel as well as cast iron.	K20 M15 P30

Tolerance			
D1 metric	Tolerance h8	D1 inch	Tolerance h8
12,5 to 18,0	+0,000/-0,027	.500 to .709	+.000/-.0010
>18,0 to 30,0	+0,000/-0,033	>.709 to 1.181	+.000/-.0013
>30,0 to 40,0	+0,000/-0,039	>1.181 to 1.575	+.000/-.0015



● first choice
○ alternate choice

	KC7235	KC7315
H		
S		
N		
K	○	○
M		
P	●	●

HP Geometry

D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7235	KC7315
12,50	.4921	2036906	KSEM1250HPM	KSEM1250HPM	C	●	●
12,60	.4961	1875398	KSEM1260HPM	KSEM1260HPM	C	●	●
12,70	.5000	2047379	KSEM1270HPM	KSEM0500HP	C	●	●
12,80	.5039	2047380	KSEM1280HPM	KSEM1280HPM	C	●	●
12,93	.5090	2047381	KSEM1293HPM	KSEM0509HP	C	●	●
13,00	.5118	2036909	KSEM1300HPM	KSEM1300HPM	C	●	●
13,10	.5160	2047382	KSEM1310HPM	KSEM0516HP	C	●	●
13,20	.5197	2047393	KSEM1320HPM	KSEM1320HPM	C		●
13,50	.5310	1875435	KSEM1350HPM	KSEM1350HPM	C	●	●
13,60	.5354	1875436	KSEM1360HPM	KSEM1360HPM	B	●	●
13,70	.5394	2047395	KSEM1370HPM	KSEM1370HPM	B	●	●
13,80	.5433	2047396	KSEM1380HPM	KSEM1380HPM	B	●	●
13,89	.5470	2047397	KSEM1389HPM	KSEM0547HP	B	●	●
14,00	.5512	1839181	KSEM1400HPM	KSEM1400HPM	B	●	●
14,10	.5551	2047398	KSEM1410HPM	KSEM1410HPM	B	●	●
14,20	.5591	1875441	KSEM1420HPM	KSEM1420HPM	B	●	●
14,29	.5630	2047400	KSEM1429HPM	KSEM0563HP	B	●	●
14,40	.5669	2047401	KSEM1440HPM	KSEM1440HPM	B		●
14,50	.5709	2036907	KSEM1450HPM	KSEM1450HPM	B	●	●
14,60	.5748	2047402	KSEM1460HPM	KSEM1460HPM	A		●
14,68	.5780	2047403	KSEM1468HPM	KSEM0578HP	A	●	●
14,80	.5827	2047404	KSEM1480HPM	KSEM1480HPM	A	●	●
15,00	.5906	2036606	KSEM1500HPM	KSEM1500HPM	A	●	●
15,08	.5940	1875448	KSEM1508HPM	KSEM0594HP	A	●	●
15,30	.6024	2047406	KSEM1530HPM	KSEM1530HPM	A	●	●
15,48	.6090	2047407	KSEM1548HPM	KSEM0609HP	A		●
15,50	.6102	2047408	KSEM1550HPM	KSEM1550HPM	A	●	●
15,60	.6142	1875451	KSEM1560HPM	KSEM1560HPM	A	●	●
15,70	.6181	2047409	KSEM1570HPM	KSEM1570HPM	A		●
15,80	.6220	1875453	KSEM1580HPM	KSEM1580HPM	A	●	●
15,88	.6250	1875454	KSEM1588HPM	KSEM0625HP	1	●	●
16,00	.6299	1875455	KSEM1600HPM	KSEM1600HPM	1	●	●
16,09	.6340	2047411	KSEM1609HPM	KSEM0634HP	1	●	●
16,20	.6378	2047412	KSEM1620HPM	KSEM1620HPM	1		●
16,27	.6410	1875457	KSEM1627HPM	KSEM0641HP	1	●	●
16,50	.6496	1875458	KSEM1650HPM	KSEM1650HPM	1	●	●
16,67	.6560	2047414	KSEM1667HPM	KSEM0656HP	1	●	●
17,00	.6693	2036529	KSEM1700HPM	KSEM1700HPM	1	●	●
17,07	.6720	2047415	KSEM1707HPM	KSEM0672HP	1	●	●
17,46	.6875	1875462	KSEM1746HPM	KSEM0688HP	1	●	●

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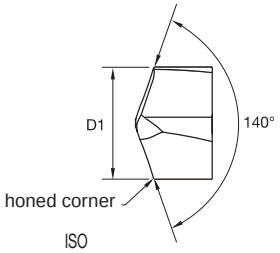
HP Geometry



● first choice
○ alternate choice

H		
S		
N		
K	○	○
M		
P	●	●

(continued from previous page)

D1			ISO	ANSI		KC7235	KC7315
mm	inch	order number	catalog number	catalog number	seat size/series		
17,50	.6890	2036531	KSEM1750HPM	KSEM1750HPM	1	●	●
17,86	.7030	2047417	KSEM1786HPM	KSEM0703HP	1	●	●
18,00	.7087	1875475	KSEM1800HPM	KSEM1800HPM	1	●	●
18,26	.7190	1875476	KSEM1826HPM	KSEM0719HP	2	●	●
18,50	.7283	1875477	KSEM1850HPM	KSEM1850HPM	2	●	●
18,65	.7340	1875478	KSEM1865HPM	KSEM0734HP	2	●	●
19,00	.7480	1875479	KSEM1900HPM	KSEM1900HPM	2	●	●
19,05	.7500	1875480	KSEM1905HPM	KSEM0750HP	2	●	●
19,23	.7570	2872839	KSEM1923HPM	KSEM0757HP	2	●	●
19,27	.7590	1875481	KSEM1927HPM	KSEM0759HP	2	●	●
15,45	.7660	2047471	KSEM1945HPM	KSEM0766HP	2	●	●
19,50	.7677	2047423	KSEM1950HPM	KSEM1950HPM	2	●	●
19,84	.7810	2047424	KSEM1984HPM	KSEM0781HP	2	●	●
20,00	.7874	2036532	KSEM2000HPM	KSEM2000HPM	3	●	●
20,24	.7970	2047425	KSEM2024HPM	KSEM0797HP	3	●	●
20,50	.8071	2036706	KSEM2050HPM	KSEM2050HPM	3	●	●
20,64	.8125	2047426	KSEM2064HPM	KSEM0813HP	3	●	●
21,00	.8268	1839182	KSEM2100HPM	KSEM2100HPM	3	●	●
21,43	.8440	2047427	KSEM2143HPM	KSEM0844HP	3	●	●
21,50	.8460	2036956	KSEM2150HPM	KSEM2150HPM	3	●	●
21,83	.8590	1875491	KSEM2183HPM	KSEM0859HP	3	●	●
22,00	.8661	1875492	KSEM2200HPM	KSEM2200HPM	3	●	●
22,23	.8750	1875493	KSEM2223HPM	KSEM0875HP	4	●	●
22,44	.8840	1875494	KSEM2244HPM	KSEM0884HP	4	●	●
22,50	.8858	2036607	KSEM2250HPM	KSEM2250HPM	4	●	●
23,00	.9055	2036903	KSEM2300HPM	KSEM2300HPM	4	●	●
23,42	.9220	1875497	KSEM2342HPM	KSEM0922HP	4	●	●
23,50	.9252	2047432	KSEM2350HPM	KSEM2350HPM	4	●	●
23,81	.9375	1875499	KSEM2381HPM	KSEM0938HP	4	●	●
24,00	.9449	2036904	KSEM2400HPM	KSEM2400HPM	4	●	●
24,50	.9646	1875501	KSEM2450HPM	KSEM2450HPM	5	●	●
24,61	.9690	1875502	KSEM2461HPM	KSEM0969HP	5	●	●
25,00	.9843	1875503	KSEM2500HPM	KSEM2500HPM	5	●	●
25,40	1.0000	1875504	KSEM2540HPM	KSEM1000HP	5	●	●
25,50	1.0039	2047437	KSEM2550HPM	KSEM2550HPM	5	●	●
25,61	1.0080	1961233	KSEM2560HPM	KSEM1008HP	5	●	●
25,67	1.0110	2047438	KSEM2567HPM	KSEM1011HP	5	●	●
25,81	1.0160	2288063	KSEM2581HPM	KSEM1016HP	5	●	
26,00	1.0236	2036609	KSEM2600HPM	KSEM2600HPM	5	●	●
26,19	1.0310	2047439	KSEM2619HPM	KSEM1031HP	6	●	●
26,50	1.0433	2036612	KSEM2650HPM	KSEM2650HPM	6	●	●
26,59	1.0470	2047440	KSEM2659HPM	KSEM1047HP	6	●	●
27,00	1.0630	1875511	KSEM2700HPM	KSEM2700HPM	6	●	●
27,50	1.0827	2047441	KSEM2750HPM	KSEM2750HPM	6	●	●
27,78	1.0940	2047442	KSEM2778HPM	KSEM1094HP	6	●	●
28,00	1.1024	1875514	KSEM2800HPM	KSEM2800HPM	6	●	●
28,18	1.1090	2047444	KSEM2818HPM	KSEM1109HP	7	●	●
28,50	1.1220	1875516	KSEM2850HPM	KSEM2850HPM	7	●	●
28,58	1.1250	2047446	KSEM2858HPM	KSEM1125HP	7	●	●
29,00	1.1417	2036923	KSEM2900HPM	KSEM2900HPM	7	●	●

(continued on next page)

HP Geometry

● first choice
○ alternate choice

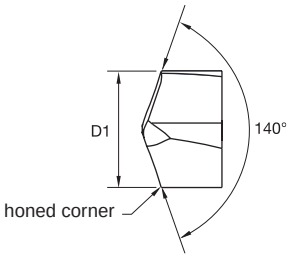
(continued from previous page)

D1			ISO	ANSI		H K	S K	N K	K K	M K	P K
mm	inch	order number	catalog number	catalog number	seat size/series				KC7235		KC7315
29,37	1.1560	1875519	KSEM2937HPM	KSEM1156HP	7				●		●
29,50	1.1614	2045646	KSEM2950HPM	KSEM2950HPM	7				●		●
29,77	1.1720	2047448	KSEM2977HPM	KSEM1172HP	7				●		●
30,00	1.1811	2036905	KSEM3000HPM	KSEM3000HPM	7				●		●
30,16	1.1875	2047472	KSEM3016HPM	KSEM1188HP	8				●		●
30,50	1.2008	2036953	KSEM3050HPM	KSEM3050HPM	8				●		●
30,96	1.2190	1875525	KSEM3096HPM	KSEM1219HP	8				●		●
31,00	1.2200	2047449	KSEM3100HPM	KSEM3100HPM	8				●		●
31,50	1.2402	2047450	KSEM3150HPM	KSEM3150HPM	8				●		●
31,75	1.2500	2047451	KSEM3175HPM	KSEM1250HP	8				●		●
32,00	1.2598	2036604	KSEM3200HPM	KSEM3200HPM	8				●		●
32,50	1.2795	1971365	KSEM3250HPM	KSEM3250HPM	9				●		●
32,54	1.2810	1875529	KSEM3254HPM	KSEM1281HP	9				●		●
32,94	1.2970	2047476	KSEM3294HPM	KSEM1297HP	9						●
33,00	1.2992	2036703	KSEM3300HPM	KSEM3300HPM	9				●		●
33,34	1.3130	1875532	KSEM3334HPM	KSEM1313HP	9				●		●
33,50	1.3189	1971366	KSEM3350HPM	KSEM3350HPM	9				●		
34,00	1.3386	2047456	KSEM3400HPM	KSEM3400HPM	9				●		●
34,13	1.3440	2047477	KSEM3413HPM	KSEM1344HP	9						●
34,50	1.3583	2047457	KSEM3450HPM	KSEM3450HPM	9				●		●
34,93	1.3750	2047478	KSEM3493HPM	KSEM1375HP	9				●		●
35,00	1.3780	1875537	KSEM3500HPM	KSEM3500HPM	9				●		●
35,50	1.3976	2047458	KSEM3550HPM	KSEM3550HPM	9						●
35,72	1.4060	2047459	KSEM3572HPM	KSEM1406HP	9				●		●
36,00	1.4173	2047460	KSEM3600HPM	KSEM3600HPM	9				●		●
36,51	1.4375	1875541	KSEM3651HPM	KSEM1438HP	10				●		
37,00	1.4567	1875542	KSEM3700HPM	KSEM3700HPM	10				●		●
37,31	1.4690	1875543	KSEM3731HPM	KSEM1469HP	10				●		
37,50	1.4764	2047464	KSEM3750HPM	KSEM3750HPM	10				●		●
38,00	1.4961	1875545	KSEM3800HPM	KSEM3800HPM	10				●		●
38,10	1.5000	2047466	KSEM3810HPM	KSEM1500HP	10				●		●
38,46	1.5140	1875547	KSEM3846HPM	KSEM1514HP	10				●		
38,50	1.5157	2047468	KSEM3850HPM	KSEM3850HPM	10						●
39,00	1.5354	1875548	KSEM3900HPM	KSEM3900HPM	10				●		●
39,50	1.5551	2043552	KSEM3950HPM	KSEM3950HPM	10						●
40,00	1.5748	2047469	KSEM4000HPM	KSEM4000HPM	10				●		●

Ordering Example:
By catalog number KSEM2937HPM, or by order number 1875519.

KSEM Insert Carbide Blades — Inch and Metric

Tolerance			
D1 metric	Tolerance h8	D1 inch	Tolerance h8
12,5 to 18,0	+0,000/-0,027	.500 to .709	+.000/-.0010
>18,0 to 30,0	+0,000/-0,033	>.709 to 1.181	+.000/-.0013
>30,0 to 40,0	+0,000/-0,039	>1.181 to 1.575	+.000/-.0015



● first choice
○ alternate choice

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HPG Geometry

D1			ISO	ANSI		KC7315
mm	inch	order number	catalog number	catalog number	seat size/series	
12,50	.4921	2449924	KSEM1250HPGM	KSEM1250HPGM	C	●
12,60	.4961	2499723	KSEM1260HPGM	KSEM1260HPGM	C	●
12,70	.5000	2499607	KSEM1270HPGM	KSEM0500HPG	C	●
12,80	.5039	2499725	KSEM1280HPGM	KSEM1280HPGM	C	●
12,93	.5090	2499608	KSEM1293HPGM	KSEM0509HPG	C	●
13,00	.5118	2499727	KSEM1300HPGM	KSEM1300HPGM	C	●
13,10	.5160	2499609	KSEM1310HPGM	KSEM0516HPG	C	●
13,20	.5197	2499729	KSEM1320HPGM	KSEM1320HPGM	C	●
13,50	.5310	2499730	KSEM1350HPGM	KSEM1350HPGM	C	●
13,60	.5354	2499731	KSEM1360HPGM	KSEM1360HPGM	B	●
13,70	.5394	2499732	KSEM1370HPGM	KSEM1370HPGM	B	●
13,80	.5433	2499733	KSEM1380HPGM	KSEM1380HPGM	B	●
13,89	.5470	2499610	KSEM1389HPGM	KSEM0547HPG	B	●
14,00	.5512	2499735	KSEM1400HPGM	KSEM1400HPGM	B	●
14,10	.5551	2499736	KSEM1410HPGM	KSEM1410HPGM	B	●
14,20	.5591	2499737	KSEM1420HPGM	KSEM1420HPGM	B	●
14,29	.5630	2499611	KSEM1429HPGM	KSEM0563HPG	B	●
14,40	.5669	2499739	KSEM1440HPGM	KSEM1440HPGM	B	●
14,50	.5709	2499740	KSEM1450HPGM	KSEM1450HPGM	B	●
14,60	.5748	2499741	KSEM1460HPGM	KSEM1460HPGM	A	●
14,68	.5780	2499612	KSEM1468HPGM	KSEM0578HPG	A	●
14,80	.5827	2499743	KSEM1480HPGM	KSEM1480HPGM	A	●
15,00	.5906	2499744	KSEM1500HPGM	KSEM1500HPGM	A	●
15,08	.5940	2499843	KSEM1508HPGM	KSEM0594HPG	A	●
15,30	.6024	2499746	KSEM1530HPGM	KSEM1530HPGM	A	●
15,48	.6090	2499844	KSEM1548HPGM	KSEM0609HPG	A	●
15,50	.6102	2499748	KSEM1550HPGM	KSEM1550HPGM	A	●
15,60	.6142	2499749	KSEM1560HPGM	KSEM1560HPGM	A	●
15,70	.6181	2499750	KSEM1570HPGM	KSEM1570HPGM	A	●
15,80	.6220	2499751	KSEM1580HPGM	KSEM1580HPGM	A	●
15,88	.6250	2499845	KSEM1588HPGM	KSEM0625HPG	1	●
16,00	.6299	2499753	KSEM1600HPGM	KSEM1600HPGM	1	●
16,09	.6340	2499846	KSEM1609HPGM	KSEM0634HPG	1	●
16,20	.6378	2499755	KSEM1620HPGM	KSEM1620HPGM	1	●
16,27	.6410	2499847	KSEM1627HPGM	KSEM0641HPG	1	●
16,50	.6496	2499757	KSEM1650HPGM	KSEM1650HPGM	1	●
16,67	.6560	2499848	KSEM1667HPGM	KSEM0656HPG	1	●
17,00	.6693	2499759	KSEM1700HPGM	KSEM1700HPGM	1	●

(continued on next page)

● first choice
○ alternate choice

HPG Geometry

(continued from previous page)

D1			ISO	ANSI		H S N K M P
mm	inch	order number	catalog number	catalog number	seat size/series	KC7315
17,07	.6720	2499849	KSEM1707HPGM	KSEM0672HPG	1	●
17,46	.6875	2499850	KSEM1746HPGM	KSEM0688HPG	1	●
17,50	.6890	2487433	KSEM1750HPGM	KSEM1750HPGM	1	●
17,86	.7030	2499851	KSEM1786HPGM	KSEM0703HPG	1	●
18,00	.7087	2499763	KSEM1800HPGM	KSEM1800HPGM	1	●
18,26	.7190	2499852	KSEM1826HPGM	KSEM0719HPG	2	●
18,50	.7283	2499765	KSEM1850HPGM	KSEM1850HPGM	2	●
18,65	.7340	2499853	KSEM1865HPGM	KSEM0734HPG	2	●
19,00	.7480	2499767	KSEM1900HPGM	KSEM1900HPGM	2	●
19,05	.7500	2499854	KSEM1905HPGM	KSEM0750HPG	2	●
19,27	.7590	2499855	KSEM1927HPGM	KSEM0759HPG	2	●
15,45	.7660	2499856	KSEM1945HPGM	KSEM0766HPG	2	●
19,50	.7677	2499771	KSEM1950HPGM	KSEM1950HPGM	2	●
19,84	.7810	2499857	KSEM1984HPGM	KSEM0781HPG	2	●
20,00	.7874	2450909	KSEM2000HPGM	KSEM2000HPGM	3	●
20,24	.7970	2499858	KSEM2024HPGM	KSEM0797HPG	3	●
20,50	.8071	2465988	KSEM2050HPGM	KSEM2050HPGM	3	●
20,64	.8125	2499859	KSEM2064HPGM	KSEM0813HPG	3	●
21,00	.8268	2499775	KSEM2100HPGM	KSEM2100HPGM	3	●
21,43	.8440	2499860	KSEM2143HPGM	KSEM0844HPG	3	●
21,50	.8460	2499777	KSEM2150HPGM	KSEM2150HPGM	3	●
21,83	.8590	2499861	KSEM2183HPGM	KSEM0859HPG	3	●
22,00	.8661	2499779	KSEM2200HPGM	KSEM2200HPGM	3	●
22,23	.8750	2499862	KSEM2223HPGM	KSEM0875HPG	4	●
22,44	.8840	2499863	KSEM2244HPGM	KSEM0884HPG	4	●
22,50	.8858	2499782	KSEM2250HPGM	KSEM2250HPGM	4	●
23,00	.9055	2449518	KSEM2300HPGM	KSEM2300HPGM	4	●
23,42	.9220	2499864	KSEM2342HPGM	KSEM0922HPG	4	●
23,50	.9252	2499784	KSEM2350HPGM	KSEM2350HPGM	4	●
23,81	.9375	2499865	KSEM2381HPGM	KSEM0938HPG	4	●
24,00	.9449	2499786	KSEM2400HPGM	KSEM2400HPGM	4	●
24,50	.9646	2499787	KSEM2450HPGM	KSEM2450HPGM	5	●
24,61	.9690	2499866	KSEM2461HPGM	KSEM0969HPG	5	●
25,00	.9843	2499789	KSEM2500HPGM	KSEM2500HPGM	5	●
25,40	1.0000	2499867	KSEM2540HPGM	KSEM1000HPG	5	●
25,50	1.0039	2499791	KSEM2550HPGM	KSEM2550HPGM	5	●
25,67	1.0110	2499868	KSEM2567HPGM	KSEM1011HPG	5	●
26,00	1.0236	2449473	KSEM2600HPGM	KSEM2600HPGM	5	●
26,19	1.0310	2499869	KSEM2619HPGM	KSEM1031HPG	6	●
26,50	1.0433	2494500	KSEM2650HPGM	KSEM2650HPGM	6	●
26,59	1.0470	2499870	KSEM2659HPGM	KSEM1047HPG	6	●
27,00	1.0630	2499795	KSEM2700HPGM	KSEM2700HPGM	6	●
27,50	1.0827	2499796	KSEM2750HPGM	KSEM2750HPGM	6	●
27,78	1.0940	2499871	KSEM2778HPGM	KSEM1094HPG	6	●
28,00	1.1024	2499798	KSEM2800HPGM	KSEM2800HPGM	6	●
28,18	1.1090	2499872	KSEM2818HPGM	KSEM1109HPG	7	●
28,50	1.1220	2499800	KSEM2850HPGM	KSEM2850HPGM	7	●
28,58	1.1250	2499873	KSEM2858HPGM	KSEM1125HPG	7	●
29,00	1.1417	2499802	KSEM2900HPGM	KSEM2900HPGM	7	●
29,37	1.1560	2499874	KSEM2937HPGM	KSEM1156HPG	7	●

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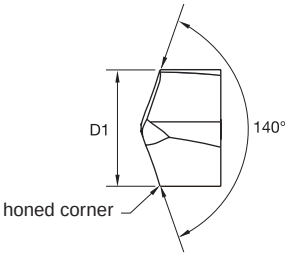
KENNAMETAL

KSEM Insert Carbide Blades — Inch and Metric



● first choice
○ alternate choice

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HPG Geometry

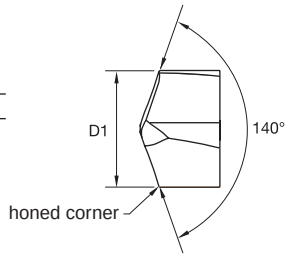
(continued from previous page)

D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7315
29,50	1.1614	2499803	KSEM2950HPGM	KSEM2950HPGM	7	●
29,77	1.1720	2499875	KSEM2977HPGM	KSEM1172HPG	7	●
30,00	1.1811	2449475	KSEM3000HPGM	KSEM3000HPGM	7	●
30,16	1.1875	2499876	KSEM3016HPGM	KSEM1188HPG	8	●
30,50	1.2008	2499807	KSEM3050HPGM	KSEM3050HPGM	8	●
30,56	1.2030	2499877	KSEM3056HPGM	KSEM1203HPG	8	●
30,96	1.2190	2499878	KSEM3096HPGM	KSEM1219HPG	8	●
31,00	1.2200	2499810	KSEM3100HPGM	KSEM3100HPGM	8	●
31,50	1.2402	2499811	KSEM3150HPGM	KSEM3150HPGM	8	●
31,75	1.2500	2499879	KSEM3175HPGM	KSEM1250HPG	8	●
32,00	1.2598	2499813	KSEM3200HPGM	KSEM3200HPGM	8	●
32,50	1.2795	2499814	KSEM3250HPGM	KSEM3250HPGM	9	●
32,54	1.2810	2499880	KSEM3254HPGM	KSEM1281HPG	9	●
32,94	1.2970	2499881	KSEM3294HPGM	KSEM1297HPG	9	●
33,00	1.2992	2494501	KSEM3300HPGM	KSEM3300HPGM	9	●
33,34	1.3130	2499882	KSEM3334HPGM	KSEM1313HPG	9	●
33,50	1.3189	2499818	KSEM3350HPGM	KSEM3350HPGM	9	●
33,73	1.3280	2499883	KSEM3373HPGM	KSEM1328HPG	9	●
34,00	1.3386	2499820	KSEM3400HPGM	KSEM3400HPGM	9	●
34,13	1.3440	2499884	KSEM3413HPGM	KSEM1344HPG	9	●
34,50	1.3583	2499822	KSEM3450HPGM	KSEM3450HPGM	9	●
34,93	1.3750	2499885	KSEM3493HPGM	KSEM1375HPG	9	●
35,00	1.3780	2466477	KSEM3500HPGM	KSEM3500HPGM	9	●
35,50	1.3976	2499824	KSEM3550HPGM	KSEM3550HPGM	9	●
35,72	1.4060	2499886	KSEM3572HPGM	KSEM1406HPG	9	●
36,00	1.4173	2499826	KSEM3600HPGM	KSEM3600HPGM	9	●
36,12	1.4220	2499887	KSEM3612HPGM	KSEM1422HPG	10	●
36,51	1.4375	2499888	KSEM3651HPGM	KSEM1438HPG	10	●
36,50	1.4375	2499828	KSEM3650HPGM	KSEM3650HPGM	10	●
37,00	1.4567	2466598	KSEM3700HPGM	KSEM3700HPGM	10	●
37,31	1.4690	2499889	KSEM3731HPGM	KSEM1469HPG	10	●
37,50	1.4764	2499831	KSEM3750HPGM	KSEM3750HPGM	10	●
38,00	1.4961	2466478	KSEM3800HPGM	KSEM3800HPGM	10	●
38,10	1.5000	2499890	KSEM3810HPGM	KSEM1500HPG	10	●
38,46	1.5140	2499891	KSEM3846HPGM	KSEM1514HPG	10	●
38,50	1.5157	2499834	KSEM3850HPGM	KSEM3850HPGM	10	●
39,00	1.5354	2499835	KSEM3900HPGM	KSEM3900HPGM	10	●
39,50	1.5551	2499836	KSEM3950HPGM	KSEM3950HPGM	10	●
40,00	1.5748	2449476	KSEM4000HPGM	KSEM4000HPGM	10	●

Order Example:
By catalog number KSEM2950HPGM, or by order number 2499803.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Tolerance			
D1 metric	Tolerance h8	D1 inch	Tolerance h8
12,5 to 18,0	+0,000/-0,027	.500 to .709	+.000/-.0010
>18,0 to 30,0	+0,000/-0,033	>.709 to 1.181	+.000/-.0013
>30,0 to 40,0	+0,000/-0,039	>1.181 to 1.575	+.000/-.0015



NOTE: This geometry is not reconditionable.

● first choice
○ alternate choice

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HPL Geometry

D1			ISO	ANSI		KC7320
mm	inch	order number	catalog number	catalog number	seat size/series	
12,50	.4921	3380488	KSEM1250HPLM	KSEM1250HPLM	C	●
12,60	.4961	3380489	KSEM1260HPLM	KSEM1260HPLM	C	●
12,70	.5000	3380490	KSEM1270HPLM	KSEM0500HPL	C	●
12,80	.5039	3380491	KSEM1280HPLM	KSEM1280HPLM	C	●
12,93	.5090	3380492	KSEM1293HPLM	KSEM0509HPL	C	●
13,00	.5118	3381103	KSEM1300HPLM	KSEM1300HPLM	C	●
13,10	.5160	3381634	KSEM1311HPLM	KSEM0515HPL	C	●
13,50	.5310	3381104	KSEM1350HPLM	KSEM1350HPLM	C	●
13,60	.5354	3381105	KSEM1360HPLM	KSEM1360HPLM	B	●
13,80	.5433	3381106	KSEM1380HPLM	KSEM1380HPLM	B	●
13,89	.5470	3381107	KSEM1389HPLM	KSEM0547HPL	B	●
14,00	.5512	3381108	KSEM1400HPLM	KSEM1400HPLM	B	●
14,10	.5551	3381109	KSEM1410HPLM	KSEM1410HPLM	B	●
14,15	.5571	3381110	KSEM1415HPLM	KSEM1415HPLM	B	●
14,20	.5591	3381111	KSEM1420HPLM	KSEM1420HPLM	B	●
14,29	.5630	3381112	KSEM1429HPLM	KSEM0563HPL	B	●
14,50	.5709	3381113	KSEM1450HPLM	KSEM1450HPLM	B	●
14,60	.5748	3381114	KSEM1460HPLM	KSEM1460HPLM	A	●
14,68	.5780	3381115	KSEM1468HPLM	KSEM0578HPL	A	●
14,80	.5827	3381116	KSEM1480HPLM	KSEM1480HPLM	A	●
15,00	.5906	3381117	KSEM1500HPLM	KSEM1500HPLM	A	●
15,08	.5940	3381118	KSEM1508HPLM	KSEM0594HPL	A	●
15,48	.6090	3381119	KSEM1548HPLM	KSEM0609HPL	A	●
15,50	.6102	3381120	KSEM1550HPLM	KSEM1550HPLM	A	●
15,60	.6142	3381121	KSEM1560HPLM	KSEM1560HPLM	A	●
15,88	.6250	3381122	KSEM1588HPLM	KSEM0625HPL	1	●
16,00	.6299	3381123	KSEM1600HPLM	KSEM1600HPLM	1	●
16,10	.6339	3381125	KSEM1610HPLM	KSEM1610HPLM	1	●
16,09	.6340	3381124	KSEM1609HPLM	KSEM0634HPL	1	●
16,15	.6358	3381126	KSEM1615HPLM	KSEM1615HPLM	1	●
16,20	.6378	3381127	KSEM1620HPLM	KSEM1620HPLM	1	●
16,27	.6410	3381128	KSEM1627HPLM	KSEM0641HPL	1	●
16,50	.6496	3381129	KSEM1650HPLM	KSEM1650HPLM	1	●
16,67	.6560	3381130	KSEM1667HPLM	KSEM0656HPL	1	●
17,00	.6693	3381131	KSEM1700HPLM	KSEM1700HPLM	1	●
17,07	.6720	3381132	KSEM1707HPLM	KSEM0672HPL	1	●
17,46	.6875	3381133	KSEM1746HPLM	KSEM0688HPL	1	●
17,50	.6890	3381134	KSEM1750HPLM	KSEM1750HPLM	1	●
17,75	.6988	3381135	KSEM1775HPLM	KSEM1775HPLM	1	●
17,80	.7008	3381136	KSEM1780HPLM	KSEM1780HPLM	1	●
17,86	.7030	3381137	KSEM1786HPLM	KSEM0703HPL	1	●
17,90	.7047	3381138	KSEM1790HPLM	KSEM1790HPLM	1	●

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HPL Geometry

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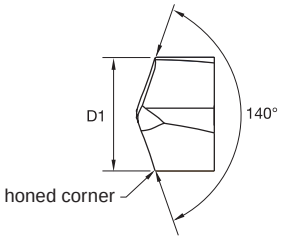

● first choice
○ alternate choice

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D1 mm	D1 inch	order number	ISO catalog number	ANSI catalog number	seat size/series	KC7320
18,00	.7087	3381139	KSEM1800HPLM	KSEM1800HPLM	1	●
18,26	.7190	3381140	KSEM1826HPLM	KSEM0719HPL	2	●
18,39	.7240	3381141	KSEM1839HPLM	KSEM1839HPLM	2	●
18,50	.7283	3381142	KSEM1850HPLM	KSEM1850HPLM	2	●
18,60	.7323	3381143	KSEM1860HPLM	KSEM1860HPLM	2	●
18,65	.7340	3381144	KSEM1865HPLM	KSEM0734HPL	2	●
18,90	.7441	3381145	KSEM1890HPLM	KSEM1890HPLM	2	●
19,00	.7480	3381146	KSEM1900HPLM	KSEM1900HPLM	2	●
19,05	.7500	3381147	KSEM1905HPLM	KSEM0750HPL	2	●
19,20	.7559	3381148	KSEM1920HPLM	KSEM1920HPLM	2	●
19,23	.7570	3381149	KSEM1923HPLM	KSEM0757HPL	2	●
19,25	.7579	3381150	KSEM1925HPLM	KSEM0758HPL	2	●
19,27	.7590	3381151	KSEM1927HPLM	KSEM0759HPL	2	●
19,35	.7618	3381152	KSEM1935HPLM	KSEM1935HPLM	2	●
19,36	.7622	3381153	KSEM1936HPLM	KSEM1936HPLM	2	●
15,45	.7660	3381154	KSEM1945HPLM	KSEM0766HPL	2	●
19,50	.7677	3381155	KSEM1950HPLM	KSEM1950HPLM	2	●
19,84	.7810	3381156	KSEM1984HPLM	KSEM0781HPL	2	●
20,00	.7874	3381157	KSEM2000HPLM	KSEM2000HPLM	3	●
20,10	.7913	3381158	KSEM2010HPLM	KSEM2010HPLM	3	●
20,24	.7970	3381159	KSEM2024HPLM	KSEM0797HPL	3	●
20,35	.8012	3381160	KSEM2035HPLM	KSEM2035HPLM	3	●
20,50	.8071	3381161	KSEM2050HPLM	KSEM2050HPLM	3	●
20,64	.8125	3381162	KSEM2064HPLM	KSEM0813HPL	3	●
21,00	.8268	3381163	KSEM2100HPLM	KSEM2100HPLM	3	●
21,15	.8327	3381164	KSEM2115HPLM	KSEM2115HPLM	3	●
21,33	.8398	3381165	KSEM2133HPLM	KSEM2133HPLM	3	●
21,43	.8440	3381167	KSEM2143HPLM	KSEM0844HPL	3	●
21,50	.8460	3381169	KSEM2150HPLM	KSEM2150HPLM	3	●
21,83	.8590	3381171	KSEM2183HPLM	KSEM0859HPL	3	●
22,00	.8661	3381173	KSEM2200HPLM	KSEM2200HPLM	3	●
22,23	.8750	3381175	KSEM2223HPLM	KSEM0875HPL	4	●
22,44	.8840	3381177	KSEM2244HPLM	KSEM0884HPL	4	●
22,50	.8858	3381179	KSEM2250HPLM	KSEM2250HPLM	4	●
22,77	.8965	3381181	KSEM2277HPLM	KSEM2277HPLM	4	●
23,00	.9055	3381183	KSEM2300HPLM	KSEM2300HPLM	4	●
23,42	.9220	3381185	KSEM2342HPLM	KSEM0922HPL	4	●
23,50	.9252	3381187	KSEM2350HPLM	KSEM2350HPLM	4	●
23,81	.9375	3381189	KSEM2381HPLM	KSEM0938HPL	4	●
24,00	.9449	3381191	KSEM2400HPLM	KSEM2400HPLM	4	●
24,50	.9646	3381193	KSEM2450HPLM	KSEM2450HPLM	5	●
24,61	.9690	3381195	KSEM2461HPLM	KSEM0969HPL	5	●
25,00	.9843	3381616	KSEM2500HPLM	KSEM2500HPLM	5	●
25,07	.9870	3381618	KSEM2507HPLM	KSEM2507HPLM	5	●
25,40	1.0000	3381620	KSEM2540HPLM	KSEM1000HPL	5	●
25,50	1.0039	3381622	KSEM2550HPLM	KSEM2550HPLM	5	●
25,60	1.0080	3381624	KSEM2560HPLM	KSEM1008HPL	5	●
25,65	1.0098	3381626	KSEM2565HPLM	KSEM2565HPLM	5	●
25,67	1.0110	3381628	KSEM2567HPLM	KSEM1011HPL	5	●
26,00	1.0236	3381630	KSEM2600HPLM	KSEM2600HPLM	5	●
26,19	1.0310	3381633	KSEM2619HPLM	KSEM1031HPL	6	●
26,50	1.0433	3381635	KSEM2650HPLM	KSEM2650HPLM	6	●

(continued on next page)

● first choice
○ alternate choice

HPL Geometry

(continued from previous page)

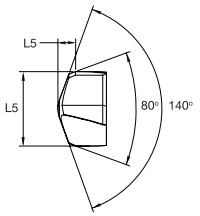
D1			ISO	ANSI		H S N K M P
mm	inch	order number	catalog number	catalog number	seat size/series	KC7320
26,59	1.0470	3381636	KSEM2659HPLM	KSEM1047HPL	6	●
26,70	1.0512	3381638	KSEM2670HPLM	KSEM2670HPLM	6	●
25,81	1.0610	3381632	KSEM2581HPLM	KSEM1016HPL	5	●
27,00	1.0630	3381640	KSEM2700HPLM	KSEM2700HPLM	6	●
27,50	1.0827	3381642	KSEM2750HPLM	KSEM2750HPLM	6	●
27,78	1.0940	3381637	KSEM2779HPLM	KSEM1094HPL	6	●
28,00	1.1024	3381644	KSEM2800HPLM	KSEM2800HPLM	6	●
28,10	1.1063	3381166	KSEM2810HPLM	KSEM2810HPLM	7	●
28,18	1.1090	3381639	KSEM2817HPLM	KSEM1109HPL	7	●
28,50	1.1220	3381168	KSEM2850HPLM	KSEM2850HPLM	7	●
28,58	1.1250	3381170	KSEM2858HPLM	KSEM1125HPL	7	●
29,00	1.1417	3381172	KSEM2900HPLM	KSEM2900HPLM	7	●
29,73	1.1560	3381174	KSEM2937HPLM	KSEM1156HPL	7	●
29,50	1.1614	3381176	KSEM2950HPLM	KSEM2950HPLM	7	●
29,77	1.1720	3381178	KSEM2977HPLM	KSEM1172HPL	7	●
30,00	1.1811	3381180	KSEM3000HPLM	KSEM3000HPLM	7	●
30,16	1.1875	3381182	KSEM3016HPLM	KSEM1188HPL	8	●
30,50	1.2008	3381184	KSEM3050HPLM	KSEM3050HPLM	8	●
31,00	1.2200	3381186	KSEM3100HPLM	KSEM3100HPLM	8	●
31,50	1.2402	3381188	KSEM3150HPLM	KSEM3150HPLM	8	●
31,75	1.2500	3381190	KSEM3175HPLM	KSEM1250HPL	8	●
32,00	1.2598	3381192	KSEM3200HPLM	KSEM3200HPLM	8	●
32,54	1.2810	3381641	KSEM3254HPLM	KSEM1281HPL	9	●
33,00	1.2992	3381194	KSEM3300HPLM	KSEM3300HPLM	9	●
33,40	1.3130	3381643	KSEM3335HPLM	KSEM1313HPL	9	●
34,00	1.3386	3381615	KSEM3400HPLM	KSEM3400HPLM	9	●
34,93	1.3750	3381196	KSEM3493HPLM	KSEM1375HPL	9	●
35,00	1.3780	3381617	KSEM3500HPLM	KSEM3500HPLM	9	●
35,72	1.4060	3381197	KSEM3571HPLM	KSEM1406HPL	9	●
36,00	1.4173	3381619	KSEM3600HPLM	KSEM3600HPLM	9	●
37,00	1.4567	3381621	KSEM3700HPLM	KSEM3700HPLM	10	●
37,50	1.4764	3381623	KSEM3750HPLM	KSEM3750HPLM	10	●
38,00	1.4961	3381625	KSEM3800HPLM	KSEM3800HPLM	10	●
38,10	1.5000	3381198	KSEM3810HPLM	KSEM1500HPL	10	●
38,46	1.5140	3381199	KSEM3846HPLM	KSEM1514HPL	10	●
39,00	1.5354	3381627	KSEM3900HPLM	KSEM3900HPLM	10	●
39,50	1.5551	3381629	KSEM3950HPLM	KSEM3950HPLM	10	●
40,00	1.5748	3381631	KSEM4000HPLM	KSEM4000HPLM	10	●

Order Example:
By catalog number KSEM2659HPLM, or by order number 3381636.

KENNAMETAL

KSEM Carbide Insert Blades — Inch and Metric

Tolerance			
D1 metric	Tolerance h8	D1 inch	Tolerance h8
12,5 to 18,0	+0,000/-0,027	.500 to .709	+.000/-.0010
>18,0 to 30,0	+0,000/-0,033	>.709 to 1.181	+.000/-.0013
>30,0 to 40,0	+0,000/-0,039	>1.181 to 1.575	+.000/-.0015



● first choice
○ alternate choice

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HPC Geometry

D1 mm	D1 inch	catalog number order number	catalog number ISO	catalog number ANSI	seat size/series	KC7410
12,50	0.492	3578855	KSEM1250HPCM	KSEM1250HPCM	C	●
12,70	0.500	3579143	KSEM1270HPCM	KSEM0500HPC	C	●
12,93	0.509	3579144	KSEM1293HPCM	KSEM0509HPC	C	●
13,00	0.512	3578856	KSEM1300HPCM	KSEM1300HPCM	C	●
13,10	0.516	3579145	KSEM1310HPCM	KSEM0516HPC	C	●
13,50	0.531	3578857	KSEM1350HPCM	KSEM1350HPCM	C	●
13,89	0.547	3579146	KSEM1389HPCM	KSEM0547HPC	B	●
14,00	0.551	3578858	KSEM1400HPCM	KSEM1400HPCM	B	●
14,29	0.563	3579147	KSEM1429HPCM	KSEM0563HPC	B	●
14,50	0.571	3578859	KSEM1450HPCM	KSEM1450HPCM	B	●
14,68	0.578	3579148	KSEM1468HPCM	KSEM0578HPC	A	●
15,00	0.591	3578860	KSEM1500HPCM	KSEM1500HPCM	A	●
15,48	0.609	3579149	KSEM1548HPCM	KSEM0609HPC	A	●
15,50	0.610	3578861	KSEM1550HPCM	KSEM1550HPCM	A	●
15,88	0.625	3579150	KSEM1588HPCM	KSEM0625HPC	A	●
16,00	0.630	3578862	KSEM1600HPCM	KSEM1600HPCM	1	●
16,09	0.634	3579151	KSEM1609HPCM	KSEM0634HPC	1	●
16,27	0.641	3579152	KSEM1627HPCM	KSEM0641HPC	1	●
16,50	0.650	3578873	KSEM1650HPCM	KSEM1650HPCM	1	●
16,67	0.656	3579153	KSEM1667HPCM	KSEM0656HPC	1	●
17,00	0.669	3578874	KSEM1700HPCM	KSEM1700HPCM	1	●
17,07	0.672	3579154	KSEM1707HPCM	KSEM0672HPC	1	●
17,46	0.688	3579155	KSEM1746HPCM	KSEM0688HPC	1	●
17,50	0.689	3578875	KSEM1750HPCM	KSEM1750HPCM	1	●
18,00	0.709	3578876	KSEM1800HPCM	KSEM1800HPCM	1	●
18,26	0.719	3579156	KSEM1826HPCM	KSEM0719HPC	2	●
18,50	0.728	3578877	KSEM1850HPCM	KSEM1850HPCM	2	●
19,00	0.748	3578878	KSEM1900HPCM	KSEM1900HPCM	2	●
19,05	0.750	3579157	KSEM1905HPCM	KSEM0750HPC	2	●
19,27	0.759	3579158	KSEM1927HPCM	KSEM0759HPC	2	●
19,45	0.766	3579159	KSEM1945HPCM	KSEM0766HPC	2	●
19,50	0.768	3578879	KSEM1950HPCM	KSEM1950HPCM	2	●
19,84	0.781	3579160	KSEM1984HPCM	KSEM0781HPC	2	●
20,00	0.787	3578880	KSEM2000HPCM	KSEM2000HPCM	3	●
20,24	0.797	3579161	KSEM2024HPCM	KSEM0797HPC	3	●
20,50	0.807	3578881	KSEM2050HPCM	KSEM2050HPCM	3	●
20,64	0.813	3579162	KSEM2064HPCM	KSEM0813HPC	3	●
21,00	0.827	3578882	KSEM2100HPCM	KSEM2100HPCM	3	●
21,43	0.844	3579163	KSEM2143HPCM	KSEM0844HPC	3	●
21,50	0.846	3578883	KSEM2150HPCM	KSEM2150HPCM	3	●
22,00	0.866	3578884	KSEM2200HPCM	KSEM2200HPCM	3	●
22,23	0.875	3579164	KSEM2223HPCM	KSEM0875HPC	4	●
22,44	0.884	3579165	KSEM2244HPCM	KSEM0884HPC	4	●
22,50	0.886	3578885	KSEM2250HPCM	KSEM2250HPCM	4	●

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To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

● first choice
○ alternate choice

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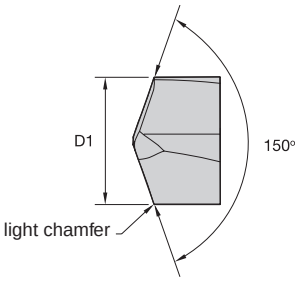
HPC Geometry

(continued from previous page)

D1 mm	D1 inch	order number	catalog number ISO	catalog number ANSI	seat size/series	KC7410
23,00	0.906	3578886	KSEM2300HPCM	KSEM2300HPCM	4	●
23,42	0.922	3579166	KSEM2342HPCM	KSEM0922HPC	4	●
23,50	0.925	3578887	KSEM2350HPCM	KSEM2350HPCM	4	●
23,81	0.938	3579167	KSEM2381HPCM	KSEM0938HPC	4	●
24,00	0.945	3578888	KSEM2400HPCM	KSEM2400HPCM	4	●
24,50	0.965	3578889	KSEM2450HPCM	KSEM2450HPCM	5	●
24,61	0.969	3579168	KSEM2461HPCM	KSEM0969HPC	5	●
25,00	0.984	3578890	KSEM2500HPCM	KSEM2500HPCM	5	●
25,40	1.000	3579169	KSEM2540HPCM	KSEM1000HPC	5	●
25,50	1.004	3578891	KSEM2550HPCM	KSEM2550HPCM	5	●
25,67	1.011	3579170	KSEM2567HPCM	KSEM1011HPC	5	●
26,00	1.024	3578892	KSEM2600HPCM	KSEM2600HPCM	5	●
26,19	1.031	3579171	KSEM2619HPCM	KSEM1031HPC	6	●
26,5	1.043	3578893	KSEM2650HPCM	KSEM2650HPCM	6	●
26,59	1.047	3579172	KSEM2659HPCM	KSEM1047HPC	6	●
27,00	1.063	3578894	KSEM2700HPCM	KSEM2700HPCM	6	●
27,50	1.083	3578895	KSEM2750HPCM	KSEM2750HPCM	6	●
27,78	1.094	3579173	KSEM2778HPCM	KSEM1094HPC	6	●
28,00	1.102	3578896	KSEM2800HPCM	KSEM2800HPCM	6	●
28,18	1.109	3579174	KSEM2818HPCM	KSEM1109HPC	7	●
28,50	1.122	3578897	KSEM2850HPCM	KSEM2850HPCM	7	●
28,58	1.125	3579175	KSEM2858HPCM	KSEM1125HPC	7	●
29,00	1.142	3578898	KSEM2900HPCM	KSEM2900HPCM	7	●
29,37	1.156	3579176	KSEM2937HPCM	KSEM1156HPC	7	●
29,50	1.161	3578899	KSEM2950HPCM	KSEM2950HPCM	7	●
29,77	1.172	3579177	KSEM2977HPCM	KSEM1172HPC	7	●
30,00	1.181	3578900	KSEM3000HPCM	KSEM3000HPCM	7	●
30,16	1.188	3579178	KSEM3016HPCM	KSEM1188HPC	8	●
30,50	1.201	3578901	KSEM3050HPCM	KSEM3050HPCM	8	●
31,00	1.220	3578902	KSEM3100HPCM	KSEM3100HPCM	8	●
31,75	1.250	3579179	KSEM3175HPCM	KSEM1250HPC	8	●
32,00	1.260	3578903	KSEM3200HPCM	KSEM3200HPCM	8	●

KSEM Carbide Insert Blades — Inch and Metric

Tolerance			
D1 metric	**Tolerance h8**	**D1 inch**	**Tolerance h8**
12,5 to 18,0	+0,000/-0,027	.500 to .709	+.000/-.0010
>18,0 to 30,0	+0,000/-0,033	>.709 to 1.181	+.000/-.0013
>30,0 to 40,0	+0,000/-0,039	>1.181 to 1.575	+.000/-.0015



● first choice
○ alternate choice

		KC7135
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PC Geometry

D1			ISO	ANSI		KC7135
mm	inch	order number	catalog number	catalog number	seat size/series	
12,50	.4921	2252989	KSEM1250PCM	KSEM1250PCM	C	●
12,60	.4961	2646063	KSEM1260PCM	KSEM1260PCM	C	●
12,80	.5039	2646064	KSEM1280PCM	KSEM1280PCM	C	●
13,00	.5118	2541511	KSEM1300PCM	KSEM1300PCM	C	●
13,20	.5197	2646065	KSEM1320PCM	KSEM1320PCM	C	●
13,50	.5310	2541512	KSEM1350PCM	KSEM1350PCM	C	●
13,60	.5354	2548881	KSEM1360PCM	KSEM1360PCM	B	●
13,70	.5394	2646066	KSEM1370PCM	KSEM1370PCM	B	●
13,80	.5433	2646067	KSEM1380PCM	KSEM1380PCM	B	●
14,00	.5512	2646068	KSEM1400PCM	KSEM1400PCM	B	●
14,10	.5551	2646069	KSEM1410PCM	KSEM1410PCM	B	●
14,20	.5591	2646070	KSEM1420PCM	KSEM1420PCM	B	●
14,40	.5669	2646071	KSEM1440PCM	KSEM1440PCM	B	●
14,50	.5709	2646072	KSEM1450PCM	KSEM1450PCM	B	●
14,60	.5748	2646073	KSEM1460PCM	KSEM1460PCM	A	●
14,80	.5827	2646074	KSEM1480PCM	KSEM1480PCM	A	●
15,00	.5906	2646075	KSEM1500PCM	KSEM1500PCM	A	●
15,30	.6024	2646076	KSEM1530PCM	KSEM1530PCM	A	●
15,50	.6102	2646077	KSEM1550PCM	KSEM1550PCM	A	●
15,60	.6142	2646078	KSEM1560PCM	KSEM1560PCM	A	●
15,70	.6181	2646079	KSEM1570PCM	KSEM1570PCM	A	●
15,80	.6220	2646080	KSEM1580PCM	KSEM1580PCM	A	●
16,00	.6299	2646081	KSEM1600PCM	KSEM1600PCM	1	●
16,20	.6378	2646082	KSEM1620PCM	KSEM1620PCM	1	●
16,50	.6496	2646083	KSEM1650PCM	KSEM1650PCM	1	●
17,00	.6693	2646084	KSEM1700PCM	KSEM1700PCM	1	●
17,50	.6890	2252992	KSEM1750PCM	KSEM1750PCM	1	●
18,00	.7087	2541018	KSEM1800PCM	KSEM1800PCM	1	●
18,50	.7283	2541019	KSEM1850PCM	KSEM1850PCM	2	●
19,00	.7480	2646085	KSEM1900PCM	KSEM1900PCM	2	●
19,50	.7677	2646086	KSEM1950PCM	KSEM1950PCM	2	●
20,00	.7874	2623860	KSEM2000PCM	KSEM2000PCM	3	●
20,50	.8071	2646087	KSEM2050PCM	KSEM2050PCM	3	●
21,00	.8268	2646088	KSEM2100PCM	KSEM2100PCM	3	●
21,50	.8460	2646089	KSEM2150PCM	KSEM2150PCM	3	●
22,00	.8661	2646090	KSEM2200PCM	KSEM2200PCM	3	●
22,50	.8858	2646091	KSEM2250PCM	KSEM2250PCM	4	●
23,00	.9055	2541020	KSEM2300PCM	KSEM2300PCM	4	●
23,50	.9252	2646092	KSEM2350PCM	KSEM2350PCM	4	●
24,00	.9449	2646093	KSEM2400PCM	KSEM2400PCM	4	●

(continued on next page)

PC Geometry

(continued from previous page)

● first choice
○ alternate choice

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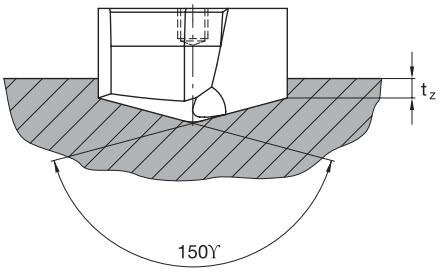
D1			ISO	ANSI		
mm	inch	order number	catalog number	catalog number	seat size/series	KC7135
24,50	.9646	2646094	KSEM2450PCM	KSEM2450PCM	5	●
25,00	.9843	2542822	KSEM2500PCM	KSEM2500PCM	5	●
25,50	1.0039	2646095	KSEM2550PCM	KSEM2550PCM	5	●
26,00	1.0236	2253024	KSEM2600PCM	KSEM2600PCM	5	●
26,50	1.0433	2646096	KSEM2650PCM	KSEM2650PCM	6	●
27,00	1.0630	2646097	KSEM2700PCM	KSEM2700PCM	6	●
27,50	1.0827	2646098	KSEM2750PCM	KSEM2750PCM	6	●
28,00	1.1024	2646099	KSEM2800PCM	KSEM2800PCM	6	●
28,50	1.1220	2646100	KSEM2850PCM	KSEM2850PCM	7	●
29,00	1.1417	2646101	KSEM2900PCM	KSEM2900PCM	7	●
29,50	1.1614	2646102	KSEM2950PCM	KSEM2950PCM	7	●
30,00	1.1811	2542849	KSEM3000PCM	KSEM3000PCM	7	●
30,50	1.2008	2646103	KSEM3050PCM	KSEM3050PCM	8	●
31,00	1.2200	2646104	KSEM3100PCM	KSEM3100PCM	8	●
31,50	1.2402	2646105	KSEM3150PCM	KSEM3150PCM	8	●
32,00	1.2598	2405616	KSEM3200PCM	KSEM3200PCM	8	●
40,00	1.5748	2405618	KSEM4000PCM	KSEM4000PCM	10	●

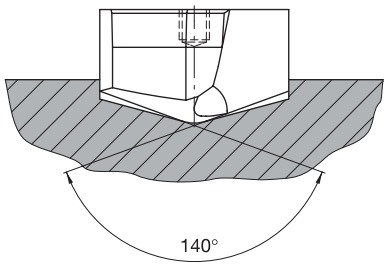
Order Example:
By catalog number KSEM2350PCM KC7135, or by order number 2646092.

Application Notes — Pre-Centering

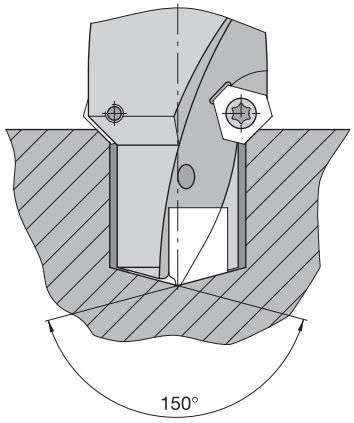
Centering using PCM inserts



HPM inserts of the follower drill



Pre-centering with FAS centering tool



Why is pre-centering necessary?

- Generally speaking, for drilling depths 5 times the nominal diameter and above (5 x d).
- In unstable conditions (workpiece and tool clamping).

Why pre-center using PCM inserts?

- Soft cut entry of follower drill due to 150° point angle of the PCM insert.
- No extension of the follower drill in the entry area.
- No breaks at the cutting edges.

What happens if...
... a center cannot be used for technical reasons?

Spot drill with “normal” insert and reduced cutting data (approximately ½ vc and approximately ½ vf) then continue drilling with regular cutting data without lifting off/stopping.

...there is no suitable PCM cutting insert in the standard range (ø)?

- Manufacture to order using PCM geometry and k7 tolerance

or

- Center using the same cutter insert as for the follower drill but without the cutting edges penetrating the workpiece (spot drill ø approximately 90% of drill ø d1).

...only one tool body is required?

Enter the workpiece with 50% feed until the cutting edges and the heels have penetrated the hole, then continue drilling without lifting off/stopping using regular cutting data.

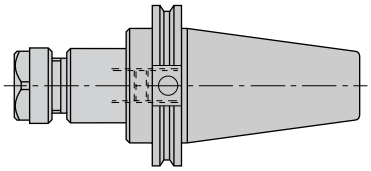
Other problems...

Short hole drilling with pre-centering support tool?

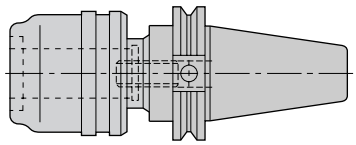
Up to 1 x nominal diameter (1 x d) possible.

KSEM inch drills with round shanks (no flats) are specifically designed for use in rotating applications where the drill rotates and the workpiece remains stationary. The shank to drill-point location of these drills is held to an extremely close tolerance. To maintain this accuracy, and get maximum performance from the KSEM drill, use only the approved toolholding method shown below.

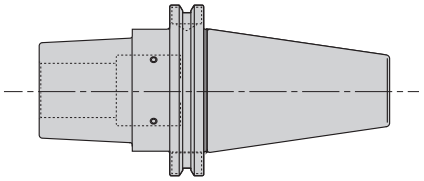
TGCHP collet chucks

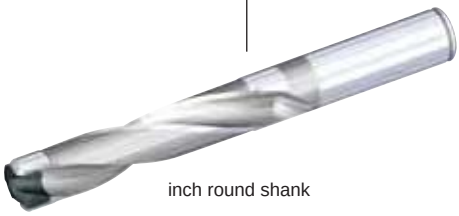


powergrip chucks



shrink fit



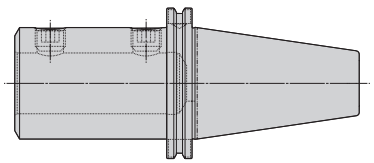


inch round shank

Inch drill bodies with flange

KSEM inch drills with a flange can be used in rotating applications where the drill rotates and the workpiece remains stationary. To maintain accuracy and get maximum performance from the drill, use only the approved toolholding method shown here.

SSF straight shank flanged adapter

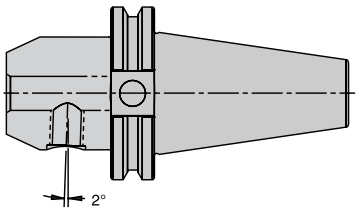


inch shank with flange

Metric drill bodies with a 2° Whistle Notch

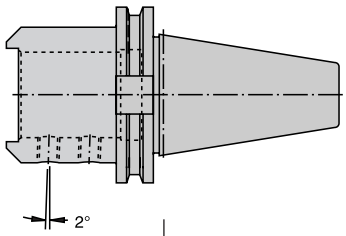
KSEM metric drills come equipped with 2° Whistle Notch shanks. The 20, 25, and 32 mm diameter shanks use WN adapters. The 50 mm shank uses a WD adapter. Choose the correct adapter to minimize runout and hold the drill securely.

WN adapters



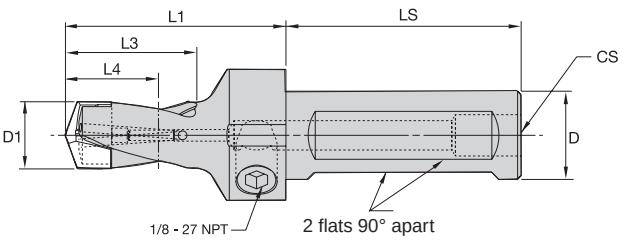
20, 25, and 32mm shanks (DIN 1835, Form E)

WD adapters



50mm shanks

KSEM Flanged Shank Bodies — Inch

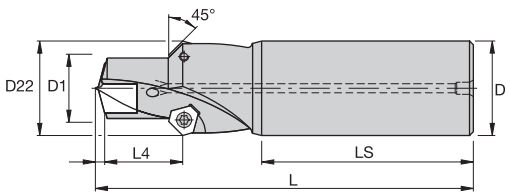


- Use any insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, wrench, and side pipe plug (inch only).
- Order insert blades separately, see pages B37-B49.
- Order TPGX chamfering insert separately, see page H10.

1xD Flanged Shank — Inch

D1 in	D1 mm	D1 max	order number	catalog number	insert blade seat size	gage insert	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench	CS
.4930	12,52	.5314	1792254	KSEM0493R1SSF075	C	KSEM0500	.750	3.94	1.94	1.02	.53	.08	2.00	364.017	170.294	1/8-27 NPT
.5320	13,51	.5708	1792255	KSEM0532R1SSF075	B	KSEM0547	.750	4.00	2.00	1.10	.61	.08	2.00	364.016	170.289	1/8-27 NPT
.5710	14,50	.6249	1792256	KSEM0571R1SSF075	A	KSEM0578	.750	4.00	2.00	1.13	.63	.09	2.00	364.016	170.289	1/8-27 NPT
.6250	15,88	.7086	1792224	KSEM0625R1SSF075	1	KSEM0625	.750	4.19	2.19	1.28	.71	.10	2.00	364.010	170.270	1/8-27 NPT
.7090	18,01	.7873	1792225	KSEM0709R1SSF075	2	KSEM0719	.750	4.25	2.25	1.38	.78	.11	2.00	364.010	170.270	1/8-27 NPT
.7880	20,02	.8661	1792226	KSEM0788R1SSF100	3	KSEM0797	1.000	5.50	2.50	1.58	.87	.13	3.00	364.011	170.272	1/4-18 NPT
.8670	22,02	.9448	1792227	KSEM0867R1SSF100	4	KSEM0875	1.000	5.56	2.56	1.63	.95	.14	3.00	364.011	170.272	1/4-18 NPT
.9450	24,00	1.0236	1792228	KSEM0945R1SSF100	5	KSEM2450	1.000	5.63	2.63	1.79	1.02	.15	3.00	364.012	170.274	1/4-18 NPT
1.0240	26,01	1.1023	1792229	KSEM1024R1SSF125	6	KSEM1031	1.250	6.13	2.88	1.87	1.11	.16	3.25	364.012	170.274	1/4-18 NPT
1.1030	28,02	1.1811	1792230	KSEM1103R1SSF125	7	KSEM1109	1.250	6.19	2.94	2.03	1.18	.17	3.25	364.013	170.276	1/4-18 NPT
1.1820	30,02	1.2598	1792231	KSEM1182R1SSF125	8	KSEM1188	1.250	6.25	3.00	2.15	1.27	.18	3.25	364.013	170.276	1/4-18 NPT
1.2600	32,00	1.4173	1792232	KSEM1260R1SSF125	9	KSEM3250	1.250	6.50	3.25	2.39	1.42	.19	3.25	364.015	170.276	1/4-18 NPT
1.4180	36,02	1.5748	1792253	KSEM1418R1SSF125	10	KSEM1422	1.250	6.63	3.38	2.58	1.57	.22	3.25	364.015	170.276	1/4-18 NPT

Ordering Example:
By catalog number KSEM0493R1SSF075, or by order number 1792254.



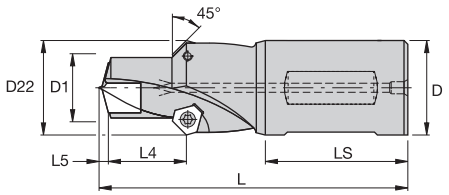
- Use any KSEM insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, insert screw and wrenches.
- Order insert blade separately, see pages B37-B49.
- Order TPGX chamfering insert separately, see page H10.

1xD w/Chamfer Round Shank — Inch

D1																
in	mm	D1 max	order number	catalog number	insert blade seat size	chamfer insert	D	D22	L	L4 max	L5	L5 max	LS	central lock screw	insert screw	wrench
.4921	12,50	.5314	2223998	KSEM0493R1SS075F45	C	TPGX0902ZPR	.750	.70	3.75	.53	.08	.08	2.00	364.017	MS1152	170.051
.5350	13,60	.5708	2223999	KSEM0532R1SS075F45	B	TPGX0902ZPR	.750	.74	3.75	.57	.08	.09	2.00	364.016	MS1152	170.289
.5750	14,60	.6249	2224000	KSEM0571R1SS075F45	A	TPGX0902ZPR	.750	.77	3.75	.62	.09	.10	2.00	364.016	MS1152	170.289
.6250	15,88	.7086	2224001	KSEM0625R1SS075F45	1	TPGX1102ZPR	.750	.88	3.75	.71	.10	.11	2.00	364.010	MS1153	170.270
.7190	18,26	.7873	2224002	KSEM0709R1SS075F45	2	TPGX1102ZPR	.750	.96	3.75	.78	.11	.12	2.00	364.010	MS1153	170.270
.7870	20,00	.8661	2224003	KSEM0788R1SS100F45	3	TPGX1303ZPR	1.000	1.11	5.00	.87	.13	.14	3.00	364.011	191.924	170.272
.8750	22,23	.9448	2224004	KSEM0867R1SS100F45	4	TPGX1303ZPR	1.000	1.19	5.00	.94	.14	.15	3.00	364.011	191.924	170.272
.9650	24,50	1.0236	2224005	KSEM0945R1SS100F45	5	TPGX1603ZPR	1.000	1.34	5.25	1.02	.15	.16	3.00	364.012	MS1155	170.055
1.0310	26,19	1.1023	2224006	KSEM1024R1SS125F45	6	TPGX1603ZPR	1.250	1.42	5.75	1.10	.16	.17	3.25	364.012	MS1155	170.055
1.1090	28,17	1.1811	2224007	KSEM1103R1SS125F45	7	TPGX1603ZPR	1.250	1.50	5.75	1.18	.17	.18	3.25	364.013	MS1155	170.276
1.1880	30,16	1.2598	2224008	KSEM1182R1SS125F45	8	TPGX1603ZPR	1.250	1.58	5.75	1.26	.18	.19	3.25	364.013	MS1155	170.276
1.2800	32,50	1.4173	2224009	KSEM1260R1SS125F45	9	TPGX1603ZPR	1.250	1.66	6.00	1.42	.19	.22	3.25	364.015	MS1155	170.276
1.4220	36,12	1.5748	2224010	KSEM1418R1SS125F45	10	TPGX1603ZPR	1.250	1.82	6.00	1.57	.22	.24	3.25	364.015	MS1155	170.276

Ordering Example:
By catalog number KSEM0493R1SS075F45, or by order number 2223998.

KSEM 45° Chamfer with Flanged Shank Bodies — Inch

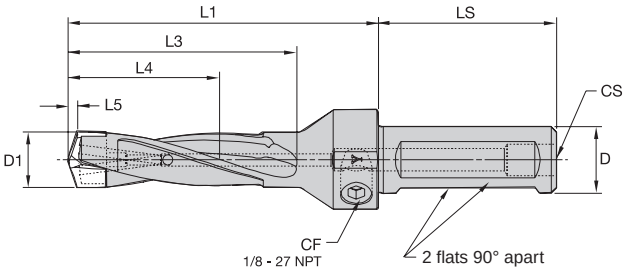


- Use any insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, wrench, and side pipe plug (inch only).
- Order insert blades separately, see pages B47-B49.
- Order TPGX chamfering insert separately, see page H10.

1xD w/Chamfer Flanged Shank — Inch

D1 inch	D1 mm	D1 max	order number	catalog number	insert blade seat size	chamfer insert	D	D22	L	L1	L4 max	L5	LS	central lock screw	insert screw	wrench	CS
.4921	12,50	.5314	2223775	KSEM0493R1SSF075F45	C	TPGX0902ZPR	.750	.70	4.00	2.00	.53	.08	2.00	364.017	MS1152	170.051	1/8-27 NPT
.5350	13,60	.5708	2223776	KSEM0532R1SSF075F45	B	TPGX0902ZPR	.750	.74	4.25	2.25	.57	.08	2.00	364.016	MS1152	170.289	1/8-27 NPT
.5750	14,60	.6249	2223777	KSEM0571R1SSF075F45	A	TPGX0902ZPR	.750	.77	4.25	2.25	.62	.09	2.00	364.016	MS1152	170.289	1/8-27 NPT
.6250	15,88	.7086	2223778	KSEM0625R1SSF075F45	1	TPGX1102ZPR	.750	.88	4.25	2.25	.71	.10	2.00	364.010	MS1153	170.270	1/8-27 NPT
.7190	18,26	.7873	2223779	KSEM0709R1SSF075F45	2	TPGX1102ZPR	.750	.96	4.25	2.25	.78	.11	2.00	364.010	MS1153	170.270	1/8-27 NPT
.7870	20,00	.8661	2223780	KSEM0788R1SSF100F45	3	TPGX1303ZPR	1.000	1.11	5.50	2.50	.87	.13	3.00	364.011	191.924	170.272	1/4-18 NPT
.8750	22,23	.9448	2223781	KSEM0867R1SSF100F45	4	TPGX1303ZPR	1.000	1.19	5.50	2.50	.94	.14	3.00	364.011	191.924	170.272	1/4-18 NPT
.9650	24,50	1.0236	2223782	KSEM0945R1SSF100F45	5	TPGX1603ZPR	1.000	1.34	5.75	2.75	1.02	.15	3.00	364.012	MS1155	170.055	1/4-18 NPT
1.0310	26,19	1.1023	2223993	KSEM1024R1SSF125F45	6	TPGX1603ZPR	1.250	1.42	5.75	2.75	1.10	.16	3.25	364.012	MS1155	170.055	1/4-18 NPT
1.1090	28,17	1.1811	2223994	KSEM1103R1SSF125F45	7	TPGX1603ZPR	1.250	1.50	6.25	3.00	1.18	.17	3.25	364.013	MS1155	170.276	1/4-18 NPT
1.1880	30,16	1.2598	2223995	KSEM1182R1SSF125F45	8	TPGX1603ZPR	1.250	1.58	6.25	3.00	1.26	.18	3.25	364.013	MS1155	170.276	1/4-18 NPT
1.2800	32,50	1.4173	2223996	KSEM1260R1SSF125F45	9	TPGX1603ZPR	1.250	1.66	6.25	3.25	1.42	.19	3.25	364.015	MS1155	170.276	1/4-18 NPT
1.4220	36,12	1.5748	2223997	KSEM1418R1SSF125F45	10	TPGX1603ZPR	1.250	1.82	6.25	3.25	1.57	.22	3.25	364.015	MS1155	170.276	1/4-18 NPT

Ordering Example:
By catalog number KSEM0493R1SSF075F45, or by order number 2223775.



- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately, see pages B37-B49.

3xD Flanged Shank — Inch

D1															
inch	mm	order number	catalog number	insert blade seat size	D	L1	L3	L4 max	L5	LS	central lock screw	wrench	CS	D1	D1 max
.5000	12,70	1785245	KSEM0500R3SSF075	C	.750	2.88	1.98	1.50	.08	2.00	364.017	170.294	1/8-27 NPT	.5000	.5197
.5090	12,93	1785246	KSEM0509R3SSF075	C	.750	2.88	1.98	1.53	.08	2.00	364.017	170.294	1/8-27 NPT	.5090	.5287
.5160	13,11	1785247	KSEM0516R3SSF075	C	.750	2.88	2.04	1.55	.08	2.00	364.017	170.294	1/8-27 NPT	.5160	.5314
.5310	13,49	1785248	KSEM0531R3SSF075	C	.750	2.94	2.06	1.59	.08	2.00	364.017	170.294	1/8-27 NPT	.5310	.5314
.5470	13,89	1785249	KSEM0547R3SSF075	B	.750	3.00	2.13	1.64	.09	2.00	364.016	170.289	1/8-27 NPT	.5470	.5667
.5630	14,30	1785250	KSEM0563R3SSF075	B	.750	3.06	2.19	1.69	.09	2.00	364.016	170.289	1/8-27 NPT	.5630	.5708
.5780	14,68	1785251	KSEM0578R3SSF075	A	.750	3.13	2.24	1.73	.09	2.00	364.016	170.289	1/8-27 NPT	.5780	.5977
.5940	15,09	1785252	KSEM0594R3SSF075	A	.750	3.19	2.32	1.78	.09	2.00	364.016	170.289	1/8-27 NPT	.5940	.6137
.6090	15,47	1785283	KSEM0609R3SSF075	A	.750	3.25	2.37	1.83	.10	2.00	364.016	170.289	1/8-27 NPT	.6090	.6249
.6250	15,88	1505110	KSEM0625R3SSF075	1	.750	3.50	2.65	1.89	.10	2.00	364.010	170.270	1/8-27 NPT	.6250	.6447
.6340	16,10	1613623	KSEM0634R3SSF075	1	.750	3.50	2.66	2.05	.10	2.00	364.010	170.270	1/8-27 NPT	.6340	.6537
.6410	16,28	1613627	KSEM0641R3SSF075	1	.750	3.63	2.68	2.05	.10	2.00	364.010	170.270	1/8-27 NPT	.6410	.6607
.6720	17,07	1613628	KSEM0672R3SSF075	1	.750	3.63	2.77	2.05	.11	2.00	364.010	170.270	1/8-27 NPT	.6720	.6917
.6875	17,46	1505111	KSEM0688R3SSF075	1	.750	3.75	2.96	2.13	.11	2.00	364.010	170.270	1/8-27 NPT	.6875	.7072
.7030	17,86	1613632	KSEM0703R3SSF075	1	.750	3.75	2.88	2.13	.11	2.00	364.010	170.270	1/8-27 NPT	.7030	.7086
.7340	18,64	1613633	KSEM0734R3SSF075	2	.750	4.25	3.51	2.36	.12	2.00	364.010	170.270	1/8-27 NPT	.7340	.7537
.7500	19,05	1505112	KSEM0750R3SSF075	2	.750	4.25	3.51	2.36	.12	2.00	364.010	170.270	1/8-27 NPT	.7500	.7502
.7500	19,05	1505113	KSEM0750R3SSF100	2	1.000	4.50	3.51	2.36	.12	3.00	364.010	170.270	1/4-18 NPT	.7500	.7502
.7590	19,28	1613634	KSEM0759R3SSF100	2	1.000	4.50	3.51	2.36	.12	3.00	364.010	170.270	1/4-18 NPT	.7590	.7787
.7660	19,46	1613635	KSEM0766R3SSF100	2	1.000	4.50	3.51	2.36	.12	3.00	364.010	170.270	1/4-18 NPT	.7660	.7857
.7810	19,84	1613636	KSEM0781R3SSF100	2	1.000	4.50	3.51	2.36	.12	3.00	364.010	170.270	1/4-18 NPT	.7810	.7873
.7970	20,24	1613637	KSEM0797R3SSF100	3	1.000	4.50	3.51	2.36	.13	3.00	364.011	170.272	1/4-18 NPT	.7970	.8167
.8125	20,64	1505115	KSEM0813R3SSF100	3	1.000	4.50	3.64	2.60	.13	3.00	364.011	170.272	1/4-18 NPT	.8125	.8322
.8590	21,82	1613638	KSEM0859R3SSF100	3	1.000	4.63	3.75	2.60	.14	3.00	364.011	170.272	1/4-18 NPT	.8590	.8661
.8750	22,23	1505117	KSEM0875R3SSF125	4	1.250	5.00	3.96	2.83	.14	3.25	364.011	170.272	1/4-18 NPT	.8750	.8947
.8750	22,23	1505116	KSEM0875R3SSF100	4	1.000	4.75	3.96	2.83	.14	3.00	364.011	170.272	1/4-18 NPT	.8750	.8947

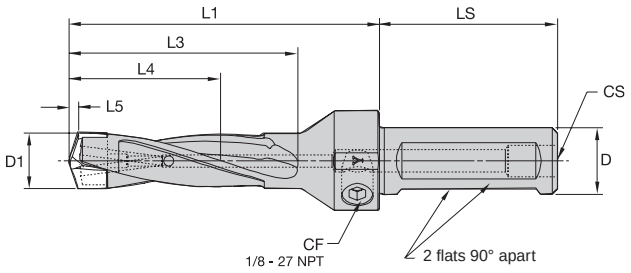
(continued on next page)

3xD Flanged Shank — Inch

(continued from previous page)

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L1	L3	L4 max	L5	LS	central lock screw	wrench	CS	D1	D1 max
.8840	22,45	1613639	KSEM0884R3SSF100	4	1.000	4.75	3.96	2.83	.14	3.00	364.011	170.272	1/4-18 NPT	.8840	.9037
.9060	23,01	1613640	KSEM0906R3SSF100	4	1.000	4.75	3.96	2.83	.14	3.00	364.011	170.272	1/4-18 NPT	.9060	.9257
.9220	23,42	1613651	KSEM0922R3SSF100	4	1.000	4.75	3.96	2.83	.15	3.00	364.011	170.272	1/4-18 NPT	.9220	.9417
.9375	23,81	1505119	KSEM0938R3SSF100	4	1.000	4.75	3.96	2.83	.15	3.00	364.011	170.272	1/4-18 NPT	.9375	.9448
.9690	24,61	1613652	KSEM0969R3SSF100	5	1.000	5.13	4.29	3.07	.15	3.00	364.012	170.274	1/4-18 NPT	.9690	.9887
.9844	25,00	1505120	KSEM0984R3SSF100	5	1.000	5.13	4.31	3.07	.15	3.00	364.012	170.274	1/4-18 NPT	.9844	1.0041
1.0000	25,40	1505122	KSEM1000R3SSF100	5	1.000	5.13	4.31	3.07	.15	3.00	364.012	170.274	1/4-18 NPT	1.0000	1.0197
1.0000	25,40	1505123	KSEM1000R3SSF125	5	1.250	5.25	4.31	3.07	.15	3.25	364.012	170.274	1/4-18 NPT	1.0000	1.0197
1.0110	25,68	1613653	KSEM1011R3SSF100	5	1.000	5.13	4.29	3.07	.16	3.00	364.012	170.274	1/4-18 NPT	1.0110	1.0236
1.0310	26,19	1613654	KSEM1031R3SSF125	6	1.250	5.50	4.61	3.31	.16	3.25	364.012	170.274	1/4-18 NPT	1.0310	1.0507
1.0470	26,59	1613655	KSEM1047R3SSF125	6	1.250	5.50	4.61	3.31	.16	3.25	364.012	170.274	1/4-18 NPT	1.0470	1.0667
1.0625	26,99	1505125	KSEM1063R3SSF125	6	1.250	5.50	4.63	3.31	.16	3.25	364.012	170.274	1/4-18 NPT	1.0625	1.0822
1.0940	27,79	1613656	KSEM1094R3SSF125	6	1.250	5.50	4.61	3.31	.17	3.25	364.012	170.274	1/4-18 NPT	1.0940	1.1023
1.1090	28,17	1613657	KSEM1109R3SSF125	7	1.250	5.75	4.92	3.54	.17	3.25	364.013	170.276	1/4-18 NPT	1.1090	1.1287
1.1250	28,58	1505127	KSEM1125R3SSF125	7	1.250	5.75	4.94	3.54	.17	3.25	364.013	170.276	1/4-18 NPT	1.1250	1.1447
1.1560	29,36	1613658	KSEM1156R3SSF125	7	1.250	5.75	4.92	3.54	.18	3.25	364.013	170.276	1/4-18 NPT	1.1560	1.1757
1.1875	30,16	1505128	KSEM1188R3SSF125	8	1.250	6.00	5.26	3.78	.18	3.25	364.013	170.276	1/4-18 NPT	1.1875	1.2072
1.2030	30,56	1613659	KSEM1203R3SSF125	8	1.250	6.00	5.32	3.78	.19	3.25	364.013	170.276	1/4-18 NPT	1.2030	1.2227
1.2500	31,75	1505132	KSEM1250R3SSF150	8	1.500	6.25	5.26	3.78	.19	3.75	364.013	170.276	1/4-18 NPT	1.2500	1.2598
1.2500	31,75	1505130	KSEM1250R3SSF125	8	1.250	6.00	5.26	3.78	.19	3.25	364.013	170.276	1/4-18 NPT	1.2500	1.2598
1.2810	32,54	1616097	KSEM1281R3SSF150	9	1.500	7.00	6.10	3.90	.20	3.75	364.015	170.276	1/4-18 NPT	1.2810	1.3204
1.2970	32,94	1616099	KSEM1297R3SSF150	9	1.500	7.00	6.10	3.90	.20	3.75	364.015	170.276	1/4-18 NPT	1.2970	1.3364
1.3130	33,35	1616100	KSEM1313R3SSF150	9	1.500	7.13	6.22	4.02	.20	3.75	364.015	170.276	1/4-18 NPT	1.3130	1.3524
1.3280	33,73	1616101	KSEM1328R3SSF150	9	1.500	7.13	6.22	4.02	.20	3.75	364.015	170.276	1/4-18 NPT	1.3280	1.3674
1.3440	34,14	1616102	KSEM1344R3SSF150	9	1.500	7.25	6.34	4.13	.21	3.75	364.015	170.276	1/4-18 NPT	1.3440	1.3834
1.3750	34,93	1616105	KSEM1375R3SSF150	9	1.500	7.25	6.34	4.13	.21	3.75	364.015	170.276	1/4-18 NPT	1.3750	1.4144
1.4060	35,71	1616106	KSEM1406R3SSF150	9	1.500	7.38	6.46	4.25	.22	3.75	364.015	170.276	1/4-18 NPT	1.4060	1.4173
1.4220	36,12	1616107	KSEM1422R3SSF150	10	1.500	7.50	6.77	4.37	.22	3.75	364.015	170.276	1/4-18 NPT	1.4220	1.4614
1.4380	36,53	1616110	KSEM1438R3SSF150	10	1.500	7.50	6.77	4.37	.22	3.75	364.015	170.276	1/4-18 NPT	1.4380	1.4774
1.4690	37,31	1616132	KSEM1469R3SSF150	10	1.500	7.63	6.89	4.49	.23	3.75	364.015	170.276	1/4-18 NPT	1.4690	1.5084
1.5000	38,10	1616135	KSEM1500R3SSF150	10	1.500	7.75	7.01	4.61	.23	3.75	364.015	170.276	1/4-18 NPT	1.5000	1.5394
1.5140	38,46	1616141	KSEM1514R3SSF150	10	1.500	7.75	7.01	4.61	.23	3.75	364.015	170.276	1/4-18 NPT	1.5140	1.5534

Ordering Example:
By catalog number KSEM00884R3SSF100 or by order number 1613639.



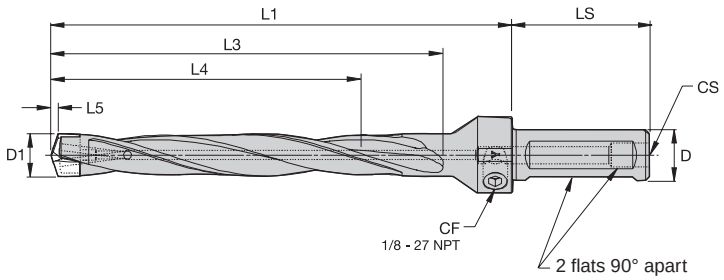
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately, see pages B37-B49.

5xD Flanged Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L1	L3	L4 max	L5	LS	central lock screw	wrench	CS	D1	D1 max
.5000	12,70	1785284	KSEM0500R5SSF075	C	.750	3.94	2.99	2.50	.08	2.00	364.017	170.294	1/8-27 NPT	.5000	.5197
.5090	12,93	1785285	KSEM0509R5SSF075	C	.750	4.00	3.03	2.55	.08	2.00	364.017	170.294	1/8-27 NPT	.5090	.5287
.5160	13,11	1785286	KSEM0516R5SSF075	C	.750	4.00	3.07	2.58	.08	2.00	364.017	170.294	1/8-27 NPT	.5160	.5314
.5310	13,49	1785287	KSEM0531R5SSF075	C	.750	4.13	3.15	2.66	.08	2.00	364.017	170.294	1/8-27 NPT	.5310	.5314
.5470	13,89	1785288	KSEM0547R5SSF075	B	.750	4.13	3.23	2.73	.09	2.00	364.016	170.289	1/8-27 NPT	.5470	.5667
.5630	14,30	1785289	KSEM0563R5SSF075	B	.750	4.25	3.31	2.81	.09	2.00	364.016	170.289	1/8-27 NPT	.5630	.5708
.5780	14,68	1785290	KSEM0578R5SSF075	A	.750	4.31	3.39	2.89	.09	2.00	364.016	170.289	1/8-27 NPT	.5780	.5977
.5940	15,09	1785291	KSEM0594R5SSF075	A	.750	4.38	3.51	2.97	.09	2.00	364.016	170.289	1/8-27 NPT	.5940	.6137
.6090	15,47	1785292	KSEM0609R5SSF075	A	.750	4.50	3.59	3.05	.10	2.00	364.016	170.289	1/8-27 NPT	.6090	.6249
.6250	15,88	1505138	KSEM0625R5SSF075	1	.750	4.75	3.91	3.15	.10	2.00	364.010	170.270	1/8-27 NPT	.6250	.6447
.6875	17,46	1505171	KSEM0688R5SSF075	1	.750	5.25	4.38	3.54	.11	2.00	364.010	170.270	1/8-27 NPT	.6875	.7072
.7500	19,05	1505174	KSEM0750R5SSF075	2	.750	5.88	5.09	3.94	.12	2.00	364.010	170.271	1/8-27 NPT	.7500	.7502
.7500	19,05	1505177	KSEM0750R5SSF100	2	1.000	6.00	5.09	3.94	.12	3.00	364.010	170.271	1/4-18 NPT	.7500	.7502
.8125	20,64	1505179	KSEM0813R5SSF100	3	1.000	6.25	5.38	4.33	.13	3.00	364.011	170.273	1/4-18 NPT	.8125	.8322
.8750	22,23	1505180	KSEM0875R5SSF100	4	1.000	6.63	5.85	4.72	.14	3.00	364.011	170.273	1/4-18 NPT	.8750	.8947
.8750	22,23	1505181	KSEM0875R5SSF125	4	1.250	6.75	5.85	4.72	.14	3.25	364.011	170.273	1/4-18 NPT	.8750	.8947
.9375	23,81	1505183	KSEM0938R5SSF100	4	1.000	6.63	5.85	4.72	.15	3.00	364.011	170.273	1/4-18 NPT	.9375	.9448
.9688	24,61	1505184	KSEM0969R5SSF100	5	1.000	7.13	6.36	5.12	.15	3.00	364.012	170.275	1/4-18 NPT	.9688	.9884
.9844	25,00	1505208	KSEM0984R5SSF100	5	1.000	7.13	6.34	5.12	.15	3.00	364.012	170.275	1/4-18 NPT	.9844	1.0041
1.0000	25,40	1505189	KSEM1000R5SSF125	5	1.250	7.25	6.36	5.12	.15	3.25	364.012	170.275	1/4-18 NPT	1.0000	1.0197
1.0000	25,40	1505188	KSEM1000R5SSF100	5	1.000	7.25	6.36	5.12	.15	3.00	364.012	170.275	1/4-18 NPT	1.0000	1.0197
1.0625	26,99	1505190	KSEM1063R5SSF125	6	1.250	7.63	6.83	5.51	.16	3.25	364.012	170.275	1/4-18 NPT	1.0625	1.0822
1.1250	28,58	1505191	KSEM1125R5SSF125	7	1.250	8.13	7.30	5.91	.17	3.25	364.013	170.277	1/4-18 NPT	1.1250	1.1447
1.1875	30,16	1505194	KSEM1188R5SSF125	8	1.250	8.50	7.78	6.30	.18	3.25	364.013	170.277	1/4-18 NPT	1.1875	1.2072
1.2500	31,75	1505196	KSEM1250R5SSF125	8	1.250	8.50	7.78	6.30	.19	3.25	364.013	170.277	1/4-18 NPT	1.2500	1.2598
1.2500	31,75	1505198	KSEM1250R5SSF150	8	1.500	8.75	7.78	6.30	.19	3.75	364.013	170.277	1/4-18 NPT	1.2500	1.2598

Order Example:
By catalog number KSEM0500R5SSF075, or by order number 1785284.

KSEM Flanged Shank Bodies — Inch

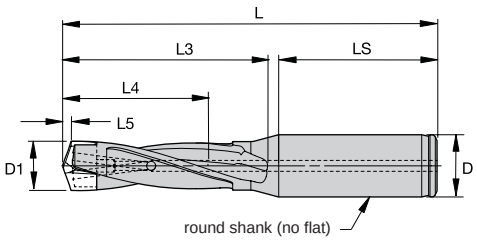


- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench, and side pipe plug.
- Order insert blade separately, see pages B37-B49.

8xD Flanged Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L1	L3	L4 max	L5	LS	central lock screw	wrench	CS	D1	D1 max
.6250	15,88	1517238	KSEM0625R8SSF075	1	.750	6.25	5.63	5.00	.10	2.00	364.010	170.271	1/8-27 NPT	.6250	.6447
.6875	17,46	1517257	KSEM0688R8SSF075	1	.750	7.00	6.38	5.50	.11	2.00	364.010	170.271	1/8-27 NPT	.6875	.7072
.7500	19,05	1517234	KSEM0750R8SSF075	2	.750	7.50	6.88	6.00	.12	2.00	364.010	170.281	1/8-27 NPT	.7500	.7502
.7500	19,05	1515717	KSEM0750R8SSF100	2	1.000	7.50	6.88	6.00	.12	3.00	364.010	170.281	1/4-18 NPT	.7500	.7502
.8125	20,64	1515716	KSEM0813R8SSF100	3	1.000	8.00	7.38	6.50	.13	3.00	364.011	170.282	1/4-18 NPT	.8125	.8326
.8750	22,23	1515718	KSEM0875R8SSF100	4	1.000	8.50	7.88	7.00	.14	3.00	364.011	170.282	1/4-18 NPT	.8750	.8947
.8750	22,23	1517239	KSEM0875R8SSF125	4	1.250	8.50	7.88	7.00	.14	3.25	364.011	170.282	1/4-18 NPT	.8750	.8947
.9375	23,81	1517235	KSEM0938R8SSF100	4	1.000	9.13	8.51	7.50	.15	3.00	364.011	170.282	1/4-18 NPT	.9375	.9448
.9844	25,00	1517236	KSEM0984R8SSF100	5	1.000	9.50	8.88	7.88	.15	3.00	364.012	170.283	1/4-18 NPT	.9844	1.0041
1.0000	25,40	1517256	KSEM1000R8SSF100	5	1.000	9.63	9.01	8.00	.15	3.00	364.012	170.283	1/4-18 NPT	1.0000	1.0197
1.0000	25,40	1517212	KSEM1000R8SSF125	5	1.250	9.63	9.01	8.00	.15	3.25	364.012	170.283	1/4-18 NPT	1.0000	1.0197
1.0625	26,99	1517181	KSEM1063R8SSF125	6	1.250	10.25	9.63	8.50	.16	3.25	364.012	170.283	1/4-18 NPT	1.0625	1.0822
1.1250	28,58	1517255	KSEM1125R8SSF125	7	1.250	10.75	10.13	9.00	.17	3.25	364.013	170.284	1/4-18 NPT	1.1250	1.1447
1.1875	30,16	1517254	KSEM1188R8SSF125	8	1.250	11.38	10.76	9.50	.18	3.25	364.013	170.284	1/4-18 NPT	1.1875	1.2072
1.2500	31,75	1517240	KSEM1250R8SSF125	8	1.250	11.88	11.26	10.00	.19	3.25	364.013	170.284	1/4-18 NPT	1.2500	1.2598
1.2500	31,75	1517211	KSEM1250R8SSF150	8	1.500	11.88	11.26	10.00	.19	3.75	364.013	170.284	1/4-18 NPT	1.2500	1.2598

Order Example:
By catalog number KSEM0500R8SSF075, or by order number 517238.



- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench.
- Order insert blade separately, see pages B37-B49.

3xD Round Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.5000	12,70	2238510	KSEM0500R3SS075	C	.750	4.13	1.97	1.50	.08	2.00	364.017	170.294	.5000	.5197
.5090	12,93	2238511	KSEM0509R3SS075	C	.750	4.25	2.09	1.53	.08	2.00	364.017	170.294	.5090	.5287
.5310	13,49	2238523	KSEM0531R3SS075	C	.750	4.25	2.09	1.59	.08	2.00	364.017	170.294	.5310	.5314
.5470	–	2238524	KSEM0547R3SS075	B	.750	4.38	2.22	1.64	.09	2.00	364.016	170.289	.5470	.5667
.5630	14,30	2238525	KSEM0563R3SS075	B	.750	4.38	2.22	1.69	.09	2.00	364.016	170.289	.5630	.5708
.5780	14,68	2238526	KSEM0578R3SS075	A	.750	4.50	2.34	1.73	.09	2.00	364.016	170.289	.5780	.5977
.5940	15,09	2238527	KSEM0594R3SS075	A	.750	4.50	2.34	1.78	.09	2.00	364.016	170.289	.5940	.6137
.6090	15,47	2238528	KSEM0609R3SS075	A	.750	4.63	2.47	1.83	.10	2.00	364.016	170.289	.6090	.6249
.6250	15,88	2238529	KSEM0625R3SS075	1	.750	4.63	2.47	1.88	.10	2.00	364.010	170.270	.6250	.6447
.6340	16,10	2238530	KSEM0634R3SS075	1	.750	4.75	2.59	1.90	.10	2.00	364.010	170.270	.6340	.6537
.6410	16,28	2238531	KSEM0641R3SS075	1	.750	4.75	2.59	1.92	.10	2.00	364.010	170.270	.6410	.6607
.6560	16,66	2238532	KSEM0656R3SS075	1	.750	4.75	2.59	1.97	.10	2.00	364.010	170.270	.6560	.6757
.6720	17,07	2238533	KSEM0672R3SS075	1	.750	4.88	2.72	2.02	.11	2.00	364.010	170.270	.6720	.6917
.6875	17,46	2238534	KSEM0688R3SS075	1	.750	4.88	2.72	2.06	.11	2.00	364.010	170.270	.6875	.7072
.7030	17,86	2238535	KSEM0703R3SS075	1	.750	5.00	2.84	2.11	.11	2.00	364.010	170.270	.7030	.7086
.7190	18,26	2238536	KSEM0719R3SS075	2	.750	5.00	2.84	2.16	.11	2.00	364.010	170.270	.7190	.7387
.7340	18,64	2238537	KSEM0734R3SS075	2	.750	5.13	2.97	2.20	.12	2.00	364.010	170.270	.7340	.7537
.7500	19,05	2238539	KSEM0750R3SS100	2	1.000	6.13	2.97	2.25	.12	3.00	364.010	170.270	.7500	.7502
.7500	19,05	2238538	KSEM0750R3SS075	2	.750	5.13	2.97	2.25	.12	2.00	364.010	170.270	.7500	.7502
.7590	19,28	2238540	KSEM0759R3SS075	2	.750	5.25	3.09	2.28	.12	2.00	364.010	170.270	.7590	.7787
.7660	19,46	2238541	KSEM0766R3SS100	2	1.000	6.25	3.09	2.30	.12	3.00	364.010	170.270	.7660	.7857
.7810	19,84	2238542	KSEM0781R3SS100	2	1.000	6.25	3.09	2.34	.12	3.00	364.010	170.270	.7810	.7873

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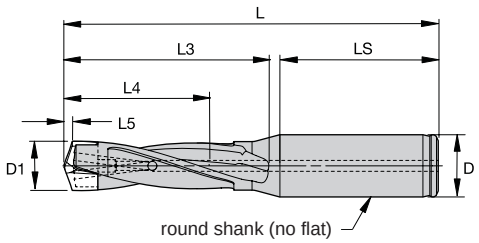


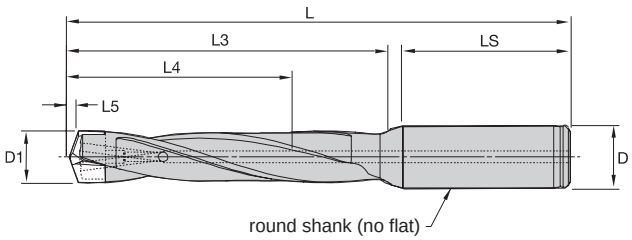
3xD Round Shank — Inch

(continued from previous page)

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.7970	20,24	2238543	KSEM0797R3SS100	3	1.000	6.38	3.22	2.39	.13	3.00	364.011	170.272	.7970	.8167
.8125	20,64	2238544	KSEM0813R3SS100	3	1.000	6.38	3.22	2.44	.13	3.00	364.011	170.272	.8125	.8322
.8440	21,44	2238545	KSEM0844R3SS100	3	1.000	6.50	3.34	2.53	.13	3.00	364.011	170.272	.8440	.8634
.8590	21,82	2238546	KSEM0859R3SS100	3	1.000	6.63	3.47	2.58	.14	3.00	364.011	170.272	.8590	.8661
.8750	22,23	2238548	KSEM0875R3SS125	4	1.250	6.88	3.47	2.63	.14	3.25	364.011	170.272	.8750	.8947
.8750	22,23	2238547	KSEM0875R3SS100	4	1.000	6.63	3.47	2.63	.14	3.00	364.011	170.272	.8750	.8947
.8840	–	2238549	KSEM0884R3SS100	4	1.000	6.75	3.59	2.65	.14	3.00	364.011	170.272	.8840	.9037
.9060	23,01	2238550	KSEM0906R3SS100	4	1.000	6.75	3.59	2.72	.14	3.00	364.011	170.272	.9060	.9257
.9220	23,42	2238551	KSEM0922R3SS100	4	1.000	6.88	3.72	2.77	.15	3.00	364.011	170.272	.9220	.9417
.9375	23,81	2238552	KSEM0938R3SS100	4	1.000	6.88	3.72	2.81	.15	3.00	364.011	170.272	.9375	.9448
.9690	24,61	2238553	KSEM0969R3SS100	5	1.000	7.00	3.84	2.91	.15	3.00	364.012	170.274	.9690	.9887
.9844	25,00	2238554	KSEM0984R3SS100	5	1.000	7.13	3.97	2.95	.15	3.00	364.012	170.274	.9844	1.0041
1.0000	25,40	2238555	KSEM1000R3SS100	5	1.000	7.13	3.97	3.00	.15	3.00	364.012	170.274	1.0000	1.0197
1.0110	25,68	2238557	KSEM1011R3SS125	5	1.250	7.50	4.09	3.03	.16	3.25	364.012	170.274	1.0110	1.0236
1.0310	26,19	2238558	KSEM1031R3SS125	6	1.250	7.50	4.09	3.09	.16	3.25	364.012	170.274	1.0310	1.0507
1.0625	26,99	2238560	KSEM1063R3SS125	6	1.250	7.63	4.22	3.19	.16	3.25	364.012	170.274	1.0625	1.0822
1.1090	28,17	2238562	KSEM1109R3SS125	7	1.250	7.88	4.47	3.33	.17	3.25	364.013	170.276	1.1090	1.1287
1.1250	28,58	2238563	KSEM1125R3SS125	7	1.250	7.88	4.47	3.38	.17	3.25	364.013	170.276	1.1250	1.1447
1.1560	–	2238564	KSEM1156R3SS125	7	1.250	8.00	4.59	3.47	.18	3.25	364.013	170.276	1.1560	1.1757
1.1720	29,77	2238565	KSEM1172R3SS125	7	1.250	8.13	4.72	3.52	.18	3.25	364.013	170.276	1.1720	1.1811
1.1875	30,16	2238566	KSEM1188R3SS125	8	1.250	8.13	4.72	3.56	.18	3.25	364.013	170.276	1.1875	1.2072
1.2190	30,96	2238568	KSEM1219R3SS125	8	1.250	8.25	4.84	3.66	.19	3.25	364.013	170.276	1.2190	1.2387
1.2500	31,75	2238569	KSEM1250R3SS125	8	1.250	8.38	4.97	3.75	.19	3.25	364.013	170.276	1.2500	1.2598
1.2500	31,75	2238570	KSEM1250R3SS150	8	1.500	8.88	4.97	3.75	.19	3.75	364.013	170.276	1.2500	1.2598
1.2810	32,54	2238571	KSEM1281R3SS150	9	1.500	9.00	5.09	3.84	.20	3.75	364.015	170.276	1.2810	1.3204
1.2970	32,94	2238572	KSEM1297R3SS150	9	1.500	9.13	5.22	3.89	.20	3.75	364.015	170.276	1.2970	1.3364
1.3130	33,35	2238573	KSEM1313R3SS150	9	1.500	9.13	5.22	3.94	.20	3.75	364.015	170.276	1.3130	1.3524
1.3280	33,73	2238574	KSEM1328R3SS150	9	1.500	9.25	5.34	3.98	.20	3.75	364.015	170.276	1.3280	1.3674
1.3750	34,93	2238576	KSEM1375R3SS150	9	1.500	9.38	5.47	4.13	.21	3.75	364.015	170.276	1.3750	1.4144
1.4060	35,71	2238577	KSEM1406R3SS150	9	1.500	9.50	5.59	4.22	.22	3.75	364.015	170.276	1.4060	1.4173
1.4380	36,53	2238579	KSEM1438R3SS150	10	1.500	9.63	5.72	4.31	.22	3.75	364.015	170.276	1.4380	1.4774
1.5000	38,10	2238581	KSEM1500R3SS150	10	1.500	9.88	5.97	4.50	.23	3.75	364.015	170.276	1.5000	1.5394
1.5140	38,46	2238582	KSEM1514R3SS150	10	1.500	10.00	6.09	4.54	.23	3.75	364.015	170.276	1.5140	1.5534

Order Example:
By catalog number KSEM0797R3SS100, or by order number 2238543.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



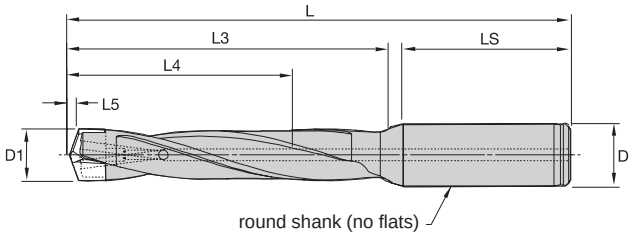
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench.
- Order insert blade separately, see pages B37-B49.

5xD Round Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.5000	12,70	1786055	KSEM0500R5SS050	C	.500	4.63	3.01	2.50	.08	1.50	364.017	170.294	.5000	.5197
.5000	12,70	1786056	KSEM0500R5SS075	C	.750	5.13	3.01	2.50	.08	2.00	364.017	170.294	.5000	.5197
.5090	12,93	1786058	KSEM0509R5SS075	C	.750	5.25	3.13	2.55	.08	2.00	364.017	170.294	.5090	.5287
.5160	13,11	1786059	KSEM0516R5SS075	C	.750	5.25	3.13	2.58	.08	2.00	364.017	170.294	.5160	.5314
.5310	13,49	1786060	KSEM0531R5SS075	C	.750	5.38	3.26	2.66	.08	2.00	364.017	170.294	.5310	.5314
.5470	13,89	1786061	KSEM0547R5SS075	B	.750	5.44	3.32	2.73	.09	2.00	364.016	170.289	.5470	.5667
.5630	14,30	1786062	KSEM0563R5SS075	B	.750	5.50	3.38	2.81	.09	2.00	364.016	170.289	.5630	.5708
.5780	14,68	1786094	KSEM0578R5SS075	A	.750	5.63	3.51	2.89	.09	2.00	364.016	170.289	.5780	.5977
.5940	15,09	1786095	KSEM0594R5SS075	A	.750	5.75	3.63	2.97	.09	2.00	364.016	170.289	.5940	.6137
.6090	15,47	1786097	KSEM0609R5SS075	A	.750	5.88	3.76	3.05	.10	2.00	364.016	170.289	.6090	.6249
.6250	15,88	1330471	KSEM0625R5SS075	1	.750	6.00	3.84	3.15	.10	2.00	364.010	170.270	.6250	.6447
.6335	16,09	1533938	KSEM0634R5SS075	1	.750	6.50	4.34	3.54	.10	2.00	364.010	170.270	.6335	.6537
.6410	16,28	1606881	KSEM0641R5SS075	1	.750	6.50	4.34	3.54	.10	2.00	364.010	170.270	.6410	.6607
.6563	16,67	1329737	KSEM0656R5SS075	1	.750	6.50	4.34	3.54	.10	2.00	364.010	170.270	.6563	.6760
.6720	17,07	1606882	KSEM0672R5SS075	1	.750	6.50	4.34	3.54	.11	2.00	364.010	170.270	.6720	.6917
.6875	17,46	1503488	KSEM0688R5SS075	1	.750	6.50	4.34	3.54	.11	2.00	364.010	170.270	.6875	.7072
.7030	17,86	1606883	KSEM0703R5SS075	1	.750	6.50	4.34	3.54	.11	2.00	364.010	170.270	.7030	.7086
.7188	18,26	1329735	KSEM0719R5SS075	2	.750	7.25	5.09	3.94	.11	2.00	364.010	170.270	.7188	.7384
.7340	18,64	1606884	KSEM0734R5SS075	2	.750	7.25	5.09	3.94	.12	2.00	364.010	170.270	.7340	.7537
.7500	19,05	1329734	KSEM0750R5SS100	2	1.000	8.25	5.09	3.94	.12	3.00	364.010	170.271	.7500	.7502
.7500	19,05	1329703	KSEM0750R5SS075	2	.750	7.25	5.09	3.94	.12	2.00	364.010	170.270	.7500	.7502
.7585	19,28	1533939	KSEM0759R5SS075	2	.750	7.25	5.09	3.94	.12	2.00	364.010	170.270	.7585	.7787
.7660	19,46	1606885	KSEM0766R5SS100	2	1.000	8.25	5.09	3.94	.12	3.00	364.010	170.271	.7660	.7857
.7813	19,85	1329733	KSEM0781R5SS100	2	1.000	8.13	4.97	3.94	.12	3.00	364.010	170.271	.7813	.7873

(continued on next page)

KSEM Round Shank Bodies — Inch

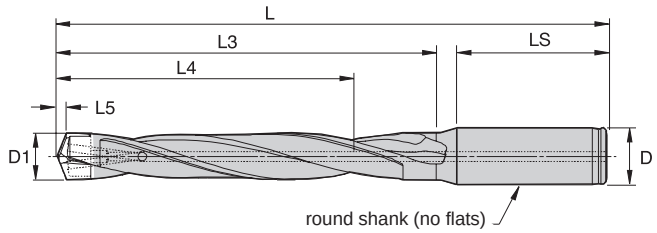


5xD Round Shank — Inch

(continued from previous page)

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.7970	20,24	1606886	KSEM0797R5SS100	3	1.000	8.50	5.34	4.33	.13	3.00	364.011	170.272	.7970	.8167
.8125	20,64	1329732	KSEM0813R5SS100	3	1.000	8.50	5.34	4.33	.13	3.00	364.011	170.272	.8125	.8322
.8438	21,43	1329731	KSEM0844R5SS100	3	1.000	8.50	5.34	4.33	.13	3.00	364.011	170.272	.8438	.8634
.8590	21,83	1606887	KSEM0859R5SS100	3	1.000	8.50	5.34	4.33	.14	3.00	364.011	170.272	.8590	.8661
.8750	22,23	1329710	KSEM0875R5SS100	4	1.000	9.00	5.84	4.72	.14	3.00	364.011	170.273	.8750	.8947
.8750	22,23	1329355	KSEM0875R5SS125	4	1.250	9.25	5.84	4.72	.14	3.25	364.011	170.273	.8750	.8947
.8835	22,45	1533940	KSEM0884R5SS100	4	1.000	9.00	5.84	4.72	.14	3.00	364.011	170.273	.8835	.9037
.9063	23,02	1329354	KSEM0906R5SS100	4	1.000	9.00	5.84	4.72	.14	3.00	364.011	170.273	.9063	.9260
.9220	23,42	1606888	KSEM0922R5SS100	4	1.000	9.00	5.84	4.72	.15	3.00	364.011	170.273	.9220	.9417
.9375	23,81	1329709	KSEM0938R5SS100	4	1.000	9.00	5.84	4.72	.15	3.00	364.011	170.273	.9375	.9448
.9688	24,61	1329708	KSEM0969R5SS100	5	1.000	9.50	6.34	5.12	.15	3.00	364.012	170.274	.9688	.9884
.9844	25,00	1329706	KSEM0984R5SS100	5	1.000	9.50	6.34	5.12	.15	3.00	364.012	170.274	.9844	1.0041
1.0000	25,40	1329705	KSEM1000R5SS125	5	1.250	9.75	6.34	5.12	.15	3.25	364.012	170.274	1.0000	1.0197
1.0000	25,40	1329707	KSEM1000R5SS100	5	1.000	9.50	6.34	5.12	.15	3.00	364.012	170.274	1.0000	1.0197
1.0105	25,68	1533981	KSEM1011R5SS125	5	1.250	10.00	6.59	5.06	.16	3.25	364.012	170.274	1.0105	1.0236
1.0313	26,20	1329704	KSEM1031R5SS125	6	1.250	10.25	6.84	5.51	.16	3.25	364.012	170.275	1.0313	1.0510
1.0470	26,59	1606889	KSEM1047R5SS125	6	1.250	10.25	6.84	5.51	.16	3.25	364.012	170.275	1.0470	1.0667
1.0625	26,99	1330472	KSEM1063R5SS125	6	1.250	10.25	6.84	5.51	.16	3.25	364.012	170.275	1.0625	1.0822
1.0938	27,78	1329938	KSEM1094R5SS125	6	1.250	10.25	6.84	5.51	.17	3.25	364.012	170.275	1.0938	1.1023
1.1090	28,17	1606890	KSEM1109R5SS125	7	1.250	10.75	7.34	5.91	.17	3.25	364.013	170.276	1.1090	1.1287
1.1250	28,58	1329937	KSEM1125R5SS125	7	1.250	10.75	7.34	5.91	.17	3.25	364.013	170.276	1.1250	1.1447
1.1563	29,37	1329934	KSEM1156R5SS125	7	1.250	10.75	7.34	5.91	.18	3.25	364.013	170.276	1.1563	1.1760
1.1720	29,77	1606901	KSEM1172R5SS125	7	1.250	10.75	7.34	5.91	.18	3.25	364.013	170.276	1.1720	1.1811
1.1875	30,16	1329935	KSEM1188R5SS125	8	1.250	11.25	7.84	6.30	.18	3.25	364.013	170.277	1.1875	1.2072
1.2030	30,56	1606902	KSEM1203R5SS125	8	1.250	11.25	7.84	6.30	.19	3.25	364.013	170.277	1.2030	1.2227
1.2188	30,96	1329936	KSEM1219R5SS125	8	1.250	11.25	7.84	6.30	.19	3.25	364.013	170.277	1.2188	1.2385
1.2500	31,75	1329933	KSEM1250R5SS150	8	1.500	11.75	7.84	6.30	.19	3.75	364.013	170.277	1.2500	1.2598
1.2500	31,75	1329932	KSEM1250R5SS125	8	1.250	11.25	7.84	6.30	.19	3.25	364.013	170.277	1.2500	1.2598
1.2810	32,54	1606903	KSEM1281R5SS150	9	1.500	12.50	8.59	6.41	.20	3.75	364.015	170.277	1.2810	1.3204
1.2970	32,94	1606904	KSEM1297R5SS150	9	1.500	12.50	8.59	6.48	.20	3.75	364.015	170.277	1.2970	1.3363
1.3130	33,35	1606905	KSEM1313R5SS150	9	1.500	12.50	8.59	6.56	.20	3.75	364.015	170.277	1.3130	1.3524
1.3280	33,73	1606906	KSEM1328R5SS150	9	1.500	12.50	8.59	6.64	.20	3.75	364.015	170.277	1.3280	1.3675
1.3440	34,14	1606907	KSEM1344R5SS150	9	1.500	13.00	9.09	6.72	.21	3.75	364.015	170.277	1.3440	1.3834
1.3750	34,93	1606908	KSEM1375R5SS150	9	1.500	13.00	9.09	6.87	.21	3.75	364.015	170.277	1.3750	1.4144
1.4060	35,71	1606909	KSEM1406R5SS150	9	1.500	13.00	9.09	7.03	.22	3.75	364.015	170.277	1.4060	1.4173
1.4220	36,12	1606910	KSEM1422R5SS150	10	1.500	13.50	9.59	7.11	.22	3.75	364.015	170.277	1.4220	1.4614
1.4380	36,51	1606911	KSEM1438R5SS150	10	1.500	13.50	9.59	7.19	.22	3.75	364.015	170.277	1.4380	1.4769
1.4690	37,31	1606912	KSEM1469R5SS150	10	1.500	13.50	9.59	7.34	.23	3.75	364.015	170.277	1.4690	1.5084
1.5000	38,10	1606913	KSEM1500R5SS150	10	1.500	13.50	9.59	7.50	.23	3.75	364.015	170.277	1.5000	1.5394
1.5140	38,46	1606914	KSEM1514R5SS150	10	1.500	13.50	9.59	7.57	.23	3.75	364.015	170.277	1.5140	1.5534

Ordering Example:
By catalog number KSEM0797R5SS100, or by order number 1606886.



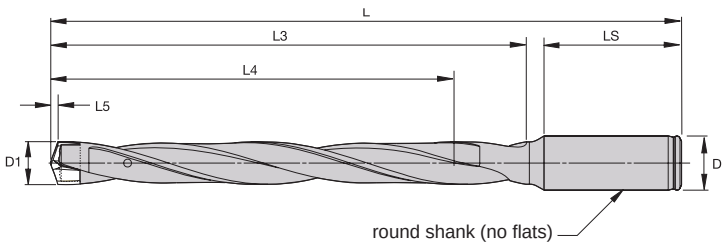
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench.
- Order insert blade separately, see pages B37-B49.

7xD Round Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.5000	12,70	1798189	KSEM0500R7SS050	C	.500	5.63	4.01	3.50	.08	1.50	364.017	170.295	.5000	.5197
.5000	12,70	1798190	KSEM0500R7SS075	C	.750	6.13	4.01	3.50	.08	2.00	364.017	170.295	.5000	.5197
.5090	12,93	1798191	KSEM0509R7SS075	C	.750	6.25	4.13	3.56	.08	2.00	364.017	170.295	.5090	.5287
.5160	13,10	1798192	KSEM0516R7SS075	C	.750	6.25	4.13	3.61	.08	2.00	364.017	170.295	.5160	.5314
.5310	13,49	1798203	KSEM0531R7SS075	C	.750	6.38	4.26	3.72	.08	2.00	364.017	170.295	.5310	.5314
.5470	13,89	1798204	KSEM0547R7SS075	B	.750	6.50	4.38	3.83	.09	2.00	364.016	170.290	.5470	.5667
.5630	14,29	1798205	KSEM0563R7SS075	B	.750	6.63	4.51	3.94	.09	2.00	364.016	170.290	.5630	.5708
.5780	14,68	1798206	KSEM0578R7SS075	A	.750	6.75	4.63	4.05	.09	2.00	364.016	170.290	.5780	.5977
.5940	15,08	1798207	KSEM0594R7SS075	A	.750	6.88	4.76	4.16	.09	2.00	364.016	170.290	.5940	.6137
.6090	15,48	1798208	KSEM0609R7SS075	A	.750	7.00	4.88	4.27	.10	2.00	364.016	170.290	.6090	.6249
.6250	15,88	1519227	KSEM0625R7SS075	1	.750	7.38	5.22	4.41	.10	2.00	364.010	170.270	.6250	.6447
.6335	16,10	1531202	KSEM0634R7SS075	1	.750	8.00	5.82	4.59	.10	2.00	364.010	170.271	.6335	.6537
.6563	16,67	1519229	KSEM0656R7SS075	1	.750	8.00	5.84	4.96	.10	2.00	364.010	170.271	.6563	.6760
.6875	17,46	1519230	KSEM0688R7SS075	1	.750	8.00	5.84	4.96	.11	2.00	364.010	170.271	.6875	.7072
.7188	18,25	1519262	KSEM0719R7SS075	2	.750	8.88	6.72	5.51	.11	2.00	364.010	170.271	.7188	.7384
.7500	19,05	1519263	KSEM0750R7SS075	2	.750	8.88	6.72	5.51	.12	2.00	364.010	170.271	.7500	.7502
.7500	19,05	1519264	KSEM0750R7SS100	2	1.000	9.88	6.72	5.51	.12	3.00	364.010	170.281	.7500	.7502
.7585	19,28	1533937	KSEM0759R7SS075	2	.750	8.88	6.72	5.51	.12	2.00	364.010	170.271	.7585	.7787
.7813	19,85	1519265	KSEM0781R7SS100	2	1.000	9.88	6.72	5.51	.12	3.00	364.010	170.281	.7813	.7873
.8125	20,64	1519267	KSEM0813R7SS100	3	1.000	10.25	7.09	6.06	.13	3.00	364.011	170.273	.8125	.8326
.8438	21,43	1519269	KSEM0844R7SS100	3	1.000	10.25	7.09	6.06	.13	3.00	364.011	170.273	.8438	.8634
.8750	22,23	1519270	KSEM0875R7SS100	4	1.000	10.88	7.72	6.61	.14	3.00	364.011	170.282	.8750	.8947
.8750	22,23	1519271	KSEM0875R7SS125	4	1.250	11.13	7.72	6.61	.14	3.25	364.011	170.282	.8750	.8947
.8835	22,45	1531204	KSEM0884R7SS100	4	1.000	10.88	7.72	6.61	.14	3.00	364.011	170.282	.8835	.9037
.9063	23,02	1519272	KSEM0906R7SS100	4	1.000	10.88	7.72	6.61	.14	3.00	364.011	170.282	.9063	.9260
.9375	23,81	1519274	KSEM0938R7SS100	4	1.000	10.88	7.72	6.61	.15	3.00	364.011	170.282	.9375	.9448
.9688	24,61	1519275	KSEM0969R7SS100	5	1.000	11.63	8.47	7.17	.15	3.00	364.012	170.275	.9688	.9884
.9844	25,00	1519276	KSEM0984R7SS100	5	1.000	11.63	8.47	7.17	.15	3.00	364.012	170.275	.9844	1.0041
1.0000	25,40	1519277	KSEM1000R7SS100	5	1.000	11.63	8.47	7.17	.15	3.00	364.012	170.275	1.0000	1.0197
1.0000	25,40	1519280	KSEM1000R7SS125	5	1.250	11.88	8.47	7.17	.15	3.25	364.012	170.275	1.0000	1.0197
1.0105	25,68	1531205	KSEM1011R7SS125	5	1.250	12.25	8.84	7.08	.16	3.25	364.012	170.283	1.0105	1.0236
1.0313	26,20	1519282	KSEM1031R7SS125	6	1.250	12.50	9.09	7.72	.16	3.25	364.012	170.283	1.0313	1.0510
1.0625	26,99	1519285	KSEM1063R7SS125	6	1.250	12.50	9.09	7.72	.16	3.25	364.012	170.283	1.0625	1.0822
1.0938	27,78	1519286	KSEM1094R7SS125	6	1.250	12.50	9.09	7.72	.17	3.25	364.012	170.283	1.0938	1.1023
1.1250	28,58	1519288	KSEM1125R7SS125	7	1.250	13.13	9.72	8.27	.17	3.25	364.013	170.277	1.1250	1.1447
1.1563	29,37	1519289	KSEM1156R7SS125	7	1.250	13.13	9.72	8.27	.18	3.25	364.013	170.277	1.1563	1.1760
1.1875	30,16	1519292	KSEM1188R7SS125	8	1.250	13.75	10.34	8.82	.18	3.25	364.013	170.284	1.1875	1.2072
1.2188	30,96	1519294	KSEM1219R7SS125	8	1.250	13.75	10.34	8.82	.19	3.25	364.013	170.284	1.2188	1.2385
1.2500	31,75	1519296	KSEM1250R7SS125	8	1.250	13.75	10.34	8.82	.19	3.25	364.013	170.284	1.2500	1.2598
1.2500	31,75	1519297	KSEM1250R7SS150	8	1.500	14.25	10.34	8.82	.19	3.75	364.013	170.284	1.2500	1.2598

Ordering Example:
By catalog number KSEM0500R7SS050, or by order number 1798189.

KSEM Round Shank Bodies — Inch

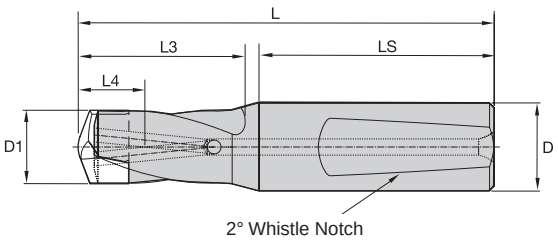


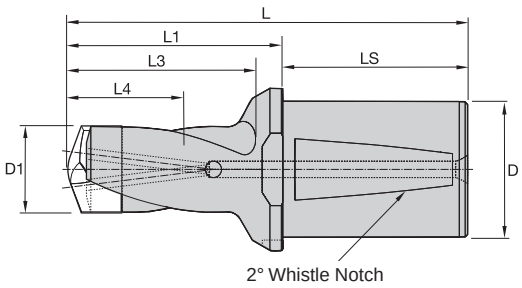
- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw, wrench.
- Order insert blade separately, see pages B37-B49.

10xD Round Shank — Inch

D1 inch	D1 mm	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
.5000	12,70	1798211	KSEM0500R10SS075	C	.750	7.75	5.63	5.00	.08	2.00	364.017	170.296	.5000	.5197
.5090	12,93	1798212	KSEM0509R10SS075	C	.750	7.88	5.76	5.09	.08	2.00	364.017	170.296	.5090	.5287
.5160	13,10	1798228	KSEM0516R10SS075	C	.750	8.00	5.88	5.16	.08	2.00	364.017	170.296	.5160	.5314
.5310	13,50	1798231	KSEM0531R10SS075	C	.750	8.13	6.01	5.31	.08	2.00	364.017	170.296	.5310	.5314
.5470	13,89	1798243	KSEM0547R10SS075	B	.750	8.25	6.13	5.47	.09	2.00	364.016	170.291	.5470	.5667
.5630	14,29	1798244	KSEM0563R10SS075	B	.750	8.38	6.26	5.63	.09	2.00	364.016	170.291	.5630	.5708
.5780	14,68	1798248	KSEM0578R10SS075	A	.750	8.50	6.38	5.78	.09	2.00	364.016	170.291	.5780	.5977
.5940	15,08	1798249	KSEM0594R10SS075	A	.750	8.75	6.63	5.94	.09	2.00	364.016	170.291	.5940	.6137
.6090	15,48	1798250	KSEM0609R10SS075	A	.750	8.88	6.76	6.09	.10	2.00	364.016	170.291	.6090	.6249
.6250	15,88	1729874	KSEM0625R10SS075	1	.750	9.00	6.84	6.25	.10	2.00	364.010	170.281	.6250	.6447
.6335	16,10	1729875	KSEM0634R10SS075	1	.750	9.13	6.97	6.34	.10	2.00	364.010	170.281	.6335	.6537
.6563	16,67	1729876	KSEM0656R10SS075	1	.750	9.38	7.22	6.56	.10	2.00	364.010	170.281	.6563	.6760
.6875	17,46	1729877	KSEM0688R10SS075	1	.750	9.75	7.59	6.88	.11	2.00	364.010	170.281	.6875	.7072
.7188	18,26	1729878	KSEM0719R10SS075	2	.750	10.25	8.09	7.19	.11	2.00	364.010	170.281	.7188	.7384
.7500	19,05	1729879	KSEM0750R10SS075	2	.750	10.50	8.34	7.50	.12	2.00	364.010	170.281	.7500	.7502
.7500	19,05	1729880	KSEM0750R10SS100	2	1.000	11.50	8.34	7.50	.12	3.00	364.010	170.281	.7500	.7502
.7585	19,28	1729921	KSEM0759R10SS100	2	1.000	11.50	8.34	7.59	.12	3.00	364.010	170.281	.7585	.7787
.7813	19,85	1729922	KSEM0781R10SS100	2	1.000	11.75	8.59	7.81	.12	3.00	364.010	170.281	.7813	.7873
.8125	20,64	1729924	KSEM0813R10SS100	3	1.000	12.13	8.97	8.13	.13	3.00	364.011	170.282	.8125	.8326
.8438	21,43	1729925	KSEM0844R10SS100	3	1.000	12.50	9.34	8.44	.13	3.00	364.011	170.282	.8438	.8634
.8750	22,23	1729926	KSEM0875R10SS100	4	1.000	12.75	9.59	8.75	.14	3.00	364.011	170.282	.8750	.8947
.8835	22,45	1729927	KSEM0884R10SS100	4	1.000	12.88	9.72	8.84	.14	3.00	364.011	170.282	.8835	.9037
.9063	23,02	1729928	KSEM0906R10SS100	4	1.000	13.13	9.97	9.06	.14	3.00	364.011	170.282	.9063	.9260
.9375	23,81	1729929	KSEM0938R10SS100	4	1.000	13.44	10.28	9.38	.15	3.00	364.011	170.282	.9375	.9448
.9688	24,61	1729952	KSEM0969R10SS100	5	1.000	13.88	10.72	9.69	.15	3.00	364.012	170.283	.9688	.9884
.9844	25,00	1729953	KSEM0984R10SS100	5	1.000	14.00	10.84	9.84	.15	3.00	364.012	170.283	.9844	1.0041
1.0000	25,40	1729954	KSEM1000R10SS100	5	1.000	14.13	10.97	10.00	.15	3.00	364.012	170.283	1.0000	1.0197
1.0000	25,40	1729955	KSEM1000R10SS125	5	1.250	14.38	10.97	10.00	.15	3.25	364.012	170.283	1.0000	1.0197
1.0105	25,68	1729956	KSEM1011R10SS125	5	1.250	14.50	11.09	10.11	.16	3.25	364.012	170.283	1.0105	1.0236
1.0313	26,20	1729957	KSEM1031R10SS125	6	1.250	14.75	11.34	10.31	.16	3.25	364.012	170.283	1.0313	1.0510
1.0625	26,99	1729958	KSEM1063R10SS125	6	1.250	15.13	11.72	10.63	.16	3.25	364.012	170.283	1.0625	1.0822
1.0938	27,78	1729959	KSEM1094R10SS125	6	1.250	15.50	12.09	10.94	.17	3.25	364.012	170.283	1.0938	1.1023
1.1250	28,58	1729960	KSEM1125R10SS125	7	1.250	15.75	12.34	11.25	.17	3.25	364.013	170.284	1.1250	1.1447
1.1563	29,37	1730118	KSEM1156R10SS125	7	1.250	16.13	12.72	11.56	.18	3.25	364.013	170.284	1.1563	1.1760
1.1875	30,16	1730120	KSEM1188R10SS125	8	1.250	16.50	13.09	11.88	.18	3.25	364.013	170.284	1.1875	1.2072
1.2188	30,96	1730124	KSEM1219R10SS125	8	1.250	16.88	13.47	12.19	.19	3.25	364.013	170.284	1.2188	1.2385
1.2500	31,75	1730131	KSEM1250R10SS125	8	1.250	17.13	13.72	12.50	.19	3.25	364.013	170.284	1.2500	1.2598
1.2500	31,75	1730132	KSEM1250R10SS150	8	1.500	17.63	13.72	12.50	.19	3.75	364.013	170.284	1.2500	1.2598

Ordering Example:
By catalog number KSEM0500R10SS075, or by order number 1798211.





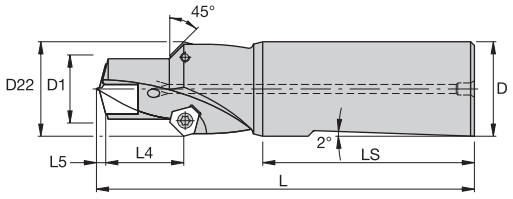
- Use insert blade diameter within the designated seat size.
- Drill shiped with central lock screw and wrench.
- Order insert blades separately, see pages B37-B49.

1xD WN/WD Shank — Metric

D1 mm	D1 inch	D1 max	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench
12,50	.4921	13,50	1792258	KSEM125R1WN16M	C	16	78	–	25	14	2,0	48	364.017	170.294
13,51	.5319	14,50	1792259	KSEM136R1WN16M	B	16	81	–	29	15	2,2	48	364.016	170.289
14,51	.5713	15,87	1792260	KSEM146R1WN20M	A	20	85	–	31	16	2,3	50	364.016	170.289
16,00	.6299	18,00	1592413	KSEM160R1WN20M	1	20	88	–	33	18	2,5	50	364.010	170.270
18,01	.7091	20,00	1592414	KSEM181R1WN25M	2	25	99	–	38	20	2,9	56	364.010	170.270
20,00	.7874	22,00	1592416	KSEM200R1WN25M	3	25	102	–	41	22	3,2	56	364.011	170.272
22,01	.8665	24,00	1592417	KSEM221R1WN25M	4	25	107	–	46	24	3,5	56	364.011	170.272
24,01	.9453	26,00	1592418	KSEM241R1WN32M	5	32	115	–	50	26	3,8	60	364.012	170.274
26,01	1.0240	28,00	1592419	KSEM261R1WN32M	6	32	119	–	54	28	4,0	60	364.012	170.274
28,02	1.1028	30,00	1592420	KSEM281R1WN32M	7	32	123	–	58	30	4,3	60	364.013	170.276
30,01	1.1815	32,00	1592461	KSEM301R1WN32M	8	32	127	–	62	32	4,6	60	364.013	170.276
32,01	1.2602	36,00	1592463	KSEM321R1WD50M	9	50	147	79	68	36	4,9	68	364.015	170.276
36,01	1.4177	40,00	1592464	KSEM361R1WD50M	10	50	155	87	76	40	5,5	68	364.015	170.276

Ordering Example:
By catalog number KSEM125R1WN16M, or by order number 1792258.

KSEM 45° Chamfer with 2° Whistle Notch Shank Bodies — Metric



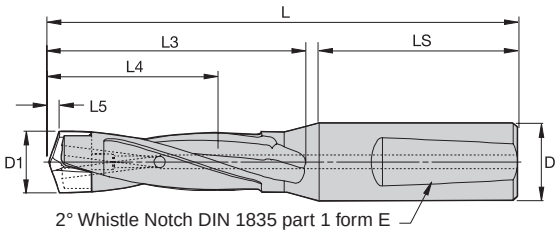
- Use any KSEM insert blade diameter within the designated seat size.
- Drill shipped with central lock screw, insert screw and wrenches.
- Order insert blades separately, see pages B37-B49.
- Order TPGX chamfering insert separately, see page H10.

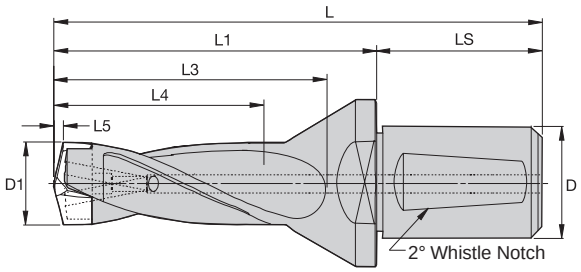
1xD w/Chamfer WN/WD Shank — Metric

D1 mm	D1 inch	D1 max	order number	catalog number	insert blade seat size	insert screw	chamfer insert	D	D22	L	L4 max	L5	L5 max	LS	central lock screw	wrench
12,50	.4921	13,50	1927913	KSEM125R1WN16F45M	C	MS1152	TPGX0902ZPR	16	18	107	14	2,0	2,1	48	364.017	170.051
13,51	.5319	14,50	1993391	KSEM136R1WN16F45M	B	MS1152	TPGX0902ZPR	16	19	107	15	2,2	2,3	48	364.016	170.289
14,51	.5713	15,87	1993392	KSEM146R1WN20F45M	A	MS1152	TPGX0902ZPR	20	20	109	16	2,3	2,5	50	364.016	170.289
16,00	.6299	18,00	1927914	KSEM160R1WN20F45M	1	MS1153	TPGX1102ZPR	20	22	110	18	2,5	2,9	50	364.010	170.270
18,01	.7091	20,00	1993403	KSEM181R1WN25F45M	2	MS1153	TPGX1102ZPR	25	25	118	20	2,9	3,1	56	364.010	170.270
20,00	.7874	22,00	1927915	KSEM200R1WN25F45M	3	191.924	TPGX1303ZPR	25	28	120	22	3,2	3,5	56	364.011	170.272
22,01	.8665	24,00	1993404	KSEM221R1WN25F45M	4	191.924	TPGX1303ZPR	25	30	123	24	3,5	3,8	56	364.011	170.272
24,01	.9453	26,00	1927916	KSEM241R1WN32F45M	5	MS1155	TPGX1603ZPR	32	34	129	26	3,8	4,0	60	364.012	170.055
26,01	1.0240	28,00	1993405	KSEM261R1WN32F45M	6	MS1155	TPGX1603ZPR	32	36	131	28	4,0	4,3	60	364.012	170.055
28,02	1.1028	30,00	1993406	KSEM281R1WN32F45M	7	MS1155	TPGX1603ZPR	32	38	134	30	4,3	4,6	60	364.013	170.276
30,01	1.1815	32,00	1993407	KSEM301R1WN32F45M	8	MS1155	TPGX1603ZPR	32	40	136	32	4,6	4,9	60	364.013	170.276
32,01	1.2602	36,00	1993408	KSEM321R1WD50F45M	9	MS1155	TPGX1603ZPR	50	42	155	36	4,9	5,5	68	364.015	170.276
36,01	1.4177	40,00	1993409	KSEM361R1WD50F45M	10	MS1155	TPGX1603ZPR	50	46	165	40	5,5	6,2	68	364.015	170.276

Ordering Example:
By catalog number KSEM125R1WN16F45M or by order number 1927913.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately, see pages B37-B49.

3xD WN/WD Shank — Metric

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
12,50	.4921	1774499	KSEM125R3WN16M	C	16	111	–	59	42	2,0	48	364.017	170.294	12,50	13,00
13,00	.5118	1792262	KSEM130R3WN16M	C	16	111	–	59	42	2,1	48	364.017	170.294	13,00	13,50
13,50	.5315	1792293	KSEM135R3WN16M	C	16	111	–	59	42	2,1	48	364.017	170.294	13,50	13,50
13,51	.5319	1792294	KSEM136R3WN16M	B	16	111	–	59	42	2,2	48	364.016	170.289	13,51	14,00
14,00	.5512	1792295	KSEM140R3WN16M	B	16	111	–	59	42	2,2	48	364.016	170.289	14,00	14,50
14,50	.5709	1792296	KSEM145R3WN20M	B	20	122	–	68	48	2,3	50	364.016	170.289	14,50	14,50
14,51	.5713	1792297	KSEM146R3WN20M	A	20	122	–	68	48	2,3	50	364.016	170.289	14,51	15,00
15,00	.5906	1792298	KSEM150R3WN20M	A	20	122	–	68	48	2,4	50	364.016	170.289	15,00	15,50
15,50	.6102	1792299	KSEM155R3WN20M	A	20	122	–	68	48	2,5	50	364.016	170.289	15,50	15,87
16,00	.6299	1245980	KSEM160R3WN20M	1	20	122	–	67	48	2,5	50	364.010	170.270	16,00	16,50
16,50	.6496	1245986	KSEM165R3WN20M	1	20	130	–	75	54	2,6	50	364.010	170.270	16,50	17,00
17,00	.6693	1245991	KSEM170R3WN20M	1	20	130	–	75	54	2,7	50	364.010	170.270	17,00	17,50
17,50	.6890	1245995	KSEM175R3WN20M	1	20	130	–	75	54	2,8	50	364.010	170.270	17,50	18,00
18,00	.7087	1245999	KSEM180R3WN20M	1	20	130	–	75	54	2,9	50	364.010	170.270	18,00	18,00
18,50	.7283	1246003	KSEM185R3WN25M	2	25	144	–	83	60	2,9	56	364.010	170.270	18,50	19,00
19,00	.7480	1246007	KSEM190R3WN25M	2	25	144	–	83	60	3,0	56	364.010	170.270	19,00	19,50
19,50	.7677	1246011	KSEM195R3WN25M	2	25	144	–	83	60	3,1	56	364.010	170.270	19,50	20,00
20,00	.7874	1246014	KSEM200R3WN25M	3	25	153	–	92	60	3,2	56	364.011	170.272	20,00	20,50
20,50	.8071	1246018	KSEM205R3WN25M	3	25	153	–	92	66	3,3	56	364.011	170.272	20,50	21,00
21,00	.8268	1246022	KSEM210R3WN25M	3	25	153	–	92	66	3,3	56	364.011	170.272	21,00	21,50
21,50	.8465	1246026	KSEM215R3WN25M	3	25	153	–	92	66	3,4	56	364.011	170.272	21,50	22,00
22,00	.8661	1246031	KSEM220R3WN25M	3	25	153	–	92	66	3,5	56	364.011	170.272	22,00	22,00
22,50	.8858	1246034	KSEM225R3WN25M	4	25	161	–	100	72	3,6	56	364.011	170.272	22,50	23,00
23,00	.9055	1246037	KSEM230R3WN25M	4	25	161	–	100	72	3,7	56	364.011	170.272	23,00	23,50
23,50	.9252	1246041	KSEM235R3WN25M	4	25	161	–	100	72	3,7	56	364.011	170.272	23,50	24,00
24,00	.9449	1246046	KSEM240R3WN25M	4	25	161	–	100	72	3,8	56	364.011	170.272	24,00	24,00

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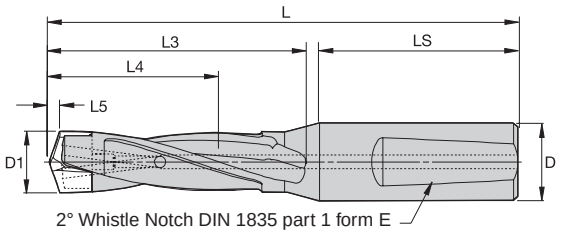
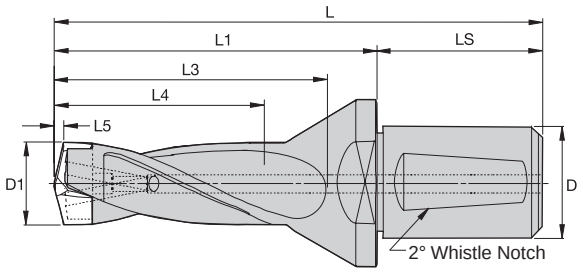
KSEM 2° Whistle Notch Shank Bodies (WN/WD) — Metric



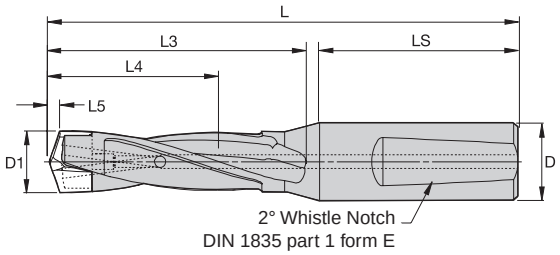


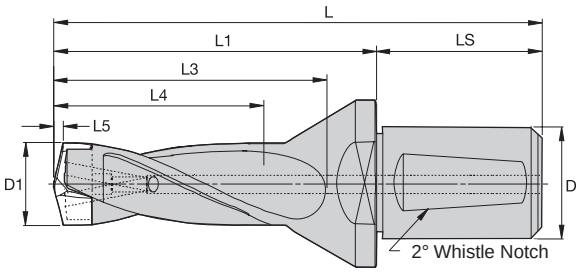
3xD WN/WD Shank — Metric

(continued from previous page)

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
24,50	.9646	1246051	KSEM245R3WN32M	5	32	174	–	109	78	3,9	60	364.012	170.274	24,50	25,00
25,00	.9843	1246055	KSEM250R3WN32M	5	32	174	–	109	78	3,8	60	364.012	170.274	25,00	25,50
25,50	1.0039	1246059	KSEM255R3WN32M	5	32	174	–	109	78	3,9	60	364.012	170.274	25,50	26,00
26,00	1.0236	1246063	KSEM260R3WN32M	5	32	174	–	109	78	4,0	60	364.012	170.274	26,00	26,00
26,50	1.0433	1246067	KSEM265R3WN32M	6	32	182	–	117	84	4,1	60	364.012	170.274	26,50	27,00
27,00	1.0630	1246071	KSEM270R3WN32M	6	32	182	–	117	84	4,2	60	364.012	170.274	27,00	27,50
27,50	1.0827	1246075	KSEM275R3WN32M	6	32	182	–	117	84	4,2	60	364.012	170.274	27,50	28,00
28,00	1.1024	1246079	KSEM280R3WN32M	6	32	182	–	117	84	4,3	60	364.012	170.274	28,00	28,00
28,50	1.1220	1279902	KSEM285R3WN32M	7	32	190	–	125	90	4,4	60	364.013	170.276	28,50	29,00
29,00	1.1417	1246085	KSEM290R3WN32M	7	32	190	–	125	90	4,5	60	364.013	170.276	29,00	29,50
29,50	1.1614	1246089	KSEM295R3WN32M	7	32	190	–	125	90	4,5	60	364.013	170.276	29,50	30,00
30,00	1.1811	1246093	KSEM300R3WN32M	7	32	190	–	125	90	4,6	60	364.013	170.276	30,00	30,00
30,50	1.2008	1246098	KSEM305R3WN32M	8	32	200	–	135	96	4,7	60	364.013	170.276	30,50	31,00
31,00	1.2205	1246102	KSEM310R3WN32M	8	32	200	–	135	96	4,8	60	364.013	170.276	31,00	31,50
31,50	1.2402	1246106	KSEM315R3WN32M	8	32	200	–	135	96	4,8	60	364.013	170.276	31,50	32,00
32,00	1.2598	1246109	KSEM320R3WN32M	8	32	200	–	135	96	4,9	60	364.013	170.276	32,00	32,00
32,01	1.2602	1749102	KSEM321R3WD50M	9	50	220	159	148	99	4,9	68	364.015	170.276	32,01	33,00
33,00	1.2992	1749103	KSEM330R3WD50M	9	50	227	159	148	99	5,1	68	364.015	170.276	33,00	34,00
34,00	1.3386	1749106	KSEM340R3WD50M	9	50	225	157	146	102	5,2	68	364.015	170.276	34,00	35,00
35,00	1.3780	1749109	KSEM350R3WD50M	9	50	235	167	156	105	5,4	68	364.015	170.276	35,00	36,00
36,00	1.4173	1749110	KSEM360R3WD50M	9	50	233	165	154	108	5,5	68	364.015	170.276	36,00	36,00
36,01	1.4177	1749131	KSEM361R3WD50M	10	50	237	176	165	111	5,5	68	364.015	170.276	36,01	37,00
37,00	1.4567	1749132	KSEM370R3WD50M	10	50	244	176	165	111	5,7	68	364.015	170.276	37,00	38,00
38,00	1.4961	1749133	KSEM380R3WD50M	10	50	242	174	163	114	5,8	68	364.015	170.276	38,00	39,00
39,00	1.5354	1749607	KSEM390R3WD50M	10	50	252	184	173	117	6,0	68	364.015	170.276	39,00	40,00
40,00	1.5748	1749610	KSEM400R3WD50M	10	50	250	182	171	120	6,2	68	364.015	170.276	40,00	40,00

Ordering Example:
By catalog number KSEM245R3WN32M, or by order number 1246051.





- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately, see pages B37-B49.

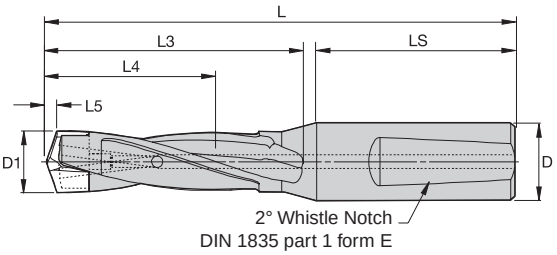
5xD WN/WD Shank — Metric

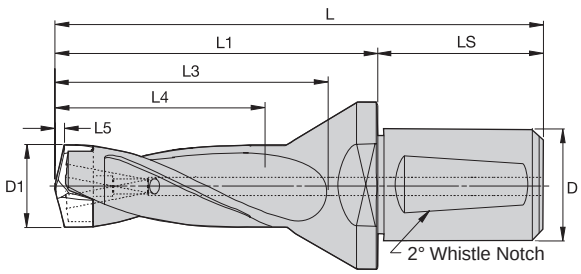
D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
12,50	.4921	1772747	KSEM125R5WN16M	C	16	139	–	87	70	2,0	48	364.017	170.294	12,50	13,00
13,00	.5118	1792301	KSEM130R5WN16M	C	16	139	–	87	70	2,1	48	364.017	170.294	13,00	13,50
13,50	.5315	1792323	KSEM135R5WN16M	C	16	139	–	87	70	2,1	48	364.017	170.294	13,50	13,50
13,51	.5319	1792302	KSEM136R5WN16M	B	16	139	–	87	70	2,2	48	364.016	170.289	13,51	14,00
14,00	.5512	1772748	KSEM140R5WN16M	B	16	139	–	87	70	2,2	48	364.016	170.289	14,00	14,50
14,50	.5709	1792325	KSEM145R5WN20M	B	20	154	–	100	80	2,3	50	364.016	170.289	14,50	14,50
14,51	.5713	1792326	KSEM146R5WN20M	A	20	154	–	100	80	2,3	50	364.016	170.289	14,51	15,00
15,00	.5906	1772749	KSEM150R5WN20M	A	20	154	–	100	80	2,4	50	364.016	170.289	15,00	15,50
15,50	.6102	1792328	KSEM155R5WN20M	A	20	154	–	100	80	2,5	50	364.016	170.289	15,50	15,87
16,00	.6299	1245983	KSEM160R5WN20M	1	20	154	–	99	80	2,5	50	364.010	170.270	16,00	16,50
16,50	.6496	1245988	KSEM165R5WN20M	1	20	166	–	111	90	2,6	50	364.010	170.270	16,50	17,00
17,00	.6693	1245993	KSEM170R5WN20M	1	20	166	–	111	90	2,7	50	364.010	170.270	17,00	17,50
17,50	.6890	1245997	KSEM175R5WN20M	1	20	166	–	111	90	2,8	50	364.010	170.270	17,50	18,00
18,00	.7087	1246001	KSEM180R5WN20M	1	20	166	–	111	90	2,9	50	364.010	170.270	18,00	18,00
18,01	.7091	1592465	KSEM181R5WN25M	2	25	184	–	123	100	2,9	56	364.010	170.270	18,01	18,50
18,50	.7283	1246005	KSEM185R5WN25M	2	25	184	–	123	100	2,9	56	364.010	170.270	18,50	19,00
19,00	.7480	1246008	KSEM190R5WN25M	2	25	184	–	123	100	3,0	56	364.010	170.270	19,00	19,50
19,50	.7677	1246013	KSEM195R5WN25M	2	25	184	–	123	100	3,1	56	364.010	170.270	19,50	20,00
20,00	.7874	1246017	KSEM200R5WN25M	3	25	197	–	136	100	3,2	56	364.011	170.272	20,00	20,50
20,50	.8071	1246021	KSEM205R5WN25M	3	25	197	–	136	110	3,3	56	364.011	170.272	20,50	21,00
21,00	.8268	1246024	KSEM210R5WN25M	3	25	197	–	136	110	3,3	56	364.011	170.272	21,00	21,50
21,50	.8465	1246028	KSEM215R5WN25M	3	25	197	–	136	110	3,4	56	364.011	170.272	21,50	22,00
22,00	.8661	1246032	KSEM220R5WN25M	3	25	197	–	136	110	3,5	56	364.011	170.272	22,00	22,00
22,01	.8665	1592466	KSEM221R5WN25M	4	25	209	–	148	120	3,5	56	364.011	170.272	22,01	22,50
22,50	.8858	1246036	KSEM225R5WN25M	4	25	209	–	148	120	3,6	56	364.011	170.272	22,50	23,00
23,00	.9055	1246040	KSEM230R5WN25M	4	25	209	–	148	120	3,7	56	364.011	170.272	23,00	23,50
23,50	.9252	1246044	KSEM235R5WN25M	4	25	209	–	148	120	3,7	56	364.011	170.272	23,50	24,00
24,00	.9449	1246048	KSEM240R5WN25M	4	25	209	–	148	120	3,8	56	364.011	170.272	24,00	24,00
24,01	.9453	1592467	KSEM241R5WN32M	5	32	226	–	161	130	3,8	60	364.012	170.274	24,01	24,50
24,50	.9646	1246053	KSEM245R5WN32M	5	32	226	–	161	130	3,9	60	364.012	170.274	24,50	25,00

(continued on next page)

KENNAMETAL

KSEM 2° Whistle Notch Shank Bodies (WN/WD) — Metric





5xD WN/WD Shank — Metric

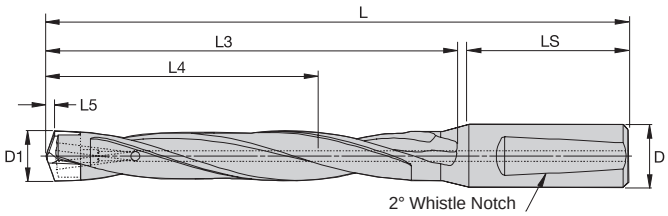
(continued from previous page)

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L1	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
25,00	.9843	1246057	KSEM250R5WN32M	5	32	226	–	161	130	3,8	60	364.012	170.274	25,00	25,50
25,50	1.0039	1246061	KSEM255R5WN32M	5	32	226	–	161	130	3,9	60	364.012	170.274	25,50	26,00
26,00	1.0236	1246065	KSEM260R5WN32M	5	32	226	–	161	130	4,0	60	364.012	170.274	26,00	26,00
26,01	1.0240	1592468	KSEM261R5WN32M	6	32	238	–	173	140	4,0	60	364.012	170.274	26,01	26,50
26,50	1.0433	1246069	KSEM265R5WN32M	6	32	238	–	173	140	4,1	60	364.012	170.274	26,50	27,00
27,00	1.0630	1246073	KSEM270R5WN32M	6	32	238	–	173	140	4,2	60	364.012	170.274	27,00	27,50
27,50	1.0827	1246077	KSEM275R5WN32M	6	32	238	–	173	140	4,2	60	364.012	170.274	27,50	28,00
28,00	1.1024	1246081	KSEM280R5WN32M	6	32	238	–	173	140	4,3	60	364.012	170.274	28,00	28,00
28,02	1.1028	1592469	KSEM281R5WN32M	7	32	250	–	185	150	4,3	60	364.013	170.276	28,02	28,50
28,50	1.1220	1246083	KSEM285R5WN32M	7	32	250	–	185	150	4,4	60	364.013	170.276	28,50	29,00
29,00	1.1417	1246088	KSEM290R5WN32M	7	32	250	–	185	150	4,5	60	364.013	170.276	29,00	29,50
29,50	1.1614	1246092	KSEM295R5WN32M	7	32	250	–	185	150	4,5	60	364.013	170.276	29,50	30,00
30,00	1.1811	1246095	KSEM300R5WN32M	7	32	250	–	185	150	4,6	60	364.013	170.276	30,00	30,00
30,01	1.1815	1592491	KSEM301R5WN32M	8	32	264	–	199	160	4,6	60	364.013	170.276	30,01	30,50
30,50	1.2008	1246099	KSEM305R5WN32M	8	32	264	–	199	160	4,7	60	364.013	170.276	30,50	31,00
31,00	1.2205	1246103	KSEM310R5WN32M	8	32	264	–	199	160	4,8	60	364.013	170.276	31,00	31,50
31,50	1.2402	1246107	KSEM315R5WN32M	8	32	264	–	199	160	4,8	60	364.013	170.276	31,50	32,00
32,00	1.2598	1246112	KSEM320R5WN32M	8	32	264	–	199	160	4,9	60	364.013	170.276	32,00	32,00
32,01	1.2602	1592492	KSEM321R5WD50M	9	50	293	225	214	165	4,9	68	364.015	170.277	32,01	33,00
33,00	1.2992	1592493	KSEM330R5WD50M	9	50	293	225	214	165	5,1	68	364.015	170.277	33,00	34,00
34,00	1.3386	1592494	KSEM340R5WD50M	9	50	293	225	214	170	5,2	68	364.015	170.277	34,00	35,00
35,00	1.3780	1592496	KSEM350R5WD50M	9	50	305	237	226	175	5,4	68	364.015	170.277	35,00	36,00
36,00	1.4173	1592498	KSEM360R5WD50M	9	50	305	237	226	180	5,5	68	364.015	170.277	36,00	36,00
36,01	1.4177	1592502	KSEM361R5WD50M	10	50	318	250	239	185	5,5	68	364.015	170.277	36,01	37,00
37,00	1.4567	1592504	KSEM370R5WD50M	10	50	318	250	239	185	5,7	68	364.015	170.277	37,00	38,00
38,00	1.4961	1592505	KSEM380R5WD50M	10	50	318	250	239	190	5,8	68	364.015	170.277	38,00	39,00
39,00	1.5354	1592507	KSEM390R5WD50M	10	50	330	262	251	195	6,0	68	364.015	170.277	39,00	40,00
40,00	1.5748	1592509	KSEM400R5WD50M	10	50	330	262	251	200	6,2	68	364.015	170.277	40,00	40,00

Ordering Example:
By catalog number KSEM250R5WN32M, or by order number 1246057.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately, see pages B37-B49.

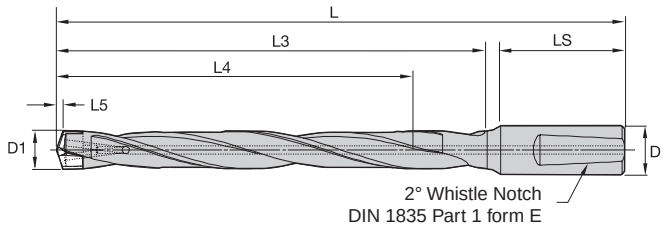


7xD WN Shank — Metric

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
12,50	.4921	1797157	KSEM125R7WN16M	C	16	167	115	98	2,0	48	364.017	170.295	12,50	13,00
13,00	.5118	1797158	KSEM130R7WN16M	C	16	167	115	98	2,1	48	364.017	170.295	13,00	13,50
13,50	.5315	1797159	KSEM135R7WN16M	C	16	167	115	98	2,1	48	364.017	170.295	13,50	13,50
13,51	.5319	1797160	KSEM136R7WN16M	B	16	167	115	98	2,2	48	364.016	170.290	13,51	14,00
14,00	.5512	1797161	KSEM140R7WN16M	B	16	167	115	98	2,2	48	364.016	170.290	14,00	14,50
14,50	.5709	1797162	KSEM145R7WN20M	B	20	186	132	112	2,3	50	364.016	170.290	14,50	14,50
14,51	.5713	1797203	KSEM146R7WN20M	A	20	186	132	112	2,3	50	364.016	170.290	14,51	15,00
15,00	.5906	1797204	KSEM150R7WN20M	A	20	186	132	112	2,4	50	364.016	170.290	15,00	15,50
15,50	.6102	1797205	KSEM155R7WN20M	A	20	186	132	112	2,5	50	364.016	170.290	15,50	15,87
16,00	.6299	1311193	KSEM160R7WN20M	1	20	186	131	112	2,5	50	364.010	170.270	16,00	16,50
16,50	.6496	1279856	KSEM165R7WN20M	1	20	202	147	126	2,6	50	364.010	170.270	16,50	17,00
17,00	.6693	1279857	KSEM170R7WN20M	1	20	202	147	126	2,7	50	364.010	170.270	17,00	17,50
17,50	.6890	1279858	KSEM175R7WN20M	1	20	202	147	126	2,8	50	364.010	170.270	17,50	18,00
18,00	.7087	1279859	KSEM180R7WN20M	1	20	202	147	126	2,9	50	364.010	170.270	18,00	18,00
18,50	.7283	1279863	KSEM185R7WN25M	2	25	224	163	140	2,9	56	364.010	170.270	18,50	19,00
19,00	.7480	1279864	KSEM190R7WN25M	2	25	224	163	140	3,0	56	364.010	170.270	19,00	19,50
19,50	.7677	1279866	KSEM195R7WN25M	2	25	224	163	140	3,1	56	364.010	170.270	19,50	20,00
20,00	.7874	1279867	KSEM200R7WN25M	3	25	241	179	140	3,2	56	364.011	170.272	20,00	20,50
20,50	.8071	1279868	KSEM205R7WN25M	3	25	241	180	154	3,3	56	364.011	170.272	20,50	21,00
21,00	.8268	1279872	KSEM210R7WN25M	3	25	241	180	154	3,3	56	364.011	170.272	21,00	21,50
21,50	.8465	1279873	KSEM215R7WN25M	3	25	241	180	154	3,4	56	364.011	170.272	21,50	22,00
22,00	.8661	1279874	KSEM220R7WN25M	3	25	241	180	154	3,5	56	364.011	170.272	22,00	22,00
22,50	.8858	1279878	KSEM225R7WN25M	4	25	257	196	168	3,6	56	364.011	170.272	22,50	23,00
23,00	.9055	1279881	KSEM230R7WN25M	4	25	257	196	168	3,7	56	364.011	170.272	23,00	23,50
23,50	.9252	1279882	KSEM235R7WN25M	4	25	257	196	168	3,7	56	364.011	170.272	23,50	24,00
24,00	.9449	1282677	KSEM240R7WN25M	4	25	257	196	168	3,8	56	364.011	170.272	24,00	24,00
24,50	.9646	1279889	KSEM245R7WN32M	5	32	278	213	182	3,9	60	364.012	170.274	24,50	25,00
25,00	.9843	1279891	KSEM250R7WN32M	5	32	278	213	182	3,8	60	364.012	170.274	25,00	25,50
25,50	1.0039	1279892	KSEM255R7WN32M	5	32	278	213	182	3,9	60	364.012	170.274	25,50	26,00
26,00	1.0236	1279893	KSEM260R7WN32M	5	32	278	213	182	4,0	60	364.012	170.274	26,00	26,00
26,50	1.0433	1279894	KSEM265R7WN32M	6	32	294	229	196	4,1	60	364.012	170.274	26,50	27,00
27,00	1.0630	1279895	KSEM270R7WN32M	6	32	294	229	196	4,2	60	364.012	170.274	27,00	27,50
27,50	1.0827	1279896	KSEM275R7WN32M	6	32	294	229	196	4,2	60	364.012	170.274	27,50	28,00
28,00	1.1024	1279898	KSEM280R7WN32M	6	32	294	229	196	4,3	60	364.012	170.274	28,00	28,00
28,50	1.1220	1279903	KSEM285R7WN32M	7	32	310	245	210	4,4	60	364.013	170.276	28,50	29,00
29,00	1.1417	1279905	KSEM290R7WN32M	7	32	310	245	210	4,5	60	364.013	170.276	29,00	29,50
29,50	1.1614	1279906	KSEM295R7WN32M	7	32	310	245	210	4,5	60	364.013	170.276	29,50	30,00
30,00	1.1811	1279908	KSEM300R7WN32M	7	32	310	245	210	4,6	60	364.013	170.276	30,00	30,00
30,50	1.2008	1279911	KSEM305R7WN32M	8	32	328	263	224	4,7	60	364.013	170.276	30,50	31,00
31,00	1.2205	1279913	KSEM310R7WN32M	8	32	328	263	224	4,8	60	364.013	170.276	31,00	31,50
31,50	1.2402	1279914	KSEM315R7WN32M	8	32	328	263	224	4,8	60	364.013	170.276	31,50	32,00
32,00	1.2598	1279915	KSEM320R7WN32M	8	32	328	263	224	4,9	60	364.013	170.284	32,00	32,00

Ordering Example:
By catalog number KSEM125R7WN16M, or by order number 1797157.

KSEM 2° Whistle Notch Shank Bodies (WN) — Metric



- Use designated insert blade with each drill body.
- For alternatives, see insert blade fitment chart on pages B76.
- Drill shipped with central lock screw and wrench.
- Order insert blade separately, see pages B37-B49.

10xD WN Shank — Metric

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
12,50	.4921	1797206	KSEM125R10WN16M	C	16	195	143	125	2,0	48	364.017	170.296	12,50	13,00
13,00	.5118	1797207	KSEM130R10WN16M	C	16	200	148	130	2,1	48	364.017	170.296	13,00	13,50
13,50	.5315	1797208	KSEM135R10WN16M	C	16	205	153	135	2,1	48	364.017	170.296	13,50	13,50
13,51	.5319	1797209	KSEM136R10WN16M	B	16	205	153	135	2,2	48	364.016	170.291	13,51	14,00
14,00	.5512	1797210	KSEM140R10WN16M	B	16	210	158	140	2,2	48	364.016	170.291	14,00	14,50
14,50	.5709	1797211	KSEM145R10WN20M	B	20	220	166	145	2,3	50	364.016	170.291	14,50	14,50
14,51	.5713	1797212	KSEM146R10WN20M	A	20	220	166	145	2,3	50	364.016	170.291	14,51	15,00
15,00	.5906	1797233	KSEM150R10WN20M	A	20	225	171	150	2,4	50	364.016	170.291	15,00	15,50
15,50	.6102	1797234	KSEM155R10WN20M	A	20	230	176	155	2,5	50	364.016	170.291	15,50	15,87
16,00	.6299	1551609	KSEM160R10WN20M	1	20	234	179	160	2,5	50	364.010	170.271	16,00	16,50
16,50	.6496	1551610	KSEM165R10WN20M	1	20	241	186	165	2,6	50	364.010	170.281	16,50	17,00
17,00	.6693	1551831	KSEM170R10WN20M	1	20	246	191	170	2,7	50	364.010	170.281	17,00	17,50
17,50	.6890	1551833	KSEM175R10WN20M	1	20	251	196	175	2,8	50	364.010	170.281	17,50	18,00
18,00	.7087	1551834	KSEM180R10WN20M	1	20	256	201	180	2,9	50	364.010	170.281	18,00	18,00
18,01	.7091	1611360	KSEM181R10WN25M	2	25	269	208	185	2,9	56	364.010	170.281	18,01	18,50
18,50	.7283	1551835	KSEM185R10WN25M	2	25	269	208	185	2,9	56	364.010	170.281	18,50	19,00
19,00	.7480	1551836	KSEM190R10WN25M	2	25	274	213	190	3,0	56	364.010	170.281	19,00	19,50
19,50	.7677	1551837	KSEM195R10WN25M	2	25	279	218	195	3,1	56	364.010	170.281	19,50	20,00
20,00	.7874	1551838	KSEM200R10WN25M	3	25	297	236	200	3,2	56	364.011	170.282	20,00	20,50
20,50	.8071	1611434	KSEM205R10WN25M	3	25	297	236	205	3,3	56	364.011	170.282	20,50	21,00
21,00	.8268	1551839	KSEM210R10WN25M	3	25	297	236	210	3,3	56	364.011	170.282	21,00	21,50
21,50	.8465	1611435	KSEM215R10WN25M	3	25	307	246	215	3,4	56	364.011	170.282	21,50	22,00
22,00	.8661	1551840	KSEM220R10WN25M	3	25	307	246	220	3,5	56	364.011	170.282	22,00	22,00
22,01	.8665	1611436	KSEM221R10WN25M	4	25	319	258	225	3,5	56	364.011	170.282	22,01	22,50
22,50	.8858	1599327	KSEM225R10WN25M	4	25	319	258	225	3,6	56	364.011	170.282	22,50	23,00
23,00	.9055	1551841	KSEM230R10WN25M	4	25	319	258	230	3,7	56	364.011	170.282	23,00	23,50
23,50	.9252	1611437	KSEM235R10WN25M	4	25	329	268	235	3,7	56	364.011	170.282	23,50	24,00
24,00	.9449	1551842	KSEM240R10WN25M	4	25	329	268	240	3,8	56	364.011	170.282	24,00	24,00

(continued on next page)

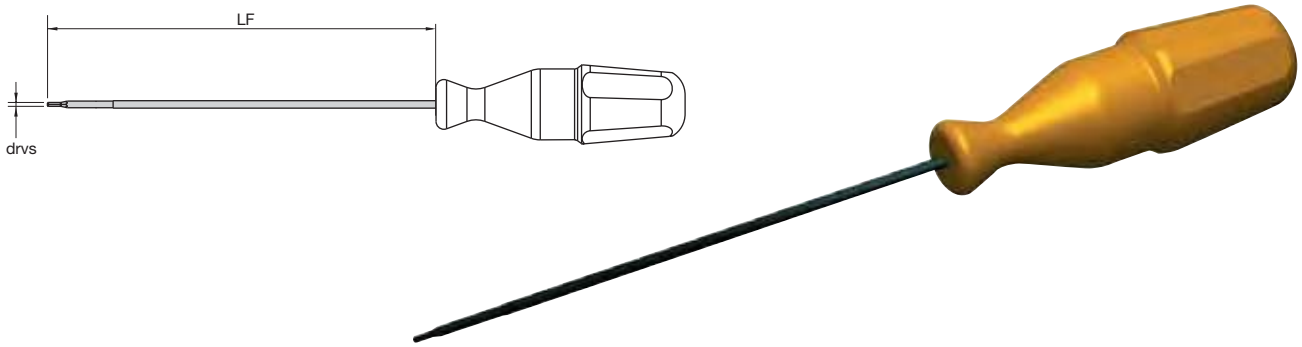
10xD WN Shank — Metric

(continued from previous page)

D1 mm	D1 inch	order number	catalog number	insert blade seat size	D	L	L3	L4 max	L5	LS	central lock screw	wrench	D1	D1 max
24,01	.9453	1611438	KSEM241R10WN32M	5	32	346	281	245	3,8	60	364.012	170.283	24,01	24,50
24,50	.9646	1611439	KSEM245R10WN32M	5	32	346	281	245	3,9	60	364.012	170.283	24,50	25,00
25,00	.9843	1551843	KSEM250R10WN32M	5	32	346	281	250	3,8	60	364.012	170.283	25,00	25,50
25,50	1.0039	1611440	KSEM255R10WN32M	5	32	356	291	255	3,9	60	364.012	170.283	25,50	26,00
26,00	1.0236	1551844	KSEM260R10WN32M	5	32	356	291	260	4,0	60	364.012	170.283	26,00	26,00
26,01	1.0240	1611441	KSEM261R10WN32M	6	32	363	298	265	4,0	60	364.012	170.283	26,01	26,50
26,50	1.0433	1551845	KSEM265R10WN32M	6	32	363	298	265	4,1	60	364.012	170.283	26,50	27,00
27,00	1.0630	1551846	KSEM270R10WN32M	6	32	368	303	270	4,2	60	364.012	170.283	27,00	27,50
27,50	1.0827	1611442	KSEM275R10WN32M	6	32	378	313	275	4,2	60	364.012	170.283	27,50	28,00
28,00	1.1024	1551847	KSEM280R10WN32M	6	32	378	313	280	4,3	60	364.012	170.283	28,00	28,00
28,02	1.1028	1611443	KSEM281R10WN32M	7	32	390	325	285	4,3	60	364.013	170.284	28,02	28,50
28,50	1.1220	1611444	KSEM285R10WN32M	7	32	390	325	285	4,4	60	364.013	170.284	28,50	29,00
29,00	1.1417	1551848	KSEM290R10WN32M	7	32	390	325	290	4,5	60	364.013	170.284	29,00	29,50
29,50	1.1614	1611445	KSEM295R10WN32M	7	32	400	335	295	4,5	60	364.013	170.284	29,50	30,00
30,00	1.1811	1551849	KSEM300R10WN32M	7	32	400	335	300	4,6	60	364.013	170.284	30,00	30,00
30,01	1.1815	1611446	KSEM301R10WN32M	8	32	414	349	305	4,6	60	364.013	170.284	30,01	30,50
31,00	1.2205	1551850	KSEM310R10WN32M	8	32	414	349	310	4,8	60	364.013	170.284	31,00	31,50
32,00	1.2598	1551861	KSEM320R10WN32M	8	32	424	359	320	4,9	60	364.013	170.284	32,00	32,00

Ordering Example:
By catalog number KSEM241R10WN32M, or by order number 1611438.

KSEM Wrenches

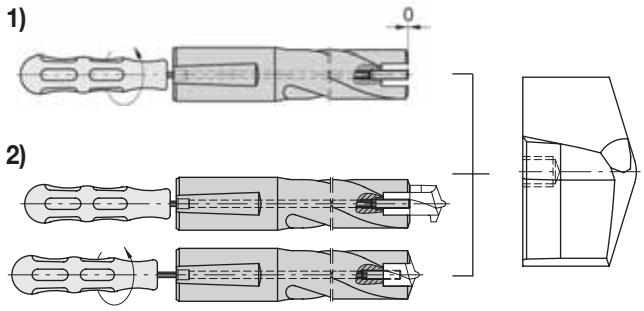


KSEM Spare Wrenches

order number	catalog number	DRVS	LF	LF
1126021	170.270	1.5 MM	7.28	185
1126032	170.271	1.5 MM	8.86	225
1510773	170.281	1.5 MM	11.69	297
1255899	170.285	1.5 MM	13.82	351
1126040	170.272	2 MM	8.27	210
1126049	170.273	2 MM	10.24	260
1510776	170.282	2 MM	13.50	343
1255900	170.286	2 MM	15.94	405
1126066	170.274	2.5 MM	9.45	240
1126072	170.275	2.5 MM	11.61	295
1510779	170.283	2.5 MM	15.47	393
1255901	170.287	2.5 MM	18.07	459
1126079	170.276	3 MM	10.43	265
1126088	170.277	3 MM	12.99	330
1510781	170.284	3 MM	17.28	439
1255902	170.288	3 MM	20.20	513
1834819	170.294	T5	6.14	156
1836470	170.295	T5	7.40	188
1836471	170.296	T5	11.42	290
1795811	170.289	T6	6.14	156
1795956	170.290	T6	7.40	188
1795960	170.291	T6	11.42	290

Order Example:
Order by catalog number 170.270, or by order number 1126021.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



1) Use the screwdriver to set the threaded pin flush with the drill face.

2) Tighten the insert using the screwdriver to fit securely in the insert seat.

To change the insert, turn the clamping screw anti-clockwise until the insert is released.

NOTE: *For inserts without a connector pin, avoid jamming during mounting through precise positioning.*

Repair of damaged threaded pin

In the event that the central threaded pin becomes damaged, it can be removed after severing it in the tool body.

To do this, drill beneath the insert seat in the tool body. The insert and threaded pin can then be removed.

For information regarding the position and diameter of this repair hole, please refer to the sheet **290.001 D/GB**.

KSEM Insert Blade Fitment Chart

Insert blades may be used, within limits, on different drill bodies. However, the insert blade must be of the same seat size. Overhang (see **figure 1**) must be kept under .0098 (0,250 mm) per side. For best drilling performance, rigidity, and efficient chip evacuation, always use the first-choice steel body (refer to table below). Performance may be compromised using alternatives. In some applications, chips may bind between the drill body and the hole wall. This is especially true when machining long-chipping materials like austenitic stainless steel and low-carbon steel. Care should be taken as damage to the drill body can result in such cases.

(does not apply to stub length drills)

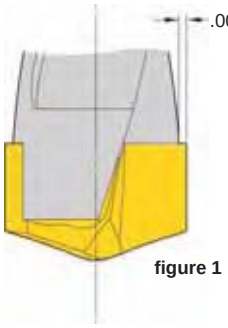


figure 1

diameter D								
inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.492	12,50	**KSEM1250**	C	KSEM125..M				
.500	12,70	**KSEM0500**	C	KSEM0500..	KSEM125..M			
.509	12,93	**KSEM0509**	C	KSEM0509..	KSEM0500..	KSEM125..M		
.512	13,00	**KSEM1300**	C	KSEM130..M	KSEM0509..	KSEM0500..	KSEM125..M	
.516	13,10	**KSEM0516**	C	KSEM0516..	KSEM130..M	KSEM0509..	KSEM0500..	
.531	13,50	**KSEM1350**	C	KSEM135..M	KSEM0531..	KSEM0516..	KSEM130..M	
.547	13.89	**KSEM0547**	B	KSEM0547..	KSEM136..M			
.551	14,00	**KSEM1400**	B	KSEM140..M	KSEM136..M	KSEM0547..		
.563	14,29	**KSEM0563**	B	KSEM0563..	KSEM140..M	KSEM0547..		
.571	14,50	**KSEM1450**	B	KSEM145..M	KSEM0563..	KSEM140..M		
.578	14,68	**KSEM0578**	A	KSEM0578..	KSEM146..M			
.591	15,00	**KSEM1500**	A	KSEM150..M	KSEM146..M	KSEM0578..		
.594	15,08	**KSEM0594**	A	KSEM0594..	KSEM150..M	KSEM0578..		
.609	15,48	**KSEM0609**	A	KSEM0609..	KSEM0594..	KSEM150..M		
.610	15,50	**KSEM1550**	A	KSEM155..M	KSEM0609..	KSEM0594..	KSEM150..M	
.625	15,88	**KSEM0625**	1	KSEM0625..				
.630	16,00	**KSEM1600**	1	KSEM160..M	KSEM0625..			
.634	16,09	**KSEM0634**	1	KSEM0634..	KSEM160..M	KSEM0625..		
.641	16,27	**KSEM0641**	1	KSEM0641..	KSEM0634..	KSEM160..M	KSEM0625..	
.650	16,50	**KSEM1650**	1	KSEM165..M	KSEM0641..	KSEM0634..		
.656	16,67	**KSEM0656**	1	KSEM0656..	KSEM165..M	KSEM0641..		
.669	17,00	**KSEM1700**	1	KSEM170..M	KSEM0656..	KSEM165..M		
.672	17,07	**KSEM0672**	1	KSEM0672..	KSEM170..M	KSEM0656..		
.688	17,46	**KSEM0688**	1	KSEM0688..	KSEM0672..	KSEM170..M		
.689	17,50	**KSEM1750**	1	KSEM175..M	KSEM0688..	KSEM0672..	KSEM170..M	
.700	17,78	**KSEM0700**	1	N/A	KSEM175..M	KSEM0688..		
.703	17,86	**KSEM0703**	1	KSEM0703..	KSEM175..M	KSEM0688..		
.709	18,00	**KSEM1800**	1	KSEM180..M	KSEM0703..	KSEM175..M		
.719	18,26	**KSEM0719**	2	KSEM0719..	KSEM181..M			
.728	18,50	**KSEM1850**	2	KSEM185..M	KSEM0719..	KSEM181..M		
.734	18,65	**KSEM0734**	2	KSEM0734..	KSEM185..M	KSEM0719..		
.748	19,00	**KSEM1900**	2	KSEM190..M	KSEM0734..	KSEM185..M		
.750	19,05	**KSEM0750**	2	KSEM0750..	KSEM190..M	KSEM0734..		
.759	19,27	**KSEM0759**	2	KSEM0759..	KSEM0750..	KSEM190..M		
.766	19,45	**KSEM0766**	2	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M	
.768	19,50	**KSEM1950**	2	KSEM195..M	KSEM0766..	KSEM0759..	KSEM0750..	KSEM190..M
.781	19,84	**KSEM0781**	2	KSEM0781..	KSEM195..M	KSEM0766..		
.787	20,00	**KSEM2000**	3	KSEM200..M				
.797	20,24	**KSEM0797**	3	KSEM0797..	KSEM200..M			
.800	20,32	**KSEM0800**	3	N/A	KSEM0797..	KSEM200..M		
.807	20,50	**KSEM2050**	3	KSEM205..M	KSEM0797..	KSEM200..M		
.813	20,64	**KSEM0813**	3	KSEM0813..	KSEM205..M	KSEM0797..		
.827	21,00	**KSEM2100**	3	KSEM210..M	KSEM0813..	KSEM205..M		
.844	21,43	**KSEM0844**	3	KSEM0844..	KSEM210..M			
.847	21,50	**KSEM2150**	3	KSEM215..M	KSEM0844..	KSEM210..M		
.859	21,83	**KSEM0859**	3	KSEM0859..	KSEM215..M	KSEM0844..		
.866	22,00	**KSEM2200**	3	KSEM220..M	KSEM0859..	KSEM215..M		
.875	22,23	**KSEM0875**	4	KSEM0875..	KSEM221..M			
.884	22,44	**KSEM0884**	4	KSEM0884..	KSEM0875..	KSEM221..M		
.886	22,50	**KSEM2250**	4	KSEM225..M	KSEM0884..	KSEM0875..	KSEM221..M	
.906	23,00	**KSEM2300**	4	KSEM230..M	KSEM0906..	KSEM225..M		
.922	23,42	**KSEM0922**	4	KSEM0922..	KSEM230..M			
.925	23,50	**KSEM2350**	4	KSEM235..M	KSEM0922..	KSEM230..M		
.938	23,81	**KSEM0938**	4	KSEM0938..	KSEM235..M	KSEM0922..		
.945	24,00	**KSEM2400**	4	KSEM240..M	KSEM0938..	KSEM235..M		

(continued on next page)

KSEM Insert Blade Fitment Chart

(does not apply to stub length drills)

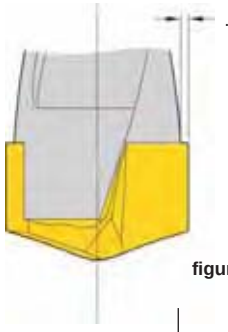


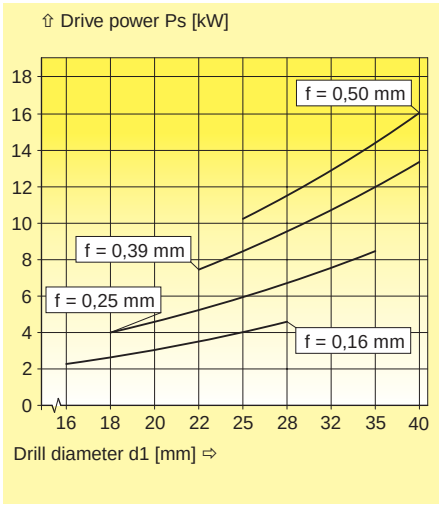
figure 1

(continued from previous page)

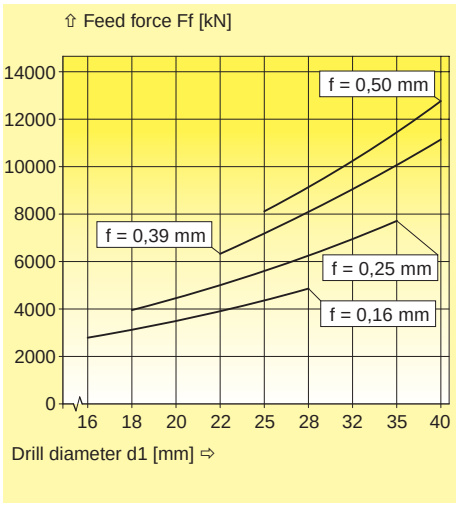
diameter D								
inch	mm	insert blade	seat size	first choice	alternate body 1	alternate body 2	alternate body 3	alternate body 4
.965	24,50	**KSEM2450**	5	KSEM245..M	KSEM241..M			
.969	24,61	**KSEM0969**	5	KSEM0969..	KSEM245..M			
.984	25,00	**KSEM2500**	5	KSEM250..M	KSEM0984..	KSEM0969..	KSEM245..M	
1.000	25,40	**KSEM1000**	5	KSEM1000..	KSEM250..M			
1.004	25,50	**KSEM2550**	5	KSEM255..M	KSEM1000..	KSEM250..M		
1.011	25,67	**KSEM1011**	5	KSEM1011..	KSEM255..M			
1.024	26,00	**KSEM2600**	5	KSEM260..M	KSEM1011..	KSEM255..M		
1.031	26,19	**KSEM1031**	6	KSEM1031..	KSEM261..M			
1.043	26,50	**KSEM2650**	6	KSEM265..M	KSEM1031..	KSEM261..M		
1.047	26,59	**KSEM1047**	6	KSEM1047..	KSEM265..M	KSEM1031..	KSEM261..M	
1.063	27,00	**KSEM2700**	6	KSEM270..M	KSEM1063..	KSEM1047..	KSEM265..M	
1.083	27,50	**KSEM2750**	6	KSEM275..M	KSEM270..M	KSEM1063..		
1.094	27,78	**KSEM1094**	6	KSEM1094..	KSEM275..M			
1.102	28,00	**KSEM2800**	6	KSEM280..M	KSEM1094..	KSEM275..M		
1.109	28,18	**KSEM1109**	7	KSEM1109..	KSEM281..M			
1.122	28,50	**KSEM2850**	7	KSEM285..M	KSEM1109..	KSEM281..M		
1.125	28,58	**KSEM1125**	7	KSEM1125..	KSEM285..M	KSEM1109..	KSEM281..M	
1.142	29,00	**KSEM2900**	7	KSEM290..M	KSEM1125..	KSEM285..M		
1.156	29,37	**KSEM1156**	7	KSEM1156..	KSEM290..M			
1.161	29,50	**KSEM2950**	7	KSEM295..M	KSEM1156..	KSEM290..M		
1.172	29,77	**KSEM1172**	7	KSEM1172..	KSEM295..M	KSEM1156..		
1.181	30,00	**KSEM3000**	7	KSEM300..M	KSEM1172..	KSEM295..M		
1.188	30,16	**KSEM1188**	8	KSEM1188..	KSEM301..M			
1.201	30,50	**KSEM3050**	8	KSEM305..M	KSEM1188..	KSEM301..M		
1.203	30,56	**KSEM1203**	8	KSEM1203..	KSEM305..M	KSEM1188..	KSEM301..M	
1.219	30,96	**KSEM1219**	8	KSEM1219..	KSEM1203..	KSEM305..M		
1.220	31,00	**KSEM3100**	8	KSEM310..M	KSEM1219..	KSEM1203..	KSEM305..M	
1.240	31,50	**KSEM3150**	8	KSEM315..M	KSEM310..M			
1.250	31,75	**KSEM1250**	8	KSEM1250..	KSEM315..M			
1.260	32,00	**KSEM3200**	8	KSEM320..M	KSEM1250..	KSEM315..M		
1.280	32,50	**KSEM3250**	9	—	KSEM321..M			
1.281	32,54	**KSEM1281**	9	KSEM1281..	KSEM321..M			
1.297	32,94	**KSEM1297**	9	KSEM1297..	KSEM1281..			
1.299	33,00	**KSEM3300**	9	KSEM330..M	KSEM1297..	KSEM1281..		
1.313	33,34	**KSEM1313**	9	KSEM1313..	KSEM330..M	KSEM1297..		
1.319	33,50	**KSEM3350**	9	—		KSEM1313..	KSEM330..M	
1.328	33,73	**KSEM1328**	9	KSEM1328..	KSEM1313..			
1.339	34,00	**KSEM3400**	9	KSEM340..M	KSEM1328..			
1.344	34,13	**KSEM1344**	9	KSEM1344..	KSEM340..M	KSEM1328..		
1.358	34,50	**KSEM3450**	9	—		KSEM1344..	KSEM340..M	
1.375	34,93	**KSEM1375**	9	KSEM1375..				
1.378	35,00	**KSEM3500**	9	KSEM350..M	KSEM1375..			
1.398	35,50	**KSEM3550**	9	—		KSEM350..M		
1.406	35,72	**KSEM1406**	9	KSEM1406..				
1.417	36,00	**KSEM3600**	9	KSEM360..M	KSEM1406..			
1.422	36,12	**KSEM1422**	10	KSEM1422..	KSEM361..M			
1.437	36,50	**KSEM3650**	10	—		KSEM1422..	KSEM361..M	
1.438	36,51	**KSEM1438**	10	KSEM1438..	KSEM1422..	KSEM361..M		
1.457	37,00	**KSEM3700**	10	KSEM370..M	KSEM1438..			
1.469	37,31	**KSEM1469**	10	KSEM1469..	KSEM370..M			
1.476	37,50	**KSEM3750**	10	—		KSEM1469..	KSEM370..M	
1.496	38,00	**KSEM3800**	10	KSEM380..M				
1.500	38,10	**KSEM1500**	10	KSEM1500..	KSEM380..M			
1.514	38,46	**KSEM1514**	10	KSEM1514..	KSEM1500..	KSEM380..M		
1.516	38,50	**KSEM3850**	10	—		KSEM1514..	KSEM1500..	KSEM380..M
1.535	39,00	**KSEM3900**	10	KSEM390..M				
1.555	39,50	**KSEM3950**	10	—		KSEM390..M		
1.575	40,00	**KSEM4000**	10	KSEM400..M				

Insert Blade Fitment Chart

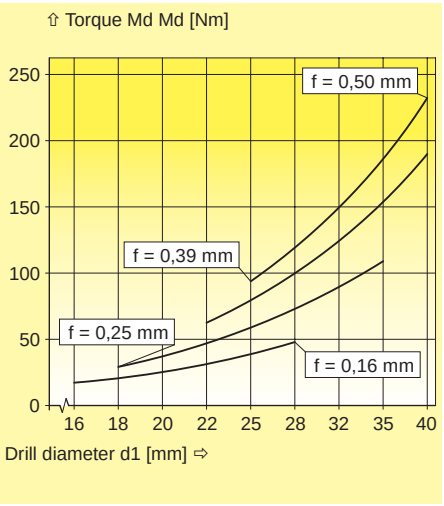
Drive power (kW)

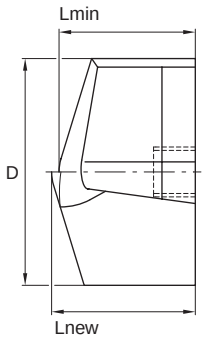


Feed force (kN)



Torque (Nm)





insert seat size	diameter range D (mm)	Lmin. (mm)	Lnew (mm)
C	12,50 - 13,50	8,5	9,6
B	13,51 - 14,50	8,9	10,1
A	14,51 - 15,88	9,4	10,6
1	15,88 - 18,00	10,3	11,6
2	18,01 - 19,99	11,2	12,6
3	20,00 - 22,00	12,1	13,6
4	22,01 - 24,00	13,0	14,6
5	24,01 - 26,00	13,9	15,6
6	26,01 - 28,00	14,8	16,6
7	28,01 - 30,00	15,7	17,6
8	30,01 - 32,00	16,6	18,6
9	32,01 - 36,00	18,4	20,6
10	36,01 - 40,00	20,2	22,6

NOTE: *The diagrams are used to determine the feed force, drive power and torque. They are based on cutting force measurement in tempered steels in Cgr. 6.Tensile strength: Rm = 600 N/mm2*
The base cutting speed used is: vc = 80 m/min

The following coolant pressure is recommended:

relative drilling depth	coolant pressure
1-3 x d	8 bars
5 x d	12 bars
7 x d	20 bars
10 x d	30 bars

KENNAMETAL

Combination Tools

BF Combination Drilling System

Features

- Drilling, chamfering, and countersinking combined in one tool.
- Drill diameter ranges are 3,4 mm to 18,0 mm and .125" to .750".
- Each drill body accepts a specific range of drill diameters based upon drill shank size.
- Greater system flexibility:
  - chamfer inserts with different angles
  - insert design allows for special geometrical shapes
  - interchangeable inserts
- Bodies are available with inch and metric shanks.

SEFAS Combination Drilling System

Features

- Replace expensive specially made step drills with standard drill components.
- High-performance, self-centering drill and chamfer in one tool.
- Use standard solid carbide drills in SE and TX styles*:
  - metric range 4,0mm to 20,0mm diameters
  - inch range .1563" to 1.010" diameters
- Choice of a 90° or 82° included angle chamfer insert.
- Integral bodies are available with inch and metric shanks.
- Three designs are offered for metric diameter drills:
  - integral body with 2° Whistle Notch flat
  - chamfering ring body for use with hydraulic chuck
  - HSK shank bodies

***NOTE:** TF drills may be used with one insert in limited applications. Consult your Kennametal sales representative for more information.*

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Application Limits and Ranges C5
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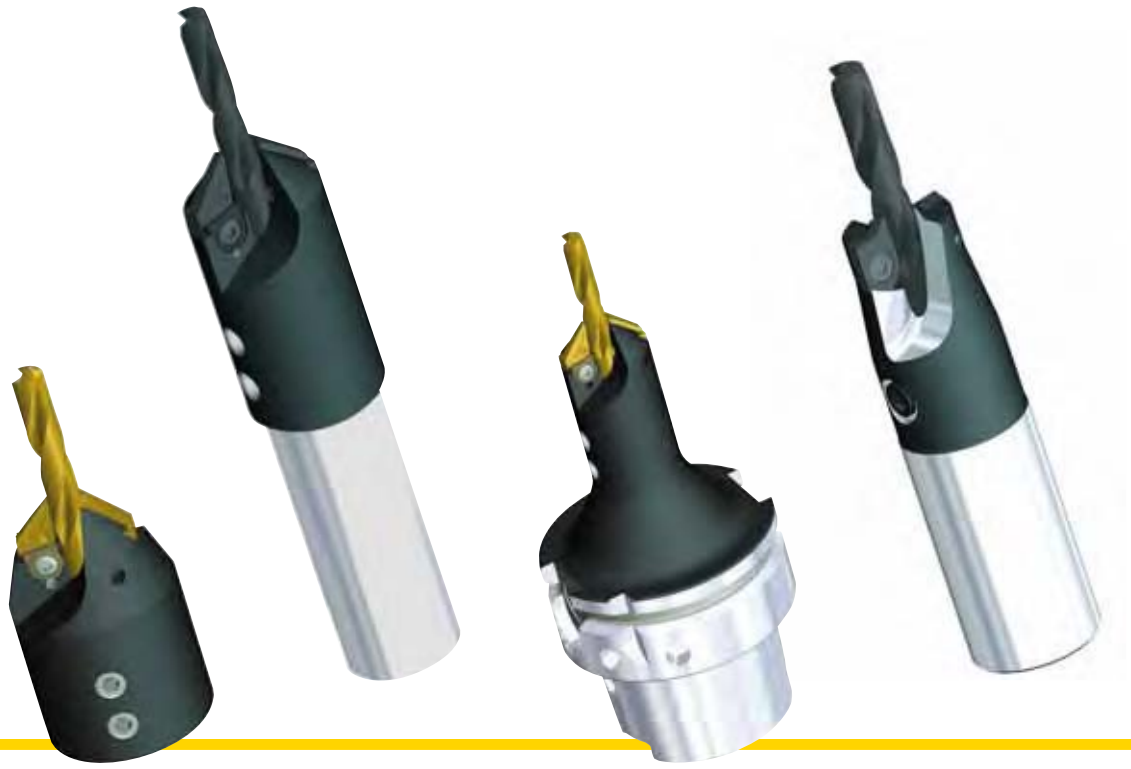


KENNAMETAL

Combination Tools

Primary Application

Combines centering, drilling, and countersinking into a single operation, increasing productivity by reducing cycle time and number of tool changes. The modular design provides flexibility to adapt the tool to varying hole geometries in small and medium lot size manufacturing. With its slim design and full through coolant capabilities, the BF Combination System can be used even for deeper holes, critical materials, and with restricted workspace.

Features and Benefits

Modular Design

- Adjust the drill length for different hole geometries.
- Exchange the inserts to manufacture different countersink geometries.
- Use through coolant Solid Carbide Drills or KenTIP Drill bodies.

HPG™ Drill Point Design

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

KenTIP Blade

- Easy to change right inside the machine or holder.
- Better hole surface quality.

KC7315 Grade

- A multilayer, TiAlN-based coating with high-hot hardness enables 100% higher cutting speeds.
- Optimized tool surface finish ensures chip evacuation in high-speed drilling and MQL applications.

BF Inserts

- Available standard inserts with various angles, spot-face options, and blanks.

Customization

- Length variations available as custom solutions.
- TX Drills for aluminum are available as custom solutions.
- BF inserts can be customized to almost any required geometry.

SE Drills – B343HPG / K343HPG Series – Grade KC7315 – Through Coolant

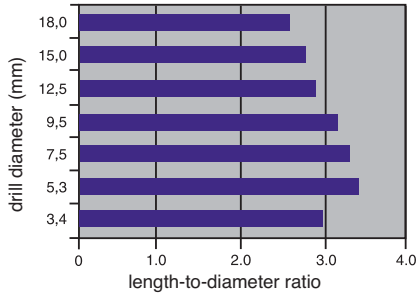
Starting Pt.	Cutting Speed		Feed rate by diameter								
	sfm	49 98 164 262 328 394 492 656 820 984 1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.709
	m/min	15 30 50 80 100 120 150 200 250 300 350	mm/r	3,0	4,0	6,0	8,0	10,0	12,0	16,0	18,0
P1	**Low-Carbon Steels, Long Chipping**		**Content: C <.25%**			**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**		
459	sfm	328 – 591	ipr	.003 - .006	.003 - .007	.004 - .009	.005 - .011	.006 - .013	.007 - .015	.007 - .017	.009 - .017
140	m/min	100 – 180	mm/r	0,07 - 0,16	0,08 - 0,19	0,10 - 0,23	0,13 - 0,29	0,15 - 0,33	0,17 - 0,37	0,19 - 0,44	0,22 - 0,44
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**		**Content: C <.25%**			**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**		
377	sfm	295 – 459	ipr	.003 - .005	.003 - .007	.004 - .007	.005 - .009	.006 - .011	.007 - .012	.007 - .014	.009 - .015
115	m/min	90 – 140	mm/r	0,07 - 0,13	0,08 - 0,17	0,10 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30	0,19 - 0,35	0,22 - 0,39
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**		**Content: C >.25%**			**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**		
328	sfm	262 – 394	ipr	.004 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.010 - .017	.011 - .019
100	m/min	80 – 120	mm/r	0,10 - 0,16	0,11 - 0,19	0,13 - 0,23	0,16 - 0,29	0,19 - 0,33	0,21 - 0,37	0,25 - 0,44	0,28 - 0,49
P4	**Alloy Steels and Tool Steels**		**Content: C >.25%**			**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**		
295	sfm	230 – 361	ipr	.003 - .006	.004 - .007	.004 - .009	.005 - .010	.006 - .011	.006 - .013	.008 - .016	.009 - .018
90	m/min	70 – 110	mm/r	0,08 - 0,16	0,10 - 0,19	0,11 - 0,22	0,12 - 0,25	0,14 - 0,29	0,16 - 0,32	0,21 - 0,41	0,24 - 0,46
P5	**Ferritic, Martensitic, and PH Stainless Steels**		**Content: C=0-.4%**			**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**		
279	sfm	230 – 361	ipr	.003 - .005	.003 - .006	.004 - .006	.005 - .008	.006 - .009	.006 - .010	.007 - .012	.008 - .013
85	m/min	70 – 110	mm/r	0,07 - 0,12	0,08 - 0,14	0,10 - 0,16	0,12 - 0,20	0,14 - 0,23	0,16 - 0,26	0,18 - 0,31	0,21 - 0,34
K1	**Gray Cast Irons and Low-Strength Ductile Irons**					**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**		
394	sfm	328 – 459	ipr	.004 - .007	.004 - .008	.005 - .010	.006 - .012	.007 - .014	.008 - .015	.009 - .018	.010 - .020
120	m/min	100 – 140	mm/r	0,09 - 0,17	0,10 - 0,21	0,12 - 0,25	0,15 - 0,31	0,17 - 0,35	0,20 - 0,39	0,23 - 0,46	0,26 - 0,52
K2	**Low- and Medium-Strength CGI and Ductile Irons**					**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**		
345	sfm	262 – 427	ipr	.004 - .006	.004 - .007	.005- .008	.006 - .010	.007 - .012	.008 - .013	.009 - .015	.010 - .017
105	m/min	80 – 130	mm/r	0,09 - 0,15	0,10 - 0,18	0,12 - 0,21	0,15 - 0,26	0,18 - 0,30	0,20 - 0,33	0,23 - 0,39	0,26 - 0,44
K3	**High-Strength Ductile and Austempered Ductile Irons**					**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**		
279	sfm	230 – 328	ipr	.003 - .005	004 - .006	.004 - .007	.006 - .009	.006 - .010	.007 - .012	.008 - .014	.009 - .015
85	m/min	70 – 100	mm/r	0,08 - 0,13	0,10 - 0,15	0,11 - 0,19	0,14 - 0,23	0,16 - 0,26	0,18 - 0,30	0,21 - 0,35	0,23 - 0,39

* 1 MPa = 145 psi

NOTE: *TX drills for aluminum are available as specials. Cutting data for N1 and N2 are on page A20.*

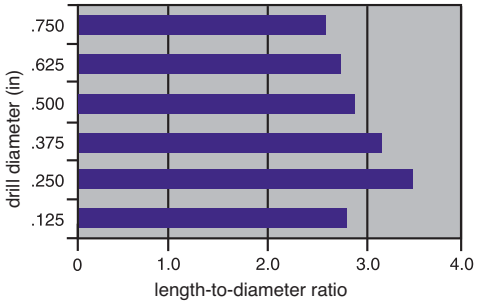
N1	**Wrought Aluminum Alloys**		**Tensile Strength RM (MPa)*: <520**	**Hardness (HB) or HRC: 60-90**
N2	**Cast Aluminums**	**Content: Si<12.2%**	**Tensile Strength RM (MPa)*: <350**	**Hardness (HB) or HRC: 70-100**

B343 metric BF drill



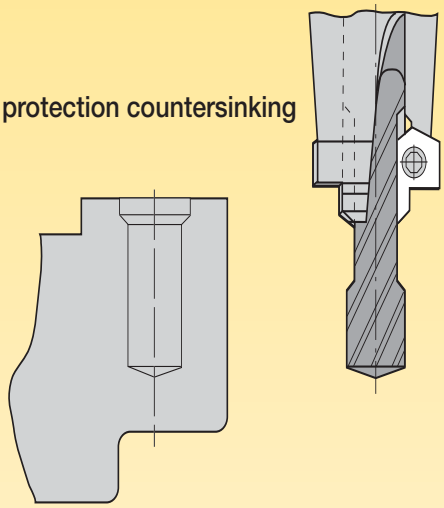
Length to Diameter Range

K343 inch BF drill

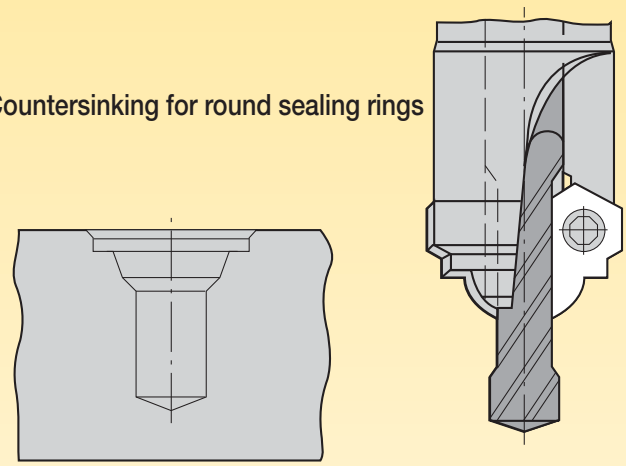


Custom Solutions Available!

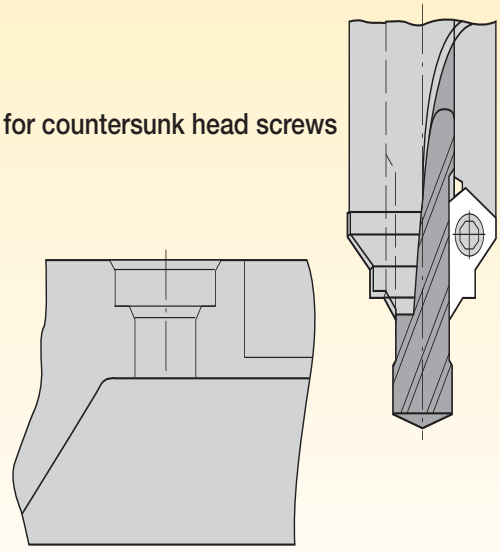
Tapped hole with protection countersinking



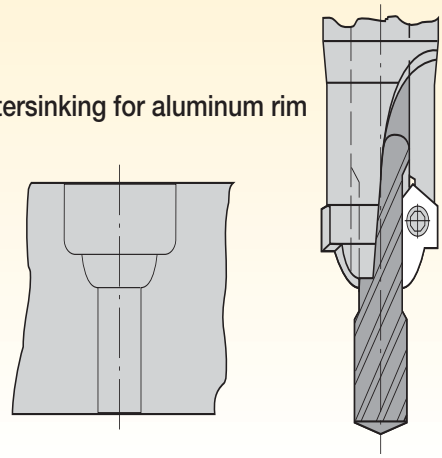
Countersinking for round sealing rings



Countersinking for countersunk head screws

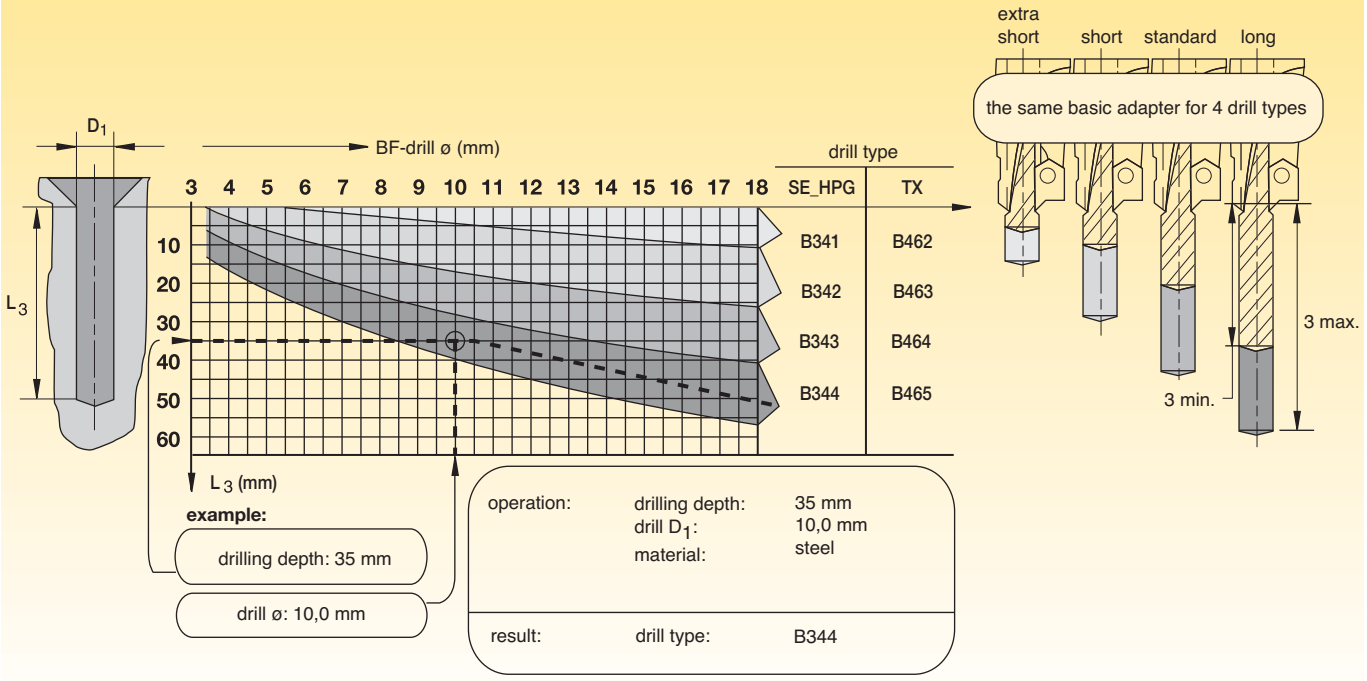


Countersinking for aluminum rim



To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Possible Drilling Depths — Semi-Standard Series

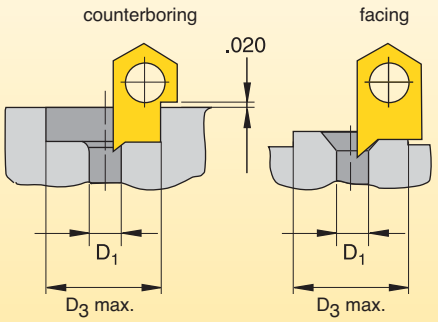


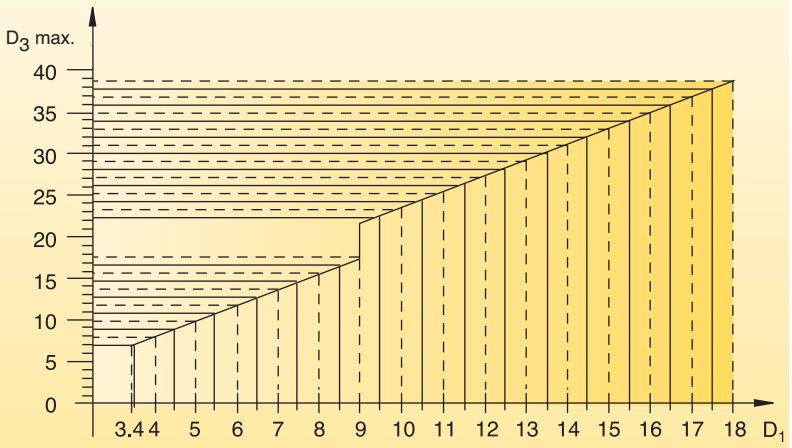
Possible Facing and Counterboring Diameters

Ninety-degree insert blanks are available to grind special geometry forms for other multi-profile applications. Contact your local Kennametal representative for special insert profile designs and quoting.

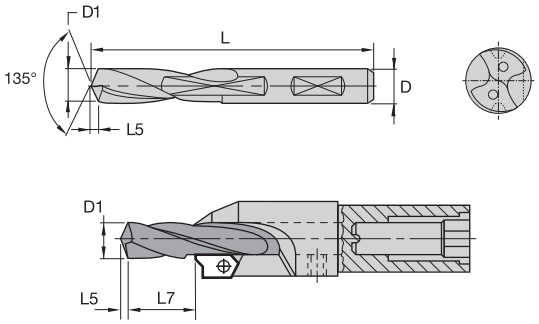
Use the table below to determine the maximum facing or counterboring diameter for a given BF drill diameter. Reference your chosen drill diameter across the bottom axis of the table and then read up and across to the left axis to find the maximum facing or counterboring diameter.

Possible Facing and Countersinking Diameter — for Machining Steel





SE_HPG Drills with Coolant



● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

B/K343_HPG — S-Shank

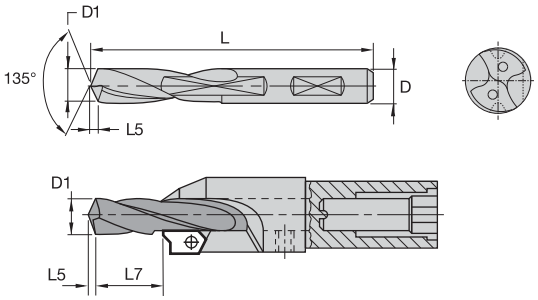
D1 mm	D1 inch	order number	catalog number	catalog number	D	L	L7 min	L7 max	L5	KC7315
3,40	.1339	2646277	B343S03400HPG	K343S01339HPG	4	55	1,0	10,0	0,6	●
3,50	.1378	2646278	B343S03500HPG	K343S01378HPG	4	55	1,6	10,6	0,6	●
3,80	.1495	2646279	B343S03797HPG	K343S01495HPG	4	55	3,3	12,3	0,7	●
3,80	.1496	2646280	B343S03800HPG	K343S01496HPG	4	55	3,3	12,3	0,7	●
3,97	.1563	2646281	B343S03970HPG	K343S01563HPG	4	55	4,2	13,2	0,7	●
4,00	.1575	2646282	B343S04000HPG	K343S01575HPG	4	55	4,4	13,4	0,7	●
4,10	.1614	2646333	B343S04100HPG	K343S01614HPG	5	62	3,7	13,7	0,8	●
4,20	.1654	2646334	B343S04200HPG	K343S01654HPG	5	62	4,2	14,2	0,8	●
4,30	.1693	2646335	B343S04300HPG	K343S01693HPG	5	62	4,7	14,7	0,8	●
4,50	.1772	2646336	B343S04500HPG	K343S01772HPG	5	62	5,6	15,6	0,8	●
4,60	.1811	2646337	B343S04600HPG	K343S01811HPG	5	62	5,8	15,8	0,8	●
4,62	.1820	2646338	B343S04623HPG	K343S01820HPG	5	62	5,9	15,9	0,9	●
4,76	.1875	2646339	B343S04763HPG	K343S01875HPG	5	62	6,6	16,6	0,9	●
4,90	.1929	2646340	B343S04900HPG	K343S01929HPG	5	62	7,2	17,2	0,9	●
5,00	.1969	2646341	B343S05000HPG	K343S01969HPG	5	62	7,6	17,6	0,9	●
5,10	.2008	2646342	B343S05100HPG	K343S02008HPG	6	66	6,8	17,8	0,9	●
5,20	.2047	2646343	B343S05200HPG	K343S02047HPG	6	66	7,2	18,2	1,0	●
5,30	.2087	2646344	B343S05300HPG	K343S02087HPG	6	66	7,6	18,6	1,0	●
5,40	.2126	2646345	B343S05400HPG	K343S02126HPG	6	66	8,0	19,0	1,0	●
5,41	.2130	2646346	B343S05410HPG	K343S02130HPG	6	66	8,0	19,0	1,0	●
5,50	.2165	2646347	B343S05500HPG	K343S02165HPG	6	66	8,4	19,4	1,0	●
5,55	.2185	2646348	B343S05550HPG	K343S02185HPG	6	66	8,3	19,3	1,0	●
5,56	.2188	2646349	B343S05558HPG	K343S02188HPG	6	66	8,4	19,4	1,0	●
5,60	.2205	2646350	B343S05600HPG	K343S02205HPG	6	66	8,5	19,5	1,0	●
5,80	.2283	2646351	B343S05800HPG	K343S02283HPG	6	66	9,3	20,3	1,1	●
6,00	.2362	2646352	B343S06000HPG	K343S02362HPG	6	66	10,0	21,0	1,1	●
6,10	.2402	2646112	B343S06100HPG	K343S02402HPGG	7	74	9,1	21,1	1,1	●
6,20	.2441	2646253	B343S06200HPG	K343S02441HPGG	7	74	9,5	21,5	1,1	●
6,30	.2480	2646254	B343S06300HPG	K343S02480HPG	7	74	9,8	21,8	1,2	●
6,35	.2500	2646255	B343S06350HPG	K343S02500HPG	7	74	10,0	22,0	1,2	●
6,40	.2520	2646256	B343S06400HPG	K343S02520HPG	7	74	10,2	22,2	1,2	●
6,50	.2559	2646257	B343S06500HPG	K343S02559HPG	7	74	10,5	22,5	1,2	●
6,53	.2570	2646258	B343S06528HPG	K343S02570HPG	7	74	10,6	22,6	1,2	●
6,60	.2598	2646259	B343S06600HPG	K343S02598HPG	7	74	10,9	22,9	1,2	●
6,70	.2638	2646260	B343S06700HPG	K343S02638HPG	7	74	11,2	23,2	1,2	●
6,75	.2656	2646261	B343S06746HPG	K343S02656HPG	7	74	11,4	23,4	1,2	●
6,80	.2677	2646262	B343S06800HPG	K343S02677HPG	7	74	11,5	23,5	1,3	●
6,90	.2717	2646263	B343S06900HPG	K343S02717HPG	7	74	11,9	23,9	1,3	●

Ordering Example:
By catalog number B343S0400HPG or K343S01339HPG,
or by order number 2646277.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	6	0,000/-0,008
>6 to 10	0,000/-0,016	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,018	12 to 18	0,000/-0,011

(continued on next page)



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B/K343_HPG — S-Shank

(continued from previous page)

D1 mm	D1 inch	order number	catalog number	catalog number	D	L	L7 min	L7 max	L5	KC7315
6,91	.2720	2646264	B343S06909HPG	K343S02720HPG	7	74	11,9	23,9	1,3	●
7,00	.2756	2646265	B343S07000HPG	K343S02756HPG	7	74	12,2	24,2	1,3	●
7,14	.2813	2646266	B343S07145HPG	K343S02813HPG	8	79	11,1	24,1	1,3	●
7,30	.2874	2646267	B343S07300HPG	K343S02874HPG	8	79	11,6	24,6	1,3	●
7,40	.2913	2646268	B343S07400HPG	K343S02913HPG	8	79	11,9	24,9	1,4	●
7,50	.2953	2646269	B343S07500HPG	K343S02953HPG	8	79	12,3	25,3	1,4	●
7,54	.2969	2646270	B343S07541HPG	K343S02969HPG	8	79	12,4	25,4	1,4	●
7,70	.3031	2646271	B343S07700HPG	K343S03031HPG	8	79	12,9	25,9	1,4	●
7,80	.3071	2646272	B343S07800HPG	K343S03071HPG	8	79	13,2	26,2	1,4	●
7,90	.3110	2646273	B343S07900HPG	K343S03110HPG	8	79	13,5	26,5	1,5	●
7,94	.3125	2646274	B343S07938HPG	K343S03125HPG	8	79	13,6	26,6	1,5	●
8,00	.3150	2646275	B343S08000HPG	K343S03150HPG	8	79	13,8	26,8	1,5	●
8,10	.3189	2651013	B343S08100HPG	K343S03189HPG	9	84	12,6	26,6	1,5	●
8,20	.3228	2651014	B343S08200HPG	K343S03228HPG	9	84	12,8	26,8	1,5	●
8,30	.3268	2651015	B343S08300HPG	K343S03268HPG	9	84	13,1	27,1	1,5	●
8,33	.3281	2651016	B343S08334HPG	K343S03281HPG	9	84	13,2	27,2	1,5	●
8,40	.3307	2651017	B343S08400HPG	K343S03307HPG	9	84	13,4	27,4	1,6	●
8,43	.3320	2651018	B343S08433HPG	K343S03320HPG	9	84	13,5	27,5	1,6	●
8,50	.3346	2651019	B343S08500HPG	K343S03346HPG	9	84	13,7	27,7	1,6	●
8,60	.3386	2651020	B343S08600HPG	K343S03386HPG	9	84	14,0	28,0	1,6	●
8,70	.3425	2651021	B343S08700HPG	K343S03425HPG	9	84	14,3	28,3	1,6	●
8,73	.3438	2651022	B343S08733HPG	K343S03438HPG	9	84	14,4	28,4	1,6	●
8,80	.3465	2651023	B343S08800HPG	K343S03465HPG	9	84	14,5	28,5	1,6	●
8,90	.3504	2651024	B343S08900HPG	K343S03504HPG	9	84	14,8	28,8	1,6	●
9,00	.3543	2651025	B343S09000HPG	K343S03543HPG	9	84	15,1	29,1	1,7	●
9,10	.3583	2651026	B343S09100HPG	K343S03583HPG	10	89	14,3	28,8	1,7	●
9,13	.3594	2651027	B343S09129HPG	K343S03594HPG	10	89	14,4	28,9	1,7	●
9,35	.3680	2651028	B343S09347HPG	K343S03680HPG	10	89	15,0	29,5	1,7	●
9,40	.3701	2651029	B343S09400HPG	K343S03701HPG	10	89	15,1	29,6	1,7	●
9,50	.3740	2651030	B343S09500HPG	K343S03740HPG	10	89	15,4	29,9	1,8	●
9,53	.3750	2651031	B343S09525HPG	K343S03750HPG	10	89	15,4	29,9	1,8	●
9,60	.3780	2651032	B343S09600HPG	K343S03780HPG	10	89	15,6	30,1	1,8	●
9,70	.3819	2651033	B343S09700HPG	K343S03819HPG	10	89	15,9	30,4	1,8	●
9,80	.3858	2651034	B343S09800HPG	K343S03858HPG	10	89	16,2	30,7	1,8	●
9,92	.3906	2651035	B343S09921HPG	K343S03906HPG	10	89	16,5	31,0	1,8	●
10,00	.3937	2651036	B343S10000HPG	K343S03937HPG	10	89	16,7	31,2	1,8	●
10,10	.3976	2646402	B343S10100HPG	K343S03976HPG	11	95	15,9	30,9	1,9	●
10,20	.4016	2646423	B343S10200HPG	K343S04016HPG	11	95	16,2	31,2	1,9	●

Ordering Example:

By catalog number B343S06909HPG or K343S02720HPG, or by order number 2646264.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	6	0,000/-0,008
>6 to 10	0,000/-0,016	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,018	12 to 18	0,000/-0,011

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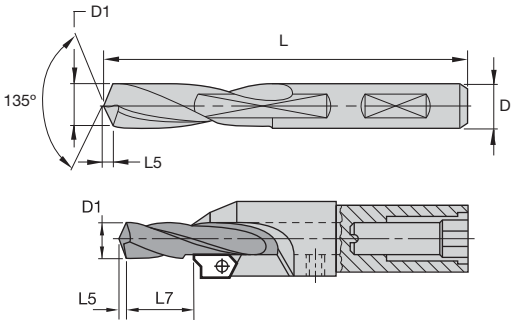

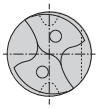

B/K343_HPG — S-Shank

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● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

D1 mm	D1 inch	order number	catalog number	catalog number	D	L	L7 min	L7 max	L5	KC7315
10,30	.4055	2646424	B343S10300HPG	K343S04055HPG	11	95	16,4	31,4	1,9	●
10,32	.4063	2646425	B343S10320HPG	K343S04063HPG	11	95	16,5	31,5	1,9	●
10,40	.4094	2646426	B343S10400HPG	K343S04094HPG	11	95	16,7	31,7	1,9	●
10,50	.4134	2646427	B343S10500HPG	K343S04134HPG	11	95	16,9	31,9	1,9	●
10,60	.4173	2646428	B343S10600HPG	K343S04173HPG	11	95	17,2	32,2	2,0	●
10,70	.4213	2646429	B343S10700HPG	K343S04213HPG	11	95	17,4	32,4	2,0	●
10,71	.4219	2646430	B343S10710HPG	K343S04219HPG	11	95	17,4	32,4	2,0	●
10,80	.4252	2646431	B343S10800HPG	K343S04252HPG	11	95	17,7	32,7	2,0	●
11,00	.4331	2646432	B343S11000HPG	K343S04331HPG	11	95	18,1	33,1	2,0	●
11,10	.4370	2646433	B343S11100HPG	K343S04370HPG	12	102	17,4	32,9	2,0	●
11,11	.4375	2646434	B343S11110HPG	K343S04375HPG	12	102	17,4	32,9	2,1	●
11,20	.4409	2646435	B343S11200HPG	K343S04409HPG	12	102	17,6	33,1	2,1	●
11,30	.4449	2646436	B343S11300HPG	K343S04449HPG	12	102	17,9	33,4	2,1	●
11,50	.4528	2646437	B343S11500HPG	K343S04528HPG	12	102	18,3	33,8	2,1	●
11,51	.4531	2646438	B343S11508HPG	K343S04531HPG	12	102	18,3	33,8	2,1	●
11,70	.4606	2646439	B343S11700HPG	K343S04606HPG	12	102	18,8	34,3	2,2	●
11,80	.4646	2646440	B343S11800HPG	K343S04646HPG	12	102	19,0	34,5	2,2	●
11,90	.4685	2646441	B343S11900HPG	K343S04688HPG	12	102	19,3	34,8	2,2	●
12,00	.4724	2646442	B343S12000HPG	K343S04724HPG	12	102	19,5	35,0	2,2	●
12,20	.4803	2646106	B343S12200HPG	K343S04803HPGG	13	102	18,9	34,9	2,3	●
12,30	.4843	2646107	B343S12300HPG	K343S04844HPGG	13	102	19,2	35,3	2,3	●
12,50	.4921	2646108	B343S12500HPG	K343S04921HPG	13	102	19,6	35,6	2,3	●

Ordering Example:

By catalog number B343S10300HPG or K343S04055HPG, or by order number 2646424.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	6	0,000/-0,008
>6 to 10	0,000/-0,016	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,018	12 to 18	0,000/-0,011

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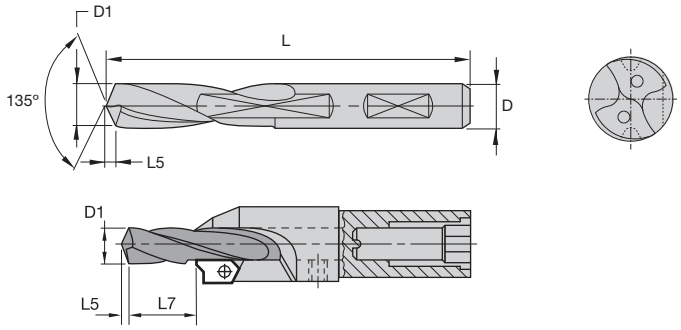


● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

B/K343_HPG — S-Shank

(continued from previous page)

D1 mm	D1 inch	order number	catalog number	catalog number	D	L	L7 min	L7 max	L5	KC7315
12,70	.5000	2646109	B343S12700HPG	K343S05000HPG	13	102	20,1	36,1	2,3	●
12,80	.5039	2646110	B343S12800HPG	K343S05039HPG	13	102	20,3	36,3	2,4	●
13,00	.5118	2646111	B343S13000HPG	K343S05118HPG	13	102	20,7	36,7	2,4	●
13,10	.5156	2646383	B343S13096HPG	K343S05156HPG	14	107	20,2	36,7	2,4	●
13,10	.5157	2646384	B343S13100HPG	K343S05157HPG	14	107	20,2	36,7	2,4	●
13,20	.5197	2646385	B343S13200HPG	K343S05197HPG	14	107	20,4	36,9	2,4	●
13,50	.5315	2646386	B343S13500HPG	K343S05315HPG	14	107	21,1	37,6	2,5	●
14,00	.5512	2646387	B343S14000HPG	K343S05512HPG	14	107	22,1	38,6	2,6	●
14,10	.5551	2646388	B343S14100HPG	K343S05551HPG	15	111	21,3	38,3	2,6	●
14,20	.5591	2646389	B343S14200HPG	K343S05591HPG	15	111	21,5	38,5	2,6	●
14,28	.5625	2646390	B343S14280HPG	K343S05625HPG	15	111	21,7	38,7	2,6	●
15,00	.5906	2646391	B343S15000HPG	K343S05906HPG	15	111	23,2	40,2	2,8	●
15,50	.6102	2646392	B343S15500HPG	K343S06102HPG	16	115	23,2	40,7	2,9	●
15,87	.6250	2646393	B343S15870HPG	K343S06250HPG	16	115	23,9	41,4	2,9	●
16,00	.6299	2646394	B343S16000HPG	K343S06299HPG	16	115	24,2	41,7	3,0	●
16,50	.6496	2646395	B343S16500HPG	K343S06496HPG	17	115	24,2	42,2	3,0	●
16,67	.6563	2646396	B343S16670HPG	K343S06562HPG	17	115	24,5	42,5	3,1	●
17,00	.6693	2646397	B343S17000HPG	K343S06693HPG	17	115	25,1	43,1	3,1	●
17,46	.6875	2646398	B343S17460HPG	K343S06875HPG	18	117	25,0	43,5	3,2	●
17,50	.6890	2646399	B343S17500HPG	K343S06890HPG	18	117	25,1	43,6	3,2	●
17,70	.6969	2646400	B343S17700HPG	K343S06969HPG	18	117	25,5	44,0	3,3	●
18,00	.7087	2646401	B343S18000HPG	K343S07087HPG	18	117	26,0	44,5	3,3	●

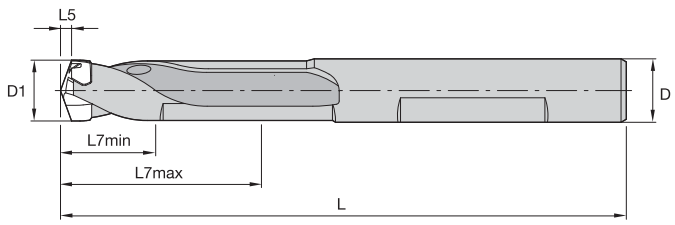
Ordering Example:

By catalog number B343S12700HPG or K343S05000HPG, or by order number 2646109.

Tolerance

D1	Tolerance h7	D	Tolerance h6
>3 to 6	0,000/-0,012	6	0,000/-0,008
>6 to 10	0,000/-0,016	8 to 10	0,000/-0,009
>10 to 18	0,000/-0,018	12 to 18	0,000/-0,011

KenTIP BF Bodies



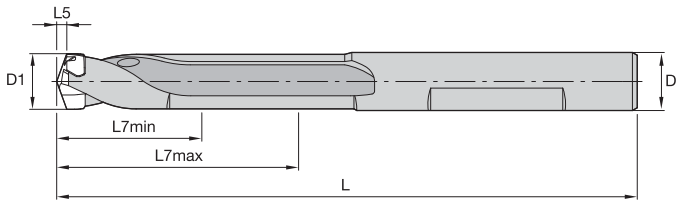
Included:
Tool body with insert wrench.

See pages B11–B20.

KenTIP 3xD — Metric

D1 mm		D1 inch									
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L7 min	L7 max	L5
7,938	8,499	.3125	.3346	2633730	KTIP080R3BF08M	F	8	80	11,5	25,5	1,4
7,938	8,499	.3125	.3346	2888501	KTIP080R3BF09M	F	9	81	11,5	25,5	1,4
8,500	8,999	.3346	.3543	2888502	KTIP085R3BF09M	G	9	82	12,5	27,0	1,5
9,000	9,499	.3543	.3740	2888893	KTIP090R3BF09M	H	9	82	13,5	28,5	1,6
9,000	9,499	.3543	.3740	2888894	KTIP090R3BF10M	H	10	91	13,5	28,5	1,6
9,500	9,999	.3740	.3937	2888895	KTIP095R3BF10M	I	10	92	15,0	30,0	1,6
10,000	10,499	.3937	.4133	2888896	KTIP100R3BF10M	J	10	93	16,0	31,5	1,7
10,000	10,499	.3937	.4133	2888897	KTIP100R3BF11M	J	11	94	16,0	31,5	1,7
10,500	10,999	.4134	.4330	2888898	KTIP105R3BF11M	K	11	94	17,0	33,0	1,8
11,000	11,499	.4331	.4527	2888899	KTIP110R3BF11M	L	11	96	18,5	34,5	1,9
11,000	11,499	.4331	.4527	2888900	KTIP110R3BF12M	L	12	106	18,5	34,5	1,9
11,500	11,999	.4528	.4724	2888901	KTIP115R3BF12M	M	12	107	19,5	36,0	2,0
12,000	12,499	.4724	.4921	2888902	KTIP120R3BF12M	N	12	108	20,5	37,5	2,1
12,000	12,499	.4724	.4921	2888903	KTIP120R3BF13M	N	13	108	20,5	37,5	2,1
12,500	12,999	.4921	.5118	2888904	KTIP125R3BF13M	O	13	110	22,0	39,0	2,2
13,000	13,499	.5118	.5315	2888906	KTIP130R3BF14M	P	14	111	23,0	40,5	2,2
13,000	13,499	.5118	.5315	2888905	KTIP130R3BF13M	P	13	111	23,0	40,5	2,2
13,500	13,999	.5315	.5511	2888907	KTIP135R3BF14M	Q	14	112	24,5	42,0	2,3
14,000	14,499	.5512	.5708	2888908	KTIP140R3BF14M	R	14	113	25,5	43,5	2,4
14,000	14,499	.5512	.5708	2888909	KTIP140R3BF15M	R	15	118	25,5	43,5	2,4
14,500	14,999	.5709	.5905	2888910	KTIP145R3BF15M	S	15	118	26,5	45,0	2,5
15,000	15,990	.5906	.6300	2888912	KTIP150R3BF16M	T	16	121	29,0	48,0	2,6
15,000	15,990	.5906	.6300	2888911	KTIP150R3BF15M	T	15	121	29,0	48,0	2,6
16,000	16,999	.6299	.6693	2888913	KTIP160R3BF16M	U	16	123	31,5	51,0	2,8
16,000	16,999	.6299	.6693	2633732	KTIP160R3BF17M	U	17	124	31,5	51,0	2,8
17,000	17,999	.6693	.7086	3324494	KTIP170R3BF18M	V	18	127	34,0	54,0	2,9
17,000	17,999	.6693	.7086	3324493	KTIP170R3BF17M	V	17	127	34,0	54,0	2,9
18,000	18,999	.7087	.7480	3324495	KTIP180R3BF18M	W	18	130	36,5	57,0	3,1

Ordering Example:
By catalog number KTIP080R3BF08M, or by order number 2633730.
Order extra wrench by catalog number 170.314, or by order number 2618743.



Included:
Tool body with insert wrench.

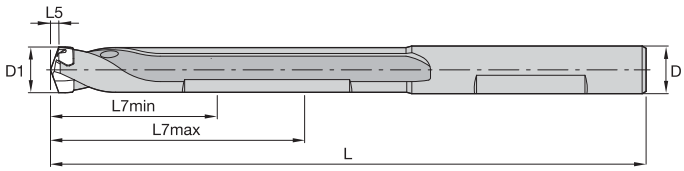
See pages B11–B20.

KenTIP 4xD — Metric

D1 mm		D1 inch									
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L7 min	L7 max	L5
8,000	8,499	.3150	.3346	2888086	KTIP080R4BF09M	F	9	90	20,0	34,0	1,4
8,500	8,999	.3346	.3543	2888087	KTIP085R4BF09M	G	9	91	21,5	36,0	1,5
9,000	9,499	.3543	.3740	2888088	KTIP090R4BF10M	H	10	101	23,0	38,0	1,6
9,500	9,999	.3740	.3937	2888089	KTIP095R4BF10M	I	10	102	25,0	40,0	1,6
10,000	10,490	.3937	.4130	2888090	KTIP100R4BF11M	J	11	105	26,5	42,0	1,7
10,500	10,999	.4134	.4330	2888091	KTIP105R4BF11M	K	11	105	28,0	44,0	1,8
11,000	11,499	.4331	.4527	2888092	KTIP110R4BF12M	L	12	118	30,0	46,0	1,9
11,500	11,999	.4528	.4724	2889053	KTIP115R4BF12M	M	12	119	31,5	48,0	2,0
12,000	12,499	.4724	.4921	2889054	KTIP120R4BF13M	N	13	121	33,0	50,0	2,1
12,500	12,999	.4921	.5118	2889055	KTIP125R4BF13M	O	13	123	35,0	52,0	2,2
13,000	13,499	.5118	.5315	2889056	KTIP130R4BF14M	P	14	125	36,5	54,0	2,2
13,500	13,999	.5315	.5511	2889057	KTIP135R4BF14M	Q	14	126	38,5	56,0	2,3
14,000	14,499	.5512	.5708	2889058	KTIP140R4BF15M	R	15	133	40,0	58,0	2,4
14,500	14,999	.5709	.5905	2889059	KTIP145R4BF15M	S	15	133	41,5	60,0	2,5
15,000	15,999	.5906	.6299	2889060	KTIP150R4BF16M	T	16	137	45,0	64,0	2,6
16,000	16,999	.6299	.6693	2889061	KTIP160R4BF17M	U	17	141	48,5	68,0	2,8
17,000	17,990	.6693	.7083	3324496	KTIP170R4BF18M	V	18	145	52,0	72,0	–
18,000	18,990	.7087	.7476	3324497	KTIP180R4BF18M	W	18	149	55,5	76,0	–

Ordering Example:
By catalog number KTIP080R3BF08M, or by order number 2633730.
Order extra wrench by catalog number 170.314, or by order number 2618743.

KenTIP BF Bodies



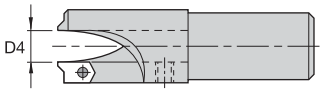
Included:
Tool body with insert wrench.

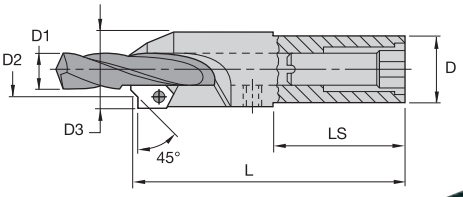
See pages B11–B20.

KenTIP 5xD — Metric

D1 mm		D1 inch									
D1	D1 max	D1	D1 max	order number	catalog number	insert blade seat size	D	L	L7 min	L7 max	L5
7,938	8,499	.3125	.3346	2889062	KTIP080R5BF09M	F	9	98	28,5	42,5	1,4
8,500	8,999	.3346	.3543	2889063	KTIP085R5BF09M	G	9	100	30,5	45,0	1,5
9,000	9,499	.3543	.3740	2633731	KTIP090R5BF10M	H	10	110	32,5	47,5	1,6
9,500	9,999	.3740	.3937	2889064	KTIP095R5BF10M	I	10	112	35,0	50,0	1,6
10,000	10,499	.3937	.4133	2889065	KTIP100R5BF11M	J	11	115	37,0	52,5	1,7
10,500	10,999	.4134	.4330	2889066	KTIP105R5BF11M	K	11	116	39,0	55,0	1,8
11,000	11,499	.4331	.4527	2889067	KTIP110R5BF12M	L	12	129	41,5	57,5	1,9
11,500	11,999	.4528	.4724	2889068	KTIP115R5BF12M	M	12	131	43,5	60,0	2,0
12,000	12,499	.4724	.4921	2889069	KTIP120R5BF13M	N	13	133	45,5	62,5	2,1
12,500	12,999	.4921	.5118	2889070	KTIP125R5BF13M	O	13	136	48,0	65,0	2,2
13,000	13,499	.5118	.5315	2889071	KTIP130R5BF14M	P	14	138	50,0	67,5	2,2
13,500	13,990	.5315	.5508	2889072	KTIP135R5BF14M	Q	14	140	52,5	70,0	2,3
14,000	14,499	.5512	.5708	2889073	KTIP140R5BF15M	R	15	147	54,5	72,5	2,4
14,500	14,999	.5709	.5905	2889074	KTIP145R5BF15M	S	15	148	56,5	75,0	2,5
15,000	15,999	.5906	.6299	2889075	KTIP150R5BF16M	T	16	153	61,0	80,0	2,6
16,000	16,999	.6299	.6693	2889076	KTIP160R5BF17M	U	17	158	65,5	85,0	2,8
17,000	17,990	.6693	.7083	3324498	KTIP170R5BF18M	V	18	163	70,0	90,0	2,9
18,000	18,990	.7087	.7476	3324499	KTIP180R5BF18M	W	18	168	74,5	95,0	3,1

Ordering Example:
By catalog number KTIP080R5BF08M, or by order number 2889062.
Order extra wrench by catalog number 170.314, or by order number 2618743.





- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills up to and including 9 mm shanks use only one insert.
- Some metric drills may be used in inch bodies. Contact your Kennametal representative.

***NOTE:** Dimensions are factored with a 45° insert positioned in insert pocket.*

Round Shank — Inch

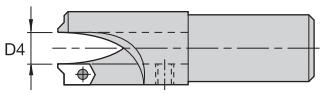
D1 min	D1 max.	order number	catalog number	D4	D	D2	D3	L	LS	insert
.1250	.1563	1246688	KBFI4	4	.750	.360	.585	3.34	1.97	3.41020R901
.1820	.1875	1246691	KBFI5B	5	.750	.400	.624	3.34	1.97	3.41020R901
.2130	.2188	1246696	KBFI6B	6	.750	.440	.664	3.34	1.97	3.41020R901
.2500	.2656	1246700	KBFI7	7	.750	.460	.684	3.73	1.97	3.41020R901
.2813	.3125	1246703	KBFI8	8	.750	.500	.724	3.74	1.97	3.41020R901
.3281	.3438	1246704	KBFI9	9	1.000	.540	.764	4.21	2.20	3.41020R901
.3594	.3906	1246707	KBFI10	10	1.000	.581	1.099	4.53	2.20	3.41220R901
.4063	.4219	1246708	KBFI11	11	1.000	.620	1.138	4.53	2.20	3.41220R901
.4375	.4688	1246710	KBFI12	12	1.000	.660	1.177	4.92	2.20	3.41220R901
.4844	.5000	1246714	KBFI13	13	1.000	.699	1.221	4.91	2.20	3.41220R901
.5156	–	1770928	KBFI14	14	1.250	.720	1.240	4.91	2.40	3.41220R901
.5625	–	1246716	KBFI15	15	1.250	.759	1.280	4.91	2.36	3.41220R901
.6250	–	1246718	KBFI16	16	1.250	.799	1.319	5.06	2.36	3.41220R901
.6562	–	1770929	KBFI17	17	1.250	.839	1.358	4.91	2.40	3.41220R901
.6875	–	1246720	KBFI18	18	1.250	.880	1.398	4.91	2.36	3.41220R901

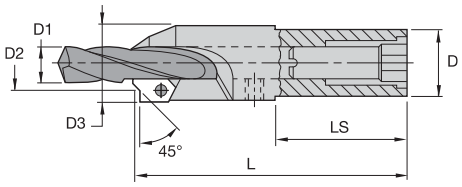
catalog number	back-up screw	drill clamp screw	insert screw	wrench
KBFI10	192.889	192.720	191.725	170.025
KBFI11	192.889	192.720	191.725	170.025
KBFI12	192.889	192.720	191.725	170.025
KBFI13	192.889	192.720	191.725	170.025
KBFI14	192.889	192.720	191.725	170.025
KBFI15	192.887	192.720	191.725	170.025
KBFI16	192.887	192.720	191.725	170.025
KBFI17	192.887	192.720	191.725	170.025
KBFI18	192.887	192.720	191.725	170.025
KBFI4	192.888	192.718	192.432	170.028
KBFI5B	192.888	192.718	192.432	170.028
KBFI6B	192.888	192.718	192.432	170.028
KBFI7	192.888	192.718	192.432	170.028
KBFI8	192.888	192.718	192.432	170.028
KBFI9	192.889	192.718	192.432	170.028

Ordering Example:
By catalog number KBFI4, or by order number 1246688.

KENNAMETAL

BF Bodies





- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills up to and including 9 mm shanks use only one insert.
- Some metric drills may be used in inch bodies. Contact your Kennametal representative.

Round Shank — Metric DIN 1835 Form A

***NOTE:** Dimensions are factored with a 45° insert positioned in insert pocket.*

D1 min	D1 max.	order number	catalog number	D4	D	D2	D3	L	LS	insert
3,40	4,00	1245716	3.37042R320	4	20	9,0	14,9	85	50	3.41020R901
4,60	5,00	1191046	3.37052R320	5	20	10,0	15,9	85	50	3.41020R901
4,10	4,50	1245718	3.37051R320	5	20	9,5	15,4	85	50	3.41020R901
5,10	5,50	1191048	3.37061R320	6	20	10,5	16,4	85	50	3.41020R901
5,55	6,00	1245720	3.37062R320	6	20	11,0	16,9	85	50	3.41020R901
6,10	7,00	1191050	3.37071R320	7	20	11,5	17,4	95	50	3.41020R901
7,30	8,00	1245722	3.37081R320	8	20	12,6	18,4	95	50	3.41020R901
7,30	8,00	2951629	3.37082R320	8	20	12,7	18,4	97	50	3.41020R901
8,10	9,00	2951631	3.37092R320	9	20	13,7	19,4	97	50	3.41020R901
8,10	9,00	1191052	3.37091R320	9	20	13,6	19,4	95	50	3.41020R901
9,10	10,00	1245724	3.37101R332	10	32	14,7	27,9	115	60	3.41220R901
10,10	11,00	1191056	3.37111R332	11	32	15,7	28,9	115	60	3.41220R901
11,10	12,00	1245725	3.37121R332	12	32	16,7	29,9	125	60	3.41220R901
12,20	13,00	1191060	3.37131R332	13	32	17,7	31,0	125	60	3.41220R901
13,10	14,00	1245727	3.37141R332	14	32	18,2	31,5	125	60	3.41220R901
14,10	15,00	1191063	3.37151R332	15	32	19,3	32,5	125	60	3.41220R901
15,50	16,00	1245729	3.37161R332	16	32	20,3	33,5	125	60	3.41220R901
16,50	17,00	1245731	3.37171R332	17	32	21,3	34,5	125	60	3.41220R901
17,50	18,00	1245733	3.37181R332	18	32	22,3	35,5	125	60	3.41220R901

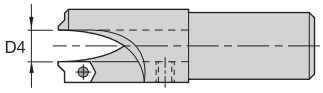
Spare Parts

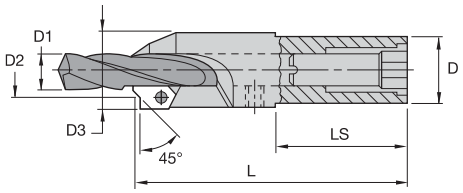
***NOTE:** Dimensions are factored with a 45° insert positioned in insert pocket.*

catalog number	back-up screw	drill clamp screw	hex wrench	insert screw	wrench
3.37042R320	192.888	192.718	170.003	192.432	170.028
3.37051R320	192.888	192.718	170.003	192.432	170.028
3.37052R320	192.888	192.718	170.003	192.432	170.028
3.37061R320	192.888	192.718	170.003	192.432	170.028
3.37062R320	192.888	192.718	170.003	192.432	170.028
3.37071R320	192.888	192.718	170.003	192.432	170.028
3.37081R320	192.888	192.718	170.003	192.432	170.028
3.37082R320	192.888	192.718	170.003	192.432	170.028
3.37091R320	192.888	192.718	170.003	192.432	170.028
3.37092R320	192.888	192.718	170.003	192.432	170.028
3.37101R332	192.889	192.720	170.005	191.725	170.025
3.37111R332	192.889	192.720	170.005	191.725	170.025
3.37121R332	192.889	192.720	170.005	191.725	170.025
3.37131R332	192.889	192.720	170.005	191.725	170.025
3.37141R332	192.889	192.720	170.005	191.725	170.025
3.37151R332	192.887	192.720	170.005	191.725	170.025
3.37161R332	192.887	192.720	170.005	191.725	170.025
3.37171R332	192.887	192.720	170.005	191.725	170.025
3.37181R332	192.887	192.720	170.005	191.725	170.025

Ordering Example:
By catalog number 3.37042R320, or by order number 1245716.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





- Drill body shipped with all screws and wrenches.
- Order the inserts and drills separately.
- Drills up to and including 9 mm shanks use only one insert.
- Some metric drills may be used in inch bodies. Contact your Kennametal representative.

2° Whistle Notch Shank — Metric

D1 min	D1 max	order number	catalog number	D4	D	D22	D3	L	LS	insert
3,40	4,00	1245717	3.37042R820	4	20	9,0	14,9	85	50	3.41020R901
4,10	4,50	1245719	3.37051R820	5	20	9,5	15,4	85	50	3.41020R901
4,60	5,00	1191047	3.37052R820	5	20	10,0	15,9	85	50	3.41020R901
5,10	5,50	1191049	3.37061R820	6	20	10,5	16,4	85	50	3.41020R901
5,55	6,00	1245721	3.37062R820	6	20	11,0	16,9	85	50	3.41020R901
6,10	7,00	1191051	3.37071R820	7	20	11,5	17,4	95	50	3.41020R901
7,30	8,00	1245723	3.37081R820	8	20	12,6	18,4	95	50	3.41020R901
8,10	9,00	1191053	3.37091R820	9	20	13,6	19,4	95	50	3.41020R901
9,10	10,00	1191055	3.37101R832	10	32	14,7	27,9	115	60	3.41220R901
10,10	11,00	1191057	3.37111R832	11	32	15,7	28,9	115	60	3.41220R901
11,10	12,00	1191059	3.37121R832	12	32	16,7	29,9	125	60	3.41220R901
12,20	13,00	1245726	3.37131R832	13	32	17,7	31,0	125	60	3.41220R901
13,10	14,00	1191062	3.37141R832	14	32	18,2	31,5	125	60	3.41220R901
14,10	15,00	1245728	3.37151R832	15	32	19,3	32,5	125	60	3.41220R901
15,50	16,00	1245730	3.37161R832	16	32	20,3	33,5	125	60	3.41220R901
16,50	17,00	1245732	3.37171R832	17	32	21,3	34,5	125	60	3.41220R901
17,50	18,00	1245734	3.37181R832	18	32	22,3	35,5	125	60	3.41220R901

***NOTE:** Dimensions are factored with a 45° insert positioned in insert pocket.*

Spare Parts

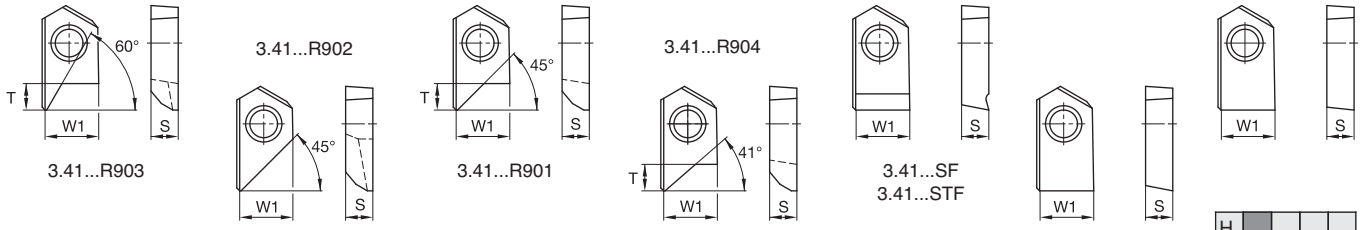
catalog number	back-up screw	drill clamp screw	hex wrench	insert screw	wrench
3.37042R820	192.888	192.718	170.003	192.432	170.028
3.37051R820	192.888	192.718	170.003	192.432	170.028
3.37052R820	192.888	192.718	170.003	192.432	170.028
3.37061R820	192.888	192.718	170.003	192.432	170.028
3.37062R820	192.888	192.718	170.003	192.432	170.028
3.37071R820	192.888	192.718	170.003	192.432	170.028
3.37081R820	192.888	192.718	170.003	192.432	170.028
3.37091R820	192.888	192.718	170.003	192.432	170.028
3.37101R832	192.889	192.720	170.005	191.725	170.025
3.37111R832	192.889	192.720	170.005	191.725	170.025
3.37121R832	192.889	192.720	170.005	191.725	170.025
3.37131R832	192.889	192.720	170.005	191.725	170.025
3.37141R832	192.889	192.720	170.005	191.725	170.025
3.37151R832	192.887	192.720	170.005	191.725	170.025
3.37161R832	192.887	192.720	170.005	191.725	170.025
3.37171R832	192.887	192.720	170.005	191.725	170.025
3.37181R832	192.887	192.720	170.005	191.725	170.025

Ordering Example:
By catalog number 3.37042R820, or by order number 1245717.

BF Inserts

Technical Note:

- Standard steel drill bodies are designed for inserts with 41° and 45° chamfers.
- When using the 60° insert or special insert, the assembled tool should be inspected.
- These insert combinations require that the steel body be altered to provide insert coverage.



● first choice
○ alternate choice

	CS5	KC7315	KMF
H			
S			
N			●
K	●	●	○
M	●		
P	●	●	

BF Inserts

catalog number	insert description	S mm	S inch	W1 mm	W1 inch	T mm	T inch	CS5	KC7315	KMF
3.41020R900	BF semi-finished	3,00	.118	6,1	.240	–	–			●
3.41020R900SF	BF finished spotface	3,00	.118	6,1	.240	–	–			●
3.41020R900STF	BF finished spotface	3,00	.118	6,1	.240	–	–	●		
3.41020R901	BF chamfer	3,00	.118	6,1	.240	2,90	.114	●	●	
3.41020R902	BF chamfer	3,00	.118	6,1	.240	–	–	●	●	
3.41020R903	BF chamfer	3,00	.118	6,1	.240	2,90	.114	●	●	
3.41020R904	BF chamfer	3,00	.118	6,1	.240	2,90	.114		●	
3.41220R900	BF semi-finished	3,50	.138	10,1	.398	–	–			●
3.41220R900SF	BF finished spotface	3,50	.138	10,1	.398	–	–			●
3.41220R900STF	BF finished spotface	3,50	.138	10,1	.398	–	–	●		
3.41220R901	BF chamfer	3,50	.138	10,1	.398	3,05	.120	●	●	
3.41220R902	BF chamfer	3,50	.138	10,1	.398	–	–	●	●	
3.41220R903	BF chamfer	3,50	.138	10,1	.398	3,05	.120	●	●	
3.41220R904	BF chamfer	3,50	.138	10,1	.398	3,05	.120		●	

Ordering Example:
By catalog number 3.41020R900.

KenTIP Custom Solutions

- Drilling and chamfering in one operation.
- No height adjustment required.
- Low set-up time.

SEFAS™ Combination Drilling System

Primary Application

Combines centering, drilling, and chamfering into a single operation, increasing productivity due by reducing cycle time and number of tool changes. These productivity gains can be achieved by still using standard Solid Carbide or KenTIP Drills. The system provides full through coolant capabilities.

Features and Benefits

Using Standard SE_HP and TX Drills

- Any style of standard HP Drill can be used achieving highest metal removal rate.
- TX Drill combines excellent hole quality and tool life in nonferrous materials.

Using Standard KenTIP Bodies

- Easy to change right inside the machine or holder.
- No reconditioning required, reducing the number of tools in inventory.

Three Standard Shank Styles

- Monoblock HSK Shank for metric drills combines high-performance drilling with the popular HSK Shank. Reduces run-out, overall tool length, and cost of an additional adapter.
- Cylindrical shank recommended for use with Kennametal Hydraulic Chucks for increased accuracy and tool life due to a very low run-out.
- Whistle Notch shank.

SEFAS Inserts

- Standard inserts available with various angles and grades for use in most workpiece materials.

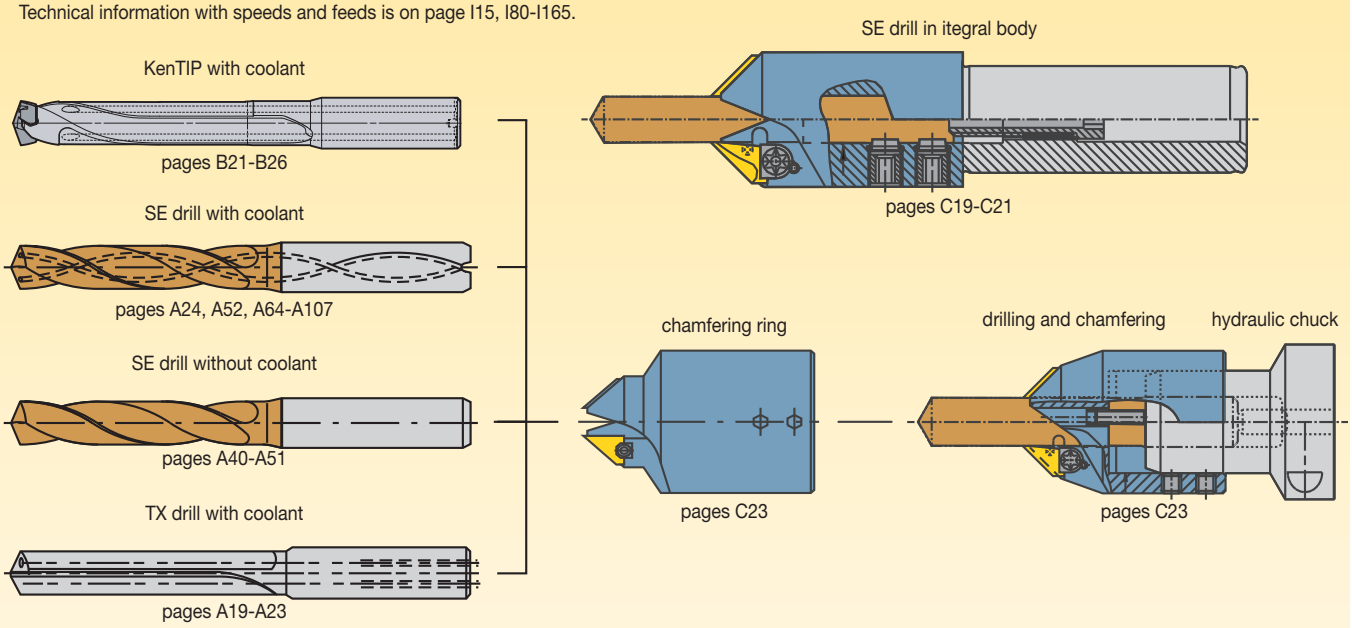
Customization

- Length variations available as custom solutions.

SEFAS Combination System Options

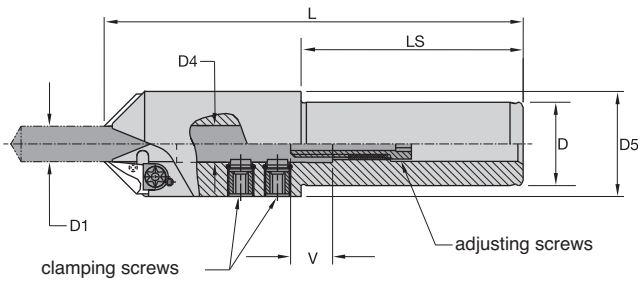
SEFAS Combination System Options

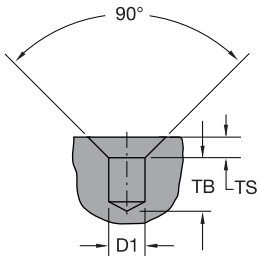
Technical information with speeds and feeds is on page I15, I80-I165.



The SEFAS combination drilling system may be used in most workpiece materials. The design and flexibility of the system can be used with a wide variety of solid carbide drills. See pages A2-A129 for drill information.

Three types of SEFAS chamfering tools are offered: (a) integral bodies, with a compact design that provides additional workpiece and workholding clearance; (b) chamfering rings that may be mounted to Kennametal hydraulic chucks for optimal drill performance and increased productivity; and (c) high-performance HSK bodies for new machine spindles and high output applications.





- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.

Round Shank — Inch — for use with Inch Drills

D1 min	D1 max	order number	catalog number	D	D4	D5	L	LS	V	insert catalog number	insert clamp	Torx wrench	drill clamp screw	adjusting screw
.1560	.188	1604277	SEF156187RSS075	.750	.188	.94	4.06	2.00	.709	3.42805R001	360.550	170.024	360.650	360.516
>0.1880	.250	1604278	SEF218250RSS075	.750	.250	.97	4.13	2.00	.709	3.42805R001	360.550	170.024	360.651	360.510
>0.2500	.313	1604279	SEF265312RSS075	.750	.313	1.03	4.31	2.00	.709	3.42805R001	360.550	170.024	360.652	360.510
>0.3130	.375	1604280	SEF328375RSS075	.750	.375	1.16	4.63	2.00	.669	3.42805R001	360.550	170.024	360.653	360.510
>0.3750	.438	1604301	SEF390437RSS100	1.000	.438	1.47	5.75	3.00	.748	3.42807R001	360.551	170.025	360.654	360.513
>0.4380	.500	1604302	SEF453500RSS100	1.000	.500	1.53	5.88	3.00	.827	3.42807R001	360.551	170.025	360.655	360.513
>0.5000	.563	1604303	SEF500562RSS100	1.000	.563	1.59	6.06	3.00	.630	3.42807R001	360.551	170.025	360.656	360.511
>0.5630	.625	1604304	SEF562625RSS125	1.250	.625	1.66	6.44	3.25	.748	3.42807R001	360.551	170.025	360.657	360.511
>0.6250	.688	1604305	SEF625687RSS125	1.250	.688	1.81	6.50	3.25	.591	3.42807R001	360.551	170.025	360.658	360.511
>0.6880	.750	1604306	SEF687750RSS125	1.250	.750	1.88	6.56	3.25	.669	3.42807R001	360.551	170.025	360.659	360.511
>0.7500	.813	1956692	SEF750812RSS125	1.250	.813	1.94	6.63	3.25	.669	3.42807R001	360.551	170.025	360.679	360.511
>0.8130	.875	1956753	SEF812875RSS150	1.500	.875	2.09	7.25	3.75	.630	3.42807R001	360.551	170.025	360.680	360.511
>0.8750	.938	1956754	SEF875937RSS150	1.500	.938	2.16	7.38	3.75	.709	3.42807R001	360.551	170.025	360.681	360.511
>0.9380	1.010	1956755	SEF9371010RSS150	1.500	1.000	2.25	7.50	3.75	.709	3.42807R001	360.551	170.025	360.682	360.511

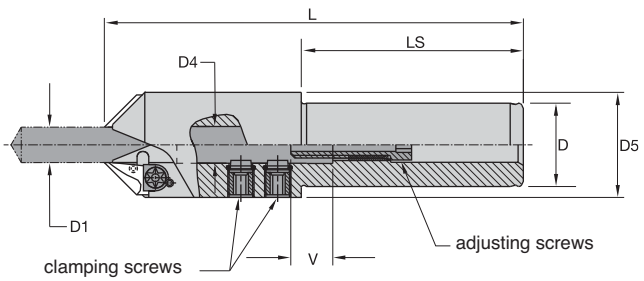
Achievable Drilling (TB) and Sink Depths (TS)

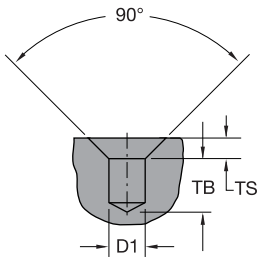
	K210A_HP, K284A		K211A_HP, K285A, K222A, K225A, K411A		K212A_HP, K256A		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel		
drill diameter D1	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
.156–.188	.236	.866	.472	1.102	.866	1.102	.047	.071	.098
>.188–.250	.354	1.024	.709	1.378	1.220	1.890	.059	.087	.118
>.250–.266	.433	1.102	.906	1.575	1.654	2.323	.079	.118	.157
>.266–.313	.433	1.102	.906	1.575	1.654	2.323	.098	.157	.197
>.313–.375	.512	1.142	1.063	1.693	1.929	2.559	.118	.197	.236
>.375–.438	.551	1.260	1.142	1.850	2.008	2.717	.138	.197	.276
>.438–.500	.591	1.378	1.220	2.008	2.205	2.992	.157	.236	.315
>.500–.563	.827	1.417	1.496	2.087	2.717	3.307	.157	.236	.315
>.563–.625	.866	1.575	1.575	2.283	3.071	3.780	.157	.236	.315
>.625–.688	1.299	1.850	2.087	2.638	3.740	4.291	.157	.236	.315
>.688–.750	1.378	2.008	2.126	2.756	4.055	4.685	.157	.236	.315
>.750–.813	1.552	2.181	2.260	2.890	4.386	5.016	.157	.236	.315
>.813–.875	1.702	2.293	2.726	3.317	4.694	5.285	.157	.236	.315
>.875–.938	1.735	2.404	2.876	3.546	4.884	5.554	.157	.236	.315
>.938–1.010	1.846	2.515	3.067	3.736	5.193	5.862	.157	.236	.315

***NOTE:** TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.*
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

Ordering Example:
By catalog number SEF156187RSS075, or by order number 1604277.

SEFAS Bodies





- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.

Round Shank — Inch — for use with Metric Drills

D1 min	D1 max	order number	catalog number	D4	D5	D	L	LS	V	insert catalog number	insert clamp	Torx wrench	drill clamp screw	adjusting screw
4,0	6,0	1604140	SEF040060RSS075M	6	.94	.750	4.06	2.00	.709	3.42805R001	360.550	170.024	360.630	360.510
>6,0	8,0	1604271	SEF060080RSS075M	8	1.02	.750	4.31	2.00	.709	3.42805R001	360.550	170.024	360.634	360.510
>8,0	10,0	1604272	SEF080100RSS100M	10	1.14	1.000	5.63	3.00	.669	3.42805R001	360.550	170.024	360.631	360.510
>10,0	12,0	1604273	SEF100120RSS125M	12	1.50	1.250	6.13	3.25	.827	3.42807R001	360.551	170.025	360.635	360.513
>12,0	14,0	1604274	SEF120140RSS125M	14	1.57	1.250	6.31	3.25	.630	3.42807R001	360.551	170.025	360.636	360.511
>14,0	16,0	1604275	SEF140160RSS125M	16	1.63	1.250	6.44	3.25	.748	3.42807R001	360.551	170.025	360.632	360.511
>16,0	18,0	1604276	SEF160180RSS125M	18	1.85	1.250	6.56	3.25	.591	3.42807R001	360.551	170.025	360.633	360.511
>18,0	20,0	1956691	SEF180200RSS125M	20	1.93	1.250	6.69	3.25	.669	3.42807R001	360.551	170.025	360.637	360.511

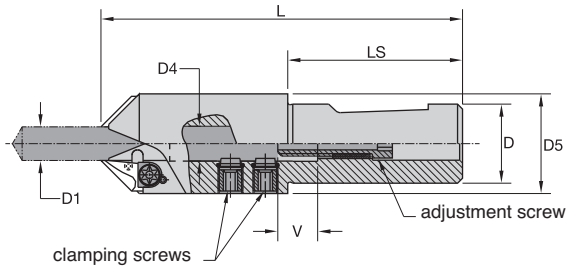
Achievable Drilling (TB) and Sink Depths (TS)

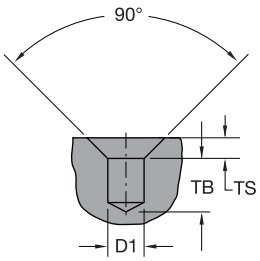
drill diameter D1	B210A_HP, B221A_HP, B224A_HP, B254A_HPC, B284A TB_{min}	B210A_HP, B221A_HP, B224A_HP, B254A_HPC, B284A TB_{max}	B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A, B285A TB_{min}	B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A, B285A TB_{max}	B212A_HP, B256A, B256A_HPC TB_{min}	B212A_HP, B256A, B256A_HPC TB_{max}	unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel TS_{100}	TS_{80}	TS_{max}
4,0–4,7	4	17	12	29	20	36	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	4,0	6,0	8,0

**** NOTE:***
TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

Ordering Example:
By catalog number SEF040060RSS075M, or by order number 1604140.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.

SEFAS 2° Whistle Notch (WN) Drill Bodies — for use with Metric Drills

D1 min	D1 max	order number	catalog number	D4	D5	D	L	LS	V	insert catalog number	insert clamp	Torx wrench	drill clamp screw	adjusting screw
4,0	6,0	1245735	3.37060R720	6	24	20	102	52	18	3.42805R001	360.550	170.024	360.630	360.510
>6,0	8,0	1245736	3.37080R720	8	26	20	108	52	18	3.42805R001	360.550	170.024	360.634	360.510
>8,0	10,0	1191054	3.37100R720	10	29	20	122	52	17	3.42805R001	360.550	170.024	360.631	360.510
>10,0	12,0	1191058	3.37120R732	12	38	32	133	62	21	3.42807R001	360.551	170.025	360.635	360.513
>12,0	14,0	1191061	3.37140R732	14	40	32	137	62	16	3.42807R001	360.551	170.025	360.636	360.511
>14,0	16,0	1245737	3.37160R732	16	42	32	141	62	19	3.42807R001	360.551	170.025	360.632	360.511
>16,0	18,0	1245738	3.37180R732	18	47	32	144	62	15	3.42807R001	360.551	170.025	360.633	360.511

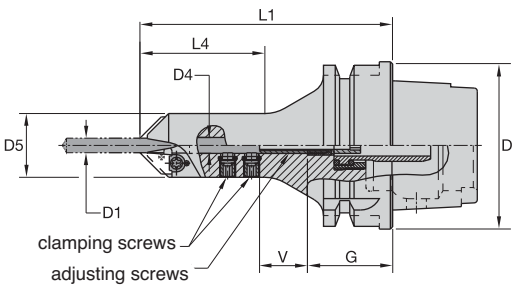
Achievable Drilling (TB) and Sink Depths (TS)

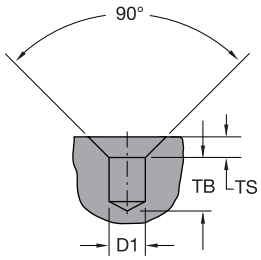
drill diameter D1	B210A_HP, B221A_HP, B224A_HP, B254_HPC, B284A TB_{min}	B210A_HP, B221A_HP, B224A_HP, B254_HPC, B284A TB_{max}	B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A_HP, B285A TB_{min}	B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A_HP, B285A TB_{max}	B212A_HP, B256A, B256A_HPC TB_{min}	B212A_HP, B256A, B256A_HPC TB_{max}	unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel TS_{100}	TS_{80}	TS_{max}
4,0–4,7	4	17	12	29	20	36	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	4,0	6,0	8,0

NOTE:
TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

Ordering Example:
By catalog number 3.37060R720, or by order number 1245735.

SEFAS Bodies





- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Two chamfer inserts required per body.

HSK Shanks — for use with Metric Drills

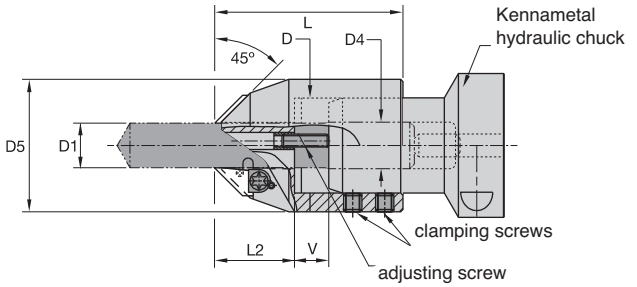
D1 min	D1 max	order number	catalog number	D4	D5	D	L1	L4 max	V	insert catalog number	insert clamp	Torx wrench	drill clamp screw	adjusting screw
4,000	6,000	1760747	SEF040060RHSK63AM	6	24	63	95	51	18	3.42805R001	360.550	170.024	360.630	360.510
>6,000	8,000	1760748	SEF060080RHSK63AM	8	26	63	102	57	18	3.42805R001	360.550	170.024	360.634	360.510
>8,000	10,000	1760749	SEF080100RHSK63AM	10	29	63	111	68	17	3.42805R001	360.550	170.024	360.631	360.510
>10,000	12,000	1760750	SEF100120RHSK63AM	12	38	63	122	89	21	3.42807R001	360.551	170.025	360.635	360.517
>12,000	14,000	1760761	SEF120140RHSK63AM	14	40	63	126	94	16	3.42807R001	360.551	170.025	360.636	360.517
>14,000	16,000	1760762	SEF140160RHSK63AM	16	42	63	130	99	19	3.42807R001	360.551	170.025	360.632	360.517

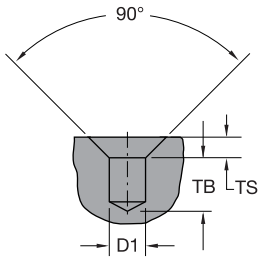
Achievable Drilling (TB) and Sink Depths (TS)

	B210A_HP, B221A_HP, B224A_HP, B254_HPC, B284A		B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A, B285A		B212A_HP, B256A, B256A_HPC		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel		
drill diameter D1	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
4,0–4,7	4	17	12	29	20	36	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	4,0	6,0	8,0

NOTE:
TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

Ordering Example:
By catalog number SEF040060RHSK63AM, or by order number 1760747.





- Drill body shipped with all screws, clamps, and wrenches.
- Order the inserts and drills separately.
- Use only with hydraulic chucks.

Chamfer Rings — For use with Kennametal Hydraulic Chucks (Inch or Metric Drills)

D1 min	D1 max	order number	catalog number	D4	D5	D	L	LS	V	insert catalog number	insert clamp	Torx wrench	drill clamp screw	adjusting screw
4,0	6,0	1245739	3.37526R006	6	38	25,7	49,5	21	5	3.42805R001	360.550	170.024	190.195	
>6,0	8,0	1245740	3.37528R008	8	40	27,7	50,0	21	6	3.42805R001	360.550	170.024	190.195	190.371
>8,0	10,0	1197803	3.37530R010	10	42	29,7	56,5	22	8	3.42805R001	360.550	170.024	190.195	193.113
>10,0	12,0	1245741	3.37532R012	12	48	31,6	68,0	29	12	3.42807R001	360.551	170.025	190.076	193.114
>12,0	14,0	1245742	3.37534R014	14	50	33,6	70,5	29	12	3.42807R001	360.551	170.025	190.076	193.114
>14,0	16,0	1245743	3.37538R016	16	54	37,6	78,0	32	12	3.42807R001	360.551	170.025	190.076	193.115
>16,0	18,0	1245744	3.37540R018	18	56	39,6	80,5	34	15	3.42807R001	360.551	170.025	190.076	193.116
>18,0	20,0	1245745	3.37542R020	20	58	41,6	82,5	35	15	3.42807R001	360.551	170.025	190.076	193.116

Achievable Drilling (TB) and Sink Depths (TS)

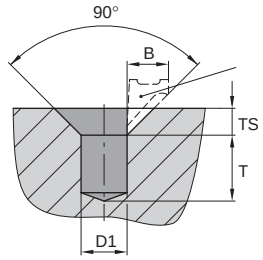
drill diameter D1	B210A_HP, B221A_HP, B224A_HP, B254_HPC, B284A		B211A_HP, B222A_HP, B225A_HP, B255A_HPC, B411A, B285A		B212A_HP, B256A, B256A_HPC		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel		
	$TB_{min.}$	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
4,0–4,7	4	17	12	29	20	36	1,2	1,8	2,5
>4,7–6,0	4	20	20	35	27	43	1,5	2,2	3,0
>6,0–7,0	11	24	23	40	32	49	2	3,0	4,0
>7,0–8,0	11	28	23	40	42	59	2,5	4,0	5,0
>8,0–10,0	13	29	27	43	46	62	2,5	4,0	5,0
>10,0–12,0	15	35	31	51	54	74	3,5	5,0	7,0
>12,0–14,0	21	36	38	53	69	84	4,0	6,0	8,0
>14,0–16,0	22	40	40	58	78	96	4,0	6,0	8,0
>16,0–18,0	31	45	51	65	93	107	4,0	6,0	8,0
>18,0–20,0	34	50	56	72	103	119	4,0	6,0	8,0

drill diameter D1	K210A_HP, K284A		K211A_HP, K285A, K222A, K225A, K411A		K212A_HP, K256A_HPC		unalloyed and low-alloy steel, unalloyed and alloy steel, and cast iron high alloy steel and stainless steel		
	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TB_{min}	TB_{max}	TS_{100}	TS_{80}	TS_{max}
.156–.250	not applicable (drill shank diameter > chamfer ring inside diameter) not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.250–.313									
>.313–.375	.748	1.339	1.229	1.890	2.165	2.756	.098	.157	.197
>.375–.500	not applicable (drill shank diameter > chamfer ring inside diameter) not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.500–.563									
>.563–.625	.906	1.732	1.614	2.441	3.110	3.937	.157	.236	.315
>.625–.709	not applicable (metric ring and hydraulic chuck are not interchangeable)								
>.709–.750	1.142	2.087	1.890	2.835	3.819	4.764	.157	.236	.315

***NOTE**:*
TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

Ordering Example:
By catalog number 3.37526R006, or by order number 1245739.

KenTIP with SEFAS

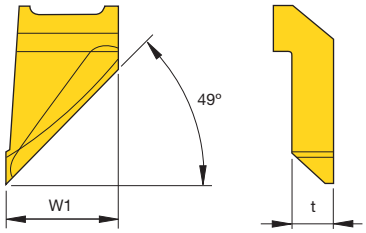


Achievable Drilling (T) and Sink Depths (TS) with KenTIP Tool Bodies

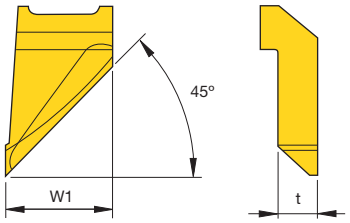
D1		drilling depths (T) with SEFAS compact tools						drilling depths (T) with SEFAS chamfer rings						sink depths (TS)		
		3xD		5xD		8xD		3xD		5xD		8xD				
mm	inch	T	T_{max}	T	T_{max}	T	T_{max}	T	T_{max}	T	T_{max}	T	T_{max}	TS_{100}*	TS_{80}*	TS_{max}*
8,00-8,49	.3125-.3343	11	19	21	37	47	63	11	22	22	40	48	66	2,5	4,0	5,0
8,50-8,99	.3346-.3539	12	21	24	40	51	67	12	24	25	43	52	70	2,5	4,0	5,0
9,00-9,49	.3543-.3736	12	23	27	43	56	72	12	26	28	46	57	75	2,5	4,0	5,0
9,50-9,99	.3740-.3933	13	25	31	47	61	77	13	28	32	50	62	80	2,5	4,0	5,0
10,00-10,49	.3937-.4130	13	26	28	49	60	81	13	28	29	51	61	83	3,5	5,0	7,0
10,50-10,99	.4134-.4327	14	28	31	52	64	85	14	30	32	54	65	87	3,5	5,0	7,0
11,00-11,49	.4331-.4524	14	30	34	55	69	90	14	32	35	57	70	92	3,5	5,0	7,0
11,50-11,99	.4528-.4720	15	32	37	58	73	94	15	34	38	60	74	96	3,5	5,0	7,0
12,00-12,49	.4724-.4917	15	30	41	56	79	94	15	32	36	58	74	96	4,0	6,0	8,0
12,50-12,99	.4921-.5114	17	32	44	59	83	98	16	34	39	61	78	100	4,0	6,0	8,0
13,00-13,49	.5118-.5311	19	34	47	62	88	103	16	36	42	64	83	105	4,0	6,0	8,0
13,50-13,99	.5315-.5508	21	36	51	66	93	108	17	38	46	68	88	110	4,0	6,0	8,0
14,00-14,49	.5512-.5705	19	37	50	68	94	112	18	40	49	71	93	115	4,0	6,0	8,0
14,50-14,99	.5709-.5902	21	39	53	71	98	116	20	42	52	74	97	119	4,0	6,0	8,0
15,00-15,99	.5906-.6295	25	43	59	77	107	125	24	46	58	80	106	128	4,0	6,0	8,0
16,00-16,99	.6299-6689	29	47	65	83	117	135	28	50	64	85	115	136	4,0	6,0	8,0

NOTE:
TS100: max. sink depths at which the full feed values can be maintained during chamfering and sinking.
TS80: max. sink depths that can be achieved without chipbreak cycles and at a 20% feed reduction.
TSmax: max. sink depths that can be achieved without chipbreak cycles and at a 50% feed reduction.

T: min. drilling depth that can be achieved due to the protruded length of the drill.
Tmax: max. drilling depth that can be achieved due to the protruded length of the drill.



45° chamfer



41° chamfer

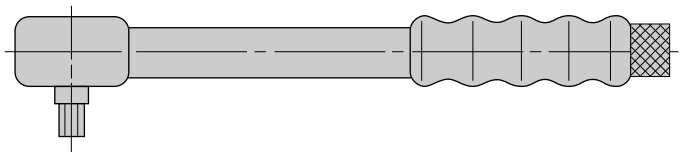
SEFAS Chamfering Inserts

● first choice
○ alternate choice

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

	S			W1							
catalog number	angle	mm	inch	mm	inch	CS5	KC7015	KC7215	KC7315	KMF
3.42805R001	45	2,83	.111	8	.315	●		●		●
3.42805R021	45	2,83	.111	8	.315		●		●	●
3.42805R081	41	2,83	.111	8	.315			●		
3.42807R001	45	3,98	.157	12	.472	●		●		●
3.42807R021	45	3,98	.157	12	.472		●		●	●
3.42807R081	41	3,98	.157	12	.472			●		

Ordering Example:
By catalog number 3.42805R001.



Torque Wrench — Inch

drill diameter D1	torque wrench	tightening torque ft.-lbs	SW	drill clamping screw	wrench adapter
.156-.188	170.190	5.2	3	360.650	170.240
>.188-.250	170.190	5.9	3	360.651	170.240
>.250-.313	170.190	5.9	3	360.652	170.240
>.313.-.375	170.190	7.4	4	360.653	170.232
>.375-.438	170.190	11.1	4	360.654	170.232
>.438-.500	170.190	11.1	4	360.655	170.232
>.500-.563	170.190	14.8	5	360.656	170.233
>.563-.625	170.190	22.1	5	360.657	170.233
>.625-.688	170.190	33.2	6	360.658	170.234
>.688-.750	170.190	33.2	6	360.659	170.234
>.750-.813	170.190	35.4	6	360.679	170.234
>.813-.875	170.190	44.3	8	360.680	170.229
>.875-.938	170.190	47.9	8	360.681	170.229
>.938-1.010	170.190	51.6	8	360.682	170.229

Torque Wrench — Metric

drill diameter D1	torque wrench	tightening torque Nm	SW	drill clamping screw	wrench adapter
4,0-6,0	170.190	7	3	360.630	170.240
>6,0-8,0	170.190	8	3	360.635	170.240
>8,0-10,0	170.190	10	4	360.631	170.232
>10,0-12,0	170.190	15	4	360.635	170.232
>12,0-14,0	170.190	20	5	360.636	170.233
>14,0-16,0	170.190	30	5	360.632	170.233
>16,0-18,0	170.190	45	6	360.633	170.234
>18,0-20,0	170.190	45	6	360.637	170.234

KENNAMETAL

Solid Carbide Taps

For Ferrous and Non-Ferrous Materials

Outstanding productivity through exceptional performance!
Ideal for Shrink-Fit, hydraulic, or Synchroflex holders with TGHP collets!

KC7542 Grade Designed for Use in Ferrous Materials < 32 HRC

- Run up to 4x faster — with 4x the tool life versus HSS Taps!
- Ideal for high-speed CNC machines with synchronous or rigid tapping capability!
- PVD TiAlN/TiN gold coating delivers superior edge strength and wear resistance!
- Get less than 10 microns run-out, resulting in exceptional thread quality!
- Specially designed and modified cutting edges guard against chipping!
- Taps can be reconditioned by Kennametal to original specifications.
- Available in metric and inch sizes.
- Custom Solutions (specials) available upon request.

KC7512 Grade Designed for Use in Non-Ferrous Materials

- For wrought aluminum, cast silicon aluminum, and other non-ferrous materials!
- Run up to 2x faster — with up to 4x the tool life versus HSS taps!
- Ideal for high-speed CNC machines with synchronous or rigid tapping capability!
- Proprietary KC7512 grade with TiN+CrC/C coating resists aluminum galling!
- Get less than 10 microns run-out, resulting in exceptional thread quality!
- Can be reconditioned by Kennametal to original specifications!
- Available in metric sizes from stock and inch sizes as custom solutions!
- Custom Solutions (specials) available upon request.

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T331 Right-Hand Spiral Flute Taps with Through Coolant for Blind Holes D5–D6
T340 Straight Flute Taps for Through Holes D7–D8
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KC7512 Grade for Non-Ferrous Materials

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High-Performance HSS Taps D23–D62

K-Stainless

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K-NI

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K-AL

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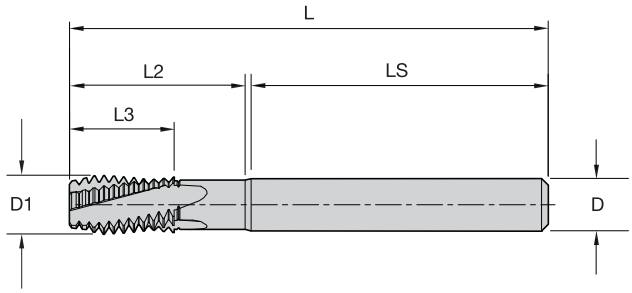
Feed and Speed Chart

Solid Carbide Taps

Tapping Operation	Tap Style	Grade	CUTTING SPEED Starting Value sfm / m/min	Range sfm: 49 98 164 262 328 394 492 656 820 984 1148 / m/min: 15 30 50 80 100 120 150 200 250 300 350
P1 Low-Carbon Steels, Long Chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125				
Through Holes	T320, T381	KC7542	328 / 100	230–427 / 70–130
Blind Holes	T331, 391	KC7542	246 / 75	164–328 / 50–100
P2 Low-Carbon Steels, Free Machining, and Short Chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220				
Through Holes	T320, T381	KC7542	295 / 90	197–394 / 60–120
Blind Holes	T331, 391	KC7542	246 / 75	164–328 / 50–100
P3 Medium to High Plain-Carbon Steels and Alloy Steels — Content: C >.25% — Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330				
Through Holes	T320, T381	KC7542	262 / 80	164–361 / 50–110
Blind Holes	T331, 391	KC7542	213 / 65	131–295 / 40–90
K1 Gray Cast Irons and Low-Strength Ductile Irons — Tensile Strength RM (MPa)*: 150-400 — Hardness (HB) or HRC: 120-290				
Through Holes	T340	KC7542	345 / 105	262–427 / 80–130
Blind Holes	T351	KC7542	246 / 75	164–328 / 50–100
K2 Low- and Medium-Strength CGI and Ductile Irons — Tensile Strength RM (MPa)*: 400-600 — Hardness (HB) or HRC: 130-260				
Through Holes	T340	KC7542	345 / 105	262–427 / 80–130
Blind Holes	T351	KC7542	246 / 75	164–328 / 50–100
K3 High-Strength Ductile and Austempered Ductile Irons — Tensile Strength RM (MPa)*: 600-900 — Hardness (HB) or HRC: 180-350				
Through Holes	T340	KC7542	345 / 105	262–427 / 80–130
Blind Holes	T351	KC7542	246 / 75	164–328 / 50–100
N1 Wrought Aluminum Alloys — Tensile Strength RM (MPa)*: <520 — Hardness (HB) or HRC: 60-90				
Through Holes	T461, T481	KC7512	476 / 145	328–623 / 100–190
Blind Holes	T471, T491	KC7512	328 / 100	230–427 / 70–130
N2 Cast Aluminums — Content: Si<12.2% — Tensile Strength RM (MPa)*: <350 — Hardness (HB) or HRC: 70-100				
Through Holes	T461, T481	KC7512	394 / 120	262–492 / 80–150
Blind Holes	T471, T491	KC7512	279 / 85	197–361 / 60–110
N3 Cast Aluminums — Content: Si>12.2% — Tensile Strength RM (MPa)*: 200-320 — Hardness (HB) or HRC: 60-120				
Through Holes	T461	KC7512	328 / 100	230–427 / 70–130
Blind Holes	T471	KC7512	279 / 85	197–361 / 60–110
N5 Copper and Copper Alloys — Tensile Strength RM (MPa)*: 200-650 — Hardness (HB) or HRC: 60-200				
Through Holes	T461, T481	KC7512	312 / 95	197–427 / 60–130
Blind Holes	T471, T491	KC7512	230 / 70	164–295 / 50–90

Run 4x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T320 — Metric — Left-Hand Spiral Flute, Plug Chamfer (5 Pitches)

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	KC7542
M6 x 1	6H	3031914	T320M060X100R6H	70	12	23	43	6	3	●
M 8 x 1,25	6H	3031915	T320M080X125R6H	80	15	28	47	8	3	●
M10 x 1,5	6H	3031916	T320M100X150R6H	90	18	33	51	10	4	●
M12 x 1,75	6H	3031917	T320M120X175R6H	100	21	40	54	12	4	●
M12 x 1,5	6H	3047640	T320MF120X150R6H	100	21	40	54	12	4	●
M14 x 2	6H	3031918	T320M140X200R6H	110	24	47	61	12	4	●
M14 x 1,5	6H	3047641	T320MF140X150R6H	110	24	47	61	12	4	●
M16 x 2	6H	3031919	T320M160X200R6H	110	24	53	55	14	4	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

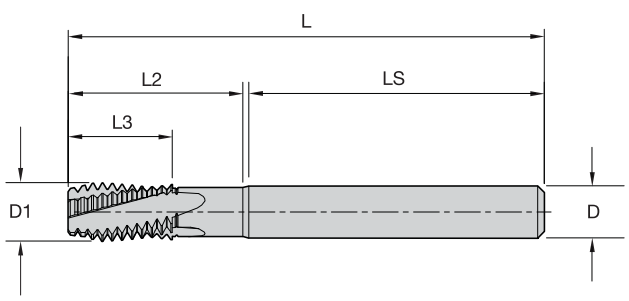
Order Example:
M6 x 1 6H thread
By catalog number and grade T320M060X100R6H KC7542,
or by order number 3031914.

Shank Tolerance

D	Tolerance h6
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Through Holes

Run 4x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T320 — Inch — Left-Hand Spiral Flute, Plug Chamfer (5 Pitches)

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7542
1/4	20	3B	3031904	T320NC02500-20R3B	2.76	.590	.910	1.665	.2500	3	NC/UNC	●
1/4	28	3B	3031905	T320NF02500-28R3B	2.76	.590	.910	1.665	.2500	3	NF/UNF	●
5/16	18	3B	3031906	T320NC03125-18R3B	3.15	.670	1.100	1.847	.3125	3	NC/UNC	●
5/16	24	3B	3031907	T320NF03125-24R3B	3.15	.670	1.100	1.847	.3125	3	NF/UNF	●
3/8	16	3B	3031908	T320NC03750-16R3B	3.54	.750	1.300	2.012	.3750	4	NC/UNC	●
3/8	24	3B	3031909	T320NF03750-24R3B	3.54	.750	1.300	2.012	.3750	4	NF/UNF	●
7/16	14	3B	3031910	T320NC04375-14R3B	3.94	.870	1.420	2.256	.4375	4	NC/UNC	●
1/2	13	3B	3031911	T320NC05000-13R3B	3.94	.940	1.570	2.079	.5000	4	NC/UNC	●
1/2	20	3B	3047639	T320NF0500020R3B	3.94	.940	1.570	2.079	.5000	4	NF/UNF	●
9/16	12	3B	3031912	T320NC05625-12R3B	4.33	1.020	1.850	2.350	.5000	4	NC/UNC	●
5/8	11	3B	3031913	T320NC06250-11R3B	4.33	1.100	2.090	2.091	.5625	5	NC/UNC	●

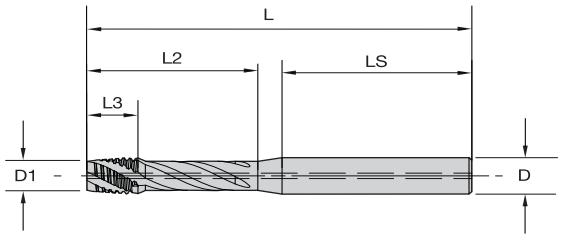
TPI = Threads per Inch.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

Order Example:
1/4-20 3B thread
By catalog number and grade T320NC02500-20R3B KC7542,
or by order number 3031904.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 3x faster with 4x service life.



● first choice
○ alternate choice

T331 — Metric — Right-Hand Spiral Flute, Semi-Bottoming Chamfer (3 Pitches), Through Coolant

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	H	S	N	K	M	P	KC7542
M6 x 1	6H	3483057	T331M060X100R6H	70	8	24	42	6	3							●
M8 x 1,25	6H	3483058	T331M080X125R6H	80	10	32	43	8	3							●
M10 x 1,5	6H	3483059	T331M100X150R6H	90	12	40	44	10	4							●
M10 x 1	6H	3483060	T331MF100X100R6H	90	12	40	44	10	4							●
M12 x 1,75	6H	3483061	T331M120X175R6H	100	14	48	46	12	4							●
M12 x 1,5	6H	3483062	T331MF120X150R6H	100	14	48	46	12	4							●
M14 x 2	6H	3483073	T331M140X200R6H	110	16	56	52	12	4							●
M14 x 1,5	6H	3483074	T331MF140X150R6H	110	16	56	52	12	4							●
M16 x 2	6H	3483075	T331M160X200R6H	110	16	64	44	14	4							●

TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

Order Example:
M6 x 1 6H thread
By catalog number and grade T331M060X100R6H KC7542,
or by order number 3483057.

Shank Tolerance

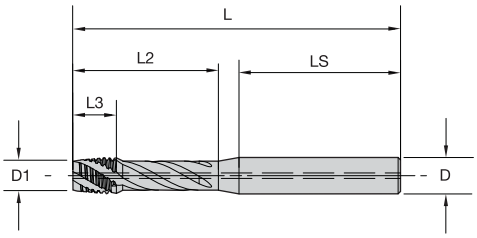
D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

High-Performance Taps

KENNAMETAL

Solid Carbide Taps for Blind Holes

Run 3x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T331 — Inch — Right-Hand Spiral Flute, Semi-Bottoming Chamfer, (3 Pitches), Through Coolant

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7542
1/4	20	3B	3482959	T331NC2500-20R3B	2.76	.394	.945	1.626	.2500	3	NC/UNC	●
1/4	28	3B	3482960	T331NF2500-28R3B	2.76	.394	.945	1.626	.2500	3	NF/UNF	●
5/16	18	3B	3482961	T331NC3125-18R3B	3.15	.472	1.260	1.689	.3125	3	NC/UNC	●
3/8	16	3B	3482962	T331NC3750-16R3B	3.54	.512	1.575	1.736	.3750	4	NC/UNC	●
7/16	14	3B	3483053	T331NC4375-14R3B	3.94	.591	1.732	1.941	.4375	4	NC/UNC	●
1/2	13	3B	3483054	T331NC5000-13R3B	3.94	.630	1.890	1.764	.5000	4	NC/UNC	●
9/16	12	3B	3483055	T331NC5625-12R3B	4.33	.669	2.205	1.996	.5000	4	NC/UNC	●
5/8	11	3B	3483056	T331NC6250-11R3B	4.33	.748	2.520	1.658	.5625	4	NC/UNC	●

TPI = Threads per Inch.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

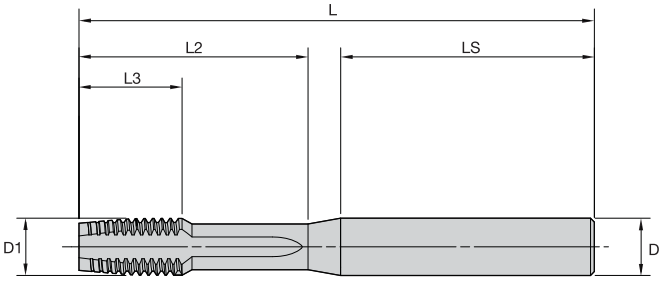
Order Example:
1/4-20 3B thread
By catalog number and grade T331NC2500-20R3B KC7542,
or by order number 3482959.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Run 4x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T340 — Metric — Straight Flute, Plug Chamfer (5 Pitches)

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	KC7542
M4 x 0,7	6H	3483105	T340M040X070R6H	60	6	16	36	6	3	●
M5 x 0,8	6H	3483106	T340M050X080R6H	60	7	20	34	6	3	●
M6 x 1	6H	3483107	T340M060X100R6H	70	12	23	43	6	4	●
M8 x 1,25	6H	3483108	T340M080X125R6H	80	15	28	47	8	4	●
M10 x 1,5	6H	3031928	T340M100X150R6H	90	18	33	51	10	4	●
M10 x 1	6H	3483109	T340MF100X100R6H	90	18	33	21	10	4	●
M12 x 1,75	6H	3031929	T340M120X175R6H	100	21	40	54	12	4	●
M12 x 1,5	6H	3483110	T340MF120X150R6H	100	21	40	54	12	4	●
M14 x 2	6H	3031930	T340M140X200R6H	110	24	47	61	12	4	●
M14 x 1,5	6H	3483111	T340MF140X150R6H	110	24	47	61	12	4	●
M16 x 2	6H	3031931	T340M160X200R6H	110	24	53	55	14	4	●
M18 x 2,5	6H	3031932	T340M180X250R6H	125	30	59	62	16	5	●
M20 x 2,5	6H	3031933	T340M200X250R6H	140	30	66	70	18	5	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

Order Example:

M10 x 1,5 6H thread

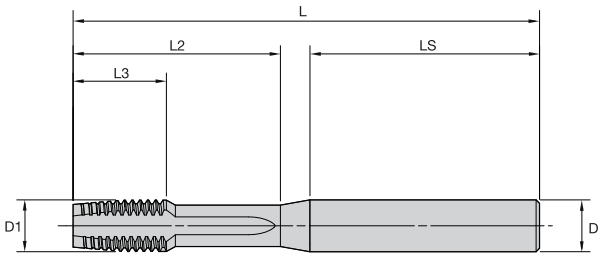
By catalog number and grade T340M100X150R6H KC7542,
or by order number 3031928.

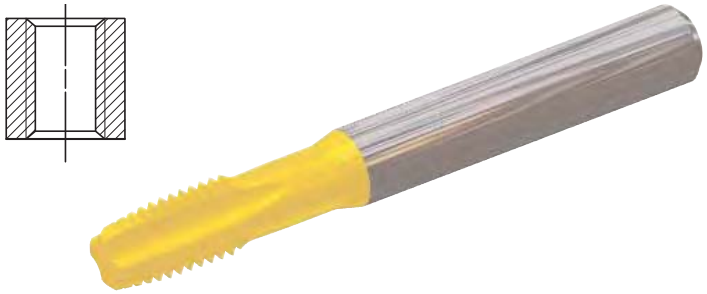
Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Through Holes

Run 4x faster with 4x service life.





● first choice
○ alternate choice

H		
S		
N		
K		●
M		
P		●

T340 — Inch — Straight Flute, Plug Chamfer (5 Pitches)

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7542
#6	32	3B	3483098	T340NC#6-32R3B	2.36	.276	.551	1.374	.2500	3	NC/UNC	●
#8	32	3B	3483099	T340NC#8-32R3B	2.36	.276	.630	1.370	.2500	3	NC/UNC	●
#10	24	3B	3483100	T340NC#10-24R3B	2.36	.354	.787	1.252	.2500	3	NC/UNC	●
#10	32	3B	3483101	T340NF#10-32R3B	2.36	.354	.787	1.252	.2500	3	NF/UNF	●
1/4	20	3B	3483102	T340NC2500-20R3B	2.76	.591	.906	1.665	.2500	4	NC/UNC	●
1/4	28	3B	3483103	T340NF2500-28R3B	2.76	.591	.906	1.665	.2500	4	NF/UNF	●
5/16	18	3B	3483104	T340NC3125-18R3B	3.15	.669	1.102	1.847	.3125	4	NC/UNC	●
3/8	16	3B	3031920	T340NC03750-16R3B	3.54	.750	1.300	2.012	.3750	4	NC/UNC	●
3/8	24	3B	3031921	T340NF03750-24R3B	3.54	.750	1.300	2.012	.3750	4	NF/UNF	●
7/16	14	3B	3031922	T340NC04375-14R3B	3.94	.870	1.420	2.256	.4375	4	NC/UNC	●
1/2	13	3B	3031923	T340NC05000-13R3B	3.94	.940	1.570	2.079	.5000	4	NC/UNC	●
1/2	20	3B	3031924	T340NF05000-20R3B	3.94	.940	1.570	2.079	.5000	4	NF/UNF	●
9/16	12	3B	3031925	T340NC05625-12R3B	4.33	1.020	1.850	2.350	.5000	4	NC/UNC	●
5/8	11	3B	3031926	T340NC06250-11R3B	4.33	1.100	2.090	2.091	.5625	5	NC/UNC	●
3/4	10	3B	3031927	T340NC07500-10R3B	4.92	1.220	2.480	2.421	.6250	5	NC/UNC	●

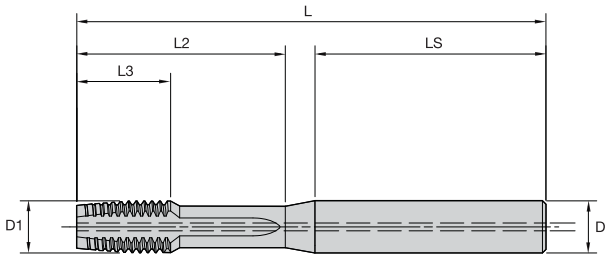
TPI = Threads per Inch.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

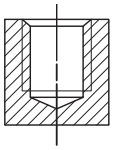
Order Example:
3/8-16 3B thread
By catalog number and grade T340NC03750-16R3B KC7542,
or by order number 3031920.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 3x faster with 4x service life.





● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T351 — Metric — Straight Flute, Bottoming Chamfer (2 Pitches), Through Coolant M6 and Larger

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	KC7542
M4 x 0,7	6H	3483089	T351M040X070R6H	60	6	16	36	6	3	●
M5 x 0,8	6H	3483090	T351M050X080R6H	60	7	20	34	6	3	●
M6 x 1	6H	3483091	T351M060X100R6H	70	12	23	43	6	4	●
M8 x 1,25	6H	3483092	T351M080X125R6H	80	15	28	47	8	4	●
M10 x 1,5	6H	3349652	T351M100X150R6H	90	18	33	51	10	4	●
M10 x 1	6H	3483093	T351MF100X100R6H	90	18	33	51	10	4	●
M12 x 1,75	6H	3349650	T351M120X175R6H	100	21	40	54	12	4	●
M12 x 1,5	6H	3483094	T351MF120X150R6H	100	21	40	54	12	4	●
M14 x 2	6H	3483095	T351M140X200R6H	110	24	47	61	12	4	●
M14 x 1,5	6H	3483096	T351MF140X150R6H	110	24	47	61	12	4	●
M16 x 2	6H	3483097	T351M160X200R6H	110	24	53	55	14	4	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.

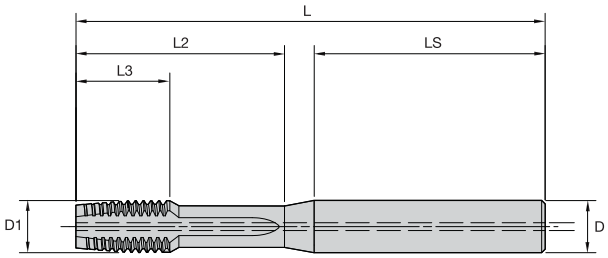
Order Example:
M6 x 1 6H thread
By catalog number and grade T351M060X100R6H KC7542,
or by order number 3483091.

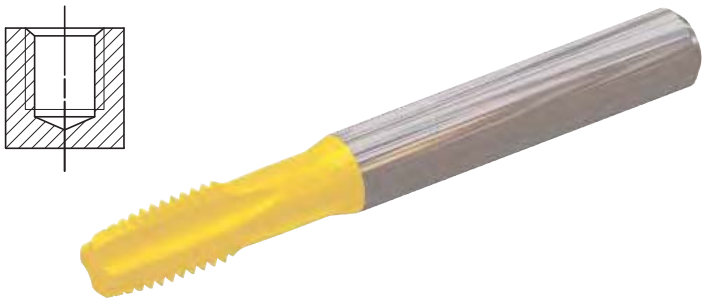
Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Blind Holes

Run 3x faster with 4x service life.





● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T351 — Inch — Straight Flute, Bottoming Chamfer (2 Pitches) Through Coolant ¼" and Larger

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7542
#6	32	3B	3483076	T351NC#6-32R3B	2.36	.276	.551	1.374	.2500	3	NC/UNC	●
#8	32	3B	3483077	T351NC#8-32R3B	2.36	.276	.630	1.370	.2500	3	NC/UNC	●
#10	24	3B	3483078	T351NC#10-24R3B	2.36	.354	.787	1.252	.2500	3	NC/UNC	●
#10	32	3B	3483079	T351NF#10-32R3B	2.36	.354	.787	1.252	.2500	3	NF/UNF	●
1/4	20	3B	3483080	T351NC2500-20R3B	2.76	.591	.906	1.665	.2500	4	NC/UNC	●
1/4	28	3B	3483081	T351NF2500-28R3B	2.76	.591	.906	1.665	.2500	4	NF/UNF	●
5/16	18	3B	3483082	T351NC3125-18R3B	3.15	.669	1.102	1.847	.3125	4	NC/UNC	●
3/8	16	3B	3483083	T351NC3750-16R3B	3.54	.748	1.299	2.012	.3750	4	NC/UNC	●
7/16	14	3B	3483084	T351NC4375-14R3B	3.94	.866	1.417	2.256	.4375	4	NC/UNC	●
1/2	13	3B	3483085	T351NC5000-13R3B	3.94	.945	1.575	2.079	.5000	4	NC/UNC	●
9/16	12	3B	3483086	T351NC5625-12R3B	4.33	1.024	1.850	2.350	.5000	4	NC/UNC	●
5/8	11	3B	3483087	T351NC6250-11R3B	4.33	1.102	2.087	2.091	.5625	5	NC/UNC	●
3/4	10	3B	3483088	T351NC7500-10R3B	4.92	1.221	2.480	2.421	.6250	5	NC/UNC	●

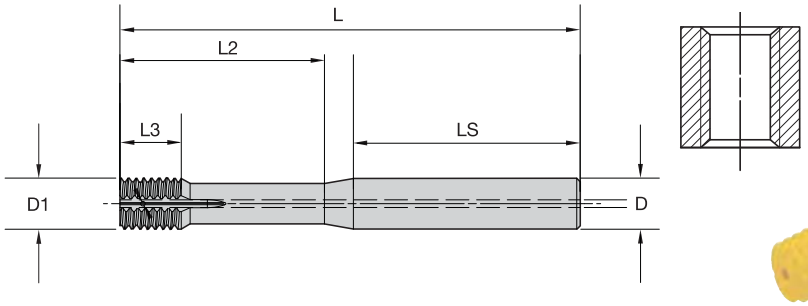
TPI = Threads per Inch.
Protected by U.S. Patents 7,147,413; 7,207,867.

Order Example:
3/8-16 3B thread
By catalog number and grade T351NC3750-16R3B KC7542,
or by order number 3483083.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 4x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T381 — Metric — Forming Taps, Plug Chamfer (5 Pitches), Coolant M6 and Larger

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	KC7542
M4 x 0,7	6H	3483133	T381M040X070R6H	60	6	16	36	6	2	●
M5 x 0,8	6H	3483134	T381M050X080R6H	60	7	20	34	6	2	●
M6 x 1	6H	3483135	T381M060X100R6H	70	8	24	42	6	2	●
M8 x 1,25	6H	3483136	T381M080X125R6H	80	10	32	43	8	2	●
M10 x 1,5	6H	3483137	T381M100X150R6H	90	12	40	44	10	3	●

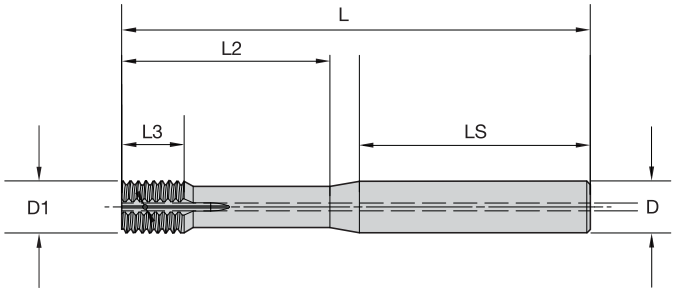
TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

Order Example:
M6 x 1 6H thread
By catalog number and grade T381M060X100R6H KC7542,
or by order number 3483135.

Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Run 4x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T381 — Inch — Forming Taps, Plug Chamfer (5 Pitches), Coolant ¼" and Larger

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	thread series	KC7542
#6	32	3B	3483125	T381NC#6-32R3B	2.36	.276	.551	1.374	.2500	2	NC/UNC	●
#8	32	3B	3483126	T381NC#8-32R3B	2.36	.276	.630	1.370	.2500	2	NC/UNC	●
#10	24	3B	3483127	T381NC#10-24R3B	2.36	.354	.787	1.252	.2500	2	NC/UNC	●
#10	32	3B	3483128	T381NF#10-32R3B	2.36	.354	.787	1.252	.2500	2	NF/UNF	●
1/4	20	3B	3483129	T381NC2500-20R3B	2.76	.394	.945	1.626	.2500	2	NC/UNC	●
1/4	28	3B	3483130	T381NF2500-28R3B	2.76	.394	.945	1.626	.2500	2	NF/UNF	●
5/16	18	3B	3483131	T381NC3125-18R3B	3.15	.472	1.260	1.689	.3125	2	NC/UNC	●
3/8	16	3B	3483132	T381NC3750-16R3B	3.54	.512	1.575	1.736	.3750	3	NC/UNC	●

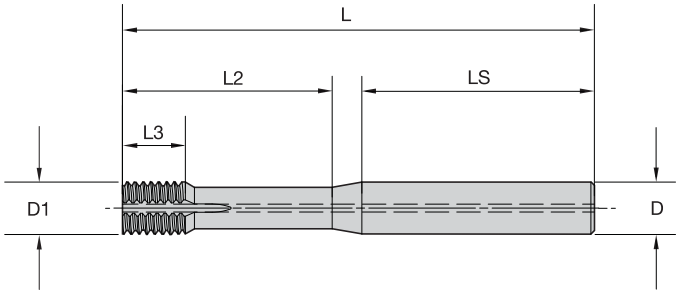
TPI = threads per inch.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.
***NOTE:** Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.*

Order Example:
1/4-20 3B thread
By catalog number and grade T381NC2500-20R3B KC7542,
or by ordering number 3483129.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 3x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

T391 — Metric — Forming Taps, Bottoming Chamfer (2 Pitches), Through Coolant M6 and Larger

tap size and pitch	class of it	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	KC7542
M4 x 0,7	6H	3483120	T391M040X070R6H	60	6	16	36	6	2	●
M5 x 0,8	6H	3483121	T391M050X080R6H	60	7	20	34	6	2	●
M6 x 1	6H	3483122	T391M060X100R6H	70	8	24	42	6	2	●
M8 x 1,25	6H	3483123	T391M080X125R6H	80	10	32	43	8	2	●
M10 x 1,5	6H	3483124	T391M100X150R6H	90	12	40	44	10	3	●

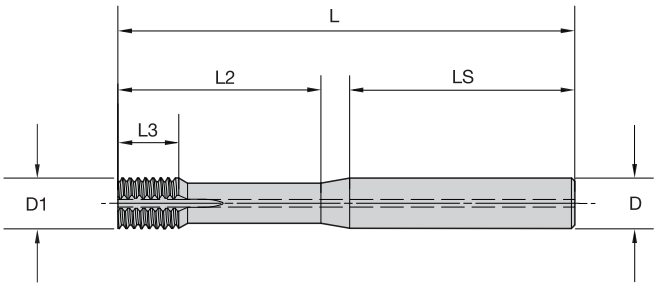
TP = pitch in mm.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

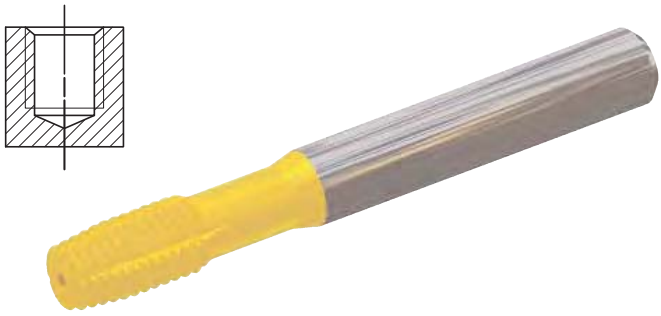
Order example:
M6 x 1 6H thread
By catalog number and grade T391M060X100R6H KC7542,
or by order number 3483122.

Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Run 3x faster with 4x service life.





T391 — Inch — Forming Taps, Bottoming Chamfer (2 Pitches), Through Coolant ¼" and Larger

● first choice
○ alternate choice

H	
S	
N	
K	●
M	
P	●

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	thread series	KC7542
#6	32	3B	3483112	T391NC#6-32R3B	2.36	.276	.551	1.374	.2500	2	NC/UNC	●
#8	32	3B	3483113	T391NC#8-32R3B	2.36	.276	.630	1.370	.2500	2	NC/UNC	●
#10	24	3B	3483114	T391NC#10-24R3B	2.36	.354	.787	1.252	.2500	2	NC/UNC	●
#10	32	3B	3483115	T391NF#10-32R3B	2.36	.354	.787	1.252	.2500	2	NF/UNF	●
1/4	20	3B	3483116	T391NC2500-20R3B	2.76	.394	.945	1.626	.2500	2	NC/UNC	●
1/4	28	3B	3483117	T391NF2500-28R3B	2.76	.394	.945	1.626	.2500	2	NF/UNF	●
5/16	18	3B	3483118	T391NC3125-18R3B	3.15	.472	1.260	1.689	.3125	2	NC/UNC	●
3/8	16	3B	3483119	T391NC3750-16R3B	3.54	.512	1.575	1.736	.3750	3	NC/UNC	●

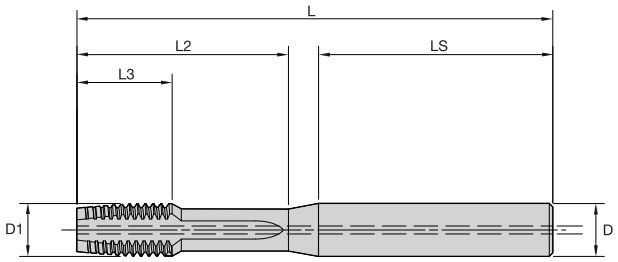
TPI = threads per inch.
Protected by U.S. Patents 7,147,939; 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

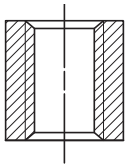
Order Example:
1/4-20 3B thread
By catalog number and grade T391NC2500-20R3B KC7542,
or by ordering number 3483116.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 2x faster with 4x service life.





T461 — Metric — Straight Flute, Plug Chamfer (5 Pitches), Coolant M6 and Larger

● first choice
○ alternate choice

H	
S	
N	●
K	
M	
P	

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	KC7512
M6 x 1	6H	3527417	T461M060X100R6H	70	12	24	42	6	3	●
M8 x 1,25	6H	3527418	T461M080X125R6H	80	15	32	43	8	3	●
M10 x 1,5	6H	3527419	T461M100X150R6H	90	18	40	44	10	3	●
M10 x 1	6H	3527420	T461MF100X100R6H	90	18	40	44	10	3	●
M12 x 1,75	6H	3527421	T461M120X175R6H	100	21	48	46	12	3	●
M12 x 1,5	6H	3527422	T461MF120X150R6H	100	21	48	46	12	3	●
M14 x 2	6H	3527423	T461M140X200R6H	110	24	56	52	12	4	●
M14 x 1,5	6H	3527424	T461MF140X150R6H	110	24	56	52	12	4	●
M16 x 2	6H	3527425	T461M160X200R6H	110	24	64	44	14	4	●
M16 x 1,5	6H	3527426	T461MF160X150R6H	110	24	64	44	14	4	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,413; 7,207,867.

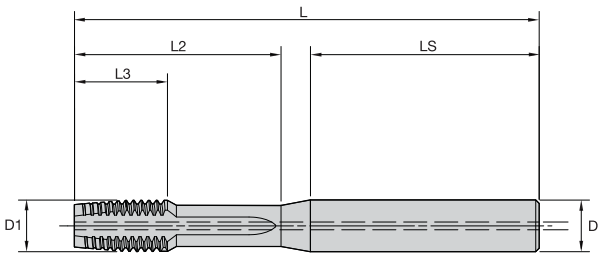
Order Example:
M6 x 1 6H thread
By catalog number and grade T461M060X100R6H KC7512,
or by order number 3527417.

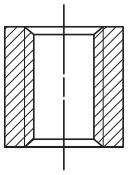
Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Through Holes

Run 2x faster with 4x service life.





● first choice
○ alternate choice

H	
S	
N	●
K	
M	
P	

T461 — Inch — Straight Flute, Plug Chamfer (5 Pitches), Coolant ¼" and Larger

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7512
1/4	20	3B	3527348	T461NC2500-20R3B	2.76	.591	.945	1.626	.2500	3	NC/UNC	●
1/4	28	3B	3527350	T461NF2500-28R3B	2.76	.591	.945	1.626	.2500	3	NF/UNF	●
5/16	18	3B	3527351	T461NC3125-18R3B	3.15	.669	1.260	1.689	.3125	3	NC/UNC	●
3/8	16	3B	3527352	T461NC3750-16R3B	3.54	.748	1.575	1.736	.3750	3	NC/UNC	●
7/16	14	3B	3527413	T461NC4375-14R3B	3.94	.866	1.732	1.941	.4375	3	NC/UNC	●
1/2	13	3B	3527414	T461NC5000-13R3B	3.94	.945	1.890	1.764	.5000	3	NC/UNC	●
9/16	12	3B	3527415	T461NC5625-12R3B	4.33	1.024	2.205	1.996	.5000	4	NC/UNC	●
5/8	11	3B	3527416	T461NC6250-11R3B	4.33	1.102	2.520	1.658	.5625	4	NC/UNC	●

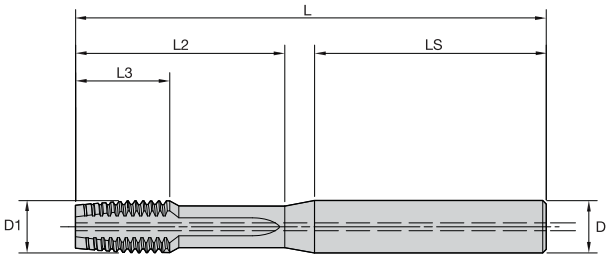
TPI = Threads per Inch.
Protected by U.S. Patents 7,147,413; 7,207,867.

Order Example:
3/8-16 3B thread
By catalog number and grade, T461NC3750-16R3B KC7512,
or by order number 3527352.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 2x faster with 4x service life.



● first choice
○ alternate choice

H		
S		
N		●
K		
M		
P		

T471 — Metric — Straight Flute, Bottoming Chamfer (2 Pitches), Through Coolant

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	KC7512
M6 x 1	6H	3527435	T471M060X100R6H	70	12	24	42	6	3	●
M8 x 1,25	6H	3527436	T471M080X125R6H	80	15	32	43	8	3	●
M10 x 1,5	6H	3527437	T471M100X150R6H	90	18	40	44	10	3	●
M10 x 1	6H	3527438	T471MF100X100R6H	90	18	40	44	10	3	●
M12 x 1,75	6H	3527439	T471M120X175R6H	100	21	48	46	12	3	●
M12 x 1,5	6H	3527440	T471MF120X150R6H	100	21	48	46	12	3	●
M14 x 2	6H	3527441	T471M140X200R6H	110	24	56	52	12	4	●
M14 x 1,5	6H	3527442	T471MF140X150R6H	110	24	56	52	12	4	●
M16 x 2	6H	3527443	T471M160X200R6H	110	24	64	44	14	4	●
M16 x 1,5	6H	3527444	T471MF160X150R6H	110	24	64	44	14	4	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,413; 7,207,867.

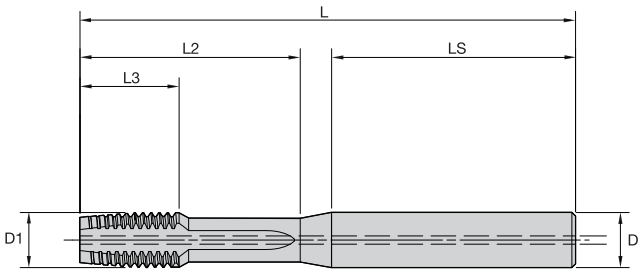
Order Example:
M6 x 1 6H thread
By catalog number and grade T471M060X100R6H KC7512,
or by order number 3527435.

Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Blind Holes

Run 2x faster with 4x service life.



● first choice
○ alternate choice

H	S	N	K	M	P
		●			

T471 — Inch — Straight Flute, Bottoming Chamfer (2 Pitches), Through Coolant

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of flutes	thread series	KC7512
1/4	20	3B	3527427	T471NC2500-20R3B	2.76	.591	.945	1.626	.2500	3	NC/UNC	●
1/4	28	3B	3527428	T471NF2500-28R3B	2.76	.591	.945	1.626	.2500	3	NF/UNF	●
5/16	18	3B	3527429	T471NC3125-18R3B	3.15	.669	1.260	1.689	.3125	3	NC/UNC	●
3/8	16	3B	3527430	T471NC3750-16R3B	3.54	.748	1.575	1.736	.3750	3	NC/UNC	●
7/16	14	3B	3527431	T471NC4375-14R3B	3.94	.866	1.732	1.941	.4375	3	NC/UNC	●
1/2	13	3B	3527432	T471NC5000-13R3B	3.94	.945	1.890	1.764	.5000	3	NC/UNC	●
9/16	12	3B	3527433	T471NC5625-12R3B	4.33	1.024	2.205	1.996	.5000	4	NC/UNC	●
5/8	11	3B	3527434	T471NC6250-11R3B	4.33	1.102	2.520	1.658	.5625	4	NC/UNC	●

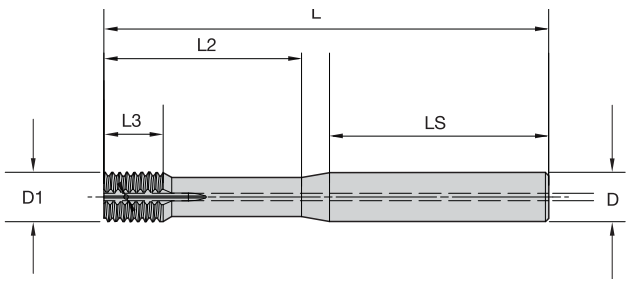
TPI = threads per inch.
Protected by U.S. Patents 7,147,413; 7,207,867.

Order Example:
3/8-16 3B thread
By catalog number and grade T471NC3750-16R3B KC7512,
or by order number 3527430.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 2x faster with 4x service life.



● first choice
○ alternate choice

H	
S	
N	●
K	
M	
P	

T481 — Metric — Forming Taps, Plug Chamfer (5 Pitches), Coolant M6 and Larger

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	KC7512
M4 x 0,7	6H	3527455	T481M040X070R6H	60	6	16	36	6	2	●
M5 x 0,8	6H	3527456	T481M050X080R6H	60	7	20	34	6	2	●
M6 x 1	6H	3527457	T481M060X100R6H	70	8	24	42	6	2	●
M8 x 1,25	6H	3527458	T481M080X125R6H	80	10	32	43	8	2	●
M10 x 1,5	6H	3527459	T481M100X150R6H	90	12	40	44	10	3	●
M10 x 1	6H	3527460	T481MF100X100R6H	90	12	40	44	10	3	●
M12 x 1,75	6H	3527461	T481M120X175R6H	100	14	48	46	12	3	●
M12 x 1,5	6H	3527462	T481MF120X150R6H	100	14	48	46	12	3	●

TP = pitch in mm.

Protected by U.S. Patents 7,147,413; 7,207,867.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

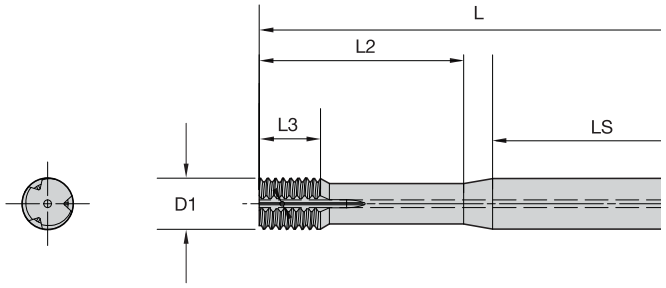
Order Example:
M6 x 1 6H thread
By catalog number and grade T481M060X100R6H KC7512,
or by order number 3527457.

Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Through Holes

Run 2x faster with 4x service life.



T481 — Inch — Forming Taps, Plug Chamfer (5 Pitches), Coolant ¼" and Larger

● first choice
○ alternate choice

H	
S	
N	●
K	
M	
P	

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	thread series	KC7512
#6	32	3B	3527445	T481NC#6-32R3B	2.36	.276	.551	1.374	.2500	2	NC/UNC	●
#8	32	3B	3527446	T481NC#8-32R3B	2.36	.276	.630	1.370	.2500	2	NC/UNC	●
#10	24	3B	3527447	T481NC#10-24R3B	2.36	.354	.787	1.252	.2500	2	NC/UNC	●
#10	32	3B	3527448	T481NF#10-32R3B	2.36	.354	.787	1.252	.2500	2	NF/UNF	●
1/4	20	3B	3527449	T481NC2500-20R3B	2.76	.394	.945	1.626	.2500	2	NC/UNC	●
1/4	28	3B	3527450	T481NF2500-28R3B	2.76	.394	.945	1.626	.2500	2	NF/UNF	●
5/16	18	3B	3527451	T481NC3125-18R3B	3.15	.472	1.260	1.689	.3125	2	NC/UNC	●
3/8	16	3B	3527452	T481NC3750-16R3B	3.54	.512	1.575	1.736	.3750	3	NC/UNC	●
7/16	14	3B	3527453	T481NC4375-14R3B	3.94	.591	1.732	1.941	.4375	3	NC/UNC	●
1/2	13	3B	3527454	T481NC5000-13R3B	4.33	.630	1.890	1.764	.5000	3	NC/UNC	●

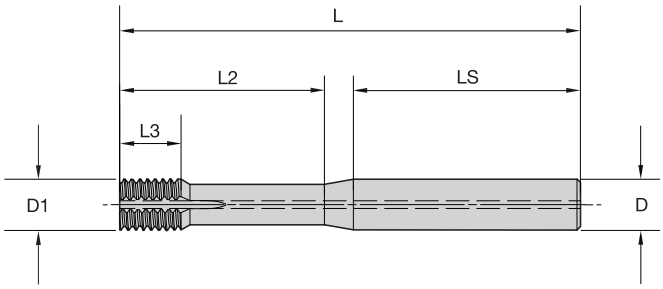
TPI = threads per inch.
Protected by U.S. Patents 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

Order Example:
3/8-16 3B thread
By catalog number and grade T481NC3750-16R3B KC7512,
or by ordering number 3527452.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

Run 2x faster with 4x service life.



● first choice
○ alternate choice

H	S	N	K	M	P
		●			

T491 — Metric — Forming Taps, Bottoming Chamfer (2 Pitches), Through Coolant M6 and Larger

tap size and pitch	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	KC7512
M4 x 0,7	6H	3527473	T491M040X070R6H	60	6	16	36	6	2	●
M5 x 0,8	6H	3527474	T491M050X080R6H	60	7	20	34	6	2	●
M6 x 1	6H	3527475	T491M060X100R6H	70	8	24	42	6	2	●
M8 x 1,25	6H	3527476	T491M080X125R6H	80	10	32	43	8	2	●
M10 x 1,5	6H	3527477	T491M100X150R6H	90	12	40	44	10	3	●
M10 x 1	6H	3527478	T491MF100X100R6H	90	12	40	44	10	3	●
M12 x 1,75	6H	3527479	T491M120X175R6H	100	14	48	46	12	3	●
M12 x 1,5	6H	3527480	T491MF120X150R6H	100	14	48	46	12	3	●

TP = pitch in mm.
Protected by U.S. Patents 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

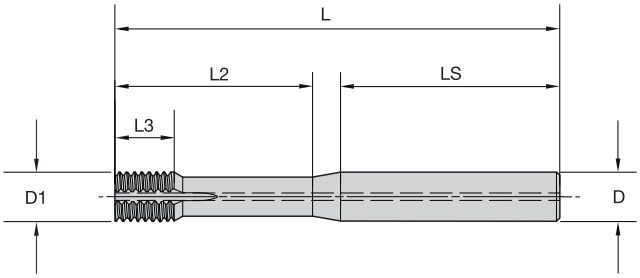
Order Example:
M6 x 1 6H thread
By catalog number and grade T491M060X100R6H KC7512,
or by order number 3527475.

Shank Tolerance

D	Tolerance 6H
6	+0, -0,008
8-10	+0, -0,009
12-16	+0, -0,011

Solid Carbide Taps for Blind Holes

Run 2x faster with 4x service life.



T491 — Inch — Forming Taps, Bottoming Chamfer (2 Pitches), Through Coolant ¼" and Larger

● first choice
○ alternate choice

	KC7512
H	
S	
N	●
K	
M	
P	

D1	TPI	class of fit	order number	catalog number	L	L3	L2	LS	D	number of lube grooves	thread series	KC7512
#6	32	3B	3527463	T491NC#6-32R3B	2.36	.276	.551	1.374	.2500	2	NC/UNC	●
#8	32	3B	3527464	T491NC#8-32R3B	2.36	.276	.630	1.370	.2500	2	NC/UNC	●
#10	24	3B	3527465	T491NC#10-24R3B	2.36	.354	.787	1.252	.2500	2	NC/UNC	●
#10	32	3B	3527466	T491NF#10-32R3B	2.36	.354	.787	1.252	.2500	2	NF/UNF	●
1/4	20	3B	3527467	T491NC2500-20R3B	2.76	.394	.945	1.626	.2500	2	NC/UNC	●
1/4	28	3B	3527468	T491NF2500-28R3B	2.76	.394	.945	1.626	.2500	2	NF/UNF	●
5/16	18	3B	3527469	T491NC3125-18R3B	3.15	.472	1.260	1.689	.3125	2	NC/UNC	●
3/8	16	3B	3527470	T491NC3750-16R3B	3.54	.512	1.575	1.736	.3750	3	NC/UNC	●
7/16	14	3B	3527471	T491NC4375-14R3B	3.94	.591	1.732	1.941	.4375	3	NC/UNC	●
1/2	13	3B	3527472	T491NC5000-13R3B	3.94	.630	1.890	1.764	.5000	3	NC/UNC	●

TPI = threads per inch.
Protected by U.S. Patents 7,147,413; 7,207,867.
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

Order Example:
3/8-16 3B thread
By catalog number and grade T491NC3750-16R3B KC7512,
or by order number 3527470.

Shank Tolerance

D Fractional	D Inch
0.250-0.375	+0, -0.0004
0.438-0.625	+0, -0.0004

KENNAMETAL

High-Performance HSS Taps

Engineered for Your Application!

Application-Specific High-Performance Taps

K-Stainless — Geometries designed for stainless steels and steels < 276 Bhn, ductile irons, copper, and copper alloys.

K-NI — Nickel alloys, hardened steels, and stainless steels > 275 Bhn.

K-AL — Wrought and die cast aluminums.

K-MS — Tool steels, pre-hardened mold steels > 275 Bhn, and gray and cast irons.

K-TI — Titanium and titanium alloys, magnesium, beryllium copper, and soft plastics.

Features and Benefits

Cutting geometries designed for specific workpiece materials.

- For better chip control.
- Material-specific geometries reduce tapping torque while extending tap life.

Made from specially formulated steel substrates to extend tap life at improved performance levels.

High-quality surface treatments enhance tool performance and provide better thread size control.

Manufactured to exacting specifications and meticulously inspected.

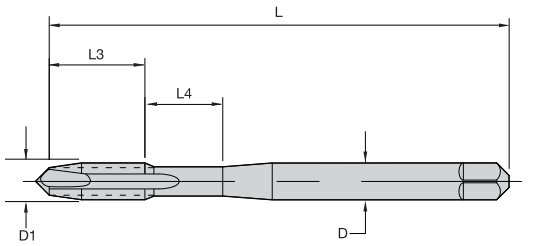
- Predictable performance tap-to-tap.
- Extended tool life.

Available in a wide variety of tap pitch diameter limits to enable fine adjustments of product pitch diameter finished size.

High-Performance Taps

K-Stainless HSS Spiral Point Plug Taps for Through Holes

Metric Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique flute geometry for lower tapping torque and pushes chips ahead of the tap during threading.
- Available in a wide variety of pitch diameter (H or D) limits to enable finer adjustments of product pitch diameter.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

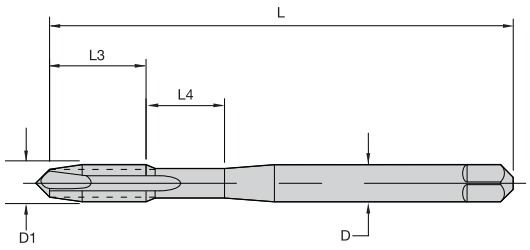
K-Stainless — Metric — Spiral Point, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

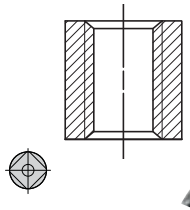
tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M3 x 0,5	D3	1823715	40510200238	1.94	.374	.251	.141	3
M3,5 x 0,6	D4	1823714	40510200239	2.00	.413	.274	.141	3
M4 x 0,7	D4	1434048	40510200240	2.13	.453	.297	.168	3
M5 x 0,8	D4	1434049	40510200241	2.38	.531	.344	.194	3
M6 x 1	D5	1434050	40510200242	2.50	.591	.409	.255	3
M7 x 1	D5	1434051	40510200243	2.72	.669	.456	.318	3
M8 x 1,25	D5	1434053	40510200245	2.72	.669	.456	.318	3
M8 x 1	D5	1434052	40510200244	2.72	.669	.456	.318	3
M10 x 1,5	D6	1434055	40510200247	2.94	.748	.502	.381	3
M10 x 1,25	D5	1434054	40510200246	2.94	.748	.502	.381	3
M12 x 1,75	D6	1434057	40510200249	3.38	.984	–	.367	3
M12 x 1,25	D5	1434056	40510200248	3.38	.984	–	.367	3
M14 x 2	D7	1827400	40510200251	3.59	.984	–	.429	3
M14 x 1,5	D6	1834625	40510200250	3.59	.984	–	.429	3
M16 x 2	D7	1322899	40510200253	3.81	1.083	–	.480	3
M16 x 1,5	D6	1434060	40510200252	3.81	1.083	–	.480	3
M18 x 2,5	D7	1823187	40510200255	4.03	1.083	–	.542	3

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Machine Screw and Fractional Sizes





Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique flute geometry for lower tapping torque and pushes chips ahead of the tap during threading.
- Available in a wide variety of pitch diameter (H or D) limits to enable finer adjustments of product pitch diameter.
- Surface treatment is oxide to prevent loading while tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless — Machine Screw and Fractional — Spiral Point, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1433812	40510200001	1.75	.256	.181	.141	2	NC/UNC/UNJC
#2	56	H3	1433813	40510200002	1.75	.256	.181	.141	2	NC/UNC/UNJC
#2	56	H4	1433814	40510200003	1.75	.256	.181	.141	2	NC/UNC/UNJC
#3	48	H2	1832100	40510200004	1.81	.295	.205	.141	2	NC/UNC/UNJC
#4	40	H2	1433816	40510200005	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	40	H3	1433817	40510200006	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	40	H4	1830286	40510200007	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	40	H5	1433819	40510200008	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	40	H6	1433820	40510200009	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	48	H2	1433821	40510200010	1.88	.335	.227	.141	2	NF/UNF/UNJF
#4	48	H4	1830287	40510200011	1.88	.335	.227	.141	2	NF/UNF/UNJF
#5	40	H2	1433823	40510200012	1.94	.374	.251	.141	3	NC/UNC/UNJC
#6	32	H2	1832101	40510200013	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H3	1433825	40510200014	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H4	1433826	40510200015	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H5	1433827	40510200016	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H6	1897973	40510200017	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H7	1433829	40510200018	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	40	H2	1832102	40510200019	2.00	.413	.274	.141	3	NF/UNF/UNJF
#6	40	H3	1433831	40510200020	2.00	.413	.274	.141	3	NF/UNF/UNJF
#8	32	H2	1433832	40510200021	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H3	1433833	40510200022	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H4	1433834	40510200023	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H5	1433835	40510200024	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H6	1433836	40510200025	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H7	1433837	40510200026	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	36	H2	1433838	40510200027	2.13	.453	.297	.168	3	NF/UNF/UNJF
#10	24	H3	1433839	40510200028	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	24	H5	1891831	40510200030	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	24	H7	1877826	40510200032	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	32	H2	1433844	40510200033	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H3	1433845	40510200034	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H4	1237813	40510200035	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H5	1433846	40510200036	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H6	1433847	40510200037	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H7	1433848	40510200038	2.38	.531	.344	.194	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

(continued on next page)

K-Stainless HSS Spiral Point Plug Taps for Through Holes

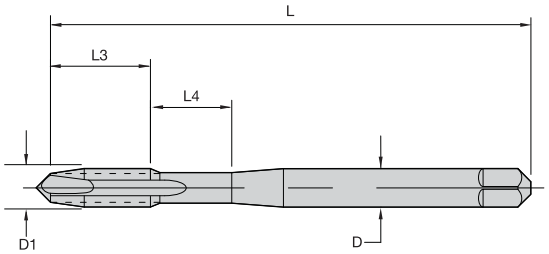
K-Stainless — Machine Screw and Fractional — Spiral Point, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

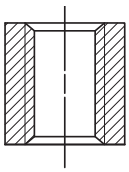
(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#12	24	H3	1433849	40510200039	2.38	.571	.366	.220	3	NC/UNC/UNJC
#12	28	H3	1433850	40510200040	2.38	.571	.366	.220	3	NF/UNF/UNJF
1/4	20	H2	1433851	40510200041	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	20	H3	1433852	40510200042	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	20	H5	1433853	40510200043	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	20	H7	1433854	40510200044	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	28	H2	1433855	40510200045	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H3	1433856	40510200046	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H4	1433858	40510200047	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H5	1433859	40510200048	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H6	1433860	40510200049	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H7	1433861	40510200050	2.50	.591	.409	.255	3	NF/UNF/UNJF
5/16	18	H3	1433862	40510200051	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	18	H5	1433863	40510200052	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	18	H7	1433864	40510200053	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	24	H3	1433865	40510200054	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H4	1433866	40510200055	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H5	1433867	40510200056	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H6	1433868	40510200057	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H7	1433869	40510200058	2.72	.669	.456	.318	3	NF/UNF/UNJF
3/8	16	H3	1433870	40510200059	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	16	H5	1433871	40510200060	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	16	H7	1832184	40510200061	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	24	H3	1433873	40510200062	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H4	1433874	40510200063	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H5	1433875	40510200064	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H6	1433876	40510200065	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H7	1433877	40510200066	2.94	.748	.502	.381	3	NF/UNF/UNJF
7/16	14	H3	1433878	40510200067	3.16	.866	–	.323	3	NC/UNC/UNJC
7/16	14	H5	1433879	40510200068	3.16	.866	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1433881	40510200070	3.16	.866	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1433882	40510200071	3.16	.866	–	.323	3	NF/UNF/UNJF
7/16	20	H6	1907673	40510200072	3.16	.866	–	.323	3	NF/UNF/UNJF
7/16	20	H7	1820627	40510200073	3.16	.866	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1433885	40510200074	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1433886	40510200075	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	13	H7	1433887	40510200076	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1433888	40510200077	3.38	.984	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1433889	40510200078	3.38	.984	–	.367	3	NF/UNF/UNJF
1/2	20	H6	1433890	40510200079	3.38	.984	–	.367	3	NF/UNF/UNJF
9/16	12	H3	1433892	40510200081	3.59	.984	–	.429	3	NC/UNC/UNJC
9/16	18	H3	1433893	40510200082	3.59	.984	–	.429	3	NF/UNF/UNJF
5/8	11	H3	1433894	40510200083	3.81	1.083	–	.480	3	NC/UNC/UNJC
5/8	11	H5	1433895	40510200084	3.81	1.083	–	.480	3	NC/UNC/UNJC
5/8	11	H7	1433896	40510200085	3.81	1.083	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1433897	40510200086	3.81	1.083	–	.480	3	NF/UNF/UNJF
5/8	18	H5	1433898	40510200087	3.81	1.083	–	.480	3	NF/UNF/UNJF
5/8	18	H7	1433899	40510200089	3.81	1.083	–	.480	3	NF/UNF/UNJF
3/4	10	H3	1433900	40510200090	4.25	1.201	–	.590	3	NC/UNC/UNJC
3/4	16	H3	1433901	40510200091	4.25	1.201	–	.590	3	NF/UNF/UNJF
7/8	9	H4	1433902	40510200092	4.69	1.339	–	.697	3	NC/UNC/UNJC
7/8	14	H4	1433903	40510200093	4.69	1.339	–	.697	3	NF/UNF/UNJF
1	8	H4	1433904	40510200094	5.13	1.496	–	.800	3	NC/UNC/UNJC
1	12	H4	1896523	40510200095	5.13	1.496	–	.800	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Machine Screw and Fractional Sizes





Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique flute geometry for lower tapping torque and pushes chips ahead of the tap during threading.
- Available in a wide variety of pitch diameter (H or D) limits to enable finer adjustments of product pitch diameter.
- Surface treatment is TiN coat for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (TiN).
- Steel and steel alloys < 275 HB (TiN).
- Plastic (TiN).
- Ductile irons (TiN).

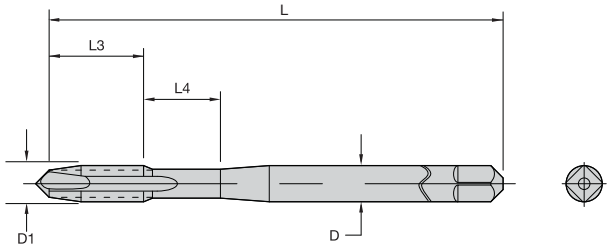
K-Stainless — Machine Screw and Fractional — Spiral Point Plug Chamfer (3 to 5 Pitches), TiN Coated

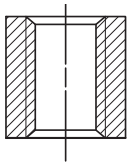
D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1434466	40510200729	1.88	.335	.227	.141	2	NC/UNC/UNJC
#5	40	H2	1434467	40510200730	1.94	.374	.251	.141	3	NC/UNC/UNJC
#6	32	H3	1434468	40510200731	2.00	.413	.274	.141	3	NC/UNC/UNJC
#8	32	H3	1434469	40510200732	2.13	.453	.297	.168	3	NC/UNC/UNJC
#10	24	H3	1434470	40510200733	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	32	H3	1434493	40510200756	2.38	.531	.344	.194	3	NF/UNF/UNJF
1/4	20	H3	1434494	40510200757	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	28	H3	1434495	40510200758	2.50	.591	.409	.255	3	NF/UNF/UNJF
5/16	18	H3	1434496	40510200759	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	24	H3	1434497	40510200760	2.72	.669	.456	.318	3	NF/UNF/UNJF
3/8	16	H3	1434498	40510200761	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	24	H3	1434499	40510200762	2.94	.748	.502	.381	3	NF/UNF/UNJF
7/16	14	H3	1434500	40510200763	3.16	.866	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434501	40510200764	3.16	.866	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434502	40510200765	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434503	40510200766	3.38	.984	–	.367	3	NF/UNF/UNJF
9/16	12	H3	1434504	40510200767	3.59	.984	–	.429	3	NC/UNC/UNJC
9/16	18	H3	1434505	40510200768	3.59	.984	–	.429	3	NF/UNF/UNJF
5/8	11	H3	1434506	40510200769	3.81	1.083	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1434507	40510200770	3.81	1.083	–	.480	3	NF/UNF/UNJF
3/4	10	H3	1434508	40510200771	4.25	1.201	–	.590	3	NC/UNC/UNJC
3/4	16	H3	1434509	40510200772	4.25	1.201	–	.590	3	NF/UNF/UNJF
7/8	9	H4	1434510	40510200773	4.69	1.339	–	.697	3	NC/UNC/UNJC
7/8	14	H4	1434511	40510200774	4.69	1.339	–	.697	3	NF/UNF/UNJF
1	8	H4	1434512	40510200775	5.13	1.496	–	.800	3	NC/UNC/UNJC

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

K-Stainless HSS Spiral Point 6" Extended Length Plug Taps for Through Holes

Machine Screw and Fractional Sizes





Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique flute geometry for lower tapping torque and pushes chips ahead of the tap during threading.
- Available in a wide variety of pitch diameter (H or D) limits to enable finer adjustments of product pitch diameter.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

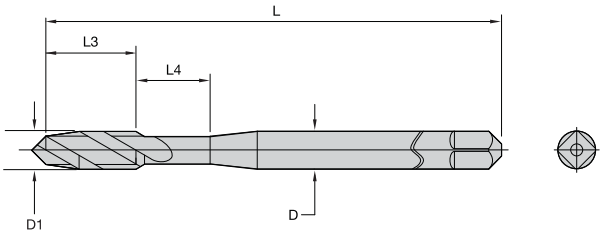
- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless — Machine Screw and Fractional — Spiral Point, Extended Length, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1434538	40510200801	6.00	.256	.181	.141	2	NC/UNC/UNJC
#3	48	H2	1434540	40510200803	6.00	.295	.205	.141	2	NC/UNC/UNJC
#4	40	H2	1434541	40510200804	6.00	.335	.227	.141	2	NC/UNC/UNJC
#6	32	H3	1434543	40510200806	6.00	.413	.274	.141	3	NC/UNC/UNJC
#8	32	H3	1434544	40510200807	6.00	.453	.297	.168	3	NC/UNC/UNJC
#10	24	H3	1434547	40510200810	6.00	.531	.344	.194	3	NC/UNC/UNJC
#10	32	H3	1434549	40510200812	6.00	.531	.344	.194	3	NF/UNF/UNJF
1/4	20	H3	1434550	40510200813	6.00	.591	.409	.255	3	NC/UNC/UNJC
1/4	28	H3	1434552	40510200815	6.00	.591	.409	.255	3	NF/UNF/UNJF
5/16	18	H3	1434553	40510200816	6.00	.669	.456	.318	3	NC/UNC/UNJC
5/16	24	H3	1434554	40510200817	6.00	.669	.456	.318	3	NF/UNF/UNJF
3/8	16	H3	1434555	40510200818	6.00	.748	.502	.381	3	NC/UNC/UNJC
3/8	24	H3	1434471	40510200734	6.00	.748	.502	.381	3	NF/UNF/UNJF
7/16	14	H3	1434472	40510200735	6.00	.866	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434473	40510200736	6.00	.866	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434474	40510200737	6.00	.984	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434475	40510200738	6.00	.984	–	.367	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Metric Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless Spiral Flute Taps — Metric — Modified Bottoming Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

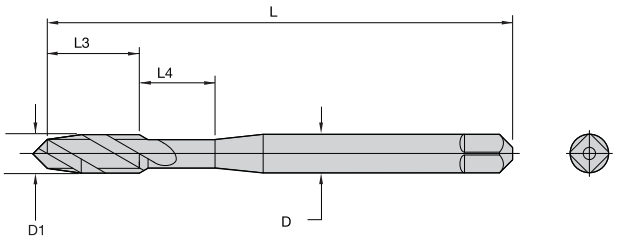
tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M3 x 0,5	D3	1434063	40510200256	1.94	.197	.428	.141	3
M3,5 x 0,6	D4	1823189	40510200258	2.00	.276	.411	.141	3
M4 x 0,7	D4	1434067	40510200260	2.13	.276	.474	.168	3
M5 x 0,8	D4	1434069	40510200262	2.38	.354	.521	.194	3
M6 x 1	D5	1434071	40510200264	2.50	.433	.567	.255	3
M7 x 1	D5	1434073	40510200266	2.72	.433	.692	.318	3
M8 x 1,25	D5	1434077	40510200270	2.72	.472	.653	.318	3
M8 x 1	D5	1434075	40510200268	2.72	.472	.653	.318	3
M10 x 1,5	D6	1434081	40510200274	2.94	.512	.738	.381	3
M10 x 1,25	D5	1434079	40510200272	2.94	.472	.778	.381	3
M12 x 1,75	D6	1434085	40510200278	3.38	.591	–	.367	3
M12 x 1,25	D5	1823190	40510200276	3.38	.551	–	.367	3
M14 x 2	D7	1434089	40510200282	3.59	.709	–	.429	3
M14 x 1,5	D6	1434087	40510200280	3.59	.551	–	.429	3
M16 x 2	D7	1434093	40510200286	3.81	.709	–	.480	3
M16 x 1,5	D6	1434091	40510200284	3.81	.551	–	.480	3
M18 x 2,5	D7	1823191	40510200290	4.03	.787	–	.542	3

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

K-Stainless HSS Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Modified Bottoming Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1433906	40510200096	1.75	.157	.280	.141	2	NC/UNC/UNJC
#3	48	H2	1433907	40510200097	1.81	.197	.303	.141	2	NC/UNC/UNJC
#4	40	H2	1433908	40510200098	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	40	H3	1433910	40510200100	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	40	H4	1835472	40510200102	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	40	H5	1922028	40510200103	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	48	H2	1886223	40510200106	1.88	.236	.326	.141	2	NF/UNF/UNJF
#5	40	H2	1863842	40510200108	2.00	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H2	1832186	40510200110	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H3	1433922	40510200112	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H4	1898302	40510200114	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H5	1433925	40510200115	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H7	1433927	40510200117	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	40	H2	1881033	40510200118	2.00	.276	.411	.141	3	NF/UNF/UNJF
#6	40	H3	1433930	40510200121	2.00	.276	.411	.141	3	NF/UNF/UNJF
#8	32	H2	1832187	40510200123	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H3	1433934	40510200125	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H4	1433936	40510200127	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H5	1433937	40510200128	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H7	1881092	40510200131	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H2	1433941	40510200132	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H3	1433942	40510200133	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H4	1433944	40510200135	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H5	1841138	40510200136	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H7	1876292	40510200138	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H2	1433948	40510200139	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H3	1433949	40510200140	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H4	1825290	40510200142	2.38	.276	.599	.194	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

(continued on next page)

K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Modified Bottoming Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#10	32	H5	1433952	40510200143	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H6	1881030	40510200145	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H7	1433955	40510200146	2.38	.276	.599	.194	3	NF/UNF/UNJF
#12	24	H3	1433956	40510200147	2.38	.354	.583	.220	3	NC/UNC/UNJC
1/4	20	H2	1322898	40510200149	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H3	1433958	40510200150	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H5	1433960	40510200152	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H7	1433962	40510200154	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H2	1433963	40510200155	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H3	1433964	40510200156	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H4	1902775	40510200158	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H5	1433967	40510200159	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H6	1433969	40510200161	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H7	1433970	40510200162	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1433971	40510200163	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H5	1433973	40510200165	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H7	1433975	40510200167	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1433976	40510200168	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H4	1832188	40510200170	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H5	1853650	40510200171	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H7	1433982	40510200174	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1433983	40510200175	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1433985	40510200177	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H7	1433987	40510200179	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1433989	40510200181	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H4	1433991	40510200183	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H6	1433995	40510200187	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1433997	40510200189	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	14	H5	1433999	40510200191	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	14	H7	1832189	40510200193	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434002	40510200194	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1434004	40510200196	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H6	1434006	40510200198	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H7	1832190	40510200199	3.16	.472	–	.323	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

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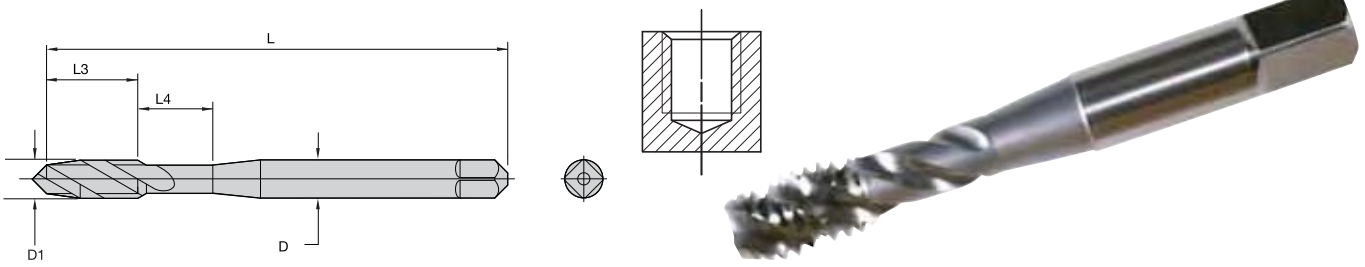
K-Stainless HSS Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



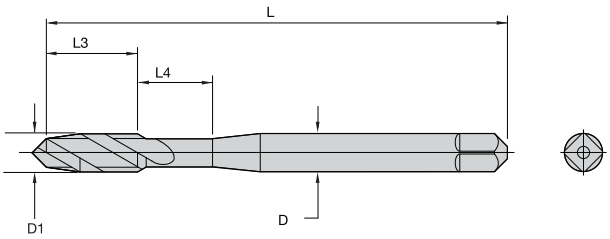
K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Modified Bottoming Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
1/2	13	H3	1434008	40510200200	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1434010	40510200202	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H7	1434012	40510200204	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434013	40510200205	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1832215	40510200207	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H6	1822849	40510200209	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H7	1888086	40510200210	3.38	.472	–	.367	3	NF/UNF/UNJF
9/16	12	H3	1434019	40510200211	3.59	.709	–	.367	3	NC/UNC/UNJC
9/16	12	H5	1822850	40510200213	3.59	.709	–	.429	3	NC/UNC/UNJC
9/16	18	H3	1434022	40510200214	3.59	.512	–	.429	3	NF/UNF/UNJF
9/16	18	H5	1434024	40510200216	3.59	.512	–	.429	3	NF/UNF/UNJF
5/8	11	H3	1434025	40510200217	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	11	H5	1434027	40510200219	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	11	H7	1434029	40510200221	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1434030	40510200222	3.81	.512	–	.480	3	NF/UNF/UNJF
5/8	18	H5	1434032	40510200224	3.81	.512	–	.480	3	NF/UNF/UNJF
5/8	18	H6	1877950	40510200226	3.81	.512	–	.480	3	NF/UNF/UNJF
5/8	18	H7	1434035	40510200227	3.81	.512	–	.480	4	NF/UNF/UNJF
3/4	10	H3	1434036	40510200228	4.25	.827	–	.480	3	NC/UNC/UNJC
3/4	10	H5	1434038	40510200230	4.25	.827	–	.590	4	NC/UNC/UNJC
3/4	16	H3	1434039	40510200231	4.25	.591	–	.590	4	NF/UNF/UNJF
3/4	16	H5	1434041	40510200233	4.25	.591	–	.590	4	NF/UNF/UNJF
7/8	9	H4	1434042	40510200234	4.69	.827	–	.697	4	NC/UNC/UNJC
7/8	14	H4	1434043	40510200235	4.69	.709	–	.697	4	NF/UNF/UNJF
1	8	H4	1434044	40510200236	5.13	.984	–	.800	4	NC/UNC/UNJC
1	12	H4	1434045	40510200237	5.13	.709	–	.800	4	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is TiN Coat for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (TiN).
- Steel and steel alloys < 275 HB (TiN).
- Plastic (TiN).
- Ductile irons (TiN).

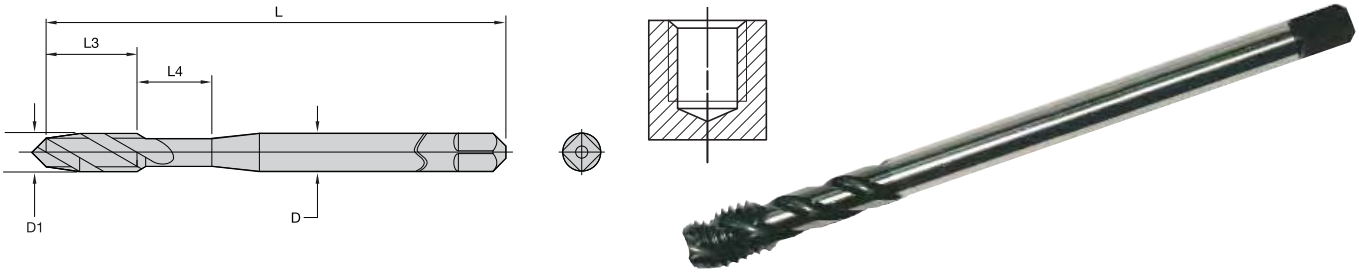
K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Modified Bottoming Chamfer (2½ to 3½ Pitches), TiN Coated

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1846796	40510200776	1.88	.236	.326	.141	2	NC/UNC/UNJC
#5	40	H2	1434514	40510200777	1.94	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H3	1434515	40510200778	2.00	.276	.411	.141	3	NC/UNC/UNJC
#8	32	H3	1434516	40510200779	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1434517	40510200780	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1434518	40510200781	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434519	40510200782	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1434520	40510200783	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434521	40510200784	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1434522	40510200785	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1434523	40510200786	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1434524	40510200787	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1434525	40510200788	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434526	40510200789	3.16	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434527	40510200790	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434528	40510200791	3.38	.472	–	.367	3	NF/UNF/UNJF
9/16	12	H3	1434529	40510200792	3.59	.709	–	.429	3	NC/UNC/UNJC
9/16	18	H3	1434530	40510200793	3.59	.512	–	.429	3	NF/UNF/UNJF
5/8	11	H3	1434531	40510200794	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1434532	40510200795	3.81	.512	–	.480	3	NF/UNF/UNJF
3/4	10	H3	1434533	40510200796	4.25	.827	–	.590	4	NC/UNC/UNJC
3/4	16	H3	1434534	40510200797	4.25	.591	–	.590	4	NF/UNF/UNJF
7/8	9	H4	1434535	40510200798	4.69	.827	–	.697	4	NC/UNC/UNJC
7/8	14	H4	1434536	40510200799	4.69	.709	–	.697	4	NF/UNF/UNJF
1	8	H4	1434537	40510200800	5.13	.984	–	.800	4	NC/UNC/UNJC

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

K-Stainless HSS Spiral Flute Extended Length Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

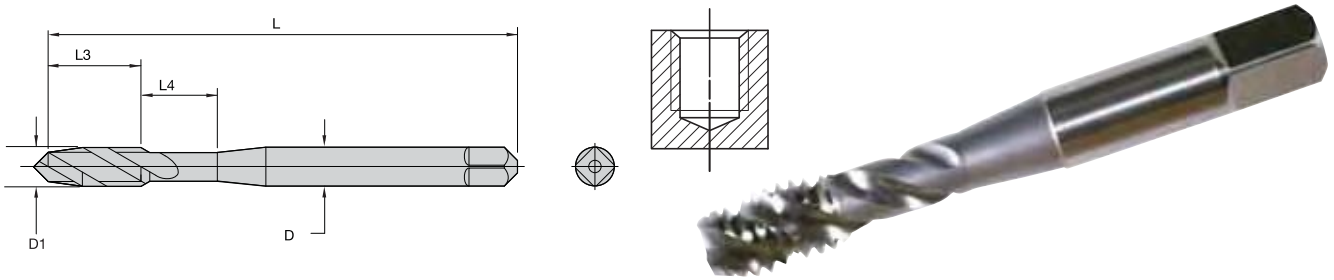
- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Extended Length, Modified Bottoming Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1434476	40510200739	6.00	.157	.280	.141	2	NC/UNC/UNJC
#3	48	H2	1434477	40510200740	6.00	.197	.303	.141	2	NC/UNC/UNJC
#4	40	H2	1434478	40510200741	6.00	.236	.326	.141	2	NC/UNC/UNJC
#6	32	H3	1434479	40510200742	6.00	.276	.411	.141	3	NC/UNC/UNJC
#8	32	H3	1434480	40510200743	6.00	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1434481	40510200744	6.00	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1434482	40510200745	6.00	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434483	40510200746	6.00	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1434484	40510200747	6.00	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434485	40510200748	6.00	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1434486	40510200749	6.00	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1434487	40510200750	6.00	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1434488	40510200751	6.00	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1434489	40510200752	6.00	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434490	40510200753	6.00	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434491	40510200754	6.00	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434492	40510200755	6.00	.472	–	.367	3	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Metric Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless Spiral Flute Taps — Metric — Full Bottoming Chamfer (1 to 2 Pitches), Oxide Treatment

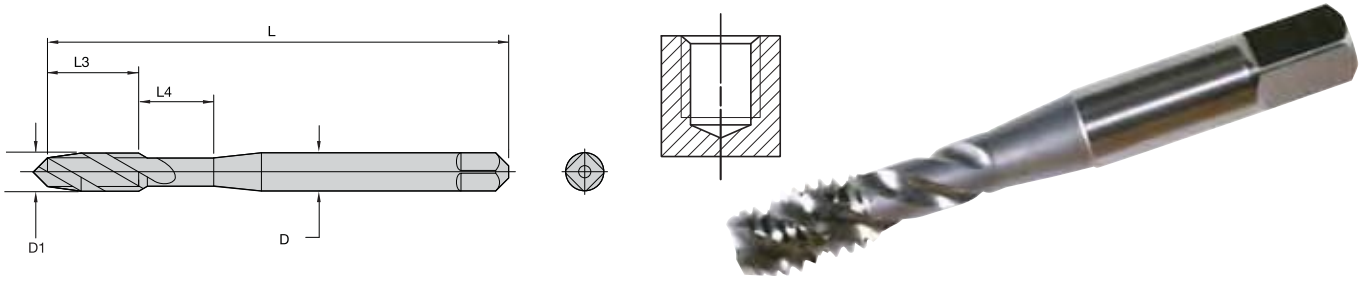
tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M3 x 0,5	D3	1434064	40510200257	1.94	.197	.428	.141	3
M3,5 x 0,6	D4	1434066	40510200259	2.00	.276	.411	.141	3
M4 x 0,7	D4	1434068	40510200261	2.13	.276	.474	.168	3
M5 x 0,8	D4	1434070	40510200263	2.38	.354	.521	.194	3
M6 x 1	D5	1434072	40510200265	2.50	.433	.567	.255	3
M7 x 1	D5	1434074	40510200267	2.72	.433	.692	.318	3
M8 x 1,25	D5	1434078	40510200271	2.72	.472	.653	.318	3
M8 x 1	D5	1434076	40510200269	2.72	.472	.653	.318	3
M10 x 1,5	D6	1434082	40510200275	2.94	.512	.738	.381	3
M10 x 1,25	D5	1434080	40510200273	2.94	.472	.778	.381	3
M12 x 1,75	D6	1434086	40510200279	3.38	.591	–	.367	3
M12 x 1,25	D5	1434084	40510200277	3.38	.551	–	.367	3
M14 x 2	D7	1434090	40510200283	3.59	.709	–	.429	3
M14 x 1,5	D6	1434088	40510200281	3.59	.551	–	.429	3
M16 x 2	D7	1434094	40510200287	3.81	.709	–	.480	3
M16 x 1,5	D6	1434092	40510200285	3.81	.551	–	.480	3
M18 x 1,5	D6	1434096	40510200289	4.03	.551	–	.542	4

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

K-Stainless HSS Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping.
- Available in a wide variety of pitch diameter (H, D) limits to enable finer adjustment in product pitch diameter in the finished product.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Made to USCTI and ANSI dimensions.
- Neck design for CNC equipment.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Full Bottoming Chamfer (1 to 2 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1832185	40510200099	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	40	H3	1433911	40510200101	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	40	H5	1433914	40510200104	1.88	.236	.326	.141	2	NC/UNC/UNJC
#4	48	H2	1433917	40510200107	1.88	.236	.326	.141	2	NF/UNF/UNJF
#5	40	H2	1433919	40510200109	1.94	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H2	1921020	40510200111	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H3	1433923	40510200113	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H5	1832957	40510200116	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	40	H2	1882494	40510200119	2.00	.276	.411	.141	3	NF/UNF/UNJF
#6	40	H3	1882048	40510200122	2.00	.276	.411	.141	3	NF/UNF/UNJF
#8	32	H2	1433933	40510200124	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H3	1433935	40510200126	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H5	1433938	40510200129	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1433943	40510200134	2.38	.354	.521	.194	3	NC/UNC/UNJC

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

(continued on next page)

Machine Screw and Fractional Sizes

K-Stainless Spiral Flute Taps — Machine Screw and Fractional — Full Bottoming Chamfer (1to 2 Pitches), Oxide Treatment

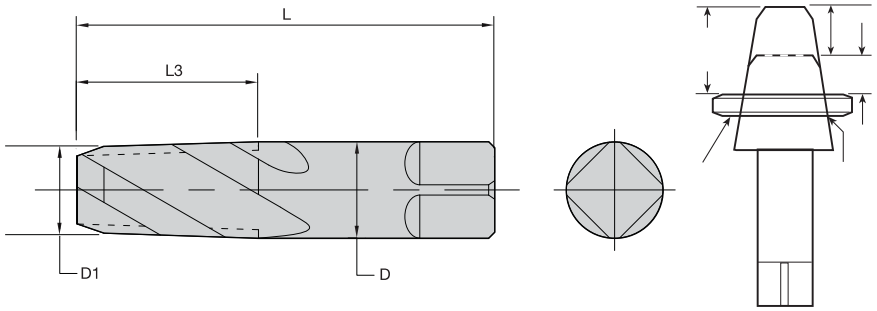
(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#10	24	H5	1433946	40510200137	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1433950	40510200141	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H5	1433953	40510200144	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1433959	40510200151	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H5	1433961	40510200153	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1433965	40510200157	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H5	1433968	40510200160	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1433972	40510200164	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H5	1433974	40510200166	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1433977	40510200169	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H5	1433980	40510200172	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1433984	40510200176	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1433986	40510200178	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H7	1433988	40510200180	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1433990	40510200182	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H4	1832958	40510200184	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H5	1433994	40510200186	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1433998	40510200190	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	14	H5	1434000	40510200192	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434003	40510200195	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1434005	40510200197	3.16	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434009	40510200201	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1434011	40510200203	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434014	40510200206	3.38	.472	–	.367	3	NF/UNF/UNJF
9/16	12	H3	1434020	40510200212	3.59	.709	–	.367	3	NC/UNC/UNJC
9/16	18	H3	1434023	40510200215	3.59	.512	–	.429	3	NF/UNF/UNJF
5/8	11	H3	1434026	40510200218	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	11	H5	1822852	40510200220	3.81	.748	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1434031	40510200223	3.81	.512	–	.480	3	NF/UNF/UNJF
5/8	18	H5	1876287	40510200225	3.81	.512	–	.480	3	NF/UNF/UNJF
3/4	10	H3	1434037	40510200229	4.25	.827	–	.590	4	NC/UNC/UNJC
3/4	16	H3	1434040	40510200232	4.25	.591	–	.590	4	NF/UNF/UNJF

K-Stainless taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

High-Performance Taps

K-Stainless HSS Spiral Flute Pipe Taps for NPT and NPTF Threads



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Ground thread pipe taps are standard in American Standard Pipe Thread (NPT) and American Standard Dryseal Pipe Thread (NPTF).
- NPT threads require the use of a sealer such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- Surface treatment is oxide for tapping steels and stainless steels < 30 HRc.
- Standard projection.
- Unique slow spiral tap geometry for improved thread finish when tapping stainless steels.

Application Information:

- Stainless steels < 275 HB (oxide).
- Steel and steel alloys < 275 HB (oxide).
- Ductile irons (oxide).

K-SS — Spiral Flute Pipe Taps, Standard Chamfer (2 ½ to 3 ½ Pitches), Oxide Treatment

NPT Threads

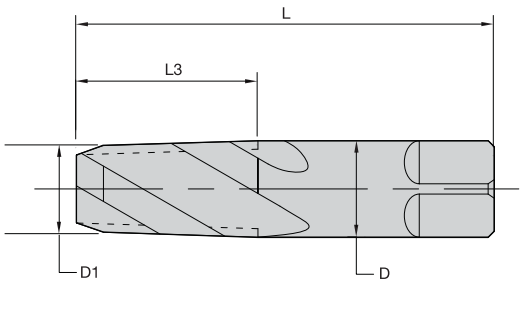
D1	TPI	order number	catalog number	L	L3	D	number of flutes	thread series
1/16	27	1434575	40510200838	2.13	.688	.313	4	NPT
1/8	27	1434576	40510200839	2.13	.750	.438	4	NPT
1/8	27	1434577	40510200840	2.13	.750	.313	4	NPT
1/4	18	1434578	40510200841	2.44	1.063	.563	4	NPT
3/8	18	1434579	40510200842	2.56	1.063	.700	4	NPT
1/2	14	1434580	40510200844	3.13	1.375	.688	4	NPT
3/4	14	1434582	40510200846	3.25	1.375	.906	4	NPT
1	11 1/2	1434584	40510200848	3.75	1.750	1.125	4	NPT

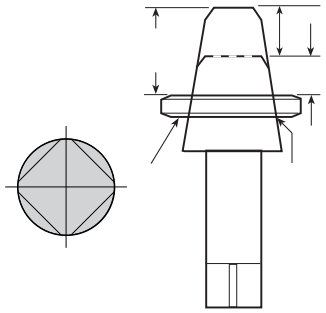
NPTF Threads

D1	TPI	order number	catalog number	L	L3	D	number of flutes	thread series
1/16	27	1434590	40510200855	2.13	.688	.313	4	NPTF
1/8	27	1434591	40510200856	2.13	.750	.438	4	NPTF
1/8	27	1434593	40510200859	2.13	.750	.313	4	NPTF
1/4	18	1434594	40510200860	2.44	1.063	.563	4	NPTF
3/8	18	1826041	40510200861	2.94	1.063	.700	4	NPTF
1/2	14	1434596	40510200862	3.13	1.375	.688	4	NPTF
3/4	14	1434597	40510200863	3.25	1.375	.906	4	NPTF
1	11 1/2	1434598	40510200864	3.75	1.750	1.125	4	NPTF

Catalog numbers 40510200839 (NPT) and 40510200856 (NPTF) have large shank.
Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

K-Stainless HSS Spiral Flute Pipe Taps for NPT and NPTF Threads





Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- Ground thread pipe taps are standard in American Standard Pipe Thread (NPT) and American Standard Dryseal Pipe Thread (NPTF).
- NPT threads require the use of a sealer such as Teflon® tape or pipe compound.
- NPTF dryseal threads give a pressure-tight joint without the use of sealer.
- Surface treatment TiN for tapping steels and stainless steels < 30 HRc.
- Standard projection.
- Unique slow spiral tap geometry for improved thread finish when tapping stainless steels.

Application Information:

- Stainless steels < 275 HB (TiN).
- Steel and steel alloys < 275 HB (TiN).
- Plastic (TiN).
- Ductile irons (TiN).

K-SS Spiral Flute Pipe Taps — Standard Chamfer (2 ½ to 3 ½ Pitches), TiN Coated

NPT Threads

D1	TPI	order number	catalog number	L	L3	D	number of flutes	thread series
1/16	27	1553904	40510200993	2.13	.688	.313	4	NPT
1/8	27	1553907	40510200994	2.13	.750	.438	4	NPT
1/8	27	1553909	40510200995	2.13	.750	.313	4	NPT
1/4	18	1553923	40510200996	2.44	1.063	.563	4	NPT
3/8	18	1553925	40510200997	2.56	1.063	.700	4	NPT
1/2	14	1553927	40510200998	3.13	1.375	.688	4	NPT
3/4	14	1553931	40510200999	3.25	1.375	.906	4	NPT
1	11 1/2	1553942	40510201000	3.75	1.750	1.125	4	NPT

NPTF Threads

D1	TPI	order number	catalog number	L	L3	D	number of flutes	thread series
1/16	27	1553946	40510201001	2.13	.688	.313	4	NPTF
1/8	27	1553948	40510201002	2.13	.750	.438	4	NPTF
1/8	27	1553954	40510201003	2.13	.750	.313	4	NPTF
1/4	18	1553958	40510201004	2.44	1.063	.563	4	NPTF
3/8	18	1553959	40510201005	2.56	1.063	.700	4	NPTF
1/2	14	1553960	40510201006	3.13	1.375	.688	4	NPTF
3/4	14	1553982	40510201008	3.25	1.375	.906	4	NPTF
1	11 1/2	1553985	40510201010	3.75	1.750	1.125	4	NPTF

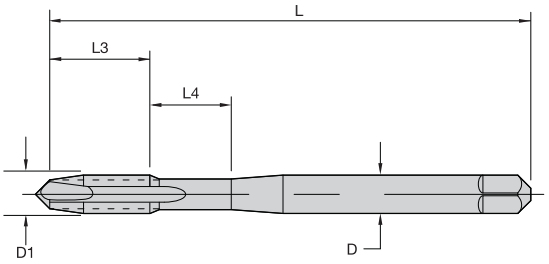
Catalog numbers 40510200994 (NPT) and 40510201002 (NPTF) have large shank.
Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

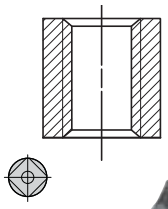
High-Performance Taps

KENNAMETAL

K-NI HSS Spiral Point Plug Taps for Through Holes

Metric Sizes





Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI dimensions.

Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI — Metric — Spiral Point Taps, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

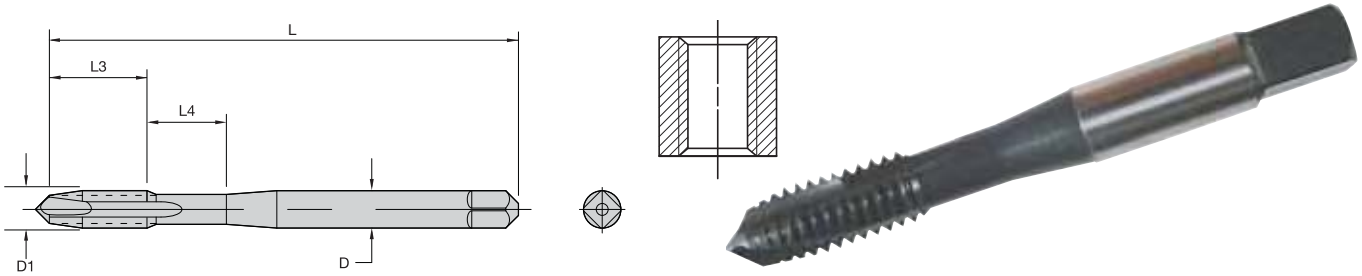
tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M2,5 x 0,45	D3	1554019	40510201034	1.81	.295	.305	.141	2
M3 x 0,5	D3	1554020	40510201035	1.94	.374	.251	.141	3
M3,5 x 0,6	D4	1554021	40510201036	2.00	.413	.274	.141	3
M4 x 0,7	D4	1554022	40510201037	2.13	.453	.297	.168	3
M5 x 0,8	D5	1554024	40510201038	2.38	.531	.344	.194	3
M6 x 1	D5	1554025	40510201039	2.50	.591	.409	.255	3
M7 x 1	D5	1554027	40510201040	2.72	.669	.456	.318	3
M8 x 1,25	D5	1554029	40510201042	2.72	.669	.456	.318	3
M8 x 1	D5	1554028	40510201041	2.72	.669	.456	.318	3
M10 x 1,5	D6	1554033	40510201044	2.94	.750	–	.381	3
M10 x 1,25	D5	1554031	40510201043	2.94	.750	–	.381	3
M12 x 1,75	D6	1554036	40510201046	3.38	.984	–	.367	3
M12 x 1,25	D5	1554034	40510201045	3.38	.984	–	.367	3

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).

Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI — Machine Screw and Fractional — Spiral Point Taps, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1434098	40510200291	1.75	.256	.181	.141	2	NC/UNC/UNJC
#4	40	H2	1434099	40510200292	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	40	H3	1810220	40510200293	1.88	.335	.227	.141	2	NC/UNC/UNJC
#4	48	H2	1810221	40510200295	1.88	.335	.227	.141	2	NF/UNF/UNJF
#5	40	H2	1810397	40510200296	2.00	.374	.251	.141	3	NC/UNC/UNJC
#6	32	H3	1434104	40510200298	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H5	1823380	40510200299	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	40	H2	1823382	40510200301	2.00	.413	.274	.141	3	NF/UNF/UNJF
#8	32	H3	1434107	40510200303	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H5	1434108	40510200305	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H6	1434109	40510200306	2.13	.453	.297	.168	3	NC/UNC/UNJC
#10	24	H3	1810398	40510200308	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	24	H4	1434112	40510200309	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	24	H5	1823403	40510200310	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	32	H2	1823407	40510200312	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H3	1434116	40510200313	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H4	1434117	40510200314	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H5	1877801	40510200315	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H6	1897728	40510200316	2.38	.531	.344	.194	3	NF/UNF/UNJF

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

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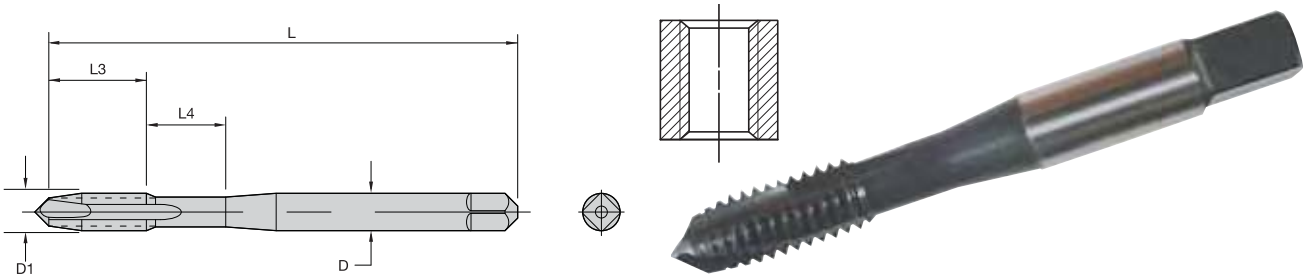
K-NI HSS Spiral Point Plug Taps for Through Holes



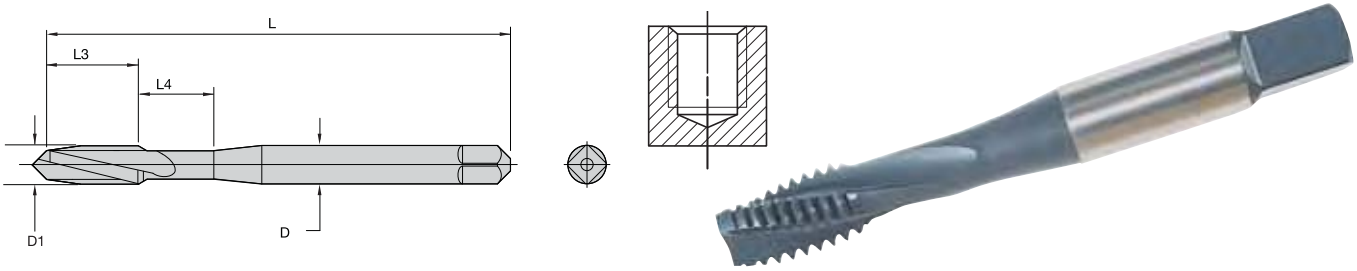
K-NI — Machine Screw and Fractional — Spiral Point Taps, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
1/4	20	H3	1434121	40510200318	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	20	H5	1823410	40510200319	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	28	H3	1434124	40510200321	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H4	1823460	40510200322	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H5	1832151	40510200323	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H6	1882495	40510200324	2.50	.591	.409	.255	3	NF/UNF/UNJF
5/16	18	H3	1434129	40510200326	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	18	H5	1823462	40510200327	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	18	H7	1882497	40510200328	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	24	H3	1434132	40510200329	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H4	1434133	40510200330	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H5	1434134	40510200331	2.72	.669	.456	.318	3	NF/UNF/UNJF
5/16	24	H7	1882498	40510200333	2.72	.669	.456	.318	3	NF/UNF/UNJF
3/8	16	H3	1434137	40510200334	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	16	H5	1719295	40510200335	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	16	H7	1823466	40510200336	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	24	H3	1434139	40510200337	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H4	1434140	40510200338	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H5	1823467	40510200339	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H6	1823874	40510200340	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H7	1876239	40510200341	2.94	.748	.502	.381	3	NF/UNF/UNJF
7/16	14	H3	1434144	40510200342	3.16	.866	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434146	40510200344	3.16	.866	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1823875	40510200345	3.16	.866	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434148	40510200346	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1434149	40510200347	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	13	H7	1904186	40510200348	3.38	.984	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434151	40510200349	3.38	.984	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1823876	40510200350	3.38	.984	–	.367	3	NF/UNF/UNJF
1/2	20	H7	1877958	40510200351	3.38	.984	–	.367	3	NF/UNF/UNJF
5/8	11	H3	1810453	40510200352	3.81	1.083	–	.480	3	NC/UNC/UNJC
5/8	18	H3	1434155	40510200353	3.81	1.083	–	.480	3	NF/UNF/UNJF
3/4	10	H3	1810443	40510200354	4.25	1.201	–	.590	3	NC/UNC/UNJC
3/4	16	H3	1810444	40510200355	4.25	1.201	–	.590	3	NF/UNF/UNJF

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Metric Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI dimensions.

Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI — Metric — Spiral Flute Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Oxide Treatment

tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M2,5 x 0,45	D3	1554346	40510201060	1.81	.295	.205	.141	2
M3 x 0,5	D3	1554349	40510201061	1.94	.197	.428	.141	3
M3,5 x 0,6	D4	1554350	40510201062	2.00	.276	.411	.141	3
M4 x 0,7	D4	1554351	40510201063	2.13	.276	.474	.168	3
M5 x 0,8	D5	1554352	40510201064	2.38	.354	.521	.194	3
M6 x 1	D5	1554354	40510201065	2.50	.433	.567	.255	3
M7 x 1	D5	1554355	40510201066	2.72	.433	.692	.318	3
M8 x 1,25	D5	1554358	40510201068	2.72	.472	.653	.318	3
M8 x 1	D5	1554357	40510201067	2.72	.472	.653	.318	3
M10 x 1,5	D6	1554361	40510201070	2.94	.512	.738	.381	3
M10 x 1,25	D5	1554359	40510201069	2.94	.472	.778	.381	3
M12 x 1,75	D6	1554364	40510201072	3.38	.591	–	.367	3
M12 x 1,25	D5	1554362	40510201071	3.38	.551	–	.367	3

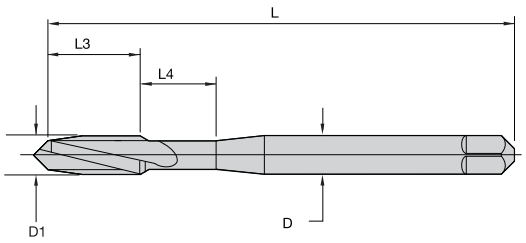
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

High-Performance Taps

K-NI HSS Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI dimensions.

Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI — Machine Screw and Fractional — Spiral Flute Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	1434157	40510200356	1.75	.157	.280	.141	3	NC/UNC/UNJC
#3	48	H2	1810230	40510200357	1.81	.197	.303	.141	3	NC/UNC/UNJC
#4	40	H2	1823877	40510200358	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	40	H3	1810464	40510200361	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	40	H5	1434163	40510200364	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	48	H2	1434165	40510200366	1.88	.236	.326	.141	3	NF/UNF/UNJF
#5	40	H2	1810328	40510200368	1.94	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H2	1890385	40510200370	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H3	1901734	40510200372	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H5	1434173	40510200374	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H7	1434175	40510200376	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	40	H2	1434176	40510200377	2.00	.276	.411	.141	3	NF/UNF/UNJF
#8	32	H2	1823923	40510200379	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H3	1434180	40510200381	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H4	1434182	40510200383	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H5	1434183	40510200384	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1434187	40510200388	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H4	1434189	40510200390	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H5	1876263	40510200391	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	24	H7	1838353	40510200393	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H4	1434196	40510200397	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H5	1434197	40510200398	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H7	1823924	40510200401	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434201	40510200402	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H5	1434203	40510200404	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1434206	40510200407	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H4	1434208	40510200409	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H6	1434212	40510200413	2.50	.354	.646	.255	3	NF/UNF/UNJF
1/4	28	H7	1867318	40510200414	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434214	40510200415	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H5	1434216	40510200417	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H7	1434217	40510200419	2.72	.472	.653	.318	3	NC/UNC/UNJC

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

(continued on next page)

Machine Screw and Fractional Sizes

K-NI — Machine Screw and Fractional — Spiral Flute Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Oxide Treatment

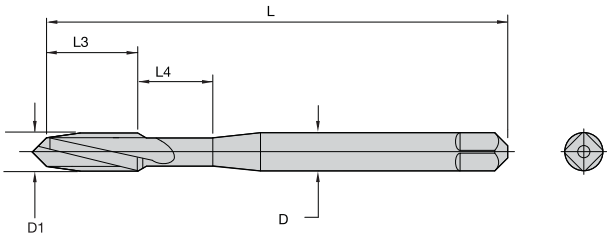
(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
5/16	24	H3	1434218	40510200420	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H4	1877947	40510200422	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H5	1825283	40510200424	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H6	1434223	40510200426	2.72	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H7	1867315	40510200427	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1434225	40510200428	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1434227	40510200430	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H7	1434229	40510200432	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1810442	40510200433	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H4	1825285	40510200435	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H5	1434234	40510200437	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H6	1434236	40510200439	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H7	1825286	40510200440	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1434238	40510200441	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1434241	40510200445	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1867316	40510200447	3.16	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434245	40510200449	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1882499	40510200451	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H7	1867317	40510200453	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434250	40510200454	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1434252	40510200456	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H7	1565882	40510200458	3.38	.472	–	.367	3	NF/UNF/UNJF
5/8	11	H3	1434254	40510200459	3.81	.748	–	.480	4	NC/UNC/UNJC
5/8	18	H3	1434256	40510200461	3.81	.512	–	.480	4	NF/UNF/UNJF
3/4	10	H3	1434258	40510200463	3.81	.827	–	.480	4	NC/UNC/UNJC
3/4	16	H3	1434260	40510200465	4.25	.591	–	.590	4	NF/UNF/UNJF

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

K-NI HSS Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI dimensions.

Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI — Machine Screw and Fractional — Spiral Flute Taps, Full Bottoming Chamfer (1 to 2 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1434160	40510200359	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	40	H3	1434162	40510200362	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	40	H5	1823878	40510200365	1.88	.236	.326	.141	3	NC/UNC/UNJC
#4	48	H2	1823927	40510200367	1.88	.236	.326	.141	3	NF/UNF/UNJF
#5	40	H2	1434168	40510200369	1.94	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H2	1434170	40510200371	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H3	1828006	40510200373	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H5	1876267	40510200375	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	40	H2	1434177	40510200378	2.00	.276	.411	.141	3	NF/UNF/UNJF
#8	32	H2	1434179	40510200380	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H3	1434181	40510200382	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1834860	40510200389	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1434195	40510200396	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434202	40510200403	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H5	1434204	40510200405	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1835471	40510200408	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434215	40510200416	2.72	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1809628	40510200421	2.72	.394	.731	.318	3	NF/UNF/UNJF

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

(continued on next page)

Machine Screw and Fractional Sizes

K-NI — Machine Screw and Fractional — Spiral Flute Taps, Full Bottoming Chamfer (1 to 2 Pitches), Oxide Treatment

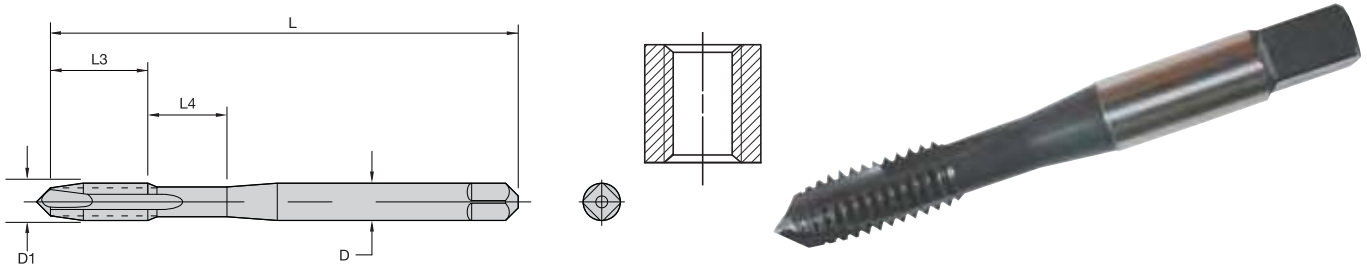
(continued from previous page)

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
5/16	24	H4	1823926	40510200423	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1836143	40510200429	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1434228	40510200431	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1825284	40510200434	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H4	1434233	40510200436	2.94	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H5	1434235	40510200438	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1434239	40510200442	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	14	H5	1434240	40510200444	3.16	.591	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1836144	40510200446	3.16	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1825287	40510200448	3.16	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1434246	40510200450	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1877961	40510200452	3.38	.630	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1826040	40510200455	3.38	.472	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1809627	40510200457	3.38	.472	–	.367	3	NF/UNF/UNJF
5/8	11	H3	1820629	40510200460	3.81	.748	–	.480	4	NC/UNC/UNJC
5/8	18	H3	1434257	40510200462	3.81	.512	–	.480	4	NF/UNF/UNJF
3/4	10	H3	1434259	40510200464	3.81	.827	–	.480	4	NC/UNC/UNJC

K-NI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

K-NI HSS Spiral Point Plug Taps for Screw Thread Inserts

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI dimensions.

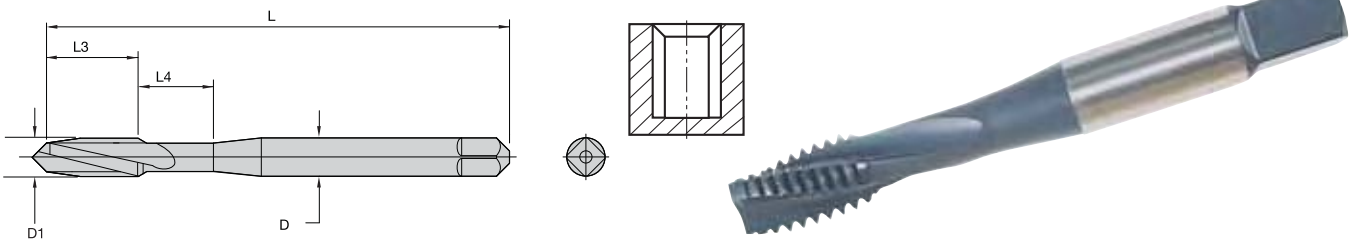
Application Information:

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI STI — Machine Screw and Fractional — Spiral Point Taps, Plug Chamfer (3 to 5 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H1	1877802	40510200466	2.00	.413	.274	.141	2	NC/UNC/UNJC
#4	40	H2	1825288	40510200467	2.00	.413	.274	.141	2	NC/UNC/UNJC
#4	40	H3	1830283	40510200468	2.00	.413	.274	.141	2	NC/UNC/UNJC
#6	32	H2	1825289	40510200469	2.38	.531	.344	.141	3	NC/UNC/UNJC
#6	32	H3	1434265	40510200470	2.38	.531	.344	.141	3	NC/UNC/UNJC
#6	32	H5	1825291	40510200471	2.38	.531	.344	.141	3	NC/UNC/UNJC
#8	32	H2	1434267	40510200472	2.38	.571	.366	.168	3	NC/UNC/UNJC
#8	32	H3	1909663	40510200473	2.38	.571	.366	.168	3	NC/UNC/UNJC
#10	24	H2	1877823	40510200475	2.50	.591	.409	.194	3	NC/UNC/UNJC
#10	24	H3	1877957	40510200476	2.50	.591	.409	.194	3	NC/UNC/UNJC
#10	24	H5	1929279	40510200477	2.50	.591	.409	.194	3	NC/UNC/UNJC
#10	32	H2	1434273	40510200478	2.50	.591	.409	.194	3	NF/UNF/UNJF
#10	32	H3	1434274	40510200479	2.50	.591	.409	.194	3	NF/UNF/UNJF
#10	32	H5	1830284	40510200480	2.50	.591	.409	.194	3	NF/UNF/UNJF
1/4	20	H2	1876290	40510200481	2.72	.669	.456	.255	3	NC/UNC/UNJC
1/4	20	H3	1434277	40510200482	2.72	.669	.456	.255	3	NC/UNC/UNJC
1/4	20	H5	1882500	40510200483	2.72	.669	.456	.255	3	NC/UNC/UNJC
1/4	28	H2	1825292	40510200484	2.72	.669	.456	.255	3	NF/UNF/UNJF
1/4	28	H3	1434280	40510200485	2.72	.669	.456	.255	3	NF/UNF/UNJF
1/4	28	H5	1434281	40510200486	2.72	.669	.456	.255	3	NF/UNF/UNJF
5/16	18	H3	1434282	40510200487	2.94	.748	.502	.318	3	NC/UNC/UNJC
5/16	18	H5	1877799	40510200489	2.94	.748	.502	.318	3	NC/UNC/UNJC
5/16	24	H2	1881031	40510200490	2.94	.748	.502	.318	3	NF/UNF/UNJF
5/16	24	H3	1434286	40510200491	2.94	.748	.502	.318	3	NF/UNF/UNJF
5/16	24	H5	1434287	40510200492	2.94	.748	.502	.318	3	NF/UNF/UNJF
3/8	16	H3	1825325	40510200493	3.38	.984	–	.381	3	NC/UNC/UNJC
3/8	16	H4	1434289	40510200494	3.38	.984	–	.381	3	NC/UNC/UNJC
3/8	16	H5	1929280	40510200495	3.38	.984	–	.381	3	NC/UNC/UNJC
3/8	24	H3	1434292	40510200497	3.16	.866	–	.381	3	NF/UNF/UNJF
3/8	24	H3	1826557	40510200496	3.16	.866	–	.381	3	NF/UNF/UNJF
7/16	14	H3	1826560	40510200499	3.59	.984	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1832956	40510200501	3.38	.984	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1863493	40510200503	3.81	1.083	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1882501	40510200504	3.81	1.083	–	.367	3	NC/UNC/UNJC

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI standards.

Application Information:

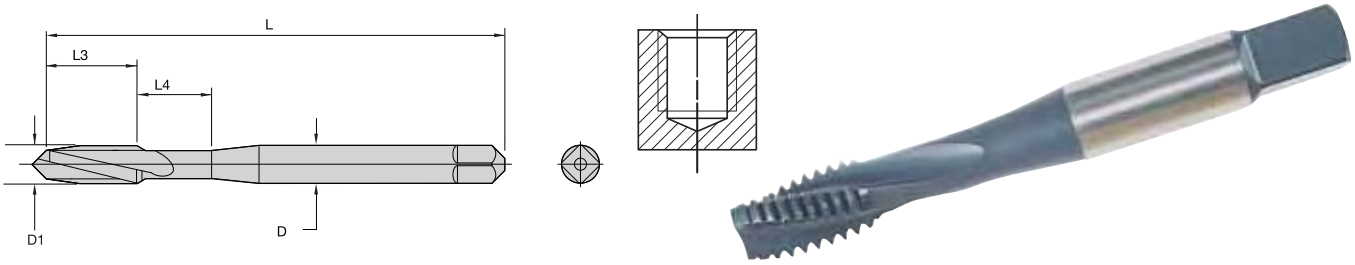
- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI STI — Machine Screw and Fractional — Spiral Flute Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H1	1434302	40510200507	2.00	.276	.411	.141	2	NC/UNC/UNJC
#4	40	H2	1434303	40510200508	2.00	.276	.411	.141	2	NC/UNC/UNJC
#4	40	H3	1434305	40510200510	2.00	.276	.411	.141	2	NC/UNC/UNJC
#6	32	H2	1901736	40510200512	2.38	.354	.521	.141	3	NC/UNC/UNJC
#6	32	H3	1826626	40510200514	2.38	.354	.521	.141	3	NC/UNC/UNJC
#6	32	H5	1876242	40510200516	2.38	.354	.521	.141	3	NC/UNC/UNJC
#8	32	H2	1901737	40510200518	2.38	.354	.583	.168	3	NC/UNC/UNJC
#8	32	H3	1434315	40510200520	2.38	.354	.583	.168	3	NC/UNC/UNJC
#10	24	H2	1877797	40510200524	2.50	.433	.567	.194	3	NC/UNC/UNJC
#10	24	H3	1826629	40510200526	2.50	.433	.567	.194	3	NC/UNC/UNJC
#10	24	H5	1892757	40510200528	2.50	.433	.567	.194	3	NC/UNC/UNJC
#10	32	H2	1434324	40510200530	2.50	.354	.646	.194	3	NF/UNF/UNJF
#10	32	H3	1434325	40510200531	2.50	.354	.646	.194	3	NF/UNF/UNJF
#10	32	H5	1832391	40510200533	2.50	.354	.646	.194	3	NF/UNF/UNJF
1/4	20	H2	1826631	40510200535	2.72	.472	.653	.255	3	NC/UNC/UNJC
1/4	20	H3	1826632	40510200536	2.72	.472	.653	.255	3	NC/UNC/UNJC
1/4	28	H5	1882502	40510200538	2.72	.472	.653	.255	3	NC/UNC/UNJC
1/4	28	H2	1434333	40510200540	2.72	.394	.731	.255	3	NF/UNF/UNJF
1/4	28	H3	1434334	40510200541	2.72	.394	.731	.255	3	NF/UNF/UNJF
5/16	18	H3	1810329	40510200545	2.94	.551	.699	.318	3	NC/UNC/UNJC
5/16	24	H2	1434342	40510200550	2.94	.394	.856	.318	3	NF/UNF/UNJF
5/16	24	H3	1841453	40510200551	2.94	.394	.856	.318	3	NF/UNF/UNJF
3/8	16	H3	1434347	40510200555	3.38	.630	–	.381	3	NC/UNC/UNJC
3/8	16	H4	1876265	40510200557	3.38	.630	–	.381	3	NC/UNC/UNJC
3/8	16	H5	1434350	40510200558	3.38	.630	–	.381	3	NC/UNC/UNJC
3/8	24	H2	1434352	40510200560	3.16	.472	–	.381	3	NF/UNF/UNJF
3/8	24	H3	1434353	40510200561	3.16	.472	–	.381	3	NF/UNF/UNJF
7/16	14	H3	1434357	40510200565	3.59	.709	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1820616	40510200569	3.59	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1883728	40510200571	3.38	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H5	1877959	40510200575	3.81	.748	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1434369	40510200577	3.59	.512	–	.367	3	NF/UNF/UNJF
1/2	20	H5	1434371	40510200579	3.59	.512	–	.367	3	NF/UNF/UNJF

K-NI HSS TI Spiral Flute Taps for Screw Thread Inserts

Machine Screw and Fractional Sizes, for Screw Thread Inserts



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- Unique flute geometry for tapping through holes in nickel alloys.
- Surface treatment oxide and surface toughening treatment.
- Neck design for CNC equipment.
- Geometry designed to tap materials >30 HRc (270 HB).
- Made to USCTI and ANSI standards.

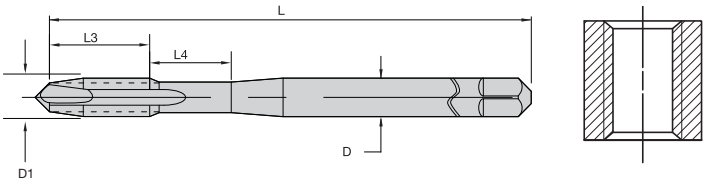
Application Information

- Nickel alloys: inconel, waspalloy, hastelloy (oxide and surface toughening treatment).
- Hardened steels and stainless steels > 275 HB (oxide and surface toughening treatment).
- Mold steels (oxide and surface toughening treatment).
- Tool steels (oxide and surface toughening treatment).

K-NI STI — Machine Screw and Fractional — Spiral Flute Taps, Full Bottoming Chamfer (1 to 2 Pitches), Oxide Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H3	1830285	40510200511	2.00	.276	.411	.141	2	NC/UNC/UNJC
#6	32	H2	1876303	40510200513	2.38	.354	.521	.141	3	NC/UNC/UNJC
#6	32	H3	1434310	40510200515	2.38	.354	.521	.141	3	NC/UNC/UNJC
#6	32	H5	1876291	40510200517	2.38	.354	.521	.141	3	NC/UNC/UNJC
#8	32	H2	1434314	40510200519	2.38	.354	.583	.168	3	NC/UNC/UNJC
#8	32	H3	1826628	40510200521	2.38	.354	.583	.168	3	NC/UNC/UNJC
#10	24	H3	1434321	40510200527	2.50	.433	.567	.194	3	NC/UNC/UNJC
#10	24	H5	1826630	40510200529	2.50	.433	.567	.194	3	NC/UNC/UNJC
#10	32	H3	1434326	40510200532	2.50	.354	.646	.194	3	NF/UNF/UNJF
#10	32	H5	1876271	40510200534	2.50	.354	.646	.194	3	NF/UNF/UNJF
1/4	20	H3	1434331	40510200537	2.72	.472	.653	.255	3	NC/UNC/UNJC
1/4	28	H3	1434335	40510200542	2.72	.394	.731	.255	3	NF/UNF/UNJF
5/16	18	H3	1434339	40510200546	2.94	.551	.699	.318	3	NC/UNC/UNJC
5/16	18	H5	1434341	40510200549	2.94	.551	.699	.318	3	NC/UNC/UNJC
5/16	24	H3	2540886	40510201303	2.94	.394	.856	.318	3	NF/UNF/UNJF
5/16	24	H5	1434346	40510200554	2.94	.394	.856	.318	3	NF/UNF/UNJF
3/8	16	H3	1826664	40510200556	3.38	.630	–	.381	3	NC/UNC/UNJC
3/8	16	H5	1434351	40510200559	3.38	.630	–	.381	3	NC/UNC/UNJC
3/8	24	H3	1826755	40510200562	3.16	.472	–	.381	3	NF/UNF/UNJF
3/8	24	H5	1826756	40510200564	3.16	.472	–	.381	3	NF/UNF/UNJF
7/16	14	H3	1434358	40510200566	3.59	.709	–	.323	3	NC/UNC/UNJC
7/16	14	H5	1907129	40510200568	3.59	.709	–	.323	3	NC/UNC/UNJC
7/16	20	H3	1826757	40510200570	3.38	.472	–	.323	3	NF/UNF/UNJF
7/16	20	H5	1434364	40510200572	3.38	.472	–	.323	3	NF/UNF/UNJF
1/2	13	H3	1826758	40510200574	3.81	.748	–	.367	3	NC/UNC/UNJC
1/2	13	H5	1883729	40510200576	3.81	.748	–	.367	3	NC/UNC/UNJC
1/2	20	H3	1826925	40510200578	3.59	.512	–	.367	3	NF/UNF/UNJF

Metric Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- New flute and geometry designed for tapping aluminum.
- Nitride surface toughening treatment for added toughness and wear life.
- Made to DIN overall tap lengths, ANSI shank dimensions.
- Neck design for CNC equipment.
- For tapping aluminum.

Application Information:

- Designed to tap wrought and die cast aluminum (surface toughening treatment).
- Non-ferrous materials including copper, zinc, and magnesium alloys (surface toughening treatment).
- Soft plastics (surface toughening treatment).

K-AL — Metric — Spiral Point Taps (DIN Length), Plug Chamfer (4 to 5 Pitches), Nitride Treatment

tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M3 x 0,5	D3	2214823	40510286228	2.21	.433	.276	.141	3
M3,5 x 0,6	D4	2214824	40510286229	2.21	.512	.275	.141	3
M4 x 0,7	D4	2214825	40510286230	2.48	.512	.315	.168	3
M5 x 0,8	D4	2214826	40510286231	2.76	.630	.354	.194	3
M6 x 1	D5	2214827	40510286232	3.15	.748	.433	.255	3
M7 x 1	D5	2214828	40510286233	3.15	.748	.433	.318	3
M8 x 1,25	D5	2214830	40510286235	3.54	.866	.512	.318	3
M8 x 1	D5	2214829	40510286234	3.54	.866	.512	.318	3
M10 x 1,5	D6	2214832	40510286237	3.94	.945	.590	.381	3
M10 x 1,25	D5	2214831	40510286236	3.94	.945	.590	.381	3
M12 x 1,75	D6	2214835	40510286240	4.33	1.142	.630	.367	3
M12 x 1,5	D5	2214834	40510286239	3.94	.866	.630	.367	3
M12 x 1,25	D5	2214833	40510286238	3.94	.866	.630	.367	3

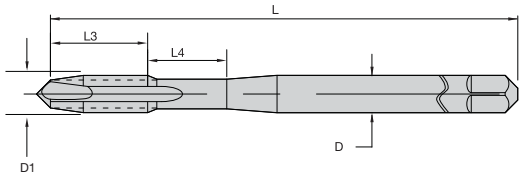
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

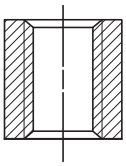
Metric taps are manufactured to USCTI specifications and dimensions.

High-Performance Taps

K-AL HSS Spiral Point Taps for Through Holes

Machine Screw and Fractional Sizes





Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- New flute and geometry designed for tapping aluminum.
- Nitride surface toughening treatment for added toughness and wear life.
- Made to DIN overall tap lengths, ANSI shank dimensions.
- Neck design for CNC equipment.
- For tapping aluminum.

Application Information:

- Designed to tap wrought and die cast aluminum (surface toughening treatment).
- Non-ferrous materials including copper, zinc, and magnesium alloys (surface toughening treatment).
- Soft plastics (surface toughening treatment).

K-AL — Machine Screw and Fractional — Spiral Point Taps (DIN Length), Plug Chamfer (4 to 5 Pitches), Nitride Treatment

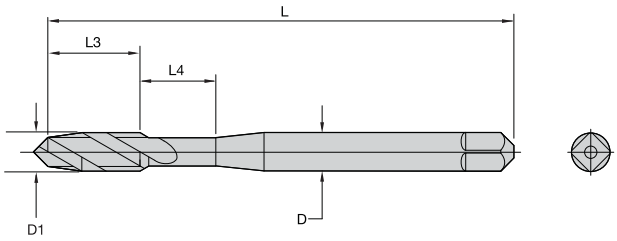
D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	2214786	40510286200	1.77	.276	.196	.141	2	NC/UNC/UNJC
#4	40	H2	2214787	40510286201	2.21	.433	.276	.141	2	NC/UNC/UNJC
#5	40	H2	2214788	40510286202	2.21	.433	.276	.141	3	NC/UNC/UNJC
#6	32	H3	2214789	40510286203	2.21	.512	.275	.141	3	NC/UNC/UNJC
#8	32	H3	2214790	40510286204	2.48	.512	.315	.168	3	NC/UNC/UNJC
#10	24	H3	2214791	40510286205	2.76	.630	.354	.194	3	NC/UNC/UNJC
#10	32	H3	2214792	40510286206	2.76	.630	.354	.194	3	NF/UNF/UNJF
1/4	20	H3	2214803	40510286207	3.15	.748	.433	.255	3	NC/UNC/UNJC
1/4	20	H5	2214804	40510286208	3.15	.748	.433	.255	3	NC/UNC/UNJC
1/4	28	H3	2214805	40510286209	3.15	.748	.433	.255	3	NF/UNF/UNJF
1/4	28	H4	2214806	40510286211	3.15	.748	.433	.255	3	NF/UNF/UNJF
5/16	18	H3	2214807	40510286212	3.54	.866	.512	.318	3	NC/UNC/UNJC
5/16	18	H5	2214808	40510286213	3.54	.866	.512	.318	3	NC/UNC/UNJC
5/16	24	H3	2214809	40510286214	3.54	.866	.512	.318	3	NF/UNF/UNJF
5/16	24	H4	2214810	40510286215	3.54	.866	.512	.318	3	NF/UNF/UNJF
3/8	16	H3	2214811	40510286216	3.94	.945	.590	.381	3	NC/UNC/UNJC
3/8	16	H5	2214812	40510286217	3.94	.945	.590	.381	3	NC/UNC/UNJC
3/8	24	H3	2214813	40510286218	3.54	.787	.748	.381	3	NF/UNF/UNJF
3/8	24	H4	2214814	40510286219	3.54	.787	.748	.381	3	NF/UNF/UNJF
7/16	14	H3	2214815	40510286220	3.94	.945	.709	.323	3	NC/UNC/UNJC
7/16	14	H5	2214816	40510286221	3.94	.945	.709	.323	3	NC/UNC/UNJC
7/16	20	H3	2214817	40510286222	3.94	.945	.709	.323	3	NF/UNF/UNJF
7/16	20	H5	2214818	40510286223	3.94	.945	.709	.323	3	NF/UNF/UNJF
1/2	13	H3	2214819	40510286224	4.33	1.142	.630	.367	3	NC/UNC/UNJC
1/2	13	H5	2214820	40510286225	4.33	1.142	.630	.367	3	NC/UNC/UNJC
1/2	20	H3	2214821	40510286226	3.94	.866	.906	.367	3	NF/UNF/UNJF
1/2	20	H5	2214822	40510286227	3.94	.866	.906	.367	3	NF/UNF/UNJF

Manufactured to DIN overall tap lengths.

K-AL taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Metric Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- New 45° spiral flute geometry for tapping aluminums.
- Nitride surface toughening treatment for added toughness and wear life.
- Made to DIN overall tap lengths, ANSI shank dimensions.
- Neck design for CNC equipment.
- For tapping wrought aluminum.

Application Information:

- Designed to tap wrought aluminums (6061-T6, 7075 type) (surface toughening treatment).
- Non-ferrous materials including copper, zinc, and magnesium alloys (surface toughening treatment).
- Will also thread blind holes in wrought aluminum > 1-1/2 diameters in depth (surface toughening treatment).

K-AL — Metric — 45° Spiral Flute Taps (DIN Length), Modified Bottoming Chamfer (2 ½ to 3 Pitches), Nitride Treatment

tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M3 x 0,5	D3	2214872	40510286528	2.21	.433	.275	.141	3
M3,5 x 0,6	D4	2214873	40510286529	2.21	.512	.276	.141	3
M4 x 0,7	D4	2214874	40510286530	2.48	.512	.315	.168	3
M5 x 0,8	D4	2214875	40510286531	2.76	.630	.354	.194	3
M6 x 1	D5	2214876	40510286532	3.15	.748	.433	.255	3
M7 x 1	D5	2214878	40510286533	3.15	.748	.433	.318	3
M8 x 1,25	D5	2214880	40510286535	3.54	.866	.512	.318	3
M8 x 1	D5	2214879	40510286534	3.54	.866	.512	.318	3
M10 x 1,5	D6	2214882	40510286537	3.94	.945	.590	.381	3
M10 x 1,25	D5	2214881	40510286536	3.94	.945	.590	.381	3
M12 x 1,75	D6	2214885	40510286540	4.33	1.142	.630	.367	3
M12 x 1,5	D5	2214884	40510286539	3.94	.866	.906	.367	3
M12 x 1,25	D5	2214883	40510286538	3.94	.866	.906	.367	3

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

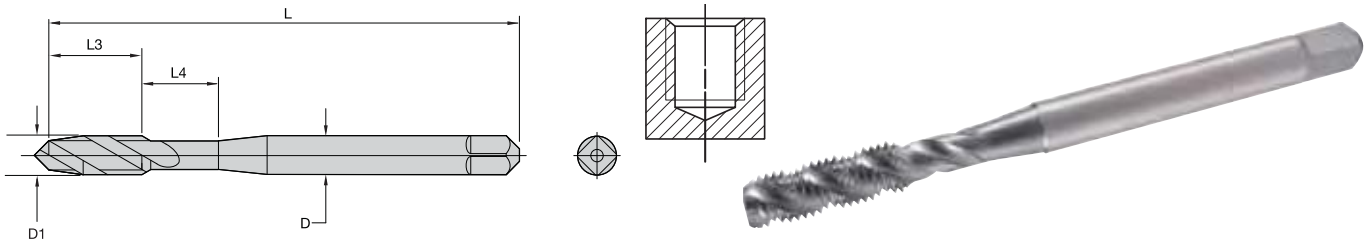
Metric taps are manufactured to USCTI specifications and dimensions.

High-Performance Taps

KENNAMETAL

K-AL HSS 45° Spiral Flute Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from special high-vanadium HSS-E.
- New 45° spiral flute geometry for tapping aluminums.
- Nitride surface toughening treatment for added toughness and wear life.
- Made to DIN overall tap lengths, ANSI shank dimensions.
- Neck design for CNC equipment.
- For tapping wrought aluminums.

Application Information:

- Designed to tap wrought aluminums (6061-T6, 7075 type) (surface toughening treatment).
- Non-ferrous materials including copper, zinc, and magnesium alloys (surface toughening treatment).
- Will also thread blind holes in wrought aluminum > 1-1/2 diameters in depth (surface toughening treatment).

K-AL — Machine Screw and Fractional — 45° Spiral Flute Taps (DIN Length), Modified Bottoming Chamfer (2 ½ to 3 Pitches), Nitride Treatment

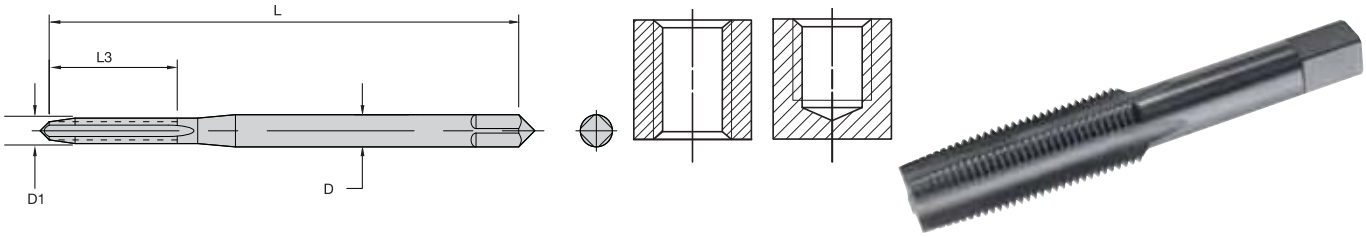
D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#2	56	H2	2214750	40510286500	1.77	.276	.196	.141	2	NC/UNC/UNJC
#4	40	H2	2214752	40510286501	2.21	.433	.276	.141	2	NC/UNC/UNJC
#5	40	H2	2214843	40510286502	2.21	.433	.276	.141	3	NC/UNC/UNJC
#6	32	H3	2214844	40510286503	2.21	.512	.275	.141	3	NC/UNC/UNJC
#8	32	H3	2214846	40510286504	2.48	.512	.315	.168	3	NC/UNC/UNJC
#10	24	H3	2214847	40510286505	2.76	.630	.354	.194	3	NC/UNC/UNJC
#10	32	H3	2214848	40510286506	2.76	.630	.354	.194	3	NF/UNF/UNJF
1/4	20	H3	2214849	40510286507	3.15	.748	.433	.255	3	NC/UNC/UNJC
1/4	20	H5	2214850	40510286508	3.15	.748	.433	.255	3	NC/UNC/UNJC
1/4	28	H3	2214851	40510286509	3.15	.748	.433	.255	3	NF/UNF/UNJF
1/4	28	H4	2214853	40510286511	3.15	.748	.433	.255	3	NF/UNF/UNJF
5/16	18	H3	2214855	40510286512	3.54	.866	.512	.318	3	NC/UNC/UNJC
5/16	18	H5	2214856	40510286513	3.54	.866	.512	.318	3	NC/UNC/UNJC
5/16	24	H3	2214857	40510286514	3.54	.866	.512	.318	3	NF/UNF/UNJF
5/16	24	H4	2214858	40510286515	3.54	.866	.512	.318	3	NF/UNF/UNJF
3/8	16	H3	2214859	40510286516	3.94	.945	.590	.381	3	NC/UNC/UNJC
3/8	16	H5	2214860	40510286517	3.94	.945	.590	.381	3	NC/UNC/UNJC
3/8	24	H3	2214861	40510286518	3.54	.787	.748	.381	3	NF/UNF/UNJF
3/8	24	H4	2214862	40510286519	3.54	.787	.748	.381	3	NF/UNF/UNJF
7/16	14	H3	2214863	40510286520	3.94	.945	.709	.323	3	NC/UNC/UNJC
7/16	14	H5	2214864	40510286521	3.94	.945	.709	.323	3	NC/UNC/UNJC
7/16	20	H3	2214865	40510286522	3.94	.945	.709	.323	3	NF/UNF/UNJF
7/16	20	H5	2214866	40510286523	3.94	.945	.709	.323	3	NF/UNF/UNJF
1/2	13	H3	2214867	40510286524	4.33	1.142	.630	.367	3	NC/UNC/UNJC
1/2	13	H5	2214869	40510286525	4.33	1.142	.630	.367	3	NC/UNC/UNJC
1/2	20	H3	2214870	40510286526	3.94	.866	.906	.367	3	NF/UNF/UNJF
1/2	20	H5	2214871	40510286527	3.94	.866	.906	.367	3	NF/UNF/UNJF

Manufactured to DIN overall tap lengths.

K-AL taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt HSS.
- Special tap geometry combined with a cobalt HSS tap blank helps improve tap toughness for use in mold steel 30-45 HRc.
- Straight flute design.
- Uncoated taps standard.
- For tapping pre-hardened mold steels.
- Made to USCTI and ANSI dimensions.

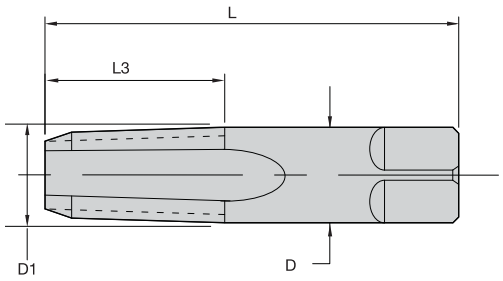
Application Information:

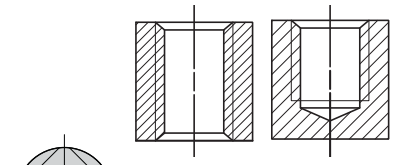
- Tool steels (uncoated).
- Pre-hardened mold steels (uncoated).
- Steel alloys > 275 HB (uncoated).
- Gray iron (uncoated).
- Hardened steel > 30 HRc (uncoated).
- Cast iron (uncoated).

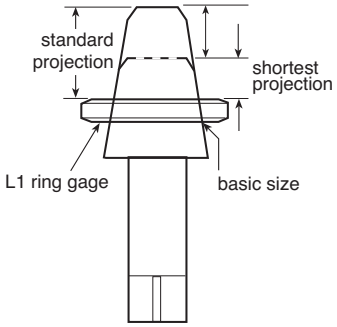
K-MS — Machine Screw and Fractional — Straight Flute Taps, Plug Chamfer (4 to 6 Pitches), Uncoated

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	D	number of flutes	thread series
#4	40	H2	1434539	40510200802	1.88	.563	.141	3	NC/UNC/UNJC
#5	40	H2	1434542	40510200805	1.88	.625	.141	3	NC/UNC/UNJC
#6	32	H3	1434545	40510200808	2.00	.688	.141	3	NC/UNC/UNJC
#8	32	H3	1434546	40510200809	2.13	.750	.168	3	NC/UNC/UNJC
#10	24	H3	1434548	40510200811	2.38	.875	.194	3	NC/UNC/UNJC
#10	32	H3	1434551	40510200814	2.38	.875	.194	3	NF/UNF/UNJF
1/4	20	H3	1434556	40510200819	2.50	1.000	.255	3	NC/UNC/UNJC
1/4	28	H3	1434557	40510200820	2.50	1.000	.255	3	NF/UNF/UNJF
5/16	24	H3	1434559	40510200822	2.72	1.125	.318	4	NF/UNF/UNJF
5/16	28	H3	1823418	40510200821	2.72	1.125	.318	4	NC/UNC/UNJC
3/8	16	H3	1434560	40510200823	2.94	1.250	.381	4	NC/UNC/UNJC
3/8	24	H3	1434561	40510200824	2.94	1.250	.381	4	NF/UNF/UNJF
7/16	14	H3	1434562	40510200825	3.16	1.438	.323	4	NC/UNC/UNJC
1/2	13	H3	1434564	40510200827	3.38	1.656	.367	4	NC/UNC/UNJC
1/2	20	H3	1434565	40510200828	3.38	1.656	.367	4	NF/UNF/UNJF
5/8	11	H3	1434566	40510200829	3.81	1.813	.480	4	NC/UNC/UNJC
5/8	18	H3	1434567	40510200830	3.81	1.813	.480	4	NF/UNF/UNJF
3/4	10	H3	1434568	40510200831	4.25	2.000	.590	4	NC/UNC/UNJC
3/4	16	H3	1434569	40510200832	4.25	2.000	.590	4	NF/UNF/UNJF

K-MS HSS NPT Taper Pipe Taps for Through and Blind Holes







Features/Benefits:

- Manufactured from premium cobalt HSS.
- Special tap geometry combined with a cobalt HSS tap blank helps improve tap toughness for use in mold steel 30-45 Rc.
- Straight flute design.
- Uncoated taps standard.

Application Information:

- Tool steels (uncoated).
- Pre-hardened mold steels (uncoated).
- Steel alloys > 275 HB (uncoated).
- Gray iron (uncoated).
- Hardened steel > 30 HRc (uncoated).
- Cast iron (uncoated).

K-MS — NPT Straight Flute Taper Pipe Taps, Standard Chamfer (2 ½ to 3 ½ Pitches), Uncoated

D1	TPI	order number	catalog number	L	L3	D	number of flutes	thread series
1/8	27	1434570	40510200833	2.13	.750	.438	4	NPT
1/4	18	1434571	40510200834	2.44	1.063	.563	4	NPT
3/8	18	1434572	40510200835	2.56	1.063	.703	4	NPT
1/2	14	1434573	40510200836	3.13	1.375	.688	4	NPT
3/4	14	1434574	40510200837	3.25	1.375	.906	5	NPT

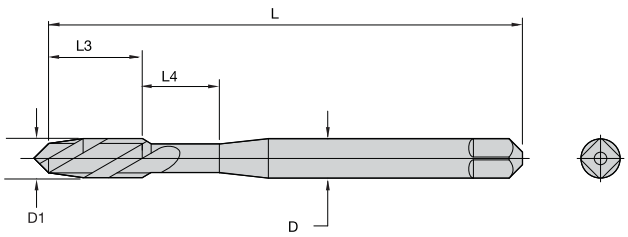
Catalog number 40510200833 has a large shank.

Typical Mold Steels

Material	American Iron & Steel Institute (AISI) Specification
Hardened Steel (HRc 30-45)	1046, 1049, 1050, 1053, 1055, 1060, 4135, 4140, 4125, D2, H13
Heat-Resistant Steel	304, 309, 310, 330, 409, 446, 309S, 310S
Cast Iron	ASTM A48-64

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Metric Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- (Left-hand flute) tap features high relief geometry for through-hole tapping in titanium alloys.
- For tapping right-hand threads.
- Nitride surface toughening treatment for added toughness and wear life.
- Plug, modified bottoming, or full bottoming chamfer.
- Neck design for CNC equipment.
- Made to USCTI and ANSI dimensions.

Application Information:

- Titanium, titanium alloys (surface toughening treatment).
- Magnesium (surface toughening treatment).
- Beryllium copper (surface toughening treatment).
- Soft plastics (surface toughening treatment).

K-TI — Metric — Left-Hand Spiral/Right-Hand Cut Taps, Plug Chamfer (4 ½ to 5 Pitches), Nitride Treatment

tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M2,5 x 0,45	D3	1554002	40510201021	1.81	.295	.205	.141	3
M3 x 0,5	D3	1554003	40510201022	1.94	.374	.251	.141	3
M3,5 x 0,6	D4	1554004	40510201023	2.00	.413	.274	.141	3
M4 x 0,7	D4	1554005	40510201024	2.13	.453	.297	.168	3
M5 x 0,8	D4	1554006	40510201025	2.38	.531	.344	.194	3
M6 x 1	D5	1554009	40510201026	2.50	.591	.409	.255	3
M7 x 1	D5	1554010	40510201027	2.72	.669	.456	.318	3
M8 x 1,25	D5	1554013	40510201029	2.72	.669	.456	.318	3
M8 x 1	D5	1554012	40510201028	2.72	.669	.456	.318	3
M10 x 1,5	D6	1554015	40510201031	2.94	.750	.502	.381	3
M10 x 1,25	D5	1554014	40510201030	2.94	.750	.502	.381	3
M12 x 1,75	D6	1554018	40510201033	3.38	.984	–	.367	3
M12 x 1,25	D5	1554017	40510201032	3.38	.984	–	.367	3

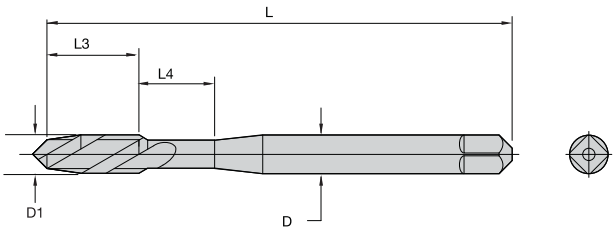
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

K-TI HSS Spiral Flute LHS/RHC Tap for Through Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- (Left-hand flute) tap features high relief geometry for through-hole tapping in titanium alloys.
- For tapping right-hand threads.
- Nitride surface toughening treatment for added toughness and wear life.
- Plug, modified bottoming, or full bottoming chamfer.
- Neck design for CNC equipment.

Application Information:

- Titanium, titanium alloys (surface toughening treatment).
- Magnesium (surface toughening treatment).
- Beryllium copper (surface toughening treatment).
- Soft plastics (surface toughening treatment).

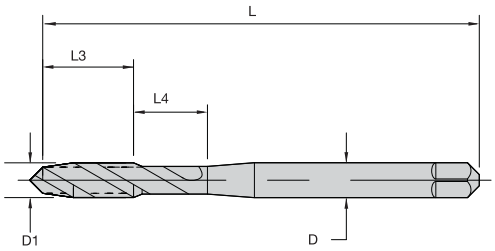
K-TI — Machine Screw and Fractional — Left-Hand Spiral/Right-Hand Cut Taps, Plug Chamfer (4 ½ to 5 Pitches), Nitride Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1865649	40510200581	1.88	.335	.227	.141	3	NC/UNC/UNJC
#5	40	H2	1434374	40510200582	1.94	.374	.251	.141	3	NC/UNC/UNJC
#6	32	H3	1831618	40510200583	2.00	.413	.274	.141	3	NC/UNC/UNJC
#6	32	H5	1434376	40510200584	2.00	.413	.274	.141	3	NC/UNC/UNJC
#8	32	H3	1434377	40510200585	2.13	.453	.297	.168	3	NC/UNC/UNJC
#8	32	H5	1883731	40510200586	2.13	.453	.297	.168	3	NC/UNC/UNJC
#10	24	H3	1434379	40510200587	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	24	H5	1434380	40510200588	2.38	.531	.344	.194	3	NC/UNC/UNJC
#10	32	H3	1434381	40510200589	2.38	.531	.344	.194	3	NF/UNF/UNJF
#10	32	H5	1434382	40510200590	2.38	.531	.344	.194	3	NF/UNF/UNJF
1/4	20	H3	1826926	40510200591	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	20	H5	1434384	40510200592	2.50	.591	.409	.255	3	NC/UNC/UNJC
1/4	28	H3	1434385	40510200593	2.50	.591	.409	.255	3	NF/UNF/UNJF
1/4	28	H5	1434386	40510200594	2.50	.591	.409	.255	3	NF/UNF/UNJF
5/16	18	H3	1922764	40510200595	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	18	H5	1434388	40510200596	2.72	.669	.456	.318	3	NC/UNC/UNJC
5/16	24	H5	1434390	40510200598	2.72	.669	.456	.318	3	NF/UNF/UNJF
3/8	16	H3	1434391	40510200599	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	16	H5	1434392	40510200600	2.94	.748	.502	.381	3	NC/UNC/UNJC
3/8	24	H3	1434393	40510200601	2.94	.748	.502	.381	3	NF/UNF/UNJF
3/8	24	H5	1434394	40510200602	2.94	.748	.502	.381	3	NF/UNF/UNJF
7/16	14	H3	1937142	40510200603	3.16	.866	.984	.323	3	NC/UNC/UNJC
7/16	14	H5	1434395	40510200604	3.16	.866	.984	.323	3	NC/UNC/UNJC
7/16	20	H3	1877954	40510200605	3.16	.866	.984	.323	3	NF/UNF/UNJF
1/2	13	H3	1434397	40510200607	3.38	.984	1.063	.367	3	NC/UNC/UNJC
1/2	20	H3	1835270	40510200609	3.38	.984	1.063	.367	3	NF/UNF/UNJF

K-TI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Metric Sizes



Application Information:

- Manufactured from premium cobalt high-vanadium PMT15.
- High relief geometry right-hand spiral flute for blind-hole tapping in titanium.
- Surface toughening treatment (nitride).
- Bottoming or modified bottoming chamfer.
- Neck design for CNC equipment.
- Made to USCTI and ANSI dimensions.

Features/Benefits:

- Titanium, titanium alloys (surface toughening treatment).
- Magnesium (surface toughening treatment).
- Beryllium copper (surface toughening treatment).
- Soft plastics (surface toughening treatment).

K-TI — Metric — Spiral Fluted Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Nitride Treatment

tap size and pitch	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes
M2,5 x 0,45	D3	1554039	40510201047	1.81	.295	.205	.141	3
M3 x 0,5	D3	1554041	40510201048	1.94	.197	.428	.141	3
M3,5 x 0,6	D4	1554043	40510201049	2.00	.276	.411	.141	3
M4 x 0,7	D4	1554044	40510201050	2.13	.276	.474	.168	3
M5 x 0,8	D5	1554323	40510201051	2.38	.354	.521	.194	3
M6 x 1	D5	1554324	40510201052	2.50	.433	.567	.255	3
M7 x 1	D5	1554326	40510201053	2.72	.433	.692	.318	3
M8 x 1,25	D5	1554328	40510201055	2.72	.472	.653	.318	3
M8 x 1	D5	1554327	40510201054	2.72	.472	.653	.318	3
M10 x 1,5	D6	1554330	40510201057	2.94	.512	.738	.381	3
M10 x 1,25	D5	1554329	40510201056	2.94	.472	.778	.381	3
M12 x 1,75	D6	1554345	40510201059	3.38	.591	–	.367	3
M12 x 1,25	D5	1554342	40510201058	3.38	.551	–	.367	3

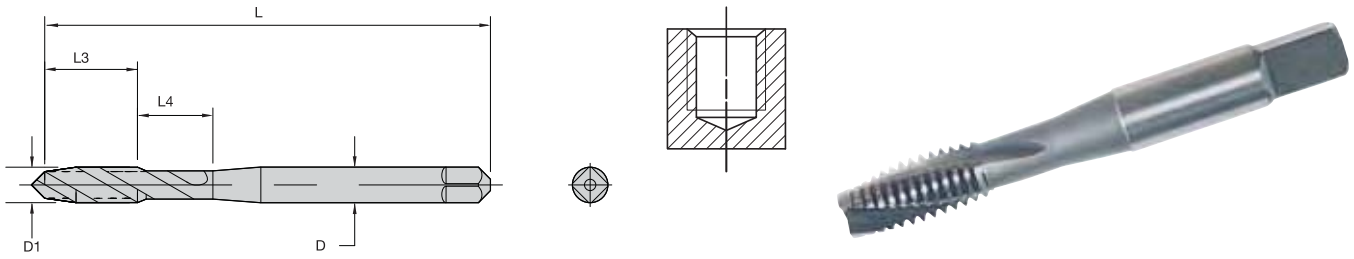
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

K-TI HSS Right-Hand Spiral Taps for Blind Holes

Machine Screw and Fractional Sizes



Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- High relief geometry right-hand spiral flute for blind-hole tapping in titanium.
- Surface toughening treatment (nitride).
- Bottoming or modified bottoming chamfer.
- Neck design for CNC equipment.
- Made to USCTI and ANSI dimensions.

Application Information:

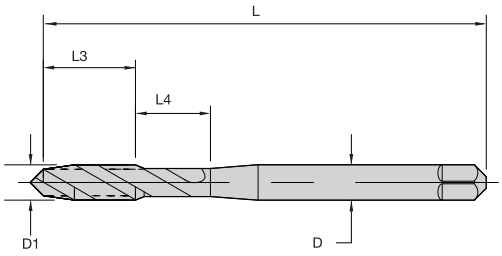
- Titanium, titanium alloys (surface toughening treatment).
- Magnesium (surface toughening treatment).
- Beryllium copper (surface toughening treatment).
- Soft plastics (surface toughening treatment).

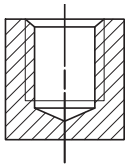
K-TI — Machine Screw and Fractional — Spiral Fluted Taps, Modified Bottoming Chamfer (3 to 4 Pitches), Nitride Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H2	1434401	40510200611	1.88	.236	.326	.141	3	NC/UNC/UNJC
#5	40	H3	1826928	40510200614	1.94	.236	.389	.141	3	NC/UNC/UNJC
#6	32	H3	1434405	40510200615	2.00	.276	.411	.141	3	NC/UNC/UNJC
#6	32	H5	1434407	40510200617	2.00	.276	.411	.141	3	NC/UNC/UNJC
#8	32	H3	1434408	40510200618	2.13	.276	.474	.168	3	NC/UNC/UNJC
#8	32	H5	1434410	40510200620	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1434411	40510200621	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1434413	40510200623	2.38	.276	.599	.194	3	NF/UNF/UNJF
#10	32	H5	1826930	40510200625	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434416	40510200626	2.72	.433	.567	.255	3	NC/UNC/UNJC
1/4	20	H3	1434418	40510200628	2.72	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1434420	40510200630	2.72	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434423	40510200634	2.94	.472	.653	.318	3	NC/UNC/UNJC
5/16	18	H5	1434425	40510200636	2.94	.472	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1434427	40510200638	2.94	.394	.731	.318	3	NF/UNF/UNJF
5/16	24	H5	1434429	40510200640	2.94	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1434430	40510200641	3.38	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1873328	40510200643	3.38	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1873330	40510200645	3.38	.394	.856	.381	3	NF/UNF/UNJF
3/8	24	H5	1434436	40510200647	3.38	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1434437	40510200648	3.59	.591	1.259	.323	3	NC/UNC/UNJC
7/16	20	H3	1863790	40510200650	3.59	.472	1.378	.323	3	NF/UNF/UNJF
7/16	20	H5	1434441	40510200652	3.59	.472	1.378	.323	3	NF/UNF/UNJF
1/2	13	H3	1434442	40510200653	3.81	.630	1.417	.367	3	NC/UNC/UNJC
1/2	20	H5	1434447	40510200658	3.81	.472	1.575	.367	3	NF/UNF/UNJF

K-TI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Machine Screw and Fractional Sizes





Features/Benefits:

- Manufactured from premium cobalt high-vanadium PMT15.
- High relief geometry right-hand spiral flute for blind-hole tapping in titanium.
- Surface toughening treatment (nitride).
- Bottoming or modified bottoming chamfer.
- Neck design for CNC equipment.
- Made to USCTI and ANSI dimensions.

Application Information:

- Titanium, titanium alloys (surface toughening treatment).
- Magnesium (surface toughening treatment).
- Beryllium copper (surface toughening treatment).
- Soft plastics (surface toughening treatment).

K-TI — Machine Screw and Fractional — Spiral Fluted Taps, Full Bottoming Chamfer (1 to 2 Pitches), Nitride Treatment

D1	TPI	pitch diameter limit	order number	catalog number	L	L3	L4	D	number of flutes	thread series
#4	40	H4	1434402	40510200612	1.88	.236	.326	.141	3	NC/UNC/UNJC
#6	32	H3	1434406	40510200616	2.00	.276	.411	.141	3	NC/UNC/UNJC
#8	32	H3	1434409	40510200619	2.13	.276	.474	.168	3	NC/UNC/UNJC
#10	24	H3	1826929	40510200622	2.38	.354	.521	.194	3	NC/UNC/UNJC
#10	32	H3	1434414	40510200624	2.38	.276	.599	.194	3	NF/UNF/UNJF
1/4	20	H3	1434417	40510200627	2.50	.433	.567	.255	3	NC/UNC/UNJC
1/4	28	H3	1434421	40510200631	2.50	.354	.646	.255	3	NF/UNF/UNJF
5/16	18	H3	1434424	40510200635	2.72	.372	.653	.318	3	NC/UNC/UNJC
5/16	18	H5	1906855	40510200637	2.72	.372	.653	.318	3	NC/UNC/UNJC
5/16	24	H3	1434428	40510200639	2.72	.394	.731	.318	3	NF/UNF/UNJF
3/8	16	H3	1434431	40510200642	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	16	H5	1877953	40510200644	2.94	.551	.699	.381	3	NC/UNC/UNJC
3/8	24	H3	1434435	40510200646	2.94	.394	.856	.381	3	NF/UNF/UNJF
7/16	14	H3	1881032	40510200649	3.16	.591	1.259	.323	3	NC/UNC/UNJC
7/16	20	H3	1832166	40510200651	3.16	.472	1.378	.323	3	NF/UNF/UNJF
1/2	13	H3	1863461	40510200654	3.38	.630	1.417	.367	3	NC/UNC/UNJC
1/2	20	H3	1434446	40510200657	3.38	.472	1.575	.367	3	NF/UNF/UNJF

K-TI taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

High-Performance Taps

KENNAMETAL

Tap Drill Recommendations

tap size & pitch		cutting taps		forming taps	
inch	metric	drill size	dec.equiv.	drill size	dec. equiv.
0-80		3/64	.0469	54	.0550
	M1,6 x 0,35	1,25	.0492	1,45	.0571
	M1,8 x 0,35	1,45	.0571	1,65	.0650
1-64		53	.0595	51	.0670
1-72		53	.0595	51	.0670
	M2 x 0,40	1,60	.0630	1,80	.0709
2-56		50	.0700	5/64	.0781
2-64		50	.0700	47	.0785
	M2,2 x 0,45	1,75	.0689	2,00	.0787
	M2,5 x 0,45	2,05	.0807	2,30	.0906
3-48		47	.0785	43	.0890
3-56		46	.0810	2,30	.0905
4-40		43	.0890	38	.1015
4-48		42	.0935	2,60	.1024
	M3 x 0,50	2,50	.0984	7/64	.1094
5-40		38	.1015	33	.1130
5-44		37	.1040	2,90	.1142
	M3,5 x 0,60	2,90	.1142	3,20	.1260
6-32		36	.1065	1/8	.1250
6-40		33	.1130	3,25	.1280
	M4 x 0,70	3,30	.1299	3,70	.1476
8-32		29	.1360	25	.1495
8-36		29	.1360	24	.1520
	M4,5 x 0,75	3,70	.1476	4,10	.1614
10-24		26	.1470	11/64	.1719
10-32		21	.1590	16	.1770
	M5 x 0,80	4,20	.1654	14	.1820
12-24		16	.1770	8	.1990
12-28		15	.1800	7	.2010
	M6 x 1,00	5,00	.1969	7/32	.2188
1/4-20		7	.2010	1	.2280
1/4-28		3	.2130	15/64	.2340
	M7 x 1,00	6,00	.2362	F	.2570
5/16-18		F	.2570	L	.2900
5/16-24		I	.2720	M	.2950
	M8 x 1,25	6,70	.2638	7,40	.2913
	M8 x 1,00	7,00	.2756	19/64	.2969
3/8-16		5/16	.3125	S	.3480
3/8-24		Q	.3320	T	.3580
	M10 x 1,50	8,50	.3346	U	.3680
	M10 x 1,25	8,70	.3425	9,40	.3701
7/16-14		U	.3680	Y	.4040
7/16-20		25/64	.3906	Z	.4130
	M12 x 1,75	10,20	.4016	11,20	.4409
	M12 x 1,25	10,80	.4252	11,50	.4528
1/2-13		27/64	.4219	15/32	.4682
1/2-20		29/64	.4531	12,25	.4823
	M14 x 2,00	12,00	.4724	33/64	.5156
9/16-12		31/64	.4844	17/32	.5312
9/16-18		33/64	.5156	13,50	.5315
5/8-11		17/32	.5312	14,75	.5807
5/8-18		37/64	.5781	15,25	.6004
	M16 x 2,00	14,00	.5512	19/32	.5938
	M16 x 1,50	14,50	.5709	15,25	.6004
	M18 x 2,50	15,50	.6102	39/64	.6094
	M18 x 1,50	16,50	.6496	17,25	.6791
3/4-10		21/32	.6562	45/64	.7031
3/4-16		11/16	.6875	23/32	.7188
	M20 x 2,50	17,50	.6890	*	*
	M20 x 1,50	18,50	.7283	*	*
	M22 x 2,50	19,50	.7677	*	*
	M22 x 1,50	20,50	.8071	*	*
7/8-9		49/64	.7656	*	*
7/8-14		13/16	.8125	*	*
	M24 x 3,00	21,00	.8268	*	*
	M24 x 2,00	22,00	.8661	*	*
1-8		7/8	.8750	*	*
1-12		59/64	.9219	*	*
	M27 x 3,00	24,00	.9449	*	*
	M27 x 2,00	25,00	.9843	*	*
1 1/8-7		63/64	.9844	*	*
1 1/8-12		1 3/64	1.0469	*	*
	M30 x 3,50	26,50	1.0433	*	*
	M30 x 2,00	28,00	1.1024	*	*
1 1/4-7		1 7/64	1.1094	*	*
1 1/4-12		1 11/64	1.1719	*	*
	M33 x 3,50	29,50	1.1614	*	*
	M33 x 2,00	31,00	1.2205	*	*
1 3/8-6		1 7/32	1.2188	*	*
1 3/8-12		1 19/64	1.2969	*	*
	M36 x 4,00	32,00	1.2598	*	*
	M36 x 3,00	33,00	1.2992	*	*
1 1/2-6		1 11/32	1.3438	*	*
1 1/2-12		1 27/64	1.4219	*	*
	M39 x 4,00	35,00	1.3780	*	*
	M39 x 3,00	36,00	1.4173	*	*

** Contact Technical Service for recommendations.*

Hole sizes shown may not suit UNJ and MJ hole requirements.

metric | fractional | wire gage | letter size

Pipe Taps — NPT, NPTF, NPSM, NPSC, NPSF

	NPT & NPTF				
nominal pipe tap size	without reamer	with reamer	NPSM	NPSC	NPSF
1/16-27	C (.242)	A (.234)	—	1/4	D (.246)
1/8-27	Q (.332)	21/64	T (.358)	Q (.332)	R (.339)
1/4-18	7/16	27/64	15/32	7/16	7/16
3/8-18	9/16	9/16	.603**	37/64	37/64
1/2-14	45/64	11/16	19,0 mm	23/32	.705**
3/4-14	29/32	57/64	61/64	59/64	59/64
1-11 1/2	1 9/64	1 1/8	1 13/64	1 5/32	1 5/32
1 1/4–11 1/2	1 31/64	1 15/32	1.546**	1 1/2	—
1 1/2–11 1/2	1 23/32	1 45/64	1 25/32	1 47/64	—
2–11 1/2	2 3/16	2 11/64	2 1/4	2 1/4	—

***special*

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

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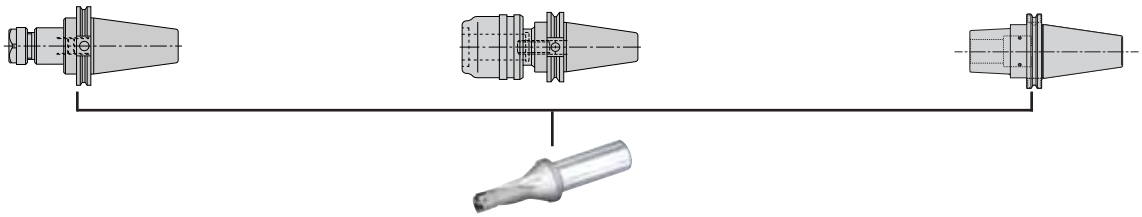
Toolholding Options

ROTATING APPLICATIONS
Inch Drill Bodies with a Round Shank

DRILL-FIX DFR inch drills with round shanks (no flats) are specifically designed for use in rotating applications where the drill rotates and the workpiece remains stationary. To maintain this accuracy and get maximum performance from the DRILL-FIX drill, select one of the approved toolholding methods shown below.

TGCHP collet chucks | Powergrip chucks | Shrink Fit



2x diameter and 3x diameter round shank

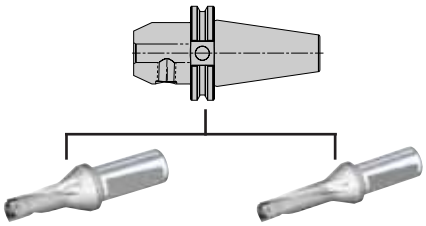
Metric Bodies with 2° Whistle Notch

DRILL-FIX DFT and DFR inch drills with a flange can be used in rotating applications where the drill rotates and the workpiece remains stationary. To maintain accuracy and get maximum performance from the drill, use only the approved toolholding method shown below.

Inch Bodies with Flange

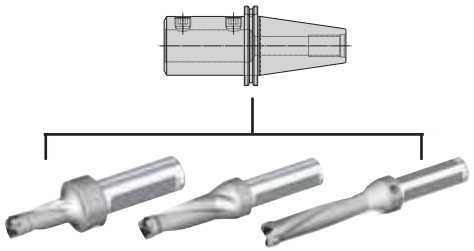
DRILL-FIX DFT and DFR metric drills come equipped with 2° Whistle Notch shanks. The 20, 32, 40, and 50 mm diameter shanks use a WD adapter according to a Hertel standard. To maintain the integrity of this system and to minimize runout, the drill must be held securely in the proper adapter.

2° Whistle Notch Hertel standard. Use WD adapters.



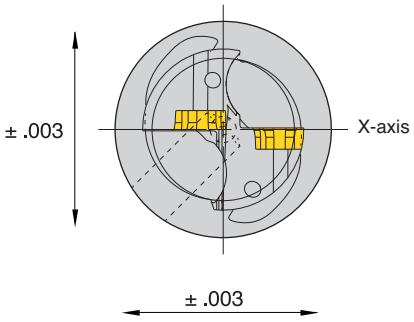
20, 32, 40, and 50 mm shanks (Hertel standard)

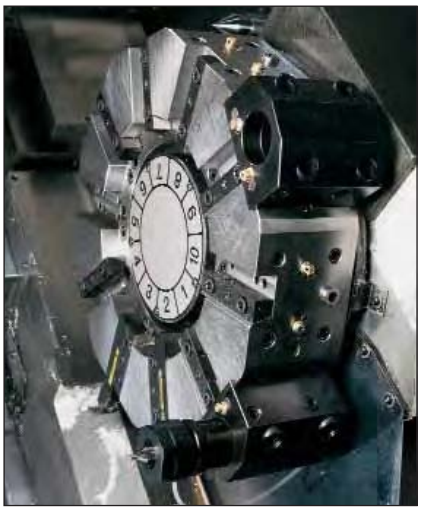
SSF straight shank flanged adapter



STATIONARY APPLICATIONS

Inch Drill Bodies with a Flange





DRILL-FIX inch drills, with a flange, were designed for use on lathes or any machine where the tool remains stationary and the workpiece rotates. An “x” is marked on the flat of the X-axis of the drill to aid insert orientation on the machine tool. It is important to align the X-axis of the drill with the X-axis on the machine tool. Accurate alignment is absolutely essential for good performance. The drill must be on center, within the tolerance shown above. Angularity must not exceed .003 within the designated drill depth.

KENNAMETAL

Indexable Drills

Drill-FIX™ DFR and DFT

Primary Application

Drill short holes up to 4xD with DFR and DFT Indexable Drills in steel, cast iron, ductile iron, stainless steel, and nonferrous materials. Use where speed and economy are prime considerations.

Features and Benefits

Tool Steel Bodies

- Longer body life over traditional steel products.
- 2.5xD and 4xD lengths are standard.
- Metric and inch drilling diameters and tool shanks standard.
- Same size insert is used in each pocket, reducing inventory costs.

Easy Insert Change

- Robust pocket design requires only a simple wrench for insert removal.
- Multiple grades and geometries available.

X Offset Design

- On turning machines, the body can be offset along the X axis to create larger hole diameters, eliminating the need for specials in many applications.

Tailored Grades and Geometries

- New KC7815 and KC7820 grades feature multi-layer CVD and KC7140 with advanced PVD coatings for improved performance in steel.
- Five geometries standard for cutting performance and superior chip control.
- Grades and geometries can be tailored in each pocket for improved performance.

Customization

- Intermediate diameters available as semi-standards.
- Engineered custom solutions available.
- Multiple diameters are available.

Feed and Speed Chart

DFR

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	sfm / m/min	Feed rate by insert size	insert / dia.	DFR 02... .500"-.625" 12,5mm-16,00mm	DFR 03... .688"-.750" 16,5mm-20,00mm	DFR 04... .813"-1.00" 20.5mm-24,00mm
						98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000					
P1 Low-Carbon Steels, Long Chipping						Content: C <.25%			Tensile Strength RM (MPa)*: <530		Hardness (HB) or HRC: <125
S	O	GD	KC7815	985	sfm	788 1030		ipr	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	300	m/min	240 314		mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
U	O	MD	KC7140	621	sfm	636 667		ipr	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	189	m/min	194 203		mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
I	O	MD	KC7140	409	sfm	394 424		ipr	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	125	m/min	120 129		mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
P2 Low-Carbon Steels, Free Machining, and Short Chipping						Content: C <.25%			Tensile Strength RM (MPa)*: <650		Hardness (HB) or HRC: <220
S	O	GD	KC7815	936	sfm	749 979		ipr	.002 - .005	.002 - .006	.004 - .008
	I	LD	KC7225	285	m/min	228 298		mm/r	0,05 - 0,12	0,06 - 0,15	0,10 - 0,21
U	O	MD	KC7140	590	sfm	604 634		ipr	.002 - .005	.002 - .006	.004 - .008
	I	LD	KC7225	180	m/min	184 193		mm/r	0,05 - 0,12	0,06 - 0,15	0,10 - 0,21
I	O	MD	KC7140	389	sfm	374 403		ipr	.002 - .005	.002 - .006	.004 - .008
	I	LD	KC7225	118	m/min	114 123		mm/r	0,06 - 0,12	0,06 - 0,15	0,10 - 0,21
P3 Medium to High Plain-Carbon Steels and Alloy Steels						Content: C >.25%			Tensile Strength RM (MPa)*: 600-850		Hardness (HB) or HRC: <330
S	O	GD	KC7815	887	sfm	709 927		ipr	.002 - .004	.002 - .005	.004 - .007
	I	LD	KC7225	270	m/min	216 283		mm/r	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18
U	O	MD	KC7140	559	sfm	572 600		ipr	.002 - .004	.002 - .005	.004 - .007
	I	LD	KC7225	170	m/min	174 183		mm/r	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18
I	O	MD	KC7140	368	sfm	355 382		ipr	.002 - .004	.002 - .005	.004 - .007
	I	LD	KC7225	112	m/min	108 116		mm/r	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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DFR

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	Feed rate by insert size			
					sfm / m/min	insert / dia.	DFR 02... .500"-.625" 12,5mm-16,00mm	DFR 03... .688"-.750" 16,5mm-20,00mm	DFR 04... .813"-1.00" 20.5mm-24,00mm
P4 Alloy Steels and Tool Steels					**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**		**Hardness (HB) or HRC: 350-450**	
S	O	MD	KC7820	788	sfm	630 – 824	ipr	.002 - .005	.003 - .006	.004 - .008
	I	MD	KC7140	240	m/min	192 – 251	mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
U	O	MD	KC7820	497	sfm	509 – 534	ipr	.002 - .005	.003 - .006	.004 - .008
	I	MD	KC7140	151	m/min	155 – 163	mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
I	O	MD	KC7820	327	sfm	315 – 339	ipr	.002 - .005	.003 - .006	.004 - .008
	I	MD	KC7140	100	m/min	96 – 103	mm/r	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21
P5 Ferritic, Martensitic, and PH Stainless Steels					**Content: C=0-.4%**	**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**	
S	O	MD	KC7820	636	sfm	576 – 667	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7140	194	m/min	176 – 203	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13
U	O	MD	KC7820	439	sfm	394 – 485	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7140	134	m/min	120 – 148	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13
I	O	MD	KC7820	318	sfm	273 – 364	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7140	97	m/min	83 – 111	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels					**Content: C=.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**		**Hardness (HB) or HRC: 350-450**	
S	O	MD	KC7140	604	sfm	547 – 634	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7820	184	m/min	167 – 193	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13
U	O	MD	KC7140	417	sfm	374 – 461	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7820	138	m/min	124 – 152	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13
I	O	MD	KC7140	302	sfm	259 – 346	ipr	.001 - .003	.002 - .004	.002 - .005
	I	MD	KC7820	81	m/min	76 – 86	mm/r	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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DFR
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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	98	164	262	328	394	492	656	820	984	1148	1640	2460	3281	Feed rate by insert size: insert	DFR 02...	DFR 03...	DFR 04...
					sfm																	
					m/min	30	50	80	100	120	150	200	250	300	350	500	750	1000	dia.	.500"- .625" 12,5mm-16,00mm	.688"- .750" 16,5mm-20,00mm	.813"- 1.00" 20.5mm-24,00mm
M1 Austenitic Stainless Steels																			**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: 130-200**
S	O	MD	KC7140	623	sfm							325					738		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	190	m/min							99					225		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
U	O	MD	KC7140	427	sfm							263					502		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	130	m/min							80					153		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
I	O	MD	KC7140	262	sfm						163						311		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	80	m/min						50						95		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
M2 High-Strength Austenitic Stainless and Cast Stainless Steels																			**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: 500-700**		**Hardness (HB) or HRC: 150-230**
S	O	MD	KC7140	561	sfm							293					664		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	171	m/min							89					202		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
U	O	MD	KC7140	384	sfm							237					452		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	130	m/min							80					153		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
I	O	MD	KC7140	236	sfm						147						280		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	80	m/min						50						95		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
M3 Duplex Steels																			**Content: C=.05-.2%**	**Tensile Strength RM (MPa)*: <900**		**Hardness (HB) or HRC: 135-275**
S	O	MD	KC7140	505	sfm							263					598		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	171	m/min							106					202		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
U	O	MD	KC7140	345	sfm							213					407		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	117	m/min							72					138		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16
I	O	MD	KC7140	213	sfm						132						252		ipr	.002 - .004	.002 - .004	.003 - .006
	I	MD	KC7140	72	m/min						45						85		mm/r	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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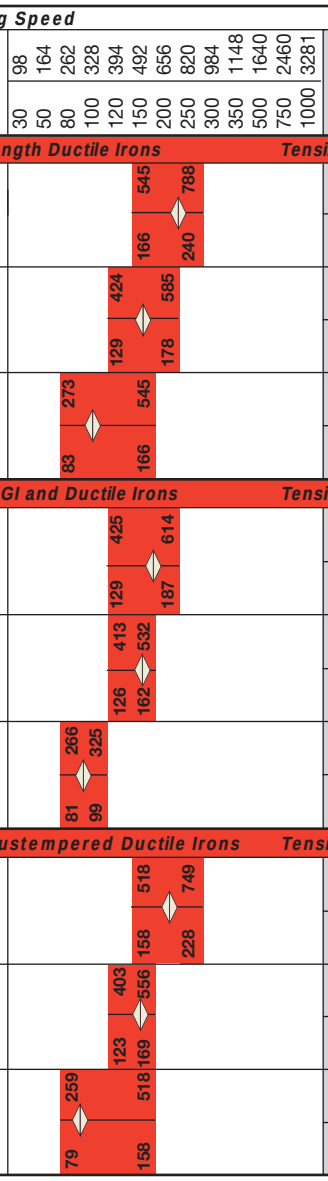
DFR
(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	Feed rate by insert size			
					sfm / m/min	insert / dia.	DFR 02... .500"- .625" 12,5mm-16,00mm	DFR 03... .688"- .750" 16,5mm-20,00mm	DFR 04... .813"-1.00" 20.5mm-24,00mm
K1	**Gray Cast Irons and Low-Strength Ductile Irons**				**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**	
S	O	GD	KC7815	727	sfm	*ipr*	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	222	m/min	*mm/r*	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21
U	O	LD	KC7225	485	sfm	*ipr*	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	148	m/min	*mm/r*	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21
I	O	GD	KC7020	303	sfm	*ipr*	.002 - .005	.003 - .006	.004 - .008
	I	LD	KC7225	92	m/min	*mm/r*	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21
K2	**Low- and Medium-Strength CGI and Ductile Irons**				**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**	
S	O	LD	KC7225	566	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7225	173	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18
U	O	LD	KC7225	378	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7225	144	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18
I	O	GD	KC7020	236	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7020	90	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18
K3	**High-Strength Ductile and Austempered Ductile Irons**				**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**	
S	O	LD	KC7225	691	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7225	211	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18
U	O	LD	KC7225	461	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7225	140	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18
I	O	GD	KC7020	288	sfm	*ipr*	.002 - .004	.003 - .005	.004 - .007
	I	LD	KC7020	88	m/min	*mm/r*	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18



* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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Feed and Speed Chart

DFR

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	Feed rate by insert size	DFR 02...	DFR 03...	DFR 04...
					sfm / m/min	insert / dia.	.500"- .625" 12,5mm-16,00mm	.688"- .750" 16,5mm-20,00mm	.813"- 1.00" 20.5mm-24,00mm
N1 Wrought Aluminum Alloys						Tensile Strength RM (MPa)*: <520			Hardness (HB) or HRC: 60-90
S	O	LD	KC7025	2362	sfm	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7025	720	m/min	mm/r	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08
U	O	LD	KC7025	1575	sfm	ipr	.001 - .002	.050 - 0.002	.002 - .003
	I	LD	KC7025	480	m/min	mm/r	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08
I	O	GD	KC7020	984	sfm	ipr	.001 - .002	.002 - .002	.002 - .003
	I	LD	KC7025	300	m/min	mm/r	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08
N2 Cast Aluminums					Content: Si<12.2%	Tensile Strength RM (MPa)*: <350			Hardness (HB) or HRC: 70-100
S	O	LD	KC7025	2197	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	670	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
U	O	LD	KC7025	1465	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	446	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
I	O	GD	KC7020	915	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	279	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
N3 Cast Aluminums					Content: Si>12.2%	Tensile Strength RM (MPa)*: 200-320			Hardness (HB) or HRC: 60-120
S	O	LD	KC7025	2032	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	619	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
U	O	LD	KC7025	1354	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	413	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
I	O	GD	KC7020	846	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	258	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
N4 MMCs (Aluminum-Based Metal Matrix Composites)						Tensile Strength RM (MPa)*: <700			Hardness (HB) or HRC: 210
S	O	LD	KC7025	2362	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	720	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
U	O	LD	KC7025	1575	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	480	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18
I	O	GD	KC7020	984	sfm	ipr	.003 - .004	.004 - .005	.005 - .007
	I	LD	KC7025	300	m/min	mm/r	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18

Cutting Speed sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281
Cutting Speed m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

(continued on next page)

DFR

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed sfm	98	164	262	328	394	492	656	820	984	1148	1640	2460	3281	Feed rate by insert size insert	DFR 02...	DFR 03...	DFR 04...
					m/min	30	50	80	100	120	150	200	250	300	350	500	750	1000	dia.	.500"-.625" 12,5mm-16,00mm	.688"-.750" 16,5mm-20,00mm	.813"-1.00" 20.5mm-24,00mm
S1 Iron-Based, Heat-Resistant Alloys																			**Tensile Strength RM (MPa)*: 500-1200**			**Hardness (HB) or HRC: 160-260**
S	O	GD	KC7020	164	sfm	75												200	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	50	m/min	23												61	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
U	O	GD	KC7020	98	sfm	60												133	ipr	.001 - .004	.002 - .002	.002 - .003
	I	LD	KC7225	30	m/min	18												41	mm/r	0,07 - 0,05	0,04 - 0,06	0,05 - 0,08
I	O	GD	KC7020	66	sfm	45												100	ipr	.001 - .002	.002 - .002	.002 - .003
	I	LD	KC7225	20	m/min	14												30	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys																			**Tensile Strength RM (MPa)*: 1000-1450**			**Hardness (HB) or HRC: 250-450**
S	O	GD	KC7020	148	sfm	68												180	.ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	45	m/min	21												55	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
U	O	GD	KC7020	82	sfm	60												106	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	25	m/min	18												32	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
I	O	GD	KC7020	66	sfm	45												80	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	20	m/min	14												24	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
S3 Titanium																			**Tensile Strength RM (MPa)*: 900-1600**			**Hardness (HB) or HRC: 300-400**
S	O	GD	KC7020	230	sfm	125												315	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	70	m/min	38												96	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
U	O	GD	KC7020	131	sfm	100												180	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	40	m/min	30												55	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
I	O	GD	KC7020	98	sfm	75												135	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	30	m/min	23												41	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
S4 Titanium Alloys																			**Tensile Strength RM (MPa)*: 900-1600**			**Hardness (HB) or HRC: 300-400**
S	O	GD	KC7020	148	sfm	88												226	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	45	m/min	27												69	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
U	O	GD	KC7020	115	sfm	75												150	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	35	m/min	23												46	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08
I	O	GD	KC7020	98	sfm	62												125	ipr	.001 - .002	.001 - .003	.002 - .003
	I	LD	KC7225	30	m/min	19												38	mm/r	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

Feed and Speed Chart

DFT

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	sfm / m/min	insert / dia.	DFT 03… .625"-.969" 16,00mm-24,00mm	DFT 05… .984"-1.250" 25,00mm-32,00mm	DFT 06… 1.313"-1.563" 33,00mm-40,00mm	DFT 07… 1.625"-1.875" 41,00mm-48,00mm	DFT 09… 1.938"-2.125" 49,00mm-68,00mm	DFT 11… 2.750"-3.250" 69,00mm-82,00mm
P1 Low-Carbon Steels, Long Chipping					**Content: C <.25%**			**Tensile Strength RM (MPa)*: <530**					**Hardness (HB) or HRC: <125**
S	O	GD	KC7815	1066	sfm	853 – 1116	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	HP	KC7140	325	m/min	260 – 340	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
U	O	MD	KC7140	673	sfm	689 – 722	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007- .012
	I	HP	KC7225	205	m/min	210 – 220	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19- 0,31
I	O	MD	KC7140	443	sfm	427 – 459	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	HP	KC7140	135	m/min	130 – 140	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15- 0,25	0,19 - 0,31	0,19 - 0,31
P2 Low-Carbon Steels, Free Machining, and Short Chipping					**Content: C <.25%**			**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: <220**
S	O	GD	KC7815	1013	sfm	387 – 738	ipr	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012
	I	LD	KC7140	309	m/min	247 – 323	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
U	O	MD	KC7140	639	sfm	655 – 686	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007- .012
	I	LD	KC7225	195	m/min	200 – 209	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19- 0,31
I	O	MD	KC7140	421	sfm	405 – 436	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	LD	KC7225	128	m/min	124 – 133	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15- 0,25	0,19 - 0,31	0,19 - 0,31
P3 Medium to High Plain-Carbon Steels and Alloy Steels					**Content: C >.25%**			**Tensile Strength RM (MPa)*: 600-850**					**Hardness (HB) or HRC: <330**
S	O	GD	KC7815	960	sfm	387 – 738	ipr	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012
	I	LD	KC7140	293	m/min	234 – 306	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
U	O	MD	KC7140	605	sfm	620 – 650	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007- .012
	I	LD	KC7225	185	m/min	189 – 198	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
I	O	MD	KC7140	399	sfm	384 – 413	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	LD	KC7225	122	m/min	117 – 126	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
P4 Alloy Steels and Tool Steels					**Content: C >.25%**			**Tensile Strength RM (MPa)*: 800-1100**					**Hardness (HB) or HRC: 350-450**
S	O	MD	KC7820	853	sfm	387 – 738	ipr	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012
	I	MD	KC7140	260	m/min	208 – 272	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
U	O	MD	KC7820	538	sfm	551 – 577	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007- .012
	I	MD	KC7140	164	m/min	168 – 176	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
I	O	MD	KC7820	354	sfm	341 – 367	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	MD	KC7140	108	m/min	104 – 112	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31

Cutting Speed sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281
Cutting Speed m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed		Feed rate by insert size						
					sfm / m/min		insert / dia.	DFT 03… .625"- .969" 16,00mm- 24,00mm	DFT 05… .984"- 1.250" 25,00mm- 32,00mm	DFT 06… 1.313"- 1.563" 33,00mm- 40,00mm	DFT 07… 1.625"- 1.875" 41,00mm- 48,00mm	DFT 09… 1.938"- 2.125" 49,00mm- 68,00mm	DFT 11… 2.750"- 3.250" 69,00mm- 82,00mm
P5 Ferritic, Martensitic, and PH Stainless Steels					**Content: C=0-.4%**		**Tensile Strength RM (MPa)*: 600-850**					**Hardness (HB) or HRC: <330**	
S	O	MD	KC7140	689	sfm	387 738	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.005 - .009
	I	MD	KC7140	210	m/min	160 220	mm	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23
U	O	MD	KC7820	476	sfm	263 502	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.005 - .009
	I	MD	KC7820	145	m/min	130 160	mm	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23
I	O	MD	KC7140	279	sfm	163 311	ipr	.002 - .004	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.005 - .009
	I	MD	KC7140	85	m/min	80 90	mm	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels					**Content: C=.1-.6%**		**Tensile Strength RM (MPa)*: 900-1350**					**Hardness (HB) or HRC: 350-450**	
S	O	MD	KC7820	655	sfm	387 738	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	MD	KC7820	200	m/min	152 209	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
U	O	MD	KC7820	452	sfm	405 499	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	MD	KC7140	138	m/min	124 152	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
I	O	MD	KC7820	265	sfm	249 281	ipr	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012
	I	MD	KC7140	81	m/min	76 86	mm	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31
M1 Austenitic Stainless Steels					**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: 130-200**	
S	O	MD	KC7140	686	sfm	357 812	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	209	m/min	109 247	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
U	O	MD	KC7140	469	sfm	290 552	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	143	m/min	88 168	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
I	O	MD	KC7140	289	sfm	180 343	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	88	m/min	55 104	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
M2 High-Strength Austenitic Stainless and Cast Stainless Steels					**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: 500-700**					**Hardness (HB) or HRC: 150-230**	
S	O	MD	KC7140	623	sfm	387 738	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	190	m/min	99 225	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
U	O	MD	KC7140	427	sfm	263 502	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	130	m/min	80 153	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
I	O	MD	KC7140	262	sfm	163 311	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	80	m/min	50 95	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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Feed and Speed Chart

DFT

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed	Feed rate by insert size					
					sfm / m/min	insert / dia.	DFT 03… .625"-.969" 16,00mm-24,00mm	DFT 05… .984"-1.250" 25,00mm-32,00mm	DFT 06… 1.313"-1.563" 33,00mm-40,00mm	DFT 07… 1.625"-1.875" 41,00mm-48,00mm	DFT 09… 1.938"-2.125" 49,00mm-68,00mm	DFT 11… 2.750"-3.250" 69,00mm-82,00mm
M3 Duplex Steels					**Content: C=.05-.2%**	**Tensile Strength RM (MPa)*: <900**				**Hardness (HB) or HRC: 135-275**		
S	O	MD	KC7140	561	sfm	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	171	m/min	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
U	O	MD	KC7140	384	sfm	ipr	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008
	I	MD	KC7140	117	m/min	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
I	O	MD	KC7140	236	sfm	ipr	.002 - .004	.003 - .005	.003 - .006	.004 -.007	.004 - .008	.004 - .008
	I	MD	KC7140	72	m/min	mm	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21
K1 Gray Cast Irons and Low-Strength Ductile Irons						**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**		
S	O	GD	KC7815	787	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	MD	KC7225	240	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
U	O	LD	KC7225	525	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	160	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
I	O	GD	KC7020	328	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	100	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
K2 Low and Medium Strength CGI and Ductile Irons						**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**		
S	O	LD	KC7225	748	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	228	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
U	O	LD	KC7225	499	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	152	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
I	O	GD	KC7020	312	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7020	95	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
K3 High-Strength Ductile and Austempered Ductile Irons						**Tensile Strength RM (MPa)*: 600-900**				**Hardness (HB) or HRC: 180-350**		
S	O	LD	KC7225	709	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	216	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
U	O	LD	KC7225	472	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7225	144	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39
I	O	GD	KC7020	295	sfm	ipr	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015
	I	LD	KC7020	90	m/min	mm	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

(continued on next page)

DFT

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed		Feed rate by insert size						
					sfm		insert	DFT 03…	DFT 05…	DFT 06…	DFT 07…	DFT 09…	DFT 11…
					m/min		dia.	.625"- .969" 16,00mm- 24,00mm	.984"- 1.250" 25,00mm- 32,00mm	1.313"- 1.563" 33,00mm- 40,00mm	1.625"- 1.875" 41,00mm- 48,00mm	1.938"- 2.125" 49,00mm- 68,00mm	2.750"- 3.250" 69,00mm- 82,00mm
N1	**Wrought Aluminum Alloys**						**Tensile Strength RM (MPa)*: <520**						
S	O	LD	KC7025	2362	sfm	1560 2760	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	720	m/min	475 841	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
U	O	LD	KC7025	1575	sfm	1040 1840	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	480	m/min	317 561	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
I	O	GD	KC7020	984	sfm	645 1141	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	300	m/min	197 348	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
N2	**Cast Aluminum**				**Content: Si<12.2%**		**Tensile Strength RM (MPa)*: <350**				**Hardness (HB) or HRC: 70-100**		
S	O	LD	KC7025	2197	sfm	1560 2760	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	670	m/min	475 841	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
U	O	LD	KC7025	1465	sfm	1040 1840	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	446	m/min	317 561	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
I	O	GD	KC7020	915	sfm	645 1141	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	279	m/min	197 348	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
N3	**Cast Aluminums**				**Content: Si>12.2%**		**Tensile Strength RM (MPa)*: 200-320**				**Hardness (HB) or HRC: 60-120**		
S	O	LD	KC7025	2032	sfm	1560 2760	ipr	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007
	I	LD	KC7025	619	m/min	475 841	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
U	O	LD	KC7025	1354	sfm	1040 1840	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	413	m/min	317 561	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
I	O	GD	KC7020	846	sfm	645 1141	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	258	m/min	197 348	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
N4	**MMC's (Aluminum-Based Metal Matrix)**						**Tensile Strength RM (MPa)*: <700**				**Hardness (HB) or HRC: 210**		
S	O	LD	KC7025	2197	sfm	1560 2760	ipr	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007
	I	LD	KC7025	670	m/min	475 841	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
U	O	LD	KC7025	1465	sfm	967 1711	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	446	m/min	295 522	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
I	O	GD	KC7020	915	sfm	600 1061	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	279	m/min	183 323	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18

* 1 MPa = 145 psi

S = Stable cutting conditions

U = Unstable cutting conditions

I = Interrupted cutting conditions

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DFT

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed		Feed rate by insert size						
					sfm / m/min		insert	DFT 03…	DFT 05…	DFT 06…	DFT 07…	DFT 09…	DFT 11…
							dia.	.625"- .969" 16,00mm- 24,00mm	.984"- 1.250" 25,00mm- 32,00mm	1.313"- 1.563" 33,00mm- 40,00mm	1.625"- 1.875" 41,00mm- 48,00mm	1.938"- 2.125" 49,00mm- 68,00mm	2.750"- 3.250" 69,00mm- 82,00mm
N5 Copper and Copper Alloys							Tensile Strength RM (MPa)*: 200-650						Hardness (HB) or HRC: 60-200
S	O	LD	KC7025	2362	sfm	1560 – 2760	ipr	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007
	I	LD	KC7025	720	m/min	475 – 841	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
U	O	LD	KC7025	1575	sfm	1040 – 1840	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	480	m/min	317 – 561	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
I	O	GD	KC7020	984	sfm	645 – 1141	ipr	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007
	I	LD	KC7025	300	m/min	197 – 348	mm	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18
S1 Iron-Based, Heat-Resistant Alloys							Tensile Strength RM (MPa)*: 500-1200						Hardness (HB) or HRC: 160-260
S	O	GD	KC7020	164	sfm	75 – 200	ipr	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005
	I	LD	KC7225	50	m/min	23 – 61	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,14	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13
U	O	GD	KC7020	98	sfm	60 – 133	ipr	.001 - .002	.002 - .002	.002 - .003	.002 - .004	.003 - .005	.003 - .005
	I	LD	KC7225	30	m/min	18 – 41	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13
I	O	GD	KC7020	66	sfm	45 – 100	ipr	.001 - .002	.002 - .002	.002 - .003	.002 - .004	.003 - .005	.003 - .005
	I	LD	KC7225	20	m/min	14 – 30	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys							Tensile Strength RM (MPa)*: 1000-1450						Hardness (HB) or HRC: 250-450
S	O	GD	KC7020	148	sfm	75 – 160	ipr	.001 - .002	.002 - .002	.002 - .003	.002 - .004	.003 - .005	.003 - .005
	I	LD	KC7225	45	m/min	23 – 49	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13
U	O	GD	KC7020	82	sfm	60 – 106	ipr	.001 - .002	.002 - .002	.002 - .003	.002 - .004	.003 - .005	.003 - .005
	I	LD	KC7225	25	m/min	18 – 32	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13
I	O	GD	KC7020	66	sfm	45 – 80	ipr	.001 - .002	.002 - .002	.002 - .003	.002 - .004	.003 - .005	.003 - .005
	I	LD	KC7225	20	m/min	14 – 24	mm	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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DFT

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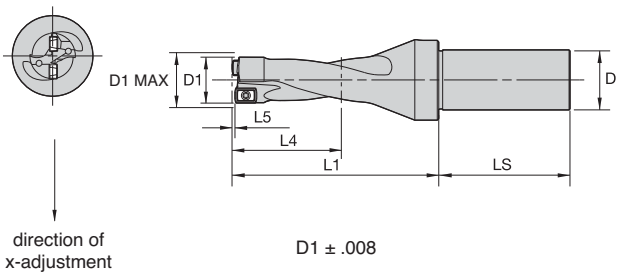
Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Starting Pt	Cutting Speed		Feed rate by insert size					
					sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	DFT 03…	DFT 05…	DFT 06…	DFT 07…	DFT 09…	DFT 11…
					m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	.625"- .969" 16,00mm- 24,00mm	.984"- 1.250" 25,00mm- 32,00mm	1.313"- 1.563" 33,00mm- 40,00mm	1.625"- 1.875" 41,00mm- 48,00mm	1.938"- 2.125" 49,00mm- 68,00mm	2.750"- 3.250" 69,00mm- 82,00mm
S3 Titanium								***Tensile Strength RM (MPa)*: 900-1600***				***Hardness (HB) or HRC: 300-400***	
S	O	GD	KC7020	230	sfm	125 – 315	ipr	.002 - .002	.002 - .004	.002 - .003	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	70	m/min	38 – 96	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15
U	O	GD	KC7020	131	sfm	100 – 180	ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	40	m/min	30 – 55	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15
I	O	GD	KC7020	98	sfm	75 – 135	ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	30	m/min	23 – 41	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15
S4 Titanium Alloys								***Tensile Strength RM (MPa)*: 900-1600***				***Hardness (HB) or HRC: 300-400***	
S	O	GD	KC7020	148	sfm	89 – 226	ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	45	m/min	27 – 69	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15
U	O	GD	KC7020	115	sfm	75 – 150	ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	35	m/min	23 – 46	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15
I	O	GD	KC7020	98	sfm	62 – 125	ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006
	I	LD	KC7225	30	m/min	19 – 38	mm	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

Drill FIX DFR Drill Bodies



- Drill shipped with insert screws and Torx wrench.
- See pages H2–H3 for inserts.

2xD Round Shank — Inch

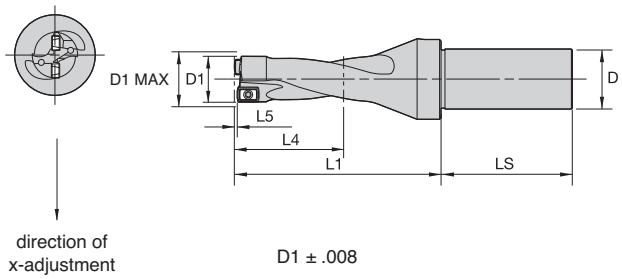
inch	D1 inch max	mm	order number	catalog number	gage insert	D	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size
.500	.539	12,70	1715038	DFR0500R2SS075	DFR020204..	.750	1.94	1.00	.020	2.00	193.281	170.027	T6
.531	.571	13,49	1715039	DFR0531R2SS075	DFR020204..	.750	2.00	1.06	.020	2.00	193.281	170.027	T6
.563	.602	14,30	1715040	DFR0563R2SS075	DFR020204..	.750	2.06	1.13	.004	2.00	193.281	170.027	T6
.594	.633	15,09	1715231	DFR0594R2SS075	DFR020204..	.750	2.13	1.19	.004	2.00	193.281	170.027	T6
.625	.664	15,88	1715232	DFR0625R2SS075	DFR020204..	.750	2.19	1.25	.004	2.00	193.281	170.027	T6

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuc k by centrifugal force. Provide adequate shieldin g to protect bystanders.

Ordering Example:

By catalog number DFR0500R2SS075, or by order number 1715038.



- Drill shipped with insert screws and Torx wrench.
- See pages H2–H3 for inserts.

3xD Round Shank — Inch

D1 inch	D1 inch max	D1 mm	order number	catalog number	gage insert	D	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size
.500	.539	12,70	1715233	DFR0500R3SS075	DFR020204..	.750	2.44	1.50	.020	2.00	193.281	170.027	T6
.508	.547	12,90	1715234	DFR0508R3SS075	DFR020204..	.750	2.44	1.52	.020	2.00	193.281	170.027	T6
.516	.555	13,11	1715235	DFR0516R3SS075	DFR020204..	.750	2.50	1.55	.020	2.00	193.281	170.027	T6
.531	.571	13,49	1715236	DFR0531R3SS075	DFR020204..	.750	2.50	1.59	.020	2.00	193.281	170.027	T6
.563	.602	14,30	1715237	DFR0563R3SS075	DFR020204..	.750	2.63	1.69	.004	2.00	193.281	170.027	T6
.578	.617	14,68	1715238	DFR0578R3SS075	DFR020204..	.750	2.63	1.73	.004	2.00	193.281	170.027	T6
.594	.633	15,09	1715239	DFR0594R3SS075	DFR020204..	.750	2.69	1.78	.004	2.00	193.281	170.027	T6
.625	.664	15,88	1715240	DFR0625R3SS075	DFR020204..	.750	2.81	1.88	.004	2.00	193.281	170.027	T6

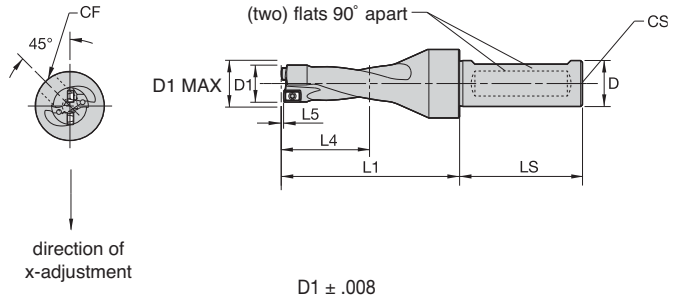
WARNING

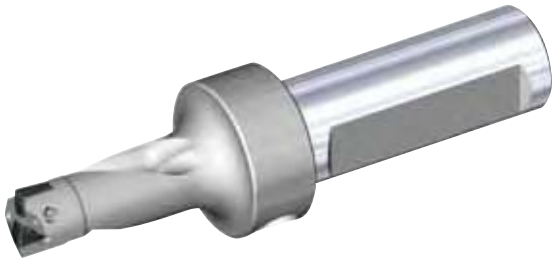
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Order example:

By catalog number DFR0500R3SS075, or by order number 1715233.

Drill FIX DFR Drill Bodies





- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

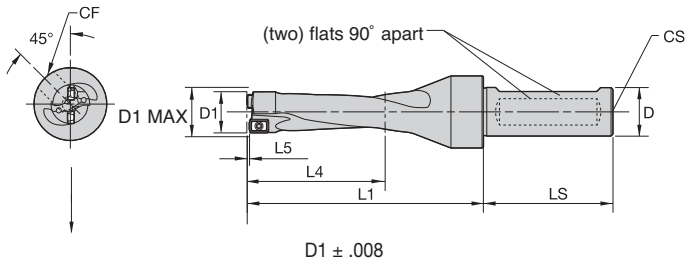
2xD Flange Shank — Inch

D1				D											
inch	inch max	mm	order number	0.750	1.000	gage insert	L1	L4 max	L5	LS	CF	CS	insert screw	Torx wrench	Torx size	pipe plug
.500	.539	12,70	2036655	DFR0500R2SSF075		DFR020204..	1.94	1.00	.02	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.563	.602	14,30	2036656	DFR0563R2SSF075		DFR020204..	2.06	1.13	.00	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.625	.664	15,88	2036657	DFR0625R2SSF075		DFR020204..	2.19	1.25	.00	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.688	.727	17,48	2036658	DFR0688R2SSF075		DFR030204..	2.31	1.38	.00	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.750	.789	19,05	2036659		DFR0750R2SSF100	DFR030204..	2.50	1.50	.00	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.813	.852	20,65	2036660		DFR0813R2SSF100	DFR040304..	2.63	1.63	.00	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.875	.914	22,23	2036661		DFR0875R2SSF100	DFR040304..	2.84	1.75	.00	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.938	.977	23,83	2036662		DFR0938R2SSF100	DFR040304..	2.97	1.88	.00	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
1.000	1.039	25,40	2036663		DFR1000R2SSF100	DFR040304..	3.10	2.00	.03	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number DFR0500R2SSF075, or by order number 2036655.



- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

3xD Flange Shank — Inch

D1				D													
inch	inch max	mm	order number	0.750	1.000	1.250	gage insert	L1	L4 max	L5	LS	CF	CS	insert screw	Torx wrench	Torx size	pipe plug
.500	.539	12,70	1715069	DFR0500R3SSF075			DFR020204..	2.44	1.50	.020	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.531	.571	13,49	1715070	DFR0531R3SSF075			DFR020204..	2.50	1.59	.020	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.563	.602	14,30	1715091	DFR0563R3SSF075			DFR020204..	2.63	1.69	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.594	.633	15,09	1715092	DFR0594R3SSF075			DFR020204..	2.69	1.78	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.625	.664	15,88	1715093	DFR0625R3SSF075			DFR020204..	2.81	1.88	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.625	.664	15,88	2036664		DFR0625R3SSF100		DFR020204..	2.81	1.88	.004	3.00	1/8-27 NPT	1/4-18 NPT	193.281	170.027	T6	HSFS0125
.656	.696	16,66	2036592	DFR0656R3SSF075			DFR030204..	2.91	1.97	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.656	.696	16,66	2036665		DFR0656R3SSF100		DFR030204..	2.91	1.97	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.688	.727	17,48	2036666		DFR0688R3SSF100		DFR030204..	3.00	2.06	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.688	.727	17,48	2036643	DFR0688R3SSF075			DFR030204..	3.00	2.06	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.703	.742	17,86	2036644	DFR0703R3SSF075			DFR030204..	3.11	2.11	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.703	.742	17,86	2036667		DFR0703R3SSF100		DFR030204..	3.11	2.11	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.734	.774	18,64	2036668		DFR0734R3SSF100		DFR030204..	3.20	2.20	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.734	.774	18,64	2036645	DFR0734R3SSF075			DFR030204..	3.20	2.20	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.750	.789	19,05	2036670	DFR0750R3SSF075			DFR030204..	3.25	2.25	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.750	.789	19,05	2036646		DFR0750R3SSF100		DFR030204..	3.25	2.25	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.781	.821	19,84	2036671	DFR0781R3SSF075			DFR030204..	3.34	2.34	.004	2.00	1/8-27 NPT	1/8-27 NPT	192.416	170.023	T7	HSFS0125
.781	.821	19,84	2036695		DFR0781R3SSF100		DFR030204..	3.34	2.34	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.813	.852	20,65	2036647		DFR0813R3SSF100		DFR040304..	3.44	2.44	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.813	.852	20,65	2036672	DFR0813R3SSF075			DFR040304..	3.44	2.44	.028	2.00	1/8-27 NPT	1/8-27 NPT	192.432	170.028	T8	HSFS0125
.844	.883	21,44	2036673	DFR0844R3SSF075			DFR040304..	3.63	2.53	.028	2.00	1/8-27 NPT	1/8-27 NPT	192.432	170.028	T8	HSFS0125
.844	.883	21,44	2036648		DFR0844R3SSF100		DFR040304..	3.63	2.53	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.875	.914	22,23	2036674	DFR0875R3SSF075			DFR040304..	3.72	2.63	.028	2.00	1/8-27 NPT	1/8-27 NPT	192.432	170.028	T8	HSFS0125
.875	.914	22,23	2036649		DFR0875R3SSF100		DFR040304..	3.72	2.63	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.906	.946	23,01	2036650		DFR0906R3SSF100		DFR040304..	3.81	2.72	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.938	.977	23,83	2036651		DFR0938R3SSF100		DFR040304..	3.91	2.81	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.969	1.008	24,61	2036652		DFR0969R3SSF100		DFR040304..	4.00	2.91	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.984	1.024	24,99	2036653		DFR0984R3SSF100		DFR040304..	4.05	2.95	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
1.000	1.039	25,40	2036675			DFR1000R3SSF125	DFR040304..	4.09	3.00	.028	3.25	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
1.000	1.039	25,40	2036654		DFR1000R3SSF100		DFR040304..	4.09	3.00	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125

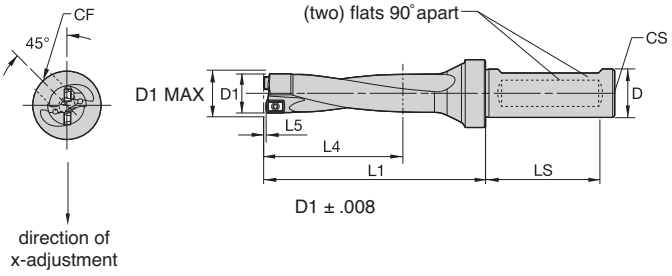
Ordering Example:

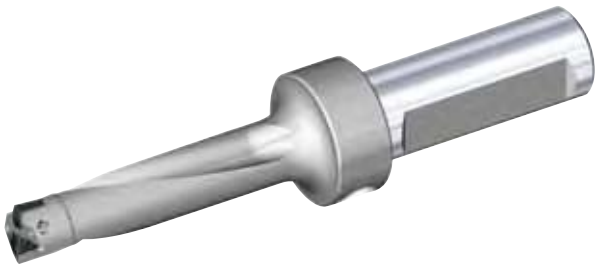
By catalog number DFR0500R3SSF075, or by order number 171069.

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Drill FIX DFR Drill Bodies





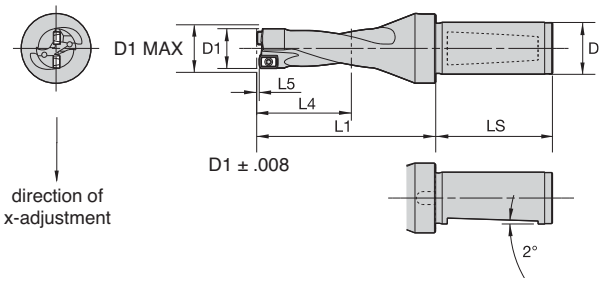
- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

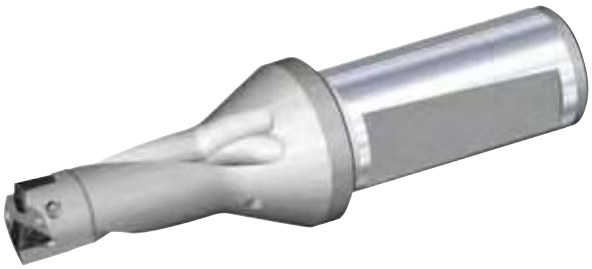
4xD Flange Shank — Inch

D1 inch	D1 inch max	D1 mm	order number	D1 0.750	D1 1.000	D1 1.250	gage insert	L1	L4 max	L5	LS	CF	CS	insert screw	Torx wrench	Torx size	pipe plug
.500	.540	12,70	3022047	DFR0500R4SSF075			DFR020204..	2.94	2.00	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.531	.571	13,49	3022048	DFR0531R4SSF075			DFR020204..	3.03	2.12	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.563	.603	14,30	3022049	DFR0563R4SSF075			DFR020204..	3.19	2.25	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.594	.634	15,09	3022050	DFR0594R4SSF075			DFR020204..	3.28	2.38	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.625	.665	15,88	3022051	DFR0625R4SSF075			DFR020204..	3.44	2.50	.004	2.00	1/8-27 NPT	1/8-27 NPT	193.281	170.027	T6	HSFS0125
.625	.669	15,88	3022052		DFR0625R4SSF100		DFR020204..	3.44	2.50	.004	3.00	1/8-27 NPT	1/4-18 NPT	193.281	170.027	T6	HSFS0125
.656	.696	16,66	3022343		DFR0656R4SSF100		DFR030204..	3.56	2.62	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.688	.728	17,48	3022344		DFR0688R4SSF100		DFR030204..	3.69	2.75	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.703	.743	17,86	3022345		DFR0703R4SSF100		DFR030204..	3.81	2.81	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.734	.774	18,64	3022346		DFR0734R4SSF100		DFR030204..	3.94	2.94	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.750	.790	19,05	3022347		DFR0750R4SSF100		DFR030204..	4.00	3.00	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.781	.821	19,84	3022348		DFR0781R4SSF100		DFR030204..	4.12	3.12	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.416	170.023	T7	HSFS0125
.813	.853	20,65	3022349		DFR0813R4SSF100		DFR040304..	4.25	3.25	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.844	.884	21,44	3022350		DFR0844R4SSF100		DFR040304..	4.47	3.38	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.875	.915	22,23	3022351		DFR0875R4SSF100		DFR040304..	4.59	3.50	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.906	.946	23,01	3022352		DFR0906R4SSF100		DFR040304..	4.72	3.62	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.938	.978	23,83	3022353		DFR0938R4SSF100		DFR040304..	4.85	3.75	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.969	1.009	24,61	3022354		DFR0969R4SSF100		DFR040304..	4.97	3.88	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
.984	1.024	24,99	3022355		DFR0984R4SSF100		DFR040304..	5.03	3.94	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
1.000	1.040	25,40	3022356		DFR1000R4SSF100		DFR040304..	5.09	4.00	.004	3.00	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125
1.000	1.040	25,40	3022357			DFR1000R4SSF125	DFR040304..	5.09	4.00	.004	3.25	1/8-27 NPT	1/4-18 NPT	192.432	170.028	T8	HSFS0125

Ordering Example:
By catalog number DFR0500R4SSF075, or by order number 3022047.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.





- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

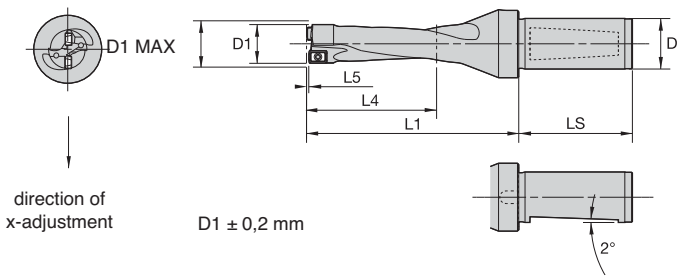
2xD WN/WD Shank — Metric

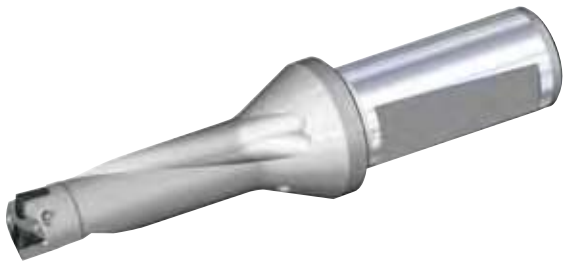
D1				D									
mm	mm max	inch	order number	20	32	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size
12,5	13,5	.492	1608363	DFR125R2WD20M		DFR020204..	47,0	25,0	0,50	45	193.281	170.027	T6
12,7	13,7	.500	1608364	DFR127R2WD20M		DFR020204..	47,4	25,4	0,50	45	193.281	170.027	T6
13,0	14,0	.512	1608365	DFR130R2WD20M		DFR020204..	48,0	26,0	0,50	45	193.281	170.027	T6
13,5	14,5	.532	1608366	DFR135R2WD20M		DFR020204..	49,0	27,0	0,50	45	193.281	170.027	T6
14,0	15,0	.551	1608367	DFR140R2WD20M		DFR020204..	50,0	28,0	0,50	45	193.281	170.027	T6
14,5	15,5	.571	1608368	DFR145R2WD20M		DFR020204..	53,0	29,0	0,09	45	193.281	170.027	T6
15,0	16,0	.591	1608369	DFR150R2WD20M		DFR020204..	54,0	30,0	0,09	45	193.281	170.027	T6
15,5	16,5	.610	1608370	DFR155R2WD20M		DFR020204..	55,0	31,0	0,09	45	193.281	170.027	T6
16,0	17,0	.630	1608391	DFR160R2WD20M		DFR020204..	56,0	32,0	0,09	45	193.281	170.027	T6
16,5	17,5	.650	1754251		DFR165R2WD32M	DFR030204..	62,0	33,0	0,11	58	192.416	170.023	T7
17,0	18,0	.669	1810334		DFR170R2WD32M	DFR030204..	63,0	34,0	0,11	58	192.416	170.023	T7
17,5	18,5	.689	1810335		DFR175R2WD32M	DFR030204..	64,0	35,0	0,11	58	192.416	170.023	T7
18,0	19,0	.709	1810336		DFR180R2WD32M	DFR030204..	65,0	36,0	0,11	58	192.416	170.023	T7
18,5	19,5	.728	1810337		DFR185R2WD32M	DFR030204..	66,0	37,0	0,11	58	192.416	170.023	T7
19,0	20,0	.748	1799693		DFR190R2WD32M	DFR030204..	67,0	38,0	0,11	58	192.416	170.023	T7
19,5	20,5	.768	1810338		DFR195R2WD32M	DFR030204..	68,0	39,0	0,11	58	192.416	170.023	T7
20,0	21,0	.787	1810339		DFR200R2WD32M	DFR030204..	72,0	40,0	0,11	58	192.416	170.023	T7
20,5	21,5	.807	1810340		DFR205R2WD32M	DFR040304..	73,0	41,0	0,10	58	192.432	170.028	T8
21,0	22,0	.827	1810341		DFR210R2WD32M	DFR040304..	74,0	42,0	0,10	58	192.432	170.028	T8
22,0	23,0	.866	1810342		DFR220R2WD32M	DFR040304..	76,0	44,0	0,10	58	192.432	170.028	T8
23,0	24,0	.906	1810363		DFR230R2WD32M	DFR040304..	78,0	46,0	0,10	58	192.432	170.028	T8
24,0	25,0	.945	1810364		DFR240R2WD32M	DFR040304..	80,0	48,0	0,10	58	192.432	170.028	T8

Ordering Example:
By catalog number DFR125R2WD20M, or by order number 1608363.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Drill FIX DFR Bodies





- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

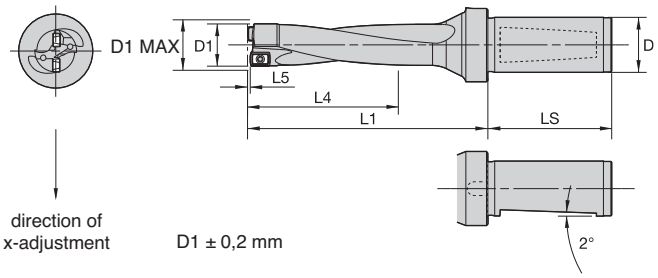
3xD WN/WD Shank — Metric

D1 mm	D1 mm max	D1 inch	order number	D 20	D 25	D 32	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	torx size
12,5	13,5	.492	1608392	DFR125R3WD20M			DFR020204..	59,9	37,5	0,50	45	193.281	170.027	T6
12,7	13,7	.500	1608393	DFR127R3WD20M			DFR020204..	60,5	38,1	0,50	45	193.281	170.027	T6
13,0	14,0	.512	1608394	DFR130R3WD20M			DFR020204..	61,4	39,0	0,50	45	193.281	170.027	T6
13,5	14,5	.532	1608395	DFR135R3WD20M			DFR020204..	62,9	40,5	0,50	45	193.281	170.027	T6
14,0	15,0	.551	1608396	DFR140R3WD20M			DFR020204..	64,4	42,0	0,50	45	193.281	170.027	T6
14,5	15,5	.571	1608397	DFR145R3WD20M			DFR020204..	67,9	43,5	0,09	45	193.281	170.027	T6
15,0	16,0	.591	1608398	DFR150R3WD20M			DFR020204..	69,4	45,0	0,09	45	193.281	170.027	T6
15,5	16,5	.610	1608399	DFR155R3WD20M			DFR020204..	70,9	46,5	0,09	45	193.281	170.027	T6
16,0	17,0	.630	1608400	DFR160R3WD20M			DFR020204..	72,4	48,0	0,09	45	193.281	170.027	T6
16,5	17,5	.650	1810365			DFR165R3WD32M	DFR030204..	78,5	49,5	0,11	58	192.416	170.023	T7
17,0	18,0	.669	1798962			DFR170R3WD32M	DFR030204..	80,0	51,0	0,11	58	192.416	170.023	T7
17,5	18,5	.689	2498749		DFR175R3WD25M		DFR030204..	81,5	52,5	0,11	45	192.416	170.023	T7
17,5	18,5	.689	1810366			DFR175R3WD32M	DFR030204..	81,5	52,5	0,11	58	192.416	170.023	T7
18,0	19,0	.709	2498750		DFR180R3WD25M		DFR030204..	83,0	54,0	0,11	45	192.416	170.023	T7
18,0	19,0	.709	1799053			DFR180R3WD32M	DFR030204..	83,0	54,0	0,11	58	192.416	170.023	T7
18,5	19,5	.728	2498751		DFR185R3WD25M		DFR030204..	84,5	55,5	0,11	45	192.416	170.023	T7
18,5	19,5	.728	1810367			DFR185R3WD32M	DFR030204..	84,5	55,5	0,11	58	192.416	170.023	T7
19,0	20,0	.748	2498752		DFR190R3WD25M		DFR030204..	86,0	57,0	0,11	45	192.416	170.023	T7
19,0	20,0	.748	1810368			DFR190R3WD32M	DFR030204..	86,0	57,0	0,11	58	192.416	170.023	T7
19,5	20,5	.768	2499003		DFR195R3WD25M		DFR030204..	87,5	58,5	0,11	45	192.416	170.023	T7
19,5	20,5	.768	1810369			DFR195R3WD32M	DFR030204..	87,5	58,5	0,11	58	192.416	170.023	T7
20,0	21,0	.787	2499004		DFR200R3WD25M		DFR030204..	92,0	60,0	0,11	45	192.416	170.023	T7
20,0	21,0	.787	1799055			DFR200R3WD32M	DFR030204..	92,0	60,0	0,11	58	192.416	170.023	T7
20,5	21,5	.807	2499005		DFR205R3WD25M		DFR040304..	93,5	61,5	0,10	45	192.432	170.028	T8
20,5	21,5	.807	1810370			DFR205R3WD32M	DFR040304..	93,5	61,5	0,10	58	192.432	170.028	T8
21,0	22,0	.827	1799056		DFR210R3WD25M		DFR040304..	95,0	63,0	0,10	45	192.432	170.028	T8
21,0	22,0	.827	1810371			DFR210R3WD32M	DFR040304..	95,0	63,0	0,10	58	192.432	170.028	T8
22,0	23,0	.866	1799059		DFR220R3WD25M		DFR040304..	98,0	66,0	0,10	45	192.432	170.028	T8
22,0	23,0	.866	1799695			DFR220R3WD32M	DFR040304..	98,0	66,0	0,10	58	192.432	170.028	T8
23,0	24,0	.906	2499006		DFR230R3WD25M		DFR040304..	101,0	69,0	0,10	45	192.432	170.028	T8
23,0	24,0	.906	1810372			DFR230R3WD32M	DFR040304..	101,0	69,0	0,10	58	192.432	170.028	T8
24,0	25,0	.945	2499007		DFR240R3WD25M		DFR040304..	104,0	72,0	0,10	45	192.432	170.028	T8
24,0	25,0	.945	1810373			DFR240R3WD32M	DFR040304..	104,0	72,0	0,10	58	192.432	170.028	T8

Ordering Example:
By catalog number DFR125R3WD20M, or by order number 1608392.

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H2–H3 for inserts.

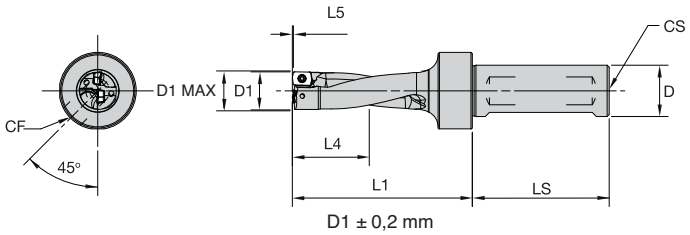
4xD WN/WD Shank — Metric

D1				D									
mm	mm max	inch	order number	20	32	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size
12,5	13,5	.492	2456906	DFR125R4WD20M		DFR020204..	72,0	50,0	0,50	45	193.281	170.027	T6
12,7	13,7	.500	2456907	DFR127R4WD20M		DFR020204..	72,8	50,8	0,50	45	193.281	170.027	T6
13,0	14,0	.512	2456908	DFR130R4WD20M		DFR020204..	74,0	52,0	0,50	45	193.281	170.027	T6
13,5	14,5	.532	2456909	DFR135R4WD20M		DFR020204..	76,0	54,0	0,50	45	193.281	170.027	T6
14,0	15,0	.551	2456910	DFR140R4WD20M		DFR020204..	78,0	56,0	0,50	45	193.281	170.027	T6
14,5	15,5	.571	2456911	DFR145R4WD20M		DFR020204..	82,0	58,0	0,09	45	193.281	170.027	T6
15,0	16,0	.591	2456912	DFR150R4WD20M		DFR020204..	84,0	60,0	0,09	45	193.281	170.027	T6
15,5	16,5	.610	2457733	DFR155R4WD20M		DFR020204..	86,0	62,0	0,09	45	193.281	170.027	T6
16,0	17,0	.630	2457734	DFR160R4WD20M		DFR020204..	88,0	64,0	0,09	45	193.281	170.027	T6
16,5	17,5	.650	2457735		DFR165R4WD32M	DFR030204..	95,0	66,0	0,11	58	192.416	170.023	T7
17,0	18,0	.669	2457736		DFR170R4WD32M	DFR030204..	97,0	68,0	0,11	58	192.416	170.023	T7
17,5	18,5	.689	2457737		DFR175R4WD32M	DFR030204..	99,0	70,0	0,11	58	192.416	170.023	T7
18,0	19,0	.709	2457738		DFR180R4WD32M	DFR030204..	101,0	72,0	0,11	58	192.416	170.023	T7
18,5	19,5	.728	2457739		DFR185R4WD32M	DFR030204..	103,0	74,0	0,11	58	192.416	170.023	T7
19,0	20,0	.748	2035319		DFR190R4WD32M	DFR030204..	105,0	76,0	0,11	58	192.416	170.023	T7
19,5	20,5	.768	2457741		DFR195R4WD32M	DFR030204..	107,0	78,0	0,11	58	192.416	170.023	T7
20,0	21,0	.787	1963407		DFR200R4WD32M	DFR030204..	109,0	80,0	0,11	58	192.416	170.023	T7
20,5	21,5	.807	2457743		DFR205R4WD32M	DFR040304..	111,0	82,0	0,10	58	192.432	170.028	T8
21,0	22,0	.827	2457744		DFR210R4WD32M	DFR040304..	113,0	84,0	0,10	58	192.432	170.028	T8
22,0	23,0	.866	2040139		DFR220R4WD32M	DFR040304..	117,0	88,0	0,10	58	192.432	170.028	T8
23,0	24,0	.906	2457746		DFR230R4WD32M	DFR040304..	121,0	92,0	0,10	58	192.432	170.028	T8
24,0	25,0	.945	2457747		DFR240R4WD32M	DFR040304..	125,0	96,0	0,10	58	192.432	170.028	T8

Ordering Example:
By catalog number DFR125R4WD20M, or by order number 2456906.

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Drill FIX DFR Bodies



- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See page H3 for inserts.

2xD Flange Shank Left Hand — Metric

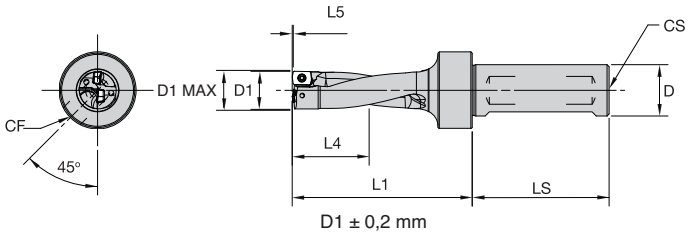
D1				D													
mm	mm max	inch	order number	20	25	32	gage insert	L1	L4 max	L5	LS	hex wrench	insert screw	misc	screw	Torx wrench	Torx size
12,5	13,5	.492	1996633	DFR125L2SSF20M			DFR020204..	47,0	25,0	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
13,0	14,0	.512	2388157	DFR130L2SSF20M			DFR020204..	48,0	26,0	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
14,0	15,0	.551	2388158	DFR140L2SSF20M			DFR020204..	50,0	28,0	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
15,0	16,0	.591	2388159	DFR150L2SSF20M			DFR020204..	54,0	30,0	0,09	51	170.000	193.281	191.982	191.520	170.027	T6
16,0	17,0	.630	2388160	DFR160L2SSF20M			DFR020204..	56,0	32,0	0,09	51	170.000	193.281	191.982	191.520	170.027	T6
17,0	18,0	.669	2388161		DFR170L2SSF25M		DFR030204..	63,0	34,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
18,0	19,0	.709	1996634		DFR180L2SSF25M		DFR030204..	65,0	36,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
19,0	20,0	.748	2388162		DFR190L2SSF25M		DFR030204..	67,0	38,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
20,0	21,0	.787	2450463			DFR200L2SSF32M	DFR030204..	72,0	40,0	0,11	61	170.001	192.416	191.982	191.010	170.023	T7
21,0	22,0	.827	2388193			DFR210L2SSF32M	DFR040304..	74,0	42,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
22,0	23,0	.866	2450464			DFR220L2SSF32M	DFR040304..	76,0	44,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
23,0	24,0	.906	1996635			DFR230L2SSF32M	DFR040304..	78,0	46,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
24,0	25,0	.945	2450465			DFR240L2SSF32M	DFR040304..	80,0	48,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number DFR125L2SSF20M, or by order number 1996633.



- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See page H3 for inserts.

3xD Flange Shank Left Hand — Metric

D1				D														
mm	mm max	inch	order number	20	25	32	gage insert	L1	L4 max	L5	LS	hex wrench	insert screw	misc	screw	Torx wrench	Torx size
12,5	13,5	.492	2388194	DFR125L3SSF20M			DFR020204..	59,5	37,5	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
13,0	14,0	.512	2388195	DFR130L3SSF20M			DFR020204..	61,0	39,0	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
14,0	15,0	.551	2388196	DFR140L3SSF20M			DFR020204..	64,0	42,0	0,50	51	170.000	193.281	191.982	191.520	170.027	T6
15,0	16,0	.591	2388197	DFR150L3SSF20M			DFR020204..	69,0	45,0	0,09	51	170.000	193.281	191.982	191.520	170.027	T6
16,0	17,0	.630	1996637	DFR160L3SSF20M			DFR020204..	72,0	48,0	0,09	51	170.000	193.281	191.982	191.520	170.027	T6
17,0	18,0	.669	2388198		DFR170L3SSF25M		DFR030204..	80,0	51,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
18,0	19,0	.709	2388199		DFR180L3SSF25M		DFR030204..	83,0	54,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
19,0	20,0	.748	2388200		DFR190L3SSF25M		DFR030204..	86,0	57,0	0,11	57	170.001	192.416	191.982	191.010	170.023	T7
20,0	21,0	.787	2450466			DFR200L3SSF32M	DFR030204..	92,0	60,0	0,11	61	170.001	192.416	191.982	191.010	170.023	T7
21,0	22,0	.827	2388201			DFR210L3SSF32M	DFR040304..	95,0	63,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
22,0	23,0	.866	2450467			DFR220L3SSF32M	DFR040304..	98,0	66,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
23,0	24,0	.906	2388202			DFR230L3SSF32M	DFR040304..	101,0	69,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8
24,0	25,0	.945	2450468			DFR240L3SSF32M	DFR040304..	104,0	72,0	0,10	61	170.001	192.432	191.982	191.010	170.028	T8

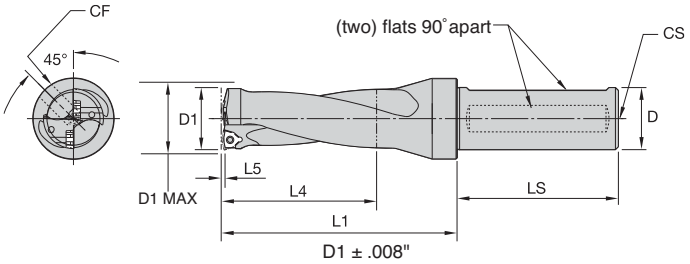
WARNING

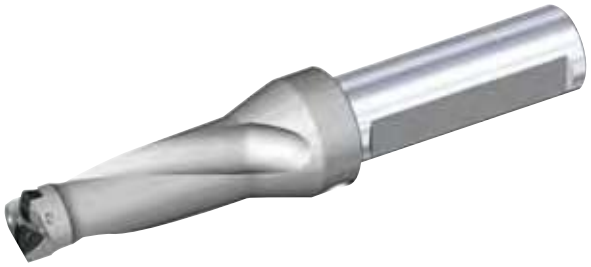
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number DFR125L3SSF20M, or by order number 2388194.

Drill FIX DFT Bodies





- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H4–H5 for inserts.

2.5xD SSF Shank — Inch

D1				D				
inch	inch max	mm	order number	0.750	1.000	1.250	1.500	2.000
.625	.780	15,9	1527597	DFT0625R2SSF075				
.625	.780	15,9	1527664		DFT0625R2SSF100			
.656	.806	16,7	1530245	DFT0656R2SSF075				
.656	.806	16,7	1527666		DFT0656R2SSF100			
.688	.838	17,5	1527625	DFT0688R2SSF075				
.688	.838	17,5	1527667		DFT0688R2SSF100			
.703	.853	17,8	1527626	DFT0703R2SSF075				
.703	.853	17,8	1527669		DFT0703R2SSF100			
.734	.884	18,6	1527627	DFT0734R2SSF075				
.734	.884	18,6	1527681		DFT0734R2SSF100			
.750	.850	19,1	1527628	DFT0750R2SSF075				
.750	.850	19,1	1527682		DFT0750R2SSF100			
.781	.881	19,8	1527691		DFT0781R2SSF100			
.813	.913	20,6	1527630	DFT0813R2SSF075				
.813	.913	20,6	1527698		DFT0813R2SSF100			
.844	.919	21,4	1527699		DFT0844R2SSF100			
.875	.950	22,2	1527663	DFT0875R2SSF075				
.875	.950	22,2	1527700		DFT0875R2SSF100			
.875	.950	22,2	1600515			DFT0875R2SSF125		
.906	.981	23,0	1527731		DFT0906R2SSF100			
.906	.981	23,0	1527689			DFT0906R2SSF125		
.938	.000	23,8	1527732		DFT0938R2SSF100			
.938	.000	23,8	1528316			DFT0938R2SSF125		
.969	1.019	24,6	1527733		DFT0969R2SSF100			
.969	1.019	24,6	1528317			DFT0969R2SSF125		
.984	1.109	25,0	1527687		DFT0984R2SSF100			
.984	1.109	25,0	1528318			DFT0984R2SSF125		
1.000	1.125	25,4	1527688		DFT1000R2SSF100			
1.000	1.125	25,4	1528319			DFT1000R2SSF125		
1.000	1.125	25,4	1528369				DFT1000R2SSF150	
1.031	1.156	26,2	1528320			DFT1031R2SSF125		
1.063	1.188	27,0	1528341			DFT1063R2SSF125		
1.094	1.219	27,8	1528342			DFT1094R2SSF125		
1.125	1.250	28,6	1528343			DFT1125R2SSF125		
1.156	1.281	29,4	1528344			DFT1156R2SSF125		
1.188	1.288	30,2	1528345			DFT1188R2SSF125		
1.219	1.319	31,0	1528346			DFT1219R2SSF125		
1.219	1.319	31,0	1528370				DFT1219R2SSF150	
1.250	1.325	31,8	1528347			DFT1250R2SSF125		
1.250	1.325	31,8	1528391				DFT1250R2SSF150	

gage insert	L1	L4 max	L5	LS	CF	CS	insert screw	Torx wrench	Torx size	pipe plug
DFT030304	2.88	1.60	.017	2.00	1/8-27 NPT	1/8-27 NPT	191.164	170.027	T6	HSFS0125
DFT030204	2.88	1.60	.017	3.00	1/8-27 NPT	1/4-18 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.64	.017	2.00	1/8-27 NPT	1/8-27 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.64	.017	3.00	1/8-27 NPT	1/4-18 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.75	.017	2.00	1/8-27 NPT	1/8-27 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.75	.017	3.00	1/8-27 NPT	1/4-18 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.76	.017	2.00	1/8-27 NPT	1/8-27 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.76	.017	3.00	1/8-27 NPT	1/4-18 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.84	.017	2.00	1/8-27 NPT	1/8-27 NPT	191.164	170.027	T6	HSFS0125
DFT030204	3.00	1.84	.017	3.00	1/8-27 NPT	1/4-18 NPT	191.164	170.027	T6	HSFS0125
DFT030304	3.25	1.88	.025	2.00	1/8-27 NPT	1/8-27 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.25	1.88	.025	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.25	1.96	.029	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.38	2.03	.032	2.00	1/8-27 NPT	1/8-27 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.38	2.03	.032	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.38	2.11	.035	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.63	2.19	.037	2.00	1/8-27 NPT	1/8-27 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.63	2.19	.037	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.63	2.19	.037	3.25	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.63	2.27	.041	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.63	2.27	.041	3.25	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.75	2.35	.043	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.027	T8	HSFS0125
DFT030304	3.75	2.35	.043	3.25	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.75	2.40	.045	3.00	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT030304	3.75	2.40	.045	3.25	1/8-27 NPT	1/4-18 NPT	MS1152	170.023	T8	HSFS0125
DFT05T308	3.88	2.50	.035	3.00	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	3.88	2.50	.035	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.00	2.50	.037	3.00	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.00	2.50	.037	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.00	2.50	.037	3.75	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.00	2.60	.041	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.13	2.65	.043	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.13	2.70	.047	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.38	2.85	.049	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.38	2.89	.052	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.50	3.00	.054	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.63	3.05	.056	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.63	3.05	.056	3.75	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.75	3.13	.059	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.75	3.13	.059	3.75	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125

(continued on next page)

Drill FIX DFT Bodies

2.5xD SSF Shank — Inch

(continued from previous page)

D1				D				
inch	inch max	mm	order number	0.750	1.000	1.250	1.500	2.000
1.281	1.345	32,5	1528348			DFT1281R2SSF125		
1.281	1.345	32,5	1528392				DFT1281R2SSF150	
1.313	1.438	33,3	1528349			DFT1313R2SSF125		
1.313	1.438	33,3	1528393				DFT1313R2SSF150	
1.375	1.500	34,9	1528350			DFT1375R2SSF125		
1.375	1.500	34,9	1528394				DFT1375R2SSF150	
1.406	1.531	35,7	1528361			DFT1406R2SSF125		
1.406	1.531	35,7	1528395				DFT1406R2SSF150	
1.438	1.563	36,5	1528362			DFT1438R2SSF125		
1.438	1.563	36,5	1528396				DFT1438R2SSF150	
1.469	1.594	37,3	1528363			DFT1469R2SSF125		
1.469	1.594	37,3	1528397				DFT1469R2SSF150	
1.500	1.625	38,1	1528364			DFT1500R2SSF125		
1.500	1.625	38,1	1528398				DFT1500R2SSF150	
1.531	1.656	38,9	1528365			DFT1531R2SSF125		
1.531	1.656	38,9	1528399				DFT1531R2SSF150	
1.563	1.688	39,7	1528366			DFT1563R2SSF125		
1.563	1.688	39,7	1528400				DFT1563R2SSF150	
1.625	1.750	41,3	1528367			DFT1625R2SSF125		
1.625	1.750	41,3	1528401				DFT1625R2SSF150	
1.688	1.813	42,9	1528368			DFT1688R2SSF125		
1.688	1.813	42,9	1528402				DFT1688R2SSF150	
1.750	1.875	44,5	1528403				DFT1750R2SSF150	
1.813	1.938	46,0	1528404				DFT1813R2SSF150	
1.875	2.000	47,6	1528405				DFT1875R2SSF150	
1.938	2.188	49,2	1528406				DFT1938R2SSF150	
2.000	2.250	50,8	1528407				DFT2000R2SSF150	
2.000	2.250	50,8	1528409					DFT2000R2SSF200
2.125	2.375	54,0	1528408				DFT2125R2SSF150	
2.125	2.375	54,0	1528410					DFT2125R2SSF200
2.250	2.500	57,2	1528421					DFT2250R2SSF200
2.375	2.590	60,3	1528422					DFT2375R2SSF200
2.500	2.650	63,5	1528423					DFT2500R2SSF200
2.750	3.050	69,9	1528424					DFT2750R2SSF200
3.000	3.150	76,2	1528426					DFT3000R2SSF200
3.250	3.260	82,6	1528427					DFT3250R2SSF200

gage insert	L1	L4 max	L5	LS	CF	CS	insert screw	Torx wrench	Torx size	pipe plug
DFT05T308	4.75	3.20	.061	3.25	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT05T308	4.75	3.20	.061	3.75	1/8-27 NPT	1/4-18 NPT	191.924	170.024	T9	HSFS0125
DFT06T308	4.88	3.30	.052	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	4.88	3.30	.052	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.13	3.45	.059	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.13	3.45	.059	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.13	3.50	.062	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.13	3.50	.062	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.25	3.60	.065	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.25	3.60	.065	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.38	3.70	.069	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.38	3.70	.069	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.50	3.75	.071	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.50	3.75	.071	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.50	3.85	.074	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.50	3.85	.074	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.63	3.90	.075	3.25	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT06T308	5.63	3.90	.075	3.75	1/8-27 NPT	1/4-18 NPT	191.848	170.025	T9	HSFS0125
DFT070408	5.88	4.10	.072	3.25	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	5.88	4.10	.072	3.75	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	6.00	4.25	.081	3.25	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	6.00	4.25	.081	3.75	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	6.25	4.38	.084	3.75	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	6.38	4.55	.088	3.75	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT070408	6.63	4.70	.092	3.75	1/8-27 NPT	1/4-18 NPT	191.698	170.025	T15	HSFS0125
DFT090508	6.75	4.85	.082	3.75	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	7.00	5.00	.087	3.75	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	7.00	5.00	.087	4.00	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	7.38	5.35	.103	3.75	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	7.38	5.35	.103	4.00	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	7.75	5.63	.111	4.00	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	8.13	5.95	.118	4.00	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT090508	8.50	6.25	.125	4.00	1/8-27 NPT	1/4-18 NPT	191.726	170.026	T20	HSFS0125
DFT110506	9.13	6.88	.139	4.00	1/8-27 NPT	1/4-18 NPT	191.375	170.026	T20	HSFS0125
DFT110506	10.00	7.50	.152	4.00	1/8-27 NPT	1/4-18 NPT	191.375	170.026	T20	HSFS0125
DFT110506	10.26	8.13	.165	4.00	1/8-27 NPT	1/4-18 NPT	191.375	170.026	T20	HSFS0125

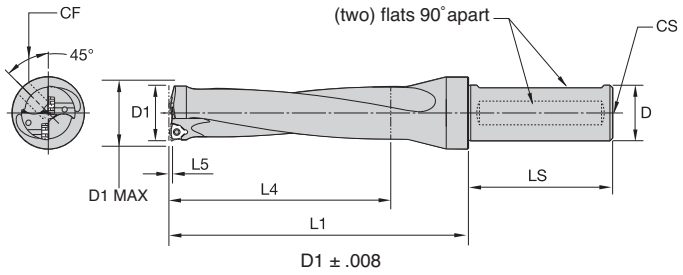
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number DFT0625R2SSF075, or by order number 1527597.

Drill FIX DFT Bodies



- Drill shipped with insert screws, side pipe plug, and Torx wrench.
- See pages H4–H5 for inserts.

4xD Flange Shank — Inch

D1 inch	D1 inch max	D1 mm	order number	D 1.000	D 1.250	D 1.500	D 2.000	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size	CS	pipe plug
.984	1.109	25,00	1522135	DFT0984R4SSF100				DFT05T308	5.50	3.94	.033	3.00	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.000	1.125	25,40	1522108			DFT1000R4SSF150		DFT05T308	5.63	4.00	.034	3.75	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.000	1.125	25,40	1522242		DFT1000R4SSF125			DFT05T308	5.63	4.00	.034	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.000	1.125	25,40	1522133	DFT1000R4SSF100				DFT05T308	5.63	4.00	.034	3.00	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.031	1.156	26,20	1522130		DFT1031R4SSF125			DFT05T308	5.75	4.13	.037	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.063	1.188	26,99	1522127		DFT1063R4SSF125			DFT05T308	5.88	4.25	.040	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.094	1.219	27,78	1522129		DFT1094R4SSF125			DFT05T308	6.00	4.38	.043	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.125	1.250	28,58	1522109			DFT1125R4SSF150		DFT05T308	6.13	4.50	.045	3.75	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.125	1.250	28,58	1522126		DFT1125R4SSF125			DFT05T308	6.13	4.50	.045	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.156	1.281	29,37	1522125		DFT1156R4SSF125			DFT05T308	6.25	4.63	.047	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.188	1.288	30,16	1522124		DFT1188R4SSF125			DFT05T308	6.50	4.75	.049	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.219	1.319	30,96	1522123		DFT1219R4SSF125			DFT05T308	6.63	4.88	.051	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.250	1.325	31,75	1522121		DFT1250R4SSF125			DFT05T308	6.75	5.00	.053	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.250	1.325	31,75	1522107			DFT1250R4SSF150		DFT05T308	6.75	5.00	.053	3.75	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.281	1.345	32,55	1522120		DFT1281R4SSF125			DFT05T308	6.88	5.13	.055	3.25	191.924	170.024	T9	1/4-18 NPT	HSFS0125
1.313	1.438	33,34	1522119		DFT1313R4SSF125			DFT06T308	7.00	5.25	.047	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.375	1.500	34,93	1522117		DFT1375R4SSF125			DFT06T308	7.25	5.50	.053	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.375	1.500	34,93	1522105			DFT1375R4SSF150		DFT06T308	7.25	5.50	.053	3.75	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.406	1.531	35,72	1522118		DFT1406R4SSF125			DFT06T308	7.50	5.63	.056	4.00	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.438	1.563	36,51	1522101			DFT1438R4SSF150		DFT06T308	7.63	5.75	.059	3.75	191.848	170.025	T15	1/4-18 NPT	HSFS0125

(continued on next page)

4xD Flange Shank — Inch

(continued from previous page)

D1 inch	D1 inch max	D1 mm	order number	D 1.000	D 1.250	D 1.500	D 2.000	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size	CS	pipe plug
1.438	1.563	36,51	1522115		DFT1438R4SSF125			DFT06T308	7.63	5.75	.059	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.469	1.594	37,31	1522114		DFT1469R4SSF125			DFT06T308	7.75	5.88	.061	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.500	1.625	38,10	1522113		DFT1500R4SSF125			DFT06T308	7.88	6.00	.064	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.500	1.625	38,10	1522106			DFT1500R4SSF150		DFT06T308	7.88	6.00	.064	3.75	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.531	1.656	38,90	1522103			DFT1531R4SSF150		DFT06T308	8.00	6.13	.066	3.75	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.531	1.656	38,90	1522112		DFT1531R4SSF125			DFT06T308	8.00	6.13	.066	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.563	1.688	39,69	1522028			DFT1563R4SSF150		DFT06T308	8.13	6.25	.067	3.75	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.563	1.688	39,69	1522111		DFT1563R4SSF125			DFT06T308	8.13	6.25	.067	3.25	191.848	170.025	T15	1/4-18 NPT	HSFS0125
1.625	1.750	41,28	1522110		DFT1625R4SSF125			DFT070408	8.38	6.50	.064	3.25	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.625	1.750	41,28	1522027			DFT1625R4SSF150		DFT070408	8.38	6.50	.064	3.75	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.688	1.813	42,86	1522030			DFT1688R4SSF150		DFT070408	8.75	6.75	.071	3.75	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.688	1.813	42,86	1522517		DFT1688R4SSF125			DFT070408	8.75	6.75	.071	3.25	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.750	1.875	44,45	1522102			DFT1750R4SSF150		DFT070408	9.00	7.00	.075	3.75	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.813	1.938	46,04	1522026			DFT1813R4SSF150		DFT070408	9.25	7.25	.079	3.75	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.875	2.000	47,63	1522029			DFT1875R4SSF150		DFT070408	9.50	7.50	.083	3.75	191.698	170.025	T15	1/4-18 NPT	HSFS0125
1.938	2.188	49,21	1522104			DFT1938R4SSF150		DFT090508	9.88	7.75	.070	3.75	191.726	170.026	T20	1/4-18 NPT	HSFS0125
2.000	2.250	50,80	1522248			DFT2000R4SSF150		DFT090508	10.13	8.00	.076	3.75	191.726	170.026	T20	1/4-18 NPT	HSFS0125
2.000	2.250	50,80	1522250				DFT2000R4SSF200	DFT090508	10.13	8.00	.076	4.00	191.726	170.026	T20	1/4-18 NPT	HSFS0125
2.125	2.375	53,98	1522321				DFT2125R4SSF200	DFT090508	10.63	8.50	.088	4.00	191.726	170.026	T20	1/4-18 NPT	HSFS0125
2.125	2.375	53,98	1522249			DFT2125R4SSF150		DFT090508	10.63	8.50	.088	3.75	191.726	170.026	T20	1/4-18 NPT	HSFS0125

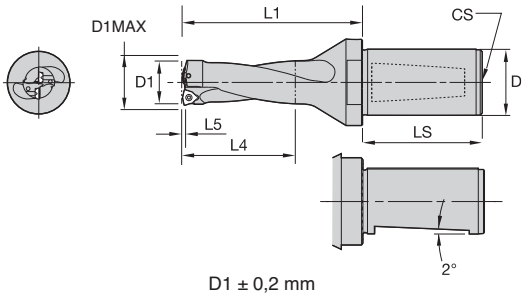
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number DFT0625R4SSF075, or by order number 1522176.

Drill FIX DFT Bodies



D1 ± 0,2 mm

- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

2.5xD WN/WD Shank — Metric

D1				D												
mm	mm max	inch	order number	20	32	40	50	gage insert	L1	L4 max	L5	LS	CS	insert screw	Torx wrench	Torx size
16,0	17,0	.630	1541287	DFT160R2WD20M				DFT030204	65,0	38,0	0,44	45	R1/8 BSP	191.164	170.027	T6
16,0	17,0	.630	1541320		DFT160R2WD32M			DFT030204	65,0	38,0	0,44	58	R1/4 BSP	191.164	170.027	T6
17,0	18,0	.669	1541288	DFT170R2WD20M				DFT030204	65,0	38,0	0,44	45	R1/8 BSP	191.164	170.027	T6
17,0	18,0	.669	1541371		DFT170R2WD32M			DFT030204	65,0	38,0	0,44	58	R1/4 BSP	191.164	170.027	T6
18,0	19,0	.709	1541289	DFT180R2WD20M				DFT030204	65,0	38,0	0,44	45	R1/8 BSP	191.164	170.027	T6
18,0	19,0	.709	1541372		DFT180R2WD32M			DFT030204	65,0	38,0	0,44	58	R1/4 BSP	191.164	170.027	T6
19,0	21,0	.748	1541290	DFT190R2WD20M				DFT030304	75,0	48,0	0,66	45	R1/8 BSP	192.432	170.028	T8
19,0	21,0	.748	1541734		DFT190R2WD32M			DFT030304	75,0	48,0	0,66	58	R1/4 BSP	192.432	170.028	T8
19,0	21,0	.748	1541841			DFT190R2WD40M		DFT030304	75,0	48,0	0,66	68	R1/4 BSP	192.432	170.028	T8
20,0	21,0	.787	1541361	DFT200R2WD20M				DFT030304	75,0	48,0	0,84	45	R1/8 BSP	192.432	170.028	T8
20,0	21,0	.787	1541362		DFT200R2WD32M			DFT030304	75,0	48,0	0,84	58	R1/4 BSP	192.432	170.028	T8
20,0	21,0	.787	1541842			DFT200R2WD40M		DFT030304	75,0	48,0	0,84	68	R1/4 BSP	192.432	170.028	T8
21,0	23,0	.827	1541317	DFT210R2WD20M				DFT030304	75,0	48,0	0,87	45	R1/8 BSP	192.432	170.028	T8
21,0	23,0	.827	1541363		DFT210R2WD32M			DFT030304	75,0	48,0	0,87	58	R1/4 BSP	192.432	170.028	T8
21,0	23,0	.827	1541843			DFT210R2WD40M		DFT030304	75,0	48,0	0,87	68	R1/4 BSP	192.432	170.028	T8
22,0	23,0	.866	1541318	DFT220R2WD20M				DFT030304	75,0	49,0	1,01	45	R1/8 BSP	192.432	170.028	T8
22,0	23,0	.866	1541364		DFT220R2WD32M			DFT030304	75,0	49,0	1,01	58	R1/4 BSP	192.432	170.028	T8
22,0	23,0	.866	1541844			DFT220R2WD40M		DFT030304	75,0	49,0	1,01	68	R1/4 BSP	192.432	170.028	T8
23,0	25,0	.906	1541319	DFT230R2WD20M				DFT030304	75,0	48,0	1,07	45	R1/8 BSP	192.432	170.028	T8
23,0	25,0	.906	1541365		DFT230R2WD32M			DFT030304	75,0	48,0	1,07	58	R1/4 BSP	192.432	170.028	T8
23,0	25,0	.906	1541845			DFT230R2WD40M		DFT030304	75,0	48,0	1,07	68	R1/4 BSP	192.432	170.028	T8
24,0	25,0	.945	1541366		DFT240R2WD32M			DFT030304	90,0	59,0	1,12	58	R1/4 BSP	192.432	170.028	T8
24,0	25,0	.945	1541846			DFT240R2WD40M		DFT030304	90,0	59,0	1,12	68	R1/4 BSP	192.432	170.028	T8
25,0	27,0	.984	1541367		DFT250R2WD32M			DFT05T308	90,0	58,0	0,94	58	R1/4 BSP	191.924	170.024	T9
25,0	27,0	.984	1541847			DFT250R2WD40M		DFT05T308	90,0	58,0	0,94	68	R1/4 BSP	191.924	170.024	T9
26,0	27,0	1.024	1541368		DFT260R2WD32M			DFT05T308	90,0	59,0	1,08	58	R1/4 BSP	191.924	170.024	T9
26,0	27,0	1.024	1541848			DFT260R2WD40M		DFT05T308	90,0	59,0	1,08	68	R1/4 BSP	191.924	170.024	T9
27,0	29,0	1.063	1541369		DFT270R2WD32M			DFT05T308	100,0	66,0	1,12	58	R1/4 BSP	191.924	170.024	T9
27,0	29,0	1.063	1541849			DFT270R2WD40M		DFT05T308	100,0	66,0	1,12	68	R1/4 BSP	191.924	170.024	T9
28,0	29,0	1.102	1541370		DFT280R2WD32M			DFT05T308	100,0	66,0	1,27	58	R1/4 BSP	191.924	170.024	T9
28,0	29,0	1.102	1541850			DFT280R2WD40M		DFT05T308	100,0	66,0	1,27	68	R1/4 BSP	191.924	170.024	T9
29,0	31,0	1.142	1541381		DFT290R2WD32M			DFT05T308	100,0	66,0	1,34	58	R1/4 BSP	191.924	170.024	T9

(continued on next page)

2.5xD WN/WD Shank — Metric

(continued from previous page)

D1				D													
mm	mm max	inch	order number	20	32	40	50	gage insert	L1	L4 max	L5	LS	CS	insert screw	Torx wrench	Torx size
29,0	31,0	1.142	1541851			DFT290R2WD40M		DFT05T308	100,0	66,0	1,34	68	R1/4 BSP	191.924	170.024	T9
30,0	31,0	1.181	1541382		DFT300R2WD32M			DFT05T308	115,0	76,0	1,37	58	R1/4 BSP	191.924	170.024	T9
30,0	31,0	1.181	1541852			DFT300R2WD40M		DFT05T308	115,0	76,0	1,37	68	R1/4 BSP	191.924	170.024	T9
31,0	33,0	1.221	1541383		DFT310R2WD32M			DFT05T308	115,0	76,0	1,44	58	R1/4 BSP	191.924	170.024	T9
31,0	33,0	1.221	1541853			DFT310R2WD40M		DFT05T308	115,0	76,0	1,44	68	R1/4 BSP	191.924	170.024	T9
32,0	33,0	1.260	1541384		DFT320R2WD32M			DFT05T308	115,0	76,0	1,53	58	R1/4 BSP	191.924	170.024	T9
32,0	33,0	1.260	1541854			DFT320R2WD40M		DFT05T308	115,0	76,0	1,53	68	R1/4 BSP	191.924	170.024	T9
33,0	35,0	1.299	1541385		DFT330R2WD32M			DFT06T308	115,0	76,0	1,36	58	R1/4 BSP	191.848	170.025	T15
33,0	35,0	1.299	1541855			DFT330R2WD40M		DFT06T308	115,0	76,0	1,36	68	R1/4 BSP	191.848	170.025	T15
34,0	35,0	1.339	1541386		DFT340R2WD32M			DFT06T308	115,0	76,0	1,52	58	R1/4 BSP	191.848	170.025	T15
34,0	35,0	1.339	1541856			DFT340R2WD40M		DFT06T308	115,0	76,0	1,52	68	R1/4 BSP	191.848	170.025	T15
35,0	38,0	1.378	1541387		DFT350R2WD32M			DFT06T308	115,0	76,0	1,58	58	R1/4 BSP	191.848	170.025	T15
35,0	38,0	1.378	1541857			DFT350R2WD40M		DFT06T308	115,0	76,0	1,58	68	R1/4 BSP	191.848	170.025	T15
36,0	37,0	1.417	1541388		DFT360R2WD32M			DFT06T308	115,0	76,0	1,76	58	R1/4 BSP	191.848	170.025	T15
36,0	37,0	1.417	1541858			DFT360R2WD40M		DFT06T308	115,0	76,0	1,76	68	R1/4 BSP	191.848	170.025	T15
37,0	38,0	1.457	1541389		DFT370R2WD32M			DFT06T308	135,0	96,0	1,73	58	R1/4 BSP	191.848	170.025	T15
37,0	38,0	1.457	1541859			DFT370R2WD40M		DFT06T308	135,0	96,0	1,73	68	R1/4 BSP	191.848	170.025	T15
38,0	41,0	1.496	1541390		DFT380R2WD32M			DFT06T308	135,0	96,0	1,80	58	R1/4 BSP	191.848	170.025	T15
38,0	41,0	1.496	1541871			DFT380R2WD40M		DFT06T308	135,0	96,0	1,80	68	R1/4 BSP	191.848	170.025	T15
39,0	40,0	1.535	1541391		DFT390R2WD32M			DFT06T308	135,0	96,0	1,90	58	R1/4 BSP	191.848	170.025	T15
39,0	40,0	1.535	1541872			DFT390R2WD40M		DFT06T308	135,0	96,0	1,90	68	R1/4 BSP	191.848	170.025	T15
40,0	41,0	1.575	1541392		DFT400R2WD32M			DFT06T308	135,0	97,0	1,97	58	R1/4 BSP	191.848	170.025	T15
40,0	41,0	1.575	1541873			DFT400R2WD40M		DFT06T308	135,0	97,0	1,97	68	R1/4 BSP	191.848	170.025	T15
41,0	44,0	1.614	1541393		DFT410R2WD32M			DFT070408	135,0	96,0	1,88	58	R1/4 BSP	191.698	170.025	T15
41,0	44,0	1.614	1541874			DFT410R2WD40M		DFT070408	135,0	96,0	1,88	68	R1/4 BSP	191.698	170.025	T15
42,0	43,0	1.654	1541394		DFT420R2WD32M			DFT070408	135,0	96,0	2,04	58	R1/4 BSP	191.698	170.025	T15
42,0	43,0	1.654	1541875			DFT420R2WD40M		DFT070408	135,0	96,0	2,04	68	R1/4 BSP	191.698	170.025	T15
43,0	44,0	1.693	1541395		DFT430R2WD32M			DFT070408	150,0	112,0	2,06	58	R1/4 BSP	191.698	170.025	T15
43,0	44,0	1.693	1541876			DFT430R2WD40M		DFT070408	150,0	112,0	2,06	68	R1/4 BSP	191.698	170.025	T15
44,0	47,0	1.732	1541396		DFT440R2WD32M			DFT070408	150,0	112,0	2,14	58	R1/4 BSP	191.698	170.025	T15
44,0	47,0	1.732	1541877			DFT440R2WD40M		DFT070408	150,0	112,0	2,14	68	R1/4 BSP	191.698	170.025	T15
45,0	46,0	1.772	1541878			DFT450R2WD40M		DFT070408	150,0	112,0	2,22	68	R1/4 BSP	191.698	170.025	T15
45,0	46,0	1.772	1541931				DFT450R2WD50M	DFT070408	150,0	112,0	2,22	68	R1/4 BSP	191.698	170.025	T15
46,0	47,0	1.811	1541932				DFT460R2WD50M	DFT070408	150,0	112,0	2,30	68	R1/4 BSP	191.698	170.025	T15
46,0	47,0	1.811	1541879			DFT460R2WD40M		DFT070408	150,0	112,0	2,30	68	R1/4 BSP	191.698	170.025	T15
47,0	50,0	1.850	1541880			DFT470R2WD40M		DFT070408	150,0	111,0	2,36	68	R1/4 BSP	191.698	170.025	T15
47,0	50,0	1.850	1541933				DFT470R2WD50M	DFT070408	150,0	111,0	2,36	68	R1/4 BSP	191.698	170.025	T15
48,0	49,0	1.890	1541934				DFT480R2WD50M	DFT070408	150,0	111,0	2,42	68	R1/4 BSP	191.698	170.025	T15
48,0	49,0	1.890	1541860			DFT480R2WD40M		DFT070408	150,0	111,0	2,42	68	R1/4 BSP	191.698	170.025	T15
49,0	50,0	1.929	1541901			DFT490R2WD40M		DFT090508	165,0	117,0	2,17	68	R1/4 BSP	191.726	170.026	T20
49,0	50,0	1.929	1541935				DFT490R2WD50M	DFT090508	165,0	117,0	2,17	68	R1/4 BSP	191.726	170.026	T20
50,0	54,0	1.969	1541902			DFT500R2WD40M		DFT090508	165,0	117,0	2,21	68	R1/4 BSP	191.726	170.026	T20
50,0	54,0	1.969	1541936				DFT500R2WD50M	DFT090508	165,0	117,0	2,21	68	R1/4 BSP	191.726	170.026	T20

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Drill FIX DFT Bodies

2.5xD WN/WD Shank — Metric

(continued from previous page)

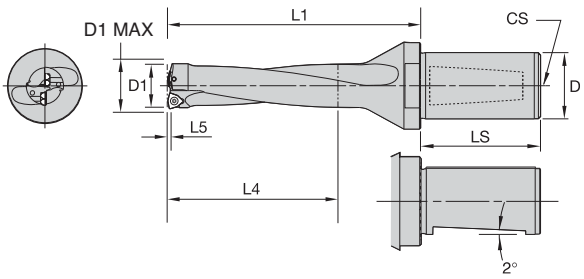
D1			order	D				gage						insert	Torx	Torx
mm	mm max	inch	number	20	32	40	50	insert	L1	L4 max	L5	LS	CS	screw	wrench	size
51,0	52,0	2.008	1541951				DFT510R2WD50M	DFT090508	165,0	117,0	2,47	68	R1/4 BSP	191.726	170.026	T20
51,0	52,0	2.008	1541903			DFT510R2WD40M		DFT090508	165,0	117,0	2,47	68	R1/4 BSP	191.726	170.026	T20
52,0	53,0	2.047	1541904			DFT520R2WD40M		DFT090508	165,0	117,0	2,56	68	R1/4 BSP	191.726	170.026	T20
52,0	53,0	2.047	1541952				DFT520R2WD50M	DFT090508	165,0	117,0	2,56	68	R1/4 BSP	191.726	170.026	T20
53,0	54,0	2.087	1541953				DFT530R2WD50M	DFT090508	165,0	117,0	2,65	68	R1/4 BSP	191.726	170.026	T20
53,0	54,0	2.087	1541905			DFT530R2WD40M		DFT090508	165,0	117,0	2,65	68	R1/4 BSP	191.726	170.026	T20
54,0	58,0	2.126	1542043				DFT540R2WD50M	DFT090508	165,0	117,0	2,73	68	R1/4 BSP	191.726	170.026	T20
54,0	58,0	2.126	1541906			DFT540R2WD40M		DFT090508	165,0	117,0	2,73	68	R1/4 BSP	191.726	170.026	T20
55,0	56,0	2.165	1542071				DFT550R2WD50M	DFT090508	180,0	110,0	2,74	68	R1/4 BSP	191.726	170.026	T20
56,0	57,0	2.205	1542072				DFT560R2WD50M	DFT090508	180,0	112,0	2,81	68	R1/4 BSP	191.726	170.026	T20
57,0	58,0	2.244	1542074				DFT570R2WD50M	DFT090508	180,0	114,0	2,88	68	R1/4 BSP	191.726	170.026	T20
58,0	62,0	2.284	1542076				DFT580R2WD50M	DFT090508	180,0	116,0	2,97	68	R1/4 BSP	191.726	170.026	T20
59,0	60,0	2.323	1544364				DFT590R2WD50M	DFT090508	180,0	118,0	3,04	68	R1/4 BSP	191.726	170.026	T20
60,0	61,0	2.362	1542081				DFT600R2WD50M	DFT090508	180,0	120,0	3,11	68	R1/4 BSP	191.726	170.026	T20
61,0	62,0	2.402	1542083				DFT610R2WD50M	DFT090508	180,0	122,0	3,17	68	R1/4 BSP	191.726	170.026	T20
62,0	65,0	2.441	1542090				DFT620R2WD50M	DFT090508	180,0	124,0	3,23	68	R1/4 BSP	191.726	170.026	T20
63,0	64,0	2.480	1542092				DFT630R2WD50M	DFT090508	180,0	126,0	3,30	68	R1/4 BSP	191.726	170.026	T20
64,0	65,0	2.520	1542093				DFT640R2WD50M	DFT090508	180,0	128,0	3,37	68	R1/4 BSP	191.726	170.026	T20
65,0	66,0	2.559	1542096				DFT650R2WD50M	DFT090508	180,0	127,0	3,43	68	R1/4 BSP	191.726	170.026	T20
66,0	69,0	2.598	1542097				DFT660R2WD50M	DFT090508	180,0	127,0	3,49	68	R1/4 BSP	191.726	170.026	T20
67,0	69,0	2.638	1541954				DFT670R2WD50M	DFT090508	180,0	126,0	3,55	68	R1/4 BSP	191.726	170.026	T20
68,0	69,0	2.677	1542099				DFT680R2WD50M	DFT090508	180,0	126,0	3,60	68	R1/4 BSP	191.726	170.026	T20
69,0	73,0	2.717	1542105				DFT690R2WD50M	DFT110506	205,0	138,0	3,60	68	R1/4 BSP	191.375	170.026	T20
70,0	71,0	2.756	1542107				DFT700R2WD50M	DFT110506	205,0	140,0	3,67	68	R1/4 BSP	191.375	170.026	T20
71,0	72,0	2.795	1542781				DFT710R2WD50M	DFT110506	205,0	142,0	3,74	68	R1/4 BSP	191.375	170.026	T20
72,0	73,0	2.835	1542782				DFT720R2WD50M	DFT110506	205,0	144,0	3,81	68	R1/4 BSP	191.375	170.026	T20
73,0	79,0	2.874	1543235				DFT730R2WD50M	DFT110506	205,0	146,0	3,88	68	R1/4 BSP	191.375	170.026	T20
74,0	75,0	2.913	1543236				DFT740R2WD50M	DFT110506	205,0	148,0	3,95	68	R1/4 BSP	191.375	170.026	T20
75,0	76,0	2.953	1543237				DFT750R2WD50M	DFT110506	205,0	147,0	4,01	68	R1/4 BSP	191.375	170.026	T20
76,0	77,0	2.992	1543238				DFT760R2WD50M	DFT110506	205,0	147,0	4,07	68	R1/4 BSP	191.375	170.026	T20
77,0	78,0	3.032	1543239				DFT770R2WD50M	DFT110506	205,0	146,0	4,13	68	R1/4 BSP	191.375	170.026	T20
78,0	79,0	3.071	1543240				DFT780R2WD50M	DFT110506	205,0	146,0	4,20	68	R1/4 BSP	191.375	170.026	T20
79,0	82,0	3.110	1543311				DFT790R2WD50M	DFT110506	205,0	145,0	4,26	68	R1/4 BSP	191.375	170.026	T20
80,0	81,0	3.150	1543312				DFT800R2WD50M	DFT110506	205,0	145,0	4,32	68	R1/4 BSP	191.375	170.026	T20
81,0	82,0	3.189	1543313				DFT810R2WD50M	DFT110506	205,0	144,0	4,33	68	R1/4 BSP	191.375	170.026	T20
82,0	83,0	3.228	1543314				DFT820R2WD50M	DFT110506	205,0	144,0	4,34	68	R1/4 BSP	191.375	170.026	T20

Ordering Example:

By catalog number DFT160R2WD20M, or by order number 1541287.

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.



D1 ± 0,2 mm

- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

4xD WN/WD Shank — Metric

D1 mm	D1 mm max	D1 inch	order number	D 32	D 40	gage insert	L1	L4 max	L5	LS	insert screw	Torx wrench	Torx size	CS
25,0	27,0	.984	1246234	DFT250R4WD32M		DFT05T308	135,0	100,0	0,80	58	191.924	170.024	T9	R1/4 BSP
25,0	27,0	.984	1246248		DFT250R4WD40M	DFT05T308	135,0	100,0	0,80	68	191.924	170.024	T9	R1/4 BSP
26,0	27,0	1.024	1191103	DFT260R4WD32M		DFT05T308	139,0	104,0	0,94	58	191.924	170.024	T9	R1/4 BSP
26,0	27,0	1.024	1246249		DFT260R4WD40M	DFT05T308	139,0	104,0	0,94	68	191.924	170.024	T9	R1/4 BSP
27,0	29,0	1.063	1246238	DFT270R4WD32M		DFT05T308	143,0	108,0	1,00	58	191.924	170.024	T9	R1/4 BSP
27,0	29,0	1.063	1246250		DFT270R4WD40M	DFT05T308	143,0	108,0	1,00	68	191.924	170.024	T9	R1/4 BSP
28,0	29,0	1.102	1246239	DFT280R4WD32M		DFT05T308	156,0	112,0	1,07	58	191.924	170.024	T9	R1/4 BSP
28,0	29,0	1.102	1246251		DFT280R4WD40M	DFT05T308	156,0	112,0	1,07	68	191.924	170.024	T9	R1/4 BSP
29,0	31,0	1.142	1246242	DFT290R4WD32M		DFT05T308	151,0	116,0	1,15	58	191.924	170.024	T9	R1/4 BSP
29,0	31,0	1.142	1246253		DFT290R4WD40M	DFT05T308	151,0	116,0	1,15	68	191.924	170.024	T9	R1/4 BSP
30,0	31,0	1.181	1246243	DFT300R4WD32M		DFT05T308	160,0	120,0	1,20	58	191.924	170.024	T9	R1/4 BSP
30,0	31,0	1.181	1246256		DFT300R4WD40M	DFT05T308	160,0	120,0	1,20	68	191.924	170.024	T9	R1/4 BSP
31,0	33,0	1.221	1246245	DFT310R4WD32M		DFT05T308	164,0	124,0	1,26	58	191.924	170.024	T9	R1/4 BSP
31,0	33,0	1.221	1246258		DFT310R4WD40M	DFT05T308	164,0	124,0	1,26	68	191.924	170.024	T9	R1/4 BSP
32,0	33,0	1.260	1246247	DFT320R4WD32M		DFT05T308	168,0	128,0	1,32	58	191.924	170.024	T9	R1/4 BSP
32,0	33,0	1.260	1246260		DFT320R4WD40M	DFT05T308	168,0	128,0	1,32	68	191.924	170.024	T9	R1/4 BSP
33,0	35,0	1.299	1246262		DFT330R4WD40M	DFT06T308	177,0	132,0	1,12	68	191.848	170.025	T15	R1/4 BSP
34,0	35,0	1.339	1246263		DFT340R4WD40M	DFT06T308	181,0	136,0	1,29	68	191.848	170.025	T15	R1/4 BSP
35,0	38,0	1.378	1246266		DFT350R4WD40M	DFT06T308	185,0	140,0	1,32	68	191.848	170.025	T15	R1/4 BSP
36,0	37,0	1.417	1246267		DFT360R4WD40M	DFT06T308	189,0	144,0	1,44	68	191.848	170.025	T15	R1/4 BSP
37,0	38,0	1.457	1185937		DFT370R4WD40M	DFT06T308	198,0	148,0	1,49	68	191.848	170.025	T15	R1/4 BSP
38,0	41,0	1.496	1246271		DFT380R4WD40M	DFT06T308	202,0	152,0	1,53	68	191.848	170.025	T15	R1/4 BSP
39,0	40,0	1.535	1246273		DFT390R4WD40M	DFT06T308	206,0	156,0	1,61	68	191.848	170.025	T15	R1/4 BSP
40,0	41,0	1.575	1246275		DFT400R4WD40M	DFT06T308	210,0	160,0	1,68	68	191.848	170.025	T15	R1/4 BSP
41,0	44,0	1.614	1185959		DFT410R4WD40M	DFT070408	214,0	164,0	1,56	68	191.698	170.025	T15	R1/4 BSP
42,0	43,0	1.654	1246278		DFT420R4WD40M	DFT070408	223,0	168,0	1,68	68	191.698	170.025	T15	R1/4 BSP
43,0	44,0	1.693	1246279		DFT430R4WD40M	DFT070408	227,0	172,0	1,75	68	191.698	170.025	T15	R1/4 BSP
44,0	47,0	1.732	1246282		DFT440R4WD40M	DFT070408	231,0	176,0	1,78	68	191.698	170.025	T15	R1/4 BSP
45,0	46,0	1.772	1246284		DFT450R4WD40M	DFT070408	240,0	180,0	1,86	68	191.698	170.025	T15	R1/4 BSP
46,0	47,0	1.811	1246285		DFT460R4WD40M	DFT070408	244,0	184,0	1,91	68	191.698	170.025	T15	R1/4 BSP
47,0	50,0	1.850	1246288		DFT470R4WD40M	DFT070408	248,0	188,0	1,97	68	191.698	170.025	T15	R1/4 BSP
48,0	49,0	1.890	1246289		DFT480R4WD40M	DFT070408	252,0	192,0	2,04	68	191.698	170.025	T15	R1/4 BSP

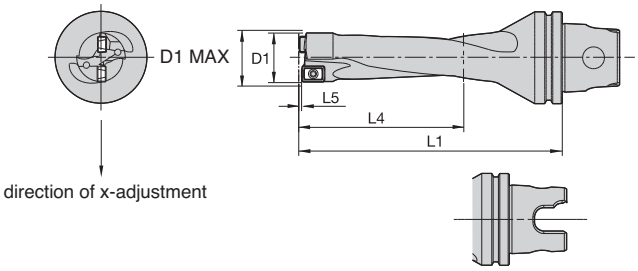
Ordering Example:

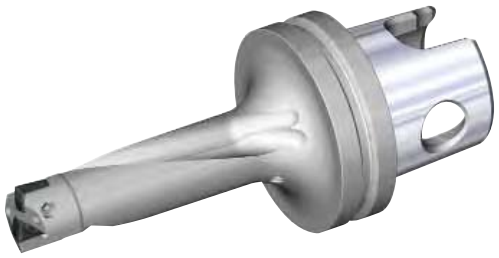
By catalog number DFT250R44WD32M, or by order number 1246234.

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill s stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Drill FIX DFR KM™ Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

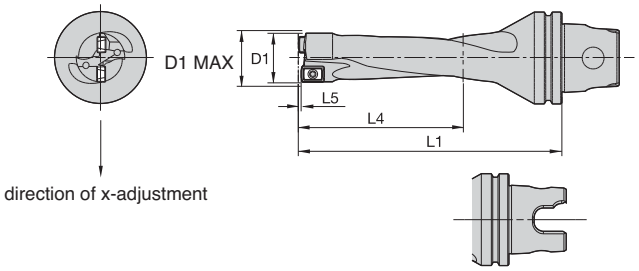
3xD KM32 Shank — Metric

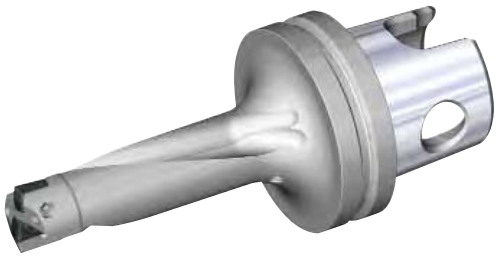
D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
12,5	13,5	.492	3583341	KM32DFR125R3M	DFR020204GD	62,6	37,5	0,49	193.281	170.027	T6
13,0	14,0	.512	3583342	KM32DFR130R3M	DFR020204GD	64,1	39,0	0,40	193.281	170.027	T6
14,0	15,0	.551	3583403	KM32DFR140R3M	DFR020204GD	67,1	42,0	0,49	193.281	170.027	T6
15,0	16,0	.591	3583404	KM32DFR150R3M	DFR020204GD	71,1	45,0	0,49	193.281	170.027	T6
16,0	17,0	.630	3583405	KM32DFR160R3M	DFR020204GD	74,1	48,0	0,49	193.281	170.027	T6
17,0	18,0	.669	3583406	KM32DFR170R3M	DFR030204GD	78,2	51,0	0,58	192.416	170.023	T7
18,0	19,0	.709	3583407	KM32DFR180R3M	DFR030204GD	81,2	54,0	0,58	192.416	170.023	T7
19,0	20,0	.748	3583408	KM32DFR190R3M	DFR030204GD	85,2	57,0	0,58	192.416	170.023	T7
20,0	21,0	.787	3583409	KM32DFR200R3M	DFR030204GD	88,2	60,0	0,58	192.416	170.023	T7
21,0	22,0	.827	3583410	KM32DFR210R3M	DFR040304GD	92,2	63,0	0,71	192.432	170.028	T8
22,0	23,0	.866	3583411	KM32DFR220R3M	DFR040304GD	95,2	66,0	0,71	192.432	170.028	T8
23,0	24,0	.906	3583412	KM32DFR230R3M	DFR040304GD	99,2	69,0	0,71	192.432	170.028	T8
24,0	25,0	.945	3583413	KM32DFR240R3M	DFR040304GD	102,2	72,0	0,71	192.432	170.028	T8

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM32DFR125R3M, or by order number 3583341.





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

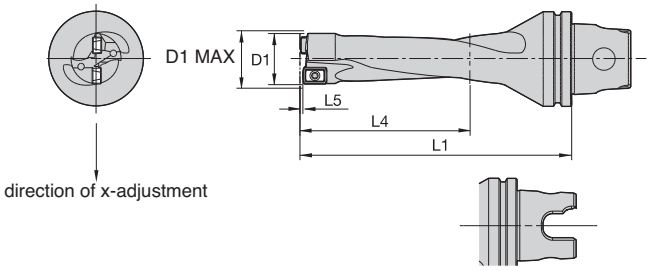
3xD KM32 Shank – Inch

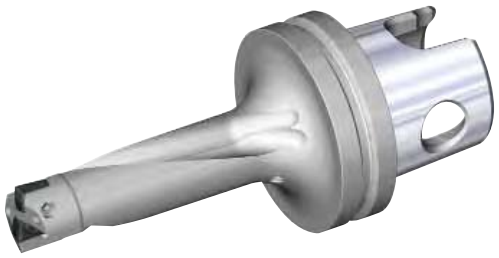
D1 inch	D1 inch max	D1 mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
.500	.539	12,7	3583438	KM32DFR0500R3	DFR020204GD	2.49	1.50	.019	193.281	170.027	T6
.531	.570	13,5	3583439	KM32DFR0531R3	DFR020204GD	2.58	1.59	.019	193.281	170.027	T6
.563	.602	14,3	3583440	KM32DFR0563R3	DFR020204GD	2.68	1.69	.019	193.281	170.027	T6
.594	.633	15,1	3583441	KM32DFR0594R3	DFR020204GD	2.81	1.78	.019	193.281	170.027	T6
.625	.664	15,9	3583442	KM32DFR0625R3	DFR020204GD	2.90	1.88	.019	193.281	170.027	T6
.656	.695	16,7	3583443	KM32DFR0656R3	DFR030204GD	3.04	1.97	.023	192.416	170.023	T7
.688	.727	17,5	3583444	KM32DFR0688R3	DFR030204GD	3.18	2.06	.023	192.416	170.023	T7
.734	.773	18,6	3583445	KM32DFR0734R3	DFR030204GD	3.31	2.20	.023	192.416	170.023	T7
.750	.789	19,1	3583446	KM32DFR0750R3	DFR030204GD	3.36	2.25	.023	192.416	170.023	T7
.781	.820	19,8	3583447	KM32DFR0781R3	DFR030204GD	3.45	2.34	.023	192.416	170.023	T7
.813	.852	20,7	3583448	KM32DFR0813R3	DFR040304GD	3.59	2.44	.028	192.432	170.028	T8
.844	.883	21,4	3583449	KM32DFR0844R3	DFR040304GD	3.68	2.53	.028	192.432	170.028	T8
.875	.914	22,2	3583450	KM32DFR0875R3	DFR040304GD	3.77	2.63	.028	192.432	170.028	T8
.906	.945	23,0	3583451	KM32DFR0906R3	DFR040304GD	3.91	2.72	.028	192.432	170.028	T8
.938	.977	23,8	3583452	KM32DFR0938R3	DFR040304GD	4.00	2.81	.028	192.432	170.028	T8
.969	1.008	24,6	3583453	KM32DFR0969R3	DFR040304GD	4.10	2.91	.028	192.432	170.028	T8

WARNING
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM32 DFR0500R3, or by order number 3583438.

Drill FIX DFR KM Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

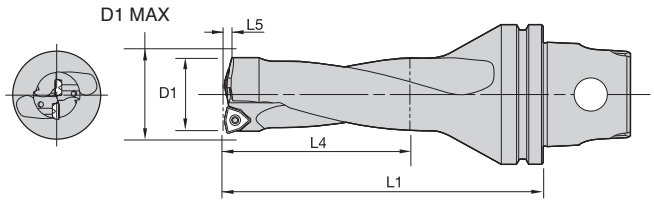
3xD KM40 Shank — Metric

D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
12,5	13,5	.492	1993103	KM40DFR125R3M	DFR020204	62	38	0,50	193.281	170.027	T6
13,0	14,0	.512	1993104	KM40DFR130R3M	DFR020204	64	39	0,50	193.281	170.027	T6
14,0	15,0	.551	1993105	KM40DFR140R3M	DFR020204	67	42	0,50	193.281	170.027	T6
15,0	16,0	.591	1993106	KM40DFR150R3M	DFR020204	71	45	0,09	193.281	170.027	T6
16,0	17,0	.630	1993107	KM40DFR160R3M	DFR020204	74	48	0,09	193.281	170.027	T6
17,0	18,0	.669	1993108	KM40DFR170R3M	DFR030204	78	51	0,11	192.416	170.023	T7
18,0	19,0	.709	1993109	KM40DFR180R3M	DFR030204	81	54	0,11	192.416	170.023	T7
19,0	20,0	.748	1993110	KM40DFR190R3M	DFR030204	85	57	0,11	192.416	170.023	T7
20,0	21,0	.787	1993111	KM40DFR200R3M	DFR030204	88	60	0,11	192.416	170.023	T7
21,0	22,0	.827	1993112	KM40DFR210R3M	DFR040304	92	63	0,10	192.432	170.028	T8
22,0	23,0	.866	1993113	KM40DFR220R3M	DFR040304	95	66	0,10	192.432	170.028	T8
23,0	24,0	.906	1993114	KM40DFR230R3M	DFR040304	99	69	0,10	192.432	170.028	T8
24,0	25,0	.945	1993115	KM40DFR240R3M	DFR040304	102	72	0,10	192.432	170.028	T8

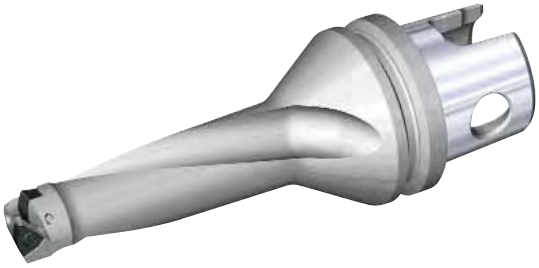
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM40DFR125R3M, or by order number 1993103.



D1 ± 0,2 mm



- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM40 Shank — Metric

D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
25,0	27,0	.984	3583414	KM40DFT250R3M	DFT05T308GD	115	75	0,75	191.924	170.024	T9
27,0	29,0	1.063	3583415	KM40DFT270R3M	DFT05T308GD	121	81	0,89	191.924	170.024	T9
29,0	31,0	1.142	3583416	KM40DFT290R3M	DFT05T308GD	130	87	1,01	191.924	170.024	T9
31,0	33,0	1.221	3583417	KM40DFT310R3M	DFT05T308GD	138	93	1,11	191.924	170.024	T9

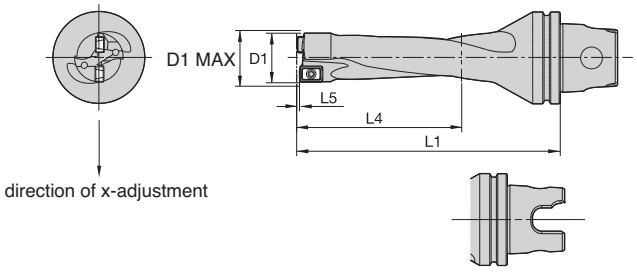
WARNING

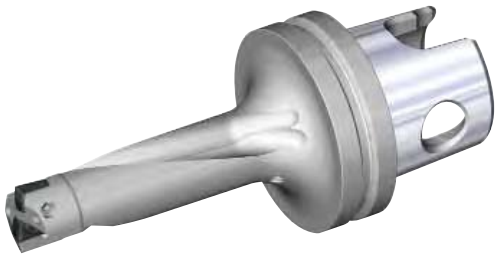
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number KM40DFT250R3M, or by order number 3583414.

Drill FIX DFR KM Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

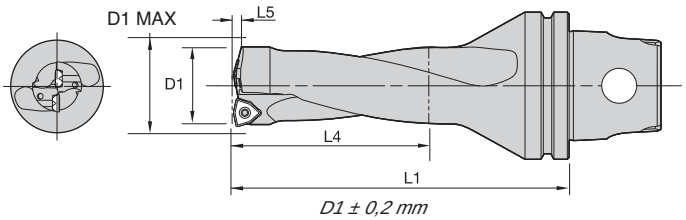
3xD KM40 Shank — Inch

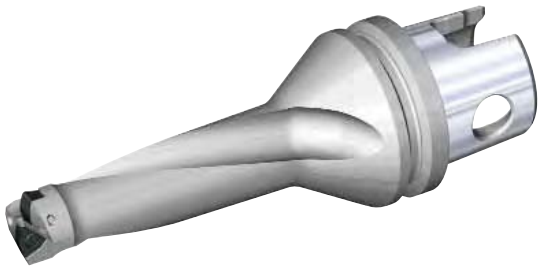
D1 inch	D1 inch max	D1 mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
.500	.539	12,7	3583454	KM40DFR0500R3	DFR020204GD	2.49	1.50	.019	193.281	170.027	T6
.531	.570	13,5	3583455	KM40DFR0531R3	DFR020204GD	2.58	1.59	.019	193.281	170.027	T6
.563	.602	14,3	3583456	KM40DFR0563R3	DFR020204GD	2.68	1.69	.019	193.281	170.027	T6
.594	.633	15,1	3583457	KM40DFR0594R3	DFR020204GD	2.81	1.78	.019	193.281	170.027	T6
.625	.664	15,9	3583458	KM40DFR0625R3	DFR020204GD	2.90	1.88	.019	193.281	170.027	T6
.656	.695	16,7	3583459	KM40DFR0656R3	DFR030204GD	3.04	1.97	.023	192.416	170.023	T7
.688	.727	17,5	3583460	KM40DFR0688R3	DFR030204GD	3.18	2.06	.023	192.416	170.023	T7
.734	.773	18,6	3583461	KM40DFR0734R3	DFR030204GD	3.31	2.20	.023	192.416	170.023	T7
.750	.789	19,1	3583462	KM40DFR0750R3	DFR030204GD	3.36	2.25	.023	192.416	170.023	T7
.781	.820	19,8	3583463	KM40DFR0781R3	DFR030204GD	3.45	2.34	.023	192.416	170.023	T7
.813	.852	20,7	3583464	KM40DFR0813R3	DFR040304GD	3.59	2.44	.028	192.432	170.028	T8
.844	.883	21,4	3583465	KM40DFR0844R3	DFR040304GD	3.68	2.53	.028	192.432	170.028	T8
.875	.914	22,2	3583466	KM40DFR0875R3	DFR040304GD	3.77	2.61	.028	192.432	170.028	T8
.906	.945	23,0	3583467	KM40DFR0906R3	DFR040304GD	3.91	2.72	.028	192.432	170.028	T8
.938	.977	23,8	3583468	KM40DFR0938R3	DFR040304GD	4.00	2.81	.028	192.432	170.028	T8
.969	1.008	24,6	3583469	KM40DFR0969R3	DFR040304GD	4.10	2.90	.028	192.432	170.028	T8

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM40DFR0500R3, or by order number 3583454.





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM40 Shank — Inch

D1 inch	D1 inch max	D1 mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
1.000	1.125	25,4	3583470	KM40DFT1000R3	DFT05T308GD	4.58	3.00	.031	191.924	170.024	T9
1.125	1.250	28,6	3583471	KM40DFT1125R3	DFT05T308GD	4.95	3.38	.039	191.924	170.024	T9
1.250	1.325	31,8	3583472	KM40DFT1250R3	DFT05T308GD	5.54	3.75	.045	191.924	170.024	T9

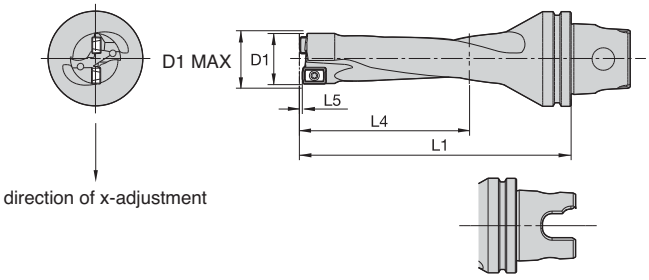
WARNING

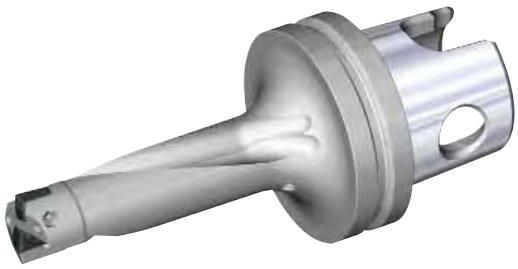
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number KM40DFT1000R3, or by order number 3583470.

Drill FIX DFR KM Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

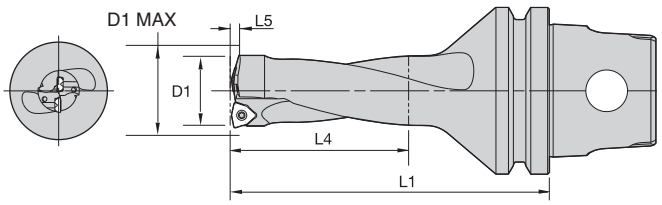
3xD KM50 Shank — Metric

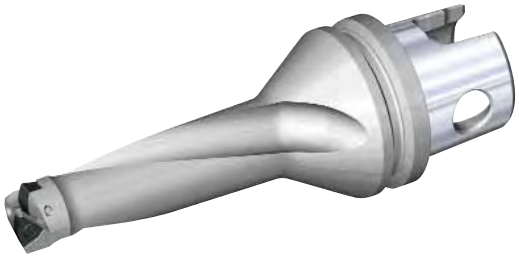
D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
12,5	13,5	.492	1993129	KM50DFR125R3M	DFR020204	66,0	37,5	0,50	193.281	170.027	T6
13,0	14,0	.512	1993130	KM50DFR130R3M	DFR020204	68,0	39,0	0,50	193.281	170.027	T6
14,0	15,0	.551	1993131	KM50DFR140R3M	DFR020204	71,0	42,0	0,50	193.281	170.027	T6
15,0	16,0	.591	1993132	KM50DFR150R3M	DFR020204	75,0	45,0	0,09	193.281	170.027	T6
16,0	17,0	.630	1993133	KM50DFR160R3M	DFR020204	78,0	48,0	0,09	193.281	170.027	T6
17,0	18,0	.669	1993134	KM50DFR170R3M	DFR030204	82,0	51,0	0,11	192.416	170.023	T7
18,0	19,0	.709	1993135	KM50DFR180R3M	DFR030204	85,0	54,0	0,11	192.416	170.023	T7
19,0	20,0	.748	1993136	KM50DFR190R3M	DFR030204	89,0	57,0	0,11	192.416	170.023	T7
20,0	21,0	.787	1993137	KM50DFR200R3M	DFR030204	92,0	60,0	0,11	192.416	170.023	T7
21,0	22,0	.827	1993138	KM50DFR210R3M	DFR040304	96,0	63,0	0,10	192.432	170.028	T8
22,0	23,0	.866	1993139	KM50DFR220R3M	DFR040304	99,0	66,0	0,10	192.432	170.028	T8
23,0	24,0	.906	1993140	KM50DFR230R3M	DFR040304	103,0	69,0	0,10	192.432	170.028	T8
24,0	25,0	.945	1993141	KM50DFR240R3M	DFR040304	106,0	72,0	0,10	192.432	170.028	T8

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM50DFR125R3M, or by order number 1993129.





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM50 Shank — Metric

D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
25,0	27,0	.984	1246441	KM50DFT250R3M	DFT05T308	120	75	0,87	191.924	170.024	T9
27,0	30,0	1.063	1246447	KM50DFT270R3M	DFT05T308	126	81	1,04	191.924	170.024	T9
29,0	31,0	1.142	1246453	KM50DFT290R3M	DFT05T308	132	87	1,23	191.924	170.024	T9
31,0	33,0	1.221	1246460	KM50DFT310R3M	DFT05T308	143	93	1,34	191.924	170.024	T9
33,0	36,0	1.299	1246466	KM50DFT330R3M	DFT06T308	149	99	1,20	191.848	170.025	T15
35,0	38,0	1.378	1246470	KM50DFT350R3M	DFT06T308	155	105	1,41	191.848	170.025	T15
38,0	41,0	1.496	1246480	KM50DFT380R3M	DFT06T308	174	114	1,62	191.848	170.025	T15

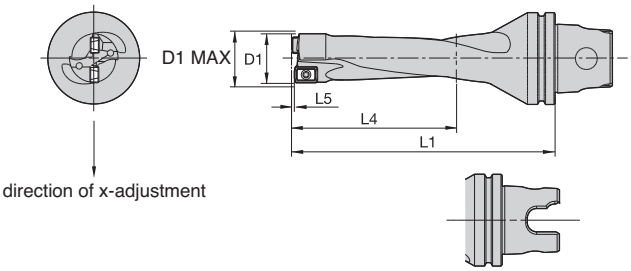
WARNING

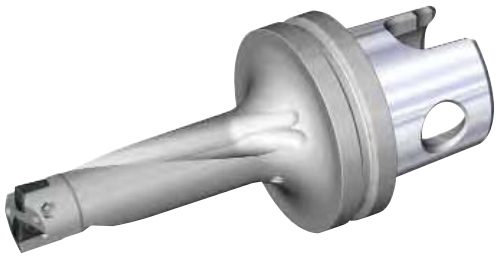
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number KM50DFT250R3M, or by order number 1246441.

Drill FIX DFR KM Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

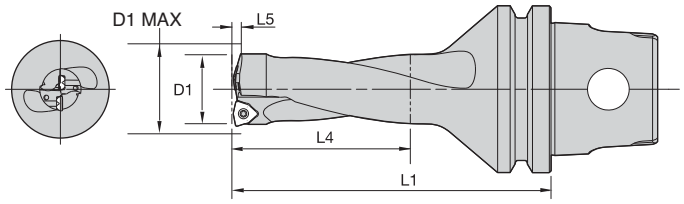
3xD KM50 Shank — Inch

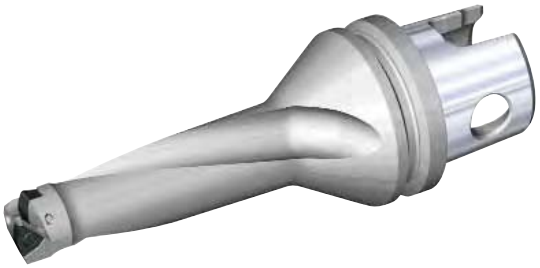
D1 inch	D1 inch max	mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
.500	.539	12,7	3583473	KM50DFR0500R3	DFR020204GD	2.63	1.50	.019	193.281	170.027	T6
.531	.570	13,5	3583474	KM50DFR0531R3	DFR020204GD	2.74	1.59	.019	193.281	170.027	T6
.563	.602	14,3	3583475	KM50DFR0563R3	DFR020204GD	2.88	1.69	.019	193.281	170.027	T6
.594	.633	15,1	3583476	KM50DFR0594R3	DFR020204GD	2.97	1.78	.019	193.281	170.027	T6
.625	.664	15,9	3583477	KM50DFR0625R3	DFR020204GD	3.06	1.88	.019	193.281	170.027	T6
.656	.695	16,7	3583478	KM50DFR0656R3	DFR030204GD	3.20	1.97	.023	192.416	170.023	T7
.688	.727	17,5	3583479	KM50DFR0688R3	DFR030204GD	3.29	2.06	.023	192.416	170.023	T7
.734	.773	18,6	3583480	KM50DFR0734R3	DFR030204GD	3.47	2.20	.023	192.416	170.023	T7
.750	.789	19,1	3583481	KM50DFR0750R3	DFR030204GD	3.52	2.25	.023	192.416	170.023	T7
.781	.820	19,8	3583482	KM50DFR0781R3	DFR030204GD	3.61	2.34	.023	192.416	170.023	T7
.813	.852	20,7	3583483	KM50DFR0813R3	DFR040304GD	3.75	2.44	.028	192.432	170.028	T8
.844	.883	21,4	3583484	KM50DFR0844R3	DFR040304GD	3.84	2.53	.028	192.432	170.028	T8
.875	.914	22,2	3583485	KM50DFR0875R3	DFR040304GD	3.97	2.63	.028	192.432	170.028	T8
.906	.945	23,0	3583486	KM50DFR0906R3	DFR040304GD	4.06	2.72	.028	192.432	170.028	T8
.938	.977	23,8	3583487	KM50DFR0938R3	DFR040304GD	4.16	2.81	.028	192.432	170.028	T8
.969	1.008	24,6	3583488	KM50DFR0969R3	DFR040304GD	4.29	2.91	.028	192.432	170.028	T8

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM50DFR0500R3, or by order number 3583473.





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM50 Shank — Inch

D1 inch	D1 inch max	D1 mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
1.000	1.125	25,4	1247513	KM50DFT1000R3	DFT05T308	4.77	3.00	.035	191.924	170.024	T9
1.125	1.250	28,6	1247517	KM50DFT1125R3	DFT05T308	5.15	3.38	.046	191.924	170.024	T9
1.250	1.325	31,8	1247523	KM50DFT1250R3	DFT05T308	5.74	3.75	.054	191.924	170.024	T9
1.313	1.438	33,4	1247525	KM50DFT1313R3	DFT06T308	5.92	3.94	.049	191.848	170.025	T15
1.438	1.563	36,5	1247530	KM50DFT1438R3	DFT06T308	6.30	4.31	.061	191.848	170.025	T15
1.500	1.625	38,1	1247533	KM50DFT1500R3	DFT06T308	6.86	4.50	.064	191.848	170.025	T15
1.563	1.688	39,7	1247537	KM50DFT1563R3	DFT06T308	7.05	4.69	.069	191.848	170.025	T15

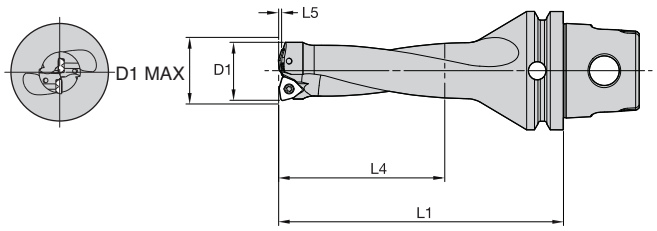
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number KM50DFT1000R3, or by order number 1247513.

Drill FIX DFT KM Bodies



- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM63XMZ Shank — Metric

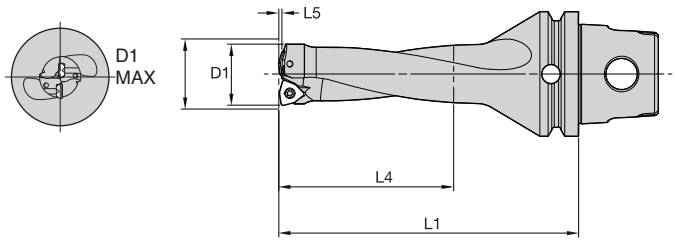
D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
25,0	27,0	.984	3583418	KM63XMZDFT250R3YM	DFT05T308GD	120	75	0,73	191.924	170.024	T9
27,0	29,0	1.063	3583419	KM63XMZDFT270R3YM	DFT05T308GD	126	81	0,88	191.924	170.024	T9
29,0	31,0	1.142	3583420	KM63XMZDFT290R3YM	DFT05T308GD	132	87	1,01	191.924	170.024	T9
31,0	33,0	1.221	3583421	KM63XMZDFT310R3YM	DFT05T308GD	143	93	1,10	191.924	170.024	T9
33,0	35,0	1.299	3583422	KM63XMZDFT330R3YM	DFT06T308GD	149	99	1,07	191.848	170.025	T15
35,0	38,0	1.378	3583423	KM63XMZDFT350R3YM	DFT06T308GD	155	105	1,21	191.848	170.025	T15
38,0	41,0	1.496	3583424	KM63XMZDFT380R3YM	DFT06T308GD	174	114	1,34	191.848	170.025	T15
41,0	44,0	1.614	3583425	KM63XMZDFT410R3YM	DFT070408GD	183	123	1,39	191.698	170.025	T15
44,0	47,0	1.732	3583426	KM63XMZDFT440R3YM	DFT070408GD	192	132	1,57	191.698	170.025	T15
47,0	50,0	1.850	3583427	KM63XMZDFT470R3YM	DFT070408GD	206	141	1,72	191.698	170.025	T15

NOTE: *KM63XMZ has been engineered to work specifically on Mazak Integrex Mark IV Series of Integrex® Machines.*

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM63XMZDFT1000R3Y, or by order number 3583489.



- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM63XMZ Shank — Inch

inch	D1 inch max	mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
1.000	1.125	25,4	3583489	KM63XMZDFT1000R3Y	DFT05T308GD	5.00	3.00	0,750	191.924	170.024	T9
1.313	1.438	33,4	3583490	KM63XMZDFT1313R3Y	DFT06T308GD	6.25	3.94	1,070	191.848	170.025	T15
1.438	1.563	36,5	3583491	KM63XMZDFT1438R3Y	DFT06T308GD	6.75	4.31	1,260	191.848	170.025	T15
1.563	1.688	39,7	3583492	KM63XMZDFT1563R3Y	DFT06T308GD	7.13	4.69	1,420	191.848	170.025	T15
1.688	1.813	42,9	3583493	KM63XMZDFT1688R3Y	DFT070408GD	7.50	5.06	1,500	191.698	170.025	T15
1.875	2.000	47,6	3583494	KM63XMZDFT1875R3Y	DFT070408GD	8.13	5.63	1,750	191.698	170.025	T15

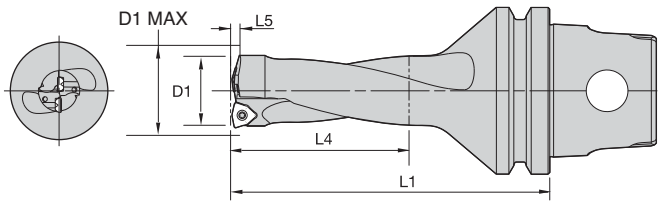
NOTE: *KM63XMZ has been engineered to work specifically on Mazak Integrex Mark IV Series of Integrex® Machines.*

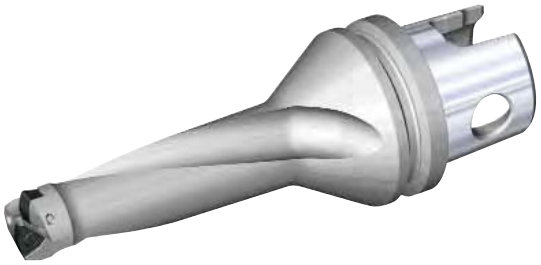
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM63XMZDFT250R3YM, or by order number 3583418.

Drill FIX DFT KM Bodies





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM63 UT Shank — Metric

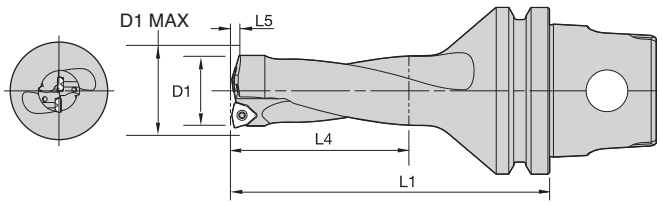
D1 mm	D1 mm max	D1 inch	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
25,0	27,0	.984	3583428	KM63UTDFT250R3M	DFT05T308GD	120	75	0,73	191.924	170.024	T9
27,0	29,0	1.063	3583429	KM63UTDFT270R3M	DFT05T308GD	126	81	0,88	191.924	170.024	T9
29,0	31,0	1.142	3583430	KM63UTDFT290R3M	DFT05T308GD	132	87	1,01	191.924	170.024	T9
31,0	33,0	1.221	3583431	KM63UTDFT310R3M	DFT05T308GD	143	93	1,10	191.924	170.024	T9
33,0	35,0	1.299	3583432	KM63UTDFT330R3M	DFT06T308GD	149	99	1,07	191.848	170.025	T15
35,0	38,0	1.378	3583433	KM63UTDFT350R3M	DFT06T308GD	155	105	1,21	191.848	170.025	T15
38,0	41,0	1.496	3583434	KM63UTDFT380R3M	DFT06T308GD	174	114	1,34	191.848	170.025	T15
41,0	44,0	1.614	3583435	KM63UTDFT410R3M	DFT070408GD	183	123	1,39	191.698	170.025	T15
44,0	47,0	1.732	3583436	KM63UTDFT440R3M	DFT070408GD	192	132	1,57	191.698	170.025	T15
47,0	50,0	1.850	3583437	KM63UTDFT470R3M	DFT070408GD	206	141	1,72	191.698	170.025	T15

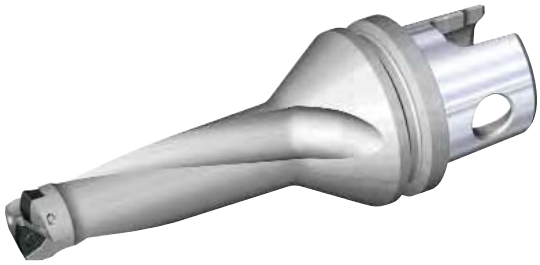
WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number KM63UTDFT250R3M, or by order number 3583428.





- Drill shipped with insert screws and Torx wrench.
- See pages H4–H5 for inserts.

3xD KM63 UT Shank — Inch

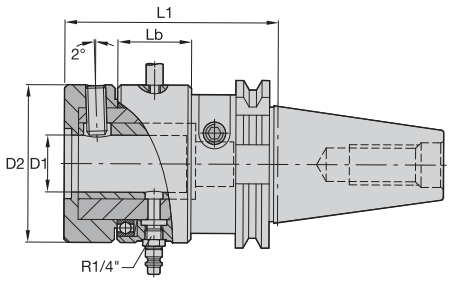
inch	D1 inch max	mm	order number	catalog number	gage insert	L1	L4 max	L5	insert screw	wrench	Torx size
1.000	1.125	25,4	3583495	KM63UTDFT1000R3	DFT05T308GD	5.00	3.00	.030	191.924	170.024	T9
1.125	1.250	28,6	3583496	KM63UTDFT1125R3	DFT05T308GD	5.50	3.38	.038	191.924	170.024	T9
1.250	1.325	31,8	3583497	KM63UTDFT1250R3	DFT05T308GD	6.00	3.75	.044	191.924	170.024	T9
1.313	1.438	33,4	3583498	KM63UTDFT1313R3	DFT06T308GD	6.25	3.94	.042	191.848	170.025	T15
1.438	1.563	36,5	3583499	KM63UTDFT1438R3	DFT06T308GD	6.75	4.31	.050	191.848	170.025	T15
1.563	1.688	39,7	3583500	KM63UTDFT1563R3	DFT06T308GD	7.13	4.69	.056	191.848	170.025	T15
1.688	1.813	42,9	3583501	KM63UTDFT1688R3	DFT070408GD	7.50	5.06	.059	191.698	170.025	T15
1.750	1.875	44,5	3583502	KM63UTDFT1750R3	DFT070408GD	7.75	5.25	.063	191.698	170.025	T15
1.875	2.000	47,6	3583503	KM63UTDFT1875R3	DFT070408GD	8.13	5.63	.069	191.698	170.025	T15

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number KM63UTDFT1000R3, or by order number 3583495.

Chuck for DRILL-FIX with Eccentric Adjustment Mechanism



D1	order number	catalog number	SK 40 DIN 69871 A	SK 40 MAS 403 BT	SK 50 DIN 69871 A	SK 50 MAS 403 BT	coolant ring	D2	L1	kgs	old catalog number
20,00	1124093	BT40BEWD20096M		●				63	96	3,0	5.36040-313720
20,00	1133935	DV40BEWD20090M	●					63	96	3,0	5.36040-153720
32,00	1135961	DV50BEWD32108M			●			63	108	4,3	5.36050-153732
32,00	1135056	DV40RMEWD32108M	●				●	90	108	4,0	5.36040-143632
32,00	1137547	BT50BEWD32127M				●		63	108	4,3	5.36050-313732
32,00	1135293	DV40BEWD32108M	●					63	108	4,0	5.36040-153732
32,00	1138816	BT40BEWD32114M		●				63	114	3,4	5.36040-313732
32,00	1135981	BT40RMEWD32114M		●			●	90	114	4,0	5.36040-313632
32,00	1136592	DV50RMEWD32108M			●		●	90	108	6,9	5.36050-143632

NOTE: *nmax: 4800 U/min pmax: 20 bar*

With coolant ring

D1	clamping screw	adjusting screw	bumper bar	eccentric bushing	dial key
32	192.941	570.850	169.974	536.088	170.236

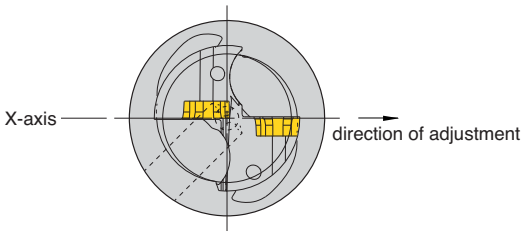
Without coolant ring

D1	clamping screw	adjusting screw	eccentric bushing	dial key
20	193.203	570.850	536.090	170.236
32	193.204	570.850	536.091	170.236

Safety note:
Use only the supplied plug-in nipple with nominal breakage point: R ¼"
CODE 191.469

Included:
Intermediate sleeve with dial key.
(For coolant ring version: dial key, bumper bar, and plug-in nipple with predeterminded breaking point.)

Ordering Example:
By catalog number BT40BEWD20096M, or by order number 1124093.



Inch "X" Offset Table

drill diameter D1	max drill diameter	"X" adjust
DRILL-FIX DFR		
.500	.539	.020
.508	.547	.020
.516	.555	.020
.531	.571	.020
.563	.602	.020
.578	.617	.020
.594	.633	.020
.625	.664	.020
.656	.696	.020
.688	.727	.020
.703	.742	.020
.734	.774	.020
.750	.789	.020
.781	.821	.020
.813	.852	.020
.844	.883	.020
.875	.914	.020
.906	.946	.020
.938	.977	.020
.969	1.008	.020
.984	1.024	.020
1.000	1.039	.020
DRILL-FIX DFT		
.625	.780	.075
.656	.806	.075
.688	.838	.075
.703	.853	.075
.734	.884	.075
.750	.850	.050
.781	.881	.050
.813	.913	.050
.828	.904	.038
.844	.919	.038
.875	.950	.038
.906	.981	.038

drill diameter D1	max drill diameter	"X" adjust
DRILL-FIX DFT		
.938	1.000	.031
.969	1.019	.025
.984	1.109	.063
1.000	1.125	.063
1.031	1.156	.063
1.063	1.188	.063
1.094	1.219	.063
1.109	1.235	.063
1.125	1.250	.063
1.156	1.281	.063
1.188	1.288	.050
1.219	1.319	050
1.250	1.325	.038
1.281	1.345	.032
1.313	1.438	.063
1.375	1.500	.063
1.406	1.531	.063
1.438	1.563	.063
1.469	1.594	.063
1.500	1.625	.063
1.531	1.656	.063
1.563	1.688	.063
1.625	1.750	.063
1.688	1.813	.063
1.750	1.875	.063
1.813	1.938	.063
1.875	2.000	.063
1.938	2.188	.125
2.000	2.250	.125
2.125	2.375	.125
2.250	2.500	.125
2.375	2.590	.108
2.500	2.650	.075
2.750	3.050	.150
3.000	3.150	.075
3.250	3.260	.005

**For drill diameters from 19 mm to 50 mm, some maximum drill diameter values could be greater than shown. Check individual product pages in this catalog for maximum drill diameter values.*

*Metric "X" Offset Table

drill diameter D1	max drill diameter	"X" adjust
DRILL-FIX DFR		
12,5	13,5	0,5
12,7	13,7	0,5
13,0	14,0	0,5
13,5	14,5	0,5
14,0	15,0	0,5
14,5	15,5	0,5
15,0	16,0	0,5
15,5	16,5	0,5
16,0	17,0	0,5
16,5	17,5	0,5
17,0	18,0	0,5
17,5	18,5	0,5
18,0	19,0	0,5
18,5	19,5	0,5
19,0	20,0	0,5
19,5	20,5	0,5
20,0	21,0	0,5
20,5	21,5	0,5
21,0	22,0	0,5
22,0	23,0	0,5
23,0	24,0	0,5
24,0	25,0	0,5
DRILL-FIX DFT		
16	17	0,5
17	18	0,5
18	19	0,5
19	21	1,0
20	21	0,5
21	22	0,5
22	23	0,5
23	24	0,5
24	25	0,5
25	27	1,0
26	27	0,5
27	29	1,0
28	29	0,5
29	31	1,0
30	31	0,5
31	33	1,0
32	33	0,5
33	35	1,0
34	35	0,5
35	37	1,0
36	37	0,5
37	38	0,5

drill diameter D1	max drill diameter	"X" adjust
DRILL-FIX DFR		
38	41	1,5
39	40	0,5
40	41	0,5
41	44	1,5
42	43	0,5
43	44	0,5
44	47	1,5
45	46	0,5
46	47	0,5
47	50	1,5
48	49	0,5
49	50	0,5
50	54	2,0
51	52	0,5
52	53	0,5
53	54	0,5
54	58	2,0
55	56	0,5
56	57	0,5
57	58	0,5
58	62	2,0
59	60	0,5
60	61	0,5
61	62	0,5
62	65	1,5
63	64	0,5
64	65	0,5
65	66	0,5
66	69	1,5
67	69	1,0
68	69	0,5
69	73	2,0
70	71	0,5
71	72	0,5
72	73	0,5
73	79	3,0
74	75	0,5
75	76	0,5
76	77	0,5
77	78	0,5
78	79	0,5
79	82	1,5
80	81	0,5
81	82	0,5
82	83	0,5

DRILL-FIX Conversion Chart — Inch

2.5x Diameter (Right Hand) "KIND" Drills to DRILL-FIX Style

fraction size	previous number	old shank size (inch)	new 2.5xD right hand .75" shank	new 2.5xD right hand 1" shank	new 2.5xD right hand 1.25" shank	new 2.5xD right hand 1.5" shank	new 2.5xD right hand 2" shank
5/8	KIND06250160		DFT0625R2SSF075	DFT0625R2SSF100			
21/32			DFT0656R2SSF075	DFT0656R2SSF100			
11/16	KIND06870175	1.25	DFT0688R2SSF075	DFT0688R2SSF100			
45/64			DTF0703R2SSF075	DFT0703R2SSF100			
47/64			DFT0734R2SSF075	DFT0734R2SSF100			
3/4	KIND07500188	1.25	DFT0750R2SSF075	DFT0750R2SSF100			
25/32	KIND07810195	1.25	DFT0781R2SSF075	DFT0781R2SSF100			
13/16	KIND08120205	1.25	DFT0813R2SSF075	DFT0813R2SSF100			
27/32			DFT0844R2SSF075	DFT0844R2SSF100			
7/8	KIND08750220	1.25	DFT0875R2SSF075	DFT0875R2SSF100			
29/32				DFT0906R2SSF100	DFT0906R2SSF125		
15/16	KIND09370235	1.25		DFT0938R2SSF100	DFT0938R2SSF125		
31/32				DFT0969R2SSF100	DFT0969R2SSF125		
63/64	KIND09840250	1.25		DFT0984R2SSF100	DFT0984R2SSF125		
1	KIND10000250	1.25		DFT1000R2SSF100	DFT1000R2SSF125	DFT1000R2SSF150	
1 1/32	KIND10310260	1.25			DFT1031R2SSF125		
1 1/16	KIND10620265	1.25			DFT1063R2SSF125		
1 3/32					DFT1094R2SSF125		
1 1/8	KIND11250285	1.25			DFT1125R2SSF125		
1 5/32					DFT1156R2SSF125		
1 3/16	KIND11870300	1.25			DFT1188R2SSF125		
1 7/32	KIND12190305	1.25			DFT1219R2SSF125	DFT1219R2SSF150	
1 1/4	KIND12500313	1.25			DFT1250R2SSF125	DFT1250R2SSF150	
1 9/32	KIND12810320	1.5			DFT1281R2SSF125	DFT1281R2SSF150	
1 5/16	KIND13120330	1.5			DFT1313R2SSF125	DFT1313R2SSF150	
1 3/8	KIND13750345	1.5			DFT1375R2SSF125	DFT1375R2SSF150	
1 13/32					DFT1406R2SSF125	DFT1406R2SSF150	
1 7/16	KIND14370360	1.5			DFT1438R2SSF125	DFT1438R2SSF150	
1 15/32	KIND14690370	1.5			DFT1469R2SSF125	DFT1469R2SSF150	
1 1/2	KIND15000375	1.5			DFT1500R2SSF125	DFT1500R2SSF150	
1 17/32					DFT1531R2SSF125	DFT1531R2SSF150	
1 9/16	KIND15620390	1.5			DFT1563R2SSF125	DFT1563R2SSF150	
1 5/8	KIND16250410	1.5			DFT1625R2SSF125	DFT1625R2SSF150	
1 11/16	KIND16870425	1.5			DFT1688R2SSF125	DFT1688R2SSF150	
1 3/4	KIND17500438	1.5				DFT1750R2SSF150	
1 13/16	KIND18120455	1.5				DFT1813R2SSF150	
1 7/8	KIND18750470	1.5				DFT1875R2SSF150	
1 15/16	KIND19370485	1.5				DFT1938R2SSF150	
2	KIND20000500	1.5				DFT2000R2SSF150	DFT2000R2SSF200
2 1//8	KIND21250535	1.5				DFT2125R2SSF150	DFT2125R2SSF200
2 1/4	KIND22500563	2					DFT2250R2SSF200
2 3/8	KIND23750595	2					DFT2375R2SSF200
2 1/2	KIND25000625	2					DFT2500R2SSF200
2 3/4							DFT2750R2SSF200
3							DFT3000R2SSF200
3 1/4							DFT3250R2SSF200

4x Diameter (Right Hand) "KIND" Drills to DRILL-FIX Style

fraction size	previous number	old shank size (inch)	new 4xD right hand .75" shank	new 4xD right hand 1" shank	new 4xD right hand 1.25" shank	new 4xD right hand 1.5" shank	new 4xD right hand 2" shank
5/8	KIND06250250	1.5	DFT0625R4SSF075				
21/32			DFT0656R4SSF075				
11/16	KIND06870275	1.5	DFT0688R4SSF075				
45/64			DFT0703R4SSF075				
47/64			DFT0734R4SSF075				
3/4	KIND07500300	1.5	DFT0750R4SSF075	DFT0750R4DDF100	DFT0750R4SSF125		
25/32	KIND07810313	1.5		DFT0781R4SSF100			
13/16	KIND08120325	1.5		DFT0813R4SSF100			
27/32				DFT0844R4SSF100			
7/8	KIND08750350	1.5		DFT0875R4SSF100	DFT0875R4SSF125		
29/32				DFT0906R4SSF100			
15/16	KIND09370375	1.5		DFT0938R4SSF100			
31/32				DFT0969R4SSF100			
63/64	KIND09840394	1.5		DFT0984R4SSF100			
1	KIND10000400	1.5		DFT1000R4SSF100	DFT1000R4SSF125	DFT1000R4SSF150	
1 1/32	KIND10310413	1.5			DFT1031R4SSF125		
1 1/16	KIND10620425	1.5			DFT1063R4SSF125		
1 3/32					DFT1094R4SSF125		
1 1/8	KIND11250450	1.5			DFT1125R4SSF125	DFT1125R4SSF150	
1 5/32					DFT1156R4DDF125		
1 3/16	KIND11870475	1.5			DFT1188R4SSF125		
1 7/32	KIND12190487	1.5			DFT1219R4SSF125		
1 1/4	KIND12500500	1.5			DFT1250R4SSF125	DFT1250R4SSF150	
1 9/32	KIND12810513	2			DFT1281R4SSF125		
1 5/16	KIND13120525	2			DFT1313R4SSF125		
1 3/8	KIND13750550	2			DFT1375R4SSF125	DFT1375R4SSF150	
1 13/32					DFT1406R4SSF125		
1 7/16	KIND14370575	2			DFT1438R4SSF125	DFT1438R4SSF150	
1 15/32	KIND14690587	2			DFT1469R4SSF125		
1 1/2					DFT1500R4SSF125	DFT1500R4SSF150	
1 17/32					DFT1531R4SSF125	DFT1531R4SSF150	
1 9/16	KIND15620625	2			DFT1563R4SSF125	DFT1563R4SSF150	
1 5/8	KIND16250650	2			DFT1625R4SSF125	DFT1625R4SSF150	
1 11/16	KIND16870675	2			DFT1688R4SSF125	DFT1688R4SSF150	
1 3/4	KIND17500700	2				DFT1750R4SSF150	
1 13/16	KIND18120725	2				DFT1813R4SSF150	
1 7/8	KIND18750750	2				DFT1875R4SSF150	
1 15/16	KIND19370775	2				DFT1938R4SSF150	
2	KIND20000800	2				DFT2000R4SSF150	DFT2000R4SSF200
2 1/8						DFT2125R4SSF150	DFT2125R4SSF200

DRILL-FIX Conversion Chart — Metric

Previous Hertel Part Numbers to New DRILL-FIX Part Numbers

previous number	drill diameter (mm)	new number
3.7116ZL620	16	DFT160L2VDI20M
3.7116ZL630	16	DFT160L2VDI30M
3.7116ZR120	16	DFT160R2WD20M
3.7116ZR132	16	DFT160R2WD32M
3.7117ZL620	17	DFT170L2VDI20M
3.7117ZL630	17	DFT170L2VDI30M
3.7117ZR120	17	DFT170R2WD20M
3.7117ZR132	17	DFT170R2WD32M
3.7118ZL620	18	DFT180L2VDI20M
3.7118ZL630	18	DFT180L2VDI30M
3.7118ZR120	18	DFT180R2WD20M
3.7118ZR132	18	DFT180R2WD32M
3.7119XL630	19	DFT190L2VDI30M
3.7119XL640	19	DFT190L2VDI40M
3.7119XR132	19	DFT190R2WD32M
3.7119XR140	19	DFT190R2WD40M
3.71200L630	20	DFT200L2VDI30M
3.71200L640	20	DFT200L2VDI40M
3.71200R132	20	DFT190R2WD32M
3.71200R140	20	DFT190R2WD40M
3.71210L630	21	DFT210L2VDI30M
3.71210L640	21	DFT210L2VDI40M
3.71210R132	21	DFT210R2WD32M
3.71210R140	21	DFT210R2WD40M
3.7122XL630	22	DFT220L2VDI30M
3.7122XL640	22	DFT220L2VDI40M
3.7122XR132	22	DFT220R2WD32M
3.7122XR140	22	DFT220R2WD40M
3.71230L630	23	DFT230L2VDI30M
3.71230L640	23	DFT230L2VDI40M
3.71230R132	23	DFT230R2WD32M
3.71230R140	23	DFT230R2WD40M

previous number	drill diameter (mm)	new number
3.7124XR132	24	DFT240R2WD32M
3.7124XR140	24	DFT240R2WD40M
3.71250R132	25	DFT250R2WD32M
3.71250R140	25	DFT250R2WD40M
3.71260R132	26	DFT260R2WD32M
3.71260R140	26	DFT260R2WD40M
3.7127XL630	27	DFT270L2VDI30M
3.7127XL640	27	DFT270L2VDI40M
3.7127XR132	27	DFT270R2WD32M
3.7127XR140	27	DFT270R2WD40M
3.71280R132	28	DFT280R2WD32M
3.71280R140	28	DFT280R2WD40M
3.71290R132	29	DFT290R2WD32M
3.71290R140	29	DFT290R2WD40M
3.7130XR132	30	DFT300R2WD32M
3.7130XR140	30	DFT300R2WD40M
3.71310R132	31	DFT310R2WD32M
3.71310R140	31	DFT310R2WD40M
3.71320R132	32	DFT320R2WD32M
3.71330R132	33	DFT330R2WD32M
3.71330R140	33	DFT330R2WD40M
3.7134XR132	34	DFT340R2WD32M
3.7134XR140	34	DFT340R2WD40M
3.71350R132	35	DFT350R2WD32M
3.71350R140	35	DFT350R2WD40M
3.71360R132	36	DFT360R2WD32M
3.71360R140	36	DFT360R2WD40M
3.71370R132	37	DFT370R2WD32M
3.71370R140	37	DFT370R2WD40M
3.71380R132	38	DFT380R2WD32M
3.71380R140	38	DFT380R2WD40M
3.7139XR132	39	DFT390R2WD32M

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Previous Hertel Part Numbers to New DRILL-FIX Part Numbers

(continued from previous page)

old number	drill diameter (mm)	new number
3.7139XR140	39	DFT390R2WD40M
3.71400R132	40	DFT400R2WD32M
3.71400R140	32	DFT320R2WD40M
3.71400R140	40	DFT400R2WD40M
3.71410F132	41	DFT410R2WD32M
3.71410F140	41	DFT410R2WD40M
3.71420R132	42	DFT420R2WD32M
3.71420R140	42	DFT420R2WD40M
3.71430R132	43	DFT430R2WD32M
3.71430R140	43	DFT430R2WD40M
3.71440R132	44	DFT440R2WD32M
3.71440R140	44	DFT440R2WD40M
3.7145XR140	45	DFT450R2WD40M
3.7145XR150	45	DFT450R2WD50M
3.71460R140	46	DFT460R2WD40M
3.71460R150	46	DFT460R2WD50M
3.71470R140	47	DFT470R2WD40M
3.71470R150	47	DFT470R2WD50M
3.7148XR140	48	DFT480R2WD40M
3.7148XR150	48	DFT480R2WD50M
3.71490R140	49	DFT490R2WD40M
3.71490R150	49	DFT490R2WD50M
3.71500R140	50	DFT500R2WD40M
3.71500R150	50	DFT500R2WD50M
3.71510R140	51	DFT510R2WD40M
3.71510R150	51	DFT510R2WD50M
3.71520R140	52	DFT520R2WD40M
3.71520R150	52	DFT520R2WD50M
3.71530R140	53	DFT530R2WD40M
3.71530R150	53	DFT530R2WD50M
3.71540R140	54	DFT540R2WD40M
3.71540R150	54	DFT540R2WD50M

old number	drill diameter (mm)	new number
3.7155XR150	55	DFT550R2WD50M
3.71560R150	56	DFT560R2WD50M
3.71570R150	57	DFT570R2WD50M
3.71580R150	58	DFT580R2WD50M
3.71590R150	59	DFT590R2WD50M
3.7160XR150	60	DFT600R2WD50M
3.71610R150	61	DFT610R2WD50M
3.71620R150	62	DFT620R2WD50M
3.71630R150	63	DFT630R2WD50M
3.71640R150	64	DFT640R2WD50M
3.71650R150	65	DFT650R2WD50M
3.7166XR150	66	DFT660R2WD50M
3.71670R150	67	DFT670R2WD50M
3.71680R150	68	DFT680R2WD50M
3.7169XL650	69	DFT690L2VDI50M
3.7169XR150	69	DFT690R2WD50M
3.71700R150	70	DFT700R2WD50M
3.71710R150	71	DFT710R2WD50M
3.71720R150	72	DFT720R2WD50M
3.7173XL650	73	DFT730L2VDI50M
3.7173XR150	73	DFT730R2WD50M
3.71740R150	74	DFT740R2WD50M
3.71750R150	75	DFT750R2WD50M
3.71760R150	76	DFT760R2WD50M
3.71770R150	77	DFT770R2WD50M
3.71780R150	78	DFT780R2WD50M
3.7179XL650	79	DFT790L2VDI50M
3.7179XR150	79	DFT790R2WD50M
3.71800R150	80	DFT800R2WD50M
3.71810R150	81	DFT810R2WD50M
3.71820R150	82	DFT820R2WD50M
3.7219XL620	19	DFT190L2VDI20M

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DRILL-FIX Conversion Chart — Metric

Previous Hertel Part Numbers to New DRILL-FIX Part Numbers

(continued from previous page)

previous number	drill diameter (mm)	new number
3.7219XL630	19	DFT190L2VDI30M
3.7219XR120	19	DFT190R2WD20M
3.7219XR132	19	DFT190R2WD32M
3.7219XR140	19	DFT190R2WD40M
3.72200R120	20	DFT200R2WD20M
3.72200R132	20	DFT200R2WD32M
3.72200R140	20	DFT200R2WD40M
3.7221XL620	21	DFT210L2VDI20M
3.7221XL630	21	DFT210L2VDI30M
3.7221XR120	21	DFT210R2WD20M
3.7221XR132	21	DFT210R2WD32M
3.7221XR140	21	DFT210R2WD40M
3.72220R120	22	DFT220R2WD20M
3.72220R132	22	DFT220R2WD32M
3.72220R140	22	DFT220R2WD40M
3.7223XL620	23	DFT230L2VDI20M
3.7223XL630	23	DFT230L2VDI30M
3.7223XR120	23	DFT230R2WD20M
3.7223XR132	23	DFT230R2WD32M
3.7223XR140	23	DFT230R2WD40M
3.72240R132	24	DFT240R2WD32M
3.72240R140	24	DFT240R2WD40M
3.7225XL630	25	DFT250L2VDI30M
3.7225XL640	25	DFT250L2VDI40M
3.7225XR132	25	DFT250R2WD32M
3.7225XR140	25	DFT250R2WD40M
3.72260R132	26	DFT260R2WD32M
3.72260R140	26	DFT260R2WD40M
3.7227XL630	27	DFT270L2VDI30M
3.7227XL640	27	DFT270L2VDI40M
3.7227XR132	27	DFT270R2WD32M
3.7227XR140	27	DFT270R2WD40M
3.72280R132	28	DFT280R2WD32M
3.72280R140	28	DFT280R2WD40M
3.7229XL630	29	DFT290L2VDI30M
3.7229XL640	29	DFT290L2VDI40M
3.7229XR132	29	DFT290R2WD32M
3.7229XR140	29	DFT290R2WD40M
3.72300R132	30	DFT300R2WD32M
3.72300R140	30	DFT300R2WD40M
3.7231XL630	31	DFT310L2VDI30M
3.7231XL640	31	DFT310L2VDI40M
3.7231XR132	31	DFT310R2WD32M
3.7231XR140	31	DFT310R2WD40M
3.72320R132	32	DFT320R2WD32M
3.72320R140	32	DFT320R2WD40M
3.7233XL630	33	DFT330L2VDI30M
3.7233XL640	33	DFT330L2VDI40M
3.7233XL650	33	DFT330L2VDI50M
3.7233XR132	33	DFT330R2WD32M
3.7233XR140	33	DFT330R2WD40M
3.72340R132	34	DFT340R2WD32M
3.72340R140	34	DFT340R2WD40M
3.7235XL630	35	DFT350L2VDI30M
3.7235XL640	35	DFT350L2VDI40M
3.7235XL650	35	DFT350L2VDI50M
3.7235XR132	35	DFT350R2WD32M
3.7235XR140	35	DFT350R2WD40M
3.72360R132	36	DFT360R2WD32M
3.72360R140	36	DFT360R2WD40M
3.72370R132	37	DFT370R2WD32M
3.72370R140	37	DFT370R2WD40M
3.7238XL630	38	DFT380L2VDI30M
3.7238XL640	38	DFT380L2VDI40M

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Previous Hertel Part Numbers to New DRILL-FIX Part Numbers

(continued from previous page)

old number	drill diameter (mm)	new number
3.7238XL650	38	DFT380L2VDI50M
3.7238XR132	38	DFT380R2WD32M
3.7238XR140	38	DFT380R2WD40M
3.72390R132	39	DFT380R2WD32M
3.72390R140	39	DFT380R2WD40M
3.72400R132	40	DFT400R2WD32M
3.72400R140	40	DFT400R2WD40M
3.7241XL640	41	DFT410L2VDI40M
3.7241XL650	41	DFT410L2VDI50M
3.7241XR132	41	DFT410R2WD32M
3.7241XR140	41	DFT410R2WD40M
3.72420R132	42	DFT420R2WD32M
3.72420R140	42	DFT420R2WD40M
3.72430R132	43	DFT430R2WD32M
3.72430R140	43	DFT430R2WD40M
3.7244XL640	44	DFT440L2VDI40M
3.7244XL650	44	DFT440L2VDI50M
3.7244XR132	44	DFT440R2WD32M
3.7244XR140	44	DFT440R2WD40M
3.72450R140	45	DFT450R2WD40M
3.72450R150	45	DFT450R2WD50M
3.72460R140	46	DFT460R2WD40M
3.72460R150	46	DFT460R2WD50M
3.7247XL640	47	DFT470L2VDI40M
3.7247XL650	47	DFT470L2VDI50M
3.7247XR140	47	DFT470R2WD40M
3.7247XR150	47	DFT470R2WD50M
3.72480R140	48	DFT480R2WD40M
3.72480R150	48	DFT480R2WD50M
3.72490R140	49	DFT490R2WD40M
3.72490R150	49	DFT490R2WD50M
3.7250XL640	50	DFT500L2VDI40M
3.7250XL650	50	DFT500L2VDI50M
3.7250XR140	50	DFT500R2WD40M
3.7250XR150	50	DFT500R2WD50M
3.72510R140	51	DFT510R2WD40M
3.72510R150	51	DFT510R2WD50M
3.72520R140	52	DFT520R2WD40M
3.72520R150	52	DFT520R2WD50M
3.72530R140	53	DFT530R2WD40M
3.72530R150	53	DFT530R2WD50M
3.7254XL640	54	DFT540L2VDI40M
3.7254XL650	54	DFT540L2VDI50M
3.7254XR140	54	DFT540R2WD40M
3.7254XR150	54	DFT540R2WD50M
3.72550R150	55	DFT550R2WD50M
3.72560R150	56	DFT560R2WD50M
3.72570R150	57	DFT570R2WD50M
3.7258XL650	58	DFT580L2VDI50M
3.7258XR150	58	DFT580R2WD50M
3.72590R150	59	DFT590R2WD50M
3.72600R150	60	DFT600R2WD50M
3.72610R150	61	DFT610R2WD50M
3.7262XL650	62	DFT620L2VDI50M
3.7262XR150	62	DFT620R2WD50M
3.72630R150	63	DFT630R2WD50M
3.72640R150	64	DFT640R2WD50M
3.72650R150	65	DFT650R2WD50M
3.7266XL650	66	DFT660L2VDI50M
3.7266XR150	66	DFT660R2WD50M
3.72670R150	67	DFT670R2WD50M
3.72680R150	68	DFT680R2WD50M

KENNAMETAL

Indexable Drills

HTS-C Indexable Drill System

Primary Application

Use HTS-C Indexable Drills to make 5xD and 8xD holes with indexable inserts in steel, cast iron, ductile iron, stainless steel, and nonferrous materials. Use where speed and economy are prime considerations.

Features and Benefits

Steel Bodies

- Metric and inch diameters are standard.
- Center pilot drill for added stability and hole straightness.
- Variable flute helix provides excellent chip removal.

Easy Insert Change

- Robust pocket design requires only a simple wrench for insert removal.
- Multiple grades and geometries available.

Tailored Grades and Geometries

- New KC7815 and KC7820 grades feature multi-layer CVD and KC7140 with advanced PVD coatings for improved performance in steel.
- Five DFT geometries standard for optimum cutting performance and superior chip control.
- Grades and geometries can be tailored in each pocket for improved performance.
- Carbide and HSS pilot drills are available to optimize productivity.

Customization

- Intermediate diameters available as semi-standards.
- Engineered custom solutions available.
- Multiple diameters are available.

HTS-C

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed	sfm / m/min	Feed rate by diameter	dia.	.750"-.945" 20.00mm-24.00mm	.984"-1.345" 25.00mm-30.00mm	1.313"-1.688" 31.00mm-39.00mm	1.625"-2.000" 40.00mm-45.00mm
P1 Low-Carbon Steels, Long Chipping							Content: C <.25%		Tensile Strength RM (MPa)*: <530			Hardness (HB) or HRC: <125	
S	O	SPHX...R-20	KC7215	B504 CS3	656	sfm	350 – 800		ipr	.002 - .002	.002 - .003	.003 - .005	.003 - .005
	I	DFT-HP	KC7215		200	m/min	107 – 244		mm/r	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,08 - 0,12
U	O	SPHX...R-20	KC7140	B504 CS3	459	sfm	244 – 558		ipr	.002 - .002	.002 - .003	.003 - .005	.003 - .005
	I	DFT-HP	KC7140		140	m/min	74 – 170		mm/r	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,08 - 0,12
P2 Low-Carbon Steels, Free Machining, and Short Chipping							Content: C <.25%		Tensile Strength RM (MPa)*: <650			Hardness (HB) or HRC: <220	
S	O	SPHX...R-20	KC7215	B504 CS3	558	sfm	333 – 760		ipr	.002 - .002	.002 - .003	.003 - .005	.004 - .006
	I	DFT-HP	KC7215		170	m/min	101 – 232		mm/r	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,10 - 0,16
U	O	SPHX...R-20	KC7140	B504 CS3	390	sfm	226 – 517		ipr	.002 - .002	.002 - .003	.003 - .005	.004 - .006
	I	DFT-HP	KC7140		119	m/min	69 – 158		mm/r	0,40 - 0,06	0,05 - 0,07	0,08 - 0,12	0,10 - 0,16
P3 Medium to High Plain-Carbon Steels and Alloy Steels							Content: C >.25%		Tensile Strength RM (MPa)*: 600-850			Hardness (HB) or HRC: <330	
S	O	SPHX...R-20	KC7215	B504	492	sfm	316 – 722		ipr	.002 - .003	.002 - .004	.003 - .005	.004 - .007
	I	DFT-HP	KC7215	B504	150	m/min	96 – 220		mm/r	0,05 - 0,08	0,06 - 0,1	0,08 - 0,13	0,09 - 0,17
U	O	SPHX...R-20	KC7140	B504	345	sfm	210 – 479		ipr	.002 - .003	.002 - .004	.003 - .005	.004 - .007
	I	DFT-HP	KC7140	B504	105	m/min	64 – 146		mm/r	0,50 - 0,08	0,06 - 0,10	0,08 - 0,13	0,09 - 0,17
P4 Alloy Steels and Tool Steels							Content: C >.25%		Tensile Strength RM (MPa)*: 800-1100			Hardness (HB) or HRC: 350-450	
S	O	SPHX...R-20	KC7215	B504	427	sfm	246 – 563		ipr	.002 - .003	.002 - .003	.003 - .005	.003 - .005
	I	DFT-HP	KC7215	B504	130	m/min	75 – 172		mm/r	0,04 - 0,07	0,05 - 0,08	0,07 - 0,12	0,08 - 0,13
U	O	SPHX...R-20	KC7140	B504	293	sfm	172 – 393		ipr	.002 - .003	.002 - .003	.003 - .005	.003 - .005
	I	DFT-HP	KC7140	B504	89	m/min	52 – 120		mm/r	0,04 - 0,07	0,05 - 0,08	0,07 - 0,12	0,08 - 0,13
P5 Ferritic, Martensitic, and PH Stainless Steels							Content: C=0-.4%		Tensile Strength RM (MPa)*: 600-850			Hardness (HB) or HRC: <330	
S	O	SPHX...R-20	KC7215	B504 CS3	328	sfm	190 – 434		ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004
	I	DFT-HP	KC7215	B504 CS3	100	m/min	58 – 132		mm/r	0,04 - 0,06	0,04 - 0,07	0,06 - 0,10	0,06 - 0,11
U	O	SPHX...R-20	KC7140	B504 CS3	197	sfm	114 – 260		ipr	.002 - .002	.002 - .003	.002 - .004	.002 - .004
	I	DFT-HP	KC7140	B504 CS3	60	m/min	35 – 79		mm/r	0,04 - 0,06	0,04 - 0,07	0,06 - 0,10	0,06 - 0,11
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels							Content: C=.1-.6%		Tensile Strength RM (MPa)*: 900-1350			Hardness (HB) or HRC: 350-450	
S	O	SPHX...R-20	KC7215	B504 CS3	312	sfm	246 – 563		ipr	.002 - .002	.002 - .003	.002 - .004	.003 - .004
	I	DFT-HP	KC7215	B504 CS3	95	m/min	75 – 172		mm/r	0,04 - 0,06	0,05 - 0,07	0,06 - 0,10	0,07 - 0,11
U	O	SPHX...R-20	KC7140	B504 CS3	246	sfm	172 – 393		ipr	.002 - .002	.002 - .003	.002 - .004	.003 - .004
	I	DFT-HP	KC7140	B504 CS3	75	m/min	52 – 120		mm/r	0,40 - 0,06	0,05 - 0,07	0,06 - 0,10	0,07 - 0,11

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions

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Feed and Speed Chart

HTS-C

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by diameter					
						sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	dia.	.750"- .945"	20.00mm- 24.00mm	.984"- 1.345"	25.00mm- 30.00mm	1.313"- 1.688"	31.00mm- 39.00mm	1.625"- 2.000"	40.00mm- 45.00mm
						m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000									
M1 Austenitic Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: <650**						**Hardness (HB) or HRC: 130-200**	
S	O	SPGX...-31	KC7140	B504 CS3	367	sfm	180 – 450	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140	B504 CS3	112	m/min	55 – 137	mm/r	0,03 - 0,05		0,03 - 0,05		0,085 - 0,07		0,05 - 0,07	
U	O	SPGX...-31	KC7140	B504 CS3	276	sfm	135 – 337	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140	B504 CS3	84	m/min	41 – 103	mm/r	0,03 - 0,05		0,03 - 0,05		0,05 - 0,07		0,05 - 0,07	
M2 High-Strength Austenitic Stainless and Cast Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: 500-700**						**Hardness (HB) or HRC: 150-230**	
S	O	SPGX...-31	KC7140	B504 CS3	331	sfm	180 – 380	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140	B504 CS3	101	m/min	55 – 116	mm/r	0,03 - 0,05		0,03 - 0,05		0,05 - 0,07		0,05 - 0,07	
U	O	SPGX...-31	KC7140	B504 CS3	248	sfm	135 – 284	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140	B504 CS3	76	m/min	41 – 87	mm/r	0,03 - 0,05		0,03 - 0,05		0,05 - 0,07		0,05 - 0,07	
M3 Duplex Steels						**Content: C=.05-.2%**		**Tensile Strength RM (MPa)*: <900**						**Hardness (HB) or HRC: 135-275**	
S	O	SPGX...-31	KC7140	B504 CS3	294	sfm	180 – 350	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140		90	m/min	55 – 107	mm/r	0,03 - 0,05		0,03 - 0,05		0,05 - 0,07		0,05 - 0,07	
U	O	SPGX...-31	KC7140	B504 CS3	220	sfm	135 – 262	ipr	.001 - .002		.001 - .002		.002 - .003		.002 - .003	
	I	DFT-HP	KC7140		67	m/min	41 – 80	mm/r	0,03 - 0,05		0,03 - 0,05		0,05 - 0,07		0,05 - 0,07	
K1 Gray Cast Irons and Low-Strength Ductile Irons								**Tensile Strength RM (MPa)*: 150-400**						**Hardness (HB) or HRC: 120-290**	
S	O	SPHX...R-21	KC7215	B504	623	sfm	348 – 754	ipr	.003 - .005		.004 - .006		.004 - .006		.005 - .008	
	I	DFT-GD	KC7215	B504	190	m/min	106 – 230	mm/r	0,08 - 0,13		0,09 - 0,15		0,10 - 0,16		0,12 - 0,20	
U	O	SPHX...R-21	KC7215	B504	427	sfm	243 – 527	ipr	.003 - .005		.004 - .006		.004 - .006		.005 - .008	
	I	DFT-GD	KC7815	B504	130	m/min	74 – 160	mm/r	0,08 - 0,13		0,09 - 0,15		0,10 - 0,16		0,12 - 0,20	
K2 Low- and Medium-Strength CGI and Ductile Irons								**Tensile Strength RM (MPa)*: 400-600**						**Hardness (HB) or HRC: 130-260**	
S	O	SPHX...R-21	KC7215	B504	561	sfm	348 – 754	ipr	.003 - .005		.004 - .006		.004 - .006		.005 - .008	
	I	DFT-GD	KC7215	B504	171	m/min	106 – 230	mm/r	0,08 - 0,13		0,09 - 0,15		0,10 - 0,16		0,12 - 0,20	
U	O	SPHX...R-21	KC7215	B504	384	sfm	243 – 527	ipr	.003 - .005		.004 - .006		.004 - .006		.005 - .008	
	I	DFT-GD	KC7815	B504	117	m/min	74 – 160	mm/r	0,08 - 0,13		0,09 - 0,15		0,10 - 0,16		0,12 - 0,20	
K3 High-Strength Ductile and Austempered Ductile Irons								**Tensile Strength RM (MPa)*: 600-900**						**Hardness (HB) or HRC: 180-350**	
S	O	SPHX...R-21	KC7215	B504	499	sfm	331 – 716	ipr	.002 - .005		.003 - .006		.004 - .006		.004 - .008	
	I	DFT-GD	KC7215	B504	152	m/min	101 – 218	mm/r	0,06 - 0,13		0,08 - 0,15		0,10 - 0,16		0,11 - 0,2	
U	O	SPHX...R-21	KC7215	B504	341	sfm	220 – 476	ipr	.002 - .005		.003 - .006		.004 - .006		.004 - .008	
	I	DFT-GD	KC7815	B504	104	m/min	67 – 145	mm/r	0,60 - 0.13		0,08 - 0.15		0,10 - 0.16		0.11 - 0,2	

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions

(continued on next page)

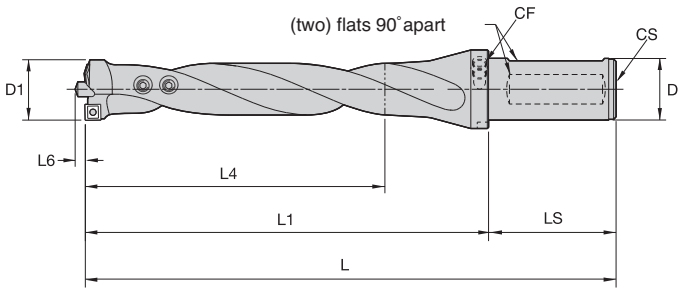
HTS-C

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed	Feed rate by diameter: dia.	.750"- .945" / 20.00mm - 24.00mm	.984"- 1.345" / 25.00mm - 30.00mm	1.313"- 1.688" / 31.00mm - 39.00mm	1.625"- 2.000" / 40.00mm - 45.00mm
N1 Wrought Aluminum Alloys											**Tensile Strength RM (MPa)*: <520** — **Hardness (HB) or HRC: 60-90**
S	O	SPHX...R-22	KM1	B503 AS3	965	sfm	600 – 1500	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		294	m/min	183 – 457	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
U	O	SPHX...R-20	KM1	B503 AS3	643	sfm	398 – 996	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		196	m/min	121 – 304	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
N2 Cast Aluminums							**Content: Si<12.2%** — **Tensile Strength RM (MPa)*: <350**					**Hardness (HB) or HRC: 70-100**
S	O	SPHX...R-22	KM1	B503 AS3	868	sfm	600 – 1500	ipr	.002 - .002	.002 - .002	.004 - .004	.004 - .006
	I	DFT-HP	KMF		265	m/min	183 – 457	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
U	O	SPHX...R-22	KM1	B503 AS3	579	sfm	398 – 996	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		176	m/min	121 – 304	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
N3 Cast Aluminums							**Content: Si>12.2%** — **Tensile Strength RM (MPa)*: 200-320**					**Hardness (HB) or HRC: 60-120**
S	O	SPHX...R-22	KM1	B503 AS3	772	sfm	372 – 930	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		235	m/min	113 – 283	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
U	O	SPHX...R-22	KM1	B503	514	sfm	259 – 648	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF	B503	157	m/min	79 – 198	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
N5 Copper and Copper Alloys											**Tensile Strength RM (MPa)*: 200-650** — **Hardness (HB) or HRC: 60-200**
S	O	SPHX...R-20	KM1	B503 AS3	868	sfm	450 – 1181	ipr	.002 -.002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		265	m/min	137 – 360	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
U	O	SPHX...R-20	KM1	B503 AS3	579	sfm	302 – 793	ipr	.002 - .002	.002 - .002	.004 - .005	.004 - .006
	I	DFT-HP	KMF		176	m/min	92 – 242	mm/r	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14
S1 Iron-Based, Heat-Resistant Alloys							**Tensile Strength RM (MPa)*: 500-1200**					**Hardness (HB) or HRC: 160-260**
S	O	SPGX...-31	KC7215	B504 CS3	131	sfm	70 – 160	ipr	.001 - .002	.001 - .002	.002 - .002	.002 - .002
	I	DFT-GD	KC7215		40	m/min	21 – 49	mm/r	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06
U	O	SPGX...-31	KC7215	B504 CS3	98	sfm	60 – 120	ipr	.001 - .002	.001 - .002	.002 - .002	.002 - .002
	I	DFT-GD	KC720		30	m/min	18 – 37	mm/r	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys							**Tensile Strength RM (MPa)*: 1000-1450**					**Hardness (HB) or HRC: 250-450**
S	O	SPGX...-31	KC7215	B504 CS3	115	sfm	61 – 139	ipr	.001 - .002	.001 - .002	.002 - .002	.002 - .002
	I	DFT-GD	KC7215		35	m/min	19 – 42	mm/r	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06
U	O	SPGX...-31	KC7215	B504 CS3	82	sfm	58 – 112	ipr	.001 - .002	.001 - .002	.002 - .002	.002 -.002
	I	DFT-GD	KC720		25	m/min	18 – 34	mm/r	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions

HTS-C



- Drills shipped with insert, clamping and adjusting screws, and Torx wrench.
- Order pilot drills separately, see page E66.
- Order inserts separately, beginning on pages H4–H9.

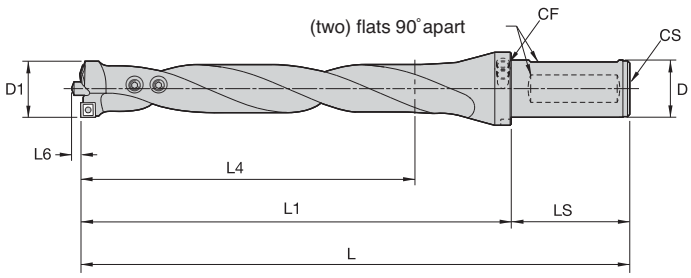
5xD Flange Shank — Inch

D1 in	D1 mm	order number	catalog number	gage insert 1	gage insert 2	D	L	L1	L4 max	L6	LS	CF	CS	adjusting screw	clamping screw	insert screw	wrench	Torx size
.750	19,05	1777840	HTSC0750R5SSF125	SPGT 060304	DFT 030304	1.250	8.38	5.13	3.75	.069	3.25	1/8 - 27 NPT	1/4 - 18 NPT	128.406	191.720	MS1152	170.023	T7
.813	20,64	1777913	HTSC0813R5SSF125	SPGT 060304	DFT 030304	1.250	8.38	5.13	4.06	.069	3.25	1/8 - 27 NPT	1/4 - 18 NPT	128.406	191.720	MS1152	170.023	T7
.875	22,23	1777944	HTSC0875R5SSF125	SPGT 060304	DFT 030304	1.250	9.00	5.75	4.38	.081	3.25	1/8 - 27 NPT	1/4 - 18 NPT	128.408	191.720	MS1152	170.023	T7
.938	23,81	1777946	HTSC0938R5SSF125	SPGT 060304	DFT 030304	1.250	9.00	5.75	4.69	.081	3.25	1/8 - 27 NPT	1/4 - 18 NPT	128.408	191.720	MS1152	170.023	T7
1.000	25,40	1777948	HTSC1000R5SSF125	SPGT 070304	DFT 030304	1.250	9.75	6.50	5.00	.118	3.25	1/8 - 27 NPT	1/4 - 18 NPT	128.508	190.114	192.432	170.028	T8
1.063	26,99	1777950	HTSC1063R5SSF150	SPGT 070304	DFT 030304	1.500	10.25	6.50	5.31	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	128.508	190.114	192.432	170.028	T8
1.125	28,58	1777952	HTSC1125R5SSF150	SPGT 070304	DFT 030304	1.500	11.00	7.25	5.63	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	128.510	190.125	192.432	170.028	T8
1.188	30,16	1777954	HTSC1188R5SSF150	SPGT 070304	DFT 030304	1.500	11.00	7.25	5.94	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	128.510	190.125	192.432	170.028	T8
1.250	28,58	1777956	HTSC1250R5SSF150	SPGT 09T308	DFT 05T308	1.500	11.88	8.13	6.25	.157	3.75	1/8 - 27 NPT	1/4 - 18 NPT	128.610	SS03M012	191.924	170.024	T9
1.313	33,34	1777959	HTSC1313R5SSF200	SPGT 09T308	DFT 05T308	2.000	12.13	8.13	6.56	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.610	SS03M012	191.924	170.024	T9
1.375	34,93	1777962	HTSC1375R5SSF200	SPGT 09T308	DFT 05T308	2.000	13.00	9.00	6.88	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.612	SS03M012	191.924	170.024	T9
1.438	36,51	1777975	HTSC1438R5SSF200	SPGT 09T308	DFT 05T308	2.000	13.00	9.00	7.19	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.612	SS03M012	191.924	170.024	T9
1.500	38,10	1777977	HTSC1500R5SSF200	SPGT 09T308	DFT 05T308	2.000	13.00	9.00	7.50	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.612	SS03M012	191.924	170.024	T9
1.563	39,69	1777981	HTSC1563R5SSF200	SPGT 120408	DFT 06T308	2.000	14.25	10.25	7.81	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.812	SS03M014	191.916	170.025	T15
1.625	41,28	1777986	HTSC1625R5SSF200	SPGT 120408	DFT 06T308	2.000	14.25	10.25	8.13	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.812	SS03M014	191.916	170.025	T15
1.688	42,86	1777989	HTSC1688R5SSF200	SPGT 120408	DFT 06T308	2.000	14.25	10.25	8.44	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.816	SS03M014	191.916	170.025	T15
1.750	44,45	1777992	HTSC1750R5SSF200	SPGT 120408	DFT 06T308	2.000	14.25	10.25	8.75	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	128.816	SS03M014	191.916	170.025	T15

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:
By catalog number HTSC0750R5SSF125, or by order number 1777840.



- Drills shipped with insert, clamping and adjusting screws, and Torx wrench.
- Order pilot drills separately, see page E66.
- Order inserts separately, beginning on page H4–H9.

8xD Flange Shank — Inch

D1 in	D1 mm	order number	catalog number	gage insert 1	gage insert 2	D	L	L1	L4 max	L6	LS	CF	CS	clamping screw	back-up screw	insert screw	wrench	Torx size
.750	19,05	1777842	HTSC0750R8SSF125	SPGT 060304	DFT 030304	1.250	11.25	8.00	6.00	.069	3.25	1/8 - 27 NPT	1/4 - 18 NPT	191.720	128.406	MS1152	170.023	T7
.813	20,64	1777918	HTSC0813R8SSF125	SPGT 060304	DFT 030304	1.250	11.25	8.00	6.50	.069	3.25	1/8 - 27 NPT	1/4 - 18 NPT	191.720	128.406	MS1152	170.023	T7
.875	22,23	1777945	HTSC0875R8SSF125	SPGT 060304	DFT 030304	1.250	12.13	8.88	7.00	.081	3.25	1/8 - 27 NPT	1/4 - 18 NPT	191.720	128.408	MS1152	170.023	T7
.938	23,81	1777947	HTSC0938R8SSF125	SPGT 060304	DFT 030304	1.250	12.13	8.88	7.50	.081	3.25	1/8 - 27 NPT	1/4 - 18 NPT	191.720	128.408	MS1152	170.023	T7
1.000	25,40	1777949	HTSC1000R8SSF125	SPGT 070304	DFT 030304	1.250	13.13	9.88	8.00	.118	3.25	1/8 - 27 NPT	1/4 - 18 NPT	190.114	128.508	192.432	170.028	T8
1.063	26,99	1777951	HTSC1063R8SSF150	SPGT 070304	DFT 030304	1.500	13.63	9.88	8.50	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	190.114	128.508	192.432	170.028	T8
1.125	28,58	1777953	HTSC1125R8SSF150	SPGT 070304	DFT 030304	1.500	14.75	11.00	9.00	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	190.125	128.510	192.432	170.028	T8
1.188	30,16	1777955	HTSC1188R8SSF150	SPGT 070304	DFT 030304	1.500	14.75	11.00	9.50	.118	3.75	1/8 - 27 NPT	1/4 - 18 NPT	190.125	128.510	192.432	170.028	T8
1.250	31,75	1777957	HTSC1250R8SSF150	SPGT 09T308	DFT 05T308	1.500	16.25	12.50	10.00	.157	3.75	1/8 - 27 NPT	1/4 - 18 NPT	SS03M012	128.610	191.924	170.024	T9
1.313	33,34	1777960	HTSC1313R8SSF200	SPGT 09T308	DFT 05T308	2.000	16.50	12.50	10.50	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M012	128.610	191.924	170.024	T9
1.375	34,93	1777973	HTSC1375R8SSF200	SPGT 09T308	DFT 05T308	2.000	17.88	13.88	11.00	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M012	128.612	191.924	170.024	T9
1.438	36,51	1777976	HTSC1438R8SSF200	SPGT 09T308	DFT 05T308	2.000	17.88	13.88	11.50	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M012	128.612	191.924	170.024	T9
1.500	38,10	1777979	HTSC1500R8SSF200	SPGT 09T308	DFT 05T308	2.000	17.88	13.88	12.00	.158	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M012	128.612	191.924	170.024	T9
1.563	39,69	1777984	HTSC1563R8SSF200	SPGT 120408	DFT 06T308	2.000	19.63	15.63	12.50	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M014	128.812	191.916	170.025	T15
1.625	41,28	1777988	HTSC1625R8SSF200	SPGT 120408	DFT 06T308	2.000	19.63	15.63	13.00	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M014	128.812	191.916	170.025	T15
1.688	42,86	1777990	HTSC1688R8SSF200	SPGT 120408	DFT 06T308	2.000	19.63	15.63	13.50	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M014	128.816	191.916	170.025	T15
1.750	44,45	1777993	HTSC1750R8SSF200	SPGT 120408	DFT 06T308	2.000	19.63	15.63	14.00	.179	4.00	1/8 - 27 NPT	1/4 - 18 NPT	SS03M014	128.816	191.916	170.025	T15

Proper Setting of the Pilot Drill Length (L6)

Correct

Flute of the pilot drill lies "flush" with the gap of the drill body.

Wrong!

Pilot drill is adjusted too high.

Chips cannot flow out of the pilot drill flute.

Wrong!

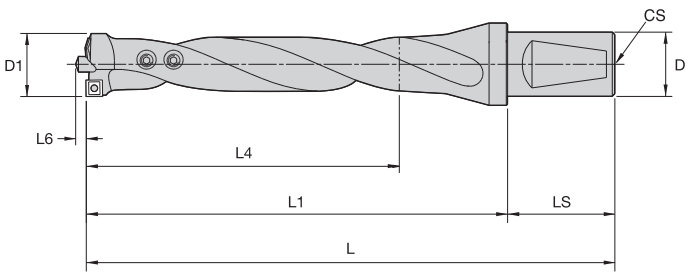
Pilot drill is adjusted too low.

Chips can lodge between the pilot drill and the gap of the drill body.

Ordering Example:

By catalog number HTSC0750R8SSF125, or by order number 1777842.

HTS-C



- Drills shipped with insert, clamping and adjusting screws, and Torx wrench.
- Order pilot drills separately, see page E66.
- Order inserts separately, beginning on pages H4–H9.

5xD WN/WD Shank — Metric

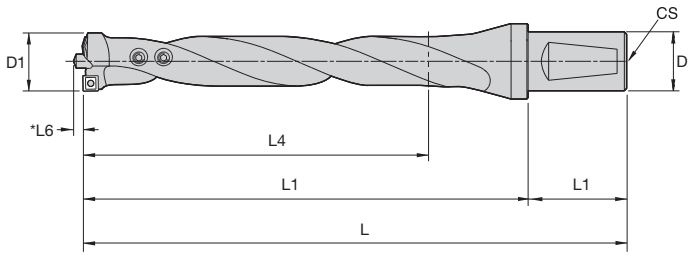
D1 mm	D1 in	order number	catalog number	gage insert 1	gage insert 2	D	L	L1	L4 max	L6	LS	CS	clamping screw	back-up screw	insert screw	wrench	Torx size
20,0	.787	1191115	3.75200R215	SPHX 060204	WOGX 030204	20	175,0	130,0	100,0	2,3	45	4	191.720	128.406	192.432	170.028	T8
21,0	.827	1245763	3.75210R215	SPHX 060204	WOGX 030204	20	175,0	130,0	105,0	2,3	45	4	191.720	128.406	192.432	170.028	T8
22,0	.866	1191118	3.75220R215	SPHX 060204	WOGX 030204	20	189,0	144,0	110,0	2,5	45	4	191.720	128.408	192.432	170.028	T8
23,0	.906	1245765	3.75230R215	SPHX 060204	WOGX 030204	20	189,0	144,0	115,0	2,5	45	4	192.057	128.408	192.432	170.028	T8
24,0	.945	1191119	3.75240R215	SPHX 060204	WOGX 030204	20	189,0	144,0	120,0	2,5	45	4	192.057	128.408	192.432	170.028	T8
25,0	.984	1191121	3.75250R215	SPHX 070304	DFT 030304	25	209,0	164,0	125,0	3,0	45	5	190.114	128.508	192.432	170.028	T8
26,0	1.024	1245768	3.75260R215	SPHX 070304	DFT 030304	25	209,0	164,0	130,0	3,0	45	5	190.114	128.508	192.432	170.028	T8
27,0	1.063	1245770	3.75270R215	SPHX 070304	DFT 030304	25	209,0	164,0	135,0	3,0	45	5	190.114	128.510	192.432	170.028	T8
28,0	1.102	1245772	3.75280R215	SPHX 070304	DFT 030304	25	229,0	184,0	140,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
29,0	1.142	1191122	3.75290R215	SPHX 070304	DFT 030304	25	229,0	184,0	145,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
30,0	1.181	1245774	3.75300R215	SPHX 070304	DFT 030304	25	229,0	184,0	150,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
31,0	1.221	1245791	3.75310R215	SPHX 090304	DFT 05T308	32	264,0	206,0	155,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
32,0	1.260	1191125	3.75320R215	SPHX 090304	DFT 05T308	32	264,0	206,0	160,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
33,0	1.299	1245792	3.75330R215	SPHX 090304	DFT 05T308	32	264,0	206,0	165,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
34,0	1.339	1191126	3.75340R215	SPHX 090304	DFT 05T308	32	264,0	206,0	170,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
35,0	1.378	1245793	3.75350R215	SPHX 090304	DFT 05T308	32	286,0	228,0	175,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
36,0	1.417	1245794	3.75360R215	SPHX 090304	DFT 05T308	32	286,0	228,0	180,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
37,0	1.457	1245795	3.75370R215	SPHX 090304	DFT 05T308	32	286,0	228,0	185,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
38,0	1.496	1245796	3.75380R215	SPHX 090304	DFT 05T308	32	286,0	228,0	190,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
39,0	1.535	1191127	3.75390R215	SPHX 090304	DFT 05T308	32	286,0	228,0	195,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
40,0	1.575	1245797	3.75400R215	SPHX 120404	DFT 06T308	40	326,0	258,0	200,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
41,0	1.614	1191128	3.75410R215	SPHX 120404	DFT 06T308	40	326,0	258,0	205,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
42,0	1.654	1245798	3.75420R215	SPHX 120404	DFT 06T308	40	326,0	258,0	210,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
43,0	1.693	1245799	3.75430R215	SPHX 120404	DFT 06T308	40	326,0	258,0	215,0	4,5	68	6	SS03M014	128.816	191.916	170.025	T15
44,0	1.732	1245800	3.75440R215	SPHX 120404	DFT 06T308	40	326,0	258,0	220,0	4,5	68	6	SS03M014	128.816	191.916	170.025	T15
45,0	1.771	1191129	3.75450R215	SPHX 120404	DFT 06T308	40	326,0	258,0	225,0	4,5	68	6	SS03M014	128.816	191.916	170.025	T15

WARNING

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect bystanders.

Ordering Example:

By catalog number 3.75200R215, or by order number 1191115.



- Drills shipped with insert, clamping and adjusting screws, and Torx wrench.
- Order pilot drill separately, see page E66.
- Order inserts separately, see pages H4–H9.

8xD WN/WD Shank — Metric

D1 mm	D1 in	order number	catalog number	gage insert 1	gage insert 2	D	L	L1	L4 max	L6	LS	CS	clamping screw	back-up screw	insert screw	wrench	Torx size
20,0	.787	1191116	3.75200R218	SPHX 060204	WOGX 030204	20	247,0	202,0	160,0	2,3	45	4	191.720	128.406	192.432	170.028	T8
21,0	.827	1191117	3.75210R218	SPHX 060204	WOGX 030204	20	247,0	202,0	168,0	2,3	45	4	191.720	128.406	192.432	170.028	T8
22,0	.866	1245764	3.75220R218	SPHX 060204	WOGX 030204	20	269,0	224,0	176,0	2,5	45	4	191.720	128.408	192.432	170.028	T8
23,0	.906	1245766	3.75230R218	SPHX 060204	WOGX 030204	20	269,0	224,0	184,0	2,5	45	4	192.057	128.408	192.432	170.028	T8
24,0	.945	1191120	3.75240R218	SPHX 060204	WOGX 030204	20	269,0	224,0	192,0	2,5	45	4	192.057	128.408	192.432	170.028	T8
25,0	.984	1245767	3.75250R218	SPHX 070304	DFT 030304	25	295,0	250,0	200,0	3,0	45	5	190.114	128.508	192.432	170.028	T8
26,0	1.024	1245769	3.75260R218	SPHX 070304	DFT 030304	25	295,0	250,0	208,0	3,0	45	5	190.114	128.508	192.432	170.028	T8
27,0	1.063	1245771	3.75270R218	SPHX 070304	DFT 030304	25	295,0	250,0	216,0	3,0	45	5	190.114	128.510	192.432	170.028	T8
28,0	1.102	1245773	3.75280R218	SPHX 070304	DFT 030304	25	324,0	279,0	224,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
29,0	1.142	1191123	3.75290R218	SPHX 070304	DFT 030304	25	324,0	279,0	232,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
30,0	1.181	1245775	3.75300R218	SPHX 070304	DFT 030304	25	324,0	279,0	240,0	3,2	45	5	190.125	128.510	192.432	170.028	T8
31,0	1.221	1191124	3.75310R218	SPHX 090304	DFT 05T308	32	374,0	316,0	248,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
32,0	1.260	1245801	3.75320R218	SPHX 090304	DFT 05T308	32	374,0	316,0	256,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
33,0	1.299	1245802	3.75330R218	SPHX 090304	DFT 05T308	32	374,0	316,0	264,0	4,0	58	6	SS03M012	128.610	191.924	170.024	T9
34,0	1.339	1245803	3.75340R218	SPHX 090304	DFT 05T308	32	374,0	316,0	272,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
35,0	1.378	1245804	3.75350R218	SPHX 090304	DFT 05T308	32	409,0	351,0	280,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
36,0	1.417	1245805	3.75360R218	SPHX 090304	DFT 05T308	32	409,0	351,0	288,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
37,0	1.457	1245806	3.75370R218	SPHX 090304	DFT 05T308	32	409,0	351,0	296,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
38,0	1.496	1245807	3.75380R218	SPHX 090304	DFT 05T308	32	409,0	351,0	304,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
39,0	1.535	1245808	3.75390R218	SPHX 090304	DFT 05T308	32	409,0	351,0	312,0	4,0	58	6	SS03M012	128.612	191.924	170.024	T9
40,0	1.575	1245809	3.75400R218	SPHX 120404	DFT 06T308	40	465,0	397,0	320,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
41,0	1.614	1245810	3.75410R218	SPHX 120404	DFT 06T308	40	465,0	397,0	328,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
42,0	1.654	1245811	3.75420R218	SPHX 120404	DFT 06T308	40	465,0	397,0	336,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
43,0	1.693	1245812	3.75430R218	SPHX 120404	DFT 06T308	40	465,0	397,0	344,0	4,5	68	6	SS03M014	128.816	191.916	170.025	T15
44,0	1.732	1245813	3.75440R218	SPHX 120404	DFT 06T308	40	465,0	397,0	352,0	4,5	68	6	SS03M014	128.812	191.916	170.025	T15
45,0	1.771	1245814	3.75450R218	SPHX 120404	DFT 06T308	40	465,0	397,0	360,0	4,5	68	6	SS03M014	128.816	191.916	170.025	T15

Proper Setting of the Pilot Drill Length (L6)

Correct

Flute of the pilot drill lies "flush" with the gap of the drill body.

Wrong!

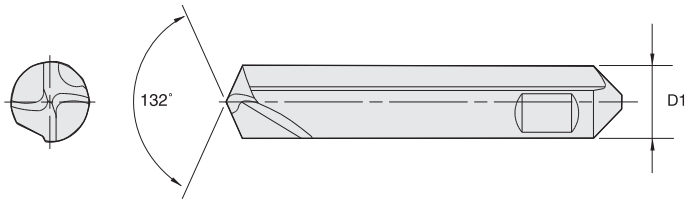
Pilot drill is adjusted too high.
Chips cannot flow out of the pilot drill flute.

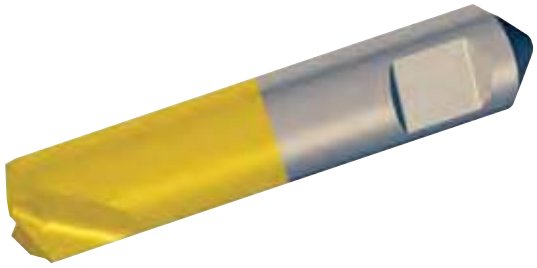
Wrong!

Pilot drill is adjusted too low.
Chips can lodge between the pilot drill and the gap of the drill body.

Order Example:
By catalog number 3.75200R218, or by order number 119116.

HTS-C Pilot Drills





- Use in inch and metric drill bodies, see pages E62–E65.
- For pilot drill repointing information, see page I28.

HTS-C High Speed Steel

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

ref drill dia min	ref drill dia max	ref drill dia min	ref drill dia max	order number	catalog number	D1 mm	D1 in	A30	AS3
–	–	.750	.812	1124589	B503S04000	4	.158	●	●
20,0	24,0	.787	.945	1133325	B503S05000	5	.197	●	●
25,0	30,0	.984	1.181	1125649	B503S06000	6	.236	●	●
31,0	39,0	1.220	1.535	1133422	B503S08000	8	.315	●	●
40,0	45,0	1.575	1.772	1133538	B503S10000	10	.394	●	●

- Use in inch and metric drill bodies, see pages E62–E65.
- For pilot drill repointing information, see page I28.

HTS-C Carbide

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

ref drill dia min	ref drill dia max	ref drill dia min	ref drill dia max	order number	catalog number	D1 mm	D1 in	G13	CS3
–	–	.750	.812	1199707	B504S04000	4	.158	●	●
20,0	24,0	.787	.945	1191622	B504S05000	5	.197	●	●
25,0	30,0	.984	1.181	1191624	B504S06000	6	.236	●	●
31,0	39,0	1.220	1.535	1191625	B504S08000	8	.315	●	●
40,0	45,0	1.575	1.772	1199719	B504S10000	10	.394	●	●

Ordering Example:

By catalog number and grade B504S04000 G13, or by order number 1199696.

KENNAMETAL

Indexable Drills

HTS Indexable Drill System

Primary Application

HTS Indexable Drills are designed to drill holes 10xD and with indexable inserts in steel, cast iron, ductile iron, stainless steel, and nonferrous materials. HTS Drills are capable of producing hole diameters up to 270 mm or 10.63".

Features and Benefits

Modular in Design

- Cartridges in drilling head are adjustable for size range control.
- General-purpose and finishing cartridges available as standard to minimize operations.
- Extensions are standard for increased depth capability.
- Through coolant standard to aid in chip removal and increased insert life.
- Can be used in stationary or rotating applications for versatility.

Easy Insert Change

- Robust pocket design requires only a simple wrench for insert removal.
- Multiple grades and geometries available.

Tailored Grades and Geometries

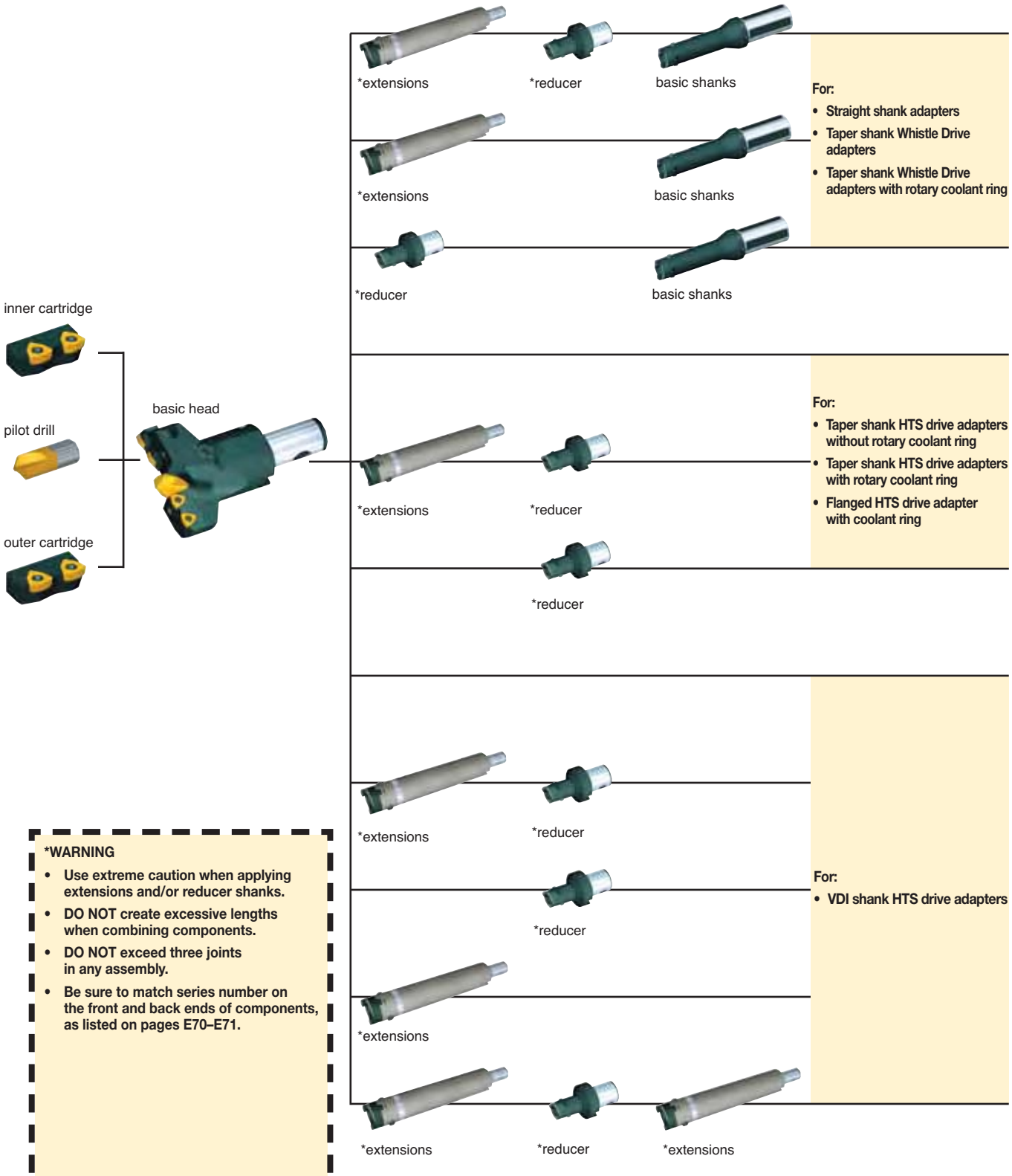
- New KC7815 and KC7820 grades offer multi-layer CVD and KC 7140 with advanced PVD coatings for improved performance in steel.
- 5 DFT geometries standard for cutting performance and superior chip control.
- Grades and geometries can be tailored in each pocket for improved performance.
- HSS pilot drills are available to optimize productivity.
  Carbide pilot drills available on request.

Customization

- Wear pads can be added for increased stability.
- Fully engineered custom solutions available.

HTS Deep-Hole Drilling System

Assembly Options



***WARNING**

- **Use extreme caution when applying extensions and/or reducer shanks.**
- **DO NOT create excessive lengths when combining components.**
- **DO NOT exceed three joints in any assembly.**
- **Be sure to match series number on the front and back ends of components, as listed on pages E70–E71.**

HTS Deep-Hole Drilling System Expanded!

With the introduction of our new HTS-DFR product, the drilling range of the HTS system has been extended down to a 1.575 (40 mm) diameter. The range of the system is now 1.575 - 10.63 (40 - 270 mm).

- Five new heads with DFR inserts cover the range of 1.575 (40 mm) - 2.165 (55 mm).
- Up to 30 percent higher feed rates are possible with DFR inserts compared to trigon inserts.
- DFR heads use outer cartridges that may be ground to produce the desired cutting diameter.
- Four standard grades on two insert geometries are available to optimize the productivity of your application.
- Better chip control is now possible with the DFR insert geometry.
- Basic shanks provide adequate chip space.
- Inch and metric basic shanks are standard.
- New extensions and reducers complete the system.
- Solid carbide and high-speed steel pilot drills are available to match the cutting conditions to your specific applications.

Pilot drill should be installed and set to the proper length before installing the inner cartridge.

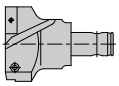
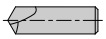
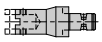
Install inner cartridge, then the outer insert.

Install inner insert into cartridge.

HTS Deep-Hole Indexable Drilling System

Assembly Guide

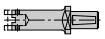
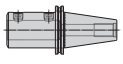
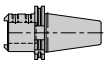
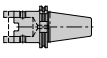
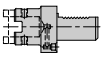
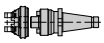
To assemble your complete HTS drilling system, choose the desired drill diameter range from the left-hand column. Next, follow the columns to the right and select the appropriate component from each column until you have built the HTS system that fits your application needs.

drilling range								
inch	mm	coupling size	basic head	inner cartridge	outer cartridge	pilot drill	reducers*	
HTS Adjustable Heads with DFR Inserts								
1.57-1.69	40-43	13A	HTSR040R025M	HTSR10CI	HTSR10CE	B513S08000	–	–
1.69-1.81	43-46		HTSR043R025M	HTSR11CI	HTSR11CE	B513S10000	–	–
1.81-1.93	46-49	13B	HTSR046R028M	HTSR12CI	HTSR12CE	B513S10000	–	–
1.93-2.05	49-52		HTSR049R028M	HTSR13CI	HTSR13CE	B513S10000	–	–
2.05-2.17	52-55		HTSR052R028M	HTSR14CI	HTSR14CE	B513S10000	–	–
HTS Adjustable Heads with DFT Inserts								
1.77-1.97	45-50	13B	3.76045R028V	3.77000R050V	3.77000R051V	B510S08000	–	–
1.97-2.17	50-55		3.76050R028V	3.77000R052V	3.77000R053V	B510S08000	–	–
2.17-2.28	55-58	16	3.76055R032V	3.77000R038V	3.77000R39V	B510S08000	5.34240R032100	5.34240R032100
2.28-2.48	58-63		3.76058R032V	3.77000R023V	3.77000R24V	B510S10000	5.34240R032100	5.34280R032080
2.48-2.68	63-68		3.76063R032V	3.77000R025V	3.77000R24V	B510S10000	5.34240R032100	5.34280R032080
2.68-2.87	68-73	22	3.76068R040V	3.77000R026V	3.77000R027V	B510S10000	5.34248R040100	5.34280R040080
2.87-3.07	73-78		3.76073R040V	3.77000R026V	3.77000R027V	B510S15000	5.34248R040100	5.34280R040080
3.07-3.31	78-84		3.76078R040V	3.77000R028V	3.77000R029V	B510S15000	5.34248R040100	5.34280R040080
3.31-3.54	84-90	27	3.76084R048V	3.77000R028V	3.77000R029V	B510S15000	5.34258R048100	5.34280R048080
3.54-3.78	90-96		3.76090R048V	3.77000R030V	3.77000R031V	B510S15000	5.34258R048100	5.34280R048080
3.78-4.02	96-102		3.76096R048V	3.77000R030V	3.77000R031V	B510S20000	5.34258R048100	5.34280R048080
4.02-4.25	102-108	32	3.76102R058V	3.77000R081V	3.77000R082V	B510S20000	5.34270R058100	5.34280R058080
4.25-4.53	108-115		3.76108R058V	3.77000R083V	3.77000R084V	B510S20000	5.34270R058100	5.34280R058080
4.53-4.80	115-122	40	3.76115R070V	3.77000R085V	3.77000R086V	B510S20000		5.34280R070150
4.80-5.12	122-130		3.76122R070V	3.77000R079V	3.77000R080V	B510S25000		5.34280R070150
5.12-5.51	130-140		3.76130R070V	3.77000R087V	3.77000R088V	B510S25000		5.34280R070150
5.51-5.91	140-150	50	3.76140R080V	3.77000R077V	3.77000R078V	B510S25000	N/A	N/A
5.91-6.22	150-158		3.76150R080V	3.77000R075V	3.77000R076V	B510S25000	N/A	N/A
6.22-6.38	158-162		3.76158R080V	3.77000R073V	3.77000R074V	B510S25000	N/A	N/A
6.38-6.70	162-170		3.76162R080V	3.77000R048V	3.77000R049V	B510S30000	N/A	N/A
7.08-7.32	180-186	60	3.76180R110	**3.77000R030V(3)	**3.77000R031V(1)	B510S30000	N/A	N/A
7.68-7.91	195-201		3.76195R110	**3.77000R081V(3)	**3.77000R082V(1)	B510S30000	N/A	N/A
8.39-8.66	213-220		3.76213R125	**3.77000R083V(3)	**3.77000R084V(1)	B510S30000	N/A	N/A
9.06-9.45	230-240	80	3.76230R160	**3.77000R079V(2)	**3.77000R080V(2)	B510S30000	N/A	N/A
10.24-10.63	260-270		3.76260R160	**3.77000R077V(2)	**3.77000R078V(2)	B510S30000	N/A	N/A

**Reducers are listed by front end coupling size. See page E93 for correct coupling size of back end.*
***Number of cartridges required indicated in parentheses.*

***NOTE:** Additional cartridges available for finishing. See basic head pages.*

To assemble your complete HTS drilling system, choose the desired drill diameter range from the left-hand column. Next, follow the columns to the right and select the appropriate component from each column until you have built the HTS system that fits your application needs.

										
	extensions		basic shank (inch)	basic shank (metric)	straight shank adapters	Whistle Drive adapters	HTS drive adapters	VDI HTS drive adapters	flanged HTS drive adapters
5.34125R025150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34125R025150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34128R028150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34128R028150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34128R028150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34128R028150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34128R028150			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34140R040200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34140R040200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34140R040200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34132R032200			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34158R058300			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34158R058300			page E95	page E96	Tooling Systems Catalog	Tooling Systems Catalog	pages E97–E98	page E99	
5.34170R070186	5.34170R070300	5.34170R070500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	
5.34170R070186	5.34170R070300	5.34170R070500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	
5.34170R070186	5.34170R070300	5.34170R070500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	
5.34180R080204	5.34180R080300	5.34180R080500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	page E100
5.34180R080204	5.34180R080300	5.34180R080500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	page E100
5.34180R080204	5.34180R080300	5.34180R080500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	page E100
5.34180R080204	5.34180R080300	5.34180R080500	page E95	N/A	N/A	N/A	pages E97–E98	page E99	page E100
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	quoted on request
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	quoted on request
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	quoted on request
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	quoted on request
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	quoted on request

**Reducers are listed by front end coupling size. See page E93 for correct coupling size of back end.*
***Number of cartridges required indicated in parentheses.*

***NOTE:** Additional cartridges available for finishing. See basic head pages.*

HTS DFR

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed	sfm / m/min	Feed rate by insert size	DFR 03...	DFR 04...
							98 164 262 328 394 492 656 820 984 1148	insert		
							30 50 80 100 120 150 200 250 300 350	dia.	1.57"- 1.81" 40,00mm - 46,00mm	1.81"- 2.17" 46,00mm - 55,00mm
P1	**Low-Carbon Steels, Long Chipping**							**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**	**Hardness (HB) or HRC: <125**
S	I	GD	KC7140	B514 KC7030	623	sfm	260 – 750	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		190	m/min	79 – 229	mm/r	0,10 - 0,14	0,12 - 0,18
U	I	GD	KC7140	B514 KC7030	427	sfm	231 – 561	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		130	m/min	71 – 171	mm/r	0,10 - 0,14	0,12 - 0,18
I	I	GD	KC7140	B514 KC7030	262	sfm	143 – 348	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		80	m/min	44 – 106	mm/r	0,10 - 0,14	0,12 - 0,18
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**							**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**	**Hardness (HB) or HRC: <220**
S	I	GD	KC7140	B514 KC7030	591	sfm	247 – 712	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		180	m/min	75 – 217	mm/r	0,10 - 0,14	0,12 - 0,18
U	I	GD	KC7140	B514 KC7030	394	sfm	231 – 561	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		120	m/min	71 – 171	mm/r	0,10 - 0,14	0,12 - 0,18
I	I	GD	KC7140	B514 KC7030	230	sfm	143 – 348	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		70	m/min	44 – 106	mm/r	0,10 - 0,14	0,12 - 0,18
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**							**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**	**Hardness (HB) or HRC: <330**
S	I	GD	KC7140	B514 KC7030	459	sfm	197 – 555	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		140	m/min	60 – 169	mm/r	0,10 - 0,14	0,12 - 0,18
U	I	GD	KC7140	B514 KC7030	328	sfm	163 – 396	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		100	m/min	50 – 121	mm/r	0,10 - 0,14	0,12 - 0,18
I	I	GD	KC7140	B514 KC7030	197	sfm	98 – 238	ipr	.004 - .006	.005 - .007
	O	MD	KC7820		60	m/min	30 – 72	mm/r	0,10 - 0,14	0,12 - 0,18

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

(continued on next page)

HTS DFR

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size		
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFR 03...	DFR 04...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.57"- 1.81" 40,00mm-46,00mm	1.81"- 2.17" 46,00mm-55,00mm
P4 Alloy Steels and Tool Steels							**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**		**Hardness (HB) or HRC: 350-450**
S	I	GD	KC7140	B514 KC7030	394	sfm	260 750	ipr	.004 - .006	.005 - .007
	O	GD	KC7020		120	m/min	79 229	mm/r	0,10 - 0,14	0,12 - 0,18
U	I	GD	KC7140	B514 KC7030	328	sfm	231 561	ipr	.004 - .006	.005 - .007
	O	GD	KC7020		100	m/min	71 171	mm/r	0,10 - 0,14	0,12 - 0,18
I	I	GD	KC7140	B514	262	sfm	143 348	ipr	.004 -.006	.005 - .007
	O	GD	KC7020	B514	80	m/min	44 106	mm/r	0,10 - 0,14	0,12 - 0,18
P5 Ferritic, Martensitic, and PH Stainless Steels							**Content: C=0-.4%**	**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**
S	I	MD	KC7140	B514 KC7030	328	sfm	205 622	ipr	.002 - .004	.003 - .006
	O	MD	KC7140		100	m/min	62 190	mm/r	0,06 - 0,11	0,07 - 0,14
U	I	MD	KC7140	B514 KC7030	197	sfm	154 373	ipr	.002 - .004	.003 - .006
	O	MD	KC7140		60	m/min	47 114	mm/r	0,06 - 0,11	0,07 - 0,14
I	I	MD	KC7140	B514 KC7030	131	sfm	103 250	ipr	.002 - .004	.003 - .006
	O	MD	KC7140		40	m/min	31 76	mm/r	0,06 - 0,11	0,07 - 0,14
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels							**Content: C=.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**		**Hardness (HB) or HRC: 350-450**
S	I	MD	KC7140	B514 KC7030	312	sfm	195 591	ipr	.003 - .004	.003 - .005
	O	MD	KC7140		95	m/min	59 180	mm/r	0,07 - 0,11	0,08 - 0,13
U	I	MD	KC7140	B514 KC7030	187	sfm	146 355	ipr	.003 - .004	.003 - .005
	O	MD	KC7140		57	m/min	45 108	mm/r	0,07 - 0,11	0,08 - 0,13
I	I	MD	KC7140	B514 KC7030	125	sfm	98 238	ipr	.003 - .004	.003 - .005
	O	MD	KC7140		38	m/min	30 72	mm/r	0,07 - 0,11	0,08 - 0,13

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

(continued on next page)

HTS DFR

(continued from previous page)

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size		
						sfm / m/min		insert / dia.	DFR 03...	DFR 04...
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFR 03...	DFR 04...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.57"- 1.81" 40,00mm-46,00mm	1.81"- 2.17" 46,00mm-55,00mm
M1 Austenitic Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: 130-200**
S	I	MD	KC7140	B513 AS3	361	sfm	130 – 439	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		110	m/min	40 – 134	mm/r	0,07 - 0,11	0,12 - 0,18
U	I	MD	KC7140	B513 AS3	230	sfm	101 – 281	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		70	m/min	31 – 86	mm/r	0,07 - 0,11	0,12 - 0,18
I	I	MD	KC7140	B513 AS3	164	sfm	72 – 199	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		50	m/min	22 – 61	mm/r	0,07 - 0,11	0,12 - 0,18
M2 High-Strength Austenitic Stainless and Cast Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: 500-700**		**Hardness (HB) or HRC: 150-230**
S	I	MD	KC7140	B513 AS3	325	sfm	124 – 417	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		99	m/min	38 – 127	mm/r	0,07 - 0,11	0,12 - 0,18
U	I	MD	KC7140	B513 AS3	207	sfm	101 – 281	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		63	m/min	31 – 86	mm/r	0,07 - 0,11	0,12 - 0,18
I	I	MD	KC7140	B513 AS3	148	sfm	72 – 199	ipr	.003 - .004	.005 - .007
	O	MD	KC7140		45	m/min	22 – 61	mm/r	0,07 - 0,11	0,12 - 0,18
M3 Duplex Steels						**Content: C=.05-.2%**		**Tensile Strength RM (MPa)*: <900**		**Hardness (HB) or HRC: 135-275**
S	I	MD	KC7140	B513 AS3	289	sfm	104 – 351	ipr	.003 - .004	.005 - .007
	O	MD	KC7140	B513 AS3	88	m/min	32 – 107	mm/r	0,07 - 0,11	0,12 - 0,18
U	I	MD	KC7140	B513 AS3	184	sfm	101 – 281	ipr	.003 - .004	.005 - .007
	O	MD	KC7140	B513 AS3	56	m/min	31 – 86	mm/r	0,07 - 0,11	0,12 - 0,18
I	I	MD	KC7140	B513 AS3	131	sfm	72 – 199	ipr	.003 - .004	.005 - .007
	O	MD	KC7140	B513 AS3	40	m/min	22 – 61	mm/r	0,07 - 0,11	0,12 - 0,18

* 1 MPa = 145 psi

S = Stable cutting conditions

U = Unstable cutting conditions

I = Interrupted cutting conditions

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HTS DFR

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size		
								insert	DFR 03...	DFR 04...
						sfm	98 164 262 328 394 492 656 820 984 1148			
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.57"- 1.81" 40,00mm-46,00mm	1.81"- 2.17" 46,00mm-55,00mm
K1	**Gray Cast Irons and Low-Strength Ductile Irons**							**Tensile Strength RM (MPa)*: 150-400**		**Hardness (HB) or HRC: 120-290**
S	I	GD	KC7020	B514 KC7030	561	sfm	260 750	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		171	m/min	79 229	mm/r	0,11 - 0,20	0,13 - 0,27
U	I	GD	KC7020	B514 KC7030	384	sfm	211 510	ipr	.004 - .004	.005 - .011
	O	GD	KC7815		117	m/min	64 156	mm/r	0,11 - 0,20	0,13 - 0,27
I	I	GD	KC7020	B514 KC7030	236	sfm	131 316	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		72	m/min	40 96	mm/r	0,11 - 0,20	0,13 - 0,27
K2	**Low- and Medium-Strength CGI and Ductile Irons**							**Tensile Strength RM (MPa)*: 400-600**		**Hardness (HB) or HRC: 130-260**
S	I	GD	KC7020	B514 KC7030	533	sfm	247 712	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		162	m/min	75 217	mm/r	0,11 - 0,20	0,13 - 0,27
U	I	GD	KC7020	B514 KC7030	365	sfm	211 510	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		111	m/min	64 156	mm/r	0,11 - 0,20	0,13 - 0,27
I	I	GD	KC7020	B514 KC7030	224	sfm	131 316	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		68	m/min	40 96	mm/r	0,11 - 0,20	0,13 - 0,27
K3	**High-Strength Ductile and Austempered Ductile Irons**							**Tensile Strength RM (MPa)*: 600-900**		**Hardness (HB) or HRC: 180-350**
S	I	GD	KC7020	B514 KC7030	480	sfm	222 641	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		146	m/min	68 195	mm/r	0,11 - 0,20	0,13 - 0,27
U	I	GD	KC7020	B514 KC7030	328	sfm	195 473	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		100	m/min	59 144	mm/r	0,11 - 0,20	0,13 - 0,27
I	I	GD	KC7020	B514 KC7030	202	sfm	113 274	ipr	.004 - .008	.005 - .011
	O	GD	KC7815		62	m/min	35 84	mm/r	0,11 - 0,20	0,13 - 0,27

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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Feed and Speed Chart

HTS DFR

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size		
						sfm / m/min		insert / dia.	DFR 03...	DFR 04...
						sfm	98 164 262 328 394 492 656 820 984 1148	insert		
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.57"- 1.81" 40,00mm-46,00mm	1.81"- 2.17" 46,00mm-55,00mm
N1	**Wrought Aluminum Alloys**							**Tensile Strength RM (MPa)*: <520**		**Hardness (HB) or HRC: 60-90**
S	I	LD	KC7025	B514 G13	787	sfm	420 – 1176	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		240	m/min	128 – 358	mm/r	0,06 - 0,09	0,11 - 0,19
U	I	LD	KC7025	B514 G13	525	sfm	336 – 784	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		160	m/min	102 – 239	mm/r	0,06 - 0,09	0,11 - 0,19
I	I	LD	KC7025	B514 G13	341	sfm	218 – 510	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		104	m/min	67 – 155	mm/r	0,06 - 0,09	0,11 - 0,19
N2	**Cast Aluminums**					**Content: Si<12.2%**		**Tensile Strength RM (MPa)*: <350**		**Hardness (HB) or HRC: 70-100**
S	I	LD	KC7025	B514 G13	732	sfm	391 – 1094	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		223	m/min	119 – 333	mm/r	0,06 - 0,09	0,11 - 0,19
U	I	LD	KC7025	B514 G13	488	sfm	336 – 784	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		149	m/min	102 – 239	mm/r	0,06 - 0,09	0,11 - 0,19
I	I	LD	KC7025	B514 G13	317	sfm	218 – 510	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		97	m/min	67 – 155	mm/r	0,06 - 0,09	0,11 - 0,19
N3	**Cast Aluminums**					**Content: Si>12.2%**		**Tensile Strength RM (MPa)*: 200-320**		**Hardness (HB) or HRC: 60-120**
S	I	LD	KC7025	B514 G13	677	sfm	361 – 1011	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		206	m/min	110 – 308	mm/r	0,06 - 0,09	0,11 - 0,19
U	I	LD	KC7025	B514 G13	451	sfm	336 – 784	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		138	m/min	102 – 239	mm/r	0,06 - 0,09	0,11 - 0,19
I	I	LD	KC7025	B514 G13	293	sfm	218 – 510	ipr	.002 - .004	.004 - .007
	O	LD	KC7025		89	m/min	67 – 155	mm/r	0,06 - 0,09	0,11 - 0,19

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFR

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed	98	164	262	328	394	492	656	820	984	1148	Feed rate by insert size	DFR 03...		DFR 04...	
						sfm											insert				
						m/min	30	50	80	100	120	150	200	250	300	350	dia.	1.57"- 1.81"	40,00mm-46,00mm	1.81"- 2.17"	46,00mm-55,00mm
N4 MMCs (Aluminum-Based Metal Matrix Composites)																	**Tensile Strength RM (MPa)*: <700**			**Hardness (HB) or HRC: 210**	
S	I	LD	KC7025	B514 G13	732	sfm						391				1094	ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		223	m/min						119				333	mm/r	0,06 - 0,09		0,11 - 0,19	
U	I	LD	KC7025	B514 G13	488	sfm					336				784		ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		149	m/min					102				239		mm/r	0,06 - 0,09		0,11 - 0,19	
I	I	LD	KC7025	B514 G13	317	sfm				218				510			ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		97	m/min				67				155			mm/r	0,06 - 0,09		0,11 - 0,19	
N5 Copper and Copper Alloys																	**Tensile Strength RM (MPa)*: 200-650**			**Hardness (HB) or HRC: 60-200**	
S	I	LD	KC7025	B514 G13	722	sfm					302				858		ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		220	m/min					92				262		mm/r	0,06 - 0,09		0,11 - 0,19	
U	I	LD	KC7025	B514 G13	459	sfm				235				549			ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		140	m/min				72				167			mm/r	0,06 - 0,09		0,11 - 0,19	
I	I	LD	KC7025	B514 G13	295	sfm			151			351					ipr	.002 - .004		.004 - .007	
	O	LD	KC7025		90	m/min			46			107					mm/r	0,06 - 0,09		0,11 - 0,19	

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

Feed and Speed Chart

HTS DFT

Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size				
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFT 03...	DFT 05...	DFT 06...	DFT 07...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.77"- 2.17" 45,00mm- 55,00mm	2.17"- 3.07" 55,00mm- 78,00mm	3.07"- 5.51" 78,00mm- 140,00mm	5.51"- 10.63" 140,00mm- 270,00mm
P1	**Low-Carbon Steels, Long Chipping**						**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**
S	I	MD	KC7935	B510 AS3	623	sfm	309 750	ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .007
	O	GD	KC7215		190	m/min	94 229	mm/r	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19
U	I	MD	KC7140	B510 AS3	427	sfm	231 561	ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .007
	O	GD	KC7815		130	m/min	71 171	mm/r	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19
I	I	MD	KC720	B510 AS3	262	sfm	143 348	ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .007
	O	GD	KC720		80	m/min	44 106	mm/r	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19
P2	**Low-Carbon Steels, Free Machining, and Short Chipping**						**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**
S	I	MD	KC7935	B510 AS3	591	sfm	309 750	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC7215		180	m/min	94 229	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 1,18	0,12 - 0,20
U	I	MD	KC7140	B510 AS3	394	sfm	231 561	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC7815		120	m/min	71 171	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
I	I	MD	KC720	B510 AS3	230	sfm	143 348	ipr	.004 - .006	.005 - .007	.044 - .046	.044 - .081
	O	GD	KC720		70	m/min	44 106	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
P3	**Medium to High Plain-Carbon Steels and Alloy Steels**						**Content: C >.25%**		**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**
S	I	MD	KC7935	B510 AS3	459	sfm	229 555	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC7215		140	m/min	70 169	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
U	I	MD	KC7140	B510 AS3	328	sfm	163 396	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC7815		100	m/min	50 121	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
I	I	MD	KC720	B510 AS3	197	sfm	98 238	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC720		60	m/min	30 72	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20

* 1 MPa = 145 psi

S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size				
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFT 03...	DFT 05...	DFT 06...	DFT 07...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.77"- 2.17" 45,00mm- 55,00mm	2.17"- 3.07" 55,00mm- 78,00mm	3.07"- 5.51" 78,00mm- 140,00mm	5.51"- 10.63" 140,00mm- 270,00mm
P4 Alloy Steels and Tool Steels							**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**	
S	I	GD	KC7215	B510 AS3	394	sfm	309 750	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC7815		120	m/min	94 229	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
U	I	GD	KC720	B510 AS3	328	sfm	231 561	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC720		100	m/min	71 171	mm/r	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
I	I	GD	KC720	B510 AS3	262	sfm	143 348	ipr	.004 - .006	.005 - .007	.005 - .007	.005 - .008
	O	GD	KC720		80	m/min	44 106	mm/r	0,10 - 0,14	0,12 - 0,18	.005 - .008	0,12 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels							**Content: C=0-.4%**	**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330w**	
S	I	LD	KC720	B510 AS3	328	sfm	257 622	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		100	m/min	78 190	mm/r	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12
U	I	LD	KC720	B510 AS3	197	sfm	154 373	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		60	m/min	47 114	mm/r	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12
I	I	LD	KC720	B510 AS3	131	sfm	103 250	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		40	m/min	31 76	mm/r	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels							**Content: C=.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**	
S	I	LD	KC720	B510 AS3	312	sfm	244 591	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		95	m/min	74 180	mm/r	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12
U	I	LD	KC720	B510 AS3	187	sfm	146 355	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		57	m/min	45 108	mm/r	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12
I	I	LD	KC720	B510 AS3	125	sfm	98 238	ipr	.002 - .003	.002 - .003	.002 - .004	.003 - .005
	O	GD	KC720		38	m/min	30 72	mm/r	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size				
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFT 03...	DFT 05...	DFT 06...	DFT 07...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.77"- 2.17" 45,00mm- 55,00mm	2.17"- 3.07" 55,00mm- 78,00mm	3.07"- 5.51" 78,00mm- 140,00mm	5.51"- 10.63" 140,00mm- 270,00mm
M1 Austenitic Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: 130-200**	
S	I	LD	KC720	B510 AS3	361	sfm	159 439	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	MD	KC7935		110	m/min	48 134	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
U	I	LD	KC720	B510 AS3	230	sfm	101 281	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC7215		70	m/min	31 86	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
I	I	MD	KC720	B510 AS3	164	sfm	72 199	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC720		50	m/min	22 61	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
M2 High-Strength Austenitic Stainless and Cast Stainless Steels						**Content: C=.05-.15%**		**Tensile Strength RM (MPa)*: 500-700**			**Hardness (HB) or HRC: 150-230**	
S	I	LD	KC720	B510 AS3	325	sfm	159 439	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	MD	KC7935		99	m/min	48 134	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
U	I	LD	KC720	B510 AS3	207	sfm	101 281	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC7215		63	m/min	31 86	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
I	I	MD	KC720	B510 AS3	148	sfm	72 199	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC720		45	m/min	22 61	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
M3 Duplex Steels						**Content: C=.05-.2%**		**Tensile Strength RM (MPa)*: <900**			**Hardness (HB) or HRC: 135-275**	
S	I	LD	KC720	B510 AS3	289	sfm	159 439	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	MD	KC7935		88	m/min	48 134	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
U	I	LD	KC720	B510 AS3	184	sfm	101 281	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC7215		56	m/min	31 86	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
I	I	MD	KC720	B510 AS3	131	sfm	72 199	ipr	.003 - .004	.005 - .007	.006 - .008	.006 - .009
	O	GD	KC720		40	m/min	22 61	mm/r	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed	sfm / m/min	insert / dia.	DFT 03...	DFT 05...	DFT 06...	DFT 07...
									Feed rate by insert size			
							98 164 262 328 394 492 656 820 984 1148					
							30 50 80 100 120 150 200 250 300 350		1.77"-2.17" 45,00mm-55,00mm	2.17"-3.07" 55,00mm-78,00mm	3.07"-5.51" 78,00mm-140,00mm	5.51"-10.63" 140,00mm-270,00mm
K1	**Gray Cast Irons and Low-Strength Ductile Irons**								**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**
S	I	LD	KC7225	B510 AS3	561	sfm	309 750	ipr	.004 - .008	.005 - .011	.006- .012	.007 - .013
	O	GD	KC7815		171	m/min	94 229	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
U	I	LD	KC7225	B510 AS3	384	sfm	211 510	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.13
	O	GD	KC7815		117	m/min	64 156	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
I	I	LD	KC7225	B510 AS3	236	sfm	131 316	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		72	m/min	40 96	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
K2	**Low- and Medium-Strength CGI and Ductile Irons**								**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**
S	I	GD	KC720	B510 AS3	533	sfm	309 750	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		162	m/min	94 229	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
U	I	GD	KC720	B510 AS3	365	sfm	211 510	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		111	m/min	64 156	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
I	I	GD	KC720	B510 AS3	224	sfm	131 316	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		68	m/min	40 96	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
K3	**High-Strength Ductile and Austempered Ductile Irons**								**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**
S	I	GD	KC720	B510 AS3	480	sfm	294 712	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		146	m/min	90 217	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31
U	I	GD	KC720	B510 AS3	328	sfm	195 473	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		100	m/min	59 144	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31
I	I	GD	KC720	B510 AS3	202	sfm	113 274	ipr	.004 - .008	.005 - .011	.006- .012	.007 - 0.013
	O	GD	KC7815		62	m/min	35 84	mm/r	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size				
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFT 03...	DFT 05...	DFT 06...	DFT 07...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.77"- 2.17" 45,00mm- 55,00mm	2.17"- 3.07" 55,00mm- 78,00mm	3.07"- 5.51" 78,00mm- 140,00mm	5.51"- 10.63" 140,00mm- 270,00mm
N1	**Wrought Aluminum Alloys**							**Tensile Strength RM (MPa)*: <520**				**Hardness (HB) or HRC: 60-90**
S	I	HP	KC720	B510 AS3	787	sfm	504 1176	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7935		240	m/min	154 358	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
U	I	HP	KC720	B510 AS3	525	sfm	336 784	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7935		160	m/min	102 239	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
I	I	HP	KC720	B510 AS3	341	sfm	218 510	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7935		104	m/min	67 155	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
N2	**Cast Aluminums**					**Content: Si<12.2%**		**Tensile Strength RM (MPa)*: <350**				**Hardness (HB) or HRC: 70-100**
S	I	HP	KC7215	B510 AS3	732	sfm	504 1176	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		223	m/min	154 358	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
U	I	HP	KC7215	B510 AS3	488	sfm	336 784	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		149	m/min	102 239	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
I	I	HP	KC7215	B510 AS3	317	sfm	218 510	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		97	m/min	67 155	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
N3	**Cast Aluminums**					**Content: Si>12.2%**		**Tensile Strength RM (MPa)*: 200-320**				**Hardness (HB) or HRC: 60-120**
S	I	HP	KC7215	B510 AS3	677	sfm	504 1176	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		206	m/min	154 358	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
U	I	HP	KC7215	B510 AS3	451	sfm	336 784	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		138	m/min	102 239	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
I	I	HP	KC7215	B510 AS3	293	sfm	218 510	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	HP	KC7215		89	m/min	67 155	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed		Feed rate by insert size				
						sfm	98 164 262 328 394 492 656 820 984 1148	insert	DFT 03...	DFT 05...	DFT 06...	DFT 07...
						m/min	30 50 80 100 120 150 200 250 300 350	dia.	1.77"- 2.17" 45,00mm- 55,00mm	2.17"- 3.07" 55,00mm- 78,00mm	3.07"- 5.51" 78,00mm- 140,00mm	5.51"- 10.63" 140,00mm- 270,00mm
N4 MMCs (Aluminum-Based Metal Matrix Composites)								**Tensile Strength RM (MPa)*: <700**			**Hardness (HB) or HRC: 210**	
S	I	LD	KC7225	B510 AS3	732	sfm	504 1176	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	LD	KC7225		223	m/min	154 358	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
U	I	LD	KC7225	B510 AS3	488	sfm	336 784	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	LD	KC7225		149	m/min	102 239	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
I	I	LD	KC7225	B510 AS3	317	sfm	218 510	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	LD	KC7225		97	m/min	67 155	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
N5 Copper and Copper Alloys								**Tensile Strength RM (MPa)*: 200-650**			**Hardness (HB) or HRC: 60-200**	
S	I	GD	KC7215	B510 AS3	722	sfm	368 858	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	GD	KC7215		220	m/min	112 262	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
U	I	GD	KC7215	B510 AS3	459	sfm	235 549	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	GD	KC7215		140	m/min	72 167	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
I	I	GD	KC7215	B510 AS3	295	sfm	151 351	ipr	.002 - .004	.004 - .007	.005 - .008	.006 - .010
	O	GD	KC7215		90	m/min	46 107	mm/r	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

* 1 MPa = 145 psi
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

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HTS DFT

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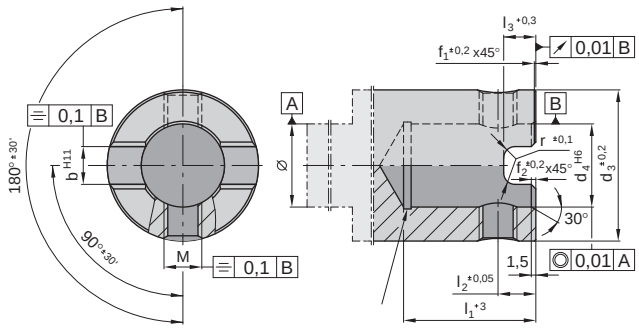
Condition	Pocket Seat I = Inboard O = Outboard	Geometry	Grade	Pilot Drill	Starting Pt	Cutting Speed																			Feed rate by insert size								
						sfm	98	164	262	328	394	492	656	820	984	1148	insert	DFT 03...		DFT 05...		DFT 06...		DFT 07...	
						m/min	30	50	80	100	120	150	200	250	300	350	dia.	1.77"- 2.17"	45,00mm- 55,00mm	2.17"- 3.07"	55,00mm- 78,00mm	3.07"- 5.51"	78,00mm- 140,00mm	5.51"- 10.63"	140,00mm- 270,00mm
S1 Iron-Based, Heat-Resistant Alloys																	**Tensile Strength RM (MPa)*: 500-1200**														**Hardness (HB) or HRC: 160-260**			
S	I	GD	KC720	B510 AS3	131	sfm	80									160	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .004	
	O	GD	KC720																						
					40	m/min	24									49	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,07 - 0,10	
U	I	GD	KC720	B510 AS3	98	sfm	60									120	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .0040	
	O	GD	KC720																						
					30	m/min	18									37	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,07 - 0,10	
I	I	GD	KC720	B510 AS3	82	sfm	50									100	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .004	
	O	GD	KC720																						
					25	m/min	15									30	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,07 - 0,10	
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys																	**Tensile Strength RM (MPa)*: 1000-1450**														**Hardness (HB) or HRC: 250-450**			
S	I	GD	KC720	B510 AS3	115	sfm	82									158	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .004	
	O	GD	KC720																						
					35	m/min	25									48	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,07 - 0,10	
U	I	GD	KC720	B510 AS3	82	sfm	58									112	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .004	
	O	GD	KC720																						
					25	m/min	18									34	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,70 - 0,10	
I	I	GD	KC720	B510 AS3	66	sfm	46									90	ipr	.002 - .003		.002 - .003		.003 - .004		.003 - .004	
	O	GD	KC720																						
					20	m/min	14									27	mm/r	0,04 - 0,07		0,05 - 0,08		0,07 - 0,10		0,07 - 0,10	

* 1 MPa = 145 psi

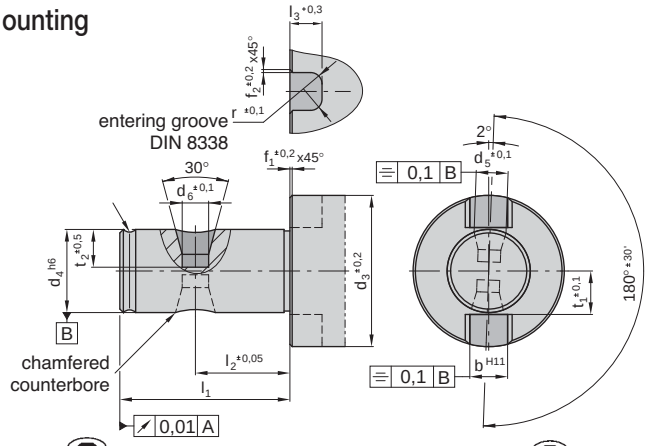
S = Stable cutting conditions
U = Unstable cutting conditions
I = Interrupted cutting conditions

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Adapter



Mounting



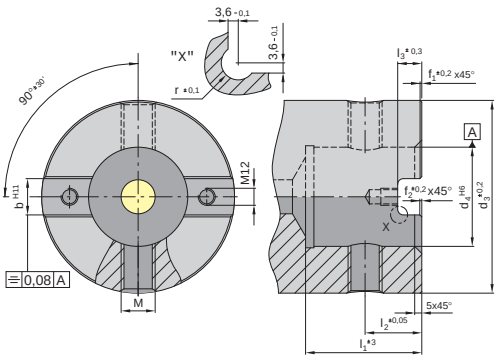
Dimensions for Adapter

d_3	d_4	l_1	l_2	l_3	M	b	r	f_1	f_2	drive ring	clamping screw	thread	MAn* [Nm]	sliding block	clamping screw M 12 x 25 for sliding block
25	13	28	12,4	7,0	M 8 x 1,0	8,0	3	0,5	0,5	193.371	193.372	M 8 x 1,0	10	-	-
28	13	28	12,4	7,0	M 8 x 1,0	8,0	3	0,5	0,5	192.419	193.372	M 8 x 1,0	10	-	-
32	16	32	14,4	7,5	M 8 x 1,0	8,0	3	0,5	0,5	192.420	192.156	M 8 x 1,0	10	-	-
40	22	35	13,4	8,5	M 10 x 1,0	10,0	3	0,5	0,5	192.421	192.157	M 10 x 1,0	16	-	-
48	27	40	15,4	9,0	M 12 x 1,0	12,0	3	1,0	1,0	192.422	191.727	M 10 x 1,0	16	-	-
58	32	38	15,4	10,0	M 12 x 1,0	14,0	3	1,0	1,0	192.423	191.727	M 12 x 1,0	20	-	-
70	40	43	16,4	10,0	M 16 x 1,5	16,0	3	1,0	1,0	192.424	191.728	M 16 x 1,5	34	-	-
80	50	46	20,4	12,5	M 16 x 1,5	18,0	4	1,0	1,0	192.425	191.728	M 16 x 1,5	34	-	-
90	50	46	20,4	12,5	M 16 x 1,5	18,0	4	1,0	1,0	192.426	191.729	M 16 x 1,5	34	-	-
110	60	46	20,4	12,5	M 16 x 1,5	20,0	4	1,0	1,0	192.427	191.729	M 16 x 1,5	34	-	-
1251)	60	77	40,0	12,5	M 24 x 2,0	25,5	4	1,0	1,0	-	193.107	M 24 x 2,0	120	191.019	125.225
1401)	70	82	40,0	12,5	M 24 x 2,0	25,5	4	1,0	1,0	-	193.107	M 24 x 2,0	120	191.019	125.225
1601)	80	82	40,0	12,5	M 24 x 2,0	25,5	4	1,0	1,0	-	193.107	M 24 x 2,0	120	191.019	125.225

Dimensions for Mounting

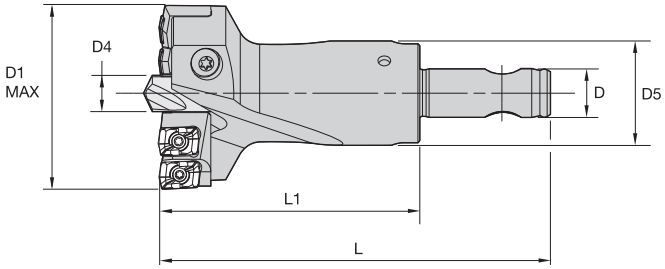
d_3	d_4	d_5	d_6	l_1	l_2	l_3	t_1	t_2	b	r	f_1	f_2
25	13	8,50	6,5	35	22,0	7,00	6,7	6,50	8,0	3	0,5	0,5
28	13	8,50	6,5	35	22,0	7,00	7,0	6,50	8,0	3	0,5	0,5
32	16	8,30	6,5	40	24,0	7,50	8,5	7,50	8,0	3	0,5	0,5
40	22	10,50	7,0	45	25,0	8,50	11,5	10,00	10,0	3	0,5	0,5
48	27	12,75	9,0	50	27,0	9,00	14,0	12,00	12,0	3	1,0	1,0
58	32	11,50	9,0	50	29,0	10,00	16,5	7,25	14,0	3	1,0	1,0
70	40	15,25	12,2	55	30,0	10,50	20,5	10,00	16,0	3	1,0	1,0
80	50	15,25	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
90	50	16,50	12,2	60	36,0	12,50	25,5	12,50	18,0	4	1,0	1,0
110	60	14,50	12,2	60	36,0	13,65	30,5	10,00	20,0	4	1,0	1,0
1251)	60	25,00	18,0	75	39,5	17,00	35,0	20,25	25,5	6	1,0	1,0
1401)	70	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0
1601)	80	25,00	18,0	80	39,5	17,00	42,0	20,25	25,5	6	1,0	1,0

1) Adapter for d3 = 125, 140, and 160



* MAn = Clamping torque of clamping screw in Nm.

HTS DFR



- Head shipped with clamping and adjusting screws.
- Order pilot drill separately, see page E87.
- Order cartridges separately, see below.

HTS DFR Adjustable Heads

D1 mm	D1 mm max	D1 in	D1 in max	order number	catalog number	coupling size D	D4 mm	D4 in	D5 mm	D5 in	L mm	L in	L1 mm	L1 in	clamping screw	adjusting screw	cartridge 1	cartridge 2
40	43	1.57	1.69	1854340	HTSR040R025M	13A	8	.315	25,0	.984	95	3.74	60	2.36	190.116	128.610	HTSR10CE	HTSR10CI
43	46	1.69	1.81	1942326	HTSR043R025M	13A	10	.394	25,0	.984	105	4.13	70	2.76	193.397	190.458	HTSR11CE	HTSR11CI
46	49	1.81	1.93	1854342	HTSR046R028M	13B	10	.394	28,0	1.102	105	4.13	70	2.76	193.397	190.458	HTSR12CE	HTSR12CI
49	52	1.93	2.05	1942327	HTSR049R028M	13B	10	.394	28,0	1.102	105	4.13	70	2.76	193.397	190.458	HTSR13CE	HTSR13CI
52	55	2.05	2.17	1942328	HTSR052R028M	13B	10	.394	28,0	1.102	105	4.13	70	2.76	193.397	190.458	HTSR14CE	HTSR14CI

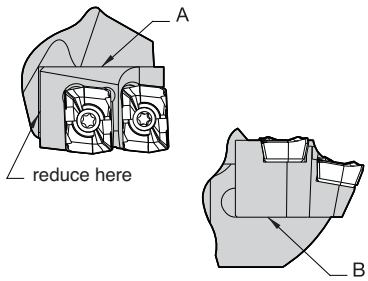
* MAn = Clamping torque of clamping screw in Nm.

1) Adapter for d3 = 125, 140, and 160

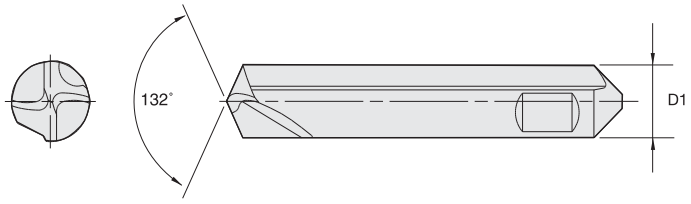
HTS DFR Cartridges

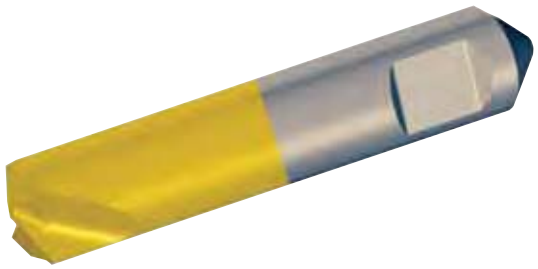
order number	catalog number	gage insert	number of inserts	Nm	ft.lbs	insert screw	cartridge screw	washer
1940786	HTSR10CE	DFR030204	2	5	4	192.416	192.592	192.902
1940731	HTSR10CI	DFR030204	2	5	4	192.416	192.592	192.902
1940787	HTSR11CE	DFR030204	2	5	4	192.416	192.592	192.902
1940732	HTSR11CI	DFR030204	2	5	4	192.416	192.592	192.902
1940788	HTSR12CE	DFR040304	2	5	4	192.416	192.592	192.902
1940783	HTSR12CI	DFR040304	2	5	4	192.416	192.592	192.902
1940789	HTSR13CE	DFR040304	2	5	4	192.416	192.592	192.902
1940784	HTSR13CI	DFR040304	2	5	4	192.416	192.592	192.902
1940790	HTSR14CE	DFR040304	2	5	4	192.416	192.592	192.902
1940785	HTSR14CI	DFR040304	2	5	4	192.416	192.592	192.902

Change drill diameter by shortening the outer cartridge.
Shorten at 90° to the contact face A and the support face B.
Shortening reduces the effective drill diameter by two times the amount removed.



Ordering Example:
By catalog number HTSR10CE, or by order number 1940786.



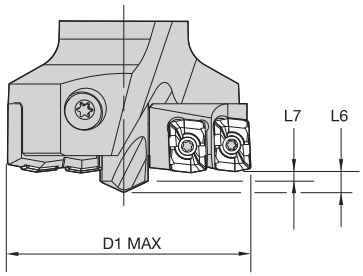


High Speed Steel Pilot Drills

		A30	AS3	D1	
order number	catalog number			mm	in
1940738	B513S08000	●	●	8	.315
1940740	B513S10000	●	●	10	.394

Carbide Pilot Drills

		G13	KC7030	D1	
order number	catalog number			mm	in
1854378	B514S08000	●	●	8,000	.315
1926505	B514S10000	●	●	10,000	.394



High Speed Steel Pilot Drills

catalog number	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7
B513S08000	.163	.068	4,14	1,73	.163	.068	4,14	1,73	.163	.068	4,14	1,73
B513S10000	.192	.074	4,88	1,88	.192	.074	4,88	1,88	.192	.074	4,88	1,88

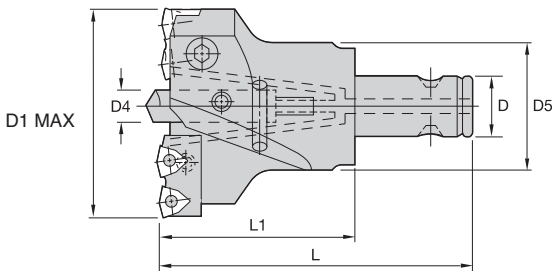
Carbide Pilot Drills

	2 to 4 x D1				4 to 6 x D1				> 6 x D1			
	inch		mm		inch		mm		inch		mm	
catalog number	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7
B514S08000	.142	.068	3,61	1,73	.142	.068	3,61	1,73	.142	.068	3,61	1,73
B514S10000	.165	.074	4,19	1,88	.165	.074	4,19	1,88	.165	.074	4,19	1,88

Ordering Example:

Order by catalog number and grade B514S0800 G13, or by order number 1926504.

HTS DFT



- Head shipped with clamping and adjusting screws.
- Order pilot drill separately, see page E92.
- Order cartridges separately, see pages E90–E91.

HTS DFT Adjustable Heads

D1						coupling size	D4		D5		L		L1	
mm	mm max	in	in max	order number	catalog number	D	mm	in	mm	in	mm	in	mm	in
45,000	50,000	1.77	1.97	1245749	3.76045R028V	13B	8	.315	28,0	1.102	85	3.3	50	1.97
50,000	55,000	1.97	2.17	1245750	3.76050R028V	13B	8	.315	28,0	1.102	85	3.3	50	1.97
55,000	58,000	2.17	2.28	1191130	3.76055R032V	16	8	.315	32,5	1.280	100	3.9	60	2.36
58,000	63,000	2.28	2.48	1245751	3.76058R032V	16	10	.394	32,5	1.280	100	3.9	60	2.36
63,000	68,000	2.48	2.68	1191131	3.76063R032V	16	10	.394	32,5	1.280	100	3.9	60	2.36
63,000	68,000	2.48	2.68	1245746	3.76063R040V	22	10	.394	40,5	1.594	115	4.5	70	2.76
68,000	73,000	2.68	2.87	1232519	3.76068R040V	22	10	.394	40,5	1.594	115	4.5	70	2.76
73,000	78,000	2.87	3.07	1191132	3.76073R040V	22	15	.591	40,5	1.594	115	4.5	70	2.76
78,000	84,000	3.07	3.31	1245752	3.76078R040V	22	15	.591	40,5	1.594	115	4.5	70	2.76
78,000	84,000	3.07	3.31	1245747	3.76078R048V	27	15	.591	48,5	1.909	120	4.7	70	2.76
84,000	90,000	3.31	3.54	1191133	3.76084R048V	27	15	.591	48,5	1.909	120	4.7	70	2.76
90,000	96,000	3.54	3.78	1245753	3.76090R048V	27	15	.591	48,5	1.909	120	4.7	70	2.76
96,000	102,000	3.78	4.02	1245754	3.76096R048V	27	20	.787	48,5	1.909	120	4.7	70	2.76
96,000	102,000	3.78	4.02	1245748	3.76096R058V	32	20	.787	58,5	2.303	130	5.1	80	3.15
102,000	108,000	4.02	4.25	1191134	3.76102R058V	32	20	.787	58,5	2.303	130	5.1	80	3.15
108,000	115,000	4.25	4.53	1245755	3.76108R058V	32	20	.787	58,5	2.303	130	5.1	80	3.15
115,000	122,000	4.53	4.80	1245756	3.76115R070V	40	20	.787	71,0	2.795	145	5.7	90	3.54
122,000	130,000	4.80	5.12	1245757	3.76122R070V	40	25	.984	71,0	2.795	145	5.7	90	3.54
130,000	140,000	5.12	5.51	1245758	3.76130R070V	40	25	.984	71,0	2.795	145	5.7	90	3.54
140,000	150,000	5.51	5.91	1245759	3.76140R080V	50	25	.984	81,0	3.189	160	6.3	100	3.94
150,000	158,000	5.91	6.22	1245760	3.76150R080V	50	25	.984	81,0	3.189	160	6.3	100	3.94
158,000	162,000	6.22	6.38	1245761	3.76158R080V	50	25	.984	81,0	3.189	160	6.3	100	3.94
162,000	170,000	6.38	6.69	1245762	3.76162R080V	50	30	1.181	80,0	3.150	160	6.3	100	3.94
180,000	186,000	7.09	7.32	1582734	3.76180R110	60	30	1.181	110,0	4.331	185	7.3	125	4.92
195,000	201,000	7.68	7.91	1582739	3.76195R110	60	30	1.181	110,0	4.331	185	7.3	125	4.92
213,000	220,000	8.39	8.66	1582742	3.76213R125	60	30	1.181	125,0	4.921	200	7.9	125	4.92
230,000	240,000	9.06	9.45	1582745	3.76230R160	80	30	1.181	160,0	6.299	230	9.1	150	5.91
260,000	270,000	10.24	10.63	1582750	3.76260R160	80	30	1.181	160,0	6.299	230	9.1	150	5.91

HTS DFT Adjustable Heads

cartridge 1	cartridge 2	cartridge 3	cartridge 4	alt cartridge 1	alt cartridge 2	clamping screw	pilot drill clamping wedge	adjusting screw	adjusting screw
3.77000R051V	3.77000R050V	–	–	3.77000R251V	3.77000R250V	SS03M012		571.060	
3.77000R053V	3.77000R052V	–	–	3.77000R253V	3.77000R252V	SS03M012		571.060	
3.77000R039V	3.77000R038V	–	–	3.77000R239V	–	SS03M012		571.067	
3.77000R024V	3.77000R023V	–	–	3.77000R224V	–	SS03M014		571.067	
3.77000R024V	3.77000R025V	–	–	3.77000R224V	–	SS03M014		571.067	
3.77000R024V	3.77000R025V	–	–	3.77000R224V	–	SS03M014			571.062
3.77000R027V	3.77000R026V	–	–	3.77000R227V	–	SS03M014			571.062
3.77000R027V	3.77000R026V	–	–	3.77000R227V	–	SS03M018			571.062
3.77000R029V	3.77000R028V	–	–	3.77000R229V	–	SS03M018			571.062
3.77000R029V	3.77000R028V	–	–	3.77000R229V	–	SS03M018			571.063
3.77000R029V	3.77000R028V	–	–	3.77000R229V	3.77000R228V	SS03M018			571.063
3.77000R031V	3.77000R030V	–	–	3.77000R231V	3.77000R230V	SS03M018			571.063
3.77000R031V	3.77000R030V	–	–	3.77000R231V	3.77000R230V	SS03M023			571.063
3.77000R031V	3.77000R030V	–	–	3.77000R231V	3.77000R230V	SS03M023			571.063
3.77000R082V	3.77000R081V	–	–	3.77000R282V	–	SS03M023			571.064
3.77000R084V	3.77000R083V	–	–	3.77000R284V	–	SS03M023			571.064
3.77000R086V	3.77000R085V	–	–	3.77000R286V	–	SS03M023			571.064
3.77000R080V	3.77000R079V	–	–	3.77000R280V	–	SS03M025			571.064
3.77000R088V	3.77000R087V	–	–	3.77000R288V	–	SS03M025			571.064
3.77000R078V	3.77000R077V	–	–	3.77000R278V	–	SS03M025			571.065
3.77000R076V	3.77000R075V	–	–	3.77000R276V	–	SS03M025			571.065
3.77000R074V	3.77000R073V	–	–	3.77000R274V	–	SS03M025			571.065
3.77000R049V	3.77000R048V	–	–	3.77000R249V	3.77000R248V	SS03M026			571.065
3.77000R031V	3.77000R030V	3.77000R030V	3.77000R030V	3.77000R231V	3.77000R230V	SS03M026			571.065
3.77000R082V	3.77000R081V	3.77000R081V	3.77000R081V	3.77000R282V	–	SS03M026			571.065
3.77000R084V	3.77000R083V	3.77000R083V	3.77000R083V	3.77000R284V	–	121.820	360.081		571.065
3.77000R080V	3.77000R079V	3.77000R080V	3.77000R079V	3.77000R280V	–	121.820	360.081		571.065
3.77000R078V	3.77000R077V	3.77000R078V	3.77000R077V	–	–	121.820	360.081		571.065

Order Example:
By catalog number 3.76045R028V, or by order number 1245749.

KENNAMETAL

HTS DFT

HTS DFT Cartridges

order number	catalog number	gage insert	number of inserts	insert screw	cartridge mounting screw	fan washer	ft.lbs.
1245818	3.77000R023V	DFT05T308	2	191.924	192.593	192.903	3.7
1191135	3.77000R024V	DFT05T308	2	191.924	192.593	192.903	3.7
1191136	3.77000R025V	DFT05T308	2	191.924	192.593	192.903	3.7
1191137	3.77000R026V	DFT05T308	2	191.924	192.593	192.903	3.7
1191138	3.77000R027V	DFT05T308	2	191.924	192.593	192.903	3.7
1175211	3.77000R028V	DFT06T308	2	191.848	129.612	192.111	7.4
1191139	3.77000R029V	DFT06T308	2	191.848	129.612	192.111	7.4
1245819	3.77000R030V	DFT06T308	3	191.848	129.616	192.111	7.4
1175212	3.77000R031V	DFT06T308	3	191.848	129.612	192.111	7.4
1191140	3.77000R038V	DFT05T308	2	191.924	192.593	192.903	3.7
1191141	3.77000R039V	DFT05T308	2	191.924	192.593	192.903	3.7
1245820	3.77000R048V	DFT070408	3	191.698	125.830	192.112	25.8
1245821	3.77000R049V	DFT070408	3	191.698	125.830	192.112	25.8
1245822	3.77000R050V	DFT030304	2	192.432	192.592	192.902	3.7
1245823	3.77000R051V	DFT030304	2	192.432	192.592	192.902	3.7
1245824	3.77000R052V	DFT030304	2	192.432	192.592	192.902	3.7
1245825	3.77000R053V	DFT030304	2	192.432	192.592	192.902	3.7
1245826	3.77000R073V	DFT070408	3	191.698	125.825	192.112	25.8
1245827	3.77000R074V	DFT070408	3	191.698	125.825	192.112	25.8
1245828	3.77000R075V	DFT070408	3	191.698	125.825	192.112	25.8
1245829	3.77000R076V	DFT070408	3	191.698	125.825	192.112	25.8
1245830	3.77000R077V	DFT070408	3	191.698	125.825	192.112	25.8
1245831	3.77000R078V	DFT070408	3	191.698	125.825	192.112	25.8
1245832	3.77000R079V	DFT06T308	3	191.848	125.820	192.112	25.8
1245833	3.77000R080V	DFT06T308	3	191.848	125.820	192.112	25.8
1191142	3.77000R081V	DFT05T308	3	191.924	125.820	192.112	25.8
1191143	3.77000R082V	DFT05T308	3	191.924	125.820	192.112	25.8
1243752	3.77000R083V	DFT06T308	3	191.924	125.820	192.112	25.8
1243753	3.77000R084V	DFT06T308	3	191.924	125.820	192.112	25.8
1245834	3.77000R085V	DFT06T308	3	191.848	125.825	192.112	25.8
1243754	3.77000R086V	DFT06T308	3	191.924	125.820	192.112	25.8
1245835	3.77000R087V	DFT06T308	3	191.848	125.820	192.112	25.8
1245836	3.77000R088V	DFT06T308	3	191.848	125.820	192.112	25.8

Ordering Example:
By catalog number 3.7700R023V, or by order number 1245818.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

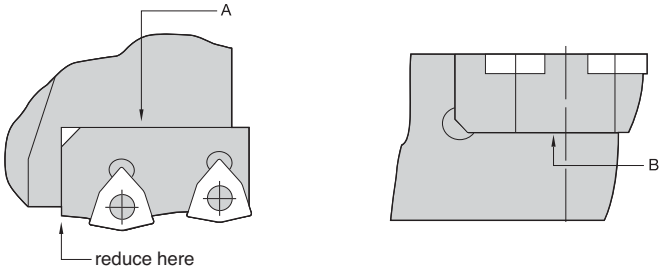
HTS DFT Finishing Exterior Cartridges with Square Insert

order number	catalog number	insert 1	insert 2	insert 3	number of inserts	insert screw	screw	washer
2634374	3.77000R224V	SPHX0903..	DFT05T3..	–	2	191.924	193.451	192.903
2634375	3.77000R227V	SPHX0903..	DFT05T3..	–	2	191.924	192.593	192.903
2634376	3.77000R229V	SPHX0903..	DFT06T3..	–	2	191.916	129.612	192.111
2634377	3.77000R231V	SPHX0903..	DFT06T3..	–	2	191.916	129.616	192.111
2634378	3.77000R239V	SPHX0903..	DFT05T3..	–	2	191.924	193.451	192.903
2634379	3.77000R249V	SPHX1505..	DFT0704..	DFT0704..	3	192.433	125.830	192.112
2634380	3.77000R251V	SPHX0703..	DFT0303..	–	2	192.432	193.450	192.902
2634381	3.77000R253V	SPHX0703..	DFT0303..	–	2	192.432	193.450	192.902
2634382	3.77000R274V	SPHX1505..	DFT0704..	–	3	192.433	125.825	192.112
2634413	3.77000R276V	SPHX1505..	DFT0704..	–	3	192.433	125.825	192.112
2634414	3.77000R278V	SPHX1505..	DFT0704..	–	3	192.433	125.825	192.112
2634415	3.77000R280V	SPHX1204..	DFT06T3..	DFT06T3..	3	191.916	125.820	192.112
2634416	3.77000R282V	SPHX0903..	DFT05T3..	DFT05T3..	3	191.924	125.820	192.112
2634417	3.77000R284V	SPHX1204..	DFT06T3..	DFT06T3..	3	191.916	125.820	192.112
2634418	3.77000R286V	SPHX1204..	DFT06T3..	DFT06T3..	3	191.916	125.825	192.112
2634419	3.77000R288V	SPHX1204..	DFT06T3..	DFT06T3..	3	191.916	125.820	192.112

HTS DFT Finishing Interior Cartridges

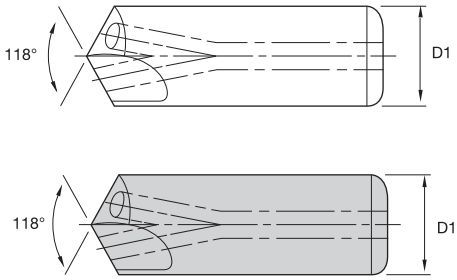
order number	catalog number	gage insert 1	gage insert 2	gage insert 3	number of inserts	insert screw	washer	Nm	ft.lbs
2869514	3.77000R228V	DFT06T3..	DFT06T3..	–	2	191.848	192.111	10,0	7.0
2869515	3.77000R230V	DFT06T3..	DFT06T3..	–	2	191.848	192.111	10,0	7.0
2869516	3.77000R248V	DFT0704..	DFT0704..	DFT0704..	3	191.698	192.112	35,0	25.0
2868502	3.77000R250V	DFT0303..	DFT0303..	–	2	192.432	192.902	5,0	3.0
2869513	3.77000R252V	DFT0303..	DFT0303..	–	2	192.432	192.902	5,0	3.0

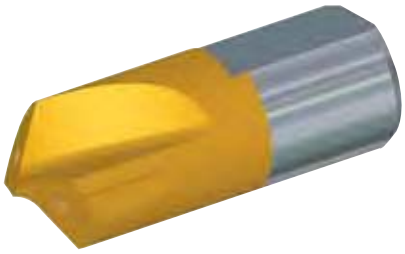
Change drill diameter by shortening the outer cartridge.
Shorten at 90° to the contact face A and the support face B.
Shortening reduces the effective drill diameter by two times the amount removed.



Order Example:
By catalog number 3.7700R224V, or by order number 2634374.

HTS DFT



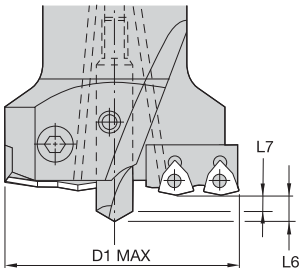


B510 Pilot Drills

	AS3	A30
H		
S	●	○
N	●	●
K	●	●
M	●	●
P	●	●

order number	catalog number	AS3	A30	D1	D1
1131036	B510S08000	●	●	.315	8
1131119	B510S10000	●	●	.394	10
1131128	B510S15000	●	●	.591	15
1131060	B510S20000	●	●	.787	20
1127915	B510S25000	●	●	.984	25
1127923	B510S30000	●	●	1.181	30

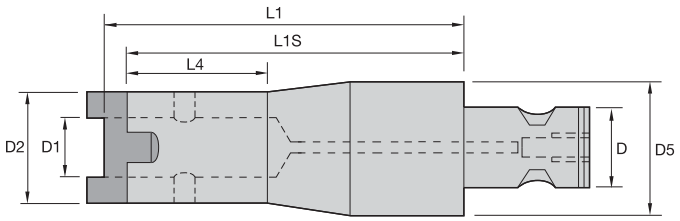
For pilot drill reconditioning information, see page I32.



	2 to 4 x D1				4 to 6 x D1				> 6 x D1			
	mm		inch		mm		inch		mm		inch	
catalog number	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7	L6	L7
B510S08000	3,00	0,80	.118	.032	3,40	1,20	.134	.047	3,80	1,60	.150	.063
B510S10000	4,00	1,30	.158	.051	4,30	1,60	.169	.063	4,60	1,90	.181	.075
B510S15000	6,20	2,10	.244	.083	6,50	2,40	.256	.095	6,80	2,70	.268	.106
B510S20000	8,10	2,60	.319	.102	8,40	2,90	.331	.114	8,70	3,20	.343	.126
B510S25000	10,50	3,50	.413	.138	7,40	3,90	.429	.154	11,30	4,30	.445	.169
B510S30000	12,30	4,10	.484	.158	12,80	4,50	.504	.177	13,20	5,00	.520	.197

Order Example:
By catalog number and grade B510S08000 AS3, or by order number 113136.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



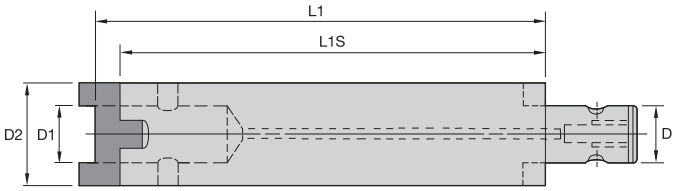
Reducers

order number	catalog number	coupling size D1	coupling size D	D2 mm	D2 in	D5 mm	D5 in	L1 mm	L1 in	L1S mm	L1S in	L4 mm	L4 in	drive ring	clamping screw	ft.lbs
1134624	5.34240R032100	16	22	32	1.24	40	1.57	110	4.33	100	3.94	–	–	192.420	192.156	7.5
1134631	5.34248R040100	22	27	40	1.56	48	1.89	112	4.41	100	3.94	–	–	192.421	192.157	12.0
1134639	5.34258R048100	27	32	48	1.87	58	2.28	112	4.41	100	3.94	–	–	192.422	191.727	15.0
1300343	5.34270R058100	32	40	58	2.27	70	2.76	114	4.48	100	3.94	–	–	192.423	191.727	15.0
1249028	5.34280R028080	13B	50	28	1.09	80	3.15	90	3.54	80	3.15	50	1.97	192.419	192.156	7.5
1300344	5.34280R032080	16	50	32	1.24	80	3.15	90	3.54	80	3.15	55	2.17	192.420	192.156	7.5
1134650	5.34280R040080	22	50	40	1.56	80	3.15	92	3.62	80	3.15	57	2.24	192.421	192.157	12.0
1150624	5.34280R048080	27	50	48	1.87	80	3.15	92	3.62	80	3.15	57	2.24	192.422	191.727	15.0
1134657	5.34280R058080	32	50	58	2.27	80	3.15	94	3.70	80	3.15	59	2.32	192.423	191.727	15.0
1134666	5.34280R070150	40	50	70	2.74	80	3.15	164	6.45	150	5.91	–	–	192.424	191.728	25.0

Assemble components using recommended torque values.

Ordering Example:
By catalog number 5.34240R032100, or by order number 1134624.
Reducers are shipped with drive ring and clamping screws.

HTS

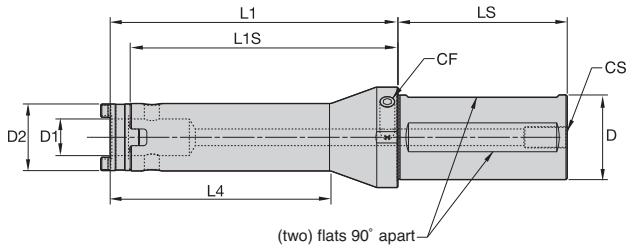


Extensions

order number	catalog number	coupling size D1	coupling size D	D2 mm	D2 in	L1 mm	L1 in	L1S mm	L1S in	drive ring	clamping screw	ft.lbs
1928647	5.34125R025150	13A	13A	25	.98	160	6.30	150	5.91	193.371	193.372	7.5
1134503	5.34128R028150	13B	13B	28	1.10	160	6.30	150	5.91	192.419	192.156	7.5
1134512	5.34132R032100	16	16	32	1.26	110	4.33	100	3.94	192.420	192.156	7.5
1134523	5.34132R032200	16	16	32	1.26	210	8.27	200	7.87	192.420	192.156	7.5
1134530	5.34140R040200	22	22	40	1.57	212	8.35	200	7.87	192.421	192.157	12.0
1134547	5.34148R048200	27	27	48	1.89	212	8.35	200	7.87	192.422	191.727	15.0
1134555	5.34158R058300	32	32	58	2.28	314	12.36	300	11.81	192.423	191.727	25.0
1134564	5.34170R070186	40	40	70	2.76	200	7.87	186	7.32	192.424	191.728	25.0
1134570	5.34170R070300	40	40	70	2.76	314	12.36	300	11.81	192.424	191.728	25.0
1134581	5.34170R070500	40	40	70	2.76	514	20.24	500	19.69	192.424	191.728	25.0
1134588	5.34180R080204	50	50	80	3.15	220	8.66	204	8.03	192.425	191.728	25.0
1134597	5.34180R080300	50	50	80	3.15	316	12.44	300	11.81	192.425	191.728	25.0
1134614	5.34180R080500	50	50	80	3.15	516	20.32	500	19.69	192.425	191.728	25.0

Assemble components using recommended torque values.

Ordering Example:
By catalog number 5.34125R025150, or by order number 1928647.
Extensions are shipped with drive ring and clamping screws.



Flanged Shank — Inch

order number	catalog number	coupling size D1	D	D2	L1	L1S	L4	LS	drive ring	clamping screw	CF	side pipe plug	CS	ft.lbs
1937135	SSF150HTS130239	13A	1.50	.98	2.39	2.00	.39	3.75	193.371	193.372	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1937136	SSF150HTS130664	13A	1.50	.98	6.64	6.25	4.65	3.75	193.371	193.372	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1937137	SSF150HTS131114	13A	1.50	.98	11.14	10.75	9.14	3.75	193.371	193.372	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1937138	SSF150HTS131764	13A	1.50	.98	17.64	17.25	15.64	3.75	193.371	193.372	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801533	SSF200HTS130239	13B	2.00	1.10	2.39	2.00	.39	4.00	192.419	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801534	SSF200HTS130664	13B	2.00	1.10	6.64	6.25	4.65	4.00	192.419	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801535	SSF200HTS131114	13B	2.00	1.10	11.14	10.75	9.14	4.00	192.419	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801536	SSF200HTS131764	13B	2.00	1.10	17.64	17.25	15.64	4.00	192.419	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801537	SSF200HTS160239	16	2.00	1.26	2.39	2.00	.39	4.00	192.420	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801538	SSF200HTS160714	16	2.00	1.26	7.14	6.75	5.14	4.00	192.420	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801539	SSF200HTS161214	16	2.00	1.26	12.14	11.75	10.14	4.00	192.420	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801540	SSF200HTS161964	16	2.00	1.26	19.64	19.25	17.64	4.00	192.420	192.156	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	7.5
1801541	SSF200HTS220297	22	2.00	1.57	2.97	2.50	.47	4.00	192.421	192.157	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	12.0
1801542	SSF200HTS220922	22	2.00	1.57	9.22	8.75	7.22	4.00	192.421	192.157	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	12.0
1801553	SSF200HTS221572	22	2.00	1.57	15.72	15.25	13.72	4.00	192.421	192.157	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	12.0
1801554	SSF200HTS222572	22	2.00	1.57	25.72	25.25	23.72	4.00	192.421	192.157	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	12.0
1801555	SSF200HTS270297	27	2.00	1.89	2.97	2.50	1.47	4.00	192.422	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801556	SSF200HTS271122	27	2.00	1.89	11.22	10.75	9.22	4.00	192.422	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801558	SSF200HTS271922	27	2.00	1.89	19.22	18.75	17.22	4.00	192.422	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801559	SSF200HTS273122	27	2.00	1.89	31.22	30.75	29.22	4.00	192.422	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801560	SSF200HTS320305	32	2.00	2.28	3.05	2.50	1.55	4.00	192.423	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801561	SSF200HTS320805	32	2.00	2.28	8.05	7.50	6.05	4.00	192.423	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801562	SSF200HTS321305	32	2.00	2.28	13.05	12.50	11.05	4.00	192.423	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801573	SSF200HTS321805	32	2.00	2.28	18.05	17.50	16.05	4.00	192.423	191.727	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	15.0
1801574	SSF250HTS400355	40	2.50	2.76	3.55	3.00	1.63	4.25	192.424	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801575	SSF250HTS401055	40	2.50	2.76	10.55	10.00	8.21	4.25	192.424	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801576	SSF250HTS401555	40	2.50	2.76	15.55	15.00	13.21	4.25	192.424	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801577	SSF250HTS402555	40	2.50	2.76	25.55	25.00	23.21	4.25	192.424	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801578	SSF300HTS500413	50	3.00	3.15	4.13	3.50	1.87	4.50	192.425	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801579	SSF300HTS501313	50	3.00	3.15	13.13	12.50	10.55	4.50	192.425	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801580	SSF300HTS502113	50	3.00	3.15	21.13	20.50	18.55	4.50	192.425	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0
1801581	SSF300HTS503113	50	3.00	3.15	31.13	30.50	28.55	4.50	192.425	191.728	1/8 - 27 NPT	HSFS0125	1/4-18 NPT	26.0

Assemble components using recommended torque values.

Ordering Example:
By catalog number SSF150HTS130239, or by order number 1937135.
Shanks shipped with drive ring, clamping screws, and side pipe plug.

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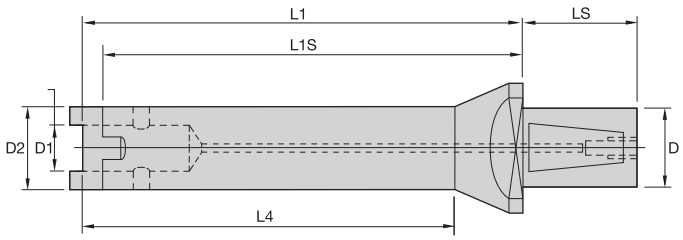
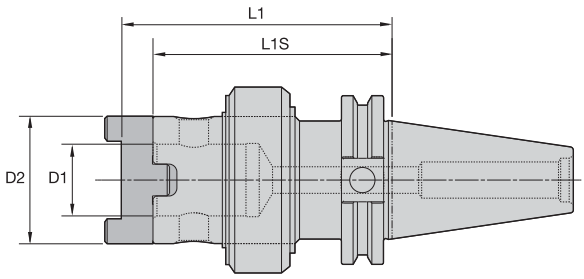


Basic Shank WN/WD — Metric

order number	catalog number	coupling size D1	D	D2	L1	L1S	L4	LS	drive ring	clamping screw	ft.lbs
1928643	5.34032-025115	13A	32	25	125	115	110	58	193.371	193.372	7.0
1928644	5.34032-025200	13A	32	25	210	200	195	58	193.371	193.372	7.0
1928645	5.34050-025300	13A	50	25	310	300	270	68	193.371	193.372	7.0
1928646	5.34050-025450	13A	50	25	460	450	420	68	193.371	193.372	7.0
1134353	5.34032-028115	13B	32	28	125	115	110	58	192.419	192.156	7.0
1134361	5.34032-028200	13B	32	28	210	200	195	58	192.419	192.156	7.0
1134415	5.34050-028300	13B	50	28	310	300	265	68	192.419	192.156	7.0
1129375	5.34050-028450	13B	50	28	460	450	415	68	192.419	192.156	7.0
1134388	5.34032-032125	16	32	32	135	125	120	58	192.420	192.156	7.0
1134425	5.34050-032200	16	50	32	210	200	165	68	192.420	192.156	7.0
1129377	5.34050-032500	16	50	32	510	500	465	68	192.420	192.156	7.0
1129376	5.34050032350	16	50	32	360	350	315	68	192.420	192.156	7.0
1134434	5.34050-040148	22	50	40	160	148	140	68	192.421	192.157	12.0
1134440	5.34050-040300	22	50	40	312	300	267	68	192.421	192.157	7.0
1129378	5.34050-040450	22	50	40	462	450	417	68	192.421	192.157	7.0
1129379	5.34050-040600	22	50	40	612	600	567	68	192.422	192.157	7.0
1134457	5.34050-048168	27	50	48	175	168	160	68	192.422	191.727	15.0
1134464	5.34050-048300	27	50	48	312	300	267	68	192.422	191.727	12.0
1129380	5.34050-048450	27	50	48	462	450	417	68	192.422	191.727	12.0
1129381	5.34050-048600	27	50	48	612	600	567	68	192.422	191.727	12.0
1134472	5.34050-058186	32	50	58	200	186	180	68	192.423	191.727	15.0
1134482	5.34050-058300	32	50	58	314	300	254	68	192.423	191.727	15.0
1129382	5.34050-058450	32	50	58	464	450	404	68	192.423	191.727	15.0
1129383	5.34050-058600	32	50	58	614	600	554	68	192.423	191.727	15.0

Assemble components using recommended torque values.

Ordering Example:
By catalog number 5.34032-025115, or by order number 1928643.
Shanks shipped with drive ring, clamping screws, and side pipe plug.

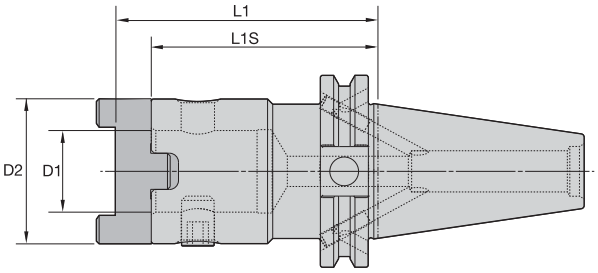


CV Taper – with Rotary Coolant Ring

order number	catalog number	taper	coupling size D1	D2	L1	L1S	clamping screw	clamping screw wrench	drive ring	coolant ring	ft.lbs
1749491	CV50RMHTS13M394	CV50	13B	1.09	4.33	3.94	192.156	170.004	192.419	302.011	7.0
1749492	CV50RMHTS16M394	CV50	16	1.25	4.33	3.94	192.156	170.004	192.420	302.011	7.0
1749493	CV50RMHTS22M394	CV50	22	1.54	4.41	3.94	192.157	170.004	192.421	302.011	12.0
1749207	CV50RMHTS27M394	CV50	27	1.88	4.41	3.94	191.727	170.006	192.422	302.011	15.0
1749208	CV50RMHTS32M394	CV50	32	2.27	4.49	3.94	191.727	170.006	192.423	302.011	15.0
1749210	CV50RMHTS40M413	CV50	40	2.74	4.69	4.13	191.728	170.008	192.424	302.009	26.0
1749273	CV50RMHTS50M413	CV50	50	3.13	4.76	4.13	191.728	170.008	192.425	302.010	26.0

Assemble components using recommended torque values.

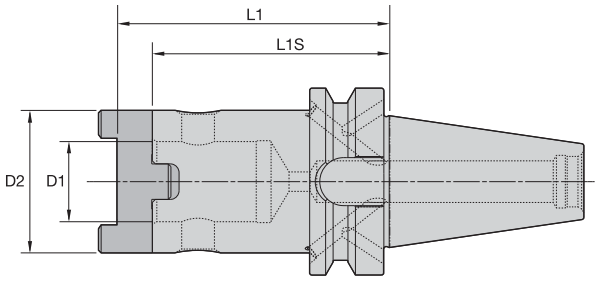
Ordering Example:
By catalog number CV50RMHTS13M394, or by order number 1749491.
Tool supplied with drive ring and clamping screws.



CV Taper — Form B Coolant

order number	catalog number	taper	coupling size D1	D2	L1	L1S	clamping screw	clamping screw wrench	drive ring	ft.lbs
1749263	CV50BHTS13M295	CV50	13B	1.10	3.35	2.95	192.156	170.004	192.419	7.0
1749264	CV50BHTS16M295	CV50	16	1.26	3.35	2.95	192.156	170.004	192.420	7.0
1749266	CV50BHTS22M295	CV50	22	1.57	3.43	2.95	192.157	170.004	192.421	12.0
1749428	CV50BHTS27M295	CV50	27	1.89	3.43	2.95	191.727	170.006	192.422	15.0
1749429	CV50BHTS32M314	CV50	32	2.28	3.70	3.15	191.727	170.006	192.423	15.0
1749430	CV50BHTS40M314	CV50	40	2.76	3.70	3.15	191.728	170.008	192.424	26.0
1749461	CV50BHTS50M314	CV50	50	3.15	3.78	3.15	191.728	170.008	192.425	26.0

Assemble components using recommended torque values.

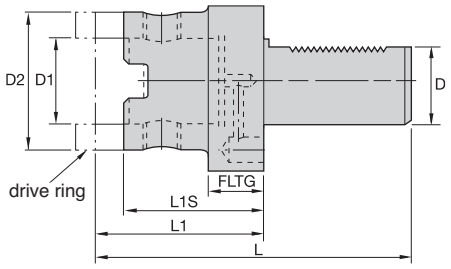


BT Taper — Form B Coolant

order number	catalog number	taper	coupling size D1	D2	L1	L1S	clamping screw	clamping screw wrench	drive ring	ft.lbs
1749281	BT50BHTS22075M	BT50	22	40	87	75	192.157	170.005	192.421	12.0
1749285	BT50BHTS32080M	BT50	32	58	94	80	191.727	170.006	192.423	15.0
1749286	BT50BHTS40080M	BT50	40	70	94	80	191.728	170.008	192.424	26.0
1749287	BT50BHTS50080M	BT50	50	80	96	80	191.728	170.008	192.425	26.0

Assemble components using recommended torque values.

Ordering Example:
By catalog number CV50BHTS13M295, or by order number 1749263.
Tool supplied with drive ring and clamping screws.



VDI – 3425 DIN 69880 Shank

order number	catalog number	coupling size D1	D	D2	FLGT	L	L1	L1S	drive ring	clamping screw	lbs.	ft.lbs
1135165	VDI50HTS70075M	40	50	70	30	167	89	75	192.424	191.728	6.7	25.0
1134488	VDI50HTS80075M	50	50	80	30	167	89	75	192.425	191.728	7.6	25.0
1135166	VDI60HTS70075M	40	60	70	30	185	91	75	192.424	191.728	8.6	25.0
1134496	VDI60HTS90075M	50	60	90	30	185	91	75	192.426	191.729	11.3	25.0

Assemble components using recommended torque values.
Basic shanks and clamping chucks with D2=90 are also available for direct clamping of extensions and reducers with D2=80.

Ordering Example:
By catalog number VDI40HTS28240M, or by order number 1134394.
Tool shipped with drive ring and clamping screws.

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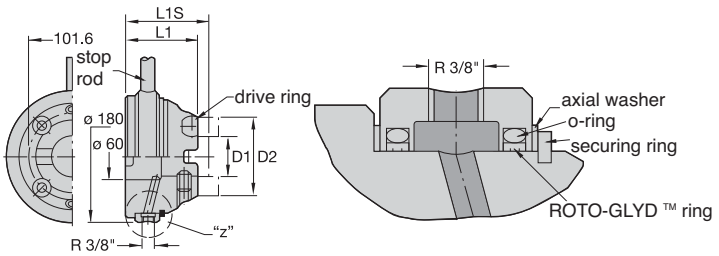
Clamping Chucks



Flanged Adapter (including Drive Ring)

order number	catalog number	D2			L1		L1S			
		D1	mm	in	mm	in	mm	in	kg	lbs.
1134674	5.34350-090100	50	90	3.5	116	4.57	100	3.94	10,0	21.9

NOTE: *Adapter includes all items shown except the nipple. Nipple must be ordered separately.*
If replacement becomes necessary, the nipple is manufactured with a predetermined breaking point for safety purposes.
Maximum rpm is 1500. Maximum pressure is 72 psi or 5 bar.

Spare Parts and Accessories

catalog number	drive ring	clamping screw	coolant ring	O ring	securing ring	axial washer	ROTO-GLYD ring	stop rod	nipple
5.34350-090100	192.426	191.729	302.014	192.731	192.126	192.158	192.730	460.716	192.759

Ordering Example:
By catalog number 5.34350-09100, or by order number 1134674.

KENNAMETAL CTR™ Counterboring Tools

Primary Application

- Designed for high production screw head counterbores and similar counterboring operations.
- The S2 S inserts produce a precise 90° bottom.
- The ground radial land delivers high surface quality.
- Extremely unequal insert positioning and flutes prevent chattering and create a low machining noise.
- Grades and geometries for steel, stainless steel, non-ferrous materials, cast irons, and heat-resistant alloys are available as standard.
- Standard metric double- and triple-fluted toolholders are available in diameters starting at 15mm (0.591") up to 46,0mm (1.811") with through-the-tool coolant design.
- All standard inch toolholders are triple-fluted and available in diameters starting at 0.813" up to 3.125" with a through-the-tool coolant design.
- Standard inserts with different radii per size are available in grades and geometries for steel and cast iron machining.

Features & Benefits

- Optimized radial land of S2 S inserts and extremely unequal positioning around the diameter.
- Results in a precise 90° bottom in a counterbored hole with high-surface quality and no chattering.
- Double-edged standard S2 S inserts in various grades and geometries.
- Can be adapted to almost all applications resulting in optimum cutting performance and long tool life.
- Extensive standard double- and triple-fluted toolholder portfolio with through-the-tool coolant design.
- Yield the highest metal removal rates possible to reduce machining time and lower manufacturing costs.

Customization

- Length and diameter variations with and without adjustable cartridges available.
- Combination and multi-step tooling based on drilling tools like DRILL-FIX and KSEM with short distance and small
- diameter steps are also available.
- Various radii and customized grades are available on request.

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Counterboring Tools F2–F3

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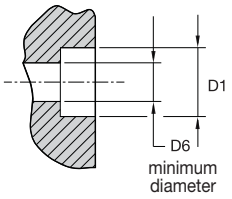
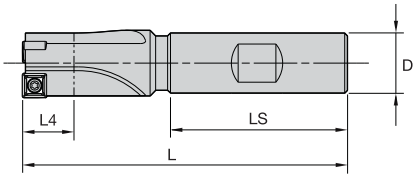
- Weldon Shank — Inch F2
- S2S Whistle Notch WN Shank — Metric F3
- Spare Parts F3

CTR — Counterbore





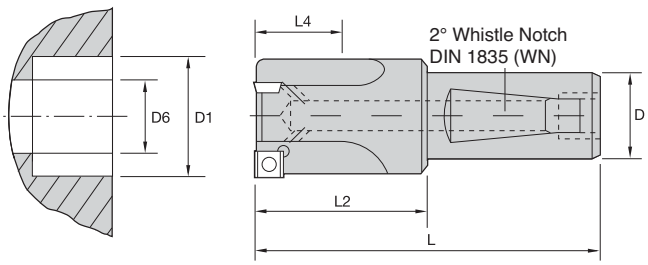
• Counterboring tool shipped with insert screws and Torx wrench.

Weldon Shank — Inch

D1	order number	catalog number	insert 1 outside	tolerance D1 min.	tolerance D1 max.	D	D6	L	L4 max	LS	no. of inserts	insert screw	wrench
.813	1992509	CBT0813RW075N3	SPHX060204R..	-0.007	.007	.750	.5312	3.50	.500	2.047	3	192.432	170.028
1.000	1992511	CBT1000RW075N2	SPHX090304R..	-0.007	.007	.750	.6562	3.50	.625	2.047	2	191.924	170.024
1.188	1992583	CBT1188RW100N3	SPHX090304R..	-0.007	.007	1.000	.7812	4.00	.750	2.299	3	191.924	170.024
1.375	1992584	CBT1375RW100N3	SPHX090304R..	-0.008	.008	1.000	.9062	4.00	.875	2.299	3	191.924	170.024
1.625	1992698	CBT1625RW100N3	SPHX120404R..	-0.008	.008	1.000	1.0612	4.50	1.000	2.299	3	191.916	170.025
1.813	1992699	CBT1813RW125N3	SPHX120404R..	-0.008	.008	1.250	1.1562	4.50	1.125	2.299	3	191.916	170.025
2.000	1992702	CBT2000RW125N3	SPHX120404R..	-0.008	.008	1.250	1.3125	4.50	1.250	2.299	3	191.916	170.025
2.188	1992773	CBT2188RW125N3	SPHX120404R..	-0.008	.008	1.250	1.4062	4.50	1.375	2.299	3	191.916	170.025
2.375	1992774	CBT2375RW150N3	SPHX120404R..	-0.008	.008	1.500	1.5625	5.00	1.500	2.701	3	191.916	170.025
2.750	1992775	CBT2750RW200N3	SPHX120404R..	-0.008	.008	2.000	1.8125	6.00	1.750	3.268	3	191.916	170.025
3.125	1992776	CBT3125RW200N3	SPHX150504R..	-0.008	.008	2.000	2.0625	6.50	2.000	3.268	3	192.433	170.025

For insert information, see page H6-H9.

Ordering Example:
By catalog number CBT0813RW075N3, or by order number 1992509.



• Tool shipped with insert screws and Torx wrench.

S2S Whistle Notch WN Shank — Metric

D1 mm	D1 inch	order number	catalog number	tolerance D1 mm min.	tolerance D1 mm max.	tolerance D1 inch min.	tolerance D1 inch max.	insert 1 outside	D	D6	L	L2	L4 max	no. of inserts
15,135	.596	2204393	CBTF150R2WD20N2M	-0,135	0,135	-0.005	.005	SPHX060204R..	20	6,0	81	31,0	8,5	2
16,135	.635	2204394	CBTF160R2WD20N2M	-0,135	0,135	-0.005	.005	SPHX060204R..	20	7,0	81	31,0	8,5	2
17,135	.675	2204395	CBTF170R2WD20N2M	-0,135	0,135	-0.005	.005	SPHX060204R..	20	8,0	86	36,0	13,5	2
18,135	.714	2204405	CBTF180R2WD20N2M	-0,135	0,135	-0.005	.005	SPHX070304R..	20	8,4	86	36,0	13,5	2
18,135	.714	1246170	CBTF180R2WD20N3M	-0,135	0,135	-0.005	.005	SPHX060204R..	20	8,4	86	36,0	13,5	3
20,165	.794	2204396	CBTF200R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	8,5	86	36,0	16,0	2
20,165	.794	1191074	CBTF200R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX060204R..	20	8,5	86	36,0	16,0	3
21,165	.833	2204397	CBTF210R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	8,5	86	36,0	16,0	2
21,165	.833	2204398	CBTF210R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX060204R..	20	10,5	86	36,0	11,0	3
22,165	.873	2204399	CBTF220R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	10,4	86	36,0	16,0	2
22,165	.873	1191075	CBTF220R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX060204R..	20	10,5	86	36,0	16,0	3
23,165	.912	2204406	CBTF230R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	10,5	91	41,0	21,0	2
23,165	.912	2204400	CBTF230R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	10,5	91	41,0	16,0	3
24,165	.951	1246203	CBTF240R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	10,5	91	41,0	18,5	2
24,165	.951	2204408	CBTF240R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	10,5	91	41,0	16,0	3
25,165	.991	2204407	CBTF250R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	12,0	96	46,0	23,5	2
25,165	.991	2204401	CBTF250R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX070304R..	20	10,5	96	46,0	21,0	3
26,165	1.030	1191076	CBTF260R2WD20N2M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	13,0	96	46,0	23,5	2
27,165	1.070	2204409	CBTF270R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	10,5	96	46,0	21,0	3
28,165	1.109	1246205	CBTF280R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	15,0	101	51,0	23,5	3
30,165	1.188	1246166	CBTF300R2WD20N3M	-0,165	0,165	-0.007	.007	SPHX090304R..	20	15,0	101	51,0	23,0	3
32,195	1.268	1246207	CBTF320R2WD20N3M	-0,195	0,195	-0.008	.008	SPHX090304R..	20	17,0	101	51,0	23,0	3
33,195	1.307	1246187	CBTF330R2WD20N3M	-0,195	0,195	-0.008	.008	SPHX090304R..	20	17,0	101	51,0	25,5	3
34,195	1.346	2204402	CBTF340R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX090304R..	32	18,0	111	51,0	25,5	3
35,195	1.386	2204403	CBTF350R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX090304R..	32	19,0	111	51,0	25,5	3
36,195	1.425	1246188	CBTF360R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX090304R..	32	19,0	116	56,0	27,5	3
38,195	1.504	2204404	CBTF380R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX120404R..	32	22,0	121	61,0	30,0	3
40,195	1.582	1246195	CBTF400R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX120404R..	32	21,0	121	61,0	30,5	3
42,195	1.661	1246168	CBTF420R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX120404R..	32	22,0	126	66,0	33,5	3
46,195	1.819	1246216	CBTF460R2WD32N3M	-0,195	0,195	-0.008	.008	SPHX120404R..	32	25,0	126	66,0	33,5	3

Spare Parts

insert	insert screw	wrench	Torx size
SPHX060204R..	192.432	170.028	T8
SPHX070304R..	192.432	170.028	T8
SPHX090304R..	191.924	170.024	T9
SPHX070304R..	192.432	170.028	T8
SPHX120404R..	191.916	170.025	T15

For insert information, see page H6-H9.

Ordering Example:
By catalog number CBT0150R2W020N2M, or by order number 2204393.

KENNAMETAL

ModBORE® Boring System

Primary Application

This premium boring line enables rough to fine boring operations using one system. Can be used in most materials commonly found in the metalcutting environment.

Features and Benefits

Complete System

- Twin blade heads for rough to semi-finishing operations available as standard.
- Fine boring heads for finishing available as standard.
- Bridge tooling for large diameters up 655mm or 25.79" standard with both roughing and fine finishing heads available as standard.
- Through the tool coolant capability in all series.

Resolution

- Fine boring heads achieve diameter change of 10 microns or 0.0004".

Product Varity

- KM and inch straight shanks available as standards.
- Bridge design available for added diameter range.

Grades and Geometries

- A wide selection of Kennametal grades and geometries are available from stock to match your precision boring needs.

Customization

- Engineered custom solutions available.
- Anti-chatter devices available.
- Cartridges can be designed into standard boring heads for added versatility.

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ModBORE™

Single Cutters for Fine Boring with the KM Connection — Diameters from .945 to 6.024 (24 mm to 153 mm)

single cutter

(single cutter)

standard inserts — The ModBORE system uses industry-standard carbide inserts to help reduce tool inventories. These inserts are available in a wide variety of high-performance Kennametal grades, coatings, and chip-control geometries to handle your specific machining applications.

build to length — Increase boring reach with KM extensions or reducers to customize your tool to meet specific requirements.

limited component requirements — Seven tools cover the entire product range.

through coolant — Use of coolant improves tool life and surface finish, and promotes chip evacuation. All KM tooling for boring provides through-coolant capability.

accurate adjustment — Our precision-ground micrometric screw enables fine adjustment for diameter settings. The adjustment is free from backlash and play. Each division indicator on the dial equals .0004 (0,01 mm) of adjustment on the part diameter.

strong locking mechanism — Diameter setting does not change when the tool is "locked-in" for operation. Bore size stays consistent, even at high rpm's.

optimum cutting geometry — Inserts are located on the tool centerline for accurate adjustment and performance.

limited hardware requirements — Five different sizes of spare insert holders accommodate seven fine-boring tools.

chamfering ring — Enables combined boring/chamfering operations with just one tool.

Twin Cutters for Rough and Semi-Finish Boring — Diameters from .925 to 6.024 (23,5 mm to 153 mm)

twin cutter

(twin cutter)

standard inserts — The ModBORE system uses industry-standard carbide inserts to help reduce tool inventories. Inserts are available in a wide variety of high-performance Kennametal grades, coatings, and chip-control geometries to handle your specific machining applications.

limited component requirements — Seven tools cover the entire product range.

rigidity — The specially designed KM joint, together with the interlocking, precision-ground serrated faces, minimizes cutting vibration and maximizes position accuracy.

through coolant — Use of coolant improves tool life and surface finish, and promotes effective chip evacuation. All KM tooling for boring has through-coolant capability.

easy chip flow — Generous clearance enables free flow of chips for ideal cutting conditions.

independent insert adjustment — Individual insert adjustment enables accurate presetting for rough and semi-finish boring.

optimum cutting geometry — Insert cutting edges are on the tool centerline while axial height is held to an extreme ground tolerance. These features combine to promote balanced cutting forces and bore straightness.

build to length — Increase boring reach with extensions or reducers to customize your tool to meet specific job requirements.

Offset Boring Head — Diameters from .384 to 1.565 (9,75 mm to 39,75 mm)

offset boring head

(offset boring head)

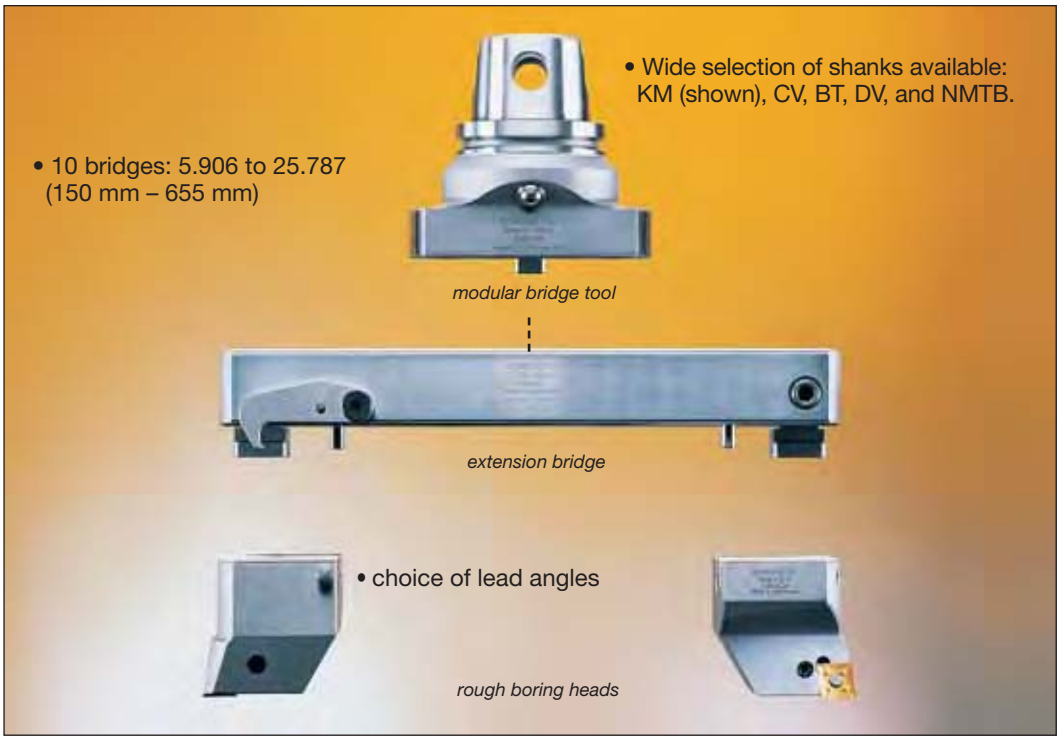
accurate adjustment — Our precision-ground micrometric screw enables fine adjustment of diameter settings. The adjustment is free from backlash and play. Each division indicator on the dial equals .0004 (0,01 mm) of adjustment on the part diameter.

strong locking mechanism — Diameter setting does not change when the tool is "locked-in" for operation. Bore size stays consistent, even at high rpm's.

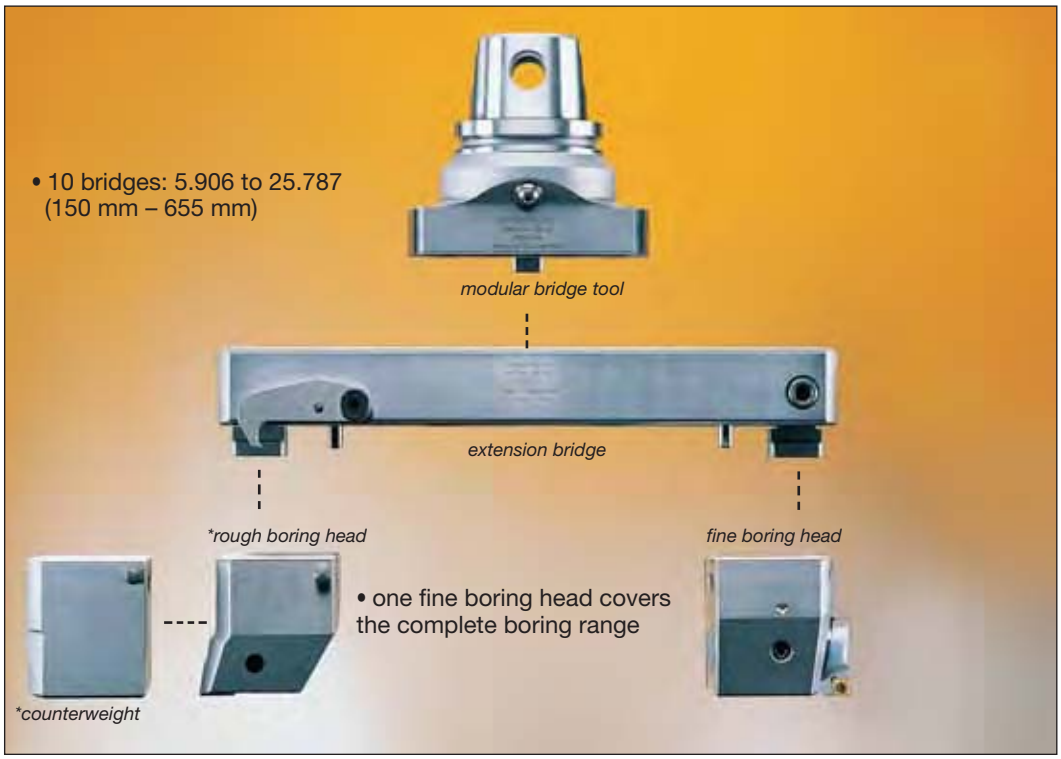
through coolant — Use of coolant improves tool life and surface finish, and promotes chip evacuation. All KM tooling for boring provides through-coolant capability.

boring bars — Our bars provide through-coolant capability while positioning surfaces allow for easy centerline cutting alignment-for use with standard indexable inserts.

Bridge Tools for Rough and Semi-Finish Boring



Bridge Tools for Fine Boring



**A rough boring head (without insert) or a counterweight can be used to balance the extension bridge.*

Feed and Speed Chart

ModBORE™—Medium Finishing▼▼		Cutting Speed				Feed Rate	
Geometry	Grade	Starting Pt		sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281		insert	.384" – 25.787"
			m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000		dia.	9,70mm – 655,00mm
P1 Low-Carbon Steels, Long Chipping	**Content: C <.25%**			**Tensile Strength RM (MPa)*: <530**			**Hardness (HB) or HRC: <125**
CNMG…MW CNMG…MN	KC9105	1312	sfm	591 – 1476		ipr	.010 -.016
CNMG…RP		400	m/min	180 – 450		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	1312	sfm	591 – 1493		ipr	.010 -.016
CNMG…RP CNMG…RM		400	m/min	180 – 455		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	919	sfm	492 – 1181		ipr	.010 -.016
CNMG…RP CNMG…RM		280	m/min	150 – 360		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	919	sfm	492 – 1181		ipr	.010 -.016
CNMG…MW CNMG…MP CNMG…RP		280	m/min	150 – 360		mm/r	0,25 - 0,40
CNMG…RP	KT315	1444	sfm	591 – 1641		ipr	.010 -.016
		440	m/min	180 – 500		mm/r	0,25 - 0,40
P2 Low-Carbon Steels, Free Machining, and Short Chipping	**Content: C <.25%**			**Tensile Strength RM (MPa)*: <650**			**Hardness (HB) or HRC: <220**
CNMG…MW CNMG…MN	KC9105	656	sfm	492 – 1312		ipr	.010 -.016
CNMG…RP		200	m/min	150 – 400		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	820	sfm	591 – 1148		ipr	.010 -.016
CNMG…RP CNMG…RM		250	m/min	180 – 350		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	656	sfm	492 – 984		ipr	.010 -.016
CNMG…RP CNMG…RM		200	m/min	150 – 300		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	656	sfm	492 – 1181		ipr	.010 -.016
CNMG…MW CNMG…MP CNMG…RP		200	m/min	150 – 360		mm/r	0,25 - 0,40
CNMG…RP	KT315	886	sfm	656 – 1312		ipr	.010 -.016
		270	m/min	200 – 400		mm/r	0,25 - 0,40
P3 Medium to High Plain-Carbon Steels and Alloy Steels	**Content: C >.25%**			**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**
CNMG…MW CNMG…MN	KC9105	623	sfm	492 – 820		ipr	.010 -.016
CNMG…RP		190	m/min	150 – 250		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	623	sfm	492 – 820		ipr	.010 -.016
CNMG…RP CNMG…RM		190	m/min	150 – 250		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	509	sfm	443 – 738		ipr	.010 -.016
CNMG…RP CNMG…RM		155	m/min	135 – 225		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	509	sfm	443 – 738		ipr	.010 -.016
CNMG…MW CNMG…MP CNMG…RP		155	m/min	135 – 225		mm/r	0,25 - 0,40
CNMG…RP	KT315	689	sfm	591 – 902		ipr	.010 -.016
		210	m/min	180 – 275		mm/r	0,25 - 0,40

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ModBORE™—Medium Finishing▼▼		Cutting Speed				Feed Rate	
Geometry	Grade	Starting Pt		sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
				m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
P4 Alloy Steels and Tool Steels	**Content: C >.25%**			**Tensile Strength RM (MPa)*: 800-1100**			**Hardness (HB) or HRC: 350-450**
CNMG…MW CNMG…MN	KC9105	492	sfm	295 – 656		ipr	.010 -.016
CNMG…RP		150	m/min	90 – 200		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	492	sfm	295 – 656		ipr	.010 -.016
CNMG…RP CNMG…RM		150	m/min	90 – 200		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	361	sfm	246 – 591		ipr	.010 -.016
CNMG…RP CNMG…RM		110	m/min	75 – 180		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	361	sfm	246 – 591		ipr	.010 -.016
CNMG…MW CNMG…MP CNMG…RP		110	m/min	75 – 180		mm/r	0,25 - 0,40
CNMG…RP	KT315	1444	sfm	591 – 1641		ipr	.004 -.010
		440	m/min	180 – 500		mm/r	0,10 - 0,25
P5 Ferritic, Martensitic, and PH Stainless Steels	**Content: C=0-.4%**			**Tensile Strength RM (MPa)*: 600-850**			**Hardness (HB) or HRC: <330**
CNMG…MW CNMG…MN	KC9105	820	sfm	492 – 1181		ipr	.010 -.016
CNMG…RP		250	m/min	150 – 360		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	722	sfm	492 – 984		ipr	.010 -.016
CNMG…RP CNMG…RM		220	m/min	150 – 300		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	656	sfm	394 – 902		ipr	.010 -.016
CNMG…RP CNMG…RM		200	m/min	120 – 275		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	656	sfm	394 – 902		ipr	.010 -.028
CNMG…MW CNMG…MP CNMG…RP		200	m/min	120 – 275		mm/r	0,25 - 0,70
CNMG…RP	KT315	1444	sfm	591 – 1641		ipr	.010 -.016
		440	m/min	180 – 500		mm/r	0,25 - 0,40
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	**Content: C=.1-.6%**			**Tensile Strength RM (MPa)*: 900-1350**			**Hardness (HB) or HRC: 350-450**
CNMG…MW CNMG…MN	KC9105	591	sfm	410 – 902		ipr	.010 -.016
CNMG…RP		180	m/min	125 – 275		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9110	591	sfm	410 – 902		ipr	.010 -.016
CNMG…RP CNMG…RM		180	m/min	125 – 275		mm/r	0,25 - 0,40
CNMG…MW CNMG…MN	KC9125	492	sfm	345 – 738		ipr	.010 -.016
CNMG…RP CNMG…RM		150	m/min	105 – 225		mm/r	0,25 - 0,40
CCMT…MW CNGP…	KC5010	492	sfm	345 – 738		ipr	.010 -.016
CNMG…MW CNMG…MP CNMG…RP		150	m/min	105 – 225		mm/r	0,25 - 0,40
CNMG…RP	KT315	820	sfm	492 – 984		ipr	.010 -.016
		250	m/min	150 – 300		mm/r	0,25 - 0,40

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Feed and Speed Chart

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ModBORE™—Medium Finishing▼▼		Cutting Speed				Feed Rate	
						insert	.384" – 25.787"
Geometry	Grade	Starting Pt				dia.	9,70mm – 655,00mm
			sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281			
			m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000			
M1 Austenitic Stainless Steels	**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: <650**					**Hardness (HB) or HRC: 130-200**
CCMT…MW CNGP…	KC5010	705	sfm	410 – 820		ipr	.002 -.016
CNMG…MW CNMG…MP CNMG…RP		215	m/min	125 – 250		mm/r	0,05 - 0,40
CCGT…HP CCGT…LF	KC9225	607	sfm	328 – 820		ipr	.006 -.016
CNMG…MP CNMG…RP		185	m/min	100 – 250		mm/r	0,16 - 0,40
CNMG…MW	KC9240	492	sfm	295 – 591		ipr	.006 -.016
CNMG…MP CNMG…RP		150	m/min	90 – 180		mm/r	0,16 - 0,40
CCMT…MW	KT315	755	sfm	492 – 984		ipr	.010 -.016
CNMG…RP		230	m/min	150 – 300		mm/r	0,25 - 0,40
M2 High-Strength Austenitic Stainless and Cast Stainless Steels	**Content: C=.05-.15%**	**Tensile Strength RM (MPa)*: 500-700**					**Hardness (HB) or HRC: 150-230**
CCMT…MW CNGP…	KC5010	656	sfm	410 – 820		ipr	.002 - .016
CNMG…MW CNMG…MP CNMG…RP		200	m/min	125 – 250		mm/r	0,05 - 0,40
CCGT…HP CCGT…LF	KC9225	541	sfm	328 – 738		ipr	.006 - .016
CNMG…MP CNMG…RP		165	m/min	100 – 225		mm/r	0,16 - 0,40
CNMG…MW	KC9240	459	sfm	295 – 591		ipr	.006 - .016
CNMG…MP CNMG…RP		140	m/min	90 – 180		mm/r	0,16 - 0,40
CCMT…MW	KT315	705	sfm	492 – 984		ipr	.010 - .016
CNMG…RP		215	m/min	150 – 300		mm/r	0,25 - 0,40
M3 Duplex Steels	**Content: C=.05-.2%**	**Tensile Strength RM (MPa)*: <900**					**Hardness (HB) or HRC: 135-275**
CCMT…MW CNGP…	KC5010	607	sfm	410 – 820		ipr	.002 - .016
CNMG…MW CNMG…MP CNMG…RP		185	m/min	125 – 250		mm/r	0,05 - 0,40
CCMT…MW CNMG…FW	KC9225	492	sfm	328 – 820		ipr	.006 -.016
CNMG…MP CNMG…RP		150	m/min	100 – 250		mm/r	0,16 - 0,40
CNMG…MW	KC9240	394	sfm	295 – 591		ipr	.006 -.016
CNMG…MP CNMG…RP		120	m/min	90 – 180		mm/r	0,16 - 0,40
CCMT…MW	KT315	656	sfm	492 – 984		ipr	.010 -.016
CNMG…RP		200	m/min	150 – 300		mm/r	0,25 - 0,40

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ModBORE™—Medium Finishing▼▼		Cutting Speed			Feed Rate	
Geometry	Grade	Starting Pt		sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000		
					insert	.384" – 25.787"
					dia.	9,70mm – 655,00mm
K1 Gray Cast Irons and Low-Strength Ductile Irons		**Tensile Strength RM (MPa)*: 150-400**			**Hardness (HB) or HRC: 120-290**	
CCMT…MW CNMG…MW	KC9315	902	sfm	328 – 1476	ipr	.005 -.016
CNMG…UN CNMG…RP		275	m/min	100 – 450	mm/r	0,12 - 0,40
CNMG…UN CNMG…RP	KC9320	920	sfm	328 – 1476	ipr	.010 -.016
		275	m/min	100 – 450	mm/r	0,25 - 0,40
CNMG…MW	KC9325	902	sfm	328 – 1476	ipr	.010 -.016
CNMG…UN CNMG…RP		275	m/min	100 – 450	mm/r	0,25 - 0,40
CCMT…MW	KT315	902	sfm	492 – 1476	ipr	.010 -.016
CNMG…RP		275	m/min	150 – 450	mm/r	0,25 - 0,40
K2 Low- and Medium-Strength CGI and Ductile Irons		**Tensile Strength RM (MPa)*: 400-600**			**Hardness (HB) or HRC: 130-260**	
CCMT…MW CNMG…MW	KC9315	853	sfm	492 – 1181	ipr	.005 -.016
CNMG…UN CNMG…RP		260	m/min	150 – 360	mm/r	0,12 - 0,40
CNMG…UN CNMG…RP	KC9320	853	sfm	492 – 1181	ipr	.010 -.016
		260	m/min	150 – 360	mm/r	0,25 - 0,40
CNMG…MW	KC9325	902	sfm	443 – 1050	ipr	.010 -.016
CNMG…UN CNMG…RP		275	m/min	135 – 320	mm/r	0,25 - 0,40
CCMT…MW	KT315	902	sfm	591 – 1181	ipr	.010 -.016
CNMG…RP		275	m/min	180 – 360	mm/r	0,25 - 0,40
K3 High-Strength Ductile and Austempered Ductile Irons		**Tensile Strength RM (MPa)*: 600-900**			**Hardness (HB) or HRC: 180-350**	
CCMT…MW CNMG…MW	KC9315	705	sfm	492 – 902	ipr	.005 -.016
CNMG…UN CNMG…RP		215	m/min	150 – 275	mm/r	0,12 - 0,40
CNMG…UN CNMG…RP	KC9320	705	sfm	492 – 902	ipr	.010 -.016
		215	m/min	150 – 275	mm/r	0,25 - 0,40
CNMG…MW	KC9325	705	sfm	443 – 902	ipr	.010 -.016
CNMG…UN CNMG…RP		215	m/min	135 – 275	mm/r	0,25 - 0,40
CCMT…MW	KT315	755	sfm	591 – 1050	ipr	.010 -.016
CNMG…RP		230	m/min	180 – 320	mm/r	0,25 - 0,40

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Feed and Speed Chart

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ModBORE™—Medium Finishing ▼▼		Cutting Speed			Feed Rate	
Geometry	Grade	Starting Pt		sfm / m/min		
			sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
			m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
N1 Wrought Aluminum Alloys		**Tensile Strength RM (MPa)*: <520**				**Hardness (HB) or HRC: 60-90**
CNGP....	KC5410	1805	sfm	328 – 3281	ipr	.006 -.016
		550	m/min	100 – 1000	mm/r	0,16 - 0,40
CNGP....	K313	853	sfm	328 – 1969	ipr	.006 -.016
		260	m/min	100 – 600	mm/r	0,16 - 0,40
N2 Cast Aluminums	**Content: Si<12.2%**	**Tensile Strength RM (MPa)*: <350**				**Hardness (HB) or HRC: 70-100**
CNGP....	KC5410	1805	sfm	328 – 3281	ipr	.006 -.016
		550	m/min	100 – 1000	mm/r	0,16 - 0,40
N3 Cast Aluminums	**Content: Si>12.2%**	**Tensile Strength RM (MPa)*: 200-320**				**Hardness (HB) or HRC: 60-120**
CNGP....	KC5410	1805	sfm	328 – 3281	ipr	.006 -.016
		550	m/min	100 – 1000	mm/r	0,16 - 0,40
N5 Copper and Copper Alloys		**Tensile Strength RM (MPa)*: 200-650**				**Hardness (HB) or HRC: 60-200**
CNGP....	KC5410	1805	sfm	328 – 3281	ipr	.006 -.016
		550	m/min	100 – 1000	mm/r	0,16 - 0,40

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ModBORE™—Medium Finishing ▼▼		Starting Pt		Cutting Speed		Feed Rate	
			sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
			m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
S1 Iron-Based, Heat-Resistant Alloys		**Tensile Strength RM (MPa)*: 500-1200**				**Hardness (HB) or HRC: 160-260**	
CCMT…MW CNGP…	KC5010	180	sfm	98 – 394	ipr	.005 -.016
CNMG…MW CNMG…MP CNMG…RP		55	m/min	30 – 120	mm/r	0,12 - 0,40
CNGP….	K313	98	sfm	33 – 164	ipr	.004 -.010
		30	m/min	10 – 50	mm/r	0,10 - 0,25
CNMG….RP	KC5510	197	sfm	98 – 410	ipr	.008 -.016
		60	m/min	30 – 125	mm/r	0,20 - 0,40
CNGP….	KC5525	180	sfm	98 – 394	ipr	.008 -.025
		55	m/min	30 – 120	mm/r	0,20 - 0,63
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys		**Tensile Strength RM (MPa)*: 1000-1450**				**Hardness (HB) or HRC: 250-450**	
CCMT…MW CNGP…	KC5010	197	sfm	98 – 410	ipr	.005 -.016
CNMG…MW CNMG…MP CNMG…RP		60	m/min	30 – 125	mm/r	0,12 - 0,40
CNGP….	K313	115	sfm	33 – 197	ipr	.004 -.010
		35	m/min	10 – 60	mm/r	0,10 - 0,25
CNMG….RP	KC5510	197	sfm	98 – 410	ipr	.008 -.016
		60	m/min	30 – 125	mm/r	0,20 - 0,40
CNGP….	KC5525	98	sfm	66 – 197	ipr	.008 -.025
		30	m/min	20 – 60	mm/r	0,20 - 0,63
S4 Titanium Alloys		**Tensile Strength RM (MPa)*: 900-1600**				**Hardness (HB) or HRC: 300-400**	
CCMT…MW CNGP…	KC5010	230	sfm	148 – 591	ipr	.005 -.016
CNMG…MW CNMG…MP CNMG…RP		70	m/min	45 – 180	mm/r	0,12 - 0,40
CNGP….	K313	148	sfm	66 – 246	ipr	.004 -.010
		45	m/min	20 – 75	mm/r	0,10 - 0,25
CNMG….RP	KC5510	230	sfm	148 – 591	ipr	.008 -.016
		70	m/min	45 – 180	mm/r	0,20 - 0,40
CNGP….	KC5525	180	sfm	66 – 295	ipr	.008 -.016
		55	m/min	20 – 90	mm/r	0,20 - 0,40

Feed and Speed Chart

ModBORE™— Finishing ▼▼▼		Cutting Speed													Feed Rate	
Geometry	Grade	Starting Pt	sfm	98	164	262	328	394	492	656	820	984	1148	1640	2460	3281	insert	.384" – 25.787"
			m/min	30	50	80	100	120	150	200	250	300	350	500	750	1000	dia.	9,70mm – 655,00mm
P1 Low-Carbon Steels, Long Chipping	**Content: C <.25%**			**Tensile Strength RM (MPa)*: <530**														**Hardness (HB) or HRC: <125**
CCMT…LF CNMG…FF	KC9105	1312	sfm						591						1476		ipr	.002 -.010
CNMG…FN CNMG…FW		400	m/min						180						450		mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	1312	sfm						591						1493		ipr	.002 -.010
CNMG…FF CNMG…FN CNMG…FW		400	m/min						180						455		mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	919	sfm						492				1181				ipr	.002 -.010
CNMG…FN		280	m/min						150				360				mm/r	0,06 - 0,25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	919	sfm						492				1181				ipr	.002 -.010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		280	m/min						150				360				mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	1444	sfm						591						1641		ipr	.002 -.006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		440	m/min						180						500		mm/r	0,04 - 0,16
P2 Low-Carbon Steels, Free Machining, and Short Chipping	**Content: C <.25%**			**Tensile Strength RM (MPa)*: <650**														**Hardness (HB) or HRC: <220**
CCMT…LF CNMG…FF	KC9105	656	sfm						492						1312		ipr	.002 - .010
CNMG…FN CNMG…FW		200	m/min						150						400		mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	820	sfm						591				1148				ipr	.002 - .010
CNMG…FF CNMG…FN CNMG…FW		250	m/min						180				350				mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	656	sfm						492				984				ipr	.002 - .010
CNMG…FN		200	m/min						150				300				mm/r	0.06 - 0.25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	656	sfm						492				1181				ipr	.002 - .010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		200	m/min						150				360				mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	886	sfm							656			1312				ipr	.002 - .006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		270	m/min							200			400				mm/r	0,04 - 0.,16
P3 Medium to High Plain-Carbon Steels and Alloy Steels	**Content: C >.25%**			**Tensile Strength RM (MPa)*: 600-850**														**Hardness (HB) or HRC: <330**
CCMT…LF CNMG…FF	KC9105	623	sfm						492						820		ipr	.002 - .010
CNMG…FN CNMG…FW		190	m/min						150						250		mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	623	sfm						492						820		ipr	.002 - .010
CNMG…FF CNMG…FN CNMG…FW		190	m/min						150						250		mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	509	sfm							443					738		ipr	.002 - .010
CNMG…FN		155	m/min							135					225		mm/r	0,06 - 0,25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	509	sfm							443					738		ipr	.002 - .010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		155	m/min							135					225		mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	689	sfm								591				902		ipr	.002 - .006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		210	m/min								180				275		mm/r	0,04 - 0.,16

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ModBORE™— Finishing ▼▼▼		Cutting Speed				Feed Rate	
		Starting Pt	sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
Geometry	Grade		m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
P4 Alloy Steels and Tool Steels	*Content: C >.25%*	*Tensile Strength RM (MPa)*: 800-1100*				*Hardness (HB) or HRC: 350-450*	
CCMT…LF CNMG…FF	KC9105	492	sfm	295 656	ipr	.002 -.010
CNMG…FN CNMG…FW		150	m/min	90 200	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	492	sfm	591 1493	ipr	.002 -.010
CNMG…FF CNMG…FN CNMG…FW		150	m/min	180 455	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	361	sfm	246 591	ipr	.002 -.010
CNMG…FN		110	m/min	75 180	mm/r	0,06 - 0,25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	361	sfm	246 591	ipr	.002 -.010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		110	m/min	75 180	mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	1444	sfm	591 1641	ipr	.002 -.006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		440	m/min	180 500	mm/r	0,04 - 0,16
P5 Ferritic, Martensitic, and PH Stainless Steels	*Content: C=0-.4%*	*Tensile Strength RM (MPa)*: 600-850*				*Hardness (HB) or HRC: <330*	
CCMT…LF CNMG…FF	KC9105	820	sfm	492 1181	ipr	.002 - .010
CNMG…FN CNMG…FW		250	m/min	150 360	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	722	sfm	492 984	ipr	.002 - .010
CNMG…FF CNMG…FN CNMG…FW		220	m/min	150 300	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	656	sfm	394 902	ipr	.002 - .010
CNMG…FN		200	m/min	120 275	mm/r	0.06 - 0.25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	656	sfm	394 902	ipr	.002 - .010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		200	m/min	120 275	mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	1444	sfm	591 1641	ipr	.002 - .006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		440	m/min	180 500	mm/r	0,04 - 0.,16
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	*Content: C=.1-.6%*	*Tensile Strength RM (MPa)*: 900-1350*				*Hardness (HB) or HRC: 350-450*	
CCMT…LF CNMG…FF	KC9105	591	sfm	410 902	ipr	.002 - .010
CNMG…FN CNMG…FW		180	m/min	125 275	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9110	591	sfm	410 902	ipr	.002 - .010
CNMG…FF CNMG…FN CNMG…FW		180	m/min	125 275	mm/r	0,06 - 0,25
CCMT…LF CCMT…UF	KC9125	492	sfm	345 738	ipr	.002 - .010
CNMG…FN		150	m/min	105 225	mm/r	0,06 - 0,25
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	492	sfm	345 738	ipr	.002 - .010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		150	m/min	105 225	mm/r	0,06 - 0,25
CCMT…11 CCMT…FW CCMT…LF	KT315	820	sfm	492 984	ipr	.002 - .006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		250	m/min	150 300	mm/r	0,04 - 0.,16

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Feed and Speed Chart

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ModBORE™— Finishing ▼▼▼		Cutting Speed				Feed Rate	
Geometry	Grade	Starting Pt		sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000			
						insert	.384" – 25.787"
						dia.	9,70mm – 655,00mm
M1 Austenitic Stainless Steels	***Content: C=.05-.15%***			***Tensile Strength RM (MPa)*: <650***			***Hardness (HB) or HRC: 130-200***
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	705	sfm	410 – 820		ipr	.004 -.010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		215	m/min	125 – 250		mm/r	0,10 - 0,25
CCGT…HP CCGT…LF	KC5025	591	sfm	410 – 656		ipr	.002 -.012
		180	m/min	125 – 200		mm/r	0,05 - 0,30
CCMT…FW CCMT…LF	KC9225	607	sfm	328 – 820		ipr	.003 -.010
CCMT…UF		185	m/min	100 – 250		mm/r	0,08 - 0,25
CCMT…LF CNMG…FN	KC9240NEW	492	sfm	295 – 591		ipr	.003 -.010
CNMG…FW		150	m/min	90 – 180		mm/r	0,08 - 0,25
M2 High-Strength Austenitic Stainless and Cast Stainless Steels	***Content: C=.05-.15%***			***Tensile Strength RM (MPa)*: 500-700***			***Hardness (HB) or HRC: 150-230***
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	656	sfm	410 – 820		ipr	.004 -.010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		200	m/min	125 – 250		mm/r	0,10 - 0,25
CCGT…HP CCGT…LF	KC5025	541	sfm	328 – 656		ipr	.002 -.012
		165	m/min	100 – 200		mm/r	0,05 - 0,30
CCMT…FW CCMT…LF	KC9225	541	sfm	328 – 738		ipr	.003 -.010
CCMT…UF		165	m/min	100 – 225		mm/r	0,08 - 0,25
CCMT…LF CNMG…FN	KC9240NEW	459	sfm	295 – 591		ipr	.003 -.010
CNMG…FW		140	m/min	90 – 180		mm/r	0,08 - 0,25
M3 Duplex Steels	***Content: C=.05-.2%***			***Tensile Strength RM (MPa)*: <900***			***Hardness (HB) or HRC: 135-275***
CCGT…HP CCGT…LF CCMT…FW CCMT…LF	KC5010	607	sfm	410 – 820		ipr	.004 -.010
CNGG…LF CNMG…FF CNMG…FP CNMG…FW		185	m/min	125 – 250		mm/r	0,10 - 0,25
CCGT…HP CCGT…LF	KC5025	607	sfm	328 – 820		ipr	.002 -.012
		185	m/min	100 – 250		mm/r	0,05 - 0,30
CCMT…FW CCMT…LF	KC9225	492	sfm	328 – 820		ipr	.003 -.010
CCMT…UF		150	m/min	100 – 250		mm/r	0,08 - 0,25
CCMT…LF CNMG…FN	KC9240NEW	394	sfm	295 – 591		ipr	.003 -.010
CNMG…FW		120	m/min	90 – 180		mm/r	0,08 - 0,25

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ModBORE™— Finishing ▼▼▼		Cutting Speed				Feed Rate	
Geometry	Grade	Starting Pt		sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
				m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
K1 Gray Cast Irons and Low-Strength Ductile Irons		**Tensile Strength RM (MPa)*: 150-400**				**Hardness (HB) or HRC: 120-290**	
CCMT…FW CCMT…LF	KC9315	902		sfm	492 – 1444	ipr	.003 -.012
CNMG…FN CNMG…FW		275		m/min	150 – 440	mm/r	0,08 - 0,30
CCMT…FW CCMT…LF	KC9320	951		sfm	328 – 1476	ipr	.005 -.020
		290		m/min	100 – 450	mm/r	0,12 - 0,50
CCMT…11 CCMT…FW CCMT…LF	KT315	902		sfm	525 – 1476	ipr	.002 -.006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		275		m/min	160 – 450	mm/r	0,04 - 0,16
K2 Low- and Medium-Strength CGI and Ductile Irons		**Tensile Strength RM (MPa)*: 400-600**				**Hardness (HB) or HRC: 130-260**	
CCMT…FW CCMT…LF	KC9315	853		sfm	427 – 1148	ipr	.003 -.012
CNMG…FN CNMG…FW		260		m/min	130 – 350	mm/r	0,08 - 0,30
CCMT…FW CCMT…LF	KC9320	869		sfm	262 – 1312	ipr	.005 -.020
		265		m/min	80 – 400	mm/r	0,12 - 0,50
CCMT…11 CCMT…FW CCMT…LF	KT315	902		sfm	591 – 1181	ipr	.002 -.006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		275		m/min	180 – 360	mm/r	0,04 - 0,16
K3 High-Strength Ductile and Austempered Ductile Irons		**Tensile Strength RM (MPa)*: 600-900**				**Hardness (HB) or HRC: 180-350**	
CCMT…FW CCMT…LF	KC9315	705		sfm	427 – 1148	ipr	.003 -.012
CNMG…FN CNMG…FW		215		m/min	130 – 350	mm/r	0,08 - 0,30
CCMT…FW CCMT…LF	KC9320	722		sfm	262 – 1312	ipr	.005 -.020
		220		m/min	80 – 400	mm/r	0,12 - 0,50
CCMT…11 CCMT…FW CCMT…LF	KT315	755		sfm	591 – 1148	ipr	.002 -.006
CNMG…FF CNMG…FP CNMG…FN CNMG…FW		230		m/min	180 – 350	mm/r	0,04 - 0,16

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Feed and Speed Chart

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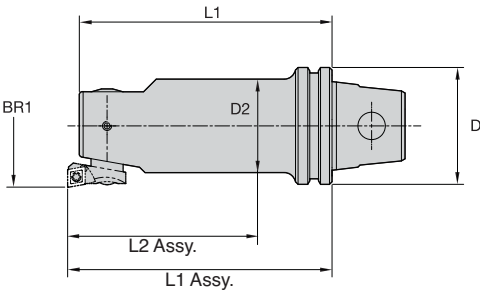
ModBORE™ — Finishing ▼▼▼		Cutting Speed				Feed Rate	
Geometry	Grade	Starting Pt		sfm	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281	insert	.384" – 25.787"
				m/min	30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	9,70mm – 655,00mm
N1 Wrought Aluminum Alloys					Tensile Strength RM (MPa)*: <520		Hardness (HB) or HRC: 60-90
CCGT...HP CCGT...LF	KC5410	1805	sfm		328 ◆ 3281	ipr	.004 -.016
		550	m/min		100 ◆ 1000	mm/r	0,10 - 0,40
CCGT...HP CCGT...LF	K313	853	sfm		328 ◆ 1969	ipr	.004 -.016
CCMT...LF CNGG...LF		260	m/min		100 ◆ 600	mm/r	0,10 - 0,40
N2 Cast Aluminums	**Content: Si<12.2%**				Tensile Strength RM (MPa)*: <350		Hardness (HB) or HRC: 70-100
CCGT...HP CCGT...LF	KC5410	1805	sfm		328 ◆ 3281	ipr	.004 -.016
		550	m/min		100 ◆ 1000	mm/r	0,10 - 0,40
N3 Cast Aluminums	**Content: Si>12.2%**				Tensile Strength RM (MPa)*: 200-320		Hardness (HB) or HRC: 60-120
CCGT...HP CCGT...LF	KC5410	1805	sfm		328 ◆ 3281	ipr	.004 -.016
		550	m/min		100 ◆ 1000	mm/r	0,10 - 0,40
N5 Copper and Copper Alloys					Tensile Strength RM (MPa)*: 200-650		Hardness (HB) or HRC: 60-200
CCGT...HP CCGT...LF	KC5410	1805	sfm		328 ◆ 3281	ipr	.004 -.016
		550	m/min		100 ◆ 1000	mm/r	0,10 - 0,40
S1 Iron-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 500-1200		Hardness (HB) or HRC: 160-260
CCGT...HP CCGT...LF CCMT...FW CCMT...LF	KC5010	180	sfm		98 ◆ 394	ipr	.002 -.010
CNGG...LF CNMG...FF CNMG...FP CNMG...FW		55	m/min		30 ◆ 120	mm/r	0,06 - 0,25
CCGT...HP CCGT...LF	KC5025	131	sfm		98 ◆ 197	ipr	.025 -.010
		40	m/min		30 ◆ 60	mm/r	0,63 - 0,25
CCGT...HP CCGT...LF	K313	98	sfm		33 ◆ 164	ipr	.004 -.010
CCMT...LF CNGG...LF		30	m/min		10 ◆ 50	mm/r	0,10 - 0,25
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 1000-1450		Hardness (HB) or HRC: 250-450
CCGT...HP CCGT...LF CCMT...FW CCMT...LF	KC5010	197	sfm		98 ◆ 410	ipr	.002 -.010
CNGG...LF CNMG...FF CNMG...FP CNMG...FW		60	m/min		30 ◆ 125	mm/r	0,06 - 0,25
CCGT...HP CCGT...LF	KC5025	98	sfm		66 ◆ 197	ipr	.025 -.010
		30	m/min		20 ◆ 60	mm/r	0,63 - 0,25
CCGT...HP CCGT...LF	K313	115	sfm		33 ◆ 197	ipr	.004 -.010
CCMT...LF CNGG...LF		35	m/min		10 ◆ 60	mm/r	0,10 - 0,25
S4 Titanium Alloys					Tensile Strength RM (MPa)*: 900-1600		Hardness (HB) or HRC: 300-400
CCGT...HP CCGT...LF CCMT...FW CCMT...LF	KC5010	230	sfm		148 ◆ 591	ipr	.002 -.010
CNGG...LF CNMG...FF CNMG...FP CNMG...FW		70	m/min		45 ◆ 180	mm/r	0,06 - 0,25
CCGT...HP CCGT...LF	KC5025	180	sfm		66 ◆ 295	ipr	.025 -.010
		55	m/min		20 ◆ 90	mm/r	0,63 - 0,25
CCGT...HP CCGT...LF	K313	148	sfm		66 ◆ 246	ipr	.004 -.010
CCMT...LF CNGG...LF		45	m/min		20 ◆ 75	mm/r	0,10 - 0,25

Fine Boring Single Cutters



- 0.01mm (0.0004") diameter adjustment.
- Order insert cartridges separately for required bore range, see page G19.

FBHS KM Shank Series

BR1 bore range mm	BR1 bore range in	order number	catalog number	D KM size	D2 mm	D2 in	L1 mm	L1 in	L1 Assy mm	L1 Assy in	L2 Assy mm	L2 Assy in	cartridge mounting screw	lock screw
23,900-37,100	.9409-1.4606	3586572	KM32FBHS24	KM32	20,0	.79	86,0	3.39	90,0	3.54	76,1	2.99	880.252.200	881.252.200
30,900-47,100	1.2165-1.8543	3586573	KM32FBHS31	KM32	25,0	.98	96,0	3.78	100,0	3.94	86,1	3.39	880.252.250	881.252.250
39,900-59,100	1.5709-2.3268	3586574	KM40FBHS40	KM40	32,0	1.26	86,0	3.39	90,0	3.54	74,0	2.92	880.252.320	881.252.320
50,900-81,100	2.0039-3.1929	3586575	KM50FBHS51	KM50	42,0	1.65	86,0	3.39	90,0	3.54	70,0	2.76	880.252.420	881.252.420
66,900-105,100	2.6339-4.1378	3586576	KM50FBHS67	KM50	55,0	2.17	96,0	3.78	100,0	3.94	100,0	3.94	880.252.550	881.252.550
86,900-154,100	3.4213-6.0669	3586577	KM50FBHS87	KM50	72,0	2.84	116,0	4.57	120,0	4.72	120,0	4.72	880.252.550	881.252.720
86,900-154,100	3.4213-6.0669	3586578	KM63UTFBHS87	KM63UT	72,0	2.83	115,0	4.53	120,0	4.72	120,0	4.72	880.252.550	881.252.720
115,900-191,100	4.5630-7.5236	3586579	KM63UTFBHS116	KM63UT	96,0	3.70	145,0	5.71	150,0	5.91	150,0	5.91	880.252.550	881.252.940

Reference Insert Cartridges

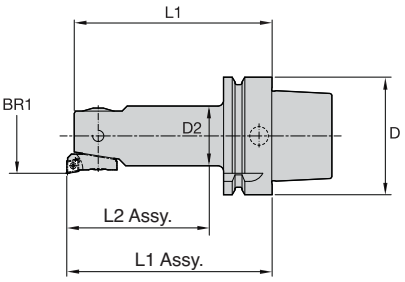
BR1 mm	BR1 in						
23,900 - 37,100	.9409 - 1.4606	R24FBHS06	R24FBHS06LF	R30FBHS06			
30,900 - 47,100	1.2165 - 1.8543	R31FBHS06	R32FBHS06LF	F38FBHS06			
39,900 - 59,100	1.5709 - 2.3268	R40FBHS06	R40FBHS06LF	R48FBHS06			
50,900 - 81,100	2.0039 - 3.1929	R51FBHS06	R51FBHS06LF	R65FBHS06			
66,900 - 105,100	2.6339 - 4.1378	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	
86,900 - 154,100	3.4213 - 6.0669	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	R125FBHS09
115,900 - 191,100	4.5630 - 7.5236	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	R125FBHS09

NOTE: *Dial graduations equal 0.005 mm (0.00002") movement of the tool tip which changes the cutting diameter by 0.01 mm (0.0004").*

Order Example:
By catalog number KM32FBHS24, or by order number 3586572.

ModBORE™ Boring Systems

Fine Boring Single Cutters



- 0.01mm (0.0004") diameter adjustment.
- Order insert cartridges separately for required bore range, see page G19.

FBHS HSK Shank Series

BR1 bore range mm	BR1 bore range in	order number	catalog number	D HSK size	D2 mm	D2 in	L1 mm	L1 in	L1 Assy mm	L1 Assy in	L2 Assy mm	L2 Assy in	cartridge mounting screw	lock screw
23,900-37,100	.9409-1.4606	3586580	HSK63FBHS24	HSK63A	20,0	.79	86,0	3.39	90,0	3.54	61,1	2.40	880.252.200	881.252.200
30,900-47,100	1.2165-1.8543	3586581	HSK63FBHS31	HSK63A	25,0	.98	101,0	3.98	105,0	4.13	76,1	2.99	880.252.250	881.252.250
39,900-59,100	1.5709-2.3268	3586582	HSK63FBHS40	HSK63A	32,0	1.26	106,0	4.17	110,0	4.33	81,1	3.19	880.252.320	881.252.320
50,900-81,100	2.0039-3.1929	3586583	HSK63FBHS51	HSK63A	42,0	1.65	116,0	4.57	120,0	4.72	91,1	3.58	880.252.420	881.252.420
66,900-105,100	2.6339-4.1378	3586584	HSK63FBHS67	HSK63A	55,0	2.17	121,0	4.76	125,0	4.92	99,1	3.90	880.252.550	881.252.550
86,900-154,100	3.4213-6.0669	3586585	HSK63FBHS87	HSK63A	72,0	2.83	141,0	5.55	145,0	5.71	145,0	5.71	880.252.550	881.252.720

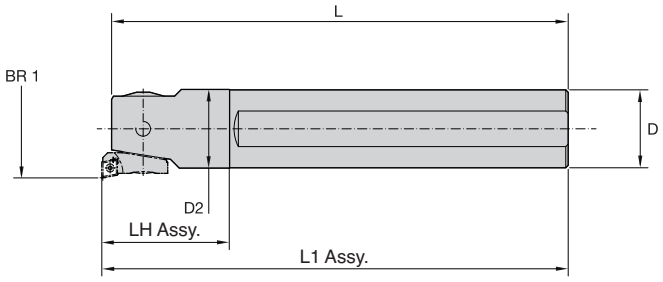
Reference Insert Cartridges

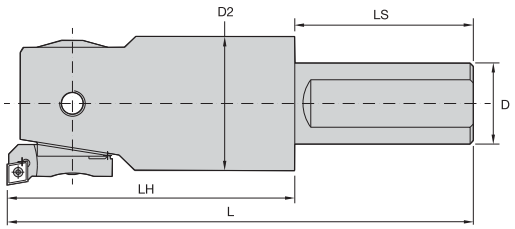
BR1 mm	BR1 in						
23,900 - 37,100	.9409 - 1.4606	R24FBHS06	R24FBHS06LF	R30FBHS06			
30,900 - 47,100	1.2165 - 1.8543	R31FBHS06	R32FBHS06LF	F38FBHS06			
39,900 - 59,100	1.5709 - 2.3268	R40FBHS06	R40FBHS06LF	R48FBHS06			
50,900 - 81,100	2.0039 - 3.1929	R51FBHS06	R51FBHS06LF	R65FBHS06			
66,900 - 105,100	2.6339 - 4.1378	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	
86,900 - 154,100	3.4213 - 6.0669	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	R125FBHS09

NOTE: *Dial graduations equal 0.005 mm (0.00002") movement of the tool tip which changes the cutting diameter by 0.01 mm (0.0004").*

Order Example:
By catalog number HSK63FBHS24, or by order number 3586580.

Fine Boring Single Cutters





- 0.01mm (0.0004") diameter adjustment.
- Order insert cartridges seperately for required bore range, see page G19.

FBHS Steel Straight Shank Series

BR1 bore range inch	BR1 bore range metric	order number	catalog number	D	D2	L	LH Assy	L1 Assy	LS	cartridge mounting screw	lock screw
.9409-1.4606	23,900-37,100	3586586	SF075FBHS24	.75	.79	5.75	1.65	5.91	–	880.252.200	881.252.200
1.2165-1.8543	30,900-47,100	3586587	SF100FBHS31	1.00	.98	6.54	1.85	6.69	–	880.252.250	881.252.250
1.5709-2.3268	39,900-59,100	3586588	SF125FBHS40	1.25	1.26	7.32	2.05	7.48	–	880.252.320	881.252.320
2.0039-3.1929	50,900-81,100	3586589	SF100FBHS51	1.00	1.65	5.59	3.54	5.74	2.2008	880.252.420	881.252.420
2.6339-4.1378	66,900-105,100	3586590	SF125FBHS67	1.25	2.17	6.17	3.94	6.33	2.3898	880.252.550	881.252.550
3.4213-6.0669	86,900-154,100	3586591	SF150FBHS87	1.50	2.84	7.39	4.72	7.54	2.8189	880.252.550	881.252.720
4.5630-7.5236	115,900-191,100	3586592	SF200FBHS116	2.00	3.01	9.13	5.91	9.29	3.3819	880.252.550	881.252.940

Reference Insert Cartridges

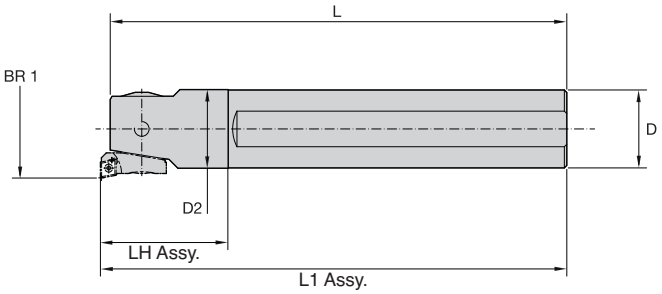
BR1 mm	BR1 in						
23,900 - 37,100	.9409 - 1.4606	R24FBHS06	R24FBHS06LF	R30FBHS06			
30,900 - 47,100	1.2165 - 1.8543	R31FBHS06	R32FBHS06LF	F38FBHS06			
39,900 - 59,100	1.5709 - 2.3268	R40FBHS06	R40FBHS06LF	R48FBHS06			
50,900 - 81,100	2.0039 - 3.1929	R51FBHS06	R51FBHS06LF	R65FBHS06			
66,900 - 105,100	2.6339 - 4.1378	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	
86,900 - 154,100	3.4213 - 6.0669	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	R125FBHS09
115,900 - 191,100	4.5630 - 7.5236	R67FBHS06	R67FBHS09	R67FBHS09LF	R85FBHS06	R85FBHS09	R125FBHS09

NOTE: *Dial graduations equal 0.005 mm (0.00002") movement of the tool tip which changes the cutting diameter by 0.01 mm (0.0004").*

Order Example:
By catalog number SF075FBHS24, or by order number 3586586.

ModBORE™ Boring Systems

Fine Boring Single Cutters



- 0,01mm (0.0004") diameter adjustment.
- Order insert cartridges separately for required bore range, see page G19.

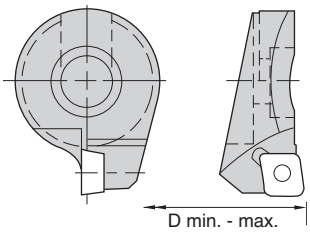
FBHS Carbide Straight Shank Series

BR1 bore range	BR1 bore range	order number	catalog number	D	D2	L	LH Assy.	L1 Assy.	cartridge mounting screw	lock screw
23,900-37,100	.9409-1.4606	3586593	SSE075FBHS24	.75	.79	9.69	3.15	9.84	880.252.200	881.252.200
30,900-47,100	1.2165-1.8543	3586594	SSE100FBHS31	1.00	.98	11.89	3.94	12.05	880.252.250	881.252.250
39,900-59,100	1.5709-2.3268	3586595	SSE125FBHS40	1.25	1.26	14.80	5.04	14.96	880.252.320	881.252.320

order number	catalog number	cartridge 1	cartridge 2	cartridge 3	button-head cap screw	flat point socket set screw	screw
3586593	SSE075FBHS24	R24FBHS06	R30FBHS06	R24FBHS06LF			880.252.200
3586594	SSE100FBHS31	R31FBHS06	R38FBHS06	R31FBHS06LF	880.252.250	881.252.250	
3586595	SSE125FBHS40	R40FBHS06	R48FBHS06	R40FBHS06LF	880.252.320		881.252.320

NOTE: *Dial graduations equal 0,005 mm (0.00002") movement of the tool tip which changes the cutting diameter by 0,01 mm (0.0004").*

Order Example:
By catalog number SSE075FBHS24, or by order number 3586593.



• Order cartridges separately.

Insert Holders for FBHS 90° Lead

order number	catalog number	gage insert	Torx size	insert screw	
1137487	R24FBHS06	CCGT-21.51	T7	843.006.000	
2649548	R30FBHS06	CCMT2151	T7	843.006.000	
1133669	R31FBHS06	CCGT-21.51	T7	843.006.000	
2649549	R38FBHS06	CCMT2151	T7	843.006.000	
1135369	R40FBHS06	CCGT-21.51	T7	843.006.000	
2649550	R48FBHS06	CCMT2151	T7	843.006.000	
1137479	R51FBHS06	CCGT-21.51	T7	843.006.000	
2649551	R65FBHS06	CCMT2151	T7	843.006.000	
1834274	R67FBHS06	CCMT2151	T7	843.006.000	
2649552	R85FBHS06	CCMT2151	T7	843.006.000	
2649554	R125FBHS09	CCMT3252	T15		843.009.000
1137505	R67FBHS09	CCGT-32.52	T15		843.009.000
2649553	R85FBHS09	CCMT3252	T15		843.009.000

Insert Holders for FBHS 95° Lead

order number	catalog number	gage insert	insert screw	
2649555	R24FBHS06LF	CCMT2151	843.006.000	
2649556	R31FBHS06LF	CCMT2151	843.006.000	
2649557	R40FBHS06LF	CCMT2151	843.006.000	
2649558	R51FBHS06LF	CCMT2151	843.006.000	
2649559	R67FBHS09LF	CCMT3252		843.009.000

Order Example:
By catalog number R125FBHS09, or by order number 2649554.

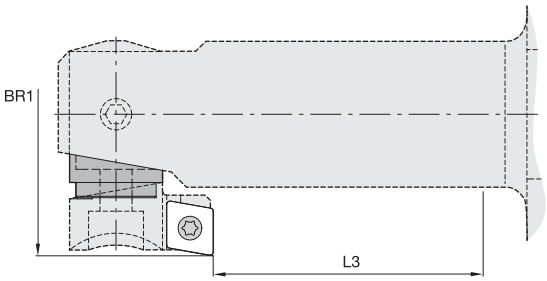
Cartridges for Fine Boring Single Cutters, all Series

Fine Boring Cartridge Usage Chart

BR1						insert		
mm		inch						
min.	max.	min.	max.	order number	catalog number	fine boring head series	ISO	ANSI
23,9	31,1	.9409	1.2244	1137487	R24-FBHS-06	....FBHS-24	CC...0602...	CC..215...
23,9	31,1	.9409	1.2244	2649555	R24-FBHS-06LF	....FBHS-24	CC...0602...	CC..215...
29,9	37,1	1.1772	1.4606	2649548	R30-FBHS-06	....FBHS-24	CC...0602...	CC..215...
30,9	40,1	1.2165	1.5787	1133669	R31-FBHS-06	....FBHS-31	CC...0602...	CC..215...
30,9	40,1	1.2165	1.5787	2649556	R31-FBHS-06LF	....FBHS-31	CC...0602...	CC..215...
37,9	47,1	1.4921	1.8543	2649549	R38-FBHS-06	....FBHS-31	CC...0602...	CC..215...
39,9	51,1	1.5709	2.0118	1135369	R40-FBHS-06	....FBHS-40	CC...0602...	CC..215...
39,9	51,1	1.5709	2.0118	2649557	R40-FBHS-06LF	....FBHS-40	CC...0602...	CC..215...
47,9	59,1	1.8858	2.3268	2649550	R48-FBHS-06	....FBHS-40	CC...0602...	CC..215...
50,9	67,1	2.0039	2.6417	1137479	R51-FBHS-06	....FBHS-51	CC...0602...	CC..215...
50,9	67,1	2.0039	2.6417	2649558	R51-FBHS-06LF	....FBHS-51	CC...0602...	CC..215...
64,9	81,1	2.5551	3.1929	2649551	R65-FBHS-06	....FBHS-51	CC...0602...	CC..215...
66,9	87,1	2.6339	3.4291	1834274	R67-FBHS-06	....FBHS-67	CC...0602...	CC..215...
66,9	87,1	2.6339	3.4291	1137505	R67-FBHS-09	....FBHS-67	CC...09T3...	CC..325...
66,9	87,1	2.6339	3.4291	2649559	R67-FBHS-09LF	....FBHS-67	CC...09T3...	CC..325...
84,9	105,1	3.3425	4.1378	2649552	R85-FBHS-06	....FBHS-67	CC...0602...	CC..215...
84,9	105,1	3.3425	4.1378	2649553	R85-FBHS-09	....FBHS-67	CC...09T3...	CC..325...
86,9	116,1	3.4213	4.5709	1834274	R67-FBHS-06	....FBHS-87	CC...0602...	CC..215...
86,9	116,1	3.4213	4.5709	1137505	R67-FBHS-09	....FBHS-87	CC...09T3...	CC..325...
86,9	116,1	3.4213	4.5709	2649559	R67-FBHS-09LF	....FBHS-87	CC...09T3...	CC..325...
104,9	134,1	4.1299	5.2795	2649552	R85-FBHS-06	....FBHS-87	CC...0602...	CC..215...
104,9	134,1	4.1299	5.2795	2649553	R85-FBHS-09	....FBHS-87	CC...09T3...	CC..325...
124,9	154,1	4.9173	6.0669	2649554	R125-FBHS-09	....FBHS-87	CC...09T3...	CC..325...
115,9	153,1	4.5630	6.0276	1834274	R67-FBHS-06	....FBHS-116	CC...0602...	CC..215...
115,9	153,1	4.5630	6.0276	1137505	R67-FBHS-09	....FBHS-116	CC...09T3...	CC..325...
115,9	153,1	4.5630	6.0276	2649559	R67-FBHS-09LF	....FBHS-116	CC...09T3...	CC..325...
133,9	171,1	5.2717	6.7362	2649552	R85-FBHS-06	....FBHS-116	CC...0602...	CC..215...
133,9	171,1	5.2717	6.7362	2649553	R85-FBHS-09	....FBHS-116	CC...09T3...	CC..325...
153,9	191,1	6.0591	7.5236	2649554	R125-FBHS-09	....FBHS-116	CC...09T3...	CC..325...

NOTE: Order cartridges for the desired bore range.
Match fine boring series to the basic boring head.

Reversal Adapter for Back Boring — Fine Boring Single Cutters



Reversal Adapters

BR1 mm min.	BR1 mm max.	BR1 inch min.	BR1 inch max.	order number	reversal adapter catalog number	use with cartridges			fine boring head series	L3 mm	L3 inch
37	44	1.4567	1.7323	2649560	R37FBHSRB	R24FBHS06	R24FBHS06LF		....FBHS-24	13,0	0.512
40	51	1.5748	2.0079	2649561	R40FBHSRB	R30FBHS06			....FBHS-24	13,0	0.512
44	53	1.7323	2.0866	2649562	R44FBHSRB	R31FBHS06	R31FBHS06LF		....FBHS-31	17,6	0.693
51	60	2.0079	2.3622	2649563	R51FBHSRB	R38FBHS06			....FBHS-31	17,6	0.693
53	64	2.0866	2.5197	2649564	R53FBHSRB	R40FBHS06	R40FBHS06LF		....FBHS-40	31,3	1.232
60	71	2.3622	2.7953	2649565	R60FBHSRB	R48FBHS06			....FBHS-40	31,3	1.232
64	80	2.5197	3.1496	2649566	R64FBHSRB	R51FBHS06	R51FBHS06LF		....FBHS-51	49,2	1.937
75	91	2.9528	3.5827	2649567	R75FBHSRB	R65FBHS06			....FBHS-51	49,2	1.937
87	107	3.4243	4.2126	2649568	R87FBHSRB	R67FBHS06	R67FBHS09	R67FBHS09LF	....FBHS-67	62,0	2.441

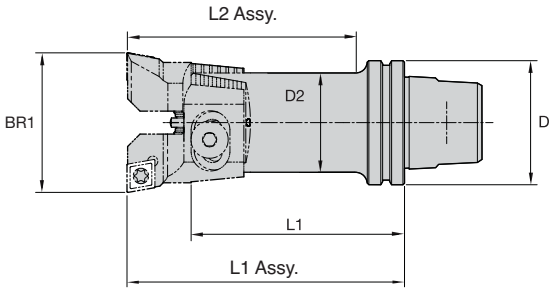
Use the chart above to match the insert holder to the reversal adapter.

Order Example:
By catalog number R37FBHSRB, or by order number 2649560.

ModBORE™ Boring Systems

Rough Boring Twin Cutters

- Basic bodies shipped without blade sets.
- Order blade sets separately, see pages G25-G26.



RBHT KM Shank Series

BR1 bore range mm	BR1 bore range in	order number	catalog number	D KM size	D2 mm	D2 in	L1 mm	L1 in	L1 Assy mm	L1 Assy in	L2 Assy mm	L2 Assy in	blade mounting screw	washer
23,500-30,500	.9252-1.2008	3586519	KM32RBHT24	KM32	20,0	.79	75,4	2.97	90,0	3.54	76,0	2.99	840.142.200	841.142.200
29,500-40,000	1.1614-1.5748	3586520	KM32RBHT30	KM32	25,0	.98	83,8	3.30	100,0	3.94	86,0	3.39	840.142.250	841.142.250
39,500-50,500	1.5551-1.9882	3586521	KM40RBHT40	KM40	32,0	1.26	68,8	2.71	90,0	3.54	74,0	2.91	840.142.320	841.142.320
49,500-66,500	1.9488-2.6181	3586522	KM50RBHT50	KM50	42,0	1.65	62,2	2.45	90,0	3.54	70,0	2.76	840.142.420	841.142.420
65,500-87,500	2.5787-3.4449	3586543	KM50RBHT66	KM50	55,0	2.17	63,0	2.48	100,0	3.94	100,0	3.94	840.142.550	841.142.550
86,500-115,500	3.4055-4.5472	3586544	KM50RBHT87	KM50	72,0	2.83	70,5	2.78	120,0	4.72	120,0	4.72	840.142.720	841.142.720
86,500-115,500	3.4055-4.5472	3586545	KM63UTRBHT87	KM63UT	72,0	2.83	70,5	2.78	120,0	4.72	120,0	4.72	840.142.720	841.142.720
114,500-153,000	4.5079-6.0236	3586546	KM63UTRBHT115	KM63UT	94,0	3.70	83,2	3.28	150,0	5.91	150,0	5.91	840.142.940	841.142.940

Reference Insert Blade Sets

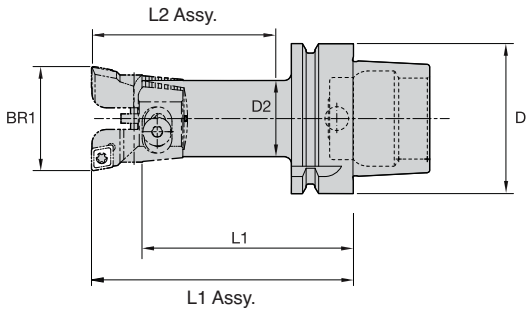
BR1 mm	BR1 in	90° lead blade sets		70° lead blade sets		90° lead simultaneous adjusting blade sets	90° lead split depth of cut blade
23.500 - 30.500	.9252 - 1.2008	MB24RBHT06F		MB24RBHT06K		SYB24RBHT06F	STB24RBHT06F
29.500 - 40.000	1.1614 - 1.5748	MB30RBHT06F		MB30RBHT06K		STY30RBHT06F	STB30RBHT06F
39.500 - 50.500	1.5551 - 1.9882	MB40RBHT09F		MB40RBHT09K		STY40RBHT09F	STB40RBHT09F
49.500 - 66.500	1.9488 - 2.6181	MB50RBHT09F		MB50RBHT09K		SYB50RBHT09F	STB50RBHT09F
65.500 - 87.500	2.5787 - 3.4449	MB66RBHT12F	MB66RBHT12LF	MB66RBHT12K	MB66RBHT12LK	SYB66RBHT12F	STB66RBHT12F
86.500 - 115.500	3.4055 - 4.5472	MB87RBHT12F	MB87RBHT16LF	MB87RBHT12K	MB87RBHT16LK	SYB87RBHT12F	STB87RBHT12F
114.500 - 153.000	4.5079 - 6.0236	MB115RBHT12F	MB115RBHT16LF		MB115RBHT16LK	SYB115RBHT16LF	STB115RBHT16LF

Order Example:
By catalog number KM32RBHT24, or by order number 3586519.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Rough Boring Twin Cutters

- Basic bodies shipped without blade sets.
- Order blade sets separately, see pages G25-G26.



RBHT HSK Shank Series

BR1 bore range mm	BR1 bore range in	order number	catalog number	D HSK size	D2 mm	D2 in	L1 mm	L1 in	L1 Assy. mm	L1 Assy. in	L2 Assy. mm	L2 Assy. in	blade mounting screw	washer	pin
23,500-30,500	.9252-1.2008	3586547	HSK63RBHT24	HSK63A	20,0	.79	75,4	2.97	90,0	3.54	64,1	2.52	840.142.200	841.142.200	841.342.200
29,500-40,000	1.1614-1.5748	3586548	HSK63RBHT30	HSK63A	25,0	.98	88,8	3.50	105,0	4.13	79,1	3.11	840.142.250	841.142.250	841.342.200
39,500-50,500	1.5551-1.9882	3586549	HSK63RBHT40	HSK63A	32,0	1.26	92,2	3.63	110,0	4.33	84,1	3.31	840.142.320	841.142.320	841.342.200
49,500-66,500	1.9488-2.6181	3586550	HSK63RBHT50	HSK63A	42,0	1.65	92,2	3.63	120,0	4.72	94,1	3.70	840.142.420	841.142.420	841.342.200
65,500-87,500	2.5787-3.4449	3586551	HSK63RBHT66	HSK63A	55,0	2.17	95,5	3.76	125,0	4.92	125,0	4.92	840.142.550	841.142.720	841.342.420
86,500-115,500	3.4055-4.5472	3586563	HSK63RBHT87	HSK63A	72,0	2.83	95,5	3.76	145,0	5.71	145,0	5.71	840.142.720	841.142.720	841.342.420

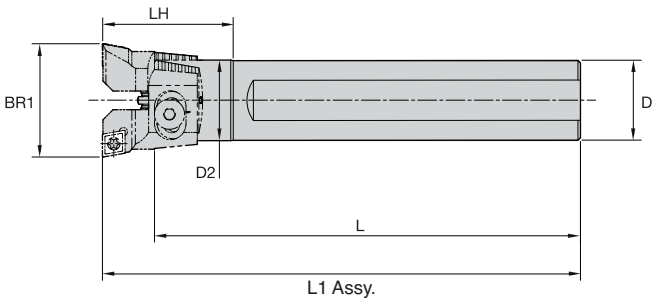
Reference Insert Blade Sets

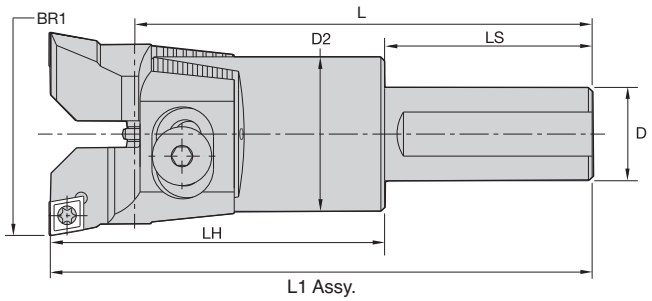
BR1 mm	BR1 in	90° lead blade sets		70° lead blade sets		90° lead simultaneous adjusting blade sets	90° lead split depth of cut blade
23.500 - 30.500	.9252 - 1.2008	MB24RBHT06F		MB24RBHT06K		SYB24RBHT06F	STB24RBHT06F
29.500 - 40.000	1.1614 - 1.5748	MB30RBHT06F		MB30RBHT06K		STY30RBHT06F	STB30RBHT06F
39.500 - 50.500	1.5551 - 1.9882	MB40RBHT09F		MB40RBHT09K		STY40RBHT09F	STB40RBHT09F
49.500 - 66.500	1.9488 - 2.6181	MB50RBHT09F		MB50RBHT09K		SYB50RBHT09F	STB50RBHT09F
65.500 - 87.500	2.5787 - 3.4449	MB66RBHT12F	MB66RBHT12LF	MB66RBHT12K	MB66RBHT12LK	SYB66RBHT12F	STB66RBHT12F
86.500 - 115.500	3.4055 - 4.5472	MB87RBHT12F	MB87RBHT16LF	MB87RBHT12K	MB87RBHT16LK	SYB87RBHT12F	STB87RBHT12F

Order Example:
By catalog number HSK63RBHT24, or by order number 3586547.

ModBORE™ Boring Systems

Rough Boring Twin Cutters





- Basic bodies shipped without blade sets.
- Order blade sets separately, see pages G25-G26.

RBHT Steel Straight Shank Series

BR1 bore range metric	BR1 bore range inch	order number	catalog number	D	D2	L	LH	L1 Assy	LS	blade mounting screw	washer	pin
23,500-30,500	.9252-1.2008	3586564	SF075RBHT24	.75	.79	5.33	1.09	5.91	–	840.142.200	841.142.200	841.342.200
29,500-40,000	1.1614-1.5748	3586565	SF100RBHT30	1.00	.98	6.06	1.20	6.69	–	840.142.250	841.142.250	841.342.200
39,500-50,500	1.5551-1.9882	3586566	SF125RBHT40	1.25	1.26	6.65	1.23	7.48	–	840.142.320	841.142.320	841.342.200
49,500-66,500	1.9488-2.6181	3586567	SF100RBHT50	1.00	1.65	4.65	2.45	5.74	2.20	840.142.420	841.142.420	841.342.420
65,500-87,500	2.5787-3.4449	3586569	SF125RBHT66	1.25	2.17	4.87	2.48	6.33	2.39	840.142.550	841.142.720	841.342.420
86,500-115,500	3.4055-4.5472	3586570	SF150RBHT87	1.50	2.83	5.59	2.78	7.54	2.82	840.142.720	841.142.720	841.342.420
114,500-153,000	4.5079-6.0236	3586571	SF200RBHT115	2.00	3.70	6.66	3.25	9.29	3.38	840.142.940	841.142.940	841.342.420

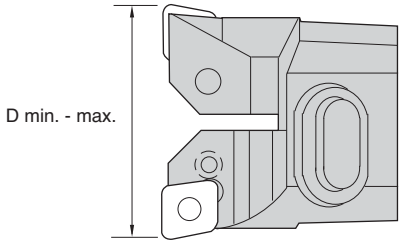
Reference Insert Blade Sets

BR1 mm	BR1 in	90° lead blade sets		70° lead blade sets		90° lead simultaneous adjusting blade sets	90° lead split depth of cut blade
23.500 - 30.500	.9252 - 1.2008	MB24RBHT06F		MB24RBHT06K		SYB24RBHT06F	STB24RBHT06F
29.500 - 40.000	1.1614 - 1.5748	MB30RBHT06F		MB30RBHT06K		STY30RBHT06F	STB30RBHT06F
39.500 - 50.500	1.5551 - 1.9882	MB40RBHT09F		MB40RBHT09K		STY40RBHT09F	STB40RBHT09F
49.500 - 66.500	1.9488 - 2.6181	MB50RBHT09F		MB50RBHT09K		SYB50RBHT09F	STB50RBHT09F
65.500 - 87.500	2.5787 - 3.4449	MB66RBHT12F	MB66RBHT12LF	MB66RBHT12K	MB66RBHT12LK	SYB66RBHT12F	STB66RBHT12F
86.500 - 115.500	3.4055 - 4.5472	MB87RBHT12F	MB87RBHT16LF	MB87RBHT12K	MB87RBHT16LK	SYB87RBHT12F	STB87RBHT12F
114.500 - 153.000	4.5079 - 6.0236	MB115RBHT12F	MB115RBHT16LF		MB115RBHT16LK	SYB115RBHT16LF	STB115RBHT16LF

Order Example:
By catalog number SF075RBHT24, or by order number 3586564.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

90° Lead Rough Boring Twin Blade Sets



90° Lead Blade Sets

D min	D max	D min	D max	order number	catalog number	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size
23,500	30,500	.9252	1.2008	3556346	MB24RBHT06F	CCGT2151	848.200.407	843.006.000				FT7	T7
29,500	40,100	1.1614	1.5787	3556347	MB30RBHT06F	CCGT2151	848.250.409	843.006.000				FT7	T7
39,500	50,500	1.5551	1.9882	3556348	MB40RBHT09F	CCGT3252	848.320.413	843.009.000				FT15	T15
49,500	66,500	1.9488	2.6181	3556349	MB50RBHT09F	CCGT3252	848.420.614	843.009.000				FT15	T15
65,500	87,500	2.5787	3.4449	3556350	MB66RBHT12F	CC..431	848.550.620	843.012.000				FT20	T20
65,500	87,500	2.5787	3.4449	3556352	MB66RBHT12LF	CNMG432	847.012.000		845.012.000	844.012.000	846.012.000		–
86,500	115,500	3.4055	4.5472	3556393	MB87RBHT12F	CC..431	848.720.000	843.012.000				FT20	T20
86,500	115,500	3.4055	4.5472	3556394	MB87RBHT16LF	CNMG543	847.016.000		845.016.000	844.016.000	846.016.000		–
114,500	153,000	4.5079	6.0236	3556395	MB115RBHT12F	CC..431	848.940.640	843.012.000				FT20	T20
114,500	153,000	4.5079	6.0236	3556396	MB115RBHT16LF	CNMG543	847.016.000		845.016.000	844.016.000	846.016.000		–

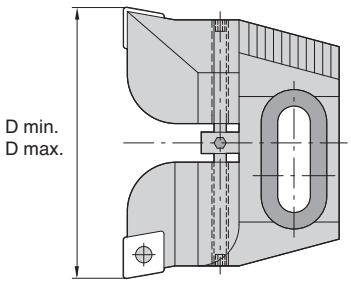
70° Lead Rough Boring Twin Blade Sets

70° Lead Blade Sets

D min	D max	D min	D max	order number	catalog number	gage insert	adjusting screw	insert screw	shim	shim pin	toggle lever	Torx wrench	Torx size
23,500	30,500	.9252	1.2008	3556397	MB24RBHT06K	CCGT2151	848.200.407	843.006.000				FT7	T7
29,500	40,100	1.1614	1.5787	3556398	MB30RBHT06K	CCGT2151	848.250.409	843.006.000				FT7	T7
39,500	50,500	1.5551	1.9882	3556399	MB40RBHT09K	CCGT3252	848.320.413	843.009.000				FT15	T15
49,500	66,500	1.9488	2.6181	3556400	MB50RBHT09K	CCGT3252	848.420.614	843.009.000				FT15	T15
65,500	87,500	2.5787	3.4449	3556401	MB66RBHT12K	CC..431	848.550.620	843.012.000				FT20	T20
65,500	87,500	2.5787	3.4449	3556402	MB66RBHT12LK	CNMG432	847.012.000		845.012.000	844.012.000	846.012.000		–
86,500	115,500	3.4055	4.5472	3556403	MB87RBHT12K	CC..431	848.720.000	843.012.000				FT20	T20
86,500	115,500	3.4055	4.5472	3556404	MB87RBHT16LK	CNMG543	847.016.000		845.016.000	844.016.000	846.016.000		–
114,500	153,000	4.5079	6.0236	3556405	MB115RBHT16LK	CNMG543	847.016.000		845.016.000	844.016.000	846.016.000		–

Order Example:
By catalog number B24RBHT06F, or by order number 1144034.

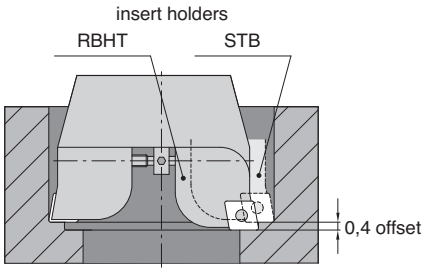
90° Lead Simultaneous Adjusting Rough Boring Twin Blade Sets

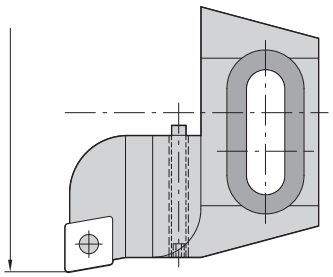


90° Lead Simultaneous Adjusting Blade Sets

mm		inch				gage				simultaneous			
D min	D max	D min	D max	order number	catalog number	insert	flat point socket set screw	flat-head cap screw	insert screw	adj spindle	shim	shim pin	toggle lever
23,500	30,500	.9252	1.2008	2652965	SYB24RBHT06F	CC..2151			843.006.000	848.200.005			
29,500	40,100	1.1614	1.5787	2652967	SYB30RBHT06F	CC..2151			843.006.000				
39,500	50,500	1.5551	1.9882	2652968	SYB40RBHT09F	CC..3252			843.009.000	848.320.005			
49,500	66,500	1.9488	2.6181	2652969	SYB50RBHT09F	CC..3252			843.009.000	848.420.005			
65,500	87,500	2.5787	3.4449	2652970	SYB66RBHT12F	CC..431	847.012.000	843.012.000		848.550.005	845.012.000	844.012.000	846.012.000
65,500	87,500	2.5787	3.4449	2652971	SYB66RBHT12LF	CN..431							
86,500	115,500	3.4055	4.5472	2652972	SYB87RBHT12F	CC..431	847.016.000	843.012.000		848.720.005	845.016.000	844.016.000	846.016.000
86,500	115,500	3.4055	4.5472	2652983	SYB87RBHT16LF	CN..431							
114,500	153,000	4.5079	6.0236	2652984	SYB115RBHT16LF	CN..431							

90° Lead Split Depth of Cut Rough Boring Blade



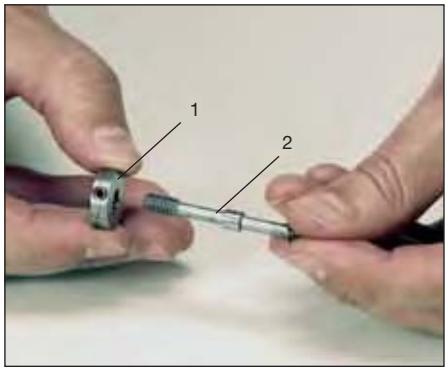


90° Lead Split Depth of Cut Blades

mm		inch				gage							
D min	D max	D min	D max	order number	catalog number	insert	dog-point set screw	flat point socket set screw	flat-head cap screw	insert screw	shim	shim pin	toggle lever
23,500	30,500	.9252	1.2008	2652987	STB24RBHT06F	CC..2151		848.200.407		843.006.000			
29,500	40,100	1.1614	1.5787	2652995	STB30RBHT06F	CC..2151		848.250.409		843.006.000			
39,500	50,500	1.5551	1.9882	2652997	STB40RBHT09F	CC..3252		848.320.413		843.009.000			
49,500	66,500	1.9488	2.6181	2652998	STB50RBHT09F	CC..3252		848.420.614		843.009.000			
65,500	87,500	2.5787	3.4449	2652999	STB66RBHT12F	CC..431	848.550.620	847.012.000	843.012.000		845.012.000	844.012.000	846.012.000
65,500	87,500	2.5787	3.4449	2653000	STB66RBHT12LF	CN..431							
86,500	115,500	3.4055	4.5472	2653001	STB87RBHT12F	CC..431	848.720.000	847.016.000	843.012.000		845.016.000	844.016.000	846.016.000
86,500	115,500	3.4055	4.5472	2653002	STB87RBHT16LF	CN..431							
114,500	153,000	4.5079	6.0236	2653003	STB115RBHT16LF	CN..431							

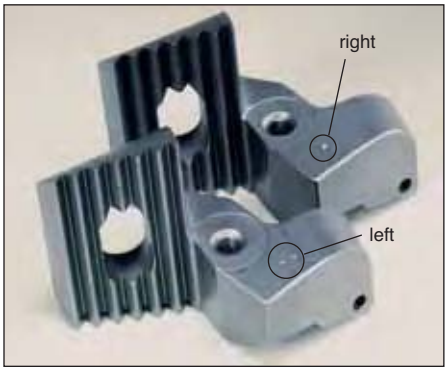
Order Example:
By catalog number SYB24RBHT06F, or by order number 2652965.

Assembling the Boring Head for Synchronized Machining



Push central ring (1) toward the center of the synchronization screw (2). The hexagonal part on the inner side of the synchronization screw has a right-hand thread on one side and a left-hand thread on the opposite side.

Tighten one of the 3 screws of the central ring (1).



The toolholders have dots: one dot for right-hand threads and 2 dots for left-hand threads.

Insert the central ring together with the synchronization screw into the central bore. Align the toolholder with left-hand thread (2 dots), moving it towards the synchronization screw. The inner hexagon has to be opposite the toolholder (3).

Align the second toolholder by moving it toward the screw. Now turn the screw with the key until at least one toolholder contacts the central ring.

Remove the previously fixed screw of the central ring. Now turn the synchronization screw until both toolholders touch the central ring.

Adjustment

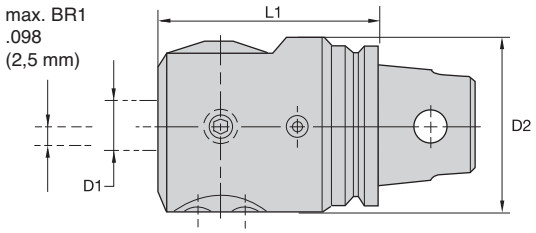
Now the toolholders are in a central position. Tighten the 3 screws of the central ring. Mount clamping screws (4) and tighten them slightly. The head is now ready for synchronized machining.

Set bore diameter with the setting key and fix the two clamping screws (presetting equipment is necessary).

Splitting depth machining

The toolholders for splitting depth machining are black finished and their z-axis has an offset of 0,4 mm (.016 inch). They are identified with a right-hand thread and have 3 dots.

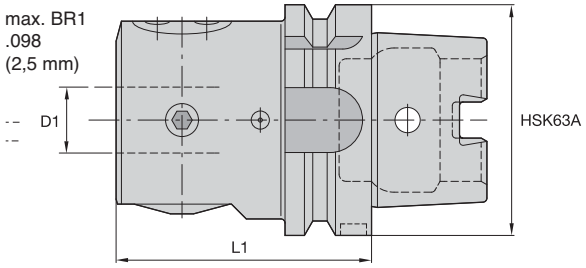
Offset Boring Head



- Order boring bars separately for required diameter, see page G29.

FBHO KM Shank Series

order number	catalog number	KM size	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	ModBORE FBHO parts pkg
1131111	KM40FBHO1660	KM40	16	.63	55,0	2.17	60,0	2.36	PKG7001
1132036	KM50FBHO1670	KM50	16	.63	55,0	2.17	70,0	2.76	PKG7001



- Order boring bars separately for required diameter, see page G29.

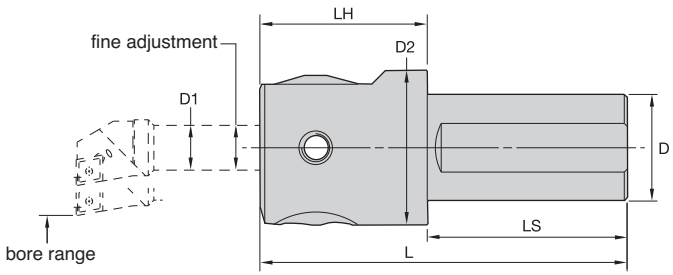
FBHO HSK Shank Series

order number	catalog number	HSK size	D1 mm	D1 in	L1 mm	L1 in
2651037	HSK63FBHO1695	HSK63A	16	.63	95,0	3.74

Order Example:
By catalog number KM40FBHO1660, or by order number 1131111.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Offset Boring Head FBHO

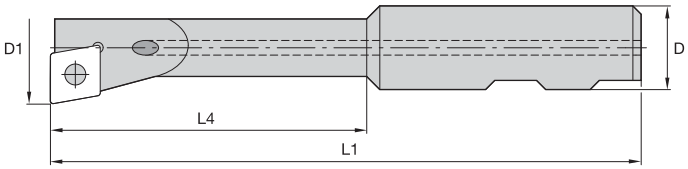


- Order boring bars separately for required diameter, see page G29.

FBHO Steel Straight Shank Series

order number	catalog number	D1 D	D1 mm	D1 in	D2	L1	LH	LS
3077141	SF100FBHO1660	1.000	16	.63	2.17	4.56	2.36	2.20
3077140	SF150FBHO1660	1.500	16	.63	2.17	5.18	2.36	2.82

Precision Boring Bars for FBHO Fine Boring Tools

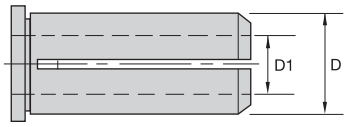


AFB Series Boring Bars

mm D1 min	mm D1 max	inch D1 min	inch D1 max	order number	catalog number	gage insert	D	L1	L1	L4	L4	insert screw		Torx size
9,75	14,75	.384	.581	1125110	AFB09075SCFCR06	CC..2151	16	75,0	2.95	30,0	1.18		PKG2025	T7
13,75	18,75	.541	.738	1133883	AFB13085SCFCR06	CC..2151	16	85,0	3.35	40,0	1.57		PKG2025	T7
17,75	22,75	.699	.896	1133894	AFB17100SCFCR06	CC..2151	16	100,0	3.94	55,0	2.17		PKG2025	T7
21,75	26,75	.856	1.053	1137835	AFB21110SCFCR09	CC..3251	16	110,0	4.33	60,0	2.36	PKG3242		T15
24,75	29,75	.974	1.171	1128324	AFB24115SCFCR09	CC..3251	16	115,0	4.53	65,0	2.56	PKG3242		T15
27,75	32,75	1.093	1.289	1126838	AFB27115SCFCR09	CC..3251	16	115,0	4.53	70,0	2.76	PKG3242		T15
31,75	36,75	1.250	1.447	1120731	AFB31115SCFCR09	CC..3251	16	115,0	4.53	70,0	2.76	PKG3242		T15
34,75	39,75	1.368	1.565	1127271	AFB34115SCFCR09	CC..3251	16	115,0	4.53	70,0	2.76	PKG3242		T15
38,75	44,10	1.526	1.736	2651038	AFB38115SCFPR09	CC..3252	16	115,0	4.53	85,0	3.47	PKG3242		T15
42,75	48,10	1.683	1.894	2651039	AFB42115SCFPR09	CC..3252	16	115,0	4.53	85,0	3.47	PKG3242		T15
47,75	53,10	1.880	2.091	2651040	AFB47115SCFPR09	CC..3252	16	115,0	4.53	85,0	3.35	PKG3242		T15

Order Example:
By catalog number AFB09075SCFCR06, or by order number 1125110.

Reduction Sleeves for FBHO Offset Boring Heads



RS Series Sleeves Metric ID

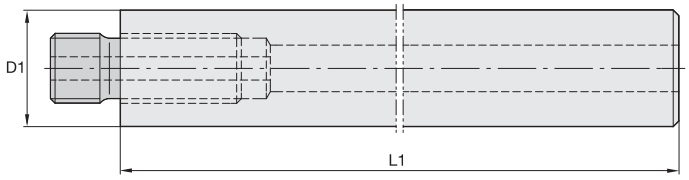
order number	catalog number	D	D1
2651042	RS1605	16	5
1125092	RS1606	16	6
1133914	RS1608	16	8
1135642	RS1610	16	10
1135662	RS1612	16	12

RS Series Sleeves Inch ID

order number	catalog number	D	D1
1285789	RS16025	.630	.250
1285790	RS16038	.630	.375
1285791	RS16050	.630	.500

Order Example:
By catalog number RS16025, or by order number 1285789.

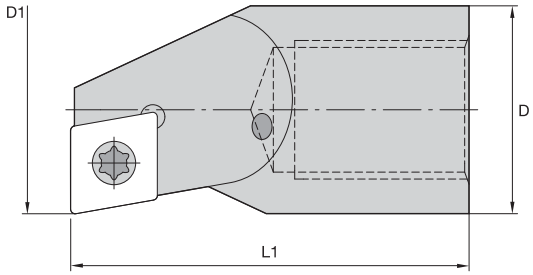
Carbide Shanks for Screw On Boring Heads



Carbide Shanks

order number	catalog number	D mm	D in	L1 mm	L1 in
2651163	CFB10082	10	.39	82	3.23
2651164	CFB12096	12	.47	96	3.78
2651165	CFB14110	14	.55	110	4.33
2651166	CFB16120	16	.63	120	4.72

Fixed Pocket Screw On Boring Head for Carbide Bars



- Match boring head diameter to carbide bar diameter.

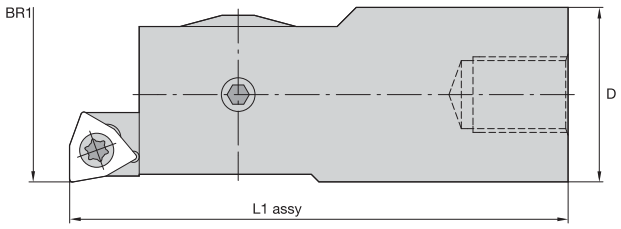
Fixed Pocket Boring Head

mm D1 min	mm D1 max	inch D1 min	inch D1 max	order number	catalog number	IntFace Catalog Gage Insert 1	D mm	D in	L1 mm	L1 in	Insert screw	Torx size
10,750	16,100	.4232	.6339	2651168	HFB1023SCFPR06	CCMT2151	10	.39	23	.91	PKG0011	T7
12,750	18,100	.5020	.7126	2651169	HFB1223SCFPR06	CCMT2151	12	.47	23	.91	PKG0011	T7
16,750	22,100	.6594	.8701	2651170	HFB1627SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7
21,750	27,100	.8563	1.0669	2651171	HFB2127SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7
24,750	30,100	.9744	1.1850	2651172	HFB2427SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7
27,750	33,100	1.0925	1.3031	2651173	HFB2727SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7
31,750	37,100	1.2500	1.4606	2651174	HFB3127SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7
34,750	40,100	1.3681	1.5787	2651175	HFB3427SCFPR06	CCMT2151	16	.63	27	1.06	PKG0011	T7

Ordering Example:
By catalog number HFB1023SCFPR06, or by order number 2651168.

ModBORE™ Boring Systems

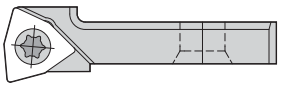
Fine Adjustable Screw On Boring Head for Carbide Bars



- Match boring head diameter to carbide bar diameter.
- Order cartridge separately, see below.

Fine Adjustable Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	L1 assy mm	L1 assy in	D mm	D in	cartridge mounting screw
14,700-17,100	.4787-0.6732	2651176	HFB14FBHS1440	40,0	1.57	14	.55	PKG1402
16,700-20,100	.6575-0.7913	2651177	HFB16FBHS1640	40,0	1.57	16	.63	PKG1602

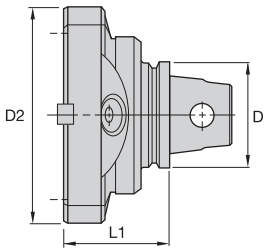


Fine Adjustable Boring Head Cartridge

order number	catalog number	gage insert	insert screw	Torx size
2651179	R14FBHS02	WC..0201	PKG0010	T6

Order Example:
By catalog number HFB14FBHS1440, or by order number 2651176.

KM Bridge Tool Adapters

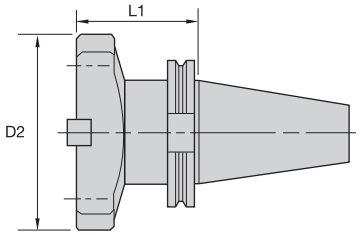


- Extension bridge required
- Order extension bridge separately, see page G35.
- Match adapter and extension bridge series.

KM Shank Series

D1	D1 max	D1	D1 max	order number	catalog number	extension bridge series	D2	D2	L1	L1	spare parts package	socket-head cap screw
150	305	5.906	12.008	1135802	KM63BT13065	A	130,0	5.12	65,0	2.56	PKG1565	MS1085PKG
150	405	5.906	15.945	1197315	KM80BT13070	B,A	130,0	5.12	70,0	2.76	PKG1565	MS1085PKG

CV Bridge Tool Adapters



- Extension bridge required
- Order extension bridge separately, see page G35.
- Match adapter and extension bridge series.

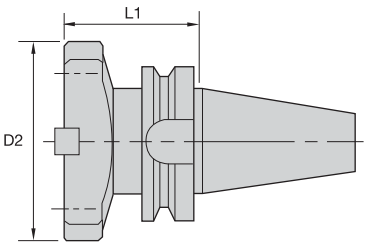
CV Shank Series ANSI B5.50

D1	D1 max	D1	D1 max	order number	catalog number	extension bridge series	D2	D2	L1	L1	spare parts package	socket-head cap screw
150	655	5.906	25.787	1122185	CV50BT13069	A,B,C	130,0	5.12	69,1	2.72	PKG1565	MS1085PKG

Order Example:
By catalog number KM63BT13065, or by order number 1135802.

BT Bridge Tool Adapters

- Extension bridge required.
- Order extension bridge separately, see page G35.
- Match adapter and extension bridge series.

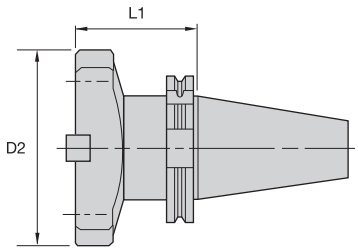


BT Shank Series JMTBA MAS 403 BT

D1	D1 max	D1	D1 max	order number	catalog number	extension bridge series	D2	D2	L1	L1	spare parts package	socket-head cap screw
150	655	5.906	25.787	1121711	BT50BT13088	A,B,C	130,0	5.12	88,0	3.46	PKG1565	MS1085PKG

DV Bridge Tool Adapters

- Extension bridge required.
- Order extension bridge separately, see page G35.
- Match adapter and extension bridge series.

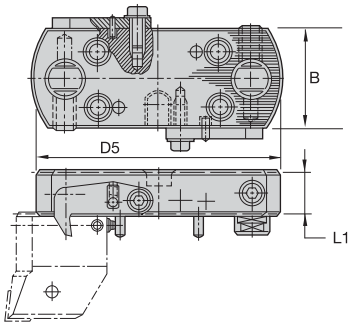


DV Shank Series DIN 69871 A

D1	D1 max	D1	D1 max	order number	catalog number	extension bridge series	D2	D2	L1	L1	spare parts package	socket-head cap screw
150	655	5.906	25.787	1133581	DV50BT13069	A,B,C	130,0	5.12	69,1	2.72	PKG1565	MS1085PKG

Order Example:
By catalog number BT50BT13088, or by order number 1121711.

Bridge Tool Extensions

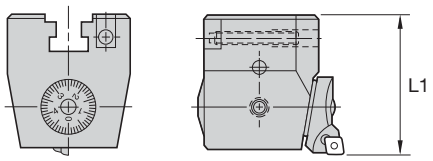


- Match bridge series to adapter.

Extension Bridges

BR1 bore range	BR1 bore range	order number	catalog number	max RPM	extension bridge series	B	B	L1	L1	spare parts package	hex size	kg
150,000-205,000	5.9055-8.0709	1133280	EB13030150	1250	A	70,0	2.76	30,0	1.18	PKG156502	8.0 MM	1,95
200,000-255,000	7.8740-10.0394	1125085	EB18030200	1000	A	70,0	2.76	30,0	1.18	PKG156502	8.0 MM	2,77
250,000-305,000	9.8425-12.0079	1132857	EB23035250	850	B	70,0	2.76	35,0	1.38	PKG156502	8.0 MM	4,00
300,000-355,000	11.8110-13.9764	1126830	EB28035300	700	B	70,0	2.76	35,0	1.38	PKG156502	8.0 MM	5,14
350,000-405,000	13.7795-15.9449	1121703	EB33040350	600	B	70,0	2.76	40,0	1.57	PKG156502	8.0 MM	6,86
400,000-455,000	15.7480-17.9134	1140602	EB38040400	530	C	70,0	2.76	40,0	1.57	PKG156502	8.0 MM	7,95
450,000-505,000	17.7165-19.8819	1121036	EB43040450	480	C	70,0	2.76	40,0	1.57	PKG156502	8.0 MM	9,23
500,000-550,000	19.6850-21.8504	1270619	EB48040500	440	C	70,0	2.76	40,0	1.57	PKG156502	8.0 MM	10,23
550,000-605,000	21.6535-23.8189	1270620	EB53050550	400	C	70,0	2.76	50,0	1.97	PKG156502	8.0 MM	13,91
600,000-655,000	23.6220-25.7874	1270621	EB58050600	370	C	70,0	2.76	50,0	1.97	PKG156502	8.0 MM	15,32

Bridge Tool 90° Lead Fine Boring Head



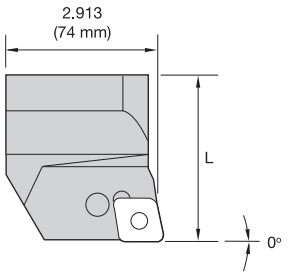
- Insert holder included.
- 0,01mm (0.0004") diameter adjustment.
- Use with counterweight for balance.

EBUF-F 90° Fine Boring Head

order number	catalog number	L1	rot catalog cartridge 1	spare parts package	wrench size – adjusting screw	kg
1135375	EBUFF0975	75	R67-FBHS-09	PKG0002	5 MM	2,1

Order Example:
By catalog number EB13030150, or by order number 1133280.

Bridge Tool 90° Lead Rough Boring Head

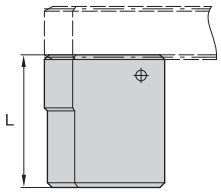


- Packaged as a matched set of two to permit twin cutting operations.

EBUR-F 90° Lead Boring Head

order number	catalog number	insert 1	L	spare parts package	insert screw ID drive size	kg
1624878	EBURF1975PKG	CNMG643	75	PKG7994	4 MM	1,6

Bridge Tool Counter Weight for Extension Bridge



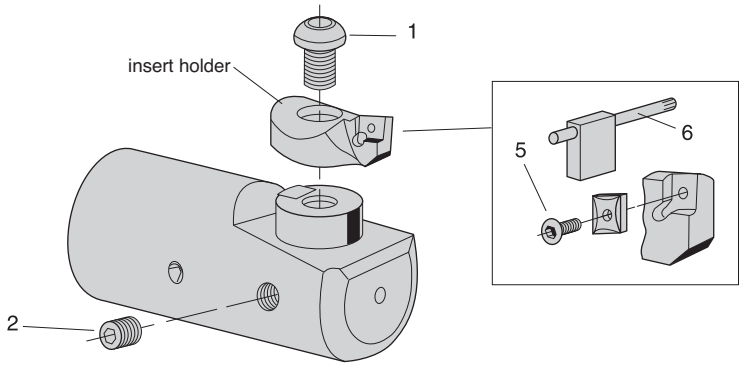
- Use to balance the extension bridge when using an EBURF-F fine boring head.

Counterweight

		L		
order number	catalog number	mm	inch	lbs
1130854	232.000.000	72	2.835	4

Order Example:
By catalog number EBUR-F_1975PKG, or by order number 1624878.

ModBORE Parts Packages

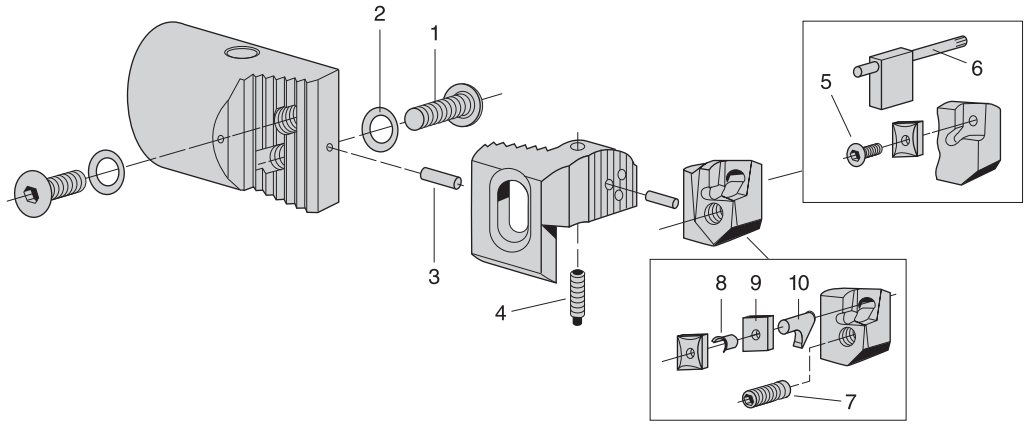


Fine Boring Single Cutters

order number	catalog number	boring head	*insert holder	1	2	5	6
1125103	PKG-2502	KM32-FBHS-24-90	R24-FBHS-06	2	2	2	1
1125164	PKG-2502	KM32-FBHS-31-100	R31-FBHS-06	2	2	2	1
1129913	PKG-3202	KM40-FBHS-40-90	R40-FBHS-06	2	2	2	1
1133896	PKG-4202	KM50-FBHS-51-90	R51-FBHS-06	2	2	2	1
1125984	PKG-5502	KM50-FBHS-67-100	R67-FBHS-09	2	2	2	1
1123194	PKG-7202	KM50-FBHS-87-120 KM63-FBHS-87-120	R67-FBHS-09	2	2	2	1
1131097	PKG-9402	KM50-FBHS-87-120	R67-FBHS-09	2	2	2	1
1133903	PKG-2025	KM32-FBHS-24-90 KM32-FBHS-31-100 KM40-FBHS-40-90 KM50-FBHS-51-90	R24-FBHS-06 R31-FBHS-06 R40-FBHS-06 R51-FBHS-06	–	–	5	–
1133202	PKG-3242	KM50-FBHS-67-100 KM50-FBHS-87-120 KM63-FBHS-87-120 KM63-FBHS-116-150	R67-FBHS-09	–	–	5	–

**Replacement insert holder must be purchased separately. See page G19 for part numbers.*

ModBORE Parts Packages



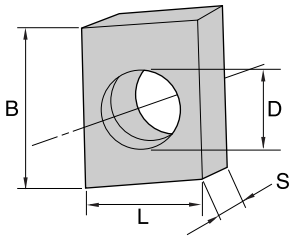
Twin Cutters

order number	catalog number	boring head	1	2	3	4	5	6	7	8	9	10
1132587	PKG-2001	KM32-RBHT-24-90F KM32-RBHT-24-90K	1	1	1	1	1	1	–	–	–	–
1121118	PKG-2501	KM32-RBHT-30-100F KM32-RBHT-30-100K	1	1	1	1	1	1	–	–	–	–
1125968	PKG-3201	KM40-RBHT-40-90F KM40-RBHT-40-90K	1	1	1	1	1	1	–	–	–	–
1121097	PKG-4201	KM50-RBHT-50-90F KM50-RBHT-50-90K	1	1	1	1	1	1	–	–	1	–
1121110	PKG-5501	KM50-RBHT-66-100F KM50-RBHT-66-100K	1	1	1	1	–	–	1	1	1	1
1121105	PKG-7201	KM50-RBHT-87-120F KM50-RBHT-87-120K KM63-RBHT-87-120F KM63-RBHT-87-120K	1	1	1	1	–	–	1	1	1	1
1131577	PKG-9401	KM63-RBHT-115-150F KM63-RBHT-115-150K	1	1	1	1	–	–	1	1	1	1
1133903	PKG-2025	KM32-RBHT-24-90F KM32-RBHT-24-90K KM32-RBHT-30-100F KM32-RBHT-30-100K	–	–	–	–	5	–	–	–	–	–
1133202	PKG-3242	KM40-RBHT-40-90F KM40-RBHT-40-90K KM50-RBHT-50-90F KM50-RBHT-50-90K	–	–	–	–	5	–	–	–	–	–
1135353	PKG-5500	KM50-RBHT-66-100F KM50-RBHT-66-100K	–	–	–	–	–	–	2	2	–	–

ModBORE Spare Parts

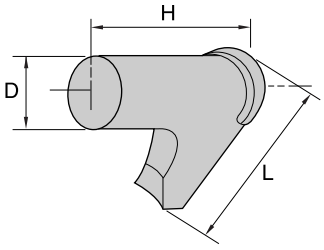
- "012" parts are for ½" IC inserts.
- "016" parts are for ⅝" IC inserts.
- "019" parts are for ¾" IC inserts.

Insert Shim



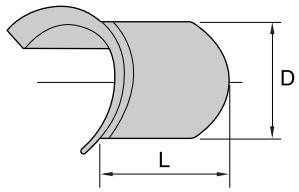
order number	catalog number	grade	D in	D (mm)	L in	L (mm)	B in	B (mm)	S in	S (mm)
1131510	845-012-000	K9	.252	(6,4)	.457	(11,6)	.457	(11,6)	.125	(3,18)
1231898	845-016-000	K9	.315	(8,0)	.575	(14,6)	.575	(14,6)	.188	(4,77)
1302745	845-019-000	K9	.378	(9,6)	.701	(17,8)	.701	(17,8)	.188	(4,77)

Lever Pin



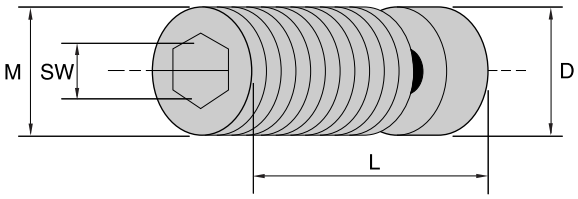
order number	catalog number	D in	D (mm)	H in	H (mm)	L in	L (mm)
1302746	846-012-000	.177	(4,5)	.512	(13,0)	.531	(13,5)
1133699	846-016-000	.232	(5,9)	.661	(16,8)	.650	(16,5)
1302747	846-019-000	.283	(7,2)	.827	(21,0)	.799	(20,3)

Shim Retainer



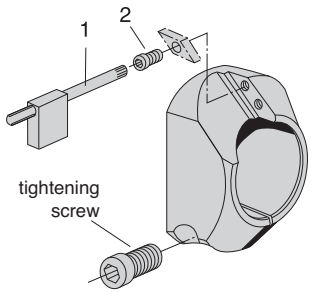
order number	catalog number	D in	D (mm)	L in	L (mm)
1237427	844-012-000	.260	(6,6)	.217	(5,5)
1302743	844-016-000	.327	(8,3)	.339	(8,6)
1302744	844-019-000	.387	(9,8)	.437	(11,1)

Lever Screw



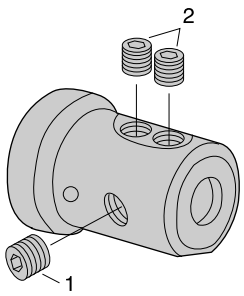
order number	catalog number	D in	D (mm)	L in	L (mm)	M	SW
1191394	847-012-000	.315	(8)	.681	(17,3)	m8 x 1	3 mm
1302748	847-016-000	.315	(8)	.799	(20,3)	m8 x 1	3 mm
1302749	847-019-000	.394	(10)	1.063	(27)	m10 x 1	4 mm

Chamfering Rings



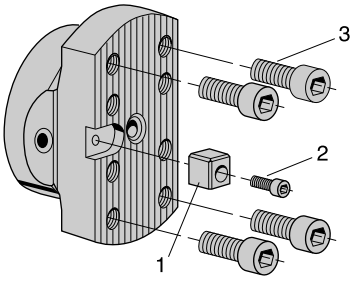
order number	catalog number	chamfering ring	1	2
1130085	PKG-0001	CR24-40-W11 CR30-44-W11	1	10
1197293	PKG-0003	CR40-60-W15	1	10

Offset Boring Heads



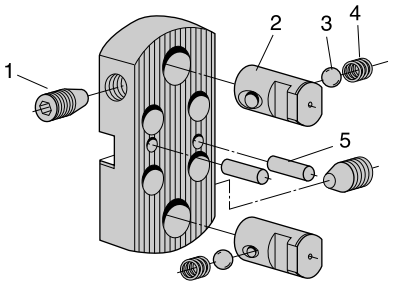
order number	catalog number	boring head	1	2
1127184	PKG-7001	KM40-FBHO-1660 KM50-FBHO-1670	1	2

Bridge Tool – Adapters



order number	catalog number	bridge tool	1	2	3
1122168	PKG-1565	all bridge tools	1	1	-
1126855	MS1085-PKG		-	-	4

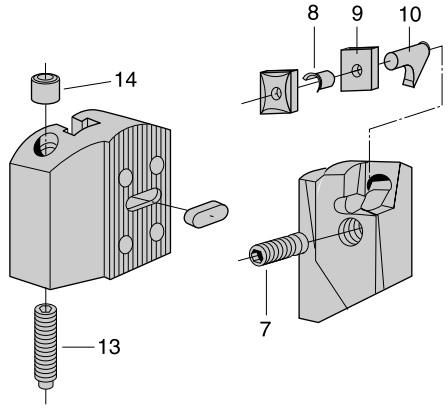
Extension Bridges



order number	catalog number	bridge tool	1	1	1	1	1
1133203	PKG-156501	all bridge tools	1	-	1	1	2
1135346	PKG-156502		1	1	-	-	-

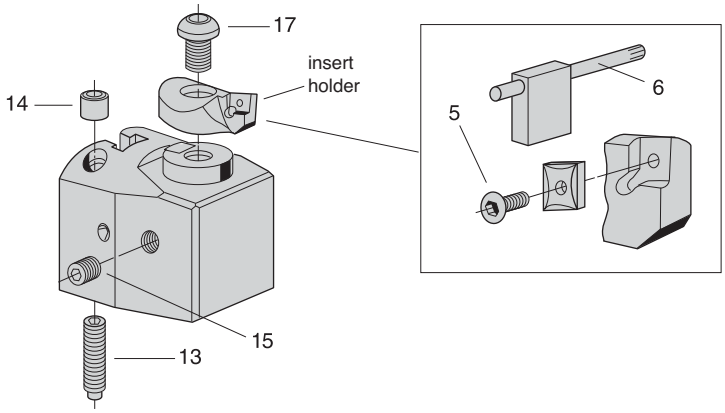
NOTE: *Includes safety latch and hardware, not shown here.*

Extension Bridge Rough Boring Heads



order number	catalog number	boring head	7	8	9	10	13	14
1135358	PKG-7994	EBUR-F-1975 EBUR-K-1969	2	2	-	2	-	-
1123201	PKG-0004	EBUR-F-1975 EBUR-K-1969	-	-	2	-	2	2

Extension Bridge Fine Boring Heads



order number	catalog number	boring head	5	6	13	14	15	17
1124975	PKG-0002	EBUF-F09-75	1	1	1	1	1	1
1133202	PKG-3242		5	-	-	-	-	-

NOTE: *Replacement insert holder must be purchased separately. See page G19 for part numbers.*

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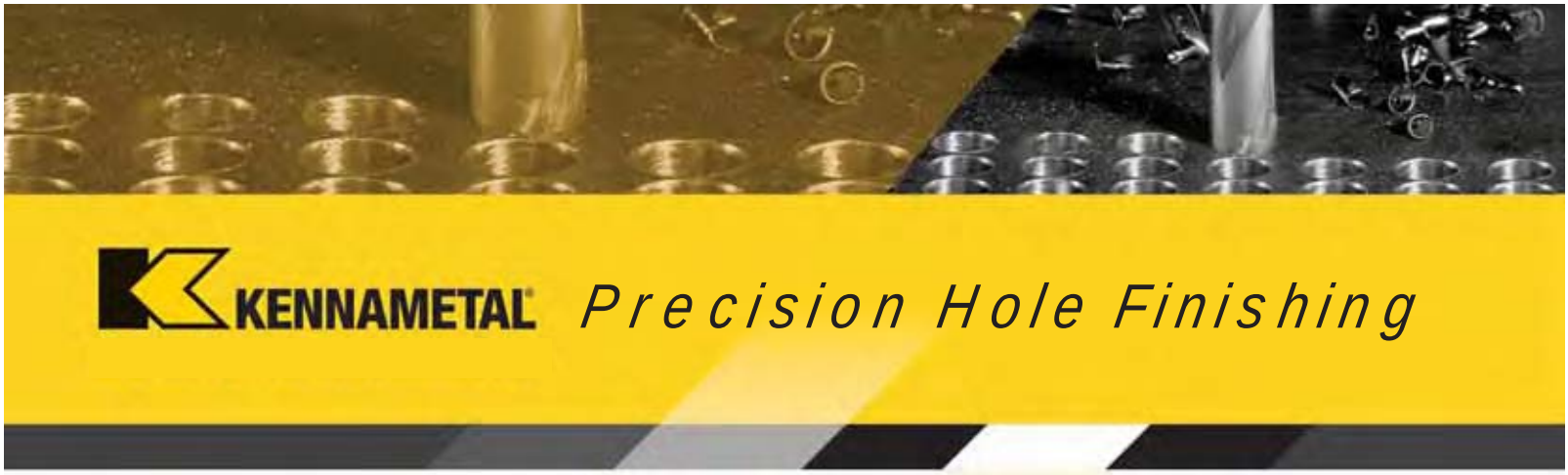


KENNAMETAL

Precision Hole Finishing

Romicron® Fine Boring System

Primary Application

Use this premium fine boring system in applications where extremely close tolerances are critical to the overall process. Can be used in most materials commonly found in the metalcutting environment.

Features and Benefits

Ease of Adjustment

- No tools are needed so adjustment can take place on the machine tool. Eliminates the need to remove and return the boring head to the presetting area providing increased productivity.
- SEE, FEEL, and HEAR the adjustment mechanism for “fail-safe” size control.
- Simple design requires little or no training to gain the maximum benefit.

Resolution

- For each adjustment, diameter change is 2 microns or 0.000080'.

Product Variety

- KR taper, KM, and HSK available as standards.
- Cartridge design available for added diameter range.

Grades and Geometries

- A wide selection of Kennametal grades and geometries are available from stock to match your precision boring needs.

Customization

- Engineered custom solutions available.
- Anti-chatter devices available.
- Cartridges can be designed into standard boring heads for added versatility.

Romicron® High-Performance Boring System

- **Fast...**

Adjustments can be made in less than 5 seconds, while still holding .0001 (0,002 mm) on the diameter!

- **Accurate...**

Each click of the dial is .000040 (0,001 mm) on the radius and can be done in less than 5 seconds.

This high-performance boring system will give you:

- More uptime.
- Less scrap.
- Longer tool life.
- CPK's > 1.33.
- Less stress during adjustments.
- A one-year warranty on workmanship and material.
- The convenience of a tool that can be serviced in the United States.

Romicron® is the boring system that makes sense.

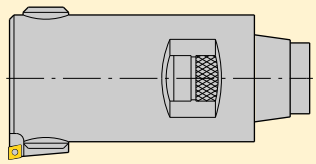
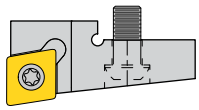
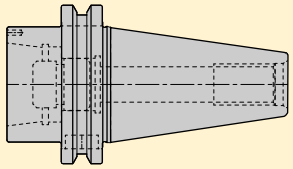
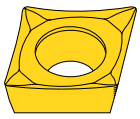
In fact, you'll use three of your senses when making adjustments. You can hear each click, see each click, and feel each click of the dial. This click confirms each graduation to give the machine operator confidence in each adjustment.

The audible click at each graduation lets you hear each adjustment.

The clearly marked graduated dial makes it easy to see each adjustment.

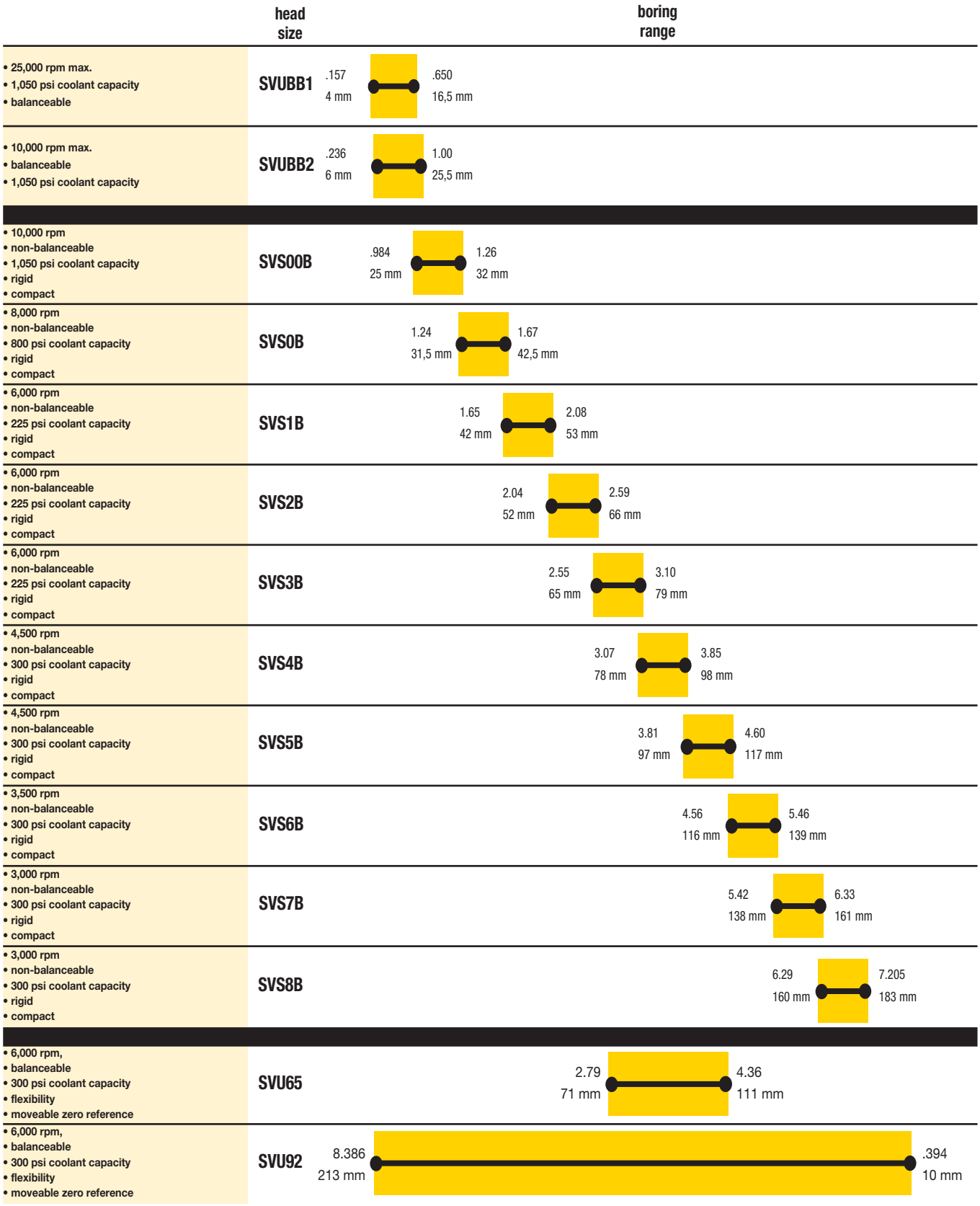
The definite stop at each graduation lets you feel each adjustment.

How to Order a Romicron Product

When deciding what Romicron tools to order, consider the following:	Examples:
1  ***To select the boring head, consider:*** a) size range b) features needed	bore diameter: 1.5" material: aluminum features: no balancing or through coolant Boring head choice: ***KR32SVS0B093M***
2  ***To select the cartridge for the above boring head, consider:*** a) Romicron head on which it will be mounted b) size of hole to be bored c) style of cartridge (TPGM or CPGM)	for: KR32SVS0B093M boring head for: 1.5 bore style: CPGM Cartridge choice: ***KRCSCFPR061A***
3  ***To select the taper for the above boring head, consider:*** a) taper type (CV, BT, DV) b) taper (30, 40, 45, 50) c) ID KR connection (32, 50, 63, 80) d) correct combination for Romicron head being used	(The machine is CAT40, therefore): Taper choice for above boring head: ***CV40KR32157 for SVS0*** Taper choices for other KR32 boring heads: CV40KR32161 for SVS00 CV40KR32100 for SVUBB2 CV40KR50236 for SVU65
4  ***To select the correct grade and style of insert, consider:*** a) material to be cut b) cartridge style	insert type: CPGT Insert style choice: ***CPGT-HP*** Insert grade choice: ***KC5010***

If you have any questions, call Kennametal's Customer Application Support hot line toll-free at 1-800-835-3668 for assistance.

Boring range, coolant capacity, maximum RPM features of all Romicron Boring Heads.



ROMICRON® is a trademark of Industrias Romi S.A. US Patents: SVS: 5,316,417; 5,326,198; SVU: 5,326,198; 5,478,177. GB Patents: SVS: 593,222; 593,223; SVU: 593,223. DE Patents: SVS: 43 32 520 3-14; 43 32 506 8-14; SVU: 43 32 506 8-14, and corresponding patents or pending patents in Japan, Sweden, Italy, Germany, Great Britain, France, Switzerland, and Brazil.

Feed and Speed Chart

Romicron Fine Boring System ▼▼▼▼

Geometry	Grade	Starting Pt	Cutting Speed	Feed rate	dia. .750"- .945"	dia. 20,00mm-24,00mm
			sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281			
			m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000			
P1 Low-Carbon Steels, Long Chipping			**Content: C <.25%**	**Tensile Strength RM (MPa)*: <530**		**Hardness (HB) or HRC: <125**
CPMT..LF CPMT...FW	KC5010	918	sfm: 492 – 1148	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		280	m/min: 150 – 360	mm/r	0,06 - 0,20	
CPMT...LF	KC9110	1312	sfm: 591 – 1476	ipr	.002 - .008	
		400	m/min: 180 – 450	mm/r	0,06 - 0,20	
CPMT...LF	KC9125	918	sfm: 492 – 1148	ipr	.002 - .008	
		280	m/min: 150 – 360	mm/r	0,06 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	1443	sfm: 591 – 1640	ipr	.002 - .010	
		440	m/min: 180 – 500	mm/r	0,06 - 0,25	
P2 Low-Carbon Steels, Free Machining, and Short Chipping			**Content: C <.25%**	**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: <220**
CPMT..LF CPMT...FW	KC5010	656	sfm: 492 – 1181	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		200	m/min: 150 – 360	mm/r	0,06 - 0,20	
CPMT... LF	KC9110	820	sfm: 591 – 1116	ipr	.002 - .008	
		250	m/min: 180 – 340	mm/r	0,06 - 0,20	
CPMT...LF	KC9125	656	sfm: 492 – 1181	ipr	.002 - .008	
		200	m/min: 150 – 360	mm/r	0,06 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	885	sfm: 656 – 1312	ipr	.002 - .010	
		270	m/min: 200 – 400	mm/r	0,06 - 0,25	
P3 Medium to High Plain-Carbon Steels and Alloy Steels			**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**
CPMT..LF CPMT...FW	KC5010	509	sfm: 443 – 738	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		155	m/min: 135 – 225	mm/r	0,06 - 0,20	
CPMT... LF	KC9110	623	sfm: 492 – 984	ipr	.002 - .008	
		190	m/min: 150 – 300	mm/r	0,06 - 0,20	
CPMT...LF	KC9125	509	sfm: 443 – 738	ipr	.002 - .008	
		155	m/min: 135 – 225	mm/r	0,06 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	689	sfm: 591 – 902	ipr	.002 - 0.010	
		210	m/min: 180 – 275	mm/r	0,06 - 0,25	

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Romicron Fine Boring System ▼▼▼▼			Cutting Speed		Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	.750"- .945"	20,00mm-24,00mm
P4 Alloy Steels and Tool Steels			**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**		**Hardness (HB) or HRC: 350-450**	
CPMT..LF CPMT...FW	KC5010	361	sfm	246 – 606	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		110	m/min	75 – 180	mm/r	0,06 - 0,20	
CPMT... LF	KC9110	427	sfm	295 – 656	ipr	.002 - .008	
		130	m/min	90 – 200	mm/r	0,06 - 0,20	
CPMT...LF	KC9125	361	sfm	246 – 606	ipr	.002 - .008	
		110	m/min	75 – 180	mm/r	0,06 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	525	sfm	295 – 722	ipr	.002 - .010	
		160	m/min	90 – 220	mm/r	0,06 - 0,25	
P5 Ferritic, Martensitic, and PH Stainless Steels			**Content: C=0-.4%**	**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**	
CPMT..LF CPMT...FW	KC5010	656	sfm	394 – 902	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		200	m/min	120 – 275	mm/r	0,063 - 0,20	
CPMT... LF	KC9110	656	sfm	492 – 984	ipr	.002 - .008	
		200	m/min	150 – 300	mm/r	0,063 - 0,20	
CPMT...LF	KC9125	656	sfm	394 – 902	ipr	.002 - .008	
		200	m/min	120 – 275	mm/r	0,063 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	820	sfm	492 – 984	ipr	.002 - .010	
		250	m/min	150 – 300	mm/r	0,06 - 0,25	
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels			**Content: C=.1-.6%**	**Tensile Strength RM (MPa)*: 900-1350**		**Hardness (HB) or HRC: 350-450**	
CPMT..LF CPMT...FW	KC5010	492	sfm	345 – 738	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		150	m/min	105 – 225	mm/r	0,06 - 0,20	
CPMT... LF	KC9110	705	sfm	427 – 886	ipr	.002 - .008	
		215	m/min	130 – 270	mm/r	0,06 - 0,20	
CPMT...LF	KC9125	492	sfm	345 – 738	ipr	.002 - .008	
		150	m/min	105 – 225	mm/r	0,06 - 0,20	
CPMT...LF CPMT...FW CDHB...	KT315	656	sfm	424 – 879	ipr	.002 - .010	
		200	m/min	140 – 290	mm/r	0,06 - 0,25	

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Feed and Speed Chart

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Romicron Fine Boring System ▼▼▼▼			Cutting Speed		Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 100 394 492 150 656 820 250 984 1148 350 1640 500 2460 750 3281 1000 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	.750"- .945"	20,00mm-24,00mm
M1 Austenitic Stainless Steels			**Content: C .05%-.15%**		**Tensile Strength (Mpa): < 650**		**Hardness (Hb): 130-200**
CPMT...LF	KC9225	607	sfm	328 – 820	ipr	.002 - .008	
CPMT...FW		185	m/min	100 – 250	mm/r	0,05 - 0,20	
CPMT...LF	KC5025	591	sfm	328 – 656	ipr	.002 - .008	
CPGT...HP CPGT...LF		180	m/min	100 – 200	mm/r	0,05 - 0,20	
CPMT..LF CPMT...FW	KC5010	705	sfm	410 – 820	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		215	m/min	125 – 250	mm/r	0,05 - 0,20	
CPMT...LF CPMT...FW	KT315	755	sfm	492 – 984	ipr	.002 - .008	
CDHB....		230	m/min	150 – 300	mm/r	0,05 - 0,20	
CPMT...LF	KC9240 NEW	492	sfm	295 – 591	ipr	.002 - .008	
		150	m/min	90 – 180	mm/r	0,05 - 0,20	
M2 High Strength Austenitic Stainless and Cast Steels			**Content: C .05%-.15%**		**Tensile Strength (Mpa): 500-700**		**Hardness (Hb): 150-230**
CPMT...LF	KC9225	541	sfm	328 – 738	ipr	.002 - .008	
CPMT...FW		165	m/min	100 – 225	mm/r	0,05 - 0,20	
CPMT...LF	KC5025	541	sfm	328 – 656	ipr	.002 - .008	
CPGT...HP CPGT...LF		165	m/min	100 – 200	mm/r	0,05 - 0,20	
CPMT..LF CPMT...FW	KC5010	656	sfm	410 – 820	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		200	m/min	125 – 250	mm/r	0,05 - 0,20	
CPMT...LF CPMT...FW	KT315	705	sfm	492 – 984	ipr	.002 - .008	
CDHB....		215	m/min	150 – 300	mm/r	0,05 - 0,20	
CPMT...LF	KC9240 NEW	459	sfm	295 – 591	ipr	.002 - .008	
		140	m/min	90 – 180	mm/r	0,05 - 0,20	
M3 Duplex Stainless Steel			**Content: C .05%-.21%**		**Tensile Strength (Mpa): < 900**		**Hardness (Hb): 135-275**
CPMT...LF	KC9225	492	sfm	328 – 820	ipr	.002 - .008	
CPMT...FW		150	m/min	100 – 250	mm/r	0,05 - 0,20	
CPMT...LF	KC5025	492	sfm	328 – 656	ipr	.002 - .008	
CPGT...HP CPGT...LF		150	m/min	100 – 200	mm/r	0,05 - 0,20	
CPMT..LF CPMT...FW	KC5010	607	sfm	410 – 820	ipr	.002 - .008	
CPGT...FW CPGT...LF CPGT...HP CDHB....		185	m/min	125 – 250	mm/r	0,05 - 0,20	
CPMT...LF CPMT...FW	KT315	656	sfm	492 – 984	ipr	.002 - .008	
CDHB....		200	m/min	150 – 300	mm/r	0,05 - 0,20	
CPMT...LF	KC9240 NEW	394	sfm	295 – 591	ipr	.002 - .008	
		120	m/min	90 – 180	mm/r	0,05 - 0,20	

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Romicron Fine Boring System ▼▼▼▼			Cutting Speed		Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	.750"- .945"	20,00mm-24,00mm
K1 Cast and Low-Strength Ductile Irons			**Content:**		**Tensile Strength (Mpa): 150-400**		**Hardness (Hb): 120-290**
CPMT..LF CPMT...FW	KC9315	902	sfm	492 – 1444	ipr	.002 - .010	
		275	m/min	150 – 440	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KC9320	951	sfm	328 – 1476	ipr	.002 - .010	
		290	m/min	100 – 450	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KT315	902	sfm	525 – 1476	ipr	.002 - .010	
CDHB...		275	m/min	160 – 450	mm/r	0,06 - 0,25	
K2 Low to Medium Strength Compacted Graphite and Ductile Irons			**Content:**		**Tensile Strength (Mpa): 400-600**		**Hardness (Hb): 130-260**
CPMT..LF CPMT...FW	KC9315	853	sfm	427 – 1181	ipr	.002 - .010	
		260	m/min	130 – 360	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KC9320	869	sfm	262 – 1312	ipr	.002 - .010	
		265	m/min	80 – 400	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KT315	902	sfm	591 – 1181	ipr	.002 - .010	
CDHB...		275	m/min	180 – 360	mm/r	0,06 - 0,25	
K3 High Strength Ductile and Austempered Ductile Iron			**Content:**		**Tensile Strength (Mpa): 600-900**		**Hardness (Hb): 180-350**
CPMT..LF CPMT...FW	KC9315	705	sfm	427 – 902	ipr	.002 - .010	
		215	m/min	130 – 275	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KC9320	722	sfm	591 – 984	ipr	.002 - .010	
		220	m/min	180 – 300	mm/r	0,06 - 0,25	
CPMT..LF CPMT...FW	KT315	755	sfm	591 – 738	ipr	.002 - .010	
CDHB...		230	m/min	180 – 225	mm/r	0,06 - 0,25	

(continued on next page)

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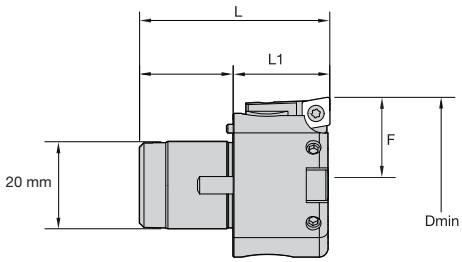
Romicron Fine Boring System ▼▼▼▼

Geometry	Grade	Starting Pt	Cutting Speed	Feed rate		
			sfm / m/min		dia.	.750"- .945"	20,00mm-24,00mm
N1 Wrought Aluminum Alloys			**Content: .05%-.2%**		**Tensile Strength (Mpa): <900**		**Hardness (Hb): 180-350**
CPMT...LF CPMT...FW	K313	853	sfm	328 – 1969	ipr	.004 - .016	
CPGT...LF CDHB...		260	m/min	100 – 600	mm/r	0,10 - 0,40	
CPGT...HP CPGT...LF	KC5410	1805	sfm	328 – 3281	ipr	.002 - .002	
		550	m/min	100 – 1000	mm/r	0,04 - 0,06	
N2 Cast Aluminums			**Content:**		**Tensile Strength (Mpa): 150-400**		**Hardness (Hb): 120-290**
CPGT...HP CPGT...LF	KC5410	1805	sfm	328 – 3281	ipr	.002 - .002	
		550	m/min	100 – 1000	mm/r	0,04 - 0,06	
N3 Cast Aluminums			**Content:**		**Tensile Strength (Mpa): 400-600**		**Hardness (Hb): 130-260**
CPGT...HP CPGT...LF	KC5410	1805	sfm	328 – 3281	ipr	.002 - .002	
		550	m/min	100 – 1000	mm/r	0,04 - 0,06	
N5 Copper and Copper Alloys			**Content:**		**Tensile Strength (Mpa): 600-900**		**Hardness (Hb): 180-350**
CPMT...LF CPMT...FW	K313	853	sfm	328 – 1969	ipr	.004 - .016	
CPGT...LF CDHB...		260	m/min	100 – 600	mm/r	0,10 - 0,40	
S1 Heat-Resistant Alloys, Fe-Based			**Content:**		**Tensile Strength (Mpa): 500-1200**		**Hardness (Hb): 160-260**
CPMT..LF CPMT...FW	KC5010	180	sfm	98 – 394	ipr	.002 - .012	
CPGT...FW CPGT...LF CPGT...HP CDHB....		55	m/min	30 – 120	mm/r	0,04 - 0,30	
CPMT...LF	KC5025	131	sfm	66 – 197	ipr	.002 - .012	
CPGT...HP CPGT...LF		40	m/min	20 – 60	mm/r	0,04 - 0,30	
CPMT...LF CPMT...FW	K313	98	sfm	33 – 164	ipr	.002 - .012	
CPGT...LF CDHB...		30	m/min	10 – 50	mm/r	0,04 - 0,30	
S2 Heat-Resistant Alloys, Ni-Based or Co-Based			**Content:**		**Tensile Strength (Mpa): 1000-1450**		**Hardness (Hb): 250-450**
CPMT..LF CPMT...FW	KC5010	197	sfm	98 – 410	ipr	.002 - .012	
CPGT...FW CPGT...LF CPGT...HP CDHB....		60	m/min	30 – 125	mm/r	0,04 - 0,30	
CPMT...LF	KC5025	98	sfm	66 – 197	ipr	.002 - .012	
CPGT...HP CPGT...LF		30	m/min	20 – 60	mm/r	0,04 - 0,30	
CPMT...LF CPMT...FW	K313	115	sfm	33 – 213	ipr	.002 - .012	
CPGT...LF CDHB...		35	m/min	10 – 65	mm/r	0,04 - 0,30	

Axial Mount Modular Unit

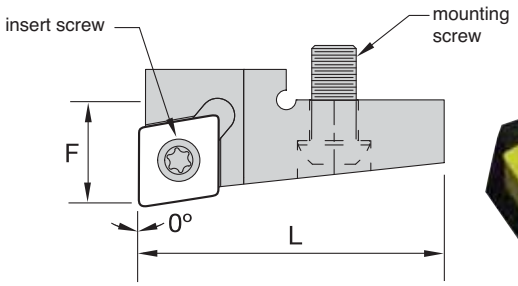
- Minimum bore = 40,0 mm or 1.575"



- Cartridge included

Axial Mounting Unit

D min	order number	catalog number	reference head size	gage insert	L mm	L in	L1 mm	L1 in	F mm	F in	kg
40,00	2541222	KRMSVS00MF40039M	SVS00M	CPMT060204	43,7	1.72	22,2	.87	20,2	.80	0,20

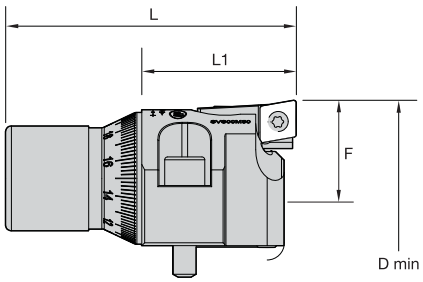


0° Lead Cartridge

order number	catalog number	gage insert	F mm	F in	L mm	L in	mounting screw	insert screw	insert screw wrench	mounting screw wrench
1500650	KRCSCFPR062L	CP..215...	5,9	.23	19,2	.75	MS2006PKG	MS2005PKG	FT7	KT8

Order Example:
By catalog number KRMSVS00MF40039M, or by order number 2451222.

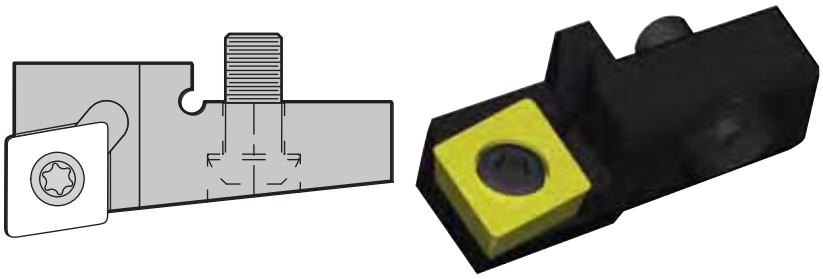
Radial Mount Modular Unit



- Cartridge included

Radial Mounting Unit

D min	order number	catalog number	gage insert	L mm	L in	L1 mm	L1 in	F mm	F in	kg
50,0	2541218	KRMSVS00M50049M	CPMT060204	50,8	2.00	27,0	1.06	25,4	1.00	0,17
100,0	2541219	KRMSVS2M100080M	CPMT060204	80,0	3.15	47,7	1.88	48,0	1.89	0,97

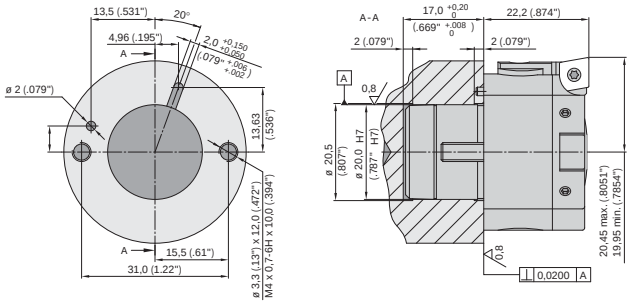


Radial Mount Modular Unit Cartridge

order number	catalog number	reference head size	gage insert	kg	lbs.	mounting screw	insert screw	Torx wrench	Torx size
2541220	KRCSCFPR061N	KRMSVS00M50049M	CPMT060204	0,0	.02	MS2006PKG	MS1153	FT7	T7
2541221	KRCSCFPR061O	KRMSVS2M100080M	CPMT060204	0,0	.06	MS1897	MS1153	KT27	T7

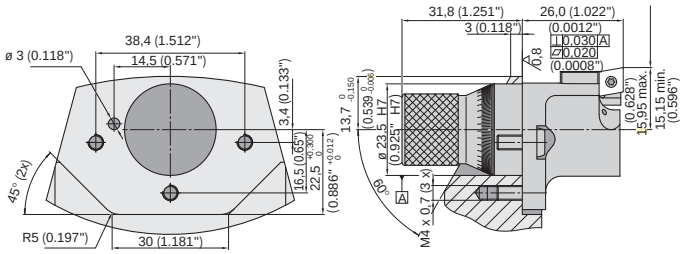
Order Example:
By catalog number KRMSVS500M50049M, or by order number 2541218.

Mounting Dimensions – Axial model KRMSVS00MF40039M



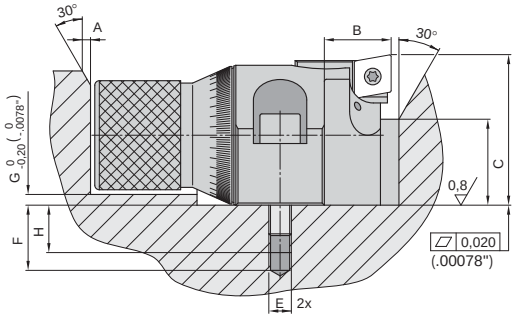
Dimensions in mm (inches)

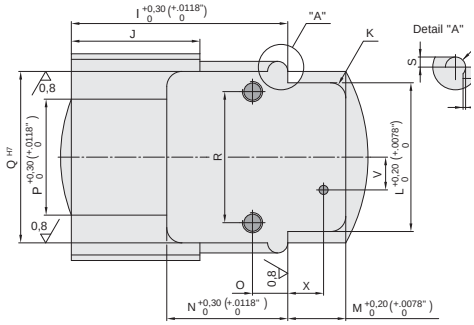
Mounting Dimensions – Axial model KRMSVS00MF60055M



Dimensions in mm (inches)

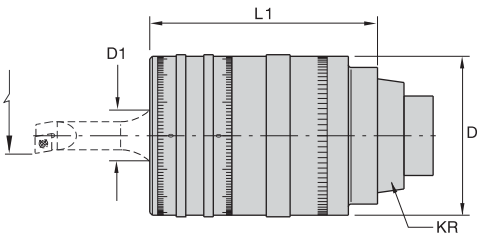
Mounting Dimensions – Radial Models





	KRMSVS00M50049M		KRMSVS00M055M		KRMSVS2M100080M	
dimensions	inch	mm	inch	mm	inch	mm
A	.067	1,7	.067	1,7	.157	4,0
B	.492	12,5	.590	15,0	1.385	22,7
C	.570	14,5	.623	14,5	1.102	28,0
D (mean dimension)	1.000	25,4	1.086	27,6	1.889	48,0
E	M4 x 0,7		M4 x 0,7		M8 x 1,25	
F	.433	11,0	.472	12,0	.984	25,0
G	.059	1,5	.059	1,5	.590	1,5
H	.314	8,0	.393	10,0	.866	22,0
I	1.496	40,0	1.633	41,5	2.322	59,0
J	.944	25,5	.964	24,0	1.338	34,0
K	.118	3,0	.118	3,0	.157	4,0
L	1.161	29,5	1.200	30,5	2.165	55,0
M	.472	12,0	.669	15,0	.964	24,5
N	.787	20,0	.826	21,0	1.220	31,0
O	.257	7,0	.433	11,0	.492	12,5
P	.905	23,0	.905	23,0	1.574	40,0
Q	1.228	34,0	1.574	40,0	2.559	65,0
R	1.023	26,0	1.200	30,5	1.968	50,0
S	.078	2,0	.056	1,5	.157	4,0
T	.078	2,0	.118	3,0	.157	4,0
U	.000	0,0	.19	0,5	.000	0,0
V	.393	6,5	.393	7,0	.688	10,5
X	.118	7,1	.216	10,0	.236	15,7

KR — SVUBB1 Boring Head



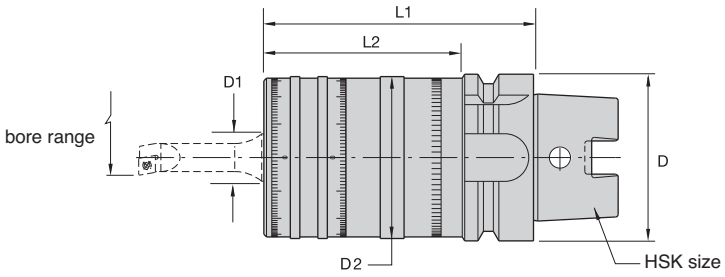
- Order boring bar separately, see page G55.
- Order taper shank separately, see pages G78-G81.

KR Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	KR size	radial adjustment max mm	radial adjustment max in	D mm	D in	D1 mm	D1 in	L1 mm	L1 in	Torx wrench	kg
4,000-16,500	.1575-0.6496	2202443	KR32SVUBB1060M	KR32	1,5	.06	46,5	1.83	10,0	.39	58,6	2.31	KT15	0,94

NOTE: *For correct balance ring settings, see page G82. Balance ring settings will achieve a balance grade of G6.3.*

HSK63 — SVUBB1 Boring Head Head



- Order boring bar separately, see page G55.
- Order taper shank separately, see pages G78-G81.

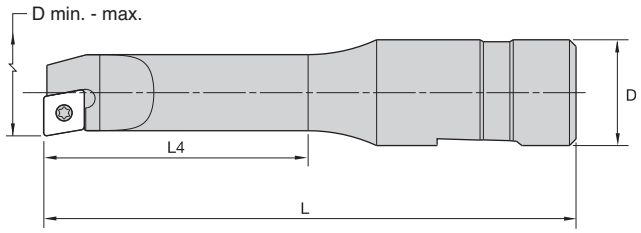
HSK63 Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	radial adjustment min mm	radial adjustment min in	D mm	D in	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	L2 mm	L2 in	Torx wrench	kg
4,000-16,500	.1575-0.6496	2202448	HSK63ASVUBB1095M	1,5	.06	63	2.48	10,0	.39	46,5	1.83	95,6	3.76	69,6	2.74	KT15	1,45

NOTE: *For correct balance ring settings, see page G82. Balance ring settings will achieve a balance grade of G6.3.*

Order Example:
By catalog number KR32SVUBB1060M, or by order number 2202443.

Boring Bars for SVUBB1 Boring Head



- Order inserts separately, see page H12-H13.

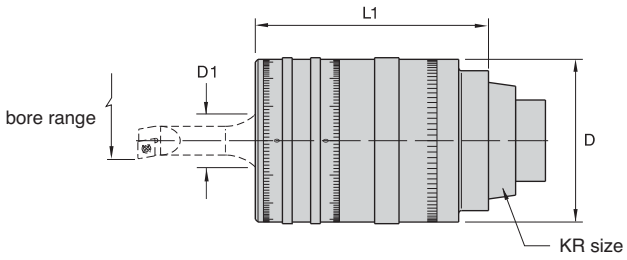
SVUBB1 Boring Head

D min	D max	D min	D max	order number	catalog number	gage insert	D	L mm	L in	L4 mm	L4 in	insert screw	Torx wrench	kg	lbs
4,00	7,00	.158	.276	2202438	KRBB10FABDRS204C	–	10	56,6	2.23	14,3	.56			0,05	.11
6,00	9,00	.236	.354	2202439	KRBB10SCLDR4060C	CD..12061	10	54,0	2.13	21,7	.85	MS1454	FT5	0,05	.11
8,50	11,50	.335	.453	2202440	KRBB10SCFPR06085C	CC..2151	10	58,0	2.28	30,5	1.20	MS1153	FT7	0,08	.17
11,00	14,00	.433	.551	2202450	KRBB10SCFPR06110C	CC..2151	10	60,0	2.36	32,5	1.28	MS1153	FT7	0,08	.18
13,50	16,50	.532	.650	2202451	KRBB10SCFPR06135C	CC..2151	10	65,0	2.56	38,5	1.52	MS1153	FT7	0,09	.20

Carbide shank and custom solution boring bars are available upon request to meet your specific requirements. Please contact Kennametal for a design and quotation.

Order Example:
By catalog number KRBB10FABDRS204C, or by order number 2202438.

KR — SVUBB2 Boring Head



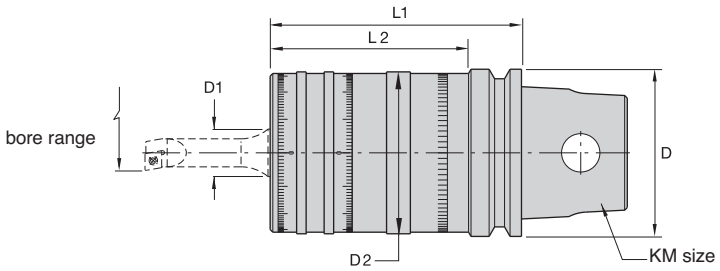
- Order boring bar separately, see page G57.
- Order taper shank separately, see pages G78-G81.

KR Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	radial adjustment max mm	radial adjustment max in	KR size	D mm	D in	D1 mm	D1 in	L1 mm	L1 in	Torx wrench	kg
6,000-25,000	.2362-0.9843	1538977	KR32SVUBB2085M	1,750	.0689	KR32	60	2.36	16,0	.63	85,0	3.48	KT27	1,81
6,000-25,000	.2362-0.9843	1522322	KR50SVUBB2075M	1,750	.0689	KR50	60	2.36	16,0	.63	75,0	3.07	KT27	1,61

NOTE: *For correct balance ring settings, see page G84. Balance ring settings will achieve a balance grade of G6.3.*

KM — SVUBB2 Boring Head



- Order Boring bar separately, see page G57.
- Order Taper shank separately, see page G78-G81

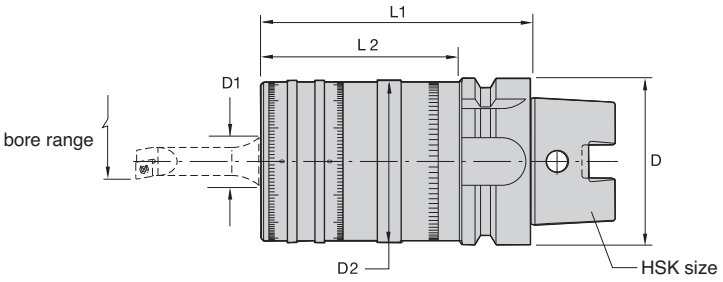
KM Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	KM size	radial adjustment min mm	radial adjustment min in	D mm	D in	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	L2 mm	L2 in	Torx wrench	kg
6,000-25,500	.2360-1.0030	1763094	KM50SVUBB2088M	KM50	1,75	.07	50,0	1.97	16,0	.63	60,0	2.63	88,0	3.46	72,0	2.83	KT27	1,91

NOTE: *For correct balance ring settings, see page G84. Balance ring settings will achieve a balance grade of G6.3.*

Order Example:
By catalog number KR32SVUBB2085M, or by order number 1538977.

HSK — SVUBB2 Boring Head



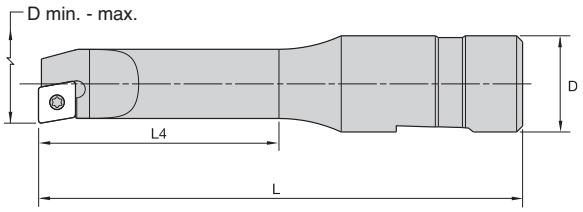
- Order Boring bar separately, see below.

HSK Boring Head

BR1 bore range mm	BR1 bore range in	order number	catalog number	radial adjustment min mm	radial adjustment min in	HSK size	D mm	D in	D1 mm	D1 in	D2 mm	D2 in	L1 mm	L1 in	L2 mm	L2 in	Torx wrench	kg
6,000-25,500	.2360-1.0030	1763082	HSK63ASVUBB2116M	1,75	.07	HSK63A	63,0	2.48	16,0	.63	60,0	2.36	116,0	4.57	90,0	3.54	KT27	2,52
6,000-25,500	.2360-1.0030	1763093	HSK100ASVUBB2122M	1,75	.07	HSK100A	100,0	3.94	16,0	.63	60,0	2.36	122,0	4.80	93,0	3.66	KT27	4,21

NOTE: *For correct balance ring settings, see page G84. Balance ring settings will achieve a balance grade of G6.3.*

Boring Bars for SVUBB2 Boring Head



- Order inserts separately, see page H12-H13.

SVUBB2 — Universal Boring Bars

D min	D max	D min	D max	order number	catalog number	gage insert	D mm	D in	L mm	L in	L4 mm	L4 in	insert screw	Torx wrench	kg
6,0	9,5	.236	.374	1522062	KRBB16SCLDRS406A	CD..12061	16	.63	62	2.44	20	.79	MS1454	FT5	0,06
8,6	12,0	.339	.472	1522063	KRBB16SCFPR06085A	CP..2151	16	.63	68	2.68	26	1.02	MS1153	FT7	0,06
11,0	14,5	.433	.571	1522064	KRBB16SCFPR0611A	CP..2151	16	.63	78	3.07	36	1.42	MS1153	FT7	0,08
13,5	17,0	.532	.669	1522068	KRBB16SCFPR06135A	CP..2151	16	.63	80	3.15	40	1.57	MS1153	FT7	0,09
16,0	19,5	.630	.768	1522069	KRBB16SCFPR0616A	CP..2151	16	.63	90	3.54	55	2.17	MS1153	FT7	0,11
19,0	22,5	.748	.886	1522070	KRBB16SCFPR0619A	CP..2151	16	.63	90	3.54	60	2.36	MS1153	FT7	0,12
22,0	25,5	.866	1.004	1522071	KRBB16SCFPR0622A	CP..2151	16	.63	90	3.54	60	2.36	MS1153	FT7	0,15

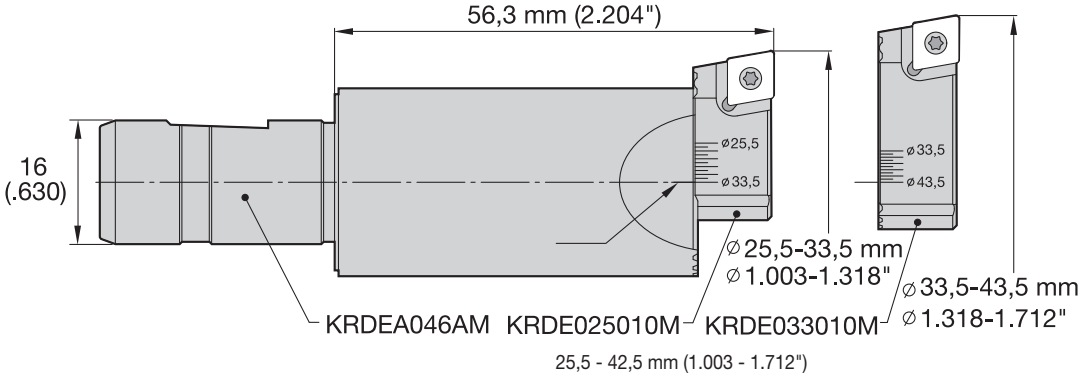
Carbide shank and custom solution boring bars are available upon request to meet your specific requirements. Please contact Kennametal for a design and quotation.

Order Example:
By catalog number HSK63ASVUBB2116M, or by order number 1763082.

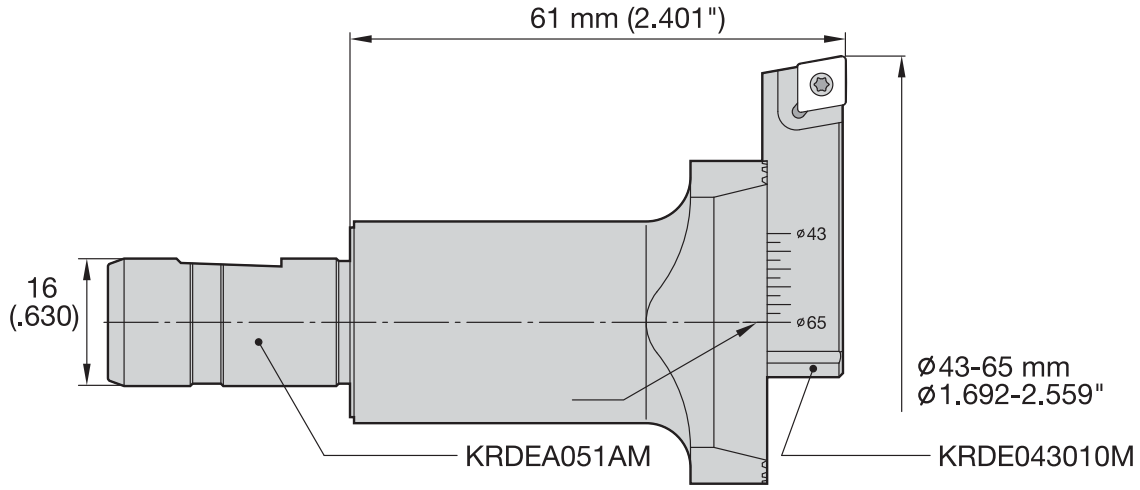
Romicron® Universal Application

Typical Assembly for Different Diameters

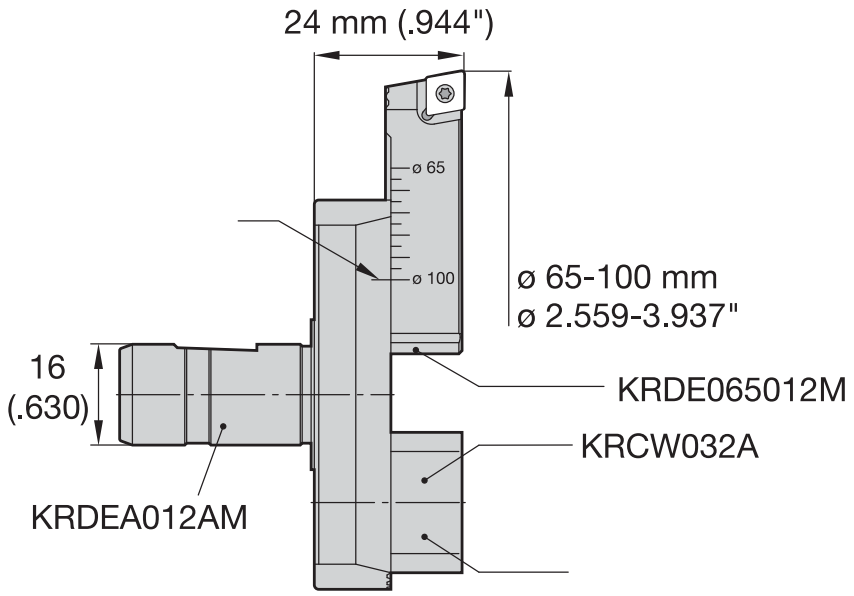
Use with SVUBB2 Boring Head 25,5 mm - 100,0 mm (1.003 - 3.937")



25,5 - 42,5 mm (1.003 - 1.712")



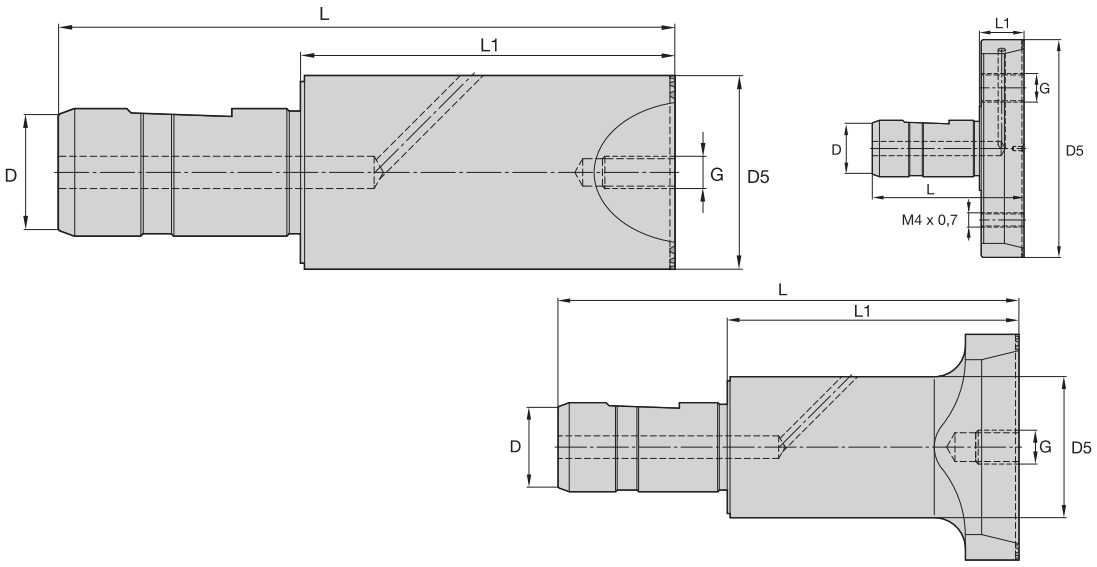
43,0 - 65,0 mm (1.692 - 2.559")



65,0 - 100,0 mm (2.559 - 3.937")

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

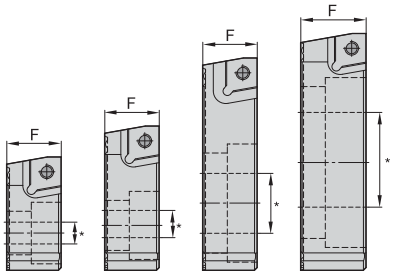
SVUBB2 Universal Adapters



Adapters

BR1 bore range				D		D5			L		L1			
mm	in	order number	catalog number	mm	in	mm	in	G	mm	in	mm	in	kg	lbs.
25,500-43,500	1.0039-1.7126	2541200	KRDEA046AM	16	.63	24,0	.94	M4X0.70	76,4	3.01	46,4	1.83	0,2	.50
43,000-65,000	1.6929-2.5591	2541201	KRDEA051AM	16	.63	25,0	.98	M6X1.00	81,7	3.22	51,7	2.04	0,2	.52
65,000-100,000	2.5591-3.9371	2541202	KRDEA012AM	16	.63	63,5	2.50	M8X1.25	42,5	1.67	12,5	.49	0,2	.42

SVUBB2 Universal Diameter Extenders



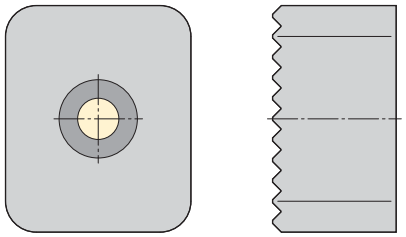
Diameter Extenders

							F		D*					
D min	D max	D min	D max	order number	catalog number	gage insert	mm	in	mm	in	insert screw	Torx wrench	kg	lbs.
26	34	1.004	1.319	2541213	KRDE025010M	CPGT060204	10,0	.39	4,0	.16	MS1153	FT7	0,02	.0
34	44	1.319	1.713	2541214	KRDE033010M	CPGT060204	10,0	.39	5,0	.20	MS1153	FT7	0,02	.1
43	65	1.693	2.559	2541215	KRDE043010M	CPGT060204	10,0	.39	11,0	.43	MS1153	FT7	0,03	.1
65	100	2.559	3.937	2541216	KRDE065012M	CPGT060204	12,0	.47	17,5	.69	MS1153	FT7	0,05	.1

Order Example:
By catalog number KRDEA046AM, or by order number 2541200.

Romicron® High-Performance Boring Systems

SVUBB2 Universal Counter Weight



Counter Weight

order number	catalog number	L mm	L in	kg	lbs.
2541217	KRCW032A	12,0	.47	0,04	.08

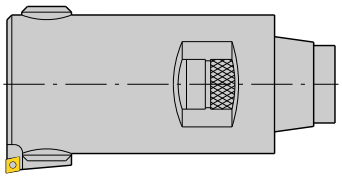
NOTE: *Counter weight must be used with KRDEA012M adapter and KRDEA065012M extender.*

Order Example:
By catalog number: KRCW032A, or by order number: 2541217

SVS — System

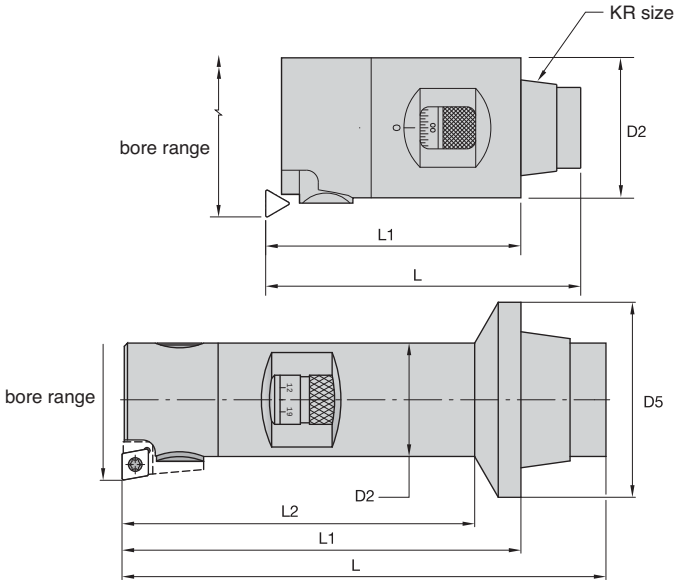
KR Connection Tooling Tree

cartridge range	cartridge size	bore range	head size
.984 - 1.083 (25 - 27,5 mm)	1L		
1.073 - 1.171 (27,25 - 29,75 mm)	2L	.984 - 1.260 (25 - 32 mm)	SVS00B
1.161 - 1.260 (29,5 - 32 mm)	3L		
1.240 - 1.398 (31,5 - 35,5 mm)	1A		
1.378 - 1.535 (35 - 39 mm)	2A	1.240 - 1.673 (31,5 - 42,5 mm)	SVS0B
1.516 - 1.673 (38,5 - 42,5 mm)	3A		
1.654 - 1.811 (42 - 46 mm)	1A		
1.791 - 1.949 (45,5 - 49,5 mm)	2A	1.654 - 2.087 (42 - 53 mm)	SVS1B
1.929 - 2.087 (49 - 53 mm)	3A		
2.047 - 2.244 (52 - 57 mm)	1B		
2.224 - 2.421 (56,5 - 61,5 mm)	2B	2.047 - 2.598 (52 - 66 mm)	SVS2B
2.402 - 2.598 (61 - 66 mm)	3B		
2.559 - 2.756 (65 - 70 mm)	1B		
2.736 - 2.933 (69,5 - 74,5 mm)	2B	2.559 - 3.110 (65 - 79 mm)	SVS3B
2.913 - 3.110 (74 - 79 mm)	3B		
3.071 - 3.346 (78 - 85 mm)	1C		
3.327 - 3.602 (84,5 - 91,5 mm)	2C	3.017 - 3.858 (78 - 98 mm)	SVS4B
3.583 - 3.858 (91 - 98 mm)	3C		
3.819 - 4.094 (97 - 104 mm)	1C		
4.075 - 4.350 (103,5 - 110,5 mm)	2C	3.819 - 4.606 (97 - 117 mm)	SVS5B
4.331 - 4.606 (110 - 117 mm)	3C		
4.567 - 4.882 (116 - 124 mm)	1D		
4.862 - 5.177 (123,5 - 131,5 mm)	2D	4.567 - 5.472 (116 - 139 mm)	SVS6B
5.157 - 5.472 (131 - 139 mm)	3D		
5.433 - 5.748 (138 - 146 mm)	1D		
5.728 - 6.043 (145,5 - 153,5 mm)	2D	5.433 - 6.339 (138 - 161 mm)	SVS7B
6.024 - 6.339 (153 - 161 mm)	3D		
6.299 - 6.614 (160 - 168 mm)	1D		
6.594 - 6.909 (167,5 - 175,5 mm)	2D	6.299 - 7.205 (160 - 183 mm)	SVS8B
6.890 - 7.205 (175 - 183 mm)	3D		



Romicron® High-Performance Boring Systems

KR - SVS - System

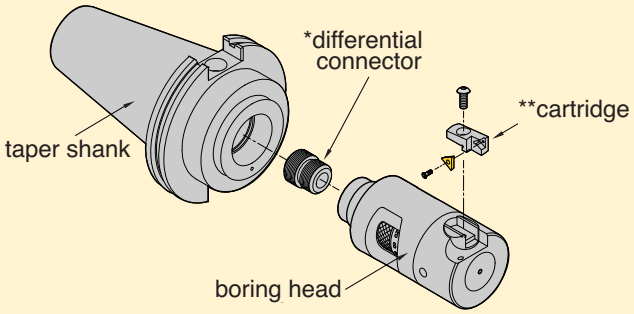


- Order cartridges separately, see page G65.
- Order taper shank separately, see pages G78-G81.

KR Boring Head

BR1 bore range							D2		L1		L		L2			
mm	in	order number	catalog number	head size	radial adjustment min	CSMS system size	mm	in	mm	in	mm	in	mm	in	kg	lbs.
25,000-32,000	.9840-1.2598	1500262	KR32SVS00B072M	SVS00B	1,250	KR32	38,0	1.50	72,0	2.83	92,0	3.62	65,0	2.56	0,7	1.43
31,500-43,500	1.2402-1.7126	1501372	KR32SVS0B093M	SVS0B	2,000	KR32	47,0	1.85	93,0	3.66	113,0	4.45	85,0	3.35	0,8	1.65
42,000-53,000	1.6535-2.0866	1192277	KR32SVS1B076M	SVS1B	2,000	KR32	38,0	1.50	76,0	2.99	96,0	3.78	–	–	0,8	1.80
52,000-66,000	2.0472-2.5984	1192278	KR32SVS2B085M	SVS2B	2,500	KR32	47,0	1.85	85,0	3.48	105,0	4.13	–	–	1,2	2.60
65,000-79,000	2.5591-3.1102	1192279	KR32SVS3B085M	SVS3B	2,500	KR32	47,0	1.85	85,0	3.48	105,0	4.13	–	–	1,2	2.68
78,000-98,000	3.0709-3.8583	1192281	KR50SVS4B094M	SVS4B	3,500	KR50	65,0	2.56	94,0	3.70	119,0	4.69	–	–	2,4	5.21
97,000-117,000	3.8189-4.6063	1279787	KR50SVS5B094M	SVS5B	3,500	KR50	65,0	2.56	94,0	3.70	119,0	4.69	–	–	3,0	6.49
116,000-139,000	4.5669-5.4724	1279793	KR63SVS6B126M	SVS6B	4,000	KR63	85,0	3.35	126,0	4.96	162,0	6.38	–	–	5,7	12.63

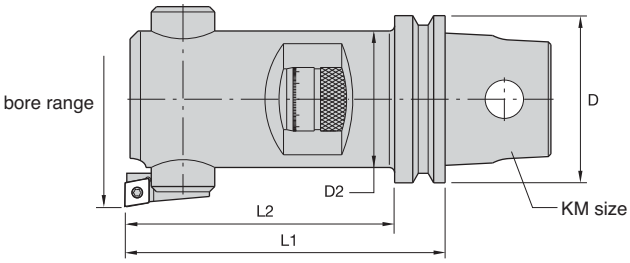
SVS Models Assembly Detail



NOTE: *See page G75 for torque values.*
**Differential connector supplied with taper shanks.*
***Order cartridge separately. See page G65..*

Order Example:
By catalog number KR32SVS00B072M, or by order number 1500262.

KM - SVS - System



- Order cartridges separately, see page G65.
- Order taper shank separately, see pages G78-G81.

KM Boring Head

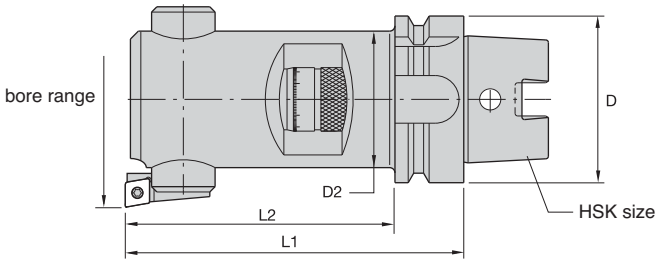
BR1 bore range							D		D2		L1		L2			
mm	in	order number	catalog number	head size	radial adjustment min	KM size	mm	in	mm	in	mm	in	mm	in	kg	lbs.
25,000-32,000	.9840-1.2600	1763133	KM40SVS00B080M	SVS00B	1,250	KM40	40,0	1.57	23,5	.93	80,0	3.15	65,0	2.56	0,7	1.50
25,000-32,000	.9840-1.2600	1746909	KM50SVS00B083M	SVS00B	1,250	KM50	50,0	1.97	23,5	.93	83,0	3.27	65,0	2.56	0,7	1.50
31,500-42,500	1.2400-1.6730	1763333	KM40SVS0B101M	SVS0B	2,000	KM40	40,0	1.57	30,0	1.18	101,0	3.98	85,0	3.35	0,8	1.70
31,500-42,500	1.2400-1.6730	1763334	KM50SVS0B103M	SVS0B	2,000	KM50	50,0	1.97	30,0	1.18	103,0	4.06	85,0	3.35	0,9	2.00
42,000-53,000	1.6540-2.0870	1763336	KM40SVS1B100M	SVS1B	2,000	KM40	40,0	1.57	38,0	1.50	100,0	3.94	88,0	3.46	1,1	2.50
42,000-53,000	1.6540-2.0870	1763338	KM50SVS1B105M	SVS1B	2,000	KM50	50,0	1.97	38,0	1.50	105,0	4.13	90,0	3.54	1,3	2.90
52,000-66,000	2.0470-2.5980	1763339	KM40SVS2B104M	SVS2B	2,500	KM40	40,0	1.57	47,0	1.85	104,0	4.09	92,0	3.62	1,5	3.20
52,000-66,000	2.0470-2.5980	1746981	KM50SVS2B107M	SVS2B	2,500	KM50	50,0	1.97	47,0	1.85	107,0	4.21	92,0	3.62	1,5	3.30
65,000-79,000	2.5590-3.1100	1763373	KM50SVS3B107M	SVS3B	2,500	KM50	50,0	1.97	47,0	1.85	107,0	4.21	92,0	3.62	1,9	4.20
65,000-79,000	2.5590-3.1100	1763374	KM63SVS3B107M	SVS3B	2,500	KM63	63,0	2.48	47,0	1.85	107,0	4.21	92,0	3.62	2,1	4.60
78,000-98,000	3.0710-3.8580	1763375	KM50SVS4B125M	SVS4B	3,500	KM50	50,0	1.97	65,0	2.56	125,0	4.92	110,0	4.33	2,2	4.90
78,000-98,000	3.0710-3.8580	1763376	KM63SVS4B110M	SVS4B	3,500	KM63	63,0	2.48	65,0	2.56	110,0	4.33	92,0	3.62	2,4	5.30
97,000-117,000	3.8190-4.6060	1763379	KM63SVS5B110M	SVS5B	3,500	KM63	63,0	2.48	65,0	2.56	110,0	4.33	92,0	3.62	3,2	7.10

SVS Models Assembly Detail

Order Example:
By catalog number KM40SVS00B080M, or by order number 1763133.

Romicron® High-Performance Boring Systems

HSK -SVS - System



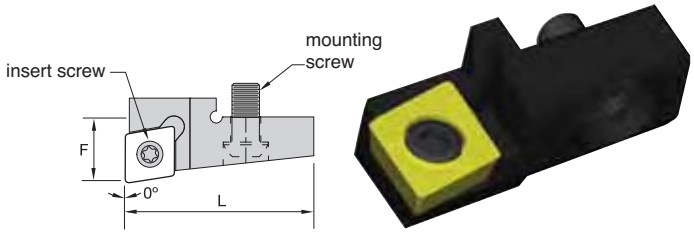
- Order cartridges separately, see page G65.

HSK Boring Head

BR1 bore range							D		D2		L1		L2			
mm	in	order number	catalog number	head size	radial adjustment min	HSK size	mm	in	mm	in	mm	in	mm	in	kg	lbs.
25,000-32,000	.9480-1.2600	1763096	HSK63ASVS00B096M	SVS00B	1,250	HSK63A	63,0	2.48	23,5	.93	96,0	3.78	66,0	2.60	1,1	2.40
31,500-42,500	1.2400-1.6730	1763098	HSK63ASVS0B117M	SVS0B	2,000	HSK63A	63,0	2.48	30,0	1.18	117,0	4.61	88,0	3.46	1,4	3.00
42,000-53,000	1.6540-2.0870	1763100	HSK63ASVS1B116M	SVS1B	2,000	HSK63A	63,0	2.48	38,0	1.50	116,0	4.57	88,0	3.46	1,6	3.40
52,000-66,000	2.0470-2.5980	1763112	HSK63ASVS2B121M	SVS2B	2,500	HSK63A	63,0	2.48	47,0	1.85	121,0	4.76	95,0	3.74	1,9	4.20
65,000-79,000	2.5590-3.1100	1763114	HSK63ASVS3B121M	SVS3B	2,500	HSK63A	63,0	2.48	47,0	1.85	121,0	4.76	95,0	3.74	1,9	4.10
78,000-98,000	3.0710-3.8580	1763116	HSK63ASVS4B139M	SVS4B	3,500	HSK63A	63,0	2.48	65,0	2.56	139,0	5.47	113,0	4.45	3,6	8.00
97,000-117,000	3.8190-4.6060	1763118	HSK63ASVS5B139M	SVS5B	3,500	HSK63A	63,0	2.48	65,0	2.56	139,0	5.47	113,0	4.45	5,9	13.00

Order Example:
By catalog number HSK63ASVS00B096M, or by order number 1763096.

SVS - System Cartridges



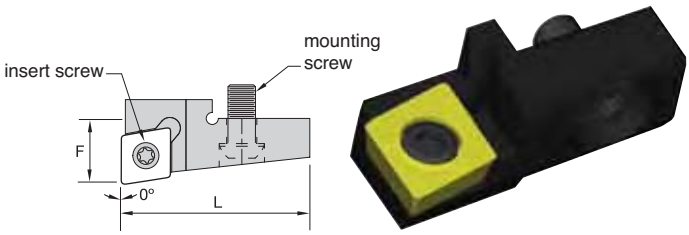
- Order inserts separately, see page H12-H13.

Cartridges SCF 0° Lead Angle

order number	catalog number	reference head	cartridge size	gage insert	L mm	L in	F mm	F in	kg	lbs.
1501356	KRCSCFPR061L	SVS00B	1L.	CP..215...	19,15	.75	4,76	.19	0,01	.02
1500650	KRCSCFPR062L	KRMSVS00M50049M,SVS00B	2L.	CP..215...	19,15	.75	5,90	.23	0,01	.02
1501357	KRCSCFPR063L	SVS00B	3L.	CP..215...	19,15	.75	7,01	.28	0,01	.03
1099162	KRCSCFPR061A	SVS1B,SVS0B	1A.	CP..215...	23,70	.93	6,45	.25	0,01	.02
1099163	KRCSCFPR062A	SVS1B,SVS0B	2A.	CP..215...	23,70	.93	8,20	.32	0,01	.02
1099164	KRCSCFPR063A	SVS1B,SVS0B	3A.	CP..215...	23,70	.93	9,95	.39	0,01	.03
1099165	KRCSCFPR061B	SVS3B,SVS2B	1B.	CP..215...	24,70	.97	6,45	.25	0,01	.02
1099166	KRCSCFPR062B	SVS3B,SVS2B	2B.	CP..215...	24,70	.97	8,70	.34	0,01	.03
1099167	KRCSCFPR063B	SVS3B,SVS2B	3B.	CP..215...	24,70	.97	10,95	.43	0,02	.03
1099168	KRCSCFPR061C	SVS5B,SVS4B	1C.	CP..215...	30,70	1.21	8,45	.33	0,02	.05
1099169	KRCSCFPR062C	SVS5B,SVS4B	2C.	CP..215...	30,70	1.21	11,70	.46	0,03	.06
1099170	KRCSCFPR063C	SVS5B,SVS4B	3C.	CP..215...	30,70	1.21	14,95	.59	0,04	.08
1099171	KRCSCFPR061D	SVS8B,SVS7B,SVS6B	1D.	CP..215...	38,70	1.52	8,45	.33	0,03	.07
1099172	KRCSCFPR062D	SVS8B,SVS7B,SVS6B	2D.	CP..215...	38,70	1.52	12,20	.48	0,05	.10
1099173	KRCSCFPR063D	SVS8B,SVS7B,SVS6B	3D.	CP..215...	38,70	1.52	15,95	.63	0,06	.13

(continued on next page)

SVS - System Cartridges



- Order inserts separately, see page H12-H13.

Cartridges SCF 0° Lead Angle

(continued from previous page)

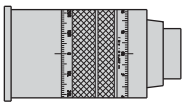
reference head size	order number	catalog number	insert screw	cartridge screw	insert Torx wrench	cartridge Torx wrench
SVS1B,SVS0B	1099162	KRCSCFPR061A	MS1152	MS1896PKG	FT7	KT15
SVS3B,SVS2B	1099165	KRCSCFPR061B	MS1153	MS1896PKG	FT7	KT15
SVS5B,SVS4B	1099168	KRCSCFPR061C	MS1153	MS1375	FT7	KT15
SVS8B,SVS7B,SVS6B	1099171	KRCSCFPR061D	MS1153	MS1897	FT7	KT27
SVS00B	1501356	KRCSCFPR061L	MS2005PKG	MS2006PKG	FT7	KT8
SVS1B,SVS0B	1099163	KRCSCFPR062A	MS1152	MS1896PKG	FT7	KT15
SVS3B,SVS2B	1099166	KRCSCFPR062B	MS1153	MS1896PKG	FT7	KT15
SVS5B,SVS4B	1099169	KRCSCFPR062C	MS1153	MS1375	FT7	KT15
SVS8B,SVS7B,SVS6B	1099172	KRCSCFPR062D	MS1153	MS1897	FT7	KT27
KRMSVS00M50049M,SVS00B	1500650	KRCSCFPR062L	MS2005PKG	MS2006PKG	FT7	KT8
SVS1B,SVS0B	1099164	KRCSCFPR063A	MS1152	MS1896PKG	FT7	KT15
SVS3B,SVS2B	1099167	KRCSCFPR063B	MS1153	MS1896PKG	FT7	KT15
SVS5B,SVS4B	1099170	KRCSCFPR063C	MS1153	MS1375	FT7	KT15
SVS8B,SVS7B,SVS6B	1099173	KRCSCFPR063D	MS1153	MS1897	FT7	KT27
SVS00B	1501357	KRCSCFPR063L	MS2005PKG	MS2006PKG	FT7	KT8

Order Example:
By catalog number KRCSCFPR061L, or by order number 1501356.

SVU65 Tooling Tree

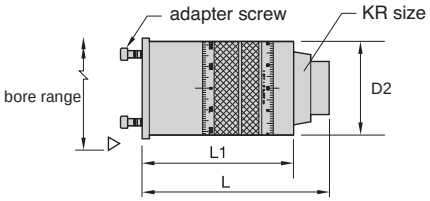
cartridge range	cartridge size	bore range	head size
2.795 - 2.992 (71 - 76 mm)	1E	2.795 - 3.346 (71 - 85 mm)	070
2.972 - 3.209 (75,5 - 81,5 mm)	2E		
3.149 - 3.346 (80 - 85 mm)	3E		
3.307 - 3.504 (84 - 89 mm)	1E	3.307 - 3.858 (84 - 98 mm)	083
3.484 - 3.681 (88,5 - 93,5 mm)	2E		
3.661 - 3.858 (93 - 98 mm)	3E		
3.819 - 4.016 (97 - 102 mm)	1E	3.819 - 4.370 (97 - 111 mm)	096
3.996 - 4.193 (101,5 - 106,5 mm)	2E		
4.173 - 4.370 (106 - 111 mm)	3E		

SVU65



2.795 - 4.370
(71 - 111)

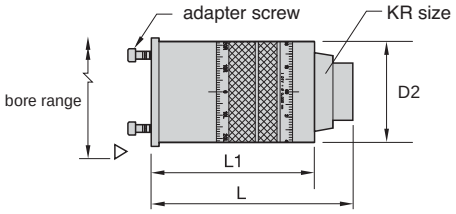
KR SVU65 System



- Order diameter extenders and cartridges separately, see page G69.
- Order taper shank separately, see pages G78-G81.

KR SVU65 System

BR1 bore range					radial adjustment min		D2		L		L1					
mm	in	order number	catalog number	KR size	mm	in	mm	in	mm	in	mm	in	adapter screw	Torx wrench	kg	lbs.
71,000-111,000	2.7950-4.3700	1192282	KR50SVU65110M	KR50	2,500	.0980	65	2.60	135	5.31	110	4.33	MS1898PKG	KT27	2,81	6.20



- Order diameter extenders and cartridges separately, see page G69.
- Order taper shank separately, see pages G78-G81.

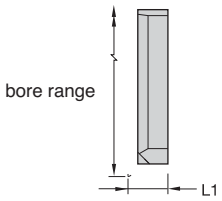
SVU65 — for Closed Loop Boring Process

BR1 bore range				radial adjustment min			D2		L		L1			
mm	in	order number	catalog number	KR size	mm	in	mm	in	mm	in	mm	in	kg	lbs.
71,000-111,000	2.7950-4.3700	1582600	KR50SVU65110MCLB	KR50	2,5	.098	65	2.60	135	5.31	110	4.33	2,81	6.20

Closed loop boring is a highly specialized process. Please contact your Kennametal representative for proper application.

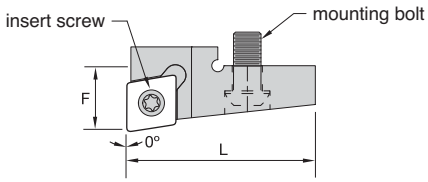
Order Example:
By catalog number KR50SVU65110M, or by order number 1192282.

KR — SVU — System



SVU 65 Diameter Extenders

BR1 bore range				L1			
mm	in	order number	catalog number	mm	in	kg	lbs.
70,000-85,000	2.7559-3.3465	1279736	KRDE070019M	19,20	.756	0,2	.48
83,000-98,000	3.2677-3.8583	1279739	KRDE083019M	19,20	.756	0,3	.62
96,000-111,000	3.7795-4.3701	1279740	KRDE096019M	19,20	.756	0,3	.76

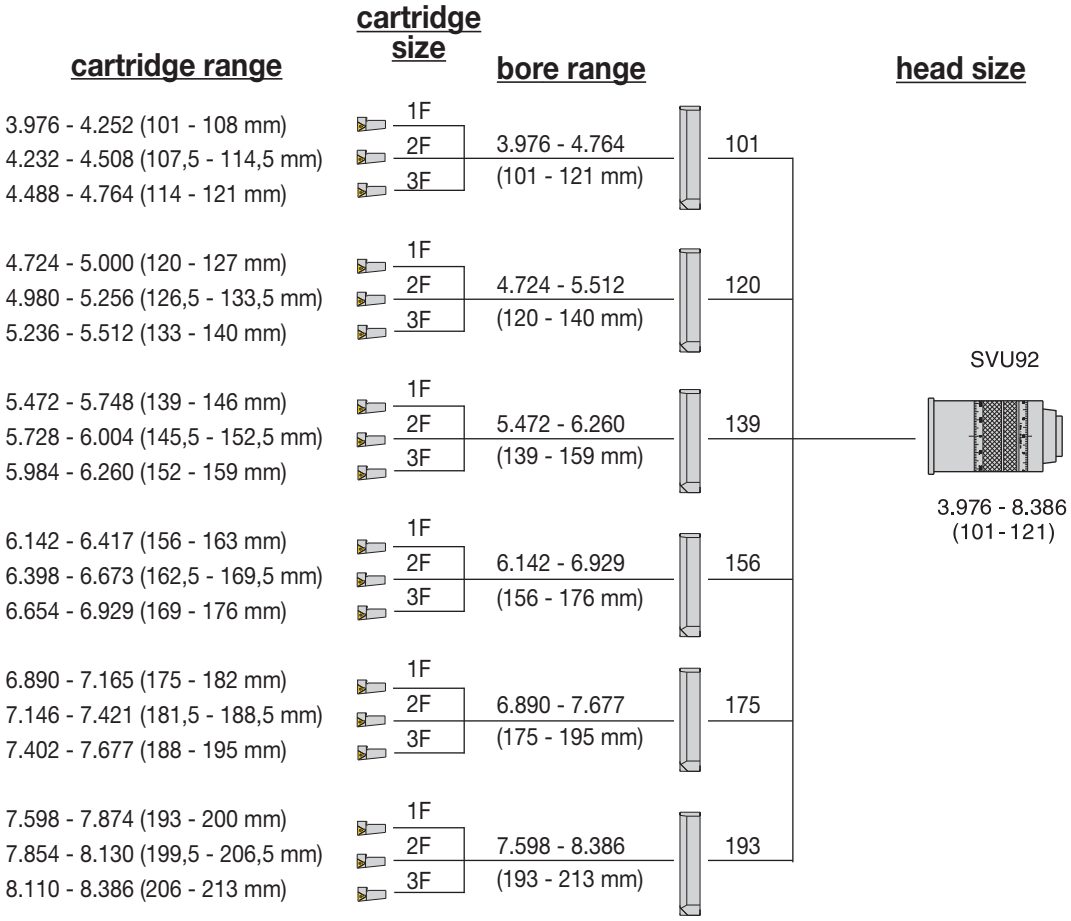


SVU 65° Lead Angle Cartridges

reference head size	order number	catalog number	gage insert	cartridge size	F mm	F in	L mm	L in	insert screw	mounting bolt	insert screw wrench	mounting bolt wrench	kg	lbs.
SVU65	1099174	KRCSCFPR061E	CPMT2151LF	1E.	6,75	.27	20	.78	MS1375	MS1153	FT7	KT15	0,01	.02
SVU65	1099175	KRCSCFPR062E	CPMT2151LF	2E.	9,00	.35	20	.78	MS1375	MS1153	FT7	KT15	0,01	.02
SVU65	1099176	KRCSCFPR063E	CPMT2151LF	3E.	11,25	.44	20	.78	MS1375	MS1153	FT7	KT15	0,01	.03

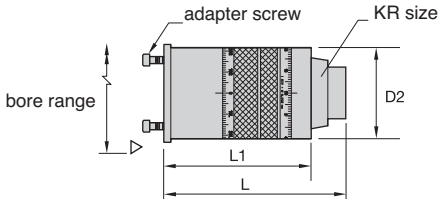
Order Example:
By catalog number KRCSCFPR061E, or by order number 1099174.

SVU92 Tooling Tree



To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

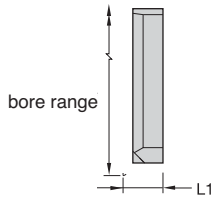
KR — SVU — System



- Order boring bar adapter and boring bar separately or order tool shank adapter separately, see below.
- Oder taper shank separately, see pages G78-G81.

KR SVU92 System

BR1 bore range					radial adjustment min yy		D2		L		L1					
mm	in	order number	catalog number	CSMS system size	mm	in	mm	in	mm	in	mm	in	adapter screw	adapter screw wrench	kg	lbs.
10,000-213,000	.3930-8.3850	1279800	KR80SVU92152M	KR80	3,50	.14	92	3.62	177	6.97	152	5.98	MS1898PKG	KT27	7,50	16.50



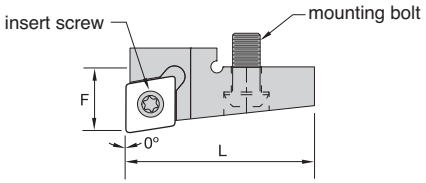
SVU 92 Diameter Extenders

BR1 bore range				L1			
mm	in	order number	catalog number	mm	in	kg	lbs.
101,000-121,000	3.9764-4.7638	1279741	KRDE101023M	23,20	.913	0,6	1.25
120,000-140,000	4.7244-5.5118	1279742	KRDE120023M	23,20	.913	0,7	1.54
139,000-159,000	5.4724-6.2598	1279743	KRDE139026M	26,20	1.032	1,0	2.15
156,000-176,000	6.1417-6.9291	1279745	KRDE156026M	26,20	1.032	1,1	2.51
175,000-195,000	3.8898-7.6772	1279746	KRDE175026M	26,20	1.032	1,3	2.83
193,000-213,000	7.5984-8.3858	1279748	KRDE193026M	26,20	1.032	1,4	3.14

Order Example:
By catalog number KR80SVU92152M, or by order number 1279800.

Romicron® High-Performance Boring Systems

SVU Models

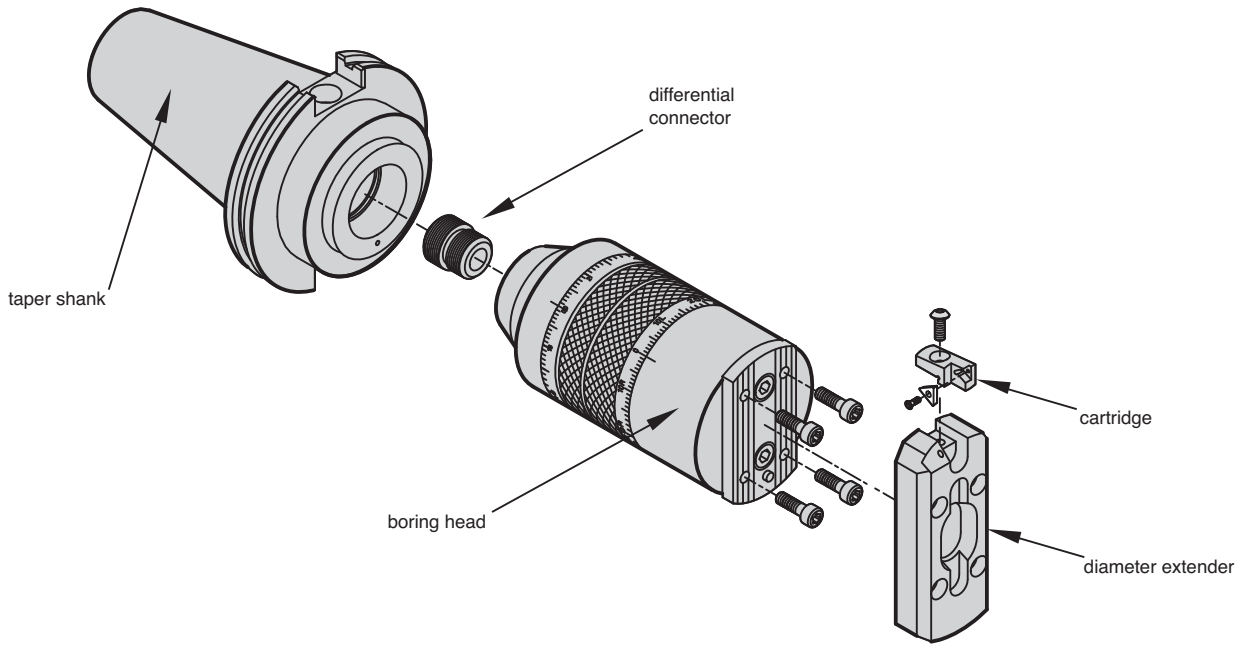


- Order inserts separately, see page H12-H13.

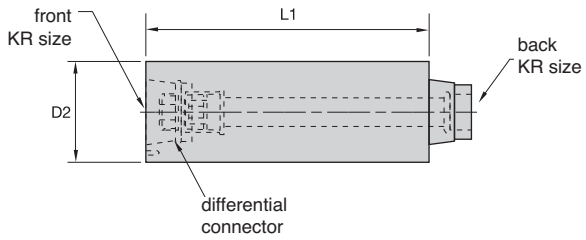
SVU 92 0° Lead Angle Cartridges

reference head	order number	catalog number	gage insert	cartridge size	F mm	F in	L mm	L in	mounting bolt	insert screw	insert screw wrench	mounting bolt wrench
SVU92	1099177	KRCSCFPR061F	CPMT2151LF	1F.	6,75	.27	20	.78	MS1375	MS1153	FT7	KT15
SVU92	1099178	KRCSCFPR062F	CPMT2151LF	2F.	10,00	.39	20	.78	MS1375	MS1153	FT7	KT15
SVU92	1099179	KRCSCFPR063F	CPMT2151LF	3F.	13,25	.52	20	.78	MS1375	MS1153	FT7	KT15

SVU Models



Order Example:
By catalog number KRCSCFPR061F, or by order number 1099177.



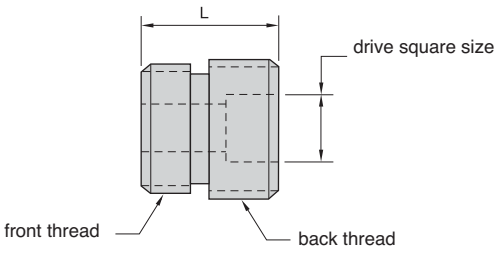
- Differential connector included.

Length Extenders and Spare Differential Connectors

order number	catalog number	front KR size	back KR size	D2 mm	D2 in	L1 mm	L1 in	lbs.	kg.	reference head
1279772	KR32KR32038050M	KR32	KR32	38	1.50	50	1.97	.99	0,45	SVS00B, SVS1B, SVUBB1
1192275	KR32KR32038100M	KR32	KR32	38	1.50	100	3.94	1.81	0,82	SVS00B, SVS1B, SVUBB1
1279775	KR32KR32047050M	KR32	KR32	47	1.85	50	1.97	1.52	0,69	SVS0B, SVS2B, SVS3B
1192276	KR32KR32047100M	KR32	KR32	47	1.85	100	3.94	2.82	1,28	SVS0B, SVS2B, SVS3B
1279783	KR50KR50056050M	KR50	KR50	56	2.20	50	1.97	1.80	0,82	SVS4B, SVS5B, SVU65, SVUBB2
1279785	KR50KR50065050M	KR50	KR50	65	2.56	50	1.97	2.56	1,16	SVS6B, SVS7B, SVS8B
1192280	KR50KR50065100M	KR50	KR50	65	2.56	100	3.94	4.96	2,25	SVS6B, SVS7B, SVS8B
1279791	KR63KR63085050M	KR63	KR63	85	3.35	50	1.97	4.41	2,00	SVU92
1279792	KR63KR63085100M	KR63	KR63	85	3.35	100	3.94	8.86	4,02	SVU92
1279797	KR80KR80095050M	KR80	KR80	95	3.74	50	1.97	5.51	2,50	SVU92
1279798	KR80KR80095100M	KR80	KR80	95	3.74	100	3.94	11.02	5,00	SVU92

Order Example:
Order by catalog number KR32KR32038050M, or by order number 1279772.

Romicron® High-Performance Boring Systems

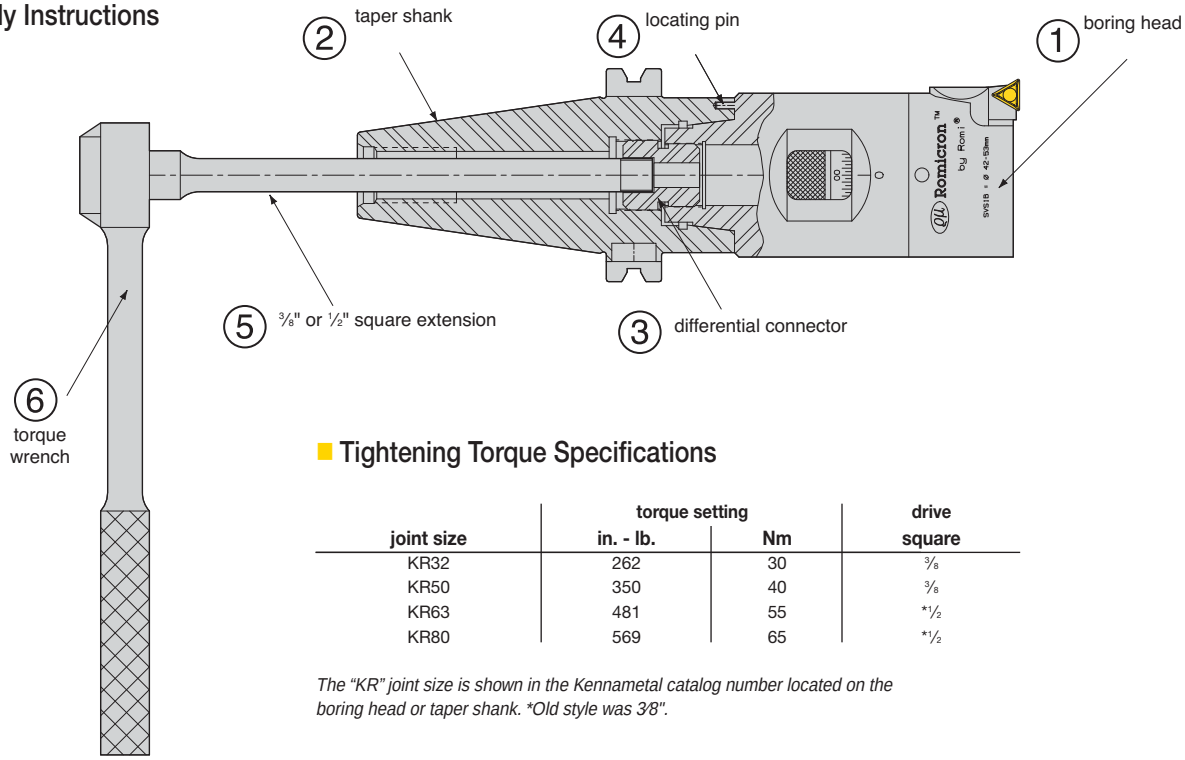


Spare Differential Connectors

order number	catalog number	L in	L mm	back thread	front thread	drive square size
1192295	KRDCKR32M	.87	22	M20 X 2	M18 X 1	3/8 SQ
1192296	KRDCKR50M	.87	22	M28 X 2	M26 X 1	3/8 SQ
1279733	KRDCKR63M	.98	25	M36 X 2	M32 X 1	1/2 SQ
1279734	KRDCKR80M	1.10	28	M42 X 2	M38 X 1	1/2 SQ

Order Example:
Order by catalog number KRDCKR32M, or by order number 1192295.

Assembly Instructions



Tightening Torque Specifications

joint size	torque setting in. - lb.	torque setting Nm	drive square
KR32	262	30	3/8
KR50	350	40	3/8
KR63	481	55	*1/2
KR80	569	65	*1/2

*The "KR" joint size is shown in the Kennametal catalog number located on the boring head or taper shank. *Old style was 3/8".*

Assembling the KR Joint

NOTE: Assembly requires – one square extension (included with BT and DV shanks), one torque wrench (not included), and one tightening fixture (not included). Before starting, make sure all mating surfaces are free from dirt and are perfectly clean.

a) Remove the differential connector (detail 3) from the taper shank (detail 2). Coat the differential connector threads with ASL-3G anti-seize lubricant supplied with the taper shank. Screw the differential connector into the rear thread of the boring head (detail 1) until it rests on the face between the two differential threads.

b) Screw front end of the taper shank (detail 2) onto the differential connector (detail 3) now located in the rear of the boring head (detail 1). Proceed carefully until the locating pin (detail 4) begins to touch the taper shank face. Stop! Unscrew the taper shank (detail 2) until the locating pin (detail 4) is aligned with the locating slot on the taper shank face.

c) Insert the square end of the socket extension (detail 5) through the taper shank (detail 2) and into the differential connector (detail 3). While maintaining alignment of locating pin (detail 4) and relative slot, turn the extension counterclockwise until you see the two Romicron faces approaching each other. Make sure the locating pin is going into the slot on the taper shank.

d) Tighten the differential connector (detail 3) to the required torque specification, as shown above, using a torque wrench (detail 6).

This will give you a taper/face contact connection.

Romicron® High-Performance Boring Systems

Romicron Fitment Chart – KR Head to Adapter

KR head catalog number	CV30	CV40	CV50	BT30
KR32SVS00B072M	CV30KR32186	CV40KR32161	CV50KR32161	BT30KR32023M
KR32SVS0B093M	–	CV40KR32157	CV50KR32157	–
KR32SVS1B076M	–	CV40KR32161	CV50KR32161	–
KR32SVS2B085M	–	CV40KR32157	CV50KR32157	–
KR32SVS3B085M	–	CV40KR32157	CV50KR32157	–
KR32SVUBB1060M	CV30KR32186	CV40KR32161	CV50KR32161	BT30KR32023M
KR32SVUBB2085M	–	CV40KR32100	CV50KR50157	–
KR50SVS4B094M	–	CV40KR50236	CV50KR50157	–
KR50SVS5B094M	–	CV40KR50236	CV50KR50157	–
KR50SVU65110M	–	CV40KR50236	CV50KR50157	–
KR50SVUBB2075M	–	–	CV50KR50157	–
KR63SVS6B126M	–	–	CV50KR63236	–
KR63SVS7B126M	–	–	CV50KR63236	–
KR63SVS8B126M	–	–	CV50KR63236	–
KR80SVU92152M	–	–	CV50KR80275	
KR80SVU120152M			CV50KR80275	

CV Adapters

CV adapters	head size	Romicron head catalog number
CV30KR32186	SVS00B	KR32SVS00B072M
	SVUBB1	KR32SVUBB1060M
CV40KR32100	SVUBB2	KR32SVUBB2085M
CV40KR32157	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
CV50KR32161	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
CV40KR50236	SVS4B	KR50SVS4B094M
	SVS5	KR50SVS5B094M
	SVU65	KR50SVU65110M
CV50KR32157	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
CV50KR32161	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
CV50KR50157	SVS4	KR50SVS4B094M
	SVS5B	KR50SVS5B094M
	SVU65	KR50SVU65110M
	SVUBB2	KR50SVUBB2075M
CV50KR63236	SVS6B	KR63SVS6B126M
	SVS7B	KR63SVS7B126M
	SVS8B	KR63SVS8B126M
CV50KR80275	SVU92	KR80SVU92152M
	SVU120	KR80SVU120152M

BT Adapters

BT adapters	head size	Romicron head catalog number
BT30KR32023M	SVS00B	KR32SVS00B072M
	SVUBB1	KR32SVUBB1060M
BT40KR32030M	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
BT40KR32031M	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
	SVUBB2	KR32SVUBB2085M
BT40KR50040M	SVS4B	KR50SVS4B094M
	SVS5B	KR50SVS5B094M
	SVU65	KR50SVU65110M
	SVUBB2	KR50SVUBB2075M
BT50RK32040M	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
BT50KR32041M	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
BT50KR50040M	SVS4B	KR50SVS4B094M
	SVS5B	KR50SVS5B094M
	SVU65	KR50SVU65110M
	SVUBB2	KR50SVUBB2075M
BT50RK63060M	SVS6B	KR63SVS6B126M
	SVS7B	KR63SVS7B126M
	SVS8B	KR63SVS8B126M
BT50RK80060M	SVU92	KR80SVU92152M
	SVU120	KR80SVU120152M

Romicron Fitment Chart – KR Head to Adapter

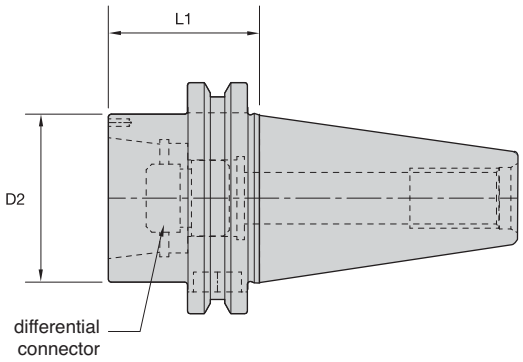
BT40	BT50	DV30	DV40	DV50
BT40KR32031M	BT50KR32041M	DV30BKR32040M	DV40BKR32041M	DV50BKR32041M
BT40KR32030M	BT50KR32040M	–	DV40BKR32040M	DV50BKR32040M
BT40KR32031M	BT50KR32041M	–	DV40BKR32041M	DV50BKR32041M
BT40KR32030M	BT50RK32040M	–	DV40BKR32040M	DV50BKR32040M
BT40KR32030M	BT50RK32040M	–	DV40BKR32040M	DV50BKR32040M
BT40KR32031M	BT50KR32041M	DV30BKR32040M	DV40BKR32041M	DV50BKR32041M
BT40KR50040M	BT50KR50040M	–	DV40BKR32024M	DV50BKR50040M
BT40KR50040M	BT50KR50040M	–	DV40BKR50060M	DV50BKR50040M
BT40KR50040M	BT50KR50040M	–	DV40BKR50060M	DV50BKR50040M
BT40KR50040M	BT50KR50040M	–	DV40BKR50060M	DV50BKR50040M
–	BT50KR50040M	–	–	DV50BKR50040M
–	BT50RK63060M	–	–	DV50BKR63060M
–	BT50RK63060M	–	–	DV50BKR63060M
–	BT50RK63060M	–	–	DV50BKR63060M
–	BT50RK80060M	–	–	DV50BKR80070M
–	BT50RK80060M	–	–	DV50BKR80070M

DV Adapters

DV adapters	head size	Romicron head catalog number
DV30BKR32040M	SVS00B	KR32SVS00B072M
	SVUBB1	KR32SVUBB1060M
DV40BKR32024M	SVUBB2	KR32SVUBB2085M
DV40BKR32040M	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
DV40BKR32041M	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
DV40BKR50060M	SVS4B	KR50SVS4B094M
	SVS5B	KR50SVS5B094M
	SVU65	KR50SVU65110M
DV50BKR32040M	SVS0B	KR32SVS0B093M
	SVS2B	KR32SVS2B085M
	SVS3B	KR32SVS3B085M
DV50BKR32041M	SVS00B	KR32SVS00B072M
	SVS1B	KR32SVS1B076M
	SVUBB1	KR32SVUBB1060M
DV50BKR50040M	SVS4B	KR50SVS4B094M
	SVS5B	KR50SVS5B094M
	SVU65	KR50SVU65110M
	SVUBB2	KR50SVUBB2075M
DV50BKR63060M	SVS6B	KR63SVS6B126M
	SVS7B	KR63SVS7B126M
	4SVS8B	KR63SVS8B126M
DV50BKR80070M	SVU92	KR80SVU92152M
	SVU120	KR80SVU120152M

Romicron® High-Performance Boring Systems

CV to KR Adapters



- Differential connector included

CV Taper Shank

order number	catalog number	taper	KR size	D2	D2	L1	L1	differential connector	lbs.	kg.	reference head
2202445	CV30KR32186	CV30	KR32	1.83	47	1.86	47,3	KRDCKR32M	1.03	0,47	SVS00B,SVS0B,SVUBB1
1539002	CV40KR32161	CV40	KR32	1.75	44	1.61	41,0	KRDCKR32M	1.98	0,90	SVS00B,SVS1B,SVUBB1
1539003	CV50KR32161	CV50	KR32	1.96	50	1.61	41,0	KRDCKR32M	1.98	0,90	SVS00B,SVS1B,SVUBB1

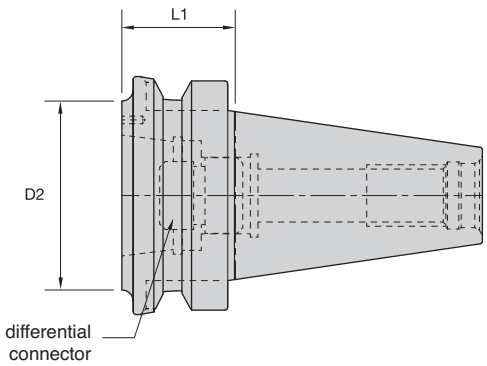
CV Form B Adapters

				D2		L1					
order number	catalog number	taper	KR size	mm	in	mm	in	differential connector	kg.	lbs.	reference head
3554365	CV40BKR32100	CV40	KR32	45	1.76	25	1.00	KRDCKR32M	0,91	2.00	SVUBB2
3554366	CV40BKR32157	CV40	KR32	47	1.85	40	1.58	KRDCKR32M	1,08	2.40	SVS0B,SVS2B,SVS3B
3554367	CV40BKR50236	CV40	KR50	65	2.56	60	2.37	KRDCKR50M	1,23	2.70	SVS4B,SVS5B,SVU65
3554368	CV50BKR32157	CV50	KR32	50	1.97	40	1.57	KRDCKR32M	3,25	7.20	SVS0B,SVS2B,SVS3B
3554369	CV50BKR50157	CV50	KR50	65	2.56	40	1.57	KRDCKR50M	3,05	6.70	SVS4B,SVS5B,SVU65,SVUBB2
3554370	CV50BKR63236	CV50	KR63	85	3.35	60	2.36	KRDCKR63M	3,50	7.70	SVS6B,SVS7B,SVS8B
3554371	CV50BKR80275	CV50	KR80	95	3.74	70	2.75	KRDCKR80M	4,28	9.40	SVU92

Order Example:
By catalog number CV30KR32186, or by order number 2202445.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

BT to KR JIS B6339



- Differential connector included

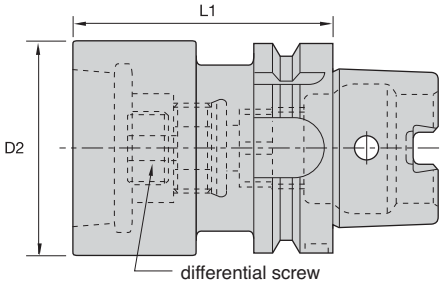
BT Taper Shank

order number	catalog number	taper	KR size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg.	lbs.	reference head
2202446	BT30KR32023M	BT30	KR32	46	1.81	23	.91	KRDCKR32M	0,29	.63	SVS00B,SVS0B,SVUBB1
1528333	BT40KR32031M	BT40	KR32	50	1.96	31	1.22	KRDCKR32M	1,00	2.20	SVS00B,SBS1B,SVUBB1

BT Form B Adapters

order number	catalog number	taper	KR size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg.	lbs.	reference head
3554372	BT40BKR32030M	BT40	KR32	50	1.97	30	1.18	KRDCKR32M	1,20	2.63	SVS0B,SBS2B,SVS3B
3554373	BT40BKR50050M	BT40	KR50	63	2.48	50	1.97	KRDCKR50M	1,26	2.80	SVS4B,SVS5B,SVU65,SVUBB2
3554374	BT50BKR32040M	BT50	KR32	50	1.97	40	1.57	KRDCKR32M	3,90	8.60	SVS0B,SVS2B,SVS3B
3554375	BT50BKR50040M	BT50	KR50	65	2.56	40	1.57	KRDCKR50M	3,17	7.00	SVS4B,SVS5B,SVU65,SVBB2
3554376	BT50BKR63060M	BT50	KR63	85	3.35	60	2.36	KRDCKR63M	4,31	9.50	SVS6B,SVS7B,SVS8B
3554377	BT50BKR80060M	BT50	KR80	95	3.74	60	2.36	KRDCKR80M	4,53	9.98	SVU92

HSK form A to KR



- Differential connector included

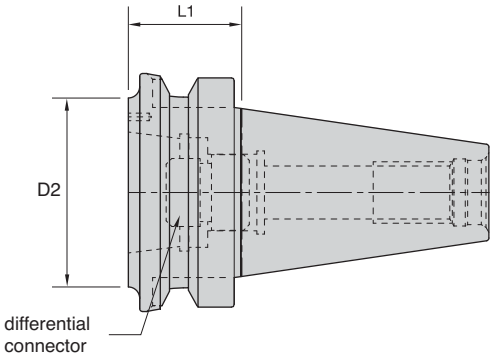
HSK Shank

order number	catalog number	HSK	KR size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg	lbs.	reference head
1153403	HSK63AKR32075M	HSK63A	KR32	50	1.96	75	2.95	KRDCKR32M	1,20	2.64	SVS0B, SVS2B, SVS3B
1153604	HSK63AKR50080M	HSK63A	KR50	65	2.56	80	3.15	KRDCKR50M	1,60	3.52	SVS4B, SVS5B, SVU65, SVUBB2
1153606	HSK100AKR32075M	HSK100A	KR32	50	1.96	75	2.95	KRDCKR32M	2,20	4.84	SVS0B, SVS2B, SVS3B
1107188	HSK100AKR50085M	HSK100A	KR50	65	2.56	85	3.35	KRDCKR50M	3,10	6.82	SVS4B, SVS5B, SVU65, SVUBB2
1173988	HSK100AKR63100M	HSK100A	KR63	95	3.73	90	3.54	KRDCKR63M	4,40	9.68	SVS6B, SVS7B, SVS8B
1153612	HSK100AKR80090M	HSK100A	KR80	50	1.96	75	2.95	KRDCKR80M	2,60	5.72	SVU92

Plug may need to be removed to access the differential screw drive through the HSK taper.
The recommended tightening torques for the differential screws are listed above.

Order Example:
By catalog number BT30KR32023M, or by order number 2202446.

DV to KR DIN 69871 AD/B



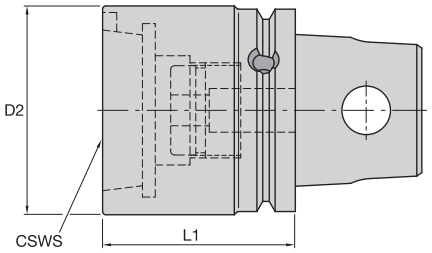
- Differential connector included

DV Form B Adapters

order number	catalog number	taper	KR size	D2 mm	D2 in	L1 mm	L1 in	differential connector	kg.	lbs.	reference head
1538979	DV40BKR32024M	DV40	KR32	44	1.75	24	.94	KRDCKR32M	0,90	1.98	SVUBB2
1263815	DV40BKR32040M	DV40	KR32	44	1.75	40	1.57	KRDCKR32M	1,00	2.20	SVS0B, SVS2B, SVS3B
1539005	DV40BKR32041M	DV40	KR32	44	1.75	41	1.61	KRDCKR32M	1,00	2.20	SVS00B, SVS1B, SVUBB1
1263816	DV40BKR50060M	DV40	KR50	65	2.56	60	2.36	KRDCKR50M	1,40	3.08	SVU65,SVS4B, SVS5B
1191970	DV50BKR32040M	DV50	KR32	50	1.96	40	1.57	KRDCKR32M	2,80	6.16	SVS0B, SVS2B, SVS3B
1528328	DV50BKR32041M	DV50	KR32	50	1.96	41	1.61	KRDCKR32M	2,80	6.16	SVS00B, SVS1B, SVUBB1
1191971	DV50BKR50040M	DV50	KR50	65	2.56	40	1.57	KRDCKR50M	2,80	6.16	SVU65,SVS4B, SVS5B, SVUBB2
1264135	DV50BKR63060M	DV50	KR63	85	3.34	60	2.36	KRDCKR63M	3,30	7.26	SVS6B, SVS7B, SVS8B
1264136	DV50BKR80070M	DV50	KR80	95	3.73	70	2.76	KRDCKR80M	4,10	9.02	SVU92

Order Example:
Order by catalog number DV30BKR322040M, or by order number 2202447.

KM63XMZ Adapters

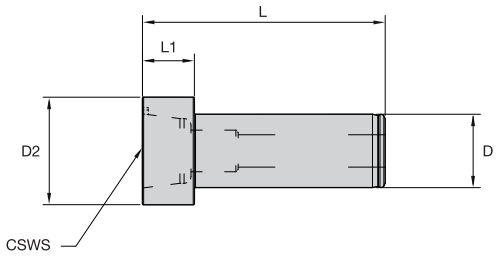


KR — Romicron Boring Head Adapters

order number	catalog number	CSWS KM size	D2 mm	D2 in	L1 mm	L1 in	kg.	lbs.
1831590	KM63XMZKR5060Y	KR50	65	3	60	2	1,40	3.01
1831589	KM63XMZKR6375Y	KR63	85	3	75	3	2,20	4.75

Refer to Kennametal the Holemaking catalog for a complete listing of Romicron boring adapters.

SS to KR



- Differential connector included

Straight Shank Inch

order number	catalog number	CSWS KR size	D mm	D in	D2 mm	D2 in	L mm	L in	L1 mm	L1 in	reference head
3562940	SS100KR32043	KR32	25,4	1.000	46,5	1.831	125,0	4.92	42,5	1.67	SVUBB1, SVUBB2
3562941	SS125KR32023	KR32	31,8	1.250	46,5	1.831	105,0	4.13	22,5	.89	SVUBB1, SVUBB2
3562942	SS125KR50033	KR50	31,8	1.250	60,0	2.362	115,0	4.53	32,5	1.28	SVUBB2

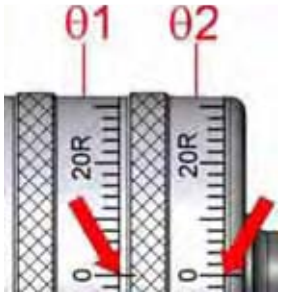
Order Example:
Order by catalog number SS100KR32043, or by order number 3562940.

1 - The balancing dials are identified on the figure below.

2 - Assure that the zero mark of dial 02 is coincident with Romicron Body Mark, and the zero mark dial 01 is coincident with the mark zero on dial 02.

3 - Read the position values of the dials 01 and 02 on the table. For example, to machine a 10 mm diameter, the positions are: 01 = 24R and 02 = 22R.

body mark (indice)



Balancing Table for SVU-BB1 Boring Head

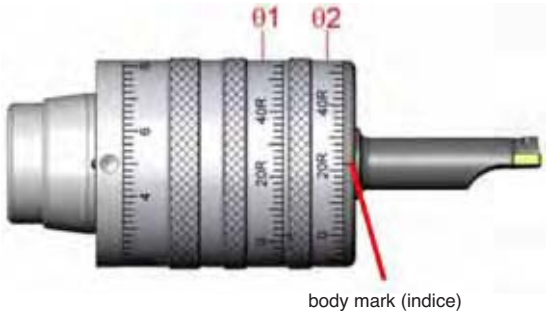
KRBB10FABDRS204C						KRBB10SCLDR4060C						KRBB10SCFPR06085C					
4.0 - 6.4 mm diameter						6.0 - 9.0 mm diameter						8.5 - 11.5 mm diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
4	0.1575	40	L	58	L	6	0.2362	34	L	66	L	8.5	0.3346	34	L	66	L
4.1	0.1614	42	L	58	L	6.1	0.2402	36	L	66	L	8.6	0.3386	36	L	68	L
4.2	0.1654	42	L	54	L	6.2	0.2441	36	L	64	L	8.7	0.3425	36	L	64	L
4.3	0.1693	44	L	54	L	6.3	0.2480	38	L	62	L	8.8	0.3465	38	L	62	L
4.4	0.1732	44	L	50	L	6.4	0.2520	38	L	62	L	8.9	0.3504	36	L	60	L
4.5	0.1772	46	L	50	L	6.5	0.2559	40	L	60	L	9	0.3543	40	L	60	L
4.6	0.1811	46	L	48	L	6.6	0.2598	40	L	58	L	9.1	0.3583	40	L	58	L
4.7	0.1850	46	L	46	L	6.7	0.2638	40	L	56	L	9.2	0.3622	42	L	56	L
4.8	0.1890	46	L	42	L	6.8	0.2677	40	L	54	L	9.3	0.3661	40	L	54	L
4.9	0.1929	46	L	40	L	6.9	0.2717	42	L	52	L	9.4	0.3701	42	L	52	L
5	0.1969	22	R	20	R	7	0.2756	42	L	54	L	9.5	0.3740	42	L	50	L
5.1	0.2008	32	R	26	R	7.1	0.2795	54	R	60	R	9.6	0.3780	40	L	46	L
5.2	0.2047	40	R	32	R	7.2	0.2835	54	R	60	R	9.7	0.3819	38	L	42	L
5.3	0.2087	44	R	34	R	7.3	0.2874	60	R	60	R	9.8	0.3858	30	L	32	L
5.4	0.2126	48	R	36	R	7.4	0.2913	70	R	72	R	9.9	0.3898	24	R	22	R
5.5	0.2165	50	R	36	R	7.5	0.2953	42	R	40	R	10	0.3937	24	R	22	R
5.6	0.2205	52	R	34	R	7.6	0.2992	48	R	44	R	10.1	0.3976	26	R	22	R
5.7	0.2244	54	R	34	R	7.7	0.3031	50	R	42	R	10.2	0.4016	44	R	38	R
5.8	0.2283	56	R	32	R	7.8	0.3071	50	R	42	R	10.3	0.4055	48	R	38	R
5.9	0.2323	58	R	32	R	7.9	0.3110	52	R	40	R	10.4	0.4094	52	R	38	R
6	0.2362	60	R	30	R	8	0.3150	54	R	40	R	10.5	0.4134	52	R	38	R
6.1	0.2402	62	R	30	R	8.1	0.3189	54	R	38	R	10.6	0.4173	56	R	36	R
6.2	0.2441	64	R	28	R	8.2	0.3228	56	R	38	R	10.7	0.4213	56	R	36	R
6.3	0.2480	66	R	28	R	8.3	0.3268	58	R	36	R	10.8	0.4252	58	R	34	R
6.4	0.2520	68	R	24	R	8.4	0.3307	58	R	34	R	10.9	0.4291	58	R	32	R
						8.5	0.3346	60	R	36	R	11	0.4331	62	R	32	R
						8.6	0.3386	62	R	34	R	11.1	0.4370	60	R	30	R
						8.7	0.3425	62	R	32	R	11.2	0.4409	62	R	28	R
						8.8	0.3465	62	R	32	R	11.3	0.4449	62	R	28	R
						8.9	0.3504	66	R	28	R	11.4	0.4488	68	R	26	R
						9	0.3543	66	R	28	R	11.5	0.4528	68	R	26	R

(continued on next page)

4 - The 01 dial must be positioned first. Moving the dial, adjust the position of dial 01. Use the mark reference located on dial 02.

5 - Now adjust the position for dial 02. Use the mark reference located on the Romicron body. After the adjustment of dial 02, the Romicron is correctly balanced.

02 mark (indice)



body mark (indice)

Balancing Table for SVU-BB1 Boring Head

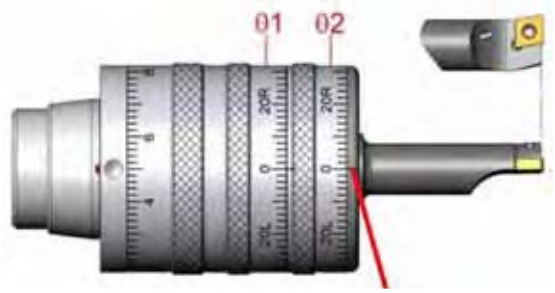
(continued from previous page)

KRBB10SCFPR06110C						KRBB10SCFPR06135C					
11 - 14 mm diameter						13.5 - 16.5 mm diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
11	0.4331	32	L	66	L	13.5	0.5315	34	L	62	L
11.1	0.4370	34	L	64	L	13.6	0.5354	36	L	60	L
11.2	0.4409	34	L	62	L	13.7	0.5394	38	L	58	L
11.3	0.4449	36	L	60	L	13.8	0.5433	38	L	56	L
11.4	0.4488	36	L	58	L	13.9	0.5472	40	L	56	L
11.5	0.4528	38	L	58	L	14	0.5512	42	L	44	L
11.6	0.4567	38	L	56	L	14.1	0.5551	42	L	52	L
11.7	0.4606	40	L	54	L	14.2	0.5591	44	L	50	L
11.8	0.4646	40	L	52	L	14.3	0.5630	42	L	46	L
11.9	0.4685	40	L	52	L	14.4	0.5669	34	L	36	L
12	0.4724	38	L	46	L	14.5	0.5709	18	L	20	L
12.1	0.4764	34	L	42	L	14.6	0.5748	10	R	6	R
12.2	0.4803	26	L	30	L	14.7	0.5787	18	R	10	R
12.3	0.4843	24	R	22	R	14.8	0.5827	40	R	30	R
12.4	0.4882	28	L	26	L	14.9	0.5866	44	R	32	R
12.5	0.4921	44	L	38	R	15	0.5906	48	R	34	R
12.6	0.4961	44	R	36	R	15.1	0.5945	48	R	32	R
12.7	0.5000	50	R	40	R	15.2	0.5984	50	R	30	R
12.8	0.5039	50	R	38	R	15.3	0.6024	52	R	30	R
12.9	0.5079	52	R	36	R	15.4	0.6063	56	R	32	R
13	0.5118	52	R	36	R	15.5	0.6102	54	R	28	R
13.1	0.5157	54	R	34	R	15.6	0.6142	58	R	28	R
13.2	0.5197	54	R	32	R	15.7	0.6181	60	R	26	R
13.3	0.5236	56	R	32	R	15.8	0.6220	64	R	26	R
13.4	0.5276	56	R	30	R	15.9	0.6260	64	R	26	R
13.5	0.5315	60	R	28	R	16	0.6299	66	R	24	R
13.6	0.5354	60	R	28	R	16.1	0.6339	66	R	22	R
13.7	0.5394	62	R	26	R	16.2	0.6378	70	R	20	R
13.8	0.5433	64	R	26	R	16.3	0.6417	74	R	18	R
13.9	0.5472	68	R	24	R	16.4	0.6457	76	R	16	R
14	0.5512	68	R	24	R	16.5	0.6496	78	R	14	R

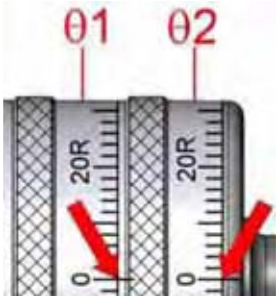
1 - The balancing dials are identified on the figure below.

2 - Assure that the zero mark of dial 02 is coincident with Romicron Body Mark, and the zero mark dial 01 is coincident with the mark zero on dial 02.

3 - Read the position values of the dials 01 and 02 on the table. For example, to machine a 10 mm diameter, the positions are: 01 = 24R and 02 = 22R.



body mark (indice)



Balancing Table for SVU-BB2 Boring Head

KRBB16SCLDRS406A						KRBB16SCFPR06085A						KRBB16SCFPR0611A						KRBB16SCFPR06135A					
6.0 - 9.5 mm diameter						8.5 - 12.0 mm diameter						11.0 - 14.5 mm diameter						13.5 - 17.0 mm diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
6	0.2362	67.5	L	67.5	L	8.5	0.3346	67.5	L	67.5	L	11	0.4331	67.5	L	70	L	13.5	0.5315	65	L	70	L
6.1	0.2402	62.5	L	62.5	L	8.6	0.3386	62.5	L	62.5	L	11.1	0.4370	60	L	62.5	L	13.6	0.5354	60	L	65	L
6.2	0.2441	57.5	L	57.5	L	8.7	0.3425	57.5	L	57.5	L	11.2	0.4409	57.5	L	60	L	13.7	0.5394	55	L	60	L
6.3	0.2480	55	L	55	L	8.8	0.3465	52.5	L	55	L	11.3	0.4449	52.5	L	55	L	13.8	0.5433	50	L	55	L
6.4	0.2520	50	L	50	L	8.9	0.3504	50	L	50	L	11.4	0.4488	47.5	L	50	L	13.9	0.5472	47.5	L	52.5	L
6.5	0.2559	47.5	L	47.5	L	9	0.3543	47.5	L	47.5	L	11.5	0.4528	45	L	47.5	L	14	0.5512	42.5	L	47.5	L
6.6	0.2598	45	L	45	L	9.1	0.3583	42.5	L	45	L	11.6	0.4567	42.5	L	45	L	14.1	0.5551	40	L	45	L
6.7	0.2638	40	L	40	L	9.2	0.3622	40	L	40	L	11.7	0.4606	37.5	L	42.5	L	14.2	0.5591	35	L	42.5	L
6.8	0.2677	37.5	L	37.5	L	9.3	0.3661	37.5	L	37.5	L	11.8	0.4646	35	L	37.5	L	14.3	0.5630	32.5	L	40	L
6.9	0.2717	35	L	35	L	9.4	0.3701	35	L	35	L	11.9	0.4685	32.5	L	35	L	14.4	0.5669	30	L	37.5	L
7	0.2756	32.5	L	32.5	L	9.5	0.3740	30	L	32.5	L	12	0.4724	30	L	32.5	L	14.5	0.5709	25	L	35	L
7.1	0.2795	30	L	30	L	9.6	0.3780	27.5	L	30	L	12.1	0.4764	27.5	L	30	L	14.6	0.5748	22.5	L	32.5	L
7.2	0.2835	27.5	L	27.5	L	9.7	0.3819	25	L	27.5	L	12.2	0.4803	25	L	27.5	L	14.7	0.5787	20	L	30	L
7.3	0.2874	25	L	25	L	9.8	0.3858	22.5	L	25	L	12.3	0.4843	22.5	L	25	L	14.8	0.5827	17.5	L	27.5	L
7.4	0.2913	22.5	L	22.5	L	9.9	0.3898	20	L	22.5	L	12.4	0.4882	17.5	L	25	L	14.9	0.5866	15	L	25	L
7.5	0.2953	20	L	20	L	10	0.3937	17.5	L	20	L	12.5	0.4921	15	L	22.5	L	15	0.5906	10	L	25	L
7.6	0.2992	17.5	L	17.5	L	10.1	0.3976	15	L	17.5	L	12.6	0.4961	12.5	L	20	L	15.1	0.5945	7.5	L	22.5	L
7.7	0.3031	15	L	15	L	10.2	0.4016	12.5	L	15	L	12.7	0.5000	10	L	17.5	L	15.2	0.5984	2.5	L	22.5	L
7.8	0.3071	12.5	L	12.5	L	10.3	0.4055	10	L	15	L	12.8	0.5039	5	L	17.5	L	15.3	0.6024	2.5	R	22.5	L
7.9	0.3110	10	L	12.5	L	10.4	0.4094	7.5	L	12.5	L	12.9	0.5079	2.5	L	15	L	15.4	0.6063	7.5	R	22.5	L
8	0.3150	7.5	L	10	L	10.5	0.4134	5	L	10	L	13	0.5118	2.5	R	15	L	15.5	0.6102	17.5	R	27.5	L
8.1	0.3189	5	L	7.5	L	10.6	0.4173	0	L	10	L	13.1	0.5157	10	R	17.5	L	15.6	0.6142	37.5	R	42.5	L
8.2	0.3228	2.5	L	5	L	10.7	0.4213	5	R	10	L	13.2	0.5197	25	R	30	L	15.7	0.6181	85	L	90	R
8.3	0.3268	2.5	R	5	L	10.8	0.4252	45	R	45	L	13.3	0.5236	62.5	L	65	R	15.8	0.6220	35	L	42.5	R
8.4	0.3307	10	L	12.5	R	10.9	0.4291	10	L	15	R	13.4	0.5276	17.5	L	22.5	R	15.9	0.6260	17.5	L	27.5	R
8.5	0.3346	0	R	5	R	11	0.4331	2.5	L	10	R	13.5	0.5315	5	L	15	R	16	0.6299	7.5	L	22.5	R
8.6	0.3386	2.5	R	7.5	R	11.1	0.4370	2.5	R	10	R	13.6	0.5354	0	R	15	R	16.1	0.6339	2.5	L	22.5	R
8.7	0.3425	7.5	R	7.5	R	11.2	0.4409	5	R	12.5	R	13.7	0.5394	5	R	15	R	16.2	0.6378	2.5	R	22.5	R
8.8	0.3465	10	R	10	R	11.3	0.4449	10	R	12.5	R	13.8	0.5433	7.5	R	17.5	R	16.3	0.6417	7.5	R	22.5	R
8.9	0.3504	12.5	R	12.5	R	11.4	0.4488	12.5	R	15	R	13.9	0.5472	10	R	20	R	16.4	0.6457	10	R	25	R
9	0.3543	12.5	R	15	R	11.5	0.4528	15	R	17.5	R	14	0.5512	15	R	20	R	16.5	0.6496	15	R	25	R
9.1	0.3583	15	R	17.5	R	11.6	0.4567	17.5	R	20	R	14.1	0.5551	17.5	R	22.5	R	16.6	0.6535	17.5	R	27.5	R
9.2	0.3622	17.5	R	20	R	11.7	0.4606	20	R	22.5	R	14.2	0.5591	20	R	25	R	16.7	0.6575	20	R	30	R
9.3	0.3661	20	R	22.5	R	11.8	0.4646	22.5	R	25	R	14.3	0.5630	22.5	R	27.5	R	16.8	0.6614	22.5	R	32.5	R
9.4	0.3701	22.5	R	25	R	11.9	0.4685	25	R	27.5	R	14.4	0.5669	25	R	30	R	16.9	0.6654	27.5	R	35	R
9.5	0.3740	25	R	27.5	R	12	0.4724	27.5	R	30	R	14.5	0.5709	27.5	R	32.5	R	17	0.6693	30	R	37.5	R

(continued on next page)

4 - The 01 dial must be positioned first. Moving the dial, adjust the position of dial 01. Use the mark reference located on dial 02.

5 - Now adjust the position for dial 02. Use the mark reference located on the Romicron body. After the adjustment of dial 02, the Romicron is correctly balanced.

02 mark (indice)

body mark (indice)

Balancing Table for SVU-BB2 Boring Head

(continued from previous page)

KRBB16SCFPR0616A						KRBB16SCFPR0619A						KRBB16SCFPR0622A					
16.0 - 19.5 mm diameter						19.0 - 22.5 mm diameter						22.0 - 25.5 mm diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
16	0.6299	65	L	72.5	L	19	0.7480	60	L	75	L	22	0.8661	57.5	L	80	L
16.1	0.6339	57.5	L	65	L	19.1	0.7520	55	L	70	L	22.1	0.8701	50	L	72.5	L
16.2	0.6378	52.5	L	62.5	L	19.2	0.7559	50	L	65	L	22.2	0.8740	45	L	70	L
16.3	0.6417	47.5	L	57.5	L	19.3	0.7598	45	L	60	L	22.3	0.8780	37.5	L	65	L
16.4	0.6457	42.5	L	52.5	L	19.4	0.7638	40	L	57.5	L	22.4	0.8819	32.5	L	62.5	L
16.5	0.6496	40	L	50	L	19.5	0.7677	35	L	52.5	L	22.5	0.8858	27.5	L	60	L
16.6	0.6535	35	L	47.5	L	19.6	0.7717	30	L	50	L	22.6	0.8898	22.5	L	57.5	L
16.7	0.6575	32.5	L	45	L	19.7	0.7756	27.5	L	47.5	L	22.7	0.8937	20	L	55	L
16.8	0.6614	27.5	L	42.5	L	19.8	0.7795	22.5	L	45	L	22.8	0.8976	15	L	52.5	L
16.9	0.6654	25	L	40	L	19.9	0.7835	20	L	42.5	L	22.9	0.9016	10	L	52.5	L
17	0.6693	20	L	37.5	L	20	0.7874	15	L	42.5	L	23	0.9055	5	L	50	L
17.1	0.6732	17.5	L	35	L	20.1	0.7913	10	L	40	L	23.1	0.9094	0	R	50	L
17.2	0.6772	12.5	L	32.5	L	20.2	0.7953	5	L	40	L	23.2	0.9134	7.5	R	52.5	L
17.3	0.6811	10	L	30	L	20.3	0.7992	0	L	40	L	23.3	0.9173	12.5	R	52.5	L
17.4	0.6850	5	L	30	L	20.4	0.8031	5	R	40	L	23.4	0.9213	20	R	55	L
17.5	0.6890	0	L	30	L	20.5	0.8071	10	R	40	L	23.5	0.9252	30	R	60	L
17.6	0.6929	5	R	30	L	20.6	0.8110	17.5	R	42.5	L	23.6	0.9291	40	R	65	L
17.7	0.6969	12.5	R	32.5	L	20.7	0.8150	27.5	R	47.5	L	23.7	0.9331	52.5	R	75	L
17.8	0.7008	22.5	R	37.5	L	20.8	0.8189	40	R	57.5	L	23.8	0.9370	67.5	R	90	L
17.9	0.7047	35	R	47.5	L	20.9	0.8228	57.5	R	72.5	L	23.9	0.9409	77.5	L	97.5	R
18	0.7087	60	R	67.5	L	21	0.8268	80	R	92.5	L	24	0.9449	60	L	82.5	R
18.1	0.7126	75	L	82.5	R	21.1	0.8307	65	L	77.5	R	24.1	0.9488	47.5	L	72.5	R
18.2	0.7165	45	L	55	R	21.2	0.8346	45	L	60	R	24.2	0.9528	35	L	62.5	R
18.3	0.7205	25	L	40	R	21.3	0.8386	30	L	50	R	24.3	0.9567	25	L	57.5	R
18.4	0.7244	15	L	32.5	R	21.4	0.8425	20	L	45	R	24.4	0.9606	17.5	L	55	R
18.5	0.7283	7.5	L	30	R	21.5	0.8465	12.5	L	40	R	24.5	0.9646	10	L	52.5	R
18.6	0.7323	2.5	L	30	R	21.6	0.8504	5	L	40	R	24.6	0.9685	5	L	50	R
18.7	0.7362	2.5	R	30	R	21.7	0.8543	0	L	40	R	24.7	0.9724	2.5	R	50	R
18.8	0.7402	7.5	R	30	R	21.8	0.8583	5	R	40	R	24.8	0.9764	7.5	R	50	R
18.9	0.7441	12.5	R	32.5	R	21.9	0.8622	10	R	40	R	24.9	0.9803	12.5	R	52.5	R
19	0.7480	15	R	35	R	22	0.8661	12.5	R	42.5	R	25	0.9843	17.5	R	52.5	R
19.1	0.7520	20	R	35	R	22.1	0.8701	17.5	R	42.5	R	25.1	0.9882	20	R	55	R
19.2	0.7559	22.5	R	37.5	R	22.2	0.8740	22.5	R	45	R	25.2	0.9921	25	R	57.5	R
19.3	0.7598	27.5	R	40	R	22.3	0.8780	25	R	47.5	R	25.3	0.9961	30	R	60	R
19.4	0.7638	30	R	42.5	R	22.4	0.8819	30	R	50	R	25.4	1.0000	35	R	62.5	R
19.5	0.7677	35	R	45	R	22.5	0.8858	35	R	52.5	R	25.5	1.0039	40	R	67.5	R

Balancing Table for Universal Applications SVU-BB2 Boring Head

KRDEA046AM

KRDE025010M
25.5 - 33.5 mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
25.5	1.0039	62.5	L	65	L	28.5	1.1220	57.5	L	60	L	31.5	1.2402	52.5	L	55	L
25.6	1.0079	57.5	L	60	L	28.6	1.1260	52.5	L	55	L	31.6	1.2441	47.5	L	50	L
25.7	1.0118	50	L	52.5	L	28.7	1.1299	45	L	50	L	31.7	1.2480	42.5	L	45	L
25.8	1.0157	45	L	47.5	L	28.8	1.1339	40	L	45	L	31.8	1.2520	37.5	L	42.5	L
25.9	1.0197	40	L	45	L	28.9	1.1378	37.5	L	40	L	31.9	1.2559	32.5	L	37.5	L
26.0	1.0236	35	L	40	L	29.0	1.1417	32.5	L	37.5	L	32.0	1.2598	27.5	L	35	L
26.1	1.0276	32.5	L	35	L	29.1	1.1457	27.5	L	32.5	L	32.1	1.2638	25	L	30	L
26.2	1.0315	27.5	L	32.5	L	29.2	1.1496	25	L	30	L	32.2	1.2677	20	L	27.5	L
26.3	1.0354	22.5	L	30	L	29.3	1.1535	20	L	27.5	L	32.3	1.2717	17.5	L	22.5	L
26.4	1.0394	20	L	25	L	29.4	1.1575	15	L	25	L	32.4	1.2756	12.5	L	22.5	L
26.5	1.0433	62.5	L	65	L	29.5	1.1614	55	L	57.5	L	32.5	1.2795	50	L	55	L
26.6	1.0472	55	L	57.5	L	29.6	1.1654	50	L	52.5	L	32.6	1.2835	45	L	50	L
26.7	1.0512	50	L	52.5	L	29.7	1.1693	45	L	47.5	L	32.7	1.2874	40	L	45	L
26.8	1.0551	45	L	47.5	L	29.8	1.1732	40	L	45	L	32.8	1.2913	37.5	L	40	L
26.9	1.0591	40	L	42.5	L	29.9	1.1772	35	L	40	L	32.9	1.2953	32.5	L	37.5	L
27.0	1.0630	35	L	40	L	30.0	1.1811	32.5	L	35	L	33.0	1.2992	27.5	L	32.5	L
27.1	1.0669	30	L	35	L	30.1	1.1850	27.5	L	32.5	L	33.1	1.3031	22.5	L	30	L
27.2	1.0709	25	L	32.5	L	30.2	1.1890	22.5	L	30	L	33.2	1.3071	20	L	25	L
27.3	1.0748	22.5	L	27.5	L	30.3	1.1929	20	L	25	L	33.3	1.3110	15	L	22.5	L
27.4	1.0787	17.5	L	25	L	30.4	1.1969	15	L	22.5	L	33.4	1.3150	12.5	L	20	L
27.5	1.0827	60	L	62.5	L	30.5	1.2008	55	L	57.5	L	33.5	1.3189	50	L	52.5	L
27.6	1.0866	52.5	L	55	L	30.6	1.2047	47.5	L	52.5	L	33.6	1.3228	45	L	47.5	L
27.7	1.0906	47.5	L	50	L	30.7	1.2087	42.5	L	47.5	L	33.7	1.3268	40	L	42.5	L
27.8	1.0945	42.5	L	45	L	30.8	1.2126	37.5	L	42.5	L	33.8	1.3307	35	L	40	L
27.9	1.0984	37.5	L	42.5	L	30.9	1.2165	35	L	37.5	L	33.9	1.3346	30	L	35	L
28.0	1.1024	32.5	L	37.5	L	31.0	1.2205	30	L	35	L	34.0	1.3386	27.5	L	32.5	L
28.1	1.1063	30	L	35	L	31.1	1.2244	25	L	32.5	L	34.1	1.3425	22.5	L	27.5	L
28.2	1.1102	25	L	30	L	31.2	1.2283	22.5	L	27.5	L	34.2	1.3465	20	L	25	L
28.3	1.1142	20	L	27.5	L	31.3	1.2323	17.5	L	25	L	34.3	1.3504	15	L	22.5	L
28.4	1.1181	17.5	L	25	L	31.4	1.2362	12.5	L	22.5	L	34.4	1.3543	10	L	20	L

(continued on next page)

Balancing Table for Universal Applications SVU-BB2 Boring Head

(continued from previous page)

KRDEA046AM

KRDE033010M

33.5 - 44.4 mm

diameter						diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
33.5	1.3189	55	L	57.5	L	36.5	1.4370	47.5	L	52.5	L	39.5	1.5551	42.5	L	47.5	L	42.5	1.6732	37.5	L	40	L
33.6	1.3228	50	L	52.5	L	36.6	1.4409	42.5	L	47.5	L	39.6	1.5591	37.5	L	42.5	L	42.6	1.6772	32.5	L	37.5	L
33.7	1.3268	45	L	47.5	L	36.7	1.4449	37.5	L	42.5	L	39.7	1.5630	32.5	L	37.5	L	42.7	1.6811	27.5	L	35	L
33.8	1.3307	40	L	42.5	L	36.8	1.4488	35	L	37.5	L	39.8	1.5669	27.5	L	35	L	42.8	1.6850	25	L	30	L
33.9	1.3346	35	L	40	L	36.9	1.4528	30	L	35	L	39.9	1.5709	25	L	30	L	42.9	1.6890	20	L	27.5	L
34.0	1.3386	30	L	35	L	37.0	1.4567	25	L	32.5	L	40.0	1.5748	20	L	27.5	L	43.0	1.6929	15	L	25	L
34.1	1.3425	25	L	32.5	L	37.1	1.4606	22.5	L	27.5	L	40.1	1.5787	15	L	25	L	43.1	1.6969	10	L	22.5	L
34.2	1.3465	22.5	L	27.5	L	37.2	1.4646	17.5	L	25	L	40.2	1.5827	10	L	22.5	L	43.2	1.7008	5	L	20	L
34.3	1.3504	17.5	L	25	L	37.3	1.4685	12.5	L	22.5	L	40.3	1.5866	7.5	L	20	L	43.3	1.7047	0	L	17.5	L
34.4	1.3543	12.5	L	22.5	L	37.4	1.4724	7.5	L	20	L	40.4	1.5906	2.5	L	17.5	L	43.4	1.7087	7.5	R	20	L
34.5	1.3583	52.5	L	57.5	L	37.5	1.4764	47.5	L	50	L	40.5	1.5945	40	L	45	L	43.5	1.7126	35	L	40	L
34.6	1.3622	47.5	L	50	L	37.6	1.4803	42.5	L	45	L	40.6	1.5984	35	L	40	L	43.6	1.7165	30	L	35	L
34.7	1.3661	42.5	L	47.5	L	37.7	1.4843	37.5	L	40	L	40.7	1.6024	30	L	37.5	L	43.7	1.7205	25	L	32.5	L
34.8	1.3701	37.5	L	42.5	L	37.8	1.4882	32.5	L	37.5	L	40.8	1.6063	27.5	L	32.5	L	43.8	1.7244	22.5	L	27.5	L
34.9	1.3740	32.5	L	37.5	L	37.9	1.4921	27.5	L	35	L	40.9	1.6102	22.5	L	30	L	43.9	1.7283	17.5	L	25	L
35.0	1.3780	27.5	L	35	L	38.0	1.4961	25	L	30	L	41.0	1.6142	17.5	L	27.5	L	44.0	1.7323	15	L	22.5	L
35.1	1.3819	25	L	30	L	38.1	1.5000	20	L	27.5	L	41.1	1.6181	15	L	22.5	L	44.1	1.7362	10	L	20	L
35.2	1.3858	20	L	27.5	L	38.2	1.5039	15	L	25	L	41.2	1.6220	10	L	20	L	44.2	1.7402	5	L	17.5	L
35.3	1.3898	15	L	25	L	38.3	1.5079	10	L	22.5	L	41.3	1.6260	5	L	20	L	44.3	1.7441	2.5	R	17.5	L
35.4	1.3937	10	L	22.5	L	38.4	1.5118	5	L	20	L	41.4	1.6299	0	R	17.5	L	44.4	1.7480	12.5	R	22.5	L
35.5	1.3976	50	L	55	L	38.5	1.5157	45	L	47.5	L	41.5	1.6339	37.5	L	42.5	L						
35.6	1.4016	45	L	50	L	38.6	1.5197	40	L	42.5	L	41.6	1.6378	35	L	37.5	L						
35.7	1.4055	40	L	45	L	38.7	1.5236	35	L	40	L	41.7	1.6417	30	L	35	L						
35.8	1.4094	35	L	40	L	38.8	1.5276	30	L	35	L	41.8	1.6457	25	L	32.5	L						
35.9	1.4134	30	L	37.5	L	38.9	1.5315	25	L	32.5	L	41.9	1.6496	22.5	L	27.5	L						
36.0	1.4173	27.5	L	32.5	L	39.0	1.5354	22.5	L	27.5	L	42.0	1.6535	17.5	L	25	L						
36.1	1.4213	22.5	L	30	L	39.1	1.5394	17.5	L	25	L	42.1	1.6575	12.5	L	22.5	L						
36.2	1.4252	17.5	L	27.5	L	39.2	1.5433	15	L	22.5	L	42.2	1.6614	7.5	L	20	L						
36.3	1.4291	15	L	22.5	L	39.3	1.5472	10	L	20	L	42.3	1.6654	2.5	L	17.5	L						
36.4	1.4331	10	L	20	L	39.4	1.5512	5	L	17.5	L	42.4	1.6693	5	R	20	L						

Balancing Table for Universal Applications SVU-BB2 Boring Head

KRDEA051AM

KRDE043010M

43.0 - 65.9 mm

diameter						diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
43.0	1.6929	55	L	65	L	46.0	1.8110	42.5	L	55	L	49.0	1.9291	32.5	L	47.5	L	52.0	2.0472	25	L	40	L
43.1	1.6969	47.5	L	57.5	L	46.1	1.8150	37.5	L	50	L	49.1	1.9331	27.5	L	42.5	L	52.1	2.0512	20	L	37.5	L
43.2	1.7008	40	L	52.5	L	46.2	1.8189	30	L	45	L	49.2	1.9370	22.5	L	40	L	52.2	2.0551	12.5	L	35	L
43.3	1.7047	35	L	47.5	L	46.3	1.8228	25	L	42.5	L	49.3	1.9409	17.5	L	35	L	52.3	2.0591	7.5	L	32.5	L
43.4	1.7087	30	L	42.5	L	46.4	1.8268	20	L	37.5	L	49.4	1.9449	12.5	L	32.5	L	52.4	2.0630	0	L	32.5	L
43.5	1.7126	22.5	L	40	L	46.5	1.8307	15	L	35	L	49.5	1.9488	5	L	32.5	L	52.5	2.0669	7.5	R	32.5	L
43.6	1.7165	17.5	L	37.5	L	46.6	1.8346	7.5	L	32.5	L	49.6	1.9528	2.5	R	32.5	L	52.6	2.0709	20	R	37.5	L
43.7	1.7205	12.5	L	32.5	L	46.7	1.8386	2.5	L	30	L	49.7	1.9567	12.5	R	35	L	52.7	2.0748	42.5	R	52.5	L
43.8	1.7244	5	L	32.5	L	46.8	1.8425	7.5	R	32.5	L	49.8	1.9606	27.5	R	42.5	L	52.8	2.0787	85	L	92.5	R
43.9	1.7283	2.5	R	32.5	L	46.9	1.8465	17.5	R	35	L	49.9	1.9646	60	R	70	L	52.9	2.0827	40	L	52.5	R
44.0	1.7323	50	L	60	L	47.0	1.8504	40	L	52.5	L	50.0	1.9685	30	L	45	L	53.0	2.0866	22.5	L	37.5	L
44.1	1.7362	42.5	L	55	L	47.1	1.8543	35	L	47.5	L	50.1	1.9724	25	L	40	L	53.1	2.0906	17.5	L	35	L
44.2	1.7402	37.5	L	50	L	47.2	1.8583	27.5	L	42.5	L	50.2	1.9764	20	L	37.5	L	53.2	2.0945	10	L	32.5	L
44.3	1.7441	32.5	L	45	L	47.3	1.8622	22.5	L	40	L	50.3	1.9803	12.5	L	35	L	53.3	2.0984	2.5	L	32.5	L
44.4	1.7480	25	L	42.5	L	47.4	1.8661	17.5	L	35	L	50.4	1.9843	7.5	L	32.5	L	53.4	2.1024	5	R	32.5	L
44.5	1.7520	20	L	37.5	L	47.5	1.8701	12.5	L	32.5	L	50.5	1.9882	0	L	32.5	L	53.5	2.1063	15	R	35	L
44.6	1.7559	15	L	35	L	47.6	1.8740	5	L	32.5	L	50.6	1.9921	7.5	R	32.5	L	53.6	2.1102	30	R	45	L
44.7	1.7598	10	L	32.5	L	47.7	1.8780	2.5	R	32.5	L	50.7	1.9961	20	R	37.5	L	53.7	2.1142	62.5	R	72.5	L
44.8	1.7638	2.5	L	30	L	47.8	1.8819	12.5	R	35	L	50.8	2.0000	40	R	52.5	L	53.8	2.1181	57.5	L	67.5	R
44.9	1.7677	7.5	R	32.5	L	47.9	1.8858	27.5	R	42.5	L	50.9	2.0039	87.5	R	95	L	53.9	2.1220	27.5	L	42.5	R
45.0	1.7717	47.5	L	57.5	L	48.0	1.8898	37.5	L	50	L	51.0	2.0079	27.5	L	42.5	L	54.0	2.1260	20	L	37.5	L
45.1	1.7756	40	L	52.5	L	48.1	1.8937	30	L	45	L	51.1	2.0118	22.5	L	40	L	54.1	2.1299	12.5	L	35	L
45.2	1.7795	35	L	47.5	L	48.2	1.8976	25	L	40	L	51.2	2.0157	17.5	L	35	L	54.2	2.1339	7.5	L	32.5	L
45.3	1.7835	30	L	42.5	L	48.3	1.9016	20	L	37.5	L	51.3	2.0197	10	L	35	L	54.3	2.1378	0	L	32.5	L
45.4	1.7874	22.5	L	40	L	48.4	1.9055	15	L	35	L	51.4	2.0236	5	L	32.5	L	54.4	2.1417	7.5	R	32.5	L
45.5	1.7913	17.5	L	35	L	48.5	1.9094	7.5	L	32.5	L	51.5	2.0276	2.5	R	30	L	54.5	2.1457	20	R	37.5	L
45.6	1.7953	12.5	L	32.5	L	48.6	1.9134	0	L	32.5	L	51.6	2.0315	12.5	R	32.5	L	54.6	2.1496	45	R	55	L
45.7	1.7992	5	L	32.5	L	48.7	1.9173	7.5	R	32.5	L	51.7	2.0354	30	R	45	L	54.7	2.1535	82.5	L	90	R
45.8	1.8031	2.5	R	32.5	L	48.8	1.9213	20	R	37.5	L	51.8	2.0394	60	R	70	L	54.8	2.1575	40	L	52.5	R
45.9	1.8071	12.5	R	35	L	48.9	1.9252	40	R	52.5	L	51.9	2.0433	60	L	70	R	54.9	2.1614	20	L	37.5	R

(continued on next page)

Balancing Table for Universal Applications SVU-BB2 Boring Head

(continued from previous page)

KRDEA051AM

KRDE043010M

43.0 - 65.9 mm

diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in					mm	in				
55.0	2.1654	17.5	L	35	L	58.0	2.2835	7.5	L	32.5	L	61.0	2.4016	5	R	32.5	L	64.0	2.5197	25	R	40	L
55.1	2.1693	10	L	32.5	L	58.1	2.2874	0	R	30	L	61.1	2.4055	15	R	35	L	64.1	2.5236	55	R	65	L
55.2	2.1732	2.5	L	32.5	L	58.2	2.2913	10	R	32.5	L	61.2	2.4094	35	R	47.5	L	64.2	2.5276	67.5	L	77.5	R
55.3	2.1772	5	R	32.5	L	58.3	2.2953	22.5	R	40	L	61.3	2.4134	75	R	82.5	L	64.3	2.5315	32.5	L	45	R
55.4	2.1811	15	R	35	L	58.4	2.2992	47.5	R	57.5	L	61.4	2.4173	50	L	60	R	64.4	2.5354	15	L	35	R
55.5	2.1850	32.5	R	45	L	58.5	2.3031	75	L	82.5	R	61.5	2.4213	25	L	40	R	64.5	2.5394	5	L	32.5	R
55.6	2.1890	65	R	75	L	58.6	2.3071	35	L	47.5	R	61.6	2.4252	10	L	32.5	R	64.6	2.5433	2.5	R	32.5	R
55.7	2.1929	55	L	65	R	58.7	2.3110	17.5	L	37.5	R	61.7	2.4291	0	L	30	R	64.7	2.5472	10	R	32.5	R
55.8	2.1969	27.5	L	42.5	R	58.8	2.3150	5	L	32.5	R	61.8	2.4331	5	R	32.5	R	64.8	2.5512	15	R	35	R
55.9	2.2008	12.5	L	35	R	58.9	2.3189	2.5	R	32.5	R	61.9	2.4370	12.5	R	35	R	64.9	2.5551	22.5	R	37.5	R
56.0	2.2047	12.5	L	35	L	59.0	2.3228	2.5	L	32.5	L	62.0	2.4409	10	R	32.5	L	65.0	2.5591	37.5	R	50	L
56.1	2.2087	7.5	L	32.5	L	59.1	2.3268	5	R	32.5	L	62.1	2.4449	25	R	40	L	65.1	2.5630	80	R	87.5	L
56.2	2.2126	0	R	32.5	L	59.2	2.3307	15	R	35	L	62.2	2.4488	52.5	R	62.5	L	65.2	2.5669	47.5	L	57.5	R
56.3	2.2165	10	R	32.5	L	59.3	2.3346	35	R	47.5	L	62.3	2.4528	70	L	77.5	R	65.3	2.5709	22.5	L	40	R
56.4	2.2205	22.5	R	40	L	59.4	2.3386	72.5	R	80	L	62.4	2.4567	35	L	47.5	R	65.4	2.5748	7.5	L	32.5	R
56.5	2.2244	47.5	R	57.5	L	59.5	2.3425	52.5	L	62.5	R	62.5	2.4606	15	L	35	R	65.5	2.5787	0	L	32.5	R
56.6	2.2283	80	L	87.5	R	59.6	2.3465	25	L	40	R	62.6	2.4646	5	L	32.5	R	65.6	2.5827	7.5	R	32.5	R
56.7	2.2323	37.5	L	50	R	59.7	2.3504	10	L	32.5	R	62.7	2.4685	2.5	R	32.5	R	65.7	2.5866	12.5	R	35	R
56.8	2.2362	17.5	L	35	R	59.8	2.3543	2.5	L	32.5	R	62.8	2.4724	10	R	32.5	R	65.8	2.5906	17.5	R	37.5	R
56.9	2.2402	7.5	L	32.5	R	59.9	2.3583	5	R	32.5	R	62.9	2.4764	15	R	35	R	65.9	2.5945	25	R	40	R
57.0	2.2441	10	L	32.5	L	60.0	2.3622	0	R	30	L	63.0	2.4803	17.5	R	37.5	L						
57.1	2.2480	2.5	L	32.5	L	60.1	2.3661	10	R	32.5	L	63.1	2.4843	37.5	R	50	L						
57.2	2.2520	5	R	32.5	L	60.2	2.3701	25	R	40	L	63.2	2.4882	77.5	R	85	L						
57.3	2.2559	15	R	35	L	60.3	2.3740	50	R	60	L	63.3	2.4921	47.5	L	57.5	R						
57.4	2.2598	32.5	R	45	L	60.4	2.3780	72.5	L	80	R	63.4	2.4961	22.5	L	40	R						
57.5	2.2638	67.5	R	77.5	L	60.5	2.3819	35	L	47.5	R	63.5	2.5000	10	L	32.5	R						
57.6	2.2677	52.5	L	62.5	R	60.6	2.3858	15	L	35	R	63.6	2.5039	0	L	30	R						
57.7	2.2717	25	L	40	R	60.7	2.3898	5	L	32.5	R	63.7	2.5079	7.5	R	32.5	R						
57.8	2.2756	10	L	32.5	R	60.8	2.3937	2.5	R	32.5	R	63.8	2.5118	12.5	R	35	R						
57.9	2.2795	2.5	L	32.5	R	60.9	2.3976	10	R	32.5	R	63.9	2.5157	17.5	R	37.5	R						

Balancing Table for Universal Applications SVU-BB2 Boring Head

KRDEA012AM

KRDE065012M

65.0 - 100.0 mm

diameter		ring 1		ring 2		diameter		ring 1		ring 2		diameter		ring 1		ring 2	
mm	in					mm	in					mm	in				
65.0	2.5591	5	L	37.5	R	68.0	2.6772	12.5	R	37.5	R	71.0	2.7953	25	R	45	R
65.1	2.5630	2.5	R	37.5	R	68.1	2.6811	17.5	R	40	R	71.1	2.7992	32.5	R	47.5	R
65.2	2.5669	10	R	37.5	R	68.2	2.6850	22.5	R	42.5	R	71.2	2.8031	37.5	R	52.5	R
65.3	2.5709	15	R	40	R	68.3	2.6890	27.5	R	47.5	R	71.3	2.8071	42.5	R	57.5	R
65.4	2.5748	20	R	42.5	R	68.4	2.6929	32.5	R	50	R	71.4	2.8110	47.5	R	62.5	R
65.5	2.5787	25	R	45	R	68.5	2.6969	40	R	55	R	71.5	2.8150	55	R	67.5	R
65.6	2.5827	30	R	47.5	R	68.6	2.7008	45	R	60	R	71.6	2.8189	65	R	77.5	R
65.7	2.5866	35	R	52.5	R	68.7	2.7047	52.5	R	65	R	71.7	2.8228	65	R	77.5	R
65.8	2.5906	42.5	R	57.5	R	68.8	2.7087	60	R	72.5	R	71.8	2.8268	65	R	77.5	R
65.9	2.5945	47.5	R	62.5	R	68.9	2.7126	70	R	82.5	R	71.9	2.8307	65	R	77.5	R
66.0	2.5984	2.5	R	35	R	69.0	2.7165	17.5	R	40	R	72.0	2.8346	30	R	47.5	R
66.1	2.6024	7.5	R	37.5	R	69.1	2.7205	22.5	R	42.5	R	72.1	2.8386	35	R	52.5	R
66.2	2.6063	12.5	R	40	R	69.2	2.7244	27.5	R	45	R	72.2	2.8425	40	R	55	R
66.3	2.6102	20	R	40	R	69.3	2.7283	32.5	R	50	R	72.3	2.8465	47.5	R	60	R
66.4	2.6142	25	R	45	R	69.4	2.7323	37.5	R	52.5	R	72.4	2.8504	55	R	67.5	R
66.5	2.6181	30	R	47.5	R	69.5	2.7362	45	R	57.5	R	72.5	2.8543	62.5	R	75	R
66.6	2.6220	35	R	52.5	R	69.6	2.7402	50	R	62.5	R	72.6	2.8583	80	R	90	R
66.7	2.6260	40	R	55	R	69.7	2.7441	57.5	R	70	R	72.7	2.8622	80	R	90	R
66.8	2.6299	47.5	R	60	R	69.8	2.7480	67.5	R	80	R	72.8	2.8661	80	R	90	R
66.9	2.6339	55	R	67.5	R	69.9	2.7520	67.5	R	80	R	72.9	2.8701	80	R	90	R
67.0	2.6378	7.5	R	37.5	R	70.0	2.7559	22.5	R	42.5	R	73.0	2.8740	40	R	55	R
67.1	2.6417	12.5	R	40	R	70.1	2.7598	27.5	R	45	R	73.1	2.8780	47.5	R	60	R
67.2	2.6457	17.5	R	42.5	R	70.2	2.7638	32.5	R	50	R	73.2	2.8819	52.5	R	65	R
67.3	2.6496	22.5	R	45	R	70.3	2.7677	37.5	R	52.5	R	73.3	2.8858	62.5	R	75	R
67.4	2.6535	30	R	47.5	R	70.4	2.7717	42.5	R	57.5	R	73.4	2.8898	75	R	87.5	R
67.5	2.6575	35	R	50	R	70.5	2.7756	50	R	62.5	R	73.5	2.8937	75	R	87.5	R
67.6	2.6614	40	R	55	R	70.6	2.7795	57.5	R	70	R	73.6	2.8976	75	R	87.5	R
67.7	2.6654	45	R	60	R	70.7	2.7835	65	R	77.5	R	73.7	2.9016	75	R	87.5	R
67.8	2.6693	52.5	R	65	R	70.8	2.7874	65	R	77.5	R	73.8	2.9055	75	R	87.5	R
67.9	2.6732	60	R	72.5	R	70.9	2.7913	65	R	77.5	R	73.9	2.9094	75	R	87.5	R

(continued on next page)

Balancing Table for Universal Applications SVU-BB2 Boring Head

(continued from previous page)

KRDEA012AM

KRDE065012M

65.0 - 100.0 mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
74.0	2.9134	40	R	55	R	77.0	3.0315	55	R	67.5	R	80.0	3.1496	22.5	L	45	L
74.1	2.9173	45	R	60	R	77.1	3.0354	65	R	77.5	R	80.1	3.1535	17.5	L	42.5	L
74.2	2.9213	52.5	R	65	R	77.2	3.0394	65	R	77.5	R	80.2	3.1575	12.5	L	40	L
74.3	2.9252	60	R	72.5	R	77.3	3.0433	65	R	77.5	R	80.3	3.1614	5	L	40	L
74.4	2.9291	70	R	82.5	R	77.4	3.0472	65	R	77.5	R	80.4	3.1654	2.5	R	40	L
74.5	2.9331	70	R	82.5	R	77.5	3.0512	65	R	77.5	R	80.5	3.1693	10	R	40	L
74.6	2.9370	70	R	82.5	R	77.6	3.0551	65	R	77.5	R	80.6	3.1732	22.5	R	45	L
74.7	2.9409	70	R	82.5	R	77.7	3.0591	65	R	77.5	R	80.7	3.1772	37.5	R	55	L
74.8	2.9449	70	R	82.5	R	77.8	3.0630	65	R	77.5	R	80.8	3.1811	65	R	77.5	L
74.9	2.9488	70	R	82.5	R	77.9	3.0669	65	R	77.5	R	80.9	3.1850	70	L	82.5	R
75.0	2.9528	52.5	R	65	R	78.0	3.0709	62.5	R	75	R	81.0	3.1890	20	L	42.5	L
75.1	2.9567	57.5	R	70	R	78.1	3.0748	82.5	R	92.5	R	81.1	3.1929	12.5	L	40	L
75.2	2.9606	70	R	82.5	R	78.2	3.0787	82.5	R	92.5	R	81.2	3.1969	5	L	40	L
75.3	2.9646	70	R	82.5	R	78.3	3.0827	82.5	R	92.5	R	81.3	3.2008	0	R	37.5	L
75.4	2.9685	70	R	82.5	R	78.4	3.0866	82.5	R	92.5	R	81.4	3.2047	10	R	40	L
75.5	2.9724	70	R	82.5	R	78.5	3.0906	82.5	R	92.5	R	81.5	3.2087	20	R	45	L
75.6	2.9764	70	R	82.5	R	78.6	3.0945	82.5	R	92.5	R	81.6	3.2126	35	R	52.5	L
75.7	2.9803	70	R	82.5	R	78.7	3.0984	82.5	R	92.5	R	81.7	3.2165	57.5	R	72.5	L
75.8	2.9843	70	R	82.5	R	78.8	3.1024	82.5	R	92.5	R	81.8	3.2205	75	L	87.5	R
75.9	2.9882	70	R	82.5	R	78.9	3.1063	82.5	R	92.5	R	81.9	3.2244	45	L	60	R
76.0	2.9921	50	R	62.5	R	79.0	3.1102	75	R	87.5	R	82.0	3.2283	15	L	40	L
76.1	2.9961	57.5	R	70	R	79.1	3.1142	75	R	87.5	R	82.1	3.2323	7.5	L	40	L
76.2	3.0000	67.5	R	80	R	79.2	3.1181	75	R	87.5	R	82.2	3.2362	0	L	40	L
76.3	3.0039	67.5	R	80	R	79.3	3.1220	75	R	87.5	R	82.3	3.2402	7.5	R	40	L
76.4	3.0079	67.5	R	80	R	79.4	3.1260	75	R	87.5	R	82.4	3.2441	17.5	R	42.5	L
76.5	3.0118	67.5	R	80	R	79.5	3.1299	75	R	87.5	R	82.5	3.2480	30	R	50	L
76.6	3.0157	67.5	R	80	R	79.6	3.1339	75	R	87.5	R	82.6	3.2520	52.5	R	67.5	L
76.7	3.0197	67.5	R	80	R	79.7	3.1378	75	R	87.5	R	82.7	3.2559	82.5	L	95	R
76.8	3.0236	67.5	R	80	R	79.8	3.1417	75	R	87.5	R	82.8	3.2598	50	L	65	R
76.9	3.0276	67.5	R	80	R	79.9	3.1457	75	R	87.5	R	82.9	3.2638	30	L	50	R

Balancing Table for Universal Applications SVU-BB2 Boring Head

(continued from previous page)

KRDEA012AM

KRDE065012M

65.0 - 100.0 mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
83.0	3.2677	10	L	40	L	86.0	3.3858	10	R	40	L	89.0	3.5039	42.5	R	57.5	L
83.1	3.2717	2.5	L	37.5	L	86.1	3.3898	20	R	45	L	89.1	3.5079	72.5	R	85	L
83.2	3.2756	5	R	40	L	86.2	3.3937	35	R	52.5	L	89.2	3.5118	62.5	L	75	R
83.3	3.2795	15	R	42.5	L	86.3	3.3976	57.5	R	72.5	L	89.3	3.5157	37.5	L	55	R
83.4	3.2835	27.5	R	47.5	L	86.4	3.4016	75	L	87.5	R	89.4	3.5197	22.5	L	45	R
83.5	3.2874	47.5	R	62.5	L	86.5	3.4055	45	L	60	R	89.5	3.5236	10	L	40	R
83.6	3.2913	77.5	R	90	L	86.6	3.4094	27.5	L	47.5	R	89.6	3.5276	0	L	37.5	R
83.7	3.2953	55	L	70	R	86.7	3.4134	15	L	42.5	R	89.7	3.5315	5	R	40	R
83.8	3.2992	32.5	L	50	R	86.8	3.4173	5	L	40	R	89.8	3.5354	12.5	R	40	R
83.9	3.3031	17.5	L	42.5	R	86.9	3.4213	2.5	R	40	R	89.9	3.5394	17.5	R	42.5	R
84.0	3.3071	5	L	37.5	L	87.0	3.4252	17.5	R	42.5	L	90.0	3.5433	65	R	77.5	L
84.1	3.3110	2.5	R	37.5	L	87.1	3.4291	30	R	50	L	90.1	3.5472	70	L	82.5	R
84.2	3.3150	12.5	R	40	L	87.2	3.4331	52.5	R	67.5	L	90.2	3.5512	40	L	57.5	R
84.3	3.3189	25	R	47.5	L	87.3	3.4370	82.5	L	95	R	90.3	3.5551	22.5	L	45	R
84.4	3.3228	42.5	R	57.5	L	87.4	3.4409	50	L	65	R	90.4	3.5591	12.5	L	40	R
84.5	3.3268	72.5	R	85	L	87.5	3.4449	30	L	50	R	90.5	3.5630	2.5	L	37.5	R
84.6	3.3307	62.5	L	75	R	87.6	3.4488	17.5	L	42.5	R	90.6	3.5669	5	R	37.5	R
84.7	3.3346	37.5	L	55	R	87.7	3.4528	7.5	L	40	R	90.7	3.5709	10	R	40	R
84.8	3.3386	22.5	L	45	R	87.8	3.4567	2.5	R	37.5	R	90.8	3.5748	17.5	R	42.5	R
84.9	3.3425	10	L	40	R	87.9	3.4606	7.5	R	40	R	90.9	3.5787	22.5	R	45	R
85.0	3.3465	2.5	R	40	L	88.0	3.4646	27.5	R	47.5	L	91.0	3.5827	75	L	87.5	R
85.1	3.3504	10	R	40	L	88.1	3.4685	47.5	R	62.5	L	91.1	3.5866	47.5	L	62.5	R
85.2	3.3543	22.5	R	45	L	88.2	3.4724	77.5	R	90	L	91.2	3.5906	27.5	L	47.5	R
85.3	3.3583	37.5	R	55	L	88.3	3.4764	55	L	70	R	91.3	3.5945	15	L	42.5	R
85.4	3.3622	65	R	77.5	L	88.4	3.4803	35	L	52.5	R	91.4	3.5984	5	L	40	R
85.5	3.3661	70	L	82.5	R	88.5	3.4843	17.5	L	42.5	R	91.5	3.6024	2.5	R	40	R
85.6	3.3701	40	L	57.5	R	88.6	3.4882	7.5	L	40	R	91.6	3.6063	10	R	40	R
85.7	3.3740	22.5	L	45	R	88.7	3.4921	0	R	40	R	91.7	3.6102	15	R	42.5	R
85.8	3.3780	12.5	L	40	R	88.8	3.4961	7.5	R	40	R	91.8	3.6142	22.5	R	45	R
85.9	3.3819	2.5	L	37.5	R	88.9	3.5000	12.5	R	42.5	R	91.9	3.6181	27.5	R	47.5	R

(continued on next page)

Balancing Table for Universal Applications SVU-BB2 Boring Head

(continued from previous page)

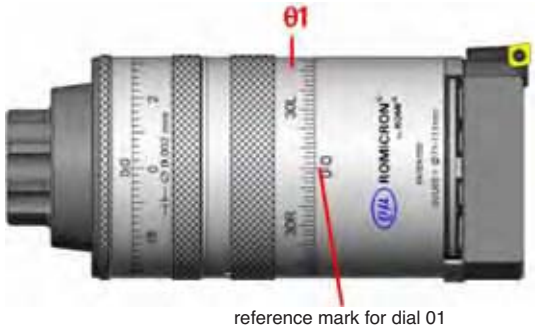
KRDEA012AM

KRDE065012M

65.0 - 100.0 mm

diameter						diameter						diameter					
mm	in	ring 1		ring 2		mm	in	ring 1		ring 2		mm	in	ring 1		ring 2	
92.0	3.6220	50	L	65	R	95.0	3.7402	12.5	L	40	R	98.0	3.8583	7.5	R	40	R
92.1	3.6260	30	L	50	R	95.1	3.7441	2.5	L	37.5	R	98.1	3.8622	12.5	R	42.5	R
92.2	3.6299	17.5	L	42.5	R	95.2	3.7480	5	R	37.5	R	98.2	3.8661	20	R	42.5	R
92.3	3.6339	7.5	L	40	R	95.3	3.7520	10	R	40	R	98.3	3.8701	25	R	47.5	R
92.4	3.6378	2.5	R	37.5	R	95.4	3.7559	17.5	R	42.5	R	98.4	3.8740	30	R	50	R
92.5	3.6417	7.5	R	40	R	95.5	3.7598	22.5	R	45	R	98.5	3.8780	37.5	R	55	R
92.6	3.6457	15	R	40	R	95.6	3.7638	27.5	R	47.5	R	98.6	3.8819	42.5	R	60	R
92.7	3.6496	20	R	45	R	95.7	3.7677	35	R	52.5	R	98.7	3.8858	50	R	65	R
92.8	3.6535	25	R	47.5	R	95.8	3.7717	40	R	57.5	R	98.8	3.8898	57.5	R	72.5	R
92.9	3.6575	32.5	R	50	R	95.9	3.7756	47.5	R	62.5	R	98.9	3.8937	70	R	82.5	R
93.0	3.6614	35	L	52.5	R	96.0	3.7795	5	L	40	R	99.0	3.8976	12.5	R	40	R
93.1	3.6654	17.5	L	42.5	R	96.1	3.7835	2.5	R	40	R	99.1	3.9016	17.5	R	42.5	R
93.2	3.6693	7.5	L	40	R	96.2	3.7874	10	R	40	R	99.2	3.9055	25	R	45	R
93.3	3.6732	0	R	37.5	R	96.3	3.7913	15	R	42.5	R	99.3	3.9094	30	R	50	R
93.4	3.6772	7.5	R	40	R	96.4	3.7953	22.5	R	45	R	99.4	3.9134	35	R	52.5	R
93.5	3.6811	12.5	R	42.5	R	96.5	3.7992	27.5	R	47.5	R	99.5	3.9173	42.5	R	57.5	R
93.6	3.6850	20	R	42.5	R	96.6	3.8031	32.5	R	52.5	R	99.6	3.9213	47.5	R	62.5	R
93.7	3.6890	25	R	47.5	R	96.7	3.8071	40	R	55	R	99.7	3.9252	55	R	70	R
93.8	3.6929	30	R	50	R	96.8	3.8110	45	R	60	R	99.8	3.9291	67.5	R	80	R
93.9	3.6969	37.5	R	55	R	96.9	3.8150	52.5	R	67.5	R	99.9	3.9331	67.5	R	80	R
94.0	3.7008	22.5	L	45	R	97.0	3.8189	2.5	R	37.5	R	100.0	3.9370	17.5	R	42.5	R
94.1	3.7047	10	L	40	R	97.1	3.8228	7.5	R	40	R	100.1	3.9409	22.5	R	45	R
94.2	3.7087	2.5	L	40	R	97.2	3.8268	15	R	40	R	100.2	3.9449	27.5	R	47.5	R
94.3	3.7126	5	R	40	R	97.3	3.8307	20	R	45	R	100.3	3.9488	35	R	52.5	R
94.4	3.7165	12.5	R	40	R	97.4	3.8346	25	R	47.5	R	100.4	3.9528	40	R	57.5	R
94.5	3.7205	17.5	R	42.5	R	97.5	3.8386	32.5	R	50	R	100.5	3.9567	47.5	R	62.5	R
94.6	3.7244	25	R	45	R	97.6	3.8425	37.5	R	55	R	100.6	3.9606	55	R	70	R
94.7	3.7283	30	R	50	R	97.7	3.8465	45	R	60	R	100.7	3.9646	65	R	77.5	R
94.8	3.7323	35	R	52.5	R	97.8	3.8504	50	R	65	R	100.8	3.9685	65	R	77.5	R
94.9	3.7362	42.5	R	57.5	R	97.9	3.8543	60	R	72.5	R	100.9	3.9724	65	R	77.5	R

1 - The balancing dial 01 is identified on the figure below. The dial resolution is 2,5 units.



reference mark for dial 01

2 - Read the position value of the dial 01 on the table. For example, to machine a 76,2 mm diameter, the position is: 01 = 22,5 L.

3 - By moving dial 01, adjust its position, observing its proper reference mark, according to the read value.

Balancing Table for SVU-65 Boring Head

KRDE070019M												KRDE083019M			
KRCSCFPR061E 71.0 - 76.0 mm diameter				KRCSCFPR062E 75.5 - 81.5 mm diameter				KRCSCFPR063E 80.0 -85.0 mm diameter				KRCSCFPR061E 84.0 - 89.0 mm diameter			
in	mm	balancing ring setting		in	mm	balancing ring setting		in	mm	balancing ring setting		in	mm	balancing ring setting	
2.795	70.99	40	L	2.972	75.49	35	L	3.150	80.01	30	L	3.307	84.00	47.5	L
2.800	71.12	37.5	L	2.976	75.59	32.5	L	3.156	80.16	27.5	L	3.312	84.12	45	L
2.806	71.27	35	L	2.983	75.77	30	L	3.163	80.34	25	L	3.317	84.25	42.5	L
2.812	71.42	32.5	L	2.990	75.95	27.5	L	3.170	80.52	22.5	L	3.322	84.38	40	L
2.819	71.60	30	L	2.996	76.10	25	L	3.177	80.70	20	L	3.327	84.51	37.5	L
2.826	71.78	27.5	L	3.003	76.28	22.5	L	3.184	80.87	17.5	L	3.333	84.66	35	L
2.833	71.96	25	L	3.011	76.48	20	L	3.192	81.08	15	L	3.339	84.81	32.5	L
2.840	72.14	22.5	L	3.018	76.66	17.5	L	3.199	81.25	12.5	L	3.345	84.96	30	L
2.847	72.31	20	L	3.025	76.84	15	L	3.207	81.46	10	L	3.351	85.12	27.5	L
2.854	72.49	17.5	L	3.033	77.04	12.5	L	3.214	81.64	7.5	L	3.357	85.27	25	L
2.862	72.69	15	L	3.040	77.22	10	L	3.222	81.84	5	L	3.363	85.42	22.5	L
2.869	72.87	12.5	L	3.048	77.42	7.5	L	3.229	82.02	2.5	L	3.370	85.60	20	L
2.877	73.08	10	L	3.056	77.62	5	L	3.237	82.22	0		3.377	85.78	17.5	L
2.884	73.25	7.5	L	3.063	77.80	2.5	L	3.245	82.42	2.5	R	3.383	85.93	15	L
2.892	73.46	5	L	3.071	78.00	0		3.252	82.60	5	R	3.390	86.11	12.5	L
2.900	73.66	2.5	L	3.079	78.21	2.5	R	3.260	82.80	7.5	R	3.397	86.28	10	L
2.908	73.86	0		3.086	78.38	5	R	3.267	82.98	10	R	3.404	86.46	7.5	L
2.915	74.04	2.5	R	3.094	78.59	7.5	R	3.275	83.19	12.5	R	3.411	86.64	5	L
2.923	74.24	5	R	3.101	78.77	10	R	3.282	83.36	15	R	3.418	86.82	2.5	L
2.931	74.45	7.5	R	3.109	78.97	12.5	R	3.290	83.57	17.5	R	3.425	87.00	0	
2.938	74.63	10	R	3.116	79.15	15	R	3.297	83.74	20	R	3.432	87.17	2.5	R
2.946	74.83	12.5	R	3.124	79.35	17.5	R	3.304	83.92	22.5	R	3.438	87.33	5	R
2.953	75.01	15	R	3.131	79.53	20	R	3.311	84.10	25	R	3.445	87.50	7.5	R
2.961	75.21	17.5	R	3.138	79.71	22.5	R	3.318	84.28	27.5	R	3.452	87.68	10	R
2.968	75.39	20	R	3.145	79.88	25	R	3.325	84.46	30	R	3.459	87.86	12.5	R
2.975	75.57	22.5	R	3.152	80.06	27.5	R	3.331	84.61	32.5	R	3.466	88.04	15	R
2.982	75.74	25	R	3.159	80.24	30	R	3.338	84.79	35	R	3.473	88.21	17.5	R
2.989	75.92	27.5	R	3.166	80.42	32.5	R	3.344	84.94	37.5	R	3.479	88.37	20	R
2.992	76.00	30	R	3.169	80.49	35	R	3.346	84.99	40	R	3.486	88.54	22.5	R
												3.492	88.70	25	R
												3.498	88.85	27.5	R
												3.504	89.00	30	R

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Balancing Table for SVU-65 Boring Head

(continued from previous page)

KRDE083019M								KRDE096019M											
KRCSCFPR062E 88.5 - 93.5 mm diameter				KRCSCFPR063E 93.0 - 98.0 mm diameter				KRCSCFPR061E 97.0 - 102.0 mm diameter				KRCSCFPR062E 101.5 - 106.5 mm diameter				KRCSCFPR063E 106.0 - 111.0 mm diameter			
in	mm	balancing ring setting		in	mm	balancing ring setting		in	mm	balancing ring setting		in	mm	balancing ring setting		in	mm	balancing ring setting	
3.484	88.49	40	L	3.661	92.99	35	L	3.819	97.00	55	L	3.996	101.50	45	L	4.173	105.99	37.5	L
3.490	88.65	37.5	L	3.667	93.14	32.5	L	3.821	97.05	52.5	L	4.000	101.60	42.5	L	4.180	106.17	35	L
3.496	88.80	35	L	3.673	93.29	30	L	3.825	97.16	50	L	4.005	101.73	40	L	4.186	106.32	32.5	L
3.502	88.95	32.5	L	3.679	93.45	27.5	L	3.830	97.28	47.5	L	4.010	101.85	37.5	L	4.191	106.45	30	L
3.507	89.08	30	L	3.685	93.60	25	L	3.834	97.38	45	L	4.015	101.98	35	L	4.196	106.58	27.5	L
3.514	89.26	27.5	L	3.692	93.78	22.5	L	3.839	97.51	42.5	L	4.021	102.13	32.5	L	4.202	106.73	25	L
3.520	89.41	25	L	3.698	93.93	20	L	3.843	97.61	40	L	4.026	102.26	30	L	4.208	106.88	22.5	L
3.526	89.56	22.5	L	3.705	94.11	17.5	L	3.848	97.74	37.5	L	4.032	102.41	27.5	L	4.214	107.04	20	L
3.533	89.74	20	L	3.711	94.26	15	L	3.853	97.87	35	L	4.037	102.54	25	L	4.220	107.19	17.5	L
3.539	89.89	17.5	L	3.718	94.44	12.5	L	3.859	98.02	32.5	L	4.043	102.69	22.5	L	4.226	107.34	15	L
3.546	90.07	15	L	3.725	94.62	10	L	3.864	98.15	30	L	4.049	102.84	20	L	4.232	107.49	12.5	L
3.552	90.22	12.5	L	3.732	94.79	7.5	L	3.870	98.30	27.5	L	4.055	103.00	17.5	L	4.238	107.65	10	L
3.559	90.40	10	L	3.738	94.95	5	L	3.876	98.45	25	L	4.061	103.15	15	L	4.245	107.82	7.5	L
3.566	90.58	7.5	L	3.745	95.12	2.5	L	3.881	98.58	22.5	L	4.067	103.30	12.5	L	4.251	107.98	5	L
3.573	90.75	5	L	3.752	95.30	0		3.887	98.73	20	L	4.074	103.48	10	L	4.257	108.13	2.5	L
3.580	90.93	2.5	L	3.759	95.48	2.5	R	3.893	98.88	17.5	L	4.080	103.63	7.5	L	4.264	108.31	0	
3.587	91.11	0		3.766	95.66	5	R	3.900	99.06	15	L	4.086	103.78	5	L	4.270	108.46	2.5	R
3.594	91.29	2.5	R	3.773	95.83	7.5	R	3.906	99.21	12.5	L	4.093	103.96	2.5	L	4.276	108.61	5	R
3.601	91.47	5	R	3.780	96.01	10	R	3.912	99.36	10	L	4.099	104.11	0		4.283	108.79	7.5	R
3.608	91.64	7.5	R	3.787	96.19	12.5	R	3.918	99.52	7.5	L	4.105	104.27	2.5	R	4.289	108.94	10	R
3.614	91.80	10	R	3.793	96.34	15	R	3.925	99.70	5	L	4.112	104.44	5	R	4.295	109.09	12.5	R
3.621	91.97	12.5	R	3.800	96.52	17.5	R	3.931	99.85	2.5	L	4.118	104.60	7.5	R	4.301	109.25	15	R
3.628	92.15	15	R	3.806	96.67	20	R	3.938	100.03	0		4.124	104.75	10	R	4.307	109.40	17.5	R
3.635	92.33	17.5	R	3.813	96.85	22.5	R	3.944	100.18	2.5	R	4.130	104.90	12.5	R	4.313	109.55	20	R
3.641	92.48	20	R	3.819	97.00	25	R	3.950	100.33	5	R	4.137	105.08	15	R	4.319	109.70	22.5	R
3.648	92.66	22.5	R	3.825	97.16	27.5	R	3.957	100.51	7.5	R	4.143	105.23	17.5	R	4.325	109.86	25	R
3.654	92.81	25	R	3.831	97.31	30	R	3.963	100.66	10	R	4.149	105.38	20	R	4.331	110.01	27.5	R
3.660	92.96	27.5	R	3.837	97.46	32.5	R	3.969	100.81	12.5	R	4.155	105.54	22.5	R	4.336	110.13	30	R
3.666	93.12	30	R	3.843	97.61	35	R	3.975	100.97	15	R	4.161	105.69	25	R	4.342	110.29	32.5	R
3.672	93.27	32.5	R	3.849	97.76	37.5	R	3.982	101.14	17.5	R	4.166	105.82	27.5	R	4.347	110.41	35	R
3.678	93.42	35	R	3.854	97.89	40	R	3.988	101.30	20	R	4.172	105.97	30	R	4.352	110.54	37.5	R
3.681	93.50	37.5	R	3.858	97.99	42.5	R	3.994	101.45	22.5	R	4.177	106.10	32.5	R	4.357	110.67	40	R
								3.999	101.57	25	R	4.183	106.25	35	R	4.362	110.79	42.5	R
								4.005	101.73	27.5	R	4.188	106.38	37.5	R	4.366	110.90	45	R
								4.110	104.39	30	R	4.190	106.43	40	R	4.370	111.00	47.5	R
								4.016	102.01	32.5	R	4.194	106.53	42.5	R				

1 - The balancing dial 01 is identified on the figure below. The dial resolution is 2,5 units.

reference mark for dial 01

2 - Read the position value of the dial 01 on the table. For example, to machine a 76,2 mm diameter, the position is: 01 = 22,5 L.

3 - By moving dial 01, adjust its position, observing its proper reference mark, according to the read value.

Balancing Table for SVU-92 Boring Head

KRDE101023M														KRDE120023M							
KRCSCFPR061F 101.0 - 108.0 mm				KRCSCFPR062F 107.5 - 114.5 mm				KRCSCFPR063F 114.0 - 121.0 mm				KRCSCFPR061F 120.0 - 127.0 mm				KRCSCFPR062F 126.5 - 133.5 mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
in	mm			in	mm			in	mm			in	mm			in	mm		
3.976	100.99	36	L	4.232	107.49	34	L	4.488	114.00	30	L	4.724	119.99	40	L	4.980	126.49	36	L
3.984	101.19	34	L	4.237	107.62	32	L	4.497	114.22	28	L	4.732	120.19	38	L	4.989	126.72	34	L
3.992	101.40	32	L	4.244	107.80	30	L	4.504	114.40	26	L	4.738	120.35	36	L	4.996	126.90	32	L
3.999	101.57	30	L	4.252	108.00	28	L	4.512	114.60	24	L	4.745	120.52	34	L	5.003	127.08	30	L
4.007	101.78	28	L	4.260	108.20	26	L	4.520	114.81	22	L	4.752	120.70	32	L	5.010	127.25	28	L
4.015	101.98	26	L	4.268	108.41	24	L	4.528	115.01	20	L	4.759	120.88	30	L	5.017	127.43	26	L
4.023	102.18	24	L	4.276	108.61	22	L	4.537	115.24	18	L	4.766	121.06	28	L	5.024	127.61	24	L
4.031	102.39	22	L	4.284	108.81	20	L	4.545	115.44	16	L	4.773	121.23	26	L	5.032	127.81	22	L
4.039	102.59	20	L	4.292	109.02	18	L	4.554	115.67	14	L	4.780	121.41	24	L	5.039	127.99	20	L
4.047	102.79	18	L	4.301	109.25	16	L	4.562	115.87	12	L	4.788	121.62	22	L	5.047	128.19	18	L
4.056	103.02	16	L	4.309	109.45	14	L	4.571	116.10	10	L	4.795	121.79	20	L	5.055	128.40	16	L
4.064	103.23	14	L	4.318	109.68	12	L	4.579	116.31	8	L	4.803	122.00	18	L	5.062	128.57	14	L
4.073	103.45	12	L	4.326	109.88	10	L	4.588	116.54	6	L	4.811	122.20	16	L	5.070	128.78	12	L
4.081	103.66	10	L	4.335	110.11	8	L	4.597	116.76	4	L	4.818	122.38	14	L	5.078	128.98	10	L
4.090	103.89	8	L	4.344	110.34	6	L	4.605	116.97	2	L	4.826	122.58	12	L	5.086	129.18	8	L
4.099	104.11	6	L	4.353	110.57	4	L	4.614	117.20	0		4.834	122.78	10	L	5.094	129.39	6	L
4.107	104.32	4	L	4.361	110.77	2	L	4.623	117.42	2	R	4.842	122.99	8	L	5.102	129.59	4	L
4.116	104.55	2	L	4.370	111.00	0		4.632	117.65	4	R	4.850	123.19	6	L	5.110	129.79	2	L
4.125	104.78	0		4.379	111.23	2	R	4.640	117.86	6	R	4.858	123.39	4	L	5.118	130.00	0	
4.134	105.00	2	R	4.388	111.46	4	R	4.649	118.08	8	R	4.866	123.60	2	L	5.126	130.20	2	R
4.143	105.23	4	R	4.396	111.66	6	R	4.658	118.31	10	R	4.874	123.80	0		5.134	130.40	4	R
4.151	105.44	6	R	4.405	111.89	8	R	4.666	118.52	12	R	4.882	124.00	2	R	5.142	130.61	6	R
4.160	105.66	8	R	4.414	112.12	10	R	4.675	118.75	14	R	4.890	124.21	4	R	5.150	130.81	8	R
4.169	105.89	10	R	4.220	107.19	12	R	4.683	118.95	16	R	4.898	124.41	6	R	5.158	131.01	10	R
4.177	106.10	12	R	4.431	112.55	14	R	4.692	119.18	18	R	4.906	124.61	8	R	5.166	131.22	12	R
4.186	106.32	14	R	4.439	112.75	16	R	4.700	119.38	20	R	4.914	124.82	10	R	5.174	131.42	14	R
4.194	106.53	16	R	4.448	112.98	18	R	4.708	119.58	22	R	4.922	125.02	12	R	5.182	131.62	16	R
4.203	106.76	18	R	4.456	113.18	20	R	4.716	119.79	24	R	4.930	125.22	14	R	5.189	131.80	18	R
4.211	106.96	20	R	4.464	113.39	22	R	4.724	119.99	26	R	4.938	125.43	16	R	5.197	132.00	20	R
4.219	107.16	22	R	4.472	113.59	24	R	4.732	120.19	28	R	4.946	125.63	18	R	5.204	132.18	22	R
4.227	107.37	24	R	4.480	113.79	26	R	4.739	120.37	30	R	4.953	125.81	20	R	5.212	132.38	24	R
4.235	107.57	26	R	4.488	114.00	28	R	4.747	120.57	32	R	4.961	126.01	22	R	5.219	132.56	26	R
4.243	107.77	28	R	4.496	114.20	30	R	4.754	120.75	34	R	4.968	126.19	24	R	5.226	132.74	28	R
4.251	107.98	30	R	4.503	114.38	32	R	4.761	120.93	36	R	4.975	126.37	26	R	5.233	132.92	30	R
4.252	108.00	32	R	4.508	114.50	34	R	4.764	121.01	38	R	4.983	126.57	28	R	5.240	133.10	32	R
												4.990	126.75	30	R	5.247	133.27	34	R
												4.997	126.92	32	R	5.254	133.45	36	R
												5.000	127.00	34	R	5.256	133.50	38	R

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Balancing Table for SVU-92 Boring Head

(continued from previous page)

KRDE120023M				KRDE139026M											
KRCSCFPR063F 133.0 - 140.0 mm				KRCSCFPR061F 139.0 - 146.0 mm				KRCSCFPR062F 145.50 - 152.5 mm				KRCSCFPR063F 152.0 - 159.0 mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
in	mm			in	mm			in	mm			in	mm		
5.236	132.99	34	L	5.472	138.99	50	L	5.728	145.49	44	L	5.984	151.99	40	L
5.240	133.10	32	L	5.476	139.09	48	L	5.735	145.67	42	L	5.989	152.12	38	L
5.247	133.27	30	L	5.481	139.22	46	L	5.740	145.80	40	L	5.995	152.27	36	L
5.254	133.45	28	L	5.486	139.34	44	L	5.746	145.95	38	L	6.000	152.40	34	L
5.261	133.63	26	L	5.491	139.47	42	L	5.751	146.08	36	L	6.006	152.55	32	L
5.268	133.81	24	L	5.496	139.60	40	L	5.757	146.23	34	L	6.012	152.70	30	L
5.275	133.99	22	L	5.501	139.73	38	L	5.762	146.35	32	L	6.018	152.86	28	L
5.283	134.19	20	L	5.507	139.88	36	L	5.768	146.51	30	L	6.024	153.01	26	L
5.290	134.37	18	L	5.512	140.00	34	L	5.774	146.66	28	L	6.030	153.16	24	L
5.298	134.57	16	L	5.518	140.16	32	L	5.780	146.81	26	L	6.036	153.31	22	L
5.306	134.77	14	L	5.524	140.31	30	L	5.787	146.99	24	L	6.043	153.49	20	L
5.314	134.98	12	L	5.530	140.46	28	L	5.793	147.14	22	L	6.049	153.64	18	L
5.322	135.18	10	L	5.536	140.61	26	L	5.799	147.29	20	L	6.056	153.82	16	L
5.329	135.36	8	L	5.542	140.77	24	L	5.806	147.47	18	L	6.062	153.97	14	L
5.337	135.56	6	L	5.548	140.92	22	L	5.812	147.62	16	L	6.069	154.15	12	L
5.345	135.76	4	L	5.555	141.10	20	L	5.819	147.80	14	L	6.076	154.33	10	L
5.353	135.97	2	L	5.561	141.25	18	L	5.825	147.96	12	L	6.082	154.48	8	L
5.361	136.17	0		5.568	141.43	16	L	5.832	148.13	10	L	6.089	154.66	6	L
5.369	136.37	2	R	5.574	141.58	14	L	5.839	148.31	8	L	6.096	154.84	4	L
5.377	136.58	4	R	5.581	141.76	12	L	5.846	148.49	6	L	6.103	155.02	2	L
6.385	162.18	6	R	5.588	141.94	10	L	5.852	148.64	4	L	6.110	155.19	0	
5.393	136.98	8	R	5.595	142.11	8	L	5.859	148.82	2	L	6.116	155.35	2	R
5.401	137.19	10	R	5.601	142.27	6	L	5.866	149.00	0		6.123	155.52	4	R
5.409	137.39	12	R	5.608	142.44	4	L	5.873	149.17	2	R	6.130	155.70	6	R
5.417	137.59	14	R	5.615	142.62	2	L	5.880	149.35	4	R	6.137	155.88	8	R
5.425	137.80	16	R	5.622	142.80	0		5.887	149.53	6	R	6.143	156.03	10	R
5.432	137.97	18	R	5.629	142.98	2	R	5.893	149.68	8	R	6.150	156.21	12	R
5.440	138.18	20	R	5.636	143.15	4	R	5.900	149.86	10	R	6.157	156.39	14	R
5.448	138.38	22	R	5.642	143.31	6	R	5.907	150.04	12	R	6.163	156.54	16	R
5.455	138.56	24	R	5.649	143.48	8	R	5.913	150.19	14	R	6.170	156.72	18	R
5.462	138.73	26	R	5.656	143.66	10	R	5.920	150.37	16	R	6.176	156.87	20	R
5.469	138.91	28	R	5.663	143.84	12	R	5.927	150.55	18	R	6.183	157.05	22	R
5.476	139.09	30	R	5.669	143.99	14	R	5.933	150.70	20	R	6.189	157.20	24	R
5.483	139.27	32	R	5.676	144.17	16	R	5.939	150.85	22	R	6.195	157.35	26	R
5.490	139.45	34	R	5.682	144.32	18	R	5.946	151.03	24	R	6.201	157.51	28	R
5.496	139.60	36	R	5.689	144.50	20	R	5.952	151.18	26	R	6.207	157.66	30	R
5.503	139.78	38	R	5.695	144.65	22	R	5.958	151.33	28	R	6.213	157.81	32	R
5.509	139.93	40	R	5.702	144.83	24	R	5.964	151.49	30	R	6.219	157.96	34	R
5.512	140.00	42	R	5.708	144.98	26	R	5.970	151.64	32	R	6.224	158.09	36	R
				5.714	145.14	28	R	5.976	151.79	34	R	6.23	158.24	38	R
				5.720	145.29	30	R	5.981	151.92	36	R	6.235	158.37	40	R
				5.726	145.44	32	R	5.987	152.07	38	R	6.24	158.50	42	R
				5.731	145.57	34	R	5.992	152.20	40	R	6.245	158.62	44	R
				5.737	145.72	36	R	5.997	152.32	42	R	6.25	158.75	46	R
				5.743	145.87	38	R	6.002	152.45	44	R	6.255	158.88	48	R
				5.747	145.97	40	R	6.004	152.50	46	R	6.259	158.98	50	R
				5.748	146.00	42	R					6.26	159.00	52	R

Balancing Table for SVU-92 Boring Head

KRDE156026M												KRDE175026M			
KRCSCFPR061F 156.0 - 163.0 MM				KRCSCFPR062F 162.5 - 169.5 MM				KRCSCFPR063F 169.0 - 176.0 MM				KRCSCFPR061F 175.0 - 182.0 MM			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
inch	metric			inch	metric			inch	metric			inch	metric		
6.142	156.01	56	L	6.398	162.51	50	L	6.654	169.01	44	L	6.890	175.01	64	L
6.146	156.11	54	L	6.402	162.61	48	L	6.658	169.11	42	L	6.892	175.06	62	L
6.150	156.21	52	L	6.406	162.71	46	L	6.663	169.24	40	L	6.895	175.13	60	L
6.154	156.31	50	L	6.410	162.81	44	L	6.668	169.37	38	L	6.898	175.21	58	L
6.158	156.41	48	L	6.415	162.94	42	L	6.673	169.49	36	L	6.901	175.29	56	L
6.162	156.51	46	L	6.420	163.07	40	L	6.678	169.62	34	L	6.904	175.36	54	L
6.166	156.62	44	L	6.425	163.20	38	L	6.683	169.75	32	L	6.908	175.46	52	L
6.171	156.74	42	L	6.430	163.32	36	L	6.689	169.90	30	L	6.912	175.56	50	L
6.176	156.87	40	L	6.435	163.45	34	L	6.694	170.03	28	L	6.915	175.64	48	L
6.181	157.00	38	L	6.440	163.58	32	L	6.700	170.18	26	L	6.919	175.74	46	L
6.186	157.12	36	L	6.445	163.70	30	L	6.706	170.33	24	L	6.924	175.87	44	L
6.191	157.25	34	L	6.451	163.86	28	L	6.711	170.46	22	L	6.928	175.97	42	L
6.196	157.38	32	L	6.457	164.01	26	L	6.717	170.61	20	L	6.932	176.07	40	L
6.202	157.53	30	L	6.462	164.13	24	L	6.723	170.76	18	L	6.937	176.20	38	L
6.207	157.66	28	L	6.468	164.29	22	L	6.729	170.92	16	L	6.941	176.30	36	L
6.213	157.81	26	L	6.474	164.44	20	L	6.735	171.07	14	L	6.946	176.43	34	L
6.218	157.94	24	L	6.480	164.59	18	L	6.741	171.22	12	L	6.951	176.56	32	L
6.224	158.09	22	L	6.486	164.74	16	L	6.747	171.37	10	L	6.956	176.68	30	L
6.230	158.24	20	L	6.492	164.90	14	L	6.754	171.55	8	L	6.961	176.81	28	L
6.236	158.39	18	L	6.498	165.05	12	L	6.760	171.70	6	L	6.967	176.96	26	L
6.242	158.55	16	L	6.504	165.20	10	L	6.766	171.86	4	L	6.972	177.09	24	L
6.248	158.70	14	L	6.510	165.35	8	L	6.772	172.01	2	L	6.977	177.22	22	L
6.254	158.85	12	L	6.517	165.53	6	L	6.779	172.19	0		6.983	177.37	20	L
6.260	159.00	10	L	6.523	165.68	4	L	6.785	172.34	2	R	6.988	177.50	18	L
6.267	159.18	8	L	6.529	165.84	2	L	6.791	172.49	4	R	6.994	177.65	16	L
6.273	159.33	6	L	6.535	165.99	0		6.797	172.64	6	R	7.000	177.80	14	L
6.279	159.49	4	L	6.542	166.17	2	R	6.804	172.82	8	R	7.005	177.93	12	L
6.285	159.64	2	L	6.548	166.32	4	R	6.810	172.97	10	R	7.011	178.08	10	L
6.292	159.82	0		6.554	166.47	6	R	6.816	173.13	12	R	7.017	178.23	8	L
6.298	159.97	2	R	6.560	166.62	8	R	6.822	173.28	14	R	7.023	178.38	6	L

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Balancing Table for SVU-92 Boring Head

(continued from previous page)

KRDE175026M								KRDE193026M							
KRCSCFPR062F 181.5 - 188.5 mm				KRCSCFPR063F 188.0 - 195.0 mm				KRCSCFPR061F 193.0 - 200.0 mm				KRCSCFPR062F 199.5 - 206.5 mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
in	mm			in	mm			in	mm			in	mm		
7.146	181.51	56	L	7.402	188.0108	48	L	7.598	192.99	64	L	7.854	199.49	54	L
7.148	181.56	54	L	7.406	188.1124	46	L	7.601	193.07	62	L	7.859	199.62	52	L
7.151	181.64	52	L	7.410	188.214	44	L	7.604	193.14	60	L	7.863	199.72	50	L
7.155	181.74	50	L	7.414	188.3156	42	L	7.607	193.22	58	L	7.866	199.80	48	L
7.159	181.84	48	L	7.419	188.4426	40	L	7.610	193.29	56	L	7.870	199.90	46	L
7.163	181.94	46	L	7.423	188.5442	38	L	7.613	193.37	54	L	7.875	200.03	44	L
7.167	182.04	44	L	7.428	188.6712	36	L	7.617	193.47	52	L	7.879	200.13	42	L
7.171	182.14	42	L	7.433	188.7982	34	L	7.621	193.57	50	L	7.883	200.23	40	L
7.176	182.27	40	L	7.437	188.8998	32	L	7.624	193.65	48	L	7.888	200.36	38	L
7.180	182.37	38	L	7.442	189.0268	30	L	7.628	193.75	46	L	7.893	200.48	36	L
7.185	182.50	36	L	7.448	189.1792	28	L	7.633	193.88	44	L	7.898	200.61	34	L
7.190	182.63	34	L	7.453	189.3062	26	L	7.637	193.98	42	L	7.902	200.71	32	L
7.195	182.75	32	L	7.458	189.4332	24	L	7.641	194.08	40	L	7.908	200.86	30	L
7.200	182.88	30	L	7.463	189.5602	22	L	7.646	194.21	38	L	7.913	200.99	28	L
7.205	183.01	28	L	7.469	189.7126	20	L	7.651	194.34	36	L	7.918	201.12	26	L
7.210	183.13	26	L	7.474	189.8396	18	L	7.656	194.46	34	L	7.923	201.24	24	L
7.215	183.26	24	L	7.480	189.992	16	L	7.661	194.59	32	L	7.929	201.40	22	L
7.221	183.41	22	L	7.486	190.1444	14	L	7.666	194.72	30	L	7.934	201.52	20	L
7.226	183.54	20	L	7.491	190.2714	12	L	7.671	194.84	28	L	7.940	201.68	18	L
7.232	183.69	18	L	7.497	190.4238	10	L	7.676	194.97	26	L	7.945	201.80	16	L
7.237	183.82	16	L	4.503	114.3762	8	L	7.681	195.10	24	L	7.951	201.96	14	L
7.243	183.97	14	L	7.509	190.7286	6	L	7.687	195.25	22	L	7.957	202.11	12	L
7.249	184.12	12	L	7.514	190.8556	4	L	7.692	195.38	20	L	7.963	202.26	10	L
7.254	184.25	10	L	7.520	191.008	2	L	7.698	195.53	18	L	7.969	202.41	8	L
7.260	184.40	8	L	7.526	191.1604	0		7.704	195.68	16	L	7.974	202.54	6	L
7.266	184.56	6	L	7.532	191.3128	2	R	7.709	195.81	14	L	7.980	202.69	4	L
7.272	184.71	4	L	7.538	191.4652	4	R	7.715	195.96	12	L	7.986	202.84	2	L
7.278	184.86	2	L	7.544	191.6176	6	R	7.721	196.11	10	L	7.992	203.00	0	
7.283	184.99	0		7.549	191.7446	8	R	7.727	196.27	8	L	7.998	203.15	2	R
7.289	185.14	2	R	7.555	191.897	10	R	7.733	196.42	6	L	8.004	203.30	4	R

KRDE193026M					
KRCSCFPR063F 206.0 - 213.0 mm					
diameter		balancing ring setting			
in	mm				
8.11	205.994	46	L		
8.116	206.1464	44	L		
8.12	206.248	42	L		
8.125	206.375	40	L		
8.129	206.4766	38	L		
8.134	206.6036	36	L		
8.139	206.7306	34	L		
8.144	206.8576	32	L		
8.149	206.9846	30	L		
8.154	207.1116	28	L		
8.159	207.2386	26	L		
8.165	207.391	24	L		
8.17	207.518	22	L		
8.176	207.6704	20	L		
8.181	207.7974	18	L		
8.187	207.9498	16	L		
8.193	208.1022	14	L		
8.198	208.2292	12	L		
8.204	208.3816	10	L		
8.21	208.534	8	L		
8.216	208.6864	6	L		
8.222	208.8388	4	L		
8.228	208.9912	2	L		
8.233	209.1182	0			
8.239	209.2706	2	R		
8.245	209.423	4	R		
8.251	209.5754	6	R		
8.257	209.7278	8	R		
8.263	209.8802	10	R		
8.269	210.0326	12	R		

(continued on next page)

Balancing Table for SVU-92 Boring Head

(continued from previous page)

KRDE156026M												KRDE175026M			
KRCSCFPR061F 156.0 - 163.0 mm				KRCSCFPR062F 162.5 - 169.5 mm				KRCSCFPR063F 169.0 - 176.0 mm				KRCSCFPR061F 175.0 - 182.0 mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
in	mm			in	mm			in	mm			in	mm		
6.304	160.12	4	R	6.567	166.80	10	R	6.828	173.43	16	R	7.029	178.54	4	L
6.310	160.27	6	R	6.573	166.95	12	R	6.834	173.58	18	R	7.034	178.66	2	L
6.317	160.45	8	R	6.579	167.11	14	R	6.840	173.74	20	R	7.040	178.82	0	
6.323	160.60	10	R	6.585	167.26	16	R	6.846	173.89	22	R	7.046	178.97	2	R
6.329	160.76	12	R	6.591	167.41	18	R	6.852	174.04	24	R	7.052	179.12	4	R
6.335	160.91	14	R	6.597	167.56	20	R	6.857	174.17	26	R	7.058	179.27	6	R
6.341	161.06	16	R	6.603	167.72	22	R	6.863	174.32	28	R	7.064	179.43	8	R
6.347	161.21	18	R	6.609	167.87	24	R	6.868	174.45	30	R	7.069	179.55	10	R
6.353	161.37	20	R	6.614	168.00	26	R	6.874	174.60	32	R	7.075	179.71	12	R
6.359	161.52	22	R	6.620	168.15	28	R	6.879	174.73	34	R	7.081	179.86	14	R
6.365	161.67	24	R	6.625	168.28	30	R	6.884	174.85	36	R	7.087	180.01	16	R
6.371	161.82	26	R	6.631	168.43	32	R	6.889	174.98	38	R	7.092	180.14	18	R
6.376	161.95	28	R	6.636	168.55	34	R	6.894	175.11	40	R	7.098	180.29	20	R
6.382	162.10	30	R	6.641	168.68	36	R	6.899	175.23	42	R	7.103	180.42	22	R
6.387	162.23	32	R	6.646	168.81	38	R	6.903	175.34	44	R	7.109	180.57	24	R
6.392	162.36	34	R	6.651	168.94	40	R	6.908	175.46	46	R	7.114	180.70	26	R
6.398	162.51	36	R	6.656	169.06	42	R	6.912	175.56	48	R	7.119	180.82	28	R
6.403	162.64	38	R	6.660	169.16	44	R	6.916	175.67	50	R	7.124	180.95	30	R
6.407	162.74	40	R	6.665	169.29	46	R	6.920	175.77	52	R	7.129	181.08	32	R
6.412	162.86	42	R	6.669	169.39	48	R	6.924	175.87	54	R	7.134	181.20	34	R
6.417	162.99	44	R	6.673	169.49	50	R	6.927	175.95	56	R	7.139	181.33	36	R
6.417	162.99	46	R	6.673	169.49	52	R	6.929	176.00	58	R	7.144	181.46	38	R
												7.148	181.56	40	R
												7.153	181.69	42	R
												7.157	181.79	44	R
												7.161	181.89	46	R
												7.165	181.99	48	R
												7.165	181.99	50	R

(continued on next page)

Balancing Table for SVU-92 Boring Head

(continued from previous page)

KRDE175026M								KRDE193026M											
KRCSCFPR062F 181.5 - 188.5 mm				KRCSCFPR063F 188.0 - 195.0 mm				KRCSCFPR061F 193.0 - 200.0 mm				KRCSCFPR062F 199.5 - 206.5 mm				KRCSCFPR063F 206.0 - 213.0 mm			
diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting		diameter		balancing ring setting	
in	mm			in	mm			in	mm			in	mm			in	mm		
7.295	185.29	4	R	7.561	192.0494	12	R	7.739	196.57	4	L	8.010	203.45	6	R	8.274	210.1596	14	R
7.301	185.45	6	R	7.567	192.2018	14	R	7.744	196.70	2	L	8.016	203.61	8	R	8.28	210.312	16	R
7.307	185.60	8	R	7.572	192.3288	16	R	7.750	196.85	0		8.022	203.76	10	R	8.286	210.4644	18	R
7.313	185.75	10	R	7.578	192.4812	18	R	7.756	197.00	2	R	8.027	203.89	12	R	8.291	210.5914	20	R
7.318	185.88	12	R	7.583	192.6082	20	R	7.762	197.15	4	R	8.033	204.04	14	R	8.297	210.7438	22	R
7.324	186.03	14	R	7.589	192.7606	22	R	7.768	197.31	6	R	8.039	204.19	16	R	8.302	210.8708	24	R
7.330	186.18	16	R	7.594	192.8876	24	R	7.774	197.46	8	R	8.044	204.32	18	R	8.307	210.9978	26	R
7.335	186.31	18	R	7.600	193.04	26	R	7.780	197.61	10	R	8.050	204.47	20	R	8.313	211.1502	28	R
7.341	186.46	20	R	7.605	193.167	28	R	7.786	197.76	12	R	8.055	204.60	22	R	8.318	211.2772	30	R
7.346	186.59	22	R	7.610	193.294	30	R	7.791	197.89	14	R	8.061	204.75	24	R	8.323	211.4042	32	R
7.352	186.74	24	R	7.615	193.421	32	R	7.797	198.04	16	R	8.066	204.88	26	R	8.328	211.5312	34	R
7.357	186.87	26	R	7.620	193.548	34	R	7.803	198.20	18	R	8.072	205.03	28	R	8.333	211.6582	36	R
7.362	186.99	28	R	7.625	193.675	36	R	7.808	198.32	20	R	8.077	205.16	30	R	8.337	211.7598	38	R
7.367	187.12	30	R	7.629	193.7766	38	R	7.814	198.48	22	R	8.082	205.28	32	R	3.342	84.8868	40	R
7.372	187.25	32	R	7.634	193.9036	40	R	7.819	198.60	24	R	8.087	205.41	34	R	8.346	211.9884	42	R
7.377	187.38	34	R	7.638	194.0052	42	R	7.825	198.76	26	R	8.092	205.54	36	R	8.351	212.1154	44	R
7.382	187.50	36	R	7.642	194.1068	44	R	7.830	198.88	28	R	8.096	205.64	38	R	8.355	212.217	46	R
7.387	187.63	38	R	7.647	194.2338	46	R	7.835	199.01	30	R	8.101	205.77	40	R	8.359	212.3186	48	R
7.391	187.73	40	R	7.651	194.3354	48	R	7.840	199.14	32	R	8.105	205.87	42	R	8.363	212.4202	50	R
7.396	187.86	42	R	7.654	194.4116	50	R	7.845	199.26	34	R	8.110	205.99	44	R	8.366	212.4964	52	R
7.400	187.96	44	R	7.658	194.5132	52	R	7.850	199.39	36	R	8.114	206.10	46	R	8.37	212.598	54	R
7.404	188.06	46	R	7.662	194.6148	54	R	7.855	199.52	38	R	8.118	206.20	48	R	8.373	212.6742	56	R
7.408	188.16	48	R	7.665	194.691	56	R	7.859	199.62	40	R	8.122	206.30	50	R	8.377	212.7758	58	R
7.412	188.26	50	R	7.668	194.7672	58	R	7.864	199.75	42	R	8.125	206.38	52	R	8.38	212.852	60	R
7.416	188.37	52	R	7.671	194.8434	60	R	7.868	199.85	44	R	8.129	206.48	54	R	8.382	212.9028	62	R
7.419	188.44	54	R	7.674	194.9196	62	R	7.872	199.95	46	R	8.130	206.50	56	R	8.385	212.979	64	R
7.421	188.49	56	R	7.677	194.9958	64	R	7.874	200.00	48	R					8.386	213.0044	66	R
				7.677	194.9958	66	R												

Basic procedures to be observed to attain ultra-high accuracy in fine boring with Romicron systems.

Romicron boring systems can produce finish bores with tolerances of a few microns (1 micron = 0,001 mm) in diameter. Due to the unlimited factors that can influence finish-boring tolerances, Kennametal suggests plus or minus two microns on the diameter. Typically, Romicron can achieve bore-to-bore variations of just a few tenths of a micron under ideal machining conditions.

Furthermore, finishing cuts for high-accuracy boring operations require very small amounts of radial displacement (radius change) on the boring head cutting tool. Because of this requirement, each line on the Romicron graduated dial corresponds, nominally, to one micron (0,001 mm) of radius change for the SVU and SVS models. The maximum deviation from the desired bore diameter can be held within plus or minus two microns ±.000079 (± 0,002 mm), provided the following conditions are strictly observed:

1. Romicron is an ultra-high-accuracy boring system. Please handle it with the same extreme care as is required for precision metrological instruments, observing high standards of cleanliness, handling, and operation.

2. Stock removal of the finishing cut should be regularly and evenly distributed (concentrically), and stock removal kept within .010 (0,25 mm), or smaller, on the side. The bore, before finishing, should be substantially parallel, within .002 (0,05 mm) — preferably less — along the full bore depth (length).

3. Feed at .002 (0,05 mm) per revolution or, preferably, less.

4. The workpiece should be held securely to achieve accurate ultra-fine boring results. The tool tip radius should be properly checked prior to boring.

5. The spindle and slide of the machine tool should be in good operating condition.

6. Maintain a controlled environment: temperature, humidity, and particles in suspension equal or equivalent to a fairly clean room (under 100,000 particles in suspension in air).

7. Machine tool to be used shall be either a fine borer, a jig borer, a high-precision machining center, or a jig center or equivalent. Taking a bore size of 1.57 (40 mm) diameter as reference, the tolerance of plus or minus two microns as specified above, ±.000079 (± 0,002 mm), is equivalent to ISO precision class IT 3.

8. When boring at speeds of approximately 4,000 rpm, or higher, balancing is usually necessary to maintain accuracy. However, when using speeds above 8,000 rpm, balancing becomes a must. The Romicron system will have to be properly balanced prior to starting high-accuracy boring operations.

9. There are a number of other requirements for achieving optimum results in high-accuracy boring, some of which are:

a. Good, solid clamping.

b. Thin-walled workpieces are prone to distortion under boring, clamping, and vibration. Such components require evaluation to determine if it is possible to clamp them properly.

c. Long bores, where length of bore exceeds 2.5 times diameter, require special care. In some cases, special shanks, special shank shapes, and heavy metal shank materials will be required.

d. The use of extensions for extended-length boring will result in overhangs, and will necessitate proper evaluation and analysis of these cutting conditions.

e. Good machining practices must be followed when utilizing diameter extenders.

f. Machinability of exotic materials should be examined to determine the best machining methods.

g. Machining of interrupted cuts can alter bore accuracy and configuration.

h. Coolant supply must be used to prevent thermal distortion.

i. Ultra-high-accuracy boring, starting from very rough bores such as drilling out-of-round bores or uneven and tapered bores, requires planning prior to starting the operation. As a general rule, one should try to plan ultra-precision boring in a sequence of operations, as follows:

Start the boring operation by first achieving a class IT 11 tolerance. The second boring pass should aim at achieving a class IT 7 tolerance. The final boring pass should result in a class IT 4 tolerance. If proper care is taken and the environment is a clean room with temperature control, a class IT 3 tolerance can be attained in bores of 1.1811 (30 mm), and larger.

10. As stated earlier, Romicron is an ultra-high-accuracy boring system devoted to finish-boring production, but it also possesses a considerable ability to undertake fairly heavy cuts as well.

Yet, be careful. To be safe, do not surpass a stock removal of .098 (2,5 mm) on the radius while roughing, and do not exceed .006 (0,15 mm) feed/revolution at maximum safe depth of stock removal.

The above recommendations are offered as a general rule. They are valid for most fine boring operations as they exist in most workshops. There are exceptions. When these exceptions occur, please ask for specialized service by calling Kennametal's Customer Application Support team at 1-800-835-3668 for expert advice.

Romicron Service and Repair

Kennametal warrants, for a period of one year, that the Romicron boring head is free from defects in materials and workmanship, under normal use and service, when correctly installed, operated, and maintained.

Service of the Romicron boring head must be performed by the factory-trained technicians at Kennametal's Service and Repair Department to ensure proper performance of the product. Servicing of the Romicron boring head requires special tooling, technical knowledge, and replacement parts available only through Kennametal. Any attempt to service the boring head by untrained personnel may cause severe damage.

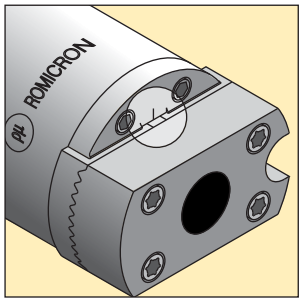
For prompt service of your Romicron boring head, call the Kennametal Service and Repair Department at 800-999-6385 to receive return instructions. To avoid delays, do not send the Romicron head to any other Kennametal location prior to contacting our Service and Repair Department.

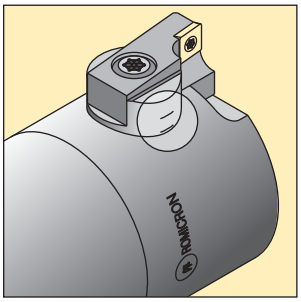
Kennametal's Service and Repair Department, located at the Customer Support Facility in Latrobe, Pennsylvania, is committed to providing technical service on complicated mechanical and electro-mechanical products. Our staff of highly trained professionals is dedicated to providing the highest quality of service, repair, and technical assistance possible.

All of our service technicians are trained at the Industrias Romi S.A. facilities in Brazil.

Service is being performed by Kennametal technicians in Latrobe, PA.

Warning!
DO NOT adjust beyond limits of tool indicated by parallel lines on tool slide.





KENNAMETAL

Precision Hole Finishing

Kennametal Erickson Dial Set™ Boring System

With an exclusive micrometer adjusting dial, you can set final diameter on the machine in .001 increments. In this way, you can correct for errors on your machine with only one trial cut.

Dial Set blade sets are precision ground and fit to toolmaker tolerances for maximum rigidity. Indexable inserts minimize downtime for tool changes. Blade sets accept industry standard 80° diamond inserts in both 0° and 15° lead angles.

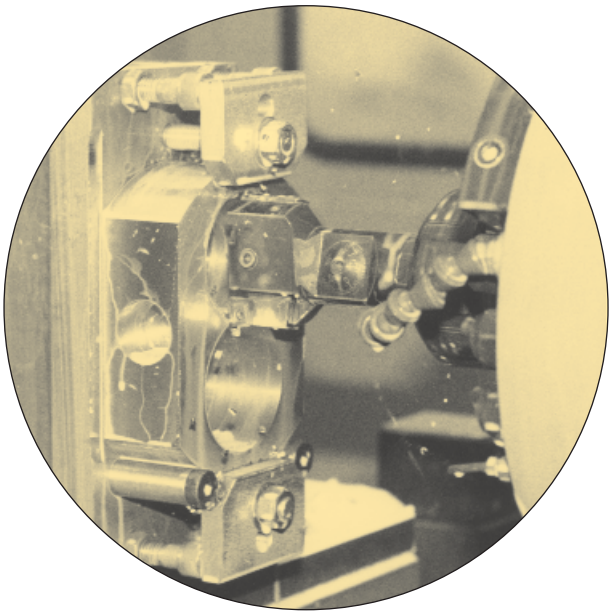
Blade sets are interchangeable, within a given range, to help keep your tool inventories and costs low.

Features

- Bore diameter adjustments can be made on the machine tool.
- Two cutting edges enable higher feed rates.
- A strong locking mechanism enables heavy cuts without chatter.
- Through-coolant offers improved tool life and chip flow.
- Available in straight shank or V-flange integral shank bars.
- Eight compatible boring bars offer a wide boring range (1.375 to 6.500).
- Standard Kennametal inserts can be used in the Dial Set system.

Ordering Information

- Select a bar that suits your metal cutting application.
- Select the blade set for your bore diameter that matches the bar size.
- Select an insert best suited for the workpiece material to be bored.



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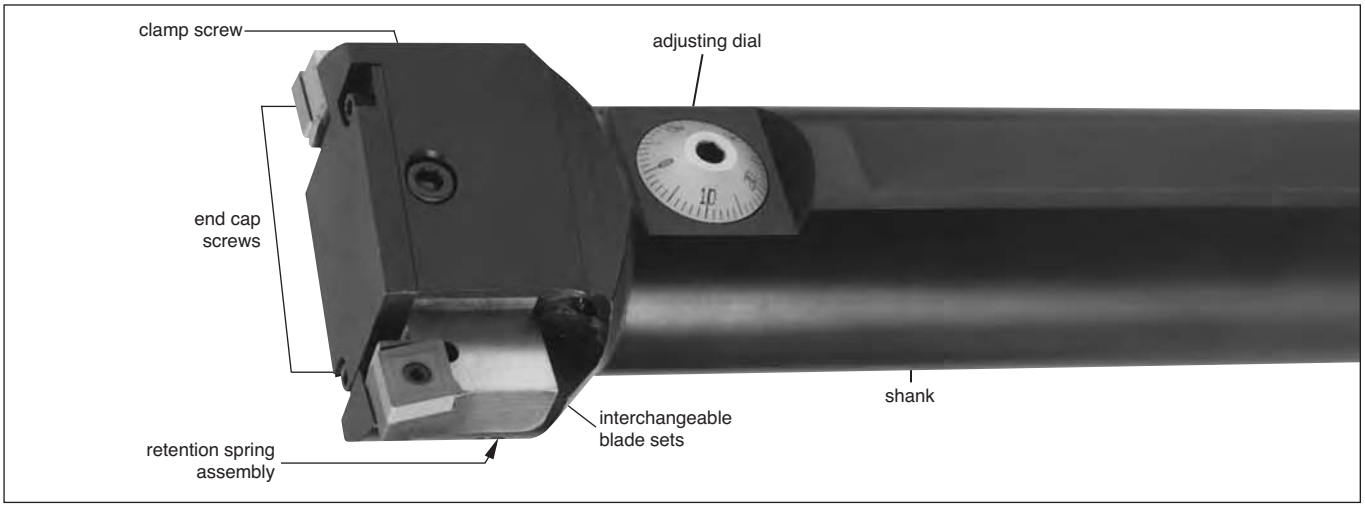
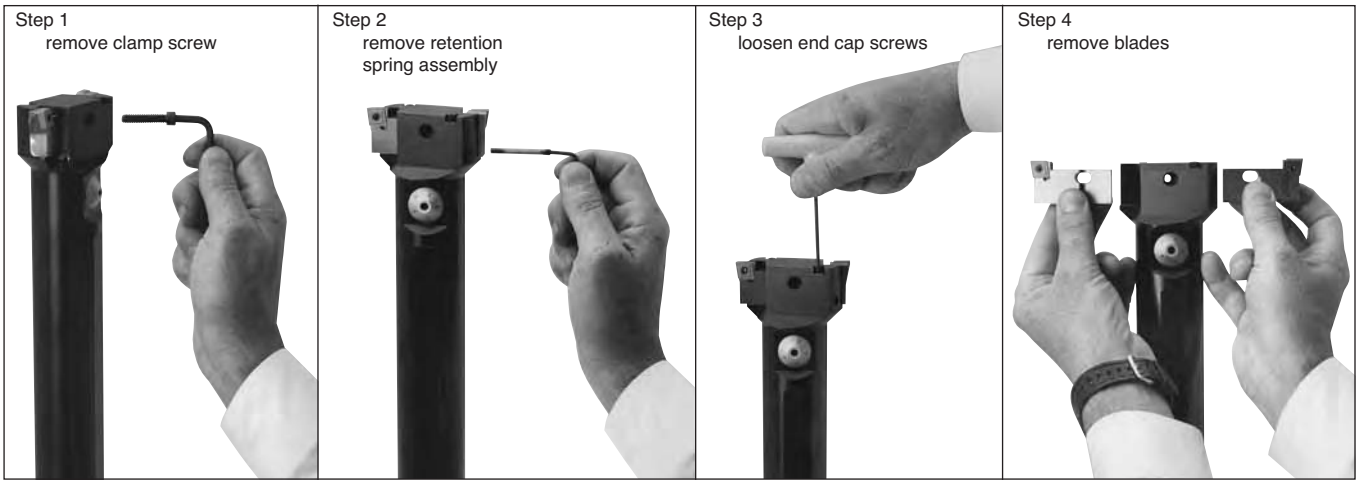
Spare Parts G118

Kennametal Erickson Dial SetTM Boring System

Parts Identification



Changing Blade Sets



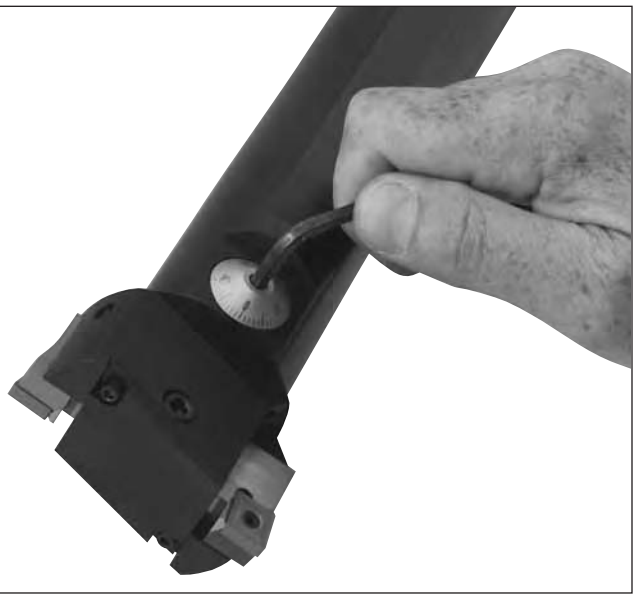
Size Settings

trial cut

1. Loosen clamp screw.
2. Using a micrometer, adjust to 0.010 / 0.030 under the desired bore size.
3. Tighten clamp screw.
4. Make trial cut.
5. Check hole size.

finish cut

6. Loosen clamp screw.
7. Adjust to correct size using dial graduations. (**NOTE**: Always turn dial in the same direction when making all adjustments.)
8. Tighten clamp screw.



To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Dial Set — Medium Finishing ▼▼		Cutting Speed				Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	1.375"- 6.500"	34,93mm-165,10mm
P1 Low-Carbon Steels, Long Chipping		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <530**		**Hardness (HB) or HRC: <125**	
CPGM...	KC9110	1312	sfm	591 – 1493	ipr	.010- .016	
		400	m/min	180 – 455	mm/r	0,25 - 0,40	
CPGM...	KC9125	919	sfm	492 – 1181	ipr	.010- .016	
		280	m/min	150 – 360	mm/r	0,25 - 0,40	
CPMG... SPGH...	KC9105	1312	sfm	591 – 1476	ipr	.010- .016	
		400	m/min	180 – 450	mm/r	0,25 - 0,40	
SPGH... SNGH...	KC850	1212	sfm	591 – 1476	ipr	.010- .016	
		400	m/min	180 – 450	mm/r	0,25 - 0,40	
CPMG...	KC5010	919	sfm	492 – 1181	ipr	.010- .016	
		280	m/min	150 – 360	mm/r	0,25 - 0,40	
CPMG...	KT315	1444	sfm	591 – 1641	ipr	.010- .016	
		440	m/min	180 – 500	mm/r	0,25 - 0,40	
P2 Low-Carbon Steels, Free Machining, and Short Chipping		**Content: C <.25%**		**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: <220**	
CPMG... SPGH...	KC9105	656	sfm	492 – 1312	ipr	.010- .016	
		200	m/min	150 – 400	mm/r	0,25 - 0,40	
SPGH... SNGH...	KC850	492	sfm	394 – 837	ipr	.010- .016	
		150	m/min	120 – 255	mm/r	0,25 - 0,40	
CPGM...	KC9110	820	sfm	591 – 1148	ipr	.010- .016	
		250	m/min	180 – 350	mm/r	0,25 - 0,40	
CPGM...	KC9125	656	sfm	492 – 984	ipr	.010- .016	
		200	m/min	150 – 300	mm/r	0,25 - 0,40	
CPMG...	KC5010	656	sfm	492 – 1181	ipr	.010- .016	
		200	m/min	150 – 360	mm/r	0,25 - 0,40	
CPMG...	KT315	886	sfm	656 – 1312	ipr	.010- .016	
		270	m/min	200 – 400	mm/r	0,25 - 0,40	

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Feed and Speed Chart

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Dial Set — Medium Finishing ▼▼		Cutting Speed			Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	1.375"- 6.500"	34,93mm-165,10mm
P3 Medium to High Plain-Carbon Steels and Alloy Steels				**Content: C >.25%**	**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**
CPMG... SPGH...	KC9105	623	sfm	455 – 820	*ipr*	.010- .016	
		190	m/min	150 – 250	*mm/r*	0,25 - 0,40	
SPGH... SNGH...	KC850	394	sfm	197 – 492	*ipr*	.010- .016	
		120	m/min	60 – 150	*mm/r*	0,25 - 0,40	
CPGM...	KC9110	623	sfm	492 – 682	*ipr*	.010- .016	
		190	m/min	150 – 250	*mm/r*	0,25 - 0,40	
CPGM...	KC9125	509	sfm	443 – 738	*ipr*	.010- .016	
		155	m/min	135 – 225	*mm/r*	0,25 - 0,40	
CPMG...	KC5010	509	sfm	443 – 738	*ipr*	.010- .016	
		155	m/min	135 – 225	*mm/r*	0,25 - 0,40	
CPMG...	KT315	689	sfm	591 – 902	*ipr*	.010- .016	
		210	m/min	180 – 275	*mm/r*	0,25 - 0,40	
P4 Alloy Steels and Tool Steels				**Content: C >.25%**	**Tensile Strength RM (MPa)*: 800-1100**		**Hardness (HB) or HRC: 350-450**
CPMG... SPGH...	KC9105	492	sfm	295 – 656	*ipr*	.010- .016	
		150	m/min	90 – 200	*mm/r*	0,25 - 0,40	
SPGH... SNGH...	KC850	328	sfm	131 – 492	*ipr*	.010- .016	
		100	m/min	40 – 150	*mm/r*	0,25 - 0,40	
CPGM...	KC9110	492	sfm	591 – 1493	*ipr*	.010- .016	
		150	m/min	180 – 455	*mm/r*	0,25 - 0,40	
CPGM...	KC9125	361	sfm	246 – 591	*ipr*	.010- .016	
		110	m/min	75 – 180	*mm/r*	0,25 - 0,40	
CPMG...	KC5010	361	sfm	246 – 591	*ipr*	.010- .016	
		110	m/min	75 – 180	*mm/r*	0,25 - 0,40	
CPMG...	KT315	1444	sfm	591 – 1641	*ipr*	.010- .016	
		440	m/min	180 – 500	*mm/r*	0,25 - 0,40	

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Dial Set — Medium Finishing ▼▼		Cutting Speed				Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	1.375"- 6.500"	34,93mm-165,10mm
P5 Ferritic, Martensitic, and PH Stainless Steels		**Content: C=0-.4%**				**Tensile Strength RM (MPa)*: 600-850**	**Hardness (HB) or HRC: <330**
CPMG... SPGH...	KC9105	820	sfm	492 – 1181	ipr	.010- .016	
		250	m/min	150 – 360	mm/r	0,25 - 0,40	
SPGH... SNGH...	KC850	459	sfm	197 – 492	ipr	.010- .016	
		140	m/min	60 – 150	mm/r	0,25 - 0,40	
CPGM...	KC9110	722	sfm	492 – 984	ipr	.010- .016	
		220	m/min	150 – 300	mm/r	0,25 - 0,40	
CPGM...	KC9125	656	sfm	394 – 902	ipr	.010- .016	
		200	m/min	120 – 275	mm/r	0,25 - 0,40	
CPMG...	KC5010	656	sfm	394 – 902	ipr	.010- .016	
		200	m/min	120 – 275	mm/r	0,25 - 0,40	
CPMG...	KT315	1444	sfm	591 – 1641	ipr	.010- .016	
		440	m/min	180 – 500	mm/r	0,25 - 0,40	
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels		**Content: C=.1-.6%**				**Tensile Strength RM (MPa)*: 900-1350**	**Hardness (HB) or HRC: 350-450**
CPMG... SPGH...	KC9105	591	sfm	410 – 902	ipr	.008 - .024	
		180	m/min	125 – 275	mm/r	0,20 - 0,60	
SPGH... SNGH...	KC850	361	sfm	164 – 410	ipr	.008 - .024	
		110	m/min	50 – 125	mm/r	0,20 - 0,60	
CPGM...	KC9110	591	sfm	410 – 902	ipr	.008 - .024	
		180	m/min	125 – 275	mm/r	0,20 - 0,60	
CPGM...	KC9125	492	sfm	345 – 738	ipr	.008 - .024	
		150	m/min	105 – 225	mm/r	0,20 - 0,60	
CPMG...	KC5010	492	sfm	345 – 738	ipr	.008 - .024	
		150	m/min	105 – 225	mm/r	0,20 - 0,60	
CPMG...	KT315	820	sfm	492 – 984	ipr	.008 - .024	
		250	m/min	150 – 300	mm/r	0,20 - 0,60	

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Feed and Speed Chart

(continued from previous page)

Dial Set — Medium Finishing ▼▼		Cutting Speed				Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	1.375"- 6.500"	34,93mm-165,10mm
M1 Austenitic Stainless Steels		**Content: C=.05-.15%**				**Tensile Strength RM (MPa)*: <650**	**Hardness (HB) or HRC: 130-200**
CPGM...	KC9225	607	sfm	410 – 820	ipr	.002 - .016	
		185	m/min	125 – 250	mm/r	0,05 - 0,40	
CPGM... SNGH...	KC9240NEW	492	sfm	328 – 656	ipr	.002 - .016	
		150	m/min	100 – 200	mm/r	0,05 - 0,40	
CPGM...	KC5010	705	sfm	443 – 755	ipr	.002 - .016	
		215	m/min	135 – 230	mm/r	0,05 - 0,40	
CPGM...	KC5025	591	sfm	328 – 656	ipr	.002 - .016	
		180	m/min	100 – 200	mm/r	0,05 - 0,40	
CPGM...	KT315	755	sfm	541 – 919	ipr	.002 - .016	
		230	m/min	165 – 280	mm/r	0,05 - 0,40	
SPGH... SNGH...	KC850	558	sfm	410 – 853	ipr	.002 - .016	
		170	m/min	125 – 260	mm/r	0,05 - 0,40	
M2 High-Strength Austenitic Stainless and Cast Stainless Steels		**Content: C=.05-.15%**				**Tensile Strength RM (MPa)*: 500-700**	**Hardness (HB) or HRC: 150-230**
CPGM...	KC9225	558	sfm	410 – 738	ipr	.002 - .016	
		170	m/min	125 – 225	mm/r	0,05 - 0,40	
CPGM... SNGH...	KC9240NEW	459	sfm	295 – 591	ipr	.002 - .016	
		140	m/min	90 – 180	mm/r	0,05 - 0,40	
CPGM...	KC5010	656	sfm	410 – 820	ipr	.002 - .016	
		200	m/min	125 – 250	mm/r	0,05 - 0,40	
CPGM...	KC5025	541	sfm	410 – 738	ipr	.002 - .016	
		165	m/min	125 – 225	mm/r	0,05 - 0,40	
CPGM...	KT315	705	sfm	492 – 984	ipr	.002 - .016	
		215	m/min	150 – 300	mm/r	0,05 - 0,40	
SPGH... SNGH...	KC850	492	sfm	295 – 590	ipr	.002 - .016	
		150	m/min	90 – 180	mm/r	0,05 - 0,40	

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Dial Set — Medium Finishing ▼▼		Cutting Speed			Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	1.375"- 6.500"	34,93mm-165,10mm
M3 Duplex Steels		**Content: C=.05-.2%**		**Tensile Strength RM (MPa)*: <900**		**Hardness (HB) or HRC: 135-275**	
CPGM...	KC9225	492	sfm	410 – 820	ipr	.002 - .016	
		150	m/min	125 – 250	mm/r	0,05 - 0,40	
CPGM... SNGH...	KC9240NEW	394	sfm	295 – 591	ipr	.002 - .016	
		120	m/min	90 – 180	mm/r	0,05 - 0,40	
CPGM...	KC5010	607	sfm	410 – 820	ipr	.002 - .016	
		185	m/min	125 – 250	mm/r	0,05 - 0,40	
CPGM...	KC850	492	sfm	328 – 656	ipr	.002 - .016	
		150	m/min	100 – 200	mm/r	0,05 - 0,40	
CPGM...	KT315	656	sfm	541 – 984	ipr	.002 - .016	
		200	m/min	165 – 300	mm/r	0,05 - 0,40	
SPGH... SNGH...	KC850	459	sfm	328 – 656	ipr	.002 - .016	
		140	m/min	100 – 200	mm/r	0,05 - 0,40	
K1 Gray Cast Irons and Low-Strength Ductile Irons				**Tensile Strength RM (MPa)*: 150-400**		**Hardness (HB) or HRC: 120-290**	
CPGM...	KC9315	902	sfm	492 – 1476	ipr	.005 - .016	
		275	m/min	150 – 450	mm/r	0,12 - 0,40	
CPGM...	KC9320	951	sfm	574 – 1641	ipr	.010 - 016	
		290	m/min	175 – 500	mm/r	0,25 - 0,40	
CPGM...	KT315	902	sfm	574 – 1476	ipr	.010 - .016	
		275	m/min	175 – 450	mm/r	0,25 - 0,40	
K2 Low- and Medium-Strength CGI and Ductile Irons				**Tensile Strength RM (MPa)*: 400-600**		**Hardness (HB) or HRC: 130-260**	
CPGM...	KC9315	902	sfm	591 – 1181	ipr	.005 - .016	
		275	m/min	180 – 360	mm/r	0,12 - 0,40	
CPGM...	KC9320	869	sfm	558 – 1312	ipr	.010 - .016	
		265	m/min	170 – 400	mm/r	0,25 - 0,40	
CPGM...	KT315	902	sfm	591 – 1181	ipr	.010 - .016	
		275	m/min	180 – 360	mm/r	0,25 - 0,40	
K3 High-Strength Ductile and Austempered Ductile Irons				**Tensile Strength RM (MPa)*: 600-900**		**Hardness (HB) or HRC: 180-350**	
CPGM...	KC9325	492	sfm	328 – 902	ipr	.005 - .016	
		150	m/min	100 – 275	mm/r	0,12 - 0,40	
CPGM...	KC9320	705	sfm	443 – 902	ipr	.016 - 0.025	
		215	m/min	135 – 275	mm/r	0,25 - 0,40	

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Feed and Speed Chart

(continued from previous page)

Dial Set — Medium Finishing ▼▼		Cutting Speed			Feed rate	
Geometry	Grade	Starting Pt		sfm / m/min	dia.	1.375"- 6.500" / 34,93mm-165,10mm
CPGM...	KC9325	755 / 230	sfm / m/min	591 / 180 — 984 / 300	ipr / mm/r	.010 - .016 / 0,25 - 0,40
N1 Wrought Aluminum Alloys				**Tensile Strength RM (MPa)*: <520**		**Hardness (HB) or HRC: 60-90**
CPGM... SPGH...	KC5410	1805 / 550	sfm / m/min	328 / 100 — 3281 / 1000	ipr / mm/r	.006 - .016 / 0,16 - 0,40
CPGM...	K313	853 / 260	sfm / m/min	328 / 100 — 1969 / 600	ipr / mm/r	.006 - .016 / 0,16 - 0,40
N2 Cast Aluminums		**Content: Si<12.2%**		**Tensile Strength RM (MPa)*: <350**		**Hardness (HB) or HRC: 70-100**
CPGM... SPGH...	KC5410	1805 / 550	sfm / m/min	328 / 100 — 3281 / 1000	ipr / mm/r	.006 - .016 / 0,16 - 0,40
CPGM...	K313	853 / 260	sfm / m/min	328 / 100 — 1969 / 600	ipr / mm/r	.006 - .016 / 0,16 - 0,40
N3 Cast Aluminums		**Content: Si>12.2%**		**Tensile Strength RM (MPa)*: 200-320**		**Hardness (HB) or HRC: 60-120**
CPGM... SPGH...	KC5410	1805 / 550	sfm / m/min	328 / 100 — 3281 / 1000	ipr / mm/r	.006 - .016 / 0,16 - 0,40
CPGM...	K313	853 / 260	sfm / m/min	328 / 100 — 1969 / 600	ipr / mm/r	.006 - .016 / 0,16 - 0,40
N5 Copper and Copper Alloys				**Tensile Strength RM (MPa)*: 200-650**		**Hardness (HB) or HRC: 60-200**
CPGM... SPGH...	KC5410	1805 / 550	sfm / m/min	328 / 100 — 3281 / 1000	ipr / mm/r	.006 - .016 / 0,16 - 0,40
CPGM...	K313	853 / 260	sfm / m/min	328 / 100 — 1969 / 600	ipr / mm/r	.006 - .016 / 0,16 - 0,40
S1 Iron-Based, Heat-Resistant Alloys				**Tensile Strength RM (MPa)*: 500-1200**		**Hardness (HB) or HRC: 160-260**
SNGH...	KC9240NEW	115 / 35	sfm / m/min	33 / 10 — 197 / 60	ipr / mm/r	.005 - .016 / 0,12 - 0,40
CPGM...	KC5010	197 / 60	sfm / m/min	98 / 30 — 410 / 125	ipr / mm/r	.005 - .016 / 0,12 - 0,40
CPGM...	KC5025	98 / 30	sfm / m/min	66 / 20 — 197 / 60	ipr / mm/r	.005 - .016 / 0,12 - 0,40
SPGH... SNGH...	KC850	230 / 70	sfm / m/min	148 / 45 — 591 / 180	ipr / mm/r	.005 - .016 / 0,12 - 0,40
CPGM...	K313	180 / 55	sfm / m/min	66 / 20 — 295 / 90	ipr / mm/r	.005 - .016 / 0,12 - 0,40

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To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

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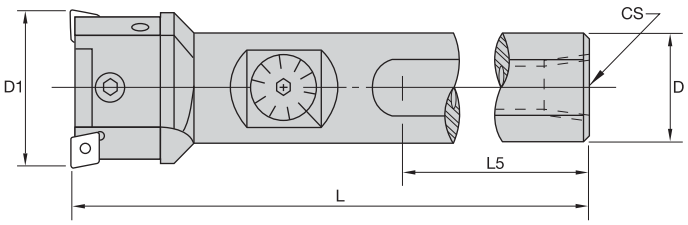
Dial Set — Medium Finishing ▼▼		Cutting Speed				Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 30 50 80 100 120 150 200 250 300 350 500 750 1000		dia.	1.375"- 6.500"	34,93mm-165,10mm
CPGM...	K68	148	sfm	66	246	ipr	.005 - .016	
		45	m/min	20	75	mm/r	0,12 - 0,40	
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys Tensile Strength RM (MPa)*: 1000-1450 Hardness (HB) or HRC: 250-450								
SNGH...	KC9240 NEW	230	sfm	148	591	ipr	.005 - .016	
		70	m/min	45	180	mm/r	0,12 - 0,40	
CPGM...	KC5010	180	sfm	66	2951	ipr	.005 - .016	
		55	m/min	20	90	mm/r	0,12 - 0,40	
CPGM...	KC5025	115	sfm	33	197	ipr	.005 - .016	
		35	m/min	10	60	mm/r	0,12 - 0,40	
SPGH... SNGH...	KC850	197	sfm	98	410	ipr	.005 - .016	
		60	m/min	30	125	mm/r	0,12 - 0,40	
CPGM...	K313	98	sfm	66	197	ipr	.005 - .016	
		30	m/min	20	60	mm/r	0,12 - 0,40	
CPGM...	K68	230	sfm	148	591	ipr	.005 - .016	
		70	m/min	45	180	mm/r	0,12 - 0,40	
S4 Titanium Alloys				**Tensile Strength RM (MPa)*: 900-1600**			**Hardness (HB) or HRC: 300-400**	
SNGH...	KC9240NEW	180	sfm	66	295	ipr	.005 - .016	
		55	m/min	20	90	mm/r	0,12 - 0,40	
CPGM...	KC5010	148	sfm	66	246	ipr	.005 - .016	
		45	m/min	20	75	mm/r	0,12 - 0,40	
CPGM...	KC5025	230	sfm	148	591	ipr	.005 - .016	
		70	m/min	45	180	mm/r	0,12 - 0,40	
SPGH... SNGH...	KC850	180	sfm	66	295	ipr	.005 - .016	
		55	m/min	20	90	mm/r	0,12 - 0,40	
CPGM...	K313	230	sfm	148	591	ipr	.005 - .016	
		70	m/min	45	180	mm/r	0,12 - 0,40	
CPGM...	K68	180	sfm	66	295	ipr	.005 - .016	
		55	m/min	20	90	mm/r	0,12 - 0,40	



• Blade sets must be ordered separately, see pages G115-G117.

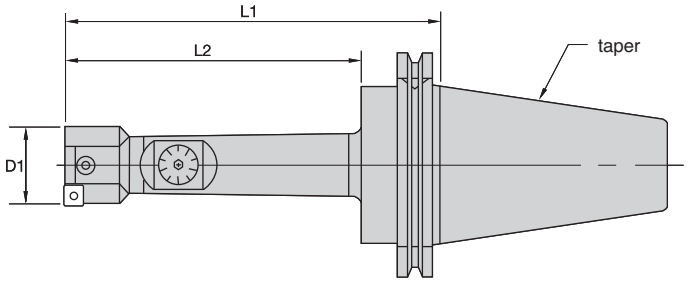
Straight Shank Bars

BR1 bore range inch	order number	catalog number	dial set bar size	D	L	L1 min	LS	CS	num sets of blades for dial set
1.3750-1.5000	1019532	SS100DS1900	1	1.000	9.00	5.67	5.83	3/8 - 18	1
1.5000-1.7500	1019645	SS125DS2118	2	1.250	11.80	6.73	8.20	3/8 - 18	2
1.7500-2.0000	1019648	SS125DS3118	3	1.250	11.80	6.73	8.20	3/8 - 18	2
2.0000-2.5000	1019533	SS150DS4130	4	1.500	13.00	7.73	9.02	3/8 - 18	2
2.5000-3.0000	1019584	SS150DS5130	5	1.500	13.00	7.73	9.02	3/8 - 18	2
3.0000-3.5000	1019468	SS200DS6148	6	2.000	14.80	8.90	10.90	3/8 - 18	2
3.5000-4.0000	1019585	SS200DS7148	7	2.000	14.80	8.90	10.90	3/8 - 18	2
4.0000-6.5000	1019586	SS225DS8148	8	2.250	14.80	11.51	8.92	1/2 - 14	5

**Required to cover bore range shown. For spare parts, see page G118.*

***L1min. is minimum length if bar is cut off (to protect adjustment mechanism).*

Integral Shank Bars — V-Flange



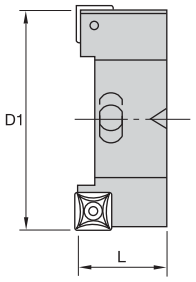
• Blade sets must be ordered separately, see pages G115-G117.

ANSI B5.50

BR1 bore range inch	order number	catalog number	dial set bar size	L1	L2	num sets of blades for dial set
1.3750-1.5000	1019965	CV50DS1662	1	6.62	5.25	1
1.5000-1.7500	1019966	CV50DS2738	2	7.38	6.01	2
1.7500-2.0000	1019967	CV50DS3875	3	8.75	7.38	2
2.0000-2.5000	1019968	CV50DS4875	4	8.75	7.38	2
2.5000-3.0000	1019969	CV50DS5875	5	8.75	7.38	2
3.0000-3.5000	1019970	CV50DS6875	6	8.75	8.00	2
3.5000-4.0000	1020029	CV50DS7875	7	8.75	8.00	2
4.0000-6.5000	1019971	CV50DS8875	8	8.75	8.00	5

**Required to cover bore range shown. For spare parts, see page G118.*
All tools have CV50 taper.

1 Degree Lead — Square Inserts



DS-SSF

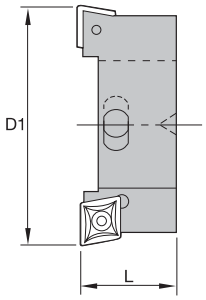
D min	D max	order number	catalog number	insert 1	rotating boring bar size	L	insert screw	insert lock pin	insert screw ID drive size
1.375	1.500	1019471	DS113SSFPR07	SPGH - 2.51.51	1	.955	169086011PKG		1/16
1.500	1.625	1019589	DS215SSFPR09	SPGH - 322	2	1.018	169086022PKG		5/64
1.625	1.750	1019592	DS216SSFPR09	SPGH - 322	2	1.018	169086022PKG		5/64
1.875	2.000	1019470	DS318SSFPR09	SPGH - 322	3	1.018	169086022PKG		5/64
1.750	1.875	1019472	DS317SSFPR09	SPGH - 322	3	1.018	169086022PKG		5/64
2.250	2.500	1019529	DS422SSFNR12	SNGH - 432	4	1.261		169086044PKG	3/32
2.000	2.250	1019531	DS420SSFNR12	SNGH - 432	4	1.261		169086044PKG	3/32
2.750	3.000	1019469	DS527SSFNR12	SNGH - 432	5	1.261		169086044PKG	3/32
2.500	2.750	1019593	DS525SSFNR12	SNGH - 432	5	1.261		169086044PKG	3/32
3.000	3.250	1019530	DS630SSFNR12	SNGH - 432	6	1.261		169086044PKG	3/32
3.250	3.500	1019649	DS632SSFNR12	SNGH - 432	6	1.261		169086044PKG	3/32
3.500	3.750	1019590	DS735SSFNR12	SNGH - 432	7	1.261		169086044PKG	3/32
3.750	4.000	1019591	DS737SSFNR12	SNGH - 432	7	1.261		169086044PKG	3/32
4.000	4.500	1019473	DS840SSFNR19	SNGH - 643	8	1.636		169086088PKG	1/8
4.500	5.000	1019647	DS845SSFNR19	SNGH - 643	8	1.636		169086088PKG	1/8

NOTE: *Bore ranges are nominal.*

**Two required per blade set.*
***Blades supplied in matched sets of two, less inserts.*

Erickson Dial Set Boring System

0 Degree Lead Kenloc — 80 Degree Diamond

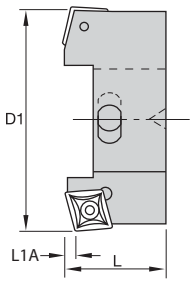


DS-SCF / DS-PCF

D min	D max	order number	catalog number	insert 1	rotating boring bar size	L	insert screw	lock pin	insert screw ID drive size
1.375	1.500	1019650	DS113SCFPR06	CPGM - 21.52	1	.951	MS1023		T7
1.500	1.625	1019651	DS215SCFPR06	CPGM - 21.52	2	1.019	MS1023		T7
1.625	1.750	1019652	DS216SCFPR06	CPGM - 21.52	2	1.019	MS1023		T7
1.750	1.875	1019653	DS317SCFPR06	CPGM - 21.52	3	1.019	MS1023		T7
1.875	2.000	1019714	DS318SCFPR06	CPGM - 21.52	3	1.019	MS1023		T7
2.000	2.250	1019715	DS420SCFPR09	CPGM - 32.52	4	1.275	MS1027		T9
2.250	2.500	1019716	DS422PCFNR12	CNMG - 432	4	1.275		KL0431	5/64
2.500	2.750	1019717	DS525PCFNR12	CNMG - 432	5	1.275		KL0431	5/64
2.750	3.000	1019718	DS527PCFNR12	CNMG - 432	5	1.275		KL0431	5/64
3.000	3.250	1019719	DS630PCFNR12	CNMG - 432	6	1.275		KL0431	5/64
3.250	3.500	1019720	DS632PCFNR12	CNMG - 432	6	1.275		KL0431	5/64
3.500	3.750	1019721	DS735PCFNR12	CNMG - 432	7	1.275		KL0431	5/64
3.750	4.000	1019722	DS737PCFNR12	CNMG - 432	7	1.275		KL0431	5/64
4.000	4.500	1019723	DS840PCFNR16	CNMG - 543	8	1.664		KL0541	1/8
4.000	4.500	1020168	DS840PCFNR12	CNMG - 432	8	1.664		KL0431	5/64
4.500	5.000	1019774	DS845PCFNR19	CNMG - 643	8	1.664		53-0641	9/64
5.000	5.500	1019775	DS850PCFNR19	CNMG - 643	8	1.664		53-0641	9/64
5.500	6.000	1019776	DS855PCFNR19	CNMG - 643	8	1.664		53-0641	9/64
6.000	6.500	1019777	DS860PCFNR19	CNMG - 643	8	1.664		53-0641	9/64

NOTE: *Bore ranges are nominal.*
**Two required per blade set.*
***Blades supplied in matched sets of two, less inserts.*

15 Degree Lead — 80 Degree Diamond Inserts (uses 100 Degree Corner)

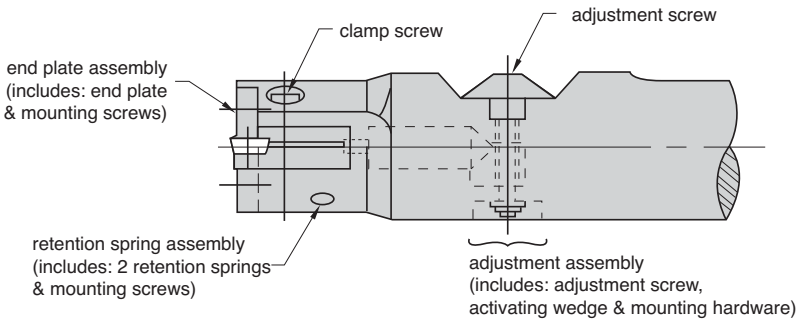


DS-SCK/DS-PCK

D min	D max	order number	catalog number	insert 1	rotating boring bar size	L	L1A	insert screw	lock pin	insert screw ID drive size
1.375	1.500	1020030	DS113SCKPR06	CPGM - 21.52	1	1.012	.061	MS1023		T7
1.500	1.625	1020031	DS215SCKPR06	CPGM - 21.52	2	1.080	.061	MS1023		T7
1.625	1.750	1020032	DS216SCKPR06	CPGM - 21.52	2	1.080	.061	MS1023		T7
1.750	1.875	1020033	DS317SCKPR06	CPGM - 21.52	3	1.080	.061	MS1023		T7
1.875	2.000	1020094	DS318SCKPR06	CPGM - 21.52	3	1.080	.061	MS1023		T7
2.000	2.250	1020095	DS420SCKPR09	CPGM - 32.52	4	1.364	.089	MS1027		T9
2.250	2.500	1020096	DS422PCKNR12	CNMG - 432	4	1.397	.122		KL0431	5/64
2.500	2.750	1020097	DS525PCKNR12	CNMG - 432	5	1.397	.122		KL0431	5/64
2.750	3.000	1020098	DS527PCKNR12	CNMG - 432	5	1.397	.122		KL0431	5/64
3.000	3.250	1020099	DS630PCKNR12	CNMG - 432	6	1.397	.122		KL0431	5/64
3.250	3.500	1019778	DS632PCKNR12	CNMG - 432	6	1.397	.122		KL0431	5/64
3.500	3.750	1020100	DS735PCKNR12	CNMG - 432	7	1.397	.122		KL0431	5/64
3.750	4.000	1019779	DS737PCKNR12	CNMG - 432	7	1.397	.122		KL0431	5/64
4.000	4.500	1020169	DS840PCKNR12	CNMG - 432	8	1.786	.122		KL0431	5/64
4.500	5.000	1020102	DS845PCKNR19	CNMG - 643	8	1.847	.183		53-0641	9/64
5.000	5.500	1020103	DS850PCKNR19	CNMG - 643	8	1.847	.183		53-0641	9/64

NOTE: *Bore ranges are nominal.*
**Two required per blade set.*
***Blades supplied in matched sets of two, less inserts.*

Erickson Dial Set Boring System



Spare Parts

	clamp screw		end plate assembly		adjustment assembly		retention spring assembly	
dial set bar size	order number	catalog number	order number	catalog number	order number	catalog number	order number	catalog number
1	1024876	DS1CSPKG	1065619	DS1EPASSY	1065627	DS1ADJASSY	1065643	DS1RSASSY
2	1024878	DS2CSPKG	1065620	DS2EPASSY	1065628	DS2ADJASSY	1065626	DS2RSASSY
3	1024879	DS3CSPKG	1065621	DS3EPASSY	1065629	DS3ADJASSY	1065644	DS3RSASSY
4	1024880	DS4CSPKG	1020024	DS4EPASSY	1065630	DS4ADJASSY	1065645	DS4RSASSY
5	1024881	DS5CSPKG	1020025	DS5EPASSY	1065631	DS5ADJASSY	1065646	DS5RSASSY
6	1024882	DS6CSPKG	1065622	DS6EPASSY	1065632	DS6ADJASSY	1020027	DS6RSASSY
7	1024883	DS7CSPKG	1065623	DS7EPASSY	1065633	DS7ADJASSY	1065647	DS7RSASSY
8	1024914	DS8CSPKG	1065624	DS8EPASSY	1065634	DS8ADJASSY	1020028	DS8RSASSY

**Sold in package of four screws.*

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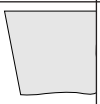
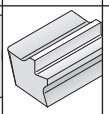
KENNAMETAL Kendex™ Precision Lock

Designed for high-precision counterboring operations in aluminum workpiece materials. The tool is ideally suited for this application, using indexable inserts that can be adjusted to the required diameter tolerance.

Features

- Inserts are precision ground on all surfaces, with sharp edges and a positive geometry.
- The inserts are accurately located in a V-shaped seat during adjustment.
- Adjustment on diameter does not affect the tool lead angle or edge height.
- Two cutting edges per insert.
- Excellent chip formation.
- Full face PCD inserts; other special designs available upon request.
- Through-the-tool coolant.
- One, two, or three cutting edges depending on the diameter.
- Self-centering design.
- Easy and reliable diameter adjustments.
- Higher feed rates compared to single blade reamers.
- Lower cost compared to reamers.

grade	coating	insert	composition and application	ANSI class	ISO class
K313			**composition:** uncoated, fine-grain, straight carbide grade containing 6% cobalt. **application:** exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most heat-resistant alloys. Used in inserts for the Kendex Precision Lock counterboring tools designed for counterboring operations in aluminum.	C2-C4	K05-K20 M10-M20

Kendex Precision — Fine Machining ▼▼▼▼			Cutting Speed																Feed rate		
			sfm																		
				98	164	262	328	394	492	656	820	984	1148	1640	2460	3281				
Geometry	Grade	Starting Pt	m/min	30	50	80	100	120	150	200	250	300	350	500	750	1000		dia.	.299"- .996"	5,8mm-25,3mm
P1 Low-Carbon Steels, Long Chipping			**Content: C <.25%**																**Tensile Strength RM (MPa)*: <530**		**Hardness (HB) or HRC: <125**
BPGF...LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
P2 Low-Carbon Steels, Free Machining, and Short Chipping			**Content: C <.25%**																**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: <220**
BPGF...LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
P3 Medium to High Plain-Carbon Steels and Alloy Steels			**Content: C >.25%**																**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**
BPGF...LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
P4 Alloy Steels and Tool Steels			**Content: C >.25%**																**Tensile Strength RM (MPa)*: 800-1100**		**Hardness (HB) or HRC: 350-450**
BPGF...LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
P5 Ferritic, Martensitic, and PH Stainless Steels			**Content: C=0-.4%**																**Tensile Strength RM (MPa)*: 600-850**		**Hardness (HB) or HRC: <330**
BPGF... LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels			**Content: C=.1-.6%**																**Tensile Strength RM (MPa)*: 900-1350**		**Hardness (HB) or HRC: 350-450**
BPGF...LGD	KC7235	558	sfm						623							689			ipr	.001 - .003	
		170	m/min						190							210			mm/r	0,02 - 0,08	
M1 Austenitic Stainless Steels			**Content: C=.05-.15%**																**Tensile Strength RM (MPa)*: <650**		**Hardness (HB) or HRC: 130-200**
BPGF...LGD	KC7235	607	sfm						410							820			ipr	.001 - .003	
		185	m/min						125							250			mm/r	0,02 - 0,08	
M2 High-Strength Austenitic Stainless and Cast Stainless Steels			**Content: C=.05-.15%**																**Tensile Strength RM (MPa)*: 500-700**		**Hardness (HB) or HRC: 150-230**
BPGF... LGD	KC7235	607	sfm						410							820			ipr	.001 - .003	
		185	m/min						125							250			mm/r	0,02 - 0,08	
M3 Duplex Steels			**Content: C=.05-.2%**																**Tensile Strength RM (MPa)*: <900**		**Hardness (HB) or HRC: 135-275**
BPGF... LGD	KC7235	607	sfm						410							820			ipr	.001 - .003	
		185	m/min						125							250			mm/r	0,02 - 0,08	
K1 Gray Cast Irons and Low-Strength Ductile Irons			**Tensile Strength RM (MPa)*: 150-400**																**Hardness (HB) or HRC: 120-290**		
BPGF... LGD	KC7210	820	sfm						492							1148			ipr	.001 - .003	
		250	m/min						150							350			mm/r	0,02 - 0,08	
K2 Low- and Medium-Strength CGI and Ductile Irons			**Tensile Strength RM (MPa)*: 400-600**																**Hardness (HB) or HRC: 130-260**		
BPGF...LGD	KC7210	820	sfm						492							1148			ipr	.001 - .003	
		250	m/min						150							350			mm/r	0,02 - 0,08	
K3 High-Strength Ductile and Austempered Ductile Irons			**Tensile Strength RM (MPa)*: 600-900**																**Hardness (HB) or HRC: 180-350**		
BPGF... LGD	KC7210	820	sfm						492							1148			ipr	.001 - .003	
		250	m/min						150							350			mm/r	0,02 - 0,08	

(continued on next page)

KENNAMETAL

Feed and Speed Chart

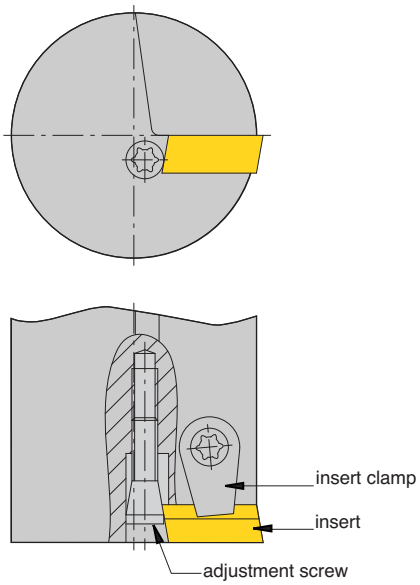
(continued from previous page)

Kendex Precision — Fine Machining ▼▼▼▼			Cutting Speed		Feed rate		
Geometry	Grade	Starting Pt	sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	dia.	.299" - .996"	5,8mm-25,3mm
N1 Wrought Aluminum Alloys					Tensile Strength RM (MPa)*: <520		Hardness (HB) or HRC: 60-90
BPGX...LHP	K313	525	sfm	591 – 656	ipr	.002 - .004	
		160	m/min	180 – 200	mm/r	0,06 - 0,10	
N2 Cast Aluminums			Content: Si<12.2%		Tensile Strength RM (MPa)*: <350		Hardness (HB) or HRC: 70-100
BPGX...LHP	K313	525	sfm	591 – 656	ipr	.002 - .004	
		160	m/min	180 – 200	mm/r	0,06 - 0,10	
N3 Cast Aluminums			Content: Si>12.2%		Tensile Strength RM (MPa)*: 200-320		Hardness (HB) or HRC: 60-120
BPGX...LHP	K313	525	sfm	591 – 656	ipr	.002 - .004	
		160	m/min	180 – 200	mm/r	0,06 - 0,10	
N5 Copper and Copper Alloys					Tensile Strength RM (MPa)*: 200-650		Hardness (HB) or HRC: 60-200
BPGX...LHP	K313	525	sfm	591 – 656	ipr	.002 - .004	
		160	m/min	180 – 200	mm/r	0,06 - 0,10	
S1 Iron-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 500-1200		Hardness (HB) or HRC: 160-260
BPGF...	KC7210	197	sfm	98 – 410	ipr	.001 - .003	
		60	m/min	30 – 125	mm/r	0,02 - 0,08	
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 1000-1450		Hardness (HB) or HRC: 250-450
BPGF...	KC7210	180	sfm	66 – 295	ipr	.001 - .003	
		55	m/min	20 – 90	mm/r	0,02 - 0,08	
S4 Titanium Alloys					Tensile Strength RM (MPa)*: 900-1600		Hardness (HB) or HRC: 300-400
BPGF...	KC7210	148	sfm	66 – 273	ipr	.001 - .003	
		45	m/min	20 – 75	mm/r	0,02 - 0,08	

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Adjustment of Kendex Precision Lock Tools

To avoid damage to the cutting edges, the diameter should only be set using an optical comparator.



Step 1

Clamp the insert in the tool seat.

Step 2

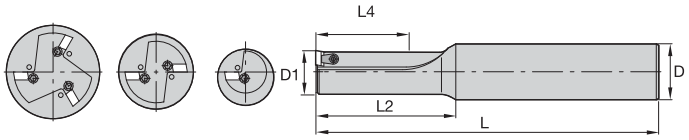
Increase the diameter to the required size by turning the adjustment screw clockwise. The insert can only be adjusted in the outward direction. If the diameter needs to be reset, unclamp the insert and start with step 1 again.

NOTE: *These are starting condition guidelines only. The machine tool, fixturing, toolholding, part configuration, and coolant capability may significantly influence specific applications.*
The bold font represents recommended starting parameters. The regular font represents the range of cutting parameters.
Use proper and safe machining practices. Make the set-up as rigid as possible.
The depth of cut must not be less than 1.5 x insert corner radius.
The depth of cut must not be greater than 1/3 of the insert cutting edge length for single-edge tools and not greater than 3/4 of the insert cutting edge length for multi-edge tools.
Feed (ipr) is affected by the desired surface finish. However, in general, the maximum feed (ipr) per edge should not exceed 1/3 of the insert corner radius.
Kendex Precision Lock may be used with minimum quantity lubrication.

Selection of Indexable Inserts

In addition to the standard inserts with a corner radius, inserts with special corner chamfers (bevel grind) are available.
These inserts may provide a better surface finish and/or higher feed rates.

Kendex Precision Lock Holders and Inserts



Round Shank — Metric

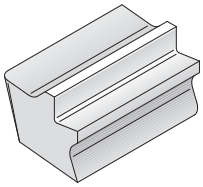
D1 mm min	D1 mm max	D1 inch min	D1 inch max	order number	catalog number	insert	D	L	L2	L4 max	no. of inserts	clamp assembly	adjusting screw	wrench	Torx size
5,8	6,2	.228	.244	1803902	KPL060R2SS12N1M	BPGX0301__	12	70	25	15	1	551.052	570.052	170.099	T5
6,8	7,2	.268	.284	1804136	KPL070R2SS12N1M	BPGX0301__	12	70	25	15	1	551.052	570.052	170.099	T5
7,8	8,2	.307	.323	1804137	KPL080R2SS12N1M	BPGX0301__	12	75	30	20	1	551.052	570.052	170.099	T5
8,8	9,2	.347	.362	1804138	KPL090R2SS12N1M	BPGX0301__	12	75	30	20	1	551.052	570.052	170.099	T5
9,7	10,3	.382	.406	1804139	KPL100R2SS16N1M	BPGX0502__	16	83	35	25	1	551.052	570.052	170.099	T6
9,8	10,2	.386	.402	1804183	KPL100R2SS16N2M	BPGX0301__	16	83	35	25	2	551.052	570.052	170.099	T5
10,7	11,3	.421	.445	1804140	KPL110R2SS16N1M	BPGX0502__	16	83	35	25	1	551.053	570.053	170.027	T6
10,8	11,2	.425	.441	1804184	KPL110R2SS16N2M	BPGX0301__	16	83	35	25	2	551.052	570.052	170.099	T5
11,7	12,3	.463	.484	1804141	KPL120R2SS16N1M	BPGX0502__	16	88	40	30	1	551.053	570.053	170.027	T6
11,8	12,2	.465	.480	1804185	KPL120R2SS16N2M	BPGX0301__	16	88	40	30	2	551.052	570.053	170.099	T5
12,7	13,3	.500	.524	1804142	KPL130R2SS16N1M	BPGX0502__	16	88	40	30	1	551.052	570.052	170.099	T6
12,8	13,2	.504	.520	1804186	KPL130R2SS16N2M	BPGX0301__	16	88	40	30	2	551.053	570.053	170.027	T5
13,8	14,2	.543	.559	1804187	KPL140R2SS16N2M	BPGX0502__	16	93	45	35	2	551.052	570.052	170.099	T6
14,7	15,3	.579	.602	1804188	KPL150R2SS20N2M	BPGX0502__	20	95	45	35	2	551.053	570.053	170.027	T6
14,8	15,2	.583	.598	1804204	KPL150R2SS20N3M	BPGX0301__	20	95	45	35	3	551.053	570.053	170.027	T5
15,7	16,3	.618	.642	1804189	KPL160R2SS20N2M	BPGX0502__	20	100	50	40	2	551.053	570.053	170.027	T6
15,8	16,2	.622	.638	1804205	KPL160R2SS20N3M	BPGX0301__	20	100	50	40	3	551.052	570.052	170.099	T5
16,7	17,3	.658	.681	1804190	KPL170R2SS20N2M	BPGX0502__	20	100	50	40	2	551.053	570.053	170.027	T6
16,8	17,2	.661	.677	1804206	KPL170R2SS20N3M	BPGX0301__	20	100	50	40	3	551.052	570.052	170.099	T5
17,7	18,3	.697	.721	1804191	KPL180R2SS20N2M	BPGX0502__	20	105	55	45	2	551.053	570.053	170.027	T6
17,7	18,3	.697	.721	1804207	KPL180R2SS20N3M	BPGX0502__	20	110	60	45	3	551.053	570.053	170.027	T6
18,7	19,3	.736	.760	1804192	KPL190R2SS20N2M	BPGX0502__	20	105	55	45	2	551.053	570.053	170.027	T6
18,7	19,3	.736	.760	1804208	KPL190R2SS20N3M	BPGX0502__	20	110	60	45	3	551.053	570.053	170.027	T6
19,7	20,3	.776	.799	1804209	KPL200R2SS20N3M	BPGX0502__	20	115	65	50	3	551.053	570.053	170.027	T6
20,7	21,3	.815	.839	1804210	KPL210R2SS20N3M	BPGX0502__	20	115	65	50	3	551.053	570.053	170.027	T6
21,7	22,3	.854	.878	1804211	KPL220R2SS20N3M	BPGX0502__	20	120	70	55	3	551.053	570.053	170.027	T6
22,7	23,3	.894	.917	1804212	KPL230R2SS20N3M	BPGX0502__	20	120	70	55	3	551.053	570.053	170.027	T6
23,7	24,3	.941	.957	1804213	KPL240R2SS20N3M	BPGX0502__	20	125	75	60	3	551.053	570.053	170.027	T6
24,7	25,3	.972	.996	1804214	KPL250R2SS20N3M	BPGX0502__	20	125	75	60	3	551.053	570.053	170.027	T6

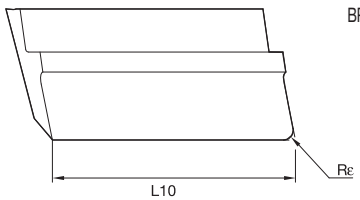
Ordering Example:
By catalog number KPL060R2SS12N1M,
or by order number 1803902.

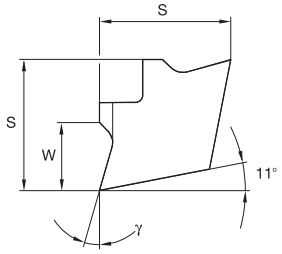
Kendex Precision Insert

● first choice
○ alternate choice

catalog number	L10	S	W	Rε	γ	K313
BPGX030101LHP	3	1,7	0,8	0,05	16.000	●
BPGX030102LHP	3	1,7	0,8	0,20	16.000	●
BPGX050202LHP	5	2,7	1,4	0,20	16.000	●
BPGX050204LHP	5	2,7	1,4	0,40	16.000	●







● first choice
○ alternate choice

catalog number	L10	S	W	Rε	γ	KC7210	KC7235
BPGF030101LGD	3	1,3	1,7	0,05	10.000	●	●
BPGF030102LGD	3	1,3	1,7	0,20	10.000	●	●
BPGF050202LGD	5	2,1	2,8	0,20	10.000	●	●
BPGF050204LGD	5	2,1	2,8	0,40	10.000	●	●

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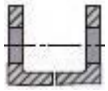
Reamer Selection

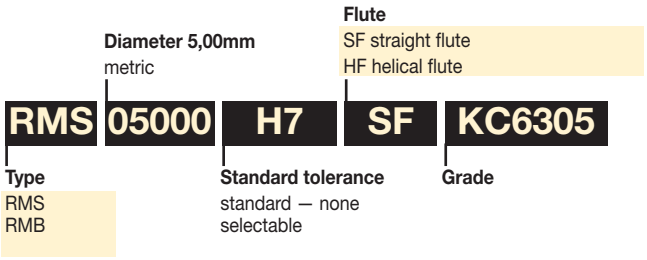
General Tool Selection Chart

	Application	Application	Application	Application	 Application
RMS	D=1.4 - 14,0mm ● ● ● ● ● ○ P M K N S H page G143	D=1.4 - 14,0mm ● ● ● ● ● ○ P M K N S H page G142	D=1.4 - 14,0mm ● ● ● ● ● ○ P M K N S H page G143	D=1.4 - 14,0mm ● ● ● ● ● ○ P M K N S H page G142	D=1.4 - 14,0mm ● ● ● ● ● ○ P M K N S H page G143
RMB	D=14,0 - 32mm ● ○ ● ○ ○ ○ P M K N S H page G155	D=14,0 - 32mm ● ○ ● ○ ○ ○ P M K N S H page G155	D=14,0 - 32mm ○ ○ ○ ○ ○ ○ P M K N S H page G155	D=14,0 - 32mm ○ ○ ○ ○ ○ ○ P M K N S H page G155	D=14,0 - 32mm ○ ○ ○ ○ ○ ○ P M K N S H page G155
RMA	D=5,60 - 45,59mm ● ● ● ● ● ○ P M K N S H page G162-G163	D=5,60 - 45,59mm ● ● ● ● ● ○ P M K N S H page G162-G163	D=5,60 - 45,59mm ● ● ● ● ● ○ P M K N S H page G162-G163	D=5,60 - 45,59mm ● ● ● ● ● ○ P M K N S H page G162-G163	D=5,60 - 45,59mm ● ● ● ● ● ○ P M K N S H page G162-G163
RIR	D=6,0 - 350mm ● ● ● ● ● ○ P M K N S H page G168	D=6,0 - 350mm ● ● ● ● ● ○ P M K N S H page G168	D=6,0 - 350mm ● ● ● ● ● ○ P M K N S H page G168	D=6,0 - 350mm ● ● ● ● ● ○ P M K N S H page G168	D=6,0 - 350mm ● ● ● ● ● ○ P M K N S H page G168
RIQ	D=16,0 - 350mm ● ● ● ● ● ● P M K N S H page G169	D=16,0 - 350mm ● ● ● ● ● ● P M K N S H page G169	D=16,0 - 350mm ● ● ● ● ● ● P M K N S H page G169	D=16,0 - 350mm ● ● ● ● ● ● P M K N S H page G169	D=16,0 - 350mm ● ● ● ● ● ● P M K N S H page G169
RMD	D=8 - 60mm ○ ○ ○ ● ○ ○ P M K N S H page G181	D=8 - 60mm ○ ○ ○ ● ○ ○ P M K N S H page G181	D=8 - 60mm ○ ○ ○ ● ○ ○ P M K N S H page G181	D=8 - 60mm ○ ○ ○ ● ○ ○ P M K N S H page G181	D=8 - 60mm ○ ○ ○ ● ○ ○ P M K N S H page G181

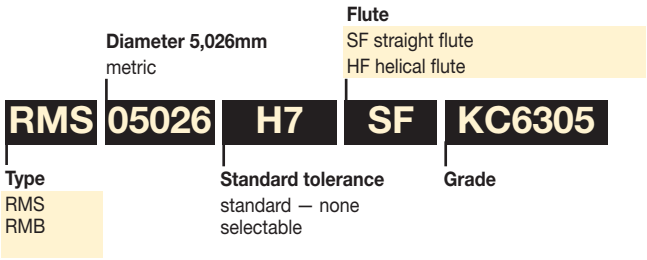
reamer type	diameter range	inch	workpiece materials group P	M	K	N	S	H	tolerance range	page
RMS	4,16 - 12,70	.197 - .551	●	●	●	●	●		>IT7	G129
RMA	5,60 - 45,59	.551 - .787	●	●	●	●	●		>IT5	G156
RMB	14,50 - 42,00	.220 - 1.795	●		●				>IT7	G144
RIR	6,00 - 350,00	.236 - 13.78	●	●	●	●	●		>IT5	G168
RIQ	16,00 - 350,00	.630 - 13.78	●	●	●	●	●	●	>IT5	G169
RMD	8,00 - 60,00	.315 - 2.36				●			>IT7	G181

Kennametal Standard Catalog Number System

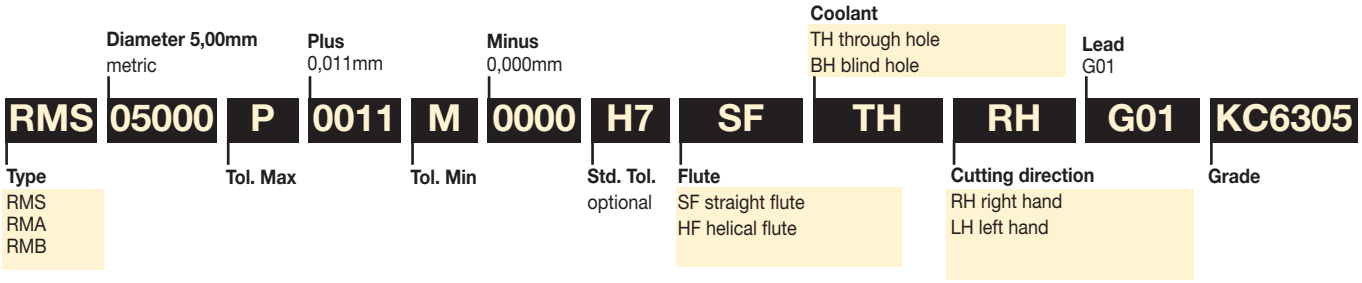
Standard Stocked Items



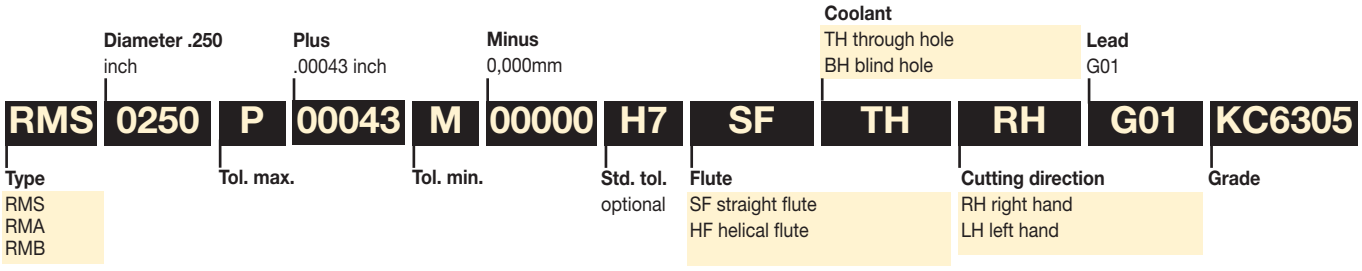
Simple Specials — Intermediate Sizes



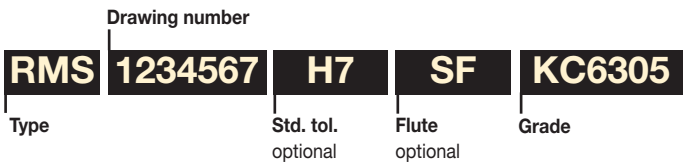
Metric Based Custom Solutions



Inch Based Custom Solutions



Complex Custom Solutions — Platform based on



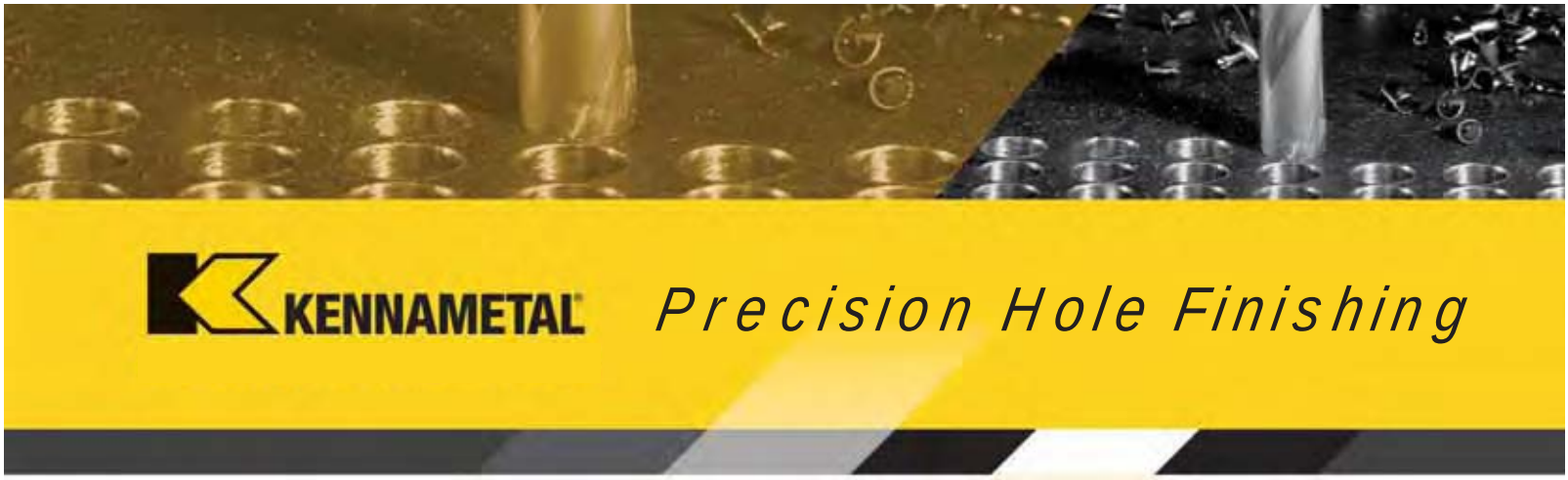
RMS	reamer monobloc solid carbide
RMB	reamer monobloc brazed
RMA	reamer monobloc adjustable
RIR	reamer insert rectangular
RIQ	reamer insert quatrocut
RMD	reamer monobloc PCD

Kennametal Standard Reaming Grades

reaming grade	composition	RMS	RMA	RMB	RIR	RIQ	RMD
K605	uncoated carbide	●	●	●	●	●	
KC6005	TiN coated carbide		●		●	●	
KC6105	TiCN coated carbide				●	●	
KC6305	TiAlN coated carbide	●	●	●	●	●	
KT325	uncoated cermet		●			●	
KT6105	TiCN coated cermet					●	
KT6215	TiAlN coated cermet		●	●		●	
KD1415	PCD				●	●	●
KB1610	PCBN				●	●	

Reaming Allowances for Multi Blade Reaming

D1		reaming allowance in mm			in inch		
mm	inch	min.	middle	max.	min.	middle	max.
1,40 - 3,15	.055 - .124	0,08	0,12	0,20	.003	.005	.008
3,16 - 4,80	.124 - .189	0,08	0,12	0,20	.003	.005	.008
4,81 - 7,15	.189 - .281	0,10	0,15	0,25	.004	.006	.010
7,16 - 9,59	.282 - .378	0,10	0,20	0,30	.004	.008	.012
9,60 - 12,70	.378 - .500	0,15	0,20	0,30	.006	.008	.012
12,70 - 15,00	.500 - .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 - 30,00	.787 - 1.181	0,20	0,30	0,40	.008	.012	.016
30,00 - 40,00	1.181 - 1.575	0,20	0,30	0,40	.008	.012	.016
40,00 - 50,00	1.575 - 1.969	0,20	0,30	0,40	.008	.012	.016



KENNAMETAL

Precision Hole Finishing

Multi Blade Reaming

RMS™ Solid Carbide Reaming Tools

Primary Application

- Solid Carbide Reaming Tools starting at .197 inch (5,0mm) in size with internal coolant supply available as standard.
- Ground to H7 tolerance class for use in most applications.
- Specific coatings and lead configurations available for high-speed machining of steel, stainless steel, and cast iron.
- Uncoated micrograin substrates for machining stainless steel and nonferrous materials at accelerated speeds.
- Unequal flutes for highest hole and surface quality.
- High-speed leads and lapped grinding of surface of rake, clearance, and relief angle for increased productivity.
- Use standard SIF Steerable Hydraulic Chucks for easy compensation of radial run out and angular inaccuracies to achieve highest possible hole straightness and surface quality.

Features and Benefits

Lapped ground leads for high-speed cutting.

- Long tool life with increased hole and surface quality.

Reaming specific grades and substrates.

- Highest metal removal rate (MRR) at increased speeds and feeds.

Radial coolant supply for through hole applications; axial coolant supply for blind holes.

- Achieve higher feed rates than conventional reaming tools.

Unequal flutes.

- Decreased run out and improved straightness compared to other tools of its class.

Customization

- Diameters starting at .055 inch (1,40mm) up to .557 inch (14,15mm) available with and without internal coolant in 0,001mm steps.
- Intermediate diameters of standard program available as Simple Specials with short delivery time.
- Solid cermet reaming tools and tooling for heat-resistant materials are available on request.

Feed and Speed Chart

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605

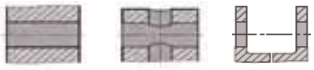
Cutting Speed													Starting Pt.	REAMER TYPE	RMS—Straight Flute—K605 External coolant
														Dia. Range inch	.055 – .163
														Dia. Range mm	1,40 – 4,15
sfm	49	98	164	262	328	394	492	656	820	984	1148			*MATERIAL*	Solid Carbide
m/min	15	30	50	80	100	120	150	200	250	300	350			*TYPE*	Straight Flute
P1 Low-Carbon Steels, Long chipping														***Content: C <.25%***	***Tensile Strength RM (MPa)*: <530***	***Hardness (HB) or HRC: <125***
Range					82						148	115		*ipr*	.004 - .008
Range					25						45	35		*mm/r*	0,1 - 0,2
P2 Low-Carbon Steels, Free Machining and Short Chipping														***Content: C <.25%***	***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: <220***
Range					82						148	115		*ipr*	.004 - .008
Range					25						45	35		*mm/r*	0,1 - 0,2
P3 Medium and High Plain-Carbon Steels, Low-alloyed				66							115	82		***Content: C >.25%***	***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
Range				20							35	25		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
P4 Alloyed and Tempered Carbon Steels, Tool			49		82							66		***Content: C >.25%***	***Tensile Strength RM (MPa)*: 800-1100***	***Hardness (HB) or HRC: 350-450***
Range			15		25							20		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
P5 Ferritic, Martensitic, and PH Stainless Steels				33		66						49		***Content: C=0-.4%***	***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
Range				10		20						15		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels				33		66						49		***Content: C=.1-.6%***	***Tensile Strength RM (MPa)*: 900-1350***	***Hardness (HB) or HRC: 350-450***
Range				10		20						15		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
M1 Austenitic Stainless Steel				20		33						26		***Content: C=.05-.15%***	***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: 130-200***
Range				6		10						8		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
M2 High Strength Austenitic Stainless and Cast Stainless Steels				20		33						26		***Content: C=.05-.15%***	***Tensile Strength RM (MPa)*: 500-700***	***Hardness (HB) or HRC: 150-230***
Range				6		10						8		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
M3 Duplex Steel				20		33						26		***Content: C=.05-.2%***	***Tensile Strength RM (MPa)*: <900***	***Hardness (HB) or HRC: 135-275***
Range				6		10						8		*ipr*	.004 - .008
Range														*mm/r*	0,1 - 0,2
K1 Cast and Low-Strength Ductile Irons															***Tensile Strength RM (MPa)*: 150-400***	***Hardness (HB) or HRC: 120-290***
Range				66							115	98		*ipr*	.004 - .007
Range				20							35	30		*mm/r*	0,09 - 0,17
K2 Low and Medium Strength CGI and Ductile Irons															***Tensile Strength RM (MPa)*: 400-600***	***Hardness (HB) or HRC: 130-260***
Range				49		98						82		*ipr*	.004 - .006
Range				15		30						25		*mm/r*	0,09 - 0,15
K3 High Strength Ductile and Austempered Ductile Iron															***Tensile Strength RM (MPa)*: 600-900***	***Hardness (HB) or HRC: 180-350***
Range				49		82						66		*ipr*	.003 - .005
Range				15		25						20		*mm/r*	0,07 - 0,13

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	REAMER TYPE	RMS—Straight Flute—K605 External coolant
													Dia. Range inch	.055 – .163
m/min	15	30	50	80	100	120	150	200	250	300	350		*Dia. Range mm*	1,40 – 4,15
													MATERIAL	Solid Carbide
													TYPE	Straight Flute
N1 Wrought Aluminum Alloys													***Tensile Strength RM (MPa)*: <520***	
Range				230				377				295	*ipr*	.004 - .012
Range				70				115				90	*mm/r*	0,1 - 0,3
N2 Cast Aluminum	***Content: Si<12.2%***												***Tensile Strength RM (MPa)*: <350***	***Hardness (HB) or HRC: 70-100***
Range				230				377				295	*ipr*	.004 - .012
Range				70				115				90	*mm/r*	0,1 - 0,3
N3 Cast Aluminums	***Content: Si>12.2%***												***Tensile Strength RM (MPa)*: 200-320***	***Hardness (HB) or HRC: 60-120***
Range				230				377				295	*ipr*	.004 - .012
Range				70				115				90	*mm/r*	0,1 - 0,3
N4 MMC's (Aluminum-Based Metal Matrix)													***Tensile Strength RM (MPa)*: <700***	***Hardness (HB) or HRC: 210***
Range				230				377				295	*ipr*	.004 - .012
Range				70				115				90	*mm/r*	0,1 - 0,3
N5 Copper and Copper Alloys													***Tensile Strength RM (MPa)*: 200-650***	***Hardness (HB) or HRC: 60-200***
Range					213			361				279	*ipr*	.004 - .012
Range					65			110				85	*mm/r*	0,1 - 0,3
S1 Iron-Based, Heat-Resistant Alloys			20		33							26	***Tensile Strength RM (MPa)*: 500-1200***	***Hardness (HB) or HRC: 160-260***
Range			6		10							8	*ipr*	.004 - .008
Range													*mm/r*	0,1 - 0,2
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys			20		33							26	***Tensile Strength RM (MPa)*: 1000-1450***	***Hardness (HB) or HRC: 250-450***
Range			6		10							8	*ipr*	.004 - .008
Range													*mm/r*	0,1 - 0,2
S3 Titanium				45				76				61	***Tensile Strength RM (MPa)*: 900-1600***	***Hardness (HB) or HRC: 300-400***
Range				15				25				20	*ipr*	.004 - .008
Range													*mm/r*	0,1 - 0,2
S4 Titanium Alloys				45				76				61	***Tensile Strength RM (MPa)*: 900-1600***	***Hardness (HB) or HRC: 300-400***
Range				15				25				20	*ipr*	.004 - .008
Range													*mm/r*	0,1 - 0,2

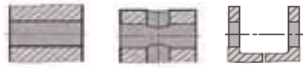
Feed and Speed Chart

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605



Cutting Speed													Starting Pt.		
sfm	49	98	164	262	328	394	492	656	820	984	1148			REAMER TYPE	RMS—Straight Flute—KC6305 External coolant
														Dia. Range inch	.055 – .163
m/min	15	30	50	80	100	120	150	200	250	300	350			*Dia. Range mm*	1,40 - 4,15
														MATERIAL	**Solid Carbide**
														TYPE	**Straight Flute**
P1 Low-Carbon Steels, Long chipping														***Content: C <.25%***	***Tensile Strength RM (MPa)*: <530***	***Hardness (HB) or HRC: <125***
Range			164					295					230	*ipr*	.004 - .008
Range			50					90					70	*mm/r*	0,1 - 0,2
P2 Low-Carbon Steels, Free Machining and Short Chipping														***Content: C <.25%***	***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: <220***
Range			164					295					230	*ipr*	.004 - .008
Range			50					90					70	*mm/r*	0,1 - 0,2
P3 Medium and High Plain-Carbon Steels, Low-alloyed														***Content: C >.25%***	***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
Range				148				262					213	*ipr*	.004 - .008
Range				45				80					65	*mm/r*	0,1 - 0,2
P4 Alloyed and Tempered Carbon Steels, Tool														***Content: C >.25%***	***Tensile Strength RM (MPa)*: 800-1100***	***Hardness (HB) or HRC: 350-450***
Range				131				213					164	*ipr*	.004 - .008
Range				40				65					50	*mm/r*	0,1 - 0,2
P5 Ferritic, Martensitic, and PH Stainless Steels														***Content: C=0-.4%***	***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
Range				66				115					98	*ipr*	.004 - .008
Range				20				35					30	*mm/r*	0,1 - 0,2
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels														***Content: C =.1-.6%***	***Tensile Strength RM (MPa)*: 900-1350***	***Hardness (HB) or HRC: 350-450***
Range				66				115					98	*ipr*	.004 - .008
Range				20				35					30	*mm/r*	0,1 - 0,2
M1 Austenitic Stainless Steel														***Content: C=.05-.15%***	***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: 130-200***
Range				30				59					49	*ipr*	.004 - .008
Range				9				18					15	*mm/r*	0,1 - 0,2
M2 High Strength Austenitic Stainless and Cast Stainless Steels														***Content: C =.05-.15%***	***Tensile Strength RM (MPa)*: 500-700***	***Hardness (HB) or HRC: 150-230***
Range				30				59					49	*ipr*	.004 - .008
Range				9				18					15	*mm/r*	0,1 - 0,2
M3 Duplex Steel														***Content: C=.05-.2%***	***Tensile Strength RM (MPa)*: <900***	***Hardness (HB) or HRC: 135-275***
Range				30				59					49	*ipr*	.004 - .008
Range				9				18					15	*mm/r*	0,1 - 0,2

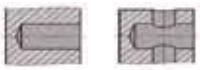
Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605



Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	REAMER TYPE	RMS—Straight Flute—KC6305 External coolant
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350		Dia. Range inch	.055 – .163
													Dia. Range mm	1,40 - 4,15
													MATERIAL	Solid Carbide
													TYPE	Straight Flute
K1 Cast and Low-Strength Ductile Irons													Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290
Range			148	262								213	ipr	.004 - .007
Range			45	80								65	mm/r	0,09 - 0,17
K2 Low and Medium Strength CGI and Ductile Irons													Tensile Strength RM (MPa)*: 400-600	Hardness (HB) or HRC: 130-260
Range			131	230								180	ipr	.004 - .006
Range			40	70								55	mm/r	0,09 - 0,15
K3 High Strength Ductile and Austempered Ductile Iron													Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350
Range			131	213								164	ipr	.003 - .005
Range			40	65								50	mm/r	0,07 - 0,13
S1 Iron-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260
Range	49	92										66	ipr	.004 - .008
Range	15	28										20	mm/r	0,1 - 0,2
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450
Range	49	92										66	ipr	.004 - .008
Range	15	28										20	mm/r	0,1 - 0,2

Feed and Speed Chart

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605



Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350	

REAMER TYPE	RMS—Straight Flute—K605 Internal coolant axial		
Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
MATERIAL	Solid Carbide		
TYPE	Straight Flute		
P1 Low-Carbon Steels, Long chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125			
Range (131 – 230)	ipr	.008 - .024	.010 - .026	.010 - .035
Range (40 – 70)	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P2 Low-Carbon Steels, Free Machining and Short Chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220			
Range (131 – 230)	ipr	.008 - .024	.010 - .026	.01 - .035
Range (40 – 70)	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P3 Medium and High Plain-Carbon Steels, Low-alloyed — Content: C >.25% — Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330			
Range (115 – 197)	ipr	.008 - .024	.010 - .026	.010 - .035
Range (35 – 60)	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P4 Alloyed and Tempered Carbon Steels, Tool — Content: C >.25% — Tensile Strength RM (MPa)*: 800-1100 — Hardness (HB) or HRC: 350-450			
Range (82 – 148)	ipr	.008 - .024	.010 - .026	.010 - .035
Range (25 – 45)	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P5 Ferritic, Martensitic, and PH Stainless Steels — Content: C=0-.4% — Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330			
Range (49 – 82)	ipr	.004 - .018	.006 - .020	.006 - .020
Range (15 – 25)	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels — Content: C=.1-.6% — Tensile Strength RM (MPa)*: 900-1350 — Hardness (HB) or HRC: 350-450			
Range (49 – 82)	ipr	.004 - .018	.006 - .020	.006 - .020
Range (15 – 25)	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M1 Austenitic Stainless Steel — Content: C=.05-.15% — Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: 130-200			
Range (26 – 49)	ipr	.004 - .018	.006 - .020	.006 - .020
Range (8 – 15)	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M2 High Strength Austenitic Stainless and Cast Stainless Steels — Content: C=.05-.15% — Tensile Strength RM (MPa)*: 500-700 — Hardness (HB) or HRC: 150-230			
Range (26 – 49)	ipr	.004 - .0180	.006 - .020	.006 - .020
Range (8 – 15)	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M3 Duplex Steel — Content: C=.05-.2% — Tensile Strength RM (MPa)*: <900 — Hardness (HB) or HRC: 135-275			
Range (26 – 49)	ipr	.004 - .018	.006 - .020	.006 - .020
Range (8 – 15)	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
K1 Cast and Low-Strength Ductile Irons — Tensile Strength RM (MPa)*: 150-400 — Hardness (HB) or HRC: 120-290			
Range (115 – 197)	ipr	.012 - .031	.012 - .039	.012 - .047
Range (35 – 60)	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K2 Low and Medium Strength CGI and Ductile Irons — Tensile Strength RM (MPa)*: 400-600 — Hardness (HB) or HRC: 130-260			
Range (82 – 164)	ipr	.012 - .031	.012 - .039	.012 - .047
Range (25 – 50)	mm/r	0,30 - 0,80	0,30 - 1,00	0,30- 1,20
K3 High Strength Ductile and Austempered Ductile Iron — Tensile Strength RM (MPa)*: 600-900 — Hardness (HB) or HRC: 180-350			
Range (66 – 148)	ipr	.012 - .031	.012 - .039	.012 - .047
Range (20 – 45)	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	REAMER TYPE	RMS—Straight Flute—K605 Internal coolant axial		
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350		Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
													Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
													MATERIAL	Solid Carbide		
													TYPE	Straight Flute		
N1 Wrought Aluminum Alloys													Tensile Strength RM (MPa)*: <520			
Range					361						640	492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110						195	150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N2 Cast Aluminum	Content: Si<12.2%												Tensile Strength RM (MPa)*: <350	Hardness (HB) or HRC: 70-100		
Range					361						640	492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110						195	150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N3 Cast Aluminums	Content: Si>12.2%												Tensile Strength RM (MPa)*: 200-320	Hardness (HB) or HRC: 60-120		
Range					361						640	492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110						195	150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N4 MMC's (Aluminum-Based Metal Matrix)													Tensile Strength RM (MPa)*: <700	Hardness (HB) or HRC: 210		
Range					361						640	492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110						195	150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N5 Copper and Copper Alloys													Tensile Strength RM (MPa)*: 200-650	Hardness (HB) or HRC: 60-200		
Range						344					591	459	ipr	.012 - .031	.012 - .039	.012 - .047
Range						105					180	140	mm/r	0,30 - 0,80	0,30 - 1,00	0,3 - 1,20
S1 Iron-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260		
Range		26			49							33	ipr	.004 - .018	.006 - .020	.006 - .020
Range		8			15							10	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450		
Range		26			49							33	ipr	.004 - .018	.006 - .020	.006 - .020
Range		8			15							10	mm/r	0,1 - 0,45	0,15 - 0,50	0,15 - 0,50
S3 Titanium													Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400		
Range		49			115							82	ipr	.004 - .018	.006 - .020	.006 - .020
Range		15			35							25	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S4 Titanium Alloys													Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400		
Range		49			115							82	ipr	.004 - .018	.006 - .020	.006 - .020
Range		15			35							25	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605

REAMER TYPE	RMS—Straight Flute—KC6305 Internal coolant axial		
Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
MATERIAL	Solid Carbide		
TYPE	Straight Flute		

Cutting Speed

sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.
m/min	15	30	50	80	100	120	150	200	250	300	350	

P1 Low-Carbon Steels, Long chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <530		Hardness (HB) or HRC: <125
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P2 Low-Carbon Steels, Free Machining and Short Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <650		Hardness (HB) or HRC: <220
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P3 Medium and High Plain-Carbon Steels, Low-alloyed	Content: C >.25%	Tensile Strength RM (MPa)*: 600-850		Hardness (HB) or HRC: <330
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P4 Alloyed and Tempered Carbon Steels, Tool	Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100		Hardness (HB) or HRC: 350-450
Range	ipr	.008 - .024	.010 - 0.026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P5 Ferritic, Martensitic, and PH Stainless Steels	Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850		Hardness (HB) or HRC: <330
Range	ipr	.008 - .024	.010 - 0.026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels	Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350		Hardness (HB) or HRC: 350-450
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M1 Austenitic Stainless Steel	Content: C=.05-.15%	Tensile Strength RM (MPa)*: <650		Hardness (HB) or HRC: 130-200
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M2 High Strength Austenitic Stainless and Cast Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: 500-700		Hardness (HB) or HRC: 150-230
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M3 Duplex Steel	Content: C=.05-.2%	Tensile Strength RM (MPa)*: <900		Hardness (HB) or HRC: 135-275
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50

Solid Carbide Reamer — RMS Series — Straight Flute — Grade K605

Cutting Speed														REAMER TYPE	RMS—Straight Flute—KC6305 Internal coolant axial		
														Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
														Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.		MATERIAL	Solid Carbide		
m/min	15	30	50	80	100	120	150	200	250	300	350			TYPE	Straight Flute		
K1 Cast and Low-Strength Ductile Irons															Tensile Strength RM (MPa)*: 150-400		Hardness (HB) or HRC: 120-290
Range				246				427				328		ipr	.012 - .031	.012 - .039	.012 - .047
Range				75				130				100		mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K2 Low and Medium Strength CGI and Ductile Irons															Tensile Strength RM (MPa)*: 400-600		Hardness (HB) or HRC: 130-260
Range				197				361				295		ipr	.012 - .031	.012 - .039	.012 - .047
Range				60				110				90		mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K3 High Strength Ductile and Austempered Ductile Iron															Tensile Strength RM (MPa)*: 600-900		Hardness (HB) or HRC: 180-350
Range				197				344				262		ipr	.012 - .031	.012 - .039	.012 - .047
Range				60				105				80		mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
S1 Iron-Based, Heat-Resistant Alloys															Tensile Strength RM (MPa)*: 500-1200		Hardness (HB) or HRC: 160-260
Range	49	92										66		ipr	.004 - .018	.006 - .020	.006 - .020
Range	15	28										20		mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys															Tensile Strength RM (MPa)*: 1000-1450		Hardness (HB) or HRC: 250-450
Range	49	92										66		ipr	.004 - .018	.006 - .020	.006 - .020
Range	15	28										20		mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50

Feed and Speed Chart

Solid Carbide Reamer — RMS Series — Helical Flute — Grade K605

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350	

REAMER TYPE	RMS—Helical Flute—K605 Internal coolant radial		
Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
MATERIAL	Solid Carbide		
TYPE	LH HELIX		
P1 Low-Carbon Steels, Long chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125			
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P2 Low-Carbon Steels, Free Machining and Short Chipping — Content: C <.25% — Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220			
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P3 Medium and High Plain-Carbon Steels, Low-alloyed — Content: C >.25% — Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330			
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P4 Alloyed and Tempered Carbon Steels, Tool — Content: C >.25% — Tensile Strength RM (MPa)*: 800-1100 — Hardness (HB) or HRC: 350-450			
Range	ipr	.008 - .024	.010 - .026	.010 - .035
Range	mm/r	0,20 - 0,60	0,25 - 0,65	0,25 - 0,90
P5 Ferritic, Martensitic, and PH Stainless Steels — Content: C=0-.4% — Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330			
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels — Content: C=.1-.6% — Tensile Strength RM (MPa)*: 900-1350 — Hardness (HB) or HRC: 350-450			
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M1 Austenitic Stainless Steel — Content: C=.05-.15% — Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: 130-200			
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M2 High Strength Austenitic Stainless and Cast Stainless Steels — Content: C=.05-.15% — Tensile Strength RM (MPa)*: 500-700 — Hardness (HB) or HRC: 150-230			
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M3 Duplex Steel — Content: C=.05-.2% — Tensile Strength RM (MPa)*: <900 — Hardness (HB) or HRC: 135-275			
Range	ipr	.004 - .018	.006 - .020	.006 - .020
Range	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
K1 Cast and Low-Strength Ductile Irons — Tensile Strength RM (MPa)*: 150-400 — Hardness (HB) or HRC: 120-290			
Range	ipr	.012 - .031	.012 - .039	.012 - .047
Range	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K2 Low and Medium Strength CGI and Ductile Irons — Tensile Strength RM (MPa)*: 400-600 — Hardness (HB) or HRC: 130-260			
Range	ipr	.012 - .031	.012 - .039	.012 - .047
Range	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K3 High Strength Ductile and Austempered Ductile Iron — Tensile Strength RM (MPa)*: 600-900 — Hardness (HB) or HRC: 180-350			
Range	ipr	.012 - .031	.012 - .039	.012 - .047
Range	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20

Solid Carbide Reamer — RMS Series — Helical Flute — Grade K605

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	REAMER TYPE	RMS—Helical Flute—K605 Internal coolant radial		
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350		Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
													Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
													MATERIAL	Solid Carbide		
													TYPE	LH HELIX		
N1 Wrought Aluminum Alloys													Tensile Strength RM (MPa)*: <520			
Range					361				640			492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110				195			150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N2 Cast Aluminum													Content: Si<12.2% / Tensile Strength RM (MPa)*: <350 / Hardness (HB) or HRC: 70-100			
Range					361				640			492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110				195			150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N3 Cast Aluminums													Content: Si>12.2% / Tensile Strength RM (MPa)*: 200-320 / Hardness (HB) or HRC: 60-120			
Range					361				640			492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110				195			150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N4 MMC's (Aluminum-Based Metal Matrix)													Tensile Strength RM (MPa)*: <700 / Hardness (HB) or HRC: 210			
Range					361				640			492	ipr	.012 - .031	.012 - .039	.012 - .047
Range					110				195			150	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
N5 Copper and Copper Alloys													Tensile Strength RM (MPa)*: 200-650 / Hardness (HB) or HRC: 60-200			
Range					344				591			459	ipr	.012 - .031	.012 - .039	.012 - .047
Range					105				180			140	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
S1 Iron-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 500-1200 / Hardness (HB) or HRC: 160-260			
Range			26			49						33	ipr	.004 - .018	.006 - .020	.006 - .020
Range			8			15						10	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys													Tensile Strength RM (MPa)*: 1000-1450 / Hardness (HB) or HRC: 250-450			
Range			26			49						33	ipr	.004 - .018	.006 - .020	.006 - .020
Range			8			15						10	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S3 Titanium													Tensile Strength RM (MPa)*: 900-1600 / Hardness (HB) or HRC: 300-400			
Range			49			115						82	ipr	.004 - .018	.006 - .020	.006 - .020
Range			15			35						25	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S4 Titanium Alloys													Tensile Strength RM (MPa)*: 900-1600 / Hardness (HB) or HRC: 300-400			
Range			49			115						82	ipr	.004 - .018	.006 - .020	.006 - .020
Range			15			35						25	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50

Solid Carbide Reamer — RMS Series — Helical Flute — Grade K605

	REAMER TYPE	RMS—Helical Flute—KC6305 Internal coolant radial		
	Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
	Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
Cutting Speed sfm: 49 98 164 262 328 394 492 656 820 984 1148 / m/min: 15 30 50 80 100 120 150 200 250 300 350	MATERIAL	Solid Carbide		
Starting Pt.	TYPE	LH HELIX		
P1 Low-Carbon Steels, Long chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <530		Hardness (HB) or HRC: <125
Range 295 509 / Range 90 155	ipr	.008 - .024	.010 - .026	.010 - .035
394 / 120	mm/r	0,20 - 0,60	0,25 - 0 ,65	0,25 - 0,90
P2 Low-Carbon Steels, Free Machining and Short Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <650		Hardness (HB) or HRC: <220
Range 295 509 / Range 90 155	ipr	.008 - .024	.010 - .026	.010 - .035
394 / 120	mm/r	0,20 - 0,60	0,25 - 0 ,65	0,25 - 0,90
P3 Medium and High Plain-Carbon Steels, Low-alloyed	Content: C >.25%	Tensile Strength RM (MPa)*: 600-850		Hardness (HB) or HRC: <330
Range 246 427 / Range 75 130	ipr	.010 - .035	.010 - .026	.010 - .035
328 / 100	mm/r	0,25 - 0,90	0,25 - 0 ,65	0,25 - 0,90
P4 Alloyed and Tempered Carbon Steels, Tool	Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100		Hardness (HB) or HRC: 350-450
Range 197 344 / Range 60 105	ipr	.010 - .035	.010 - .026	.010 - .035
262 / 80	mm/r	0,25 - 0,90	0,25 - 0 ,65	0,25 - 0,90
P5 Ferritic, Martensitic, and PH Stainless Steels	Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850		Hardness (HB) or HRC: <330
Range 98 180 / Range 30 55	ipr	.004 - .018	.006 - .020	.006 - .020
148 / 45	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
P6 High Strength Ferritic, Martensitic, and PH Stainless Steels	Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350		Hardness (HB) or HRC: 350-450
Range 98 180 / Range 30 55	ipr	.004 - .018	.006 - .020	.006 - .020
148 / 45	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M1 Austenitic Stainless Steel	Content: C=.05-.15%	Tensile Strength RM (MPa)*: <650		Hardness (HB) or HRC: 130-200
Range 49 92 / Range 15 28	ipr	.004 - .018	.006 - .020	.006 - .020
66 / 20	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M2 High Strength Austenitic Stainless and Cast Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: 500-700		Hardness (HB) or HRC: 150-230
Range 49 92 / Range 15 28	ipr	.004 - .018	.006 - .020	.006 - .020
66 / 20	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
M3 Duplex Steel	Content: C=.05-.2%	Tensile Strength RM (MPa)*: <900		Hardness (HB) or HRC: 135-275
Range 49 92 / Range 15 28	ipr	.004 - .018	.006 - .020	.006 - .020
66 / 20	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50

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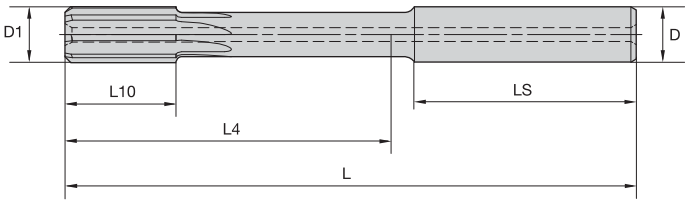
Solid Carbide Reamer — RMS Series — Helical Flute — Grade K605

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.
Cutting Speed m/min	15	30	50	80	100	120	150	200	250	300	350	

REAMER TYPE	RMS—Helical Flute—KC6305 Internal coolant radial		
Dia. Range inch	.164 – .281	.282 – .378	.378 – .551
Dia. Range mm	4,16 – 7,15	7,16 – 9,59	9,6 – 14,0
MATERIAL	Solid Carbide		
TYPE	LH HELIX		

K1 Cast and Low-Strength Ductile Irons					Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290	
Range	246	427	328	ipr	.012 - .031	.012 - .039	.012 - .047
Range	75	130	100	mm/r	0,30- 0,80	0,30 - 1,00	0,30 - 1,20
K2 Low and Medium Strength CGI and Ductile Irons					Tensile Strength RM (MPa)*: 400-600	Hardness (HB) or HRC: 130-260	
Range	197	361	295	ipr	.012 - .031	.012 - .039	.012 - .047
Range	60	110	90	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
K3 High Strength Ductile and Austempered Ductile Iron					Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350	
Range	197	344	262	ipr	.012 - .031	.012 - .039	.012 - .047
Range	60	105	80	mm/r	0,30 - 0,80	0,30 - 1,00	0,30 - 1,20
S1 Iron-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260	
Range	49	92	66	ipr	.004 - .018	.006 - .020	.006 - .020
Range	15	28	20	mm/r	0,10 - 0,45	0,15 - 0,50	0,15 - 0,50
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys					Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450	
Range	49	92	66	ipr	.004 - .014	.006 - .018	.006 - .018
Range	15	28	20	mm/r	0,10 - 0,35	0,15 - 0,45	0,15 - 0,45

RMS Solid Carbide Reaming Tools



RMS with Straight Flutes and Internal Coolant

● first choice
○ alternate choice

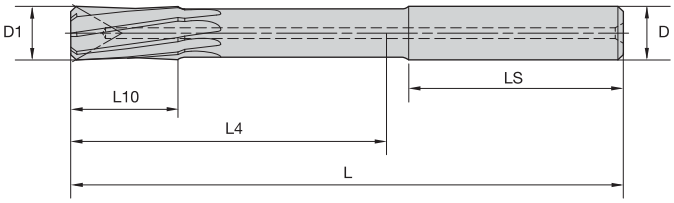
H		
S	○	○
N	●	
K	○	●
M	●	●
P	○	●

D1 mm	D1 inch	order number	D	L	L4	L10	LS	z	K605	KC6305
5,00	.197	RMS05000H7SF	6	74	32	12	36	4	●	●
5,50	.217	RMS05500H7SF	6	74	32	12	36	4	●	●
6,00	.236	RMS06000H7SF	6	74	33	12	36	4	●	●
6,50	.256	RMS06500H7SF	8	91	50	16	36	6	●	●
7,00	.276	RMS07000H7SF	8	91	50	16	36	6	●	●
8,00	.315	RMS08000H7SF	8	91	50	16	36	6	●	●
9,00	.354	RMS09000H7SF	10	103	58	20	40	6	●	●
10,00	.394	RMS10000H7SF	10	103	58	20	40	6	●	●
11,00	.433	RMS11000H7SF	12	118	68	24	45	6	●	●
12,00	.472	RMS12000H7SF	12	118	68	24	45	6	●	●
13,00	.512	RMS13000H7SF	14	132	81	28	45	6	●	●
14,00	.551	RMS14000H7SF	14	132	81	28	45	6	●	●

Ground to H7 tolerance.
Intermediate sizes ground to IT7 class available.

● standard
○ semi-standard available on request

Ordering Example:
By catalog number and grade RMS05000H7SF K605.



RMS with Helical Flutes and Internal Coolant

● first choice
○ alternate choice

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

D1 mm	D1 inch	order number	D	L	L4	L10	LS	z	K605	KC6305
5,00	.197	RMS05000H7HF	6	74	32	12	36	4	●	●
5,50	.217	RMS05500H7HF	6	74	32	12	36	4	●	●
6,00	.236	RMS06000H7HF	6	74	33	12	36	4	●	●
6,50	.256	RMS06500H7HF	8	91	50	16	36	6	●	●
7,00	.276	RMS07000H7HF	8	91	50	16	36	6	●	●
8,00	.315	RMS08000H7HF	8	91	50	16	36	6	●	●
9,00	.354	RMS09000H7HF	10	103	58	20	40	6	●	●
10,00	.394	RMS10000H7HF	10	103	58	20	40	6	●	●
11,00	.433	RMS11000H7HF	12	118	68	24	45	6	●	●
12,00	.472	RMS12000H7HF	12	118	68	24	45	6	●	●
13,00	.512	RMS13000H7HF	14	132	81	28	45	6	●	●
14,00	.551	RMS14000H7HF	14	132	81	28	45	6	●	●

Ground to H7 tolerance.
Intermediate sizes ground to IT7 class available.

● standard
○ semi-standard available on request

Ordering Example:
By catalog number and grade RMS05000H7HF K605.

KENNAMETAL *Precision Hole Finishing*

RMB Carbide and Cermet Tipped Reaming Tools

Multi Blade Reaming

Primary Application

- Achieve solid carbide and solid cermet metal removal rates from .551 inch (14mm) up to .787 inch (20,0mm) with no customization required.
- Ground to H7 tolerance class to address most applications.
- Specific coatings and lead configuration for high-speed machining of steel, stainless steel, cast iron, and nonferrous materials at accelerated speeds.
- Coated and uncoated micrograin substrate carbide as well as coated cermet specifically engineered for reaming.
- Unequal flutes deliver highest hole and surface quality.
- High-speed leads and lapped grinding of surface of rake, clearance, and relief angle increase productivity.
- Use standard SIF Steerable Hydraulic Chucks for easy compensation of radial run out and angular inaccuracies to achieve highest possible hole straightness and surface quality.

Features and Benefits

More flutes in this category of tools.

- Higher feed rate than conventional reaming tools.

Lapped ground leads for high-speed cutting.

- Long tool life with increased hole and surface quality.

Reaming specific grades and substrates.

- Highest metal removal mate (MRR) at higher speeds and feeds.

Unequal flutes.

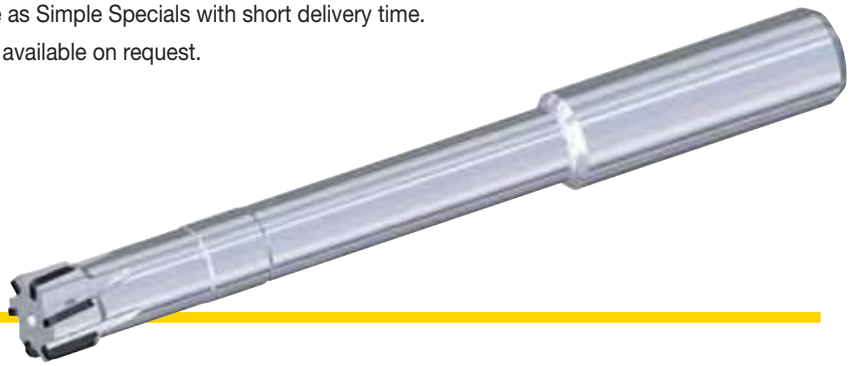
- Decreased run out and improved straightness compared to other tools in its class.

Adjustment screw at straight-fluted RMB™ reamers to change internal coolant supply from axial to radial.

- Optimized coolant options for blind holes and blind hole applications with interrupted cut.

Customization

- Diameters up to 1.259 inch (32,0mm) available with and without internal coolant in 0,001mm steps.
- Intermediate diameters of standard program available as Simple Specials with short delivery time.
- RMB tooling for machining heat-resistant materials is available on request.



Carbide Tipped Reamer — RMB Series — Straight Flute — K605™ Grade

	REAMER TYPE	RMB—Straight Flute—K605 Internal coolant axial
Cutting Speed	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
sfm: 49 98 164 262 328 394 492 656 820 984 1148 — Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350	TYPE	STRAIGHT FLUTE
P1 Low-Carbon Steels, Long Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125
sfm: 131 – 230 — 180	Tooth Feed inch	.002 - .008
m/min: 40 – 70 — 55	Tooth Feed mm	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220
sfm: 131 – 230 — 180	Tooth Feed inch	.002 - .008
m/min: 40 – 70 — 55	Tooth Feed mm	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 98 – 164 — 131	Tooth Feed inch	.002 - .008
m/min: 30 – 50 — 40	Tooth Feed mm	0,05 - 0,20
P4 Alloy Steels and Tool Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100 — Hardness (HB) or HRC: 350-450
sfm: 82 – 148 — 115	Tooth Feed inch	.002 - .008
m/min: 25 – 45 — 35	Tooth Feed mm	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels	Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 33 – 98 — 66	Tooth Feed inch	.002 - .008
m/min: 10 – 30 — 20	Tooth Feed mm	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350 — Hardness (HB) or HRC: 350-450
sfm: 33 – 98 — 66	Tooth Feed inch	.002 - .008
m/min: 10 – 30 — 20	Tooth Feed mm	0,05 - 0,20
M1 Austenitic Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: 130-200
sfm: 33 – 66 — 49	Tooth Feed inch	.002 - .008
m/min: 10 – 20 — 15	Tooth Feed mm	0,05 - 0,20
M2 High-Strength Austenitic Stainless and Cast Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: 500-700 — Hardness (HB) or HRC: 150-230
sfm: 33 – 66 — 49	Tooth Feed inch	.002 - .008
m/min: 10 – 20 — 15	Tooth Feed mm	0,05 - 0,20
M3 Duplex Steels	Content: C=.05-.2%	Tensile Strength RM (MPa)*: <900 — Hardness (HB) or HRC: 135-275
sfm: 16 – 49 — 33	Tooth Feed inch	.002 - .008
m/min: 5 – 15 — 10	Tooth Feed mm	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons	Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290
sfm: 98 – 197 — 148	Tooth Feed inch	.002 - .008
m/min: 30 – 60 — 45	Tooth Feed mm	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons	Tensile Strength RM (MPa)*: 400-600	Hardness (HB) or HRC: 130-260
sfm: 82 – 148 — 115	Tooth Feed inch	.002 - .008
m/min: 25 – 45 — 35	Tooth Feed mm	0,05 - 0,20

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Carbide Tipped Reamer — RMB Series — Straight Flute — K605 Grade

	REAMER TYPE	RMB—Straight Flute—K605 Internal coolant axial
Cutting Speed	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
sfm: 49 98 164 262 328 394 492 656 820 984 1148 / m/min: 15 30 50 80 100 120 150 200 250 300 350	MATERIAL	CARBIDE TIPPED
Starting Pt.	TYPE	STRAIGHT FLUTE

K3	**High-Strength Ductile and Austempered Ductile Irons**	**Tensile Strength RM (MPa)*: 600-900**	**Hardness (HB) or HRC: 180-350**	
sfm	66 – 131	98	Tooth Feed inch	.002 - .008
m/min	20 – 40	30	Tooth Feed mm	0,05 - 0,20
N1	**Wrought Aluminum Alloys**	**Tensile Strength RM (MPa)*: <520**	**Hardness (HB) or HRC: 60-90**	
sfm	394 – 591	492	Tooth Feed inch	.002 - .008
m/min	120 – 180	150	Tooth Feed mm	0,05 - 0,20
N2	**Cast Aluminums**	**Content: Si<12.2%**	**Tensile Strength RM (MPa)*: <350**	**Hardness (HB) or HRC: 70-100**
sfm	394 – 591	492	Tooth Feed inch	.002 - .008
m/min	120 – 180	150	Tooth Feed mm	0,05 - 0,20
N3	**Cast Aluminums**	**Content: Si>12.2%**	**Tensile Strength RM (MPa)*: 200-320**	**Hardness (HB) or HRC: 60-120**
sfm	394 – 591	492	Tooth Feed inch	.002 - .008
m/min	120 – 180	150	Tooth Feed mm	0,05 - 0,20
N4	**MMCs (Aluminum-Based Metal Matrix Composites)**		**Tensile Strength RM (MPa)*: <700**	**Hardness (HB) or HRC: 210**
sfm	394 – 591	492	Tooth Feed inch	.002 - .008
m/min	120 – 180	150	Tooth Feed mm	0,05 - 0,20
N5	**Copper and Copper Alloys**		**Tensile Strength RM (MPa)*: 200-650**	**Hardness (HB) or HRC: 60-200**
sfm	361 – 525	459	Tooth Feed inch	.002 - .008
m/min	110 – 160	140	Tooth Feed mm	0,05 - 0,20
S1	**Iron-Based, Heat-Resistant Alloys**		**Tensile Strength RM (MPa)*: 500-1200**	**Hardness (HB) or HRC: 160-260**
sfm	26 – 82	49	Tooth Feed inch	.002 - .008
m/min	8 – 25	15	Tooth Feed mm	0,05 - 0,20
S2	**Nickel-Based or Cobalt-Based, Heat-Resistant Alloys**		**Tensile Strength RM (MPa)*: 1000-1450**	**Hardness (HB) or HRC: 250-450**
sfm	26 – 82	49	Tooth Feed inch	.002 - .008
m/min	8 – 25	15	Tooth Feed mm	0,05 - 0,20
S3	**Titanium**		**Tensile Strength RM (MPa)*: 900-1600**	**Hardness (HB) or HRC: 300-400**
sfm	49 – 115	82	Tooth Feed inch	.002 - .008
m/min	15 – 35	25	Tooth Feed mm	0,05 - 0,20
S4	**Titanium Alloys**		**Tensile Strength RM (MPa)*: 900-1600**	**Hardness (HB) or HRC: 300-400**
sfm	49 – 115	82	Tooth Feed inch	.002 - .008
m/min	15 – 35	25	Tooth Feed mm	0,05 - 0,20

Carbide Tipped Reamer — RMB Series — Straight Flute — K6305™ Grade

Cutting Speed sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	REAMER TYPE	RMB—Straight Flute—KC6305 Internal coolant axial
m/min	15	30	50	80	100	120	150	200	250	300	350		Dia. Range inch	.551 – 1.260
													Dia. Range mm	14,00 – 32,00
													MATERIAL	CARBIDE TIPPED
													TYPE	STRAIGHT FLUTE
P1 Low-Carbon Steels, Long Chipping													Content: C <.25% Tensile Strength RM (MPa)*: <530	Hardness (HB) or HRC: <125
sfm					295					509		394	Tooth Feed inch	.002 - .008
m/min					90					155		120	Tooth Feed mm	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping													Content: C <.25% Tensile Strength RM (MPa)*: <650	Hardness (HB) or HRC: <220
sfm					295					509		394	Tooth Feed inch	.002 - .008
m/min					90					155		120	Tooth Feed mm	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels													Content: C >.25% Tensile Strength RM (MPa)*: 600-850	Hardness (HB) or HRC: <330
sfm					246					427		328	Tooth Feed inch	.002 - .008
m/min					75					130		100	Tooth Feed mm	0,05 - 0,20
P4 Alloy Steels and Tool Steels													Content: C >.25% Tensile Strength RM (MPa)*: 800-1100	Hardness (HB) or HRC: 350-450
sfm					197					344		262	Tooth Feed inch	.002 - .008
m/min					60					105		80	Tooth Feed mm	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels													Content: C=0-.4% Tensile Strength RM (MPa)*: 600-850	Hardness (HB) or HRC: <330
sfm					98					180		148	Tooth Feed inch	.002 - .008
m/min					30					55		45	Tooth Feed mm	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels													Content: C=.1-.6% Tensile Strength RM (MPa)*: 900-1350	Hardness (HB) or HRC: 350-450
sfm					98					180		148	Tooth Feed inch	.002 - .008
m/min					30					55		45	Tooth Feed mm	0,05 - 0,20

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SOLID CARBIDE DRILLS
MODULAR DRILLS
COMBINATION TOOLS
HSS AND CARBIDE TAPS
INDEXABLE DRILLS
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Carbide Tipped Reamer — RMB Series — Straight Flute — K6305™ Grade

Cutting Speed														REAMER TYPE	RMB—Straight Flute—KC6305 Internal coolant axial
														Dia. Range inch	.551 – 1.260
														Dia. Range mm	14,00 – 32,00
sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.		*MATERIAL*	CARBIDE TIPPED
m/min	15	30	50	80	100	120	150	200	250	300	350			*TYPE*	STRAIGHT FLUTE
M1 Austenitic Stainless Steels													***Content: C=.05-.15%***	***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: 130-200***
sfm			82								148	115		*Tooth Feed inch*	.002 - .008
m/min			25								45	35		*Tooth Feed mm*	0,05 - 0,20
M2 High-Strength Austenitic Stainless and Cast Stainless Steels													***Content: C=.05-.15%***	***Tensile Strength RM (MPa)*: 500-700***	***Hardness (HB) or HRC: 150-230***
sfm			82								148	115		*Tooth Feed inch*	0.002 - 0.008
m/min			25								45	35		*Tooth Feed mm*	0,05 - 0,20
M3 Duplex Steels													***Content: C=.05-.2%***	***Tensile Strength RM (MPa)*: <900***	***Hardness (HB) or HRC: 135-275***
sfm		49									115	82		*Tooth Feed inch*	.002 - .008
m/min		15									35	25		*Tooth Feed mm*	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons														***Tensile Strength RM (MPa)*: 150-400***	***Hardness (HB) or HRC: 120-290***
sfm					262						427	344		*Tooth Feed inch*	.002 - .008
m/min					80						130	105		*Tooth Feed mm*	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons														***Tensile Strength RM (MPa)*: 400-600***	***Hardness (HB) or HRC: 130-260***
sfm					213						361	279		*Tooth Feed inch*	.002 - .008
m/min					65						110	85		*Tooth Feed mm*	0,05 - 0,20
K3 High-Strength Ductile and Austempered Ductile Irons														***Tensile Strength RM (MPa)*: 600-900***	***Hardness (HB) or HRC: 180-350***
sfm					164						295	230		*Tooth Feed inch*	.002 - .008
m/min					50						90	70		*Tooth Feed mm*	0,05 - 0,20
S1 Iron-Based, Heat-Resistant Alloys														***Tensile Strength RM (MPa)*: 500-1200***	***Hardness (HB) or HRC: 160-260***
sfm			66								148	115		*Tooth Feed inch*	0.002 - 0.008
m/min			20								45	35		*Tooth Feed mm*	0,05 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys														***Tensile Strength RM (MPa)*: 1000-1450***	***Hardness (HB) or HRC: 250-450***
sfm		49									131	82		*Tooth Feed inch*	.002 - .008
m/min		15									40	25		*Tooth Feed mm*	0,05 - 0,20

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Cermet Tipped Reamer — RMB Series — Straight Flute — KT6215™ Grade

	REAMER TYPE	RMB—Straight Flute—KT6215 Internal coolant axial
	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
Cutting Speed *sfm* 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	*MATERIAL*	CERMET TIPPED
m/min 15 30 50 80 100 120 150 200 250 300 350	*TYPE*	STRAIGHT FLUTE
P1 Low-Carbon Steels, Long Chipping	***Content: C <.25%*** ***Tensile Strength RM (MPa)*: <530***	***Hardness (HB) or HRC: <125***
sfm 410 558 492	*Tooth Feed inch*	.002 - .008
m/min 125 170 150	*Tooth Feed mm*	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping	***Content: C <.25%*** ***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: <220***
sfm 410 558 492	*Tooth Feed inch*	.002 - .008
m/min 125 170 150	*Tooth Feed mm*	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels	***Content: C >.25%*** ***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
sfm 361 492 394	*Tooth Feed inch*	.002 - .008
m/min 110 150 120	*Tooth Feed mm*	0,05 - 0,20
P4 Alloy Steels and Tool Steels	***Content: C >.25%*** ***Tensile Strength RM (MPa)*: 800-1100***	***Hardness (HB) or HRC: 350-450***
sfm 246 344 295	*Tooth Feed inch*	.002 - .008
m/min 75 105 90	*Tooth Feed mm*	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels	***Content: C=0-.4%*** ***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
sfm 115 246 180	*Tooth Feed inch*	.002 - .008
m/min 35 75 55	*Tooth Feed mm*	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	***Content: C=.1-.6%*** ***Tensile Strength RM (MPa)*: 900-1350***	***Hardness (HB) or HRC: 350-450***
sfm 115 246 180	*Tooth Feed inch*	.002 - .008
m/min 35 75 55	*Tooth Feed mm*	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons	***Tensile Strength RM (MPa)*: 150-400***	***Hardness (HB) or HRC: 120-290***
sfm 328 492 410	*Tooth Feed inch*	.002 - .008
m/min 100 150 125	*Tooth Feed mm*	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons	***Tensile Strength RM (MPa)*: 400-600***	***Hardness (HB) or HRC: 130-260***
sfm 262 394 328	*Tooth Feed inch*	.002 - .008
m/min 80 120 100	*Tooth Feed mm*	0,05 - 0,20
K3 High-Strength Ductile and Austempered Ductile Irons	***Tensile Strength RM (MPa)*: 600-900***	***Hardness (HB) or HRC: 180-350***
sfm 197 361 279	*Tooth Feed inch*	.002 - .008
m/min 60 110 85	*Tooth Feed mm*	0,05 - 0,20

Carbide Tipped Reamer — RMB Series — Helical Flute — K605™ Grade

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Carbide Tipped Reamer — RMB Series — Helical Flute — K605 Grade

	REAMER TYPE	RMB—Helical Flute—K605 Internal coolant radial
Cutting Speed	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
sfm: 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350	TYPE	LH HELIX
K3 High-Strength Ductile and Austempered Ductile Irons	Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350
sfm: 66 – 131 (98)	Tooth Feed inch	.002 - .008
m/min: 20 – 40 (30)	Tooth Feed mm	0,05 - 0,20
N1 Wrought Aluminum Alloys	Tensile Strength RM (MPa)*: <520	Hardness (HB) or HRC: 60-90
sfm: 394 – 591 (492)	Tooth Feed inch	.002 - .008
m/min: 120 – 180 (150)	Tooth Feed mm	0,05 - 0,20
N2 Cast Aluminums Content: Si<12.2%	Tensile Strength RM (MPa)*: <350	Hardness (HB) or HRC: 70-100
sfm: 394 – 591 (492)	Tooth Feed inch	.002 - .008
m/min: 120 – 180 (150)	Tooth Feed mm	0,05 - 0,20
N3 Cast Aluminums Content: Si>12.2%	Tensile Strength RM (MPa)*: 200-320	Hardness (HB) or HRC: 60-120
sfm: 394 – 591 (492)	Tooth Feed inch	.002 - .008
m/min: 120 – 180 (150)	Tooth Feed mm	0,05 - 0,20
N4 MMCs (Aluminum-Based Metal Matrix Composites)	Tensile Strength RM (MPa)*: <700	Hardness (HB) or HRC: 210
sfm: 394 – 591 (492)	Tooth Feed inch	.002 - .008
m/min: 120 – 180 (150)	Tooth Feed mm	0,05 - 0,20
N5 Copper and Copper Alloys	Tensile Strength RM (MPa)*: 200-650	Hardness (HB) or HRC: 60-200
sfm: 361 – 525 (459)	Tooth Feed inch	.002 - .008
m/min: 110 – 160 (140)	Tooth Feed mm	0,05 - 0,20
S1 Iron-Based, Heat-Resistant Alloys	Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260
sfm: 26 – 82 (49)	Tooth Feed inch	.002 - .008
m/min: 8 – 25 (15)	Tooth Feed mm	0,05 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys	Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450
sfm: 26 – 82 (49)	Tooth Feed inch	.002 - .008
m/min: 8 – 25 (15)	Tooth Feed mm	0,05 - 0,20
S3 Titanium	Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400
sfm: 49 – 115 (82)	Tooth F eed inch	.002 - .008
m/min: 15 – 35 (25)	Tooth feed mm	0,05 - 0,20
S4 Titanium Alloys	Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400
sfm: 49 – 115 (82)	Tooth Feed inch	.002 - .008
m/min: 15 – 35 (25)	Tooth feed mm	0,05 - 0,20

Carbide Tipped Reamer — RMB Series — Helical Flute — KC6305™ Grade

	REAMER TYPE	RMB—Helical Flute—KC6305 Internal coolant radial
Cutting Speed	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
sfm: 49 98 164 262 328 394 492 656 820 984 1148 — Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350	TYPE	LH HELIX
P1 Low-Carbon Steels, Long Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <530	Hardness (HB) or HRC: <125
sfm: 295 – 509	Tooth Feed inch	.002 - .008
m/min: 90 – 155	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 394 / m/min 120		
P2 Low-Carbon Steels, Free Machining, and Short Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <650	Hardness (HB) or HRC: <220
sfm: 295 – 509	Tooth Feed inch	.002 - .008
m/min: 90 – 155	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 394 / m/min 120		
P3 Medium to High Plain-Carbon Steels and Alloy Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 600-850	Hardness (HB) or HRC: <330
sfm: 246 – 427	Tooth Feed inch	.002 - .008
m/min: 75 – 130	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 328 / m/min 100		
P4 Alloy Steels and Tool Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100	Hardness (HB) or HRC: 350-450
sfm: 197 – 344	Tooth Feed inch	.002 - .008
m/min: 60 – 105	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 262 / m/min 80		
P5 Ferritic, Martensitic, and PH Stainless Steels	Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850	Hardness (HB) or HRC: <330
sfm: 98 – 180	Tooth Feed inch	.002 - .008
m/min: 30 – 55	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 148 / m/min 45		
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350	Hardness (HB) or HRC: 350-450
sfm: 98 – 180	Tooth Feed inch	.002 - .008
m/min: 30 – 55	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 148 / m/min 45		
M1 Austenitic Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: <650	Hardness (HB) or HRC: 130-200
sfm: 82 – 148	Tooth Feed inch	.002 - .008
m/min: 25 – 45	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 115 / m/min 35		
M2 High-Strength Austenitic Stainless and Cast Stainless Steels	Content: C=.05-.15%	Tensile Strength RM (MPa)*: 500-700	Hardness (HB) or HRC: 150-230
sfm: 82 – 148	Tooth Feed inch	.002 - .008
m/min: 25 – 45	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 115 / m/min 35		
M3 Duplex Steels	Content: C=.05-.2%	Tensile Strength RM (MPa)*: <900	Hardness (HB) or HRC: 135-275
sfm: 49 – 115	Tooth Feed inch	.002 - .008
m/min: 15 – 35	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 82 / m/min 25		
K1 Gray Cast Irons and Low-Strength Ductile Irons	Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290
sfm: 262 – 427	Tooth Feed inch	12.002 - .008
m/min: 80 – 130	Tooth Feed mm	0,05 - 0,20
Starting Pt.: sfm 344 / m/min 105		

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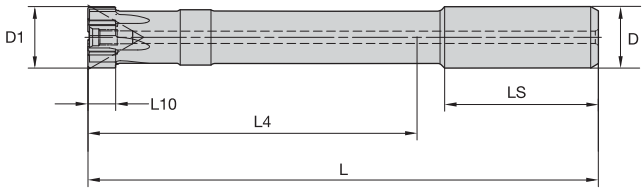
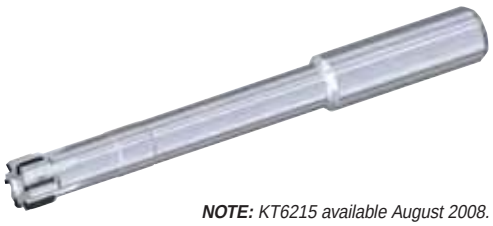
Carbide Tipped Reamer — RMB Series — Helical Flute — KC6305 Grade

	REAMER TYPE	RMB—Helical Flute—KC6305 Internal coolant radial
Cutting Speed	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
sfm: 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350	TYPE	LH HELIX
K3 High-Strength Ductile and Austempered Ductile Irons	Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350
sfm: 164 – 295; Starting Pt. 230	Tooth Feed inch	.002 - .008
m/min: 50 – 90; Starting Pt. 70	Tooth Feed mm	0,05 - 0,20
S1 Iron-Based, Heat-Resistant Alloys	Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260
sfm: 66 – 148; Starting Pt. 115	Tooth Feed inch	.002 - .008
m/min: 20 – 45; Starting Pt. 35	Tooth Feed mm	0,05 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys	Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450
sfm: 49 – 131; Starting Pt. 82	Tooth Feed inch	.002 - .008
m/min: 15 – 40; Starting Pt. 25	Tooth Feed mm	0,05 - 0,20

Cermet Tipped Reamer — RMB Series — Helical Flute — KT6215™ Grade

	REAMER TYPE	RMB—Helical Flute—KT6215 Internal coolant radial
	Dia. Range inch	.551 – 1.260
	Dia. Range mm	14,00 – 32,00
Cutting Speed *sfm* 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	*MATERIAL*	CERMET TIPPED
m/min 15 30 50 80 100 120 150 200 250 300 350	*TYPE*	LH HELIX
P1 Low-Carbon Steels, Long Chipping	***Content: C <.25%*** ***Tensile Strength RM (MPa)*: <530***	***Hardness (HB) or HRC: <125***
sfm 410 558 492	*Tooth Feed inch*	.002 - .008
m/min 125 170 150	*Tooth Feed mm*	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping	***Content: C <.25%*** ***Tensile Strength RM (MPa)*: <650***	***Hardness (HB) or HRC: <220***
sfm 410 558 492	*Tooth Feed inch*	.002 - .008
m/min 125 170 150	*Tooth Feed mm*	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels	***Content: C >.25%*** ***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
sfm 361 492 394	*Tooth Feed inch*	.002 - .008
m/min 110 150 120	*Tooth Feed mm*	0,05 - 0,20
P4 Alloy Steels and Tool Steels	***Content: C >.25%*** ***Tensile Strength RM (MPa)*: 800-1100***	***Hardness (HB) or HRC: 350-450***
sfm 246 344 295	*Tooth Feed inch*	.002 - .008
m/min 75 105 90	*Tooth Feed mm*	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels	***Content: C=0-.4%*** ***Tensile Strength RM (MPa)*: 600-850***	***Hardness (HB) or HRC: <330***
sfm 115 246 180	*Tooth Feed inch*	.002 - .008
m/min 35 75 55	*Tooth Feed mm*	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	***Content: C =.1-.6%*** ***Tensile Strength RM (MPa)*: 900-1350***	***Hardness (HB) or HRC: 350-450***
sfm 115 246 180	*Tooth Feed inch*	.002 - .008
m/min 35 75 55	*Tooth Feed mm*	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons	***Tensile Strength RM (MPa)*: 150-400***	***Hardness (HB) or HRC: 120-290***
sfm 328 492 410	*Tooth Feed inch*	.002 - .008
m/min 100 150 125	*Tooth Feed mm*	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons	***Tensile Strength RM (MPa)*: 400-600***	***Hardness (HB) or HRC: 130-260***
sfm 262 394 328	*Tooth Feed inch*	.002 - .008
m/min 80 120 100	*Tooth Feed mm*	0,05 - 0,20
K3 High-Strength Ductile and Austempered Ductile Irons	***Tensile Strength RM (MPa)*: 600-900***	***Hardness (HB) or HRC: 180-350***
sfm 197 361 279	*Tooth Feed inch*	.002 - .008
m/min 60 110 85	*Tooth Feed mm*	0,05 - 0,20





NOTE: *KT6215 available August 2008.*

RMB with Straight Flutes and Internal Coolant

● first choice
○ alternate choice

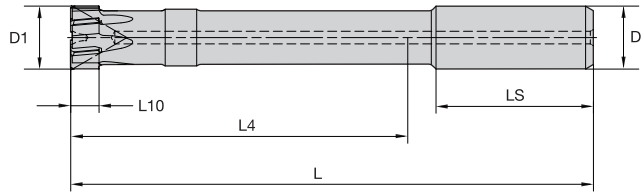
H			
S	○	○	
N	●		
K	○	●	●
M	●	●	
P	○	●	●

D1 mm	D1 inch	catalog number	D	L	L4	L10	LS	z	K605	KC6305	KT6215
14,0	.551	RMB14000H7SF	16	145	97	9	48	6	○	●	●
15,0	.591	RMB15000H7SF	20	157	107	9	50	6	○	●	●
16,0	.630	RMB16000H7SF	20	157	107	9	50	6	○	●	●
17,0	.669	RMB17000H7SF	20	171	121	9	50	6	○	●	●
18,0	.709	RMB18000H7SF	20	171	121	9	50	6	○	●	●
19,0	.748	RMB19000H7SF	20	200	150	9	50	6	○	●	●
20,0	.787	RMB20000H7SF	20	200	150	9	50	6	○	●	●

Ordering Example:
By catalog number and grade RMB14000H7SF K6305.

● standard
○ semi-standard available on request

Ground to H7 tolerance.
Intermediate sizes ground to IT7 class available.



NOTE: *KT6215 available August 2008.*

RMB with Helical Flutes and Internal Coolant

● first choice
○ alternate choice

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

D1 mm	D1 inch	catalog number	D	L	L4	L10	LS	z	K605	KC6305	KT6215
14	.551	RMB14000H7HF	16	145	97	9	48	6	○	●	●
15	.591	RMB15000H7HF	20	157	107	9	50	6	○	●	●
16	.630	RMB16000H7HF	20	157	107	9	50	6	○	●	●
17	.669	RMB17000H7HF	20	171	121	9	50	6	○	●	●
18	.709	RMB18000H7HF	20	171	121	9	50	6	○	●	●
19	.748	RMB19000H7HF	20	200	150	9	50	6	○	●	●
20	.787	RMB20000H7HF	20	200	150	9	50	6	○	●	●

Ordering Example:
By catalog number and grade RMB14000H7HF K6305.

● standard
○ semi-standard available on request

Ground to H7 tolerance.
Intermediate sizes ground to IT7 class available.

KENNAMETAL

Precision Hole Finishing

Multi Blade Reaming

RMA™ Carbide, Cermet, and PCD Tipped Expandable Reaming Tools

Primary Application

- Maintain close tolerances equal or greater than IT5.
- Highest metal removal rates due to customized grade and cutting lead.
- Available in two length versions for highest stability.
- Specific coatings and lead configurations for high-speed machining of steel, stainless steel, cast iron, nonferrous, and heat-resistant materials are available on request.
- Use standard SIF Steerable Hydraulic Chucks for easy compensation of radial run out and angular inaccuracies to achieve highest possible hole straightness and surface quality.

Features and Benefits

Capability to compensate for initial wear due to adjustment screw.

- Constant diameters through the life of the tool maintain highest process control.

Tolerance class capability equal to or greater than IT5.

- Able to replace single blade padded tools for easy handling and measurement.

Reaming specific grades and substrates.

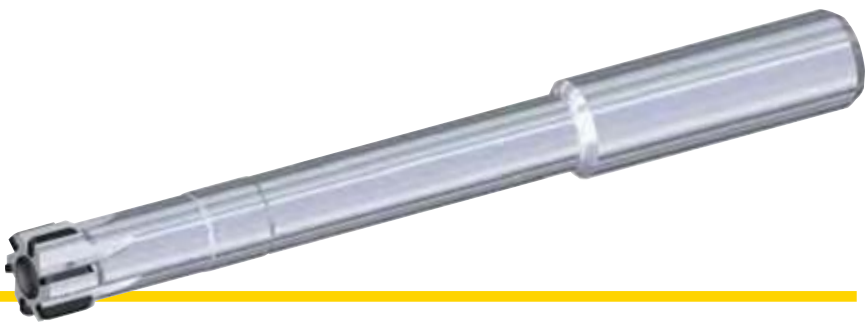
- Highest metal removal mate (MRR) at higher speeds and feeds.

Different adjustment screws available to change internal coolant supply from axial to radial.

- Optimized coolant options for secure chip evacuation and improved surface finish.

Customization

- All RMA tooling is engineered according to your specific needs in diameters starting at .220 inch (5,60mm) up to 1.794 inch (45,59mm) available with internal coolant in 0,001mm steps.
- PCD as a custom solution availble.



Carbide Tipped Expandable Reamer — RMA Series — Straight Flute — K605™ Grade

		REAMER TYPE	RMA—Straight Flute—K605 Internal Coolant
Cutting Speed		Dia. Range inch	.220 – 1.795
		Dia. Range mm	5,60 – 45,59
sfm: 49 98 164 262 328 394 492 656 820 984 1148	Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350		TYPE	STRAIGHT FLUTE
P1 Low-Carbon Steels, Long Chipping		Content: C <.25%	Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125
sfm: 131 – 230	180	Tooth Feed inch	.002 - .008
m/min: 40 – 70	55	Tooth Feed mm	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping		Content: C <.25%	Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220
sfm: 131 – 230	180	Tooth Feed inch	.002 - .008
m/min: 40 – 70	55	Tooth Feed mm	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels		Content: C >.25%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 98 – 164	131	Tooth Feed inch	.002 - .008
m/min: 30 – 50	40	Tooth Feed mm	0,05 - 0,20
P4 Alloy Steels and Tool Steels		Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100 — Hardness (HB) or HRC: 350-450
sfm: 82 – 148	115	Tooth Feed inch	.002 - .008
m/min: 25 – 45	35	Tooth Feed mm	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels		Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 33 – 98	66	Tooth Feed inch	.002 - .008
m/min: 10 – 30	20	Tooth Feed mm	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels		Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350 — Hardness (HB) or HRC: 350-450
sfm: 33 – 98	66	Tooth Feed inch	.002 - .008
m/min: 10 – 30	20	Tooth Feed mm	0,05 - 0,20
M1 Austenitic Stainless Steels		Content: C=.05-.15%	Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: 130-200
sfm: 33 – 66	49	Tooth Feed inch	.002 - .008
m/min: 10 – 20	15	Tooth Feed mm	0,05 - 0,20
M2 High-Strength Austenitic Stainless and Cast Stainless Steels		Content: C=.05-.15%	Tensile Strength RM (MPa)*: 500-700 — Hardness (HB) or HRC: 150-230
sfm: 33 – 66	49	Tooth Feed inch	.002 - .008
m/min: 10 – 20	15	Tooth Feed mm	0,05 - 0,20
M3 Duplex Steels		Content: C=.05-.2%	Tensile Strength RM (MPa)*: <900 — Hardness (HB) or HRC: 135-275
sfm: 16 – 49	33	Tooth Feed inch	.002 - .008
m/min: 5 – 15	10	Tooth Feed mm	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons		Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290
sfm: 98 – 197	148	Tooth Feed inch	.002 - .008
m/min: 30 – 60	45	Tooth Feed mm	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons		Tensile Strength RM (MPa)*: 400-600	Hardness (HB) or HRC: 130-260
sfm: 82 – 148	115	Tooth Feed inch	.002 - .008
m/min: 25 – 45	35	Tooth Feed mm	0,05 - 0,20

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SOLID CARBIDE DRILLS
MODULAR DRILLS
COMBINATION TOOLS
HSS AND CARBIDE TAPS
INDEXABLE DRILLS
COUNTERBORING TOOLS
PRECISION HOLE FINISHING
INSERTS
TECHNICAL DATA
INDEX

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Carbide Tipped Expandable Reamer — RMA Series — Straight Flute — K605™ Grade

		REAMER TYPE	RMA—Straight Flute—K605 Internal Coolant
		Dia. Range inch	.220 – 1.795
		Dia. Range mm	5,60 – 45,59
Cutting Speed sfm	49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	MATERIAL	CARBIDE TIPPED
m/min	15 30 50 80 100 120 150 200 250 300 350	TYPE	STRAIGHT FLUTE
K3 High-Strength Ductile and Austempered Ductile Irons		Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350
sfm	66 131 98	Tooth Feed inch	.002 - .008
m/min	20 40 30	Tooth Feed mm	0,05 - 0,20
N1 Wrought Aluminum Alloys		Tensile Strength RM (MPa)*: <520	Hardness (HB) or HRC: 60-90
sfm	394 591 492	Tooth Feed inch	.002 - .008
m/min	120 180 150	Tooth Feed mm	0,05 - 0,20
N2 Cast Aluminums	Content: Si<12.2%	Tensile Strength RM (MPa)*: <350	Hardness (HB) or HRC: 70-100
sfm	394 591 492	Tooth Feed inch	.002 - .008
m/min	120 180 150	Tooth Feed mm	0,05 - 0,20
N3 Cast Aluminums	Content: Si>12.2%	Tensile Strength RM (MPa)*: 200-320	Hardness (HB) or HRC: 60-120
sfm	394 591 492	Tooth Feed inch	.002 - .008
m/min	120 180 150	Tooth Feed mm	0,05 - 0,20
N4 MMCs (Aluminum-Based Metal Matrix Composites)		Tensile Strength RM (MPa)*: <700	Hardness (HB) or HRC: 210
sfm	394 591 492	Tooth Feed inch	.002 - .008
m/min	120 180 150	Tooth Feed mm	0,05 - 0,20
N5 Copper and Copper Alloys		Tensile Strength RM (MPa)*: 200-650	Hardness (HB) or HRC: 60-200
sfm	361 525 459	Tooth Feed inch	.002 - .008
m/min	110 160 140	Tooth Feed mm	0,05 - 0,20
S1 Iron-Based, Heat-Resistant Alloys		Tensile Strength RM (MPa)*: 500-1200	Hardness (HB) or HRC: 160-260
sfm	26 82 49	Tooth Feed inch	.002 - .008
m/min	8 25 15	Tooth Feed mm	0,05 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys		Tensile Strength RM (MPa)*: 1000-1450	Hardness (HB) or HRC: 250-450
sfm	26 82 49	Tooth Feed inch	.002 - .008
m/min	8 25 15	Tooth Feed mm	0,05 - 0,20
S3 Titanium		Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400
sfm	49 115 82	Tooth Feed inch	.002 - .008
m/min	15 35 25	Tooth Feed mm	0,05 - 0,20
S4 Titanium Alloys		Tensile Strength RM (MPa)*: 900-1600	Hardness (HB) or HRC: 300-400
sfm	49 115 82	Tooth Feed inch	.002 - .008
m/min	15 35 25	Tooth Feed mm	0,05 - 0,20

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Carbide Tipped Expandable Reamer — RMA Series — Straight Flute — K6305 Grade

	REAMER TYPE	RMA—Straight Flute—KC6305 Internal Coolant
	Dia. Range inch	.220 – 1.795
	Dia. Range mm	5,60 – 45,59
Cutting Speed *sfm* 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	*MATERIAL*	CARBIDE TIPPED
m/min 15 30 50 80 100 120 150 200 250 300 350	*TYPE*	STRAIGHT FLUTE
P1 *Low-Carbon Steels, Long Chipping*	*Content: C <.25%*	*Tensile Strength RM (MPa)*: <530*	*Hardness (HB) or HRC: <125*
sfm 295 509 394	*Tooth Feed inch*	.002 - .008
m/min 90 155 120	*Tooth Feed mm*	0,05 - 0,20
P2 *Low-Carbon Steels, Free Machining, and Short Chipping*	*Content: C <.25%*	*Tensile Strength RM (MPa)*: <650*	*Hardness (HB) or HRC: <220*
sfm 295 509 394	*Tooth Feed inch*	.002 - .008
m/min 90 155 120	*Tooth Feed mm*	0,05 - 0,20
P3 *Medium to High Plain-Carbon Steels and Alloy Steels*	*Content: C >.25%*	*Tensile Strength RM (MPa)*: 600-850*	*Hardness (HB) or HRC: <330*
sfm 246 427 328	*Tooth Feed inch*	.002 - .008
m/min 75 130 100	*Tooth Feed mm*	0,05 - 0,20
P4 *Alloy Steels and Tool Steels*	*Content: C >.25%*	*Tensile Strength RM (MPa)*: 800-1100*	*Hardness (HB) or HRC: 350-450*
sfm 197 344 262	*Tooth Feed inch*	.002 - .008
m/min 60 105 80	*Tooth Feed mm*	0,05 - 0,20
P5 *Ferritic, Martensitic, and PH Stainless Steels*	*Content: C=0-.4%*	*Tensile Strength RM (MPa)*: 600-850*	*Hardness (HB) or HRC: <330*
sfm 98 180 148	*Tooth Feed inch*	.002 - .008
m/min 30 55 45	*Tooth Feed mm*	0,05 - 0,20
P6 *High-Strength Ferritic, Martensitic, and PH Stainless Steels*	*Content: C=.1-.6%*	*Tensile Strength RM (MPa)*: 900-1350*	*Hardness (HB) or HRC: 350-450*
sfm 98 180 148	*Tooth Feed inch*	.002 - .008
m/min 30 55 45	*Tooth Feed mm*	0,05 - 0,20
M1 *Austenitic Stainless Steels*	*Content: C=.05-.15%*	*Tensile Strength RM (MPa)*: <650*	*Hardness (HB) or HRC: 130-200*
sfm 82 148 115	*Tooth Feed inch*	.002 - .008
m/min 25 45 35	*Tooth Feed mm*	0,05 - 0,20
M2 *High-Strength Austenitic Stainless and Cast Stainless Steels*	*Content: C=.05-.15%*	*Tensile Strength RM (MPa)*: 500-700*	*Hardness (HB) or HRC: 150-230*
sfm 82 148 115	*Tooth Feed inch*	0.002 - 0.008
m/min 25 45 35	*Tooth Feed mm*	0,05 - 0,20
M3 *Duplex Steels*	*Content: C=.05-.2%*	*Tensile Strength RM (MPa)*: <900*	*Hardness (HB) or HRC: 135-275*
sfm 49 115 82	*Tooth Feed inch*	.002 - .008
m/min 15 35 25	*Tooth Feed mm*	0,05 - 0,20

SOLID CARBIDE DRILLS
MODULAR DRILLS
COMBINATION TOOLS
HSS AND CARBIDE TAPS
INDEXABLE DRILLS
COUNTERBORING TOOLS
PRECISION HOLE FINISHING
INSERTS
TECHNICAL DATA
INDEX

(continued from previous page)

Carbide Tipped Expandable Reamer — RMA Series — Straight Flute — K6305™ Grade

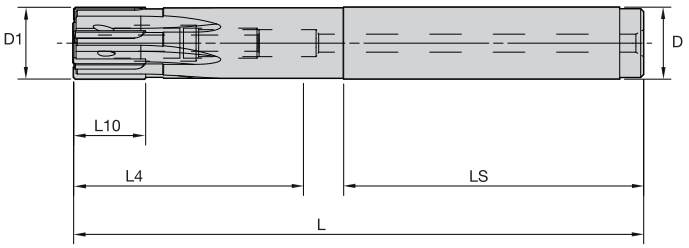
		REAMER TYPE	RMA—Straight Flute—KC6305 Internal Coolant
		Dia. Range inch	.220 – 1.795
		Dia. Range mm	5,60 – 45,59
Cutting Speed *sfm*	49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	*MATERIAL*	CARBIDE TIPPED
m/min	15 30 50 80 100 120 150 200 250 300 350	*TYPE*	STRAIGHT FLUTE
K1 Gray Cast Irons and Low-Strength Ductile Irons		***Tensile Strength RM (MPa)*: 150-400***	***Hardness (HB) or HRC: 120-290***
sfm	262 427 344	*Tooth Feed inch*	.002 - .008
m/min	80 130 105	*Tooth Feed mm*	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons		***Tensile Strength RM (MPa)*: 400-600***	***Hardness (HB) or HRC: 130-260***
sfm	213 361 279	*Tooth Feed inch*	.002 - .008
m/min	65 110 85	*Tooth Feed mm*	0,05 - 0,20
K3 High-Strength Ductile and Austempered Ductile Irons		***Tensile Strength RM (MPa)*: 600-900***	***Hardness (HB) or HRC: 180-350***
sfm	164 295 230	*Tooth Feed inch*	.002 - .008
m/min	50 90 70	*Tooth Feed mm*	0,05 - 0,20
S1 Iron-Based, Heat-Resistant Alloys		***Tensile Strength RM (MPa)*: 500-1200***	***Hardness (HB) or HRC: 160-260***
sfm	66 148 115	*Tooth Feed inch*	0.002 - 0.008
m/min	20 45 35	*Tooth Feed mm*	0,05 - 0,20
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys		***Tensile Strength RM (MPa)*: 1000-1450***	***Hardness (HB) or HRC: 250-450***
sfm	49 131 82	*Tooth Feed inch*	.002 - .008
m/min	15 40 25	*Tooth Feed mm*	0,05 - 0,20

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Cermet Tipped Expandable Reamer — RMA Series — Straight Flute — KT6215™ Grade

	REAMER TYPE	RMA—Straight Flute—KT6215 Internal Coolant
Cutting Speed	Dia. Range inch	.220 – 1.795
	Dia. Range mm	5,60 – 45,59
sfm: 49 98 164 262 328 394 492 656 820 984 1148 Starting Pt.	MATERIAL	CERMET TIPPED
m/min: 15 30 50 80 100 120 150 200 250 300 350	TYPE	STRAIGHT FLUTE
P1 Low-Carbon Steels, Long Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <530 — Hardness (HB) or HRC: <125
sfm: 410 – 558 (492)	Tooth Feed inch	.002 - .008
m/min: 125 – 170 (150)	Tooth Feed mm	0,05 - 0,20
P2 Low-Carbon Steels, Free Machining, and Short Chipping	Content: C <.25%	Tensile Strength RM (MPa)*: <650 — Hardness (HB) or HRC: <220
sfm: 410 – 558 (492)	Tooth Feed inch	.002 - .008
m/min: 125 – 170 (150)	Tooth Feed mm	0,05 - 0,20
P3 Medium to High Plain-Carbon Steels and Alloy Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 361 – 492 (394)	Tooth Feed inch	.002 - .008
m/min: 110 – 150 (120)	Tooth Feed mm	0,05 - 0,20
P4 Alloy Steels and Tool Steels	Content: C >.25%	Tensile Strength RM (MPa)*: 800-1100 — Hardness (HB) or HRC: 350-450
sfm: 246 – 344 (295)	Tooth Feed inch	.002 - .008
m/min: 75 – 105 (90)	Tooth Feed mm	0,05 - 0,20
P5 Ferritic, Martensitic, and PH Stainless Steels	Content: C=0-.4%	Tensile Strength RM (MPa)*: 600-850 — Hardness (HB) or HRC: <330
sfm: 115 – 246 (180)	Tooth Feed inch	.002 - .008
m/min: 35 – 75 (55)	Tooth Feed mm	0,05 - 0,20
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels	Content: C=.1-.6%	Tensile Strength RM (MPa)*: 900-1350 — Hardness (HB) or HRC: 350-450
sfm: 115 – 246 (180)	Tooth Feed inch	.002 - .008
m/min: 35 – 75 (55)	Tooth Feed mm	0,05 - 0,20
K1 Gray Cast Irons and Low-Strength Ductile Irons	Tensile Strength RM (MPa)*: 150-400	Hardness (HB) or HRC: 120-290
sfm: 328 – 492 (410)	Tooth Feed inch	.002 - .008
m/min: 100 – 150 (125)	Tooth Feed mm	0,05 - 0,20
K2 Low- and Medium-Strength CGI and Ductile Irons	Tensile Strength RM (MPa)*: 400-600	Hardness (HB) or HRC: 130-260
sfm: 262 – 394 (328)	Tooth Feed inch	.002 - .008
m/min: 80 – 120 (100)	Tooth Feed mm	0,05 - 0,20
K3 High-Strength Ductile and Austempered Ductile Irons	Tensile Strength RM (MPa)*: 600-900	Hardness (HB) or HRC: 180-350
sfm: 197 – 361 (279)	Tooth Feed inch	.002 - .008
m/min: 60 – 110 (85)	Tooth Feed mm	0,05 - 0,20

RMA Expandable Carbide and Cermet Tipped Reaming Tools



● first choice
○ alternate choice

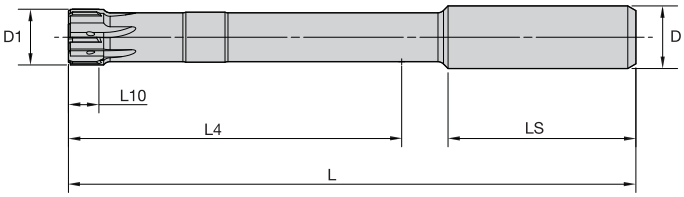
H			
S	○	○	
N	●		
K	○	●	●
M	●	●	
P	○	●	●

RMA with Straight Flutes and Internal Coolant — SHORT

D1 mm	D1 inch	D1max mm	D1max inch	catalog number	D	L	L4	L10	LS	z	K605	KC6305	KT6215
5,60	.220	6,89	.271	RMASDSS	12	85	43	10	40	4	O	O	O
6,90	.272	7,89	.311	RMASDSS	12	85	43	10	40	4	O	O	O
7,90	.311	8,89	.350	RMASDSS	12	85	43	10	40	4	O	O	O
8,90	.350	9,89	.389	RMASDSS	12	95	43	10	50	6	O	O	O
9,90	.390	10,89	.429	RMASDSS	12	95	43	10	50	6	O	O	O
10,90	.429	11,89	.468	RMASDSS	12	95	43	10	50	6	O	O	O
11,90	.469	12,89	.507	RMASDSS	12	95	43	10	50	6	O	O	O
12,90	.508	13,89	.547	RMASDSS	12	95	43	10	50	6	O	O	O
13,90	.547	14,89	.586	RMASDSS	12	95	43	10	50	6	O	O	O
14,90	.587	15,89	.626	RMASDSS	12	95	43	10	50	6	O	O	O
15,90	.626	16,89	.665	RMASDSS	16	100	43	10	50	6	O	O	O
16,90	.665	17,89	.704	RMASDSS	16	100	43	10	50	6	O	O	O
17,90	.705	18,89	.744	RMASDSS	16	100	43	10	50	6	O	O	O
18,90	.744	19,89	.783	RMASDSS	20	100	58	10	60	6	O	O	O
19,90	.783	20,89	.822	RMASDSS	20	120	58	10	60	6	O	O	O
20,90	.823	21,89	.862	RMASDSS	20	120	58	10	60	6	O	O	O
21,90	.862	22,89	.901	RMASDSS	20	120	58	10	60	6	O	O	O
22,90	.902	23,89	.941	RMASDSS	20	120	58	10	60	6	O	O	O
23,90	.941	24,89	.980	RMASDSS	20	120	58	10	60	6	O	O	O
24,90	.980	25,89	1.019	RMASDSS	20	120	58	10	60	6	O	O	O
25,90	1.020	26,89	1.059	RMASDSS	25	135	73	10	75	6	O	O	O
26,90	1.059	28,89	1.137	RMASDSS	25	135	73	10	75	6	O	O	O
28,90	1.138	30,89	1.216	RMASDSS	25	135	73	10	75	6	O	O	O
30,90	1.217	32,89	1.295	RMASDSS	25	135	73	10	75	6	O	O	O
32,90	1.295	34,89	1.374	RMASDSS	25	135	73	10	75	6	O	O	O
34,90	1.374	36,89	1.452	RMASDSS	25	135	73	10	75	6	O	O	O
36,90	1.453	38,89	1.531	RMASDSS	25	135	73	10	75	6	O	O	O
38,90	1.531	40,89	1.610	RMASDSS	25	135	73	10	75	6	O	O	O
40,90	1.610	42,89	1.689	RMASDSS	25	160	98	10	100	6	O	O	O
42,90	1.689	44,89	1.767	RMASDSS	25	160	98	10	100	6	O	O	O
44,90	1.768	45,89	1.807	RMASDSS	25	160	98	10	100	6	O	O	O

Recomended for >IT5 tolerances.
Adjustable to larger sizes to compensate cutting edge wear.

● standard
○ semi-standard available on request



● first choice
○ alternate choice

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

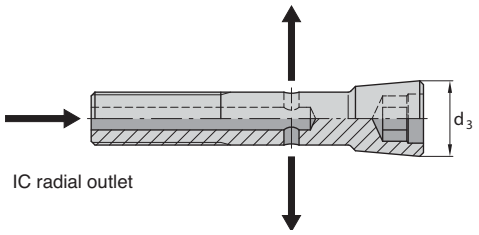
RMA with Straight Flutes and Internal Coolant — LONG

D1 mm	D1 inch	D1 max mm	D1 max inch	catalog number	D	L	L4	L10	LS	z	K605	KC6305	KT6215
5,60	.220	6,89	.271	RMASDLS	12	130	83	10	45	4	O	O	O
6,90	.272	7,89	.311	RMASDLS	12	130	83	10	45	4	O	O	O
7,90	.311	8,89	.350	RMASDLS	12	130	83	10	45	4	O	O	O
8,90	.350	9,89	.389	RMASDLS	12	130	83	10	45	6	O	O	O
9,90	.390	10,89	.429	RMASDLS	12	160	113	10	45	6	O	O	O
10,90	.429	11,89	.468	RMASDLS	12	160	113	10	45	6	O	O	O
11,90	.469	12,89	.507	RMASDLS	12	160	113	10	45	6	O	O	O
12,90	.508	13,89	.547	RMASDLS	12	160	113	10	45	6	O	O	O
13,90	.547	14,89	.586	RMASDLS	12	160	113	10	45	6	O	O	O
14,90	.587	15,89	.626	RMASDLS	12	160	113	10	45	6	O	O	O
15,90	.626	16,89	.665	RMASDLS	16	180	128	10	50	6	O	O	O
16,90	.665	17,89	.704	RMASDLS	16	180	128	10	50	6	O	O	O
17,90	.705	18,89	.744	RMASDLS	16	180	128	10	50	6	O	O	O
18,90	.744	19,89	.783	RMASDLS	20	200	138	10	60	6	O	O	O
19,90	.783	20,89	.822	RMASDLS	20	200	138	10	60	6	O	O	O
20,90	.823	21,89	.862	RMASDLS	20	200	138	10	60	6	O	O	O
21,90	.862	22,89	.901	RMASDLS	20	200	138	10	60	6	O	O	O
22,90	.902	23,89	.941	RMASDLS	20	200	138	10	60	6	O	O	O
23,90	.941	24,89	.980	RMASDLS	20	200	138	10	60	6	O	O	O
24,90	.980	25,89	1.019	RMASDLS	20	200	138	10	60	6	O	O	O
25,90	1.020	26,89	1.059	RMASDLS	25	210	148	10	75	6	O	O	O
26,90	1.059	28,89	1.137	RMASDLS	25	210	148	10	75	6	O	O	O
28,90	1.138	30,89	1.216	RMASDLS	25	210	148	10	75	6	O	O	O
30,90	1.217	32,59	1.283	RMASDLS	25	210	148	10	75	6	O	O	O

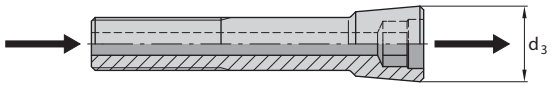
Recomended for >IT5 tolerances
Adjustable to larger sizes to compensate cutting edge wear

● standard
○ semi-standard available on request

RMA Reaming Tools



IC radial outlet



IC axial outlet

Technical Information about the RMA Reaming System (IC axial)

RMA reamers can have internal cooling openings. For this purpose, the radial IC outlet bores are closed and a special conical screw for IC is inserted into the tool.

Spare Parts for the RMA Reaming System

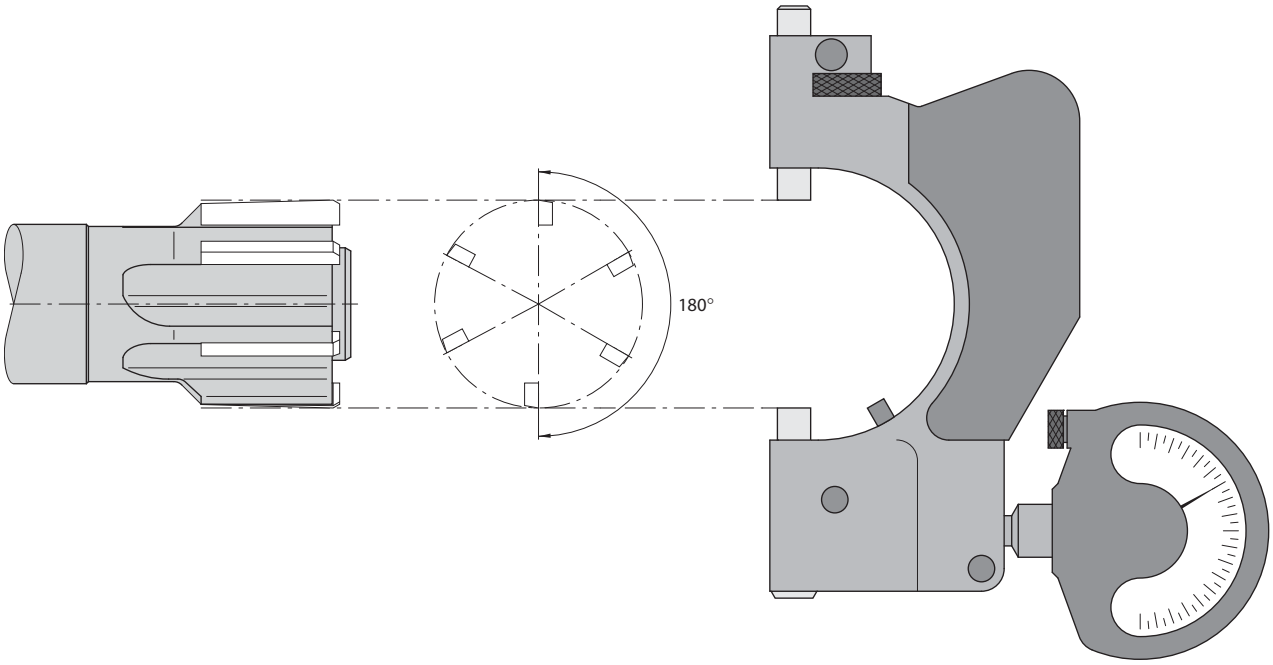
	conical screw			conical screw allowance*		
D1	IC radial	IK axial	D3	IC radial	IC axial	D3
5,60 – 6,89	365.141	365.181	3,42	365.101	365.221	3,71
6,90 – 7,89	365.142	365.182	3,97	365.102	365.222	4,26
7,90 – 8,89	365.143	365.183	4,52	365.103	365.223	4,81
8,90 – 9,89	365.144	365.184	5,12	365.104	365.224	5,41
9,90 – 10,89	365.145	365.185	5,77	365.105	365.225	6,06
10,90 – 11,89	365.146	365.186	6,32	365.106	365.226	6,61
11,90 – 12,89	365.147	365.187	7,02	365.107	365.227	7,41
12,90 – 13,89	365.148	365.188	7,53	365.108	365.228	7,92
13,90 – 14,89	365.149	365.189	8,12	365.109	365.229	8,51
14,90 – 15,89	365.150	365.190	8,72	365.110	365.230	9,11
15,90 – 16,89	365.151	365.191	9,32	365.111	365.231	9,71
16,90 – 17,89	365.152	365.192	9,92	365.112	365.232	10,31
17,90 – 18,89	365.153	365.193	10,52	365.113	365.233	10,91
18,90 – 19,89	365.154	365.194	11,57	365.114	365.234	11,96
19,90 – 20,89	365.155	365.195	12,17	365.115	365.235	12,56
20,90 – 21,89	365.156	365.196	13,17	365.116	365.236	13,56
21,90 – 22,89	365.157	365.197	14,17	365.117	365.237	14,56
22,90 – 23,89	365.158	365.198	14,67	365.118	365.238	15,06
23,90 – 24,89	365.159	365.199	15,17	365.119	365.239	15,56
24,90 – 25,89	365.160	365.200	15,67	365.120	365.240	16,06
25,90 – 26,89	365.161	365.201	16,70	365.121	365.241	17,09
26,90 – 28,89	365.162	365.202	18,20	365.122	365.242	18,59
28,90 – 30,89	365.163	365.203	19,70	365.123	365.243	20,09
30,90 – 32,59	365.164	365.204	21,20	365.124	365.244	21,59
32,90 – 34,89	365.165	365.205	22,70	365.125	365.245	23,09
34,90 – 36,89	365.166	365.206	24,20	365.126	365.246	24,59
36,90 – 38,89	365.167	365.207	25,70	365.127	365.247	26,09
38,90 – 40,89	365.168	365.208	27,20	365.128	365.248	27,59
40,90 – 42,89	365.169	365.209	28,70	365.129	365.249	29,09
42,90 – 44,89	365.170	365.210	30,20	365.130	365.250	30,59
44,90 – 45,59	365.171	365.211	31,70	365.131	365.251	32,09

For availability see current price list.
Order Example:
1 x 365.141

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Measurement Specifications

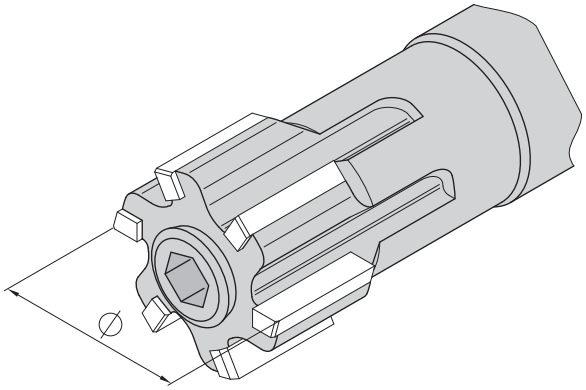
- KENNAMETAL high-performance reamers have unequal angular pitches for cutting.
- There are only two directly opposite 180° edges.
- They can be used to determine diameters and are marked on the shank below the RMA tool cutters.

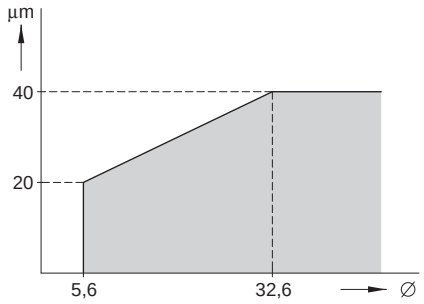


NOTE: *Because the cutter inserts are conical, the outer cutting edge of the cutter geometry should be used as the measuring point.*

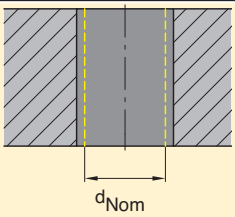
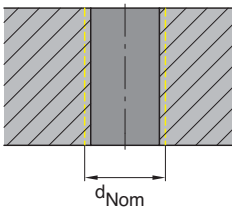
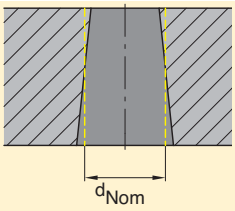
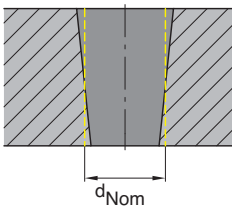
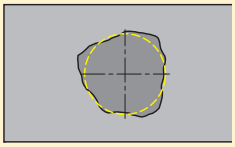
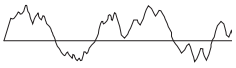
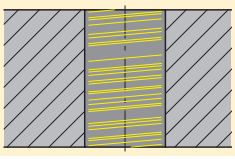
Adjusting RMA Reaming Tools

- RMA reaming tools can be adjusted according to the diameter in the range from 20-40 µm.
- Adjustment is required to compensate for wear.
- Please do not rescrew the adjustment screws as these tools can be expanded only and not contracted as this may damage the tool.





Causes of and remedies for reaming problems

Problem	Cause	Possible remedy
Drill diameter too large 	1. Reaming tool running out-of-centre 2. Concentricity of pilot hole and ream machining unsatisfactory 3. Built-up edge 4. Unsuitable cooling lubricant 5. Reaming tool Ø too large	• Use SIF equalising adapter • Re-align, use floating head • Change cooling lubricant • Change cutting speed • Measure reamers and send for repairs
Drill diameter too small 	1. Reamer worn 2. Unsuitable cooling lubricant 3. Reaming allowance too small	• Replace and refit tool • Change cooling lubricant • Increase reaming allowance
Conical drill profile wider towards drill runout 	1. Concentricity of pilot hole and reaming unsatisfactory 2. Positioning accuracy of pilot hole to reaming	• Re-align, use SIF equalising adapter • Correct positioning accuracy
Conical drill profile wider at drill entry point 	1. Concentricity of pilot hole and reaming unsatisfactory 2. Reaming tool skim cutting with ledger	• Re-align, use floating head • Securely clamp reaming tool axially
Hole out-of-centre and/or showing chatter marks 	1. Reaming tool running out-of-centre 2. Slanted cutting surface/asymmetrical cutting 3. Workpiece twisted	• Use SIF equalising adapter • Drilling: plan • Take the direction of impact into account when clamping the workpiece
Surface quality does not meet specification 	1. Tool cutters worn 2. Reaming tool running out-of-centre 3. Incorrect technology data (cutting parameters) 4. Inadequate chip evacuation	• Replace and refit tool • Use SIF equalising adapter • Change cutting parameters in machining range • Optimise coolant supply, increase coolant pressure and volume
Feed grooves 	1. Built-up edge	• Change cooling lubricant • Change cutting speed

Machining Questionnaire for Reaming Tools

From: _____

Company: _____

Phone/Fax: _____

KH: _____

Phone: _____

Date: _____

1. Workpiece material

Designation: _____

Strength [N/mm²]: _____

Heat treatment: _____

2. Machining

Drill diameter: _____

Drilling tolerance: _____

Surface requirement: _____

R_z: _____

R_a: _____

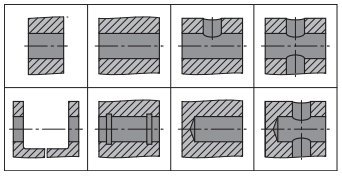
Drill length: _____

Premachining:
Drilled: ❒ Spindle: ❒

Machining of drill hole base:
Yes ❒ No ❒

For any crossholes or interruptions in the bore, please provide a sketch

Hole type:



3. Production quantity

Drill number/year: _____

4. Tool interface

Interface designation and size:
(e.g., straight shank 20)

_____

_____

5. Machine tool

Machining:
Horizontal ❒ Vertical ❒

Tool:
Rotating ❒ Stationary ❒

Internally cooled tools:
Yes ❒ No ❒

Cooling lubricant:
Oil ❒ Emulsion ❒

Cooling lubricant pressure:

p [bar]: _____

Machine manufacturer/type:

_____

Spindle interface:
(e.g. HSK 63) _____

Cutting parameters:
Variable: Yes ❒ No ❒

If not variable:

n [rev/min] _____

F [mm/min] _____

Please provide a sketch of the chuck with any foul conditions and machine tasks. Include all relevant dimensions as well as forming and positioning tolerances.

KENNAMETAL *Precision Hole Finishing*

Single Blade Reaming

RIR™ Single Blade Padded Reaming System

Primary Application

- Extremely accurate single edge padded reamer.
- Diameter range .236 inch (6 mm) up to 13.780 inch (350 mm).
- 2 cutting edges (1 using PCD and PCBN) with ground chip former for optimal chip creation.
- Capable of extreme high length-to-diameter ratios.
- Central clamping screw (left handed) for precise adjustment with reduced stick-slip-effect.
- Specific coatings and lead configuration for High Speed machining of steel, stainless steel, cast iron, nonferrous, and heat resistant materials.
- Measurement and adjustment fixture available.
- Bonded instead of common brazed guide pads.
- Use standard SIF steerable tool holder for easy axial and radial run out compensation to reach highest possible hole straightness and surface quality.

Features and Benefits

Extremely accurate adjustment of diameter and back taper with only two screws.

- Excellent control of bore size and process control.

Easier adjustment than similar single edge reamer having cone screws for adjustment.

- Central clamping screw instead of common clamping claw or wedge.

More stable pocket seat for higher tool life and long term hole quality.

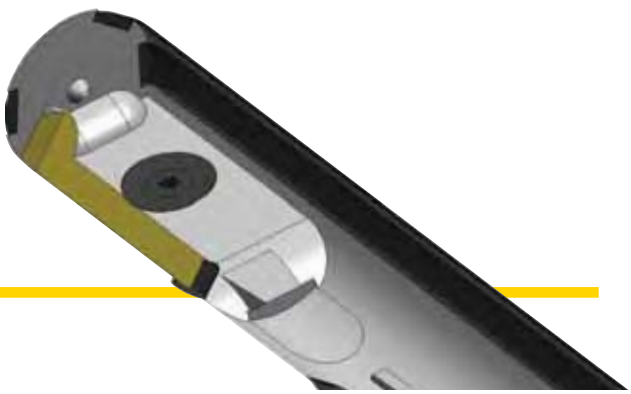
- Smooth diameter adjustment and reduced stick-slip-effect due to clamping at center line.

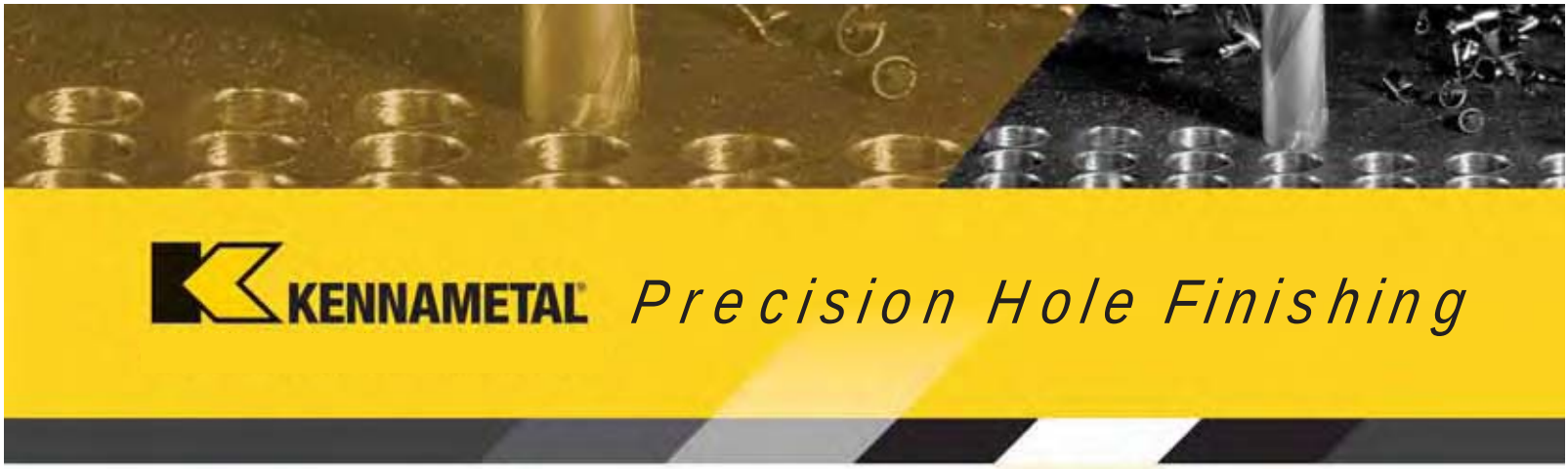
IT5 overall accuracy achievable.

- Tolerances less than 5µm can be achieved on diameter, ovality and taper.

Customization

- All RIR tooling is engineered according to your specific needs in diameters starting at .23 6inch (6mm) up to 13.780 inch (350 mm) with internal coolant.
- Taper reamer for cone shaped holes are available on request as well as the necessary measuring and adjustment equipment.





KENNAMETAL *Precision Hole Finishing*

Single Blade Reaming

RIQ™ Single Blade Padded Reaming System

Primary Application

- Highly precise, single-edge padded reamer is easy to adjust.
- Diameter range .630 inch (16mm) up to 13.780 inch (350mm).
- Four cutting edges per insert including Carbide, Cermet, PCD, and PCBN.
- Specific coatings and lead configurations available for high-speed machining of steel, stainless steel, cast iron, nonferrous, and heat-resistant materials.
- Preset back taper minimizes equipment adjustments.
- Bonded instead of brazed guide pads.
- Use standard SIF Steerable Toolholder to compensate for radial run out and angular inaccuracies and to achieve highest possible hole straightness and surface quality.

Features and Benefits

Patented serration on back of the insert.

- Easy adjustment in less time due to predefined back taper.

Four edges per insert.

- Cost advantage and easy to index — even PCD.

RIQ pocket seat.

- Edges not in cut are protected.

IT5 overall accuracy achievable.

- Tolerances less than 5µm can be achieved on diameter, ovality, and taper.

Customization

- All RIQ tooling is engineered according to your specific needs in diameters starting at .630 inch (16mm) up to 13.780 inch (350mm) with internal coolant.
- Multi-flute and step reaming applications and special blade shapes are available upon request.

RIR and RIQ Reaming Tools

Comparison

Application recommendation	RIR	RIQ
	Bore Tolerances less than 10 µm (can be greater). Geometric tolerancing down to 2 µm. Skilled Workforce, experience required. Longer length multi diameter bore possible, but less stability during end face machining.	Bore Tolerances greater than 10 µm. Geometric Tolerancing down to 5 µm. Lower skilled workforce, easier adjustment. Short length multi diameter bores. Blind bore end face machining, greater stability of insert.
Pocket seat	Flat with clamping groove in blade	Serrated. Greater insert stability
Cutting edges	2 (1 with PCD or CBN) (1 within diameter range 6 to 8mm - .236 to .315inch)	4 (Inc. PCD, CBN and Cermet)
Special blade forms	no	yes
Multiple insets on diameter	no	yes
Blade adjustment	Diameter and Back taper	Diameter only, back taper preset
Blade adjusting screws	2	1
Number of insert sizes	5	3
Chamfer or seat machining	Possible, but adjustment required on length and angle.	Yes. Angle preset into body. Minimal adjustment for length.
General comments	Requires end users to be familiar with adjusting single blade reamers. High accuracy single or multi diameters.	Requires end users not to be familiar with adjusting single blade reamers Complex multi diameter bores with chamfers and leads between bores. Multi diameter for higher productivity. (Feed Rate)

NOTE: *Kennametal's Patented RIQ Reaming System offers the customer a simpler approach to Guide Pad reaming tools.*
The flexibility of the system allows multi diameter tools within a short cut length.
The serrated 4 edged insert sits on high precision splines, making setting easier due to the fact that there is only one adjusting screw.
RIQ and RIR can be coupled together to provide unique capabilities and thereby maximizing design efficiency.

Single Padded Reamer — RIR and RIQ Series

Cutting Speed														Hole Type	1, 3	1, 3	2, 4	1, 3, 5	1, 3, 5	1, 3 ,5
sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	Grade	TYPE	E13	E30	E06	EDS	EGS	EGU
m/min	15	30	50	80	100	120	150	200	250	300	350									
P1 Low-Carbon Steels, Long Chipping														Content: C <.25%		Tensile Strength RM (MPa)*: <530			Hardness (HB) or HRC: <125	
sfm		98			328							197	KC6005	ipr	.004 - 0.012	.004 - .016	.004 - .008	—	—	—
m/min		30			100							60		mm/r	0,10 - 0,30	0,10 - 0,40	0,10 - 0,20	—	—	—
P2 Low-Carbon Steels, Free Machining, and Short Chipping														Content: C <.25%		Tensile Strength RM (MPa)*: <650			Hardness (HB) or HRC: <220	
sfm		66			295							164	KC6005	ipr	.004 - .012	.004 - .016	.004 - .008	—	—	—
m/min		20			90							50		mm/r	0,10 - 0,30	0,10 - 0,40	0,10 - 0,20	—	—	—
P3 Medium to High Plain-Carbon Steels and Alloy Steels														Content: C >.25%		Tensile Strength RM (MPa)*: 600-850			Hardness (HB) or HRC: <330	
sfm		66			262							131	KC6005	ipr	.002 - .010	.004 - .012	.004 - .008	—	—	—
m/min		20			80							40		mm/r	0,05 - 0,25	0,10 - 0,30	0,10 - 0,20	—	—	—
P4 Alloy Steels and Tool Steels														Content: C >.25%		Tensile Strength RM (MPa)*: 800-1100			Hardness (HB) or HRC: 350-450	
sfm		49			164							98	KC6105	ipr	.002 - .010	.004 - .012	.002 - .008	—	—	—
m/min		15			50							30		mm/r	0,05 - 0,25	0,10 - 0,30	0,05 - 0,20	—	—	—
P5 Ferritic, Martensitic, and PH Stainless Steels														Content: C=0-.4%		Tensile Strength RM (MPa)*: 600-850			Hardness (HB) or HRC: <330	
sfm		33			131							82	KC6105	ipr	.002 - .008	—	.002 - .008	—	—	—
m/min		10			40							25		mm/r	0,05 - 0,20	—	0,05 - 0,20	—	—	—
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels														Content: C=.1-.6%		Tensile Strength RM (MPa)*: 900-1350			Hardness (HB) or HRC: 350-450	
sfm		33			131							82	KC6105	ipr	.002 - .008	—	.002 - .008	—	—	—
m/min		10			40							25		mm/r	0,05 - 0,20	—	0,05 - 0,20	—	—	—
M1 Austenitic Stainless Steels														Content: C=.05-.15%		Tensile Strength RM (MPa)*: <650			Hardness (HB) or HRC: 130-200	
sfm		33			131							82	KC6305	ipr	.002 - .008	.004 - .010	.002 - .008	—	—	—
m/min		10			40							25		mm/r	0,05 - 0,20	0,10 - 0,25	0,05 - 0,20	—	—	—
M2 High-Strength Austenitic Stainless and Cast Stainless Steels														Content: C=.05-.15%		Tensile Strength RM (MPa)*: 500-700			Hardness (HB) or HRC: 150-230	
sfm		33			131							82	KC6305	ipr	.002 - 0.008	.004 - .010	.002 - .008	—	—	—
m/min		10			40							25		mm/r	0,05 - 0,20	0,10 - 0,25	0,05 - 0,20	—	—	—
M3 Duplex Steels														Content: C=.05-.2%		Tensile Strength RM (MPa)*: <900			Hardness (HB) or HRC: 135-275	
sfm		33			131							82	KC6305	ipr	.002 - .008	—	.002 - .008	—	—	—
m/min		10			40							25		mm/r	0,05 - 0,20	—	0,05 - 0,20	—	—	—
K1 Gray Cast Irons and Low-Strength Ductile Irons														Tensile Strength RM (MPa)*: 150-400				Hardness (HB) or HRC: 120-290		
sfm		66			328							230	KC6005	ipr	.004 - .007	.004 - .007	.005 - .008	.006 - .012	.007 - .014	.008 - .015
m/min		20			100							70		mm/r	0,09 - 0,17	0,11 - 0,19	0,12 - 0,21	0,15 - 0,31	0,18 - 0,35	0,20 - 0,39
K2 Low- and Medium-Strength CGI and Ductile Irons														Tensile Strength RM (MPa)*: 400-600				Hardness (HB) or HRC: 130-260		
sfm		66			328							197	KC6305	ipr	.004 - .006	.004 - .007	.005 - 008	.006 - 0010	.007 - .012	.008 -.013
m/min		20			100							60		mm/r	0,09 - 0,15	0,11 - 0,18	0,12 - 0,21	0,15 - 0,26	0,18 - 0,30	0,20 - 0,39

(continued on next page)

SOLID CARBIDE DRILLS
MODULAR DRILLS
COMBINATION TOOLS
HSS AND CARBIDE TAPS
INDEXABLE DRILLS
COUNTERBORING TOOLS
PRECISION HOLE FINISHING
INSERTS
TECHNICAL DATA
INDEX

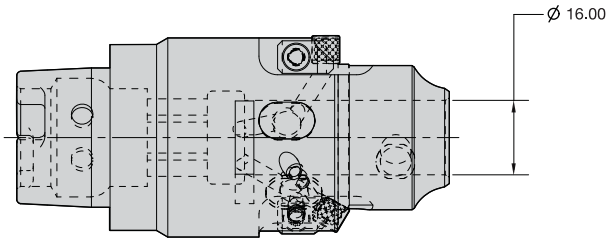
(continued from previous page)

Single Padded Reamer — RIR and RIQ Series

Cutting Speed														Hole Type	1, 3	1, 3	2, 4	1, 3, 5	1, 3, 5	1, 3 ,5
sfm	49	98	164	262	328	394	492	656	820	984	1148	Starting Pt.	Grade	TYPE	E13	E30	E06	EDS	EGS	EGU
m/min	15	30	50	80	100	120	150	200	250	300	350									
K3 High-Strength Ductile and Austempered Ductile Irons														Tensile Strength RM (MPa)*: 600-900				Hardness (HB) or HRC: 180-350		
sfm		66									328	197	KC6305	ipr	.003 - .005	.004 - .006	0.004 - .007	.005 - .009	.006 - .010	.007 - .012
m/min		20									100	60		mm/r	0,07 - 0,13	0,09 - 0,16	0,11 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30
N1 Wrought Aluminum Alloys														Tensile Strength RM (MPa)*: <520				Hardness (HB) or HRC: 60-90		
sfm			164								820	328	K605	ipr	.004 - .016	—	.004 - .010	.002 - .010	.002 - .008	—
m/min			50								250	100		mm/r	0,10 - 0,40	—	0,10 - 0,25	0,05 - 0,25	0,05 - 0,20	—
N2 Cast Aluminums Content: Si<12.2%														Tensile Strength RM (MPa)*: <350				Hardness (HB) or HRC: 70-100		
sfm			164								820	328	K605	ipr	.004 - .016	—	.004 - .010	.006 - .010	.002 - .008	—
m/min			50								250	100		mm/r	0,10 - 0,40	—	0,10 - 0,25	0,15 - 0,25	0,05 - 0,20	—
N3 Cast Aluminums Content: Si>12.2%														Tensile Strength RM (MPa)*: 200-320				Hardness (HB) or HRC: 60-120		
sfm			164								820	328	K605	ipr	.004 - .016	—	.004 .- 010	.006 - 010	.002 - .008	—
m/min			50								250	100		mm/r	0,10 - 0,40	—	0,10 - 0,25	0,15 - 0,25	0,05 - 0,20	—
N4 MMCs (Aluminum-Based Metal Matrix Composites)														Tensile Strength RM (MPa)*: <700				Hardness (HB) or HRC: 210		
sfm			164								820	328	K605	ipr	Upon request	—	Upon request	Upon request	Upon request	—
m/min			50								250	100		mm/r		—				—
N5 Copper and Copper Alloys														Tensile Strength RM (MPa)*: 200-650				Hardness (HB) or HRC: 60-200		
sfm			164								820	328		ipr	.004 - .016	—	.004 - .008	.004 - .008	.002 - .006	—
m/min			50								250	100		mm/r	0,10 - 0,40	—	0,10 - 0,20	0,10 - 0,20	0,05 - 0,15	—
S1 Iron-Based, Heat-Resistant Alloys														Tensile Strength RM (MPa)*: 500-1200				Hardness (HB) or HRC: 160-260		
sfm				33			131					82	KC6305	ipr	.004 - .016	—	.004 - .008	.006 - .010	—	—
m/min				10			40					25		mm/r	0,10 - 0,40	—	0,10 - 0,20	0,15 - 0,25	—	—
S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys														Tensile Strength RM (MPa)*: 1000-1450				Hardness (HB) or HRC: 250-450		
sfm				33			131					82	KC6305	ipr	.004 - .016	—	.004 - .008	.006 - .010	—	—
m/min				10			40					25		mm/r	0,10 - 0,40	—	0,10 - 0,20	0,15 - 0,25	—	—
S3 Titanium														Tensile Strength RM (MPa)*: 900-1600				Hardness (HB) or HRC: 300-400		
sfm		66										66	K605	ipr	.008 - .010	—	.008 - .008	.004 - .008	—	—
m/min		20										20		mm/r	0,20 - 0,25	—	0,20 - 0,20	0,10 - 0,20	—	—
S4 Titanium Alloys														Tensile Strength RM (MPa)*: 900-1600				Hardness (HB) or HRC: 300-400		
sfm		66										66	K605	ipr	.008 - .010	—	.008 - .008	.004 - .008	—	—
m/min		20										20		mm/r	0,20 - 0,25	—	0,20 - 0,20	0,10 - 0,20	—	—
H1 Hardened Steels and Irons																		Hardness (HB) 450-750	HRC: 48-65	
sfm					131						262	164	KD050	ipr	.008 - .010	—	.004 - .008	—	—	—
m/min					40						80	50		mm/r	0,20 - 0,25	—	0,10 - 0,20	—	—	—

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

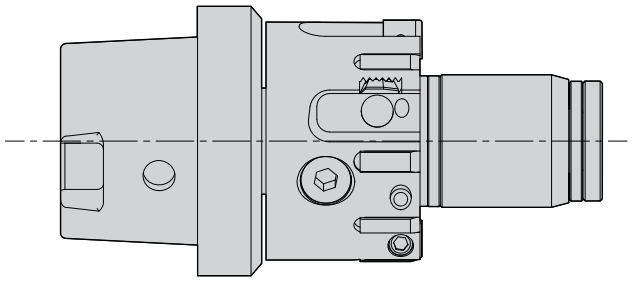
Valve Seat Tool with 2 RIQ inserts providing four edges per insert



Tool design allows for only one insert type due to the seat and recess pockets being machined within 0.002 degree of true position.

Speed = 600 rpm
Feed = 0,1 mm/rev
Seat to guide concentricity <5 µm

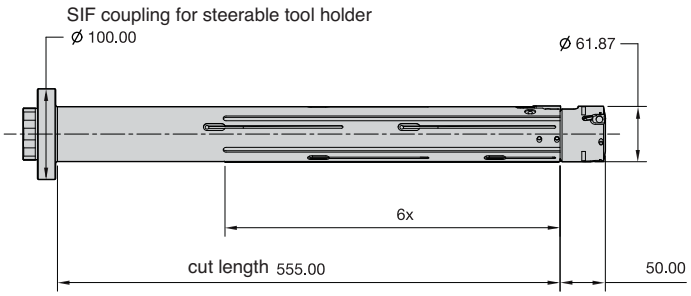
Special floating head oil seal RIQ reamer



Reamer locates in cam bore before reaming oil seal bore resulting in improved concentricity between cam bore and oils seal over existing process.

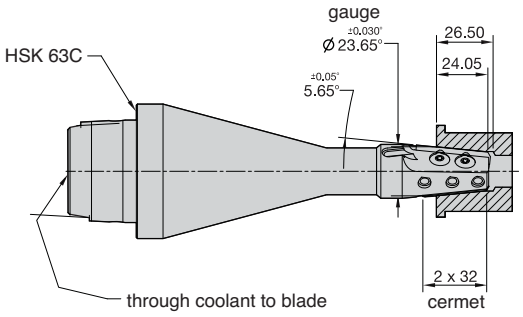
Speed = 1840 rpm
Feed = 0,1 mm/rev

Steel RIQ Crank Bore reamer



Material: Cylinder block cast iron
Speed: 1600 rpm
Feed: 0,20 mm/rev
Machining allowance: 0,3mm

RIR Taper reamer to produce taper bore on steering arms



Speed: 450 rpm
Feed: 60 mm/min
Tool life = 400 components

Blade Nomenclature

The RIR and RIQ Blade part number is made up of 10 numbers selected from 5 categories. The first three digits indicate the reamer type, the next two digits are determined by reamer size and the balance of the numbers allow specific blade configurations and grades.

RIR and RIQ

R_ Type

00 Size

E30 Lead

00 Rake

K605 Grade

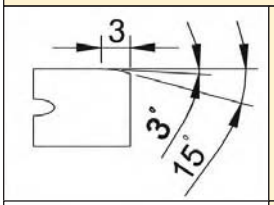
RIR for Reamer Insert Rectangular

RIQ for Reamer Insert QuatroCut

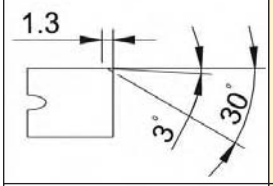
Blade Size

RIR	10,5 x 2,50mm	A0
	10,5 x 2,00mm	00
	15,0 x 2,80mm	01
	18,0 x 4,00mm	02
	20,0 x 4,76mm	03
	27,0 x 5,56mm	04
	27,0 x 6,75mm	05
RIQ	6,0 x 6,0mm	06
	9,0 x 9,0mm	09
	12,0 x 12,0mm	12

Cutting Lead



E30



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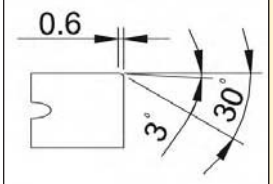

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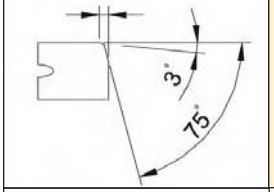
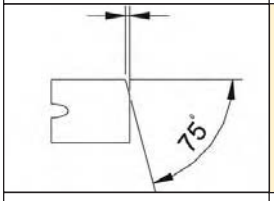


EDS

Blade Size	0	1	2	3	4
Lead Length	.75	.85	1.0	1.1	1.2

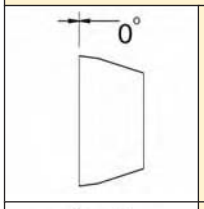


EGS

Blade Size	0	1	2	3	4
Lead Length	.25	.35	.50	.60	.70

Radius Blade	**R--**
Special Blade	**S--**

Rake Angle



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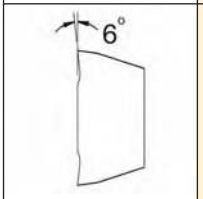

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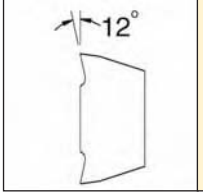


12

Grade

Carbide uncoated	**K605**
Carbide TiN	**KC6005**
Carbide TiCN	**KC6105**
Carbide TiAlN	**KC6305**
Cermet uncoated	**KT325**
Cermet TiCN	**KT6115**
Cermet TiAlN	**KT6215**
PCD	**KD1415**
PCB	**KD050**

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

The data chart below is only a guide to allow starting values to be selected. The final data for a particular application is best determined by trial or during the machining process.

Lead Selection

Lead	Suggested application	Finish attainable	Recommended machining allowance				
			Reamer diameter		Machining allowance		
					Recommended		Maximum
		Micro inch	mm	inch	mm	inch	
E30	Float reaming Good surface finish Use at slower cutting speeds <80 M/min ***NOTE: lead is 3.0mm long***	0.15 - 0.6 µm 6 - 24 micro	8.0 – 10.99 11.0 – 13.99 14.0 – 17.99 18.0 +	(.315-.432") (.433-.550") (.551 -.708") (.709" +)	0.10 - 0.25 0.15 - 0.30 0.15 - 0.35 0.15 - 0.40	(.004-.010") (.006-.012") (.006-.014") (.006-.016")	0.3 (.012") 0.4 (.016") 0.5 (.020")* 0.7 (.028")*
E13	Good general purpose lead Higher cutting speeds up to 200 M/min Good for aluminum with 12 deg rake and thin wall applications.	0.2 - 0.9 µm 8 - 36 micro (0.1 µm in Alum)	6.0 – 7.99 8.0 – 10.99 11.0 – 13.99 14.0 – 17.99 18.0 +	(.236-.314") (.315-.432") (.433-.550") (.551 -.708") (.709" +)	0.05 - 0.20 0.10 - 0.25 0.15 - 0.30 0.15 - 0.35 0.15 - 0.40	(.002-.008") (.004-.010") (.006-.012") (.006-.014") (.006-.016")	0.3 (.012") 0.4 (.016") 0.5 (.020") 0.5 (.020")* 0.7 (.028")*
E06	Blind bores when reaming/boring close to a shoulder. Only to be used when short lead is required.	0.4 - 1.2 µm 16 - 48 micro (0.15 µm in Alum)	6.0 – 7.99 8.0 – 10.99 11.0 – 13.99 14.0 – 17.99 18.0 +	(.236-.314") (.315-.432") (.433-.550") (.551 -.708") (.709" +)	0.05 - 0.15 0.10 - 0.20 0.15 - 0.25 0.15 - 0.30 0.15 - 0.35	(.002-.006") (.004-.008") (.006-.010") (.006-.012") (.006-.014")	0.3 (.012") 0.4 (.016") 0.5 (.020") 0.5 (.020")* 0.5 (.020")*
EGS	For gun reaming – particularly good for aluminum at high cutting speeds >150 M/min. Allows larger depths of cut. If machining from as cast, the reamer must have internal coolant feed and may require an external bushing support.	0.3 - 1.5 µm 12 - 80 micro (0.15 µm in Alum)	6.0 – 7.99 8.0 – 10.99 11.0 – 13.99 14.0 – 17.99 18.0 +	(.236-.314") (.315-.432") (.433-.550") (.551 -.708") (.709" +)	0.25 - 1.00 0.40 - 1.30 0.50 - 1.80 0.50 - 2.50 0.50 - 2.80	(.010-.039") (.016-.051") (.020-.071") (.020-.098") (.020-.110")	1.5 (.080") 2.1 (.083") 2.4 (.094") 3.3 (.130") 4.0 (.157")
EDS	For gun reaming – similar to EGS lead but will produce higher quality surface finish. See notes on EGS above.	0.3 - 1.0 µm 12 - 40 micro (0.1 µm in Alum)	6.0 – 7.99 8.0 – 10.99 11.0 – 13.99 14.0 – 17.99 18.0 +	(.236-.314") (.315-.432") (.433-.550") (.551 -.708") (.709" +)	0.25 - 1.00 0.40 - 1.30 0.50 - 1.80 0.50 - 2.50 0.50 - 2.80	(.010-.039") (.016-.051") (.020-.071") (.020-.098") (.020-.110")	1.5 (.059") 1.8 (.071") 2.4 (.094") 3.3 (.130") 4.0 (.157")

Coolant Requirements

Coolant selection		
	Recommended	Alternative
Material type	Mineral oil based emulsions	Semi synthetic
Steel	5%	10%
Nickel chrome steel	6%	12%
Stainless steel	6%	12%
Cast iron	4%	6%
Aluminum	6%	12%
Zinc alloys	6%	12%
Copper	6%	12%
Brass	4%	6%

Pressure and flow rates		
Cut Dia. in mm	Flow rate L/min	Pressure PSI
6 - 12mm	15 - 20	150+
12 - 16mm	20 - 40	120+
16 - 20mm	30 - 50	100+
20 - 32mm	40 - 75	75+
32 - 50mm	65 - 250	50+
50 - 100mm	175 - 350	40+

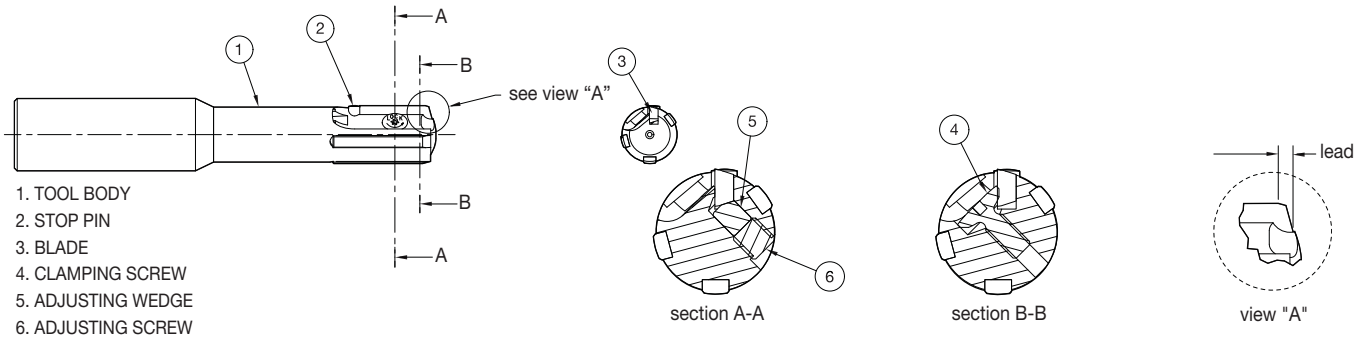
*Best results are achieved with reduced depths of cut in most materials.

Blade Geometry, Radial Rake and Coatings should be selected for the machining operation being performed. In most cases the lead form E13 is a good general purpose lead geometry. For greater stock removal or higher cutting speed the EDS lead is recommended in specific materials.

All blades are supplied in 0, 6, or 12 degree radial rakes. These rakes are applied in the same relationship as conventional types of machining operations. The radial rake is important for proper formation of the chip. When machining cast iron a 0 degree top rake is recommended, while in aluminum a 12 degree rake would be preferred.

Blade coatings can greatly improve the life of the cutting edge of the blades. A number of standard coatings are available and it is always recommended to use one of these coatings when machining ferrous materials. The use of Polycrystalline Diamond (PCD) tipped blades are recommended when machining aluminum at high speeds and/or high production rates.

Blade Adjustment



1. TOOL BODY
2. STOP PIN
3. BLADE
4. CLAMPING SCREW
5. ADJUSTING WEDGE
6. ADJUSTING SCREW

Blade Replacement and Tool Setting

The easiest way to set the KMT RIR Reamer is with the RIR setting fixture. The following steps describe blade replacement and setting with either electronic or dial indicators.

1. Back out the two blade adjusting screws (6), by turning them anti-clockwise. To remove the used blade loosen the clamping screw (4), by rotating it clockwise (THIS IS A LEFT HAND THREADED SCREW).
2. Remove the blade and clean any contamination from the blade pocket.
3. Insert the blade with the unused corner out, or replace it with a new blade. Holding the blade against the stop pin (2), tighten the clamp screw (4) completely by turning it ANTI-CLOCKWISE.
4. Clean both centers on the tool and insert the tool into the setting fixture.
5. Position the dial indicator at the front of the blade just behind the apex of the lead geometry. If fitted, position the second indicator near the rear of the blade. Zero both indicators against one of the guide pads. Rotate the tool and ensure all the pads read zero. If not clean the centres and try again.
6. Rotate the tool between centres to find the high point of the blade as indicated on the dial indicators.
7. Adjust the front adjusting screw (6) to a final setting of + 0.010mm (0.0004") above the guide pad (or as indicated on the reamer drawing). Adjust the rear adjusting screw to a final setting between -0.010 to -0.015mm (0.0004" to 0.0006") below the guide pad.

NOTE: *It is recommended to gradually alternate from front to rear adjusting screw as you approach the final settings.*

Using a Pressure Micrometer to Set the RIR Reamers

First set the Micrometer using a qualified gauge block that is the diameter of the bore to be reamed.

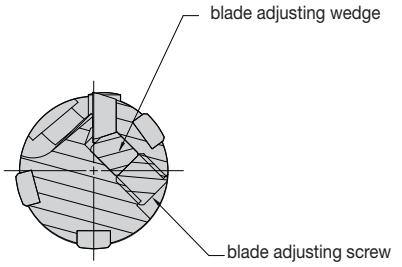
Follow steps 1 through 3 above, to replace worn blades. It is important to have the cutting edge of the blade locate on the fixed anvil of the micrometer and gently rock the spindle over the opposing guide pad to measure the blade setting. To prevent damage, do not allow the micrometer to pass over the cutting edge of the blade. Follow step No. 7 above for setting the reamer blade.

NOTE: *For RIQ reamers, back taper is preset by the serrations. This means only one adjusting screw is used to set the diameter of the tool.*

Basic Principle

"A SINGLE POINT BORING TOOL SUPPORTED BY BEARING PADS, FLOATING ON A COOLANT FILM".

"A TOOL MUST DEFLECT ONTO THE PADS, ON ENTERING THE HOLE, IN ORDER TO OBTAIN THE CORRECT SIZE".

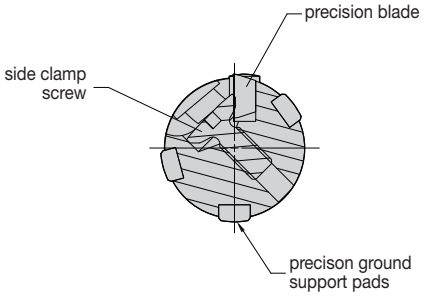


Blade Adjustment System

Kennametal's RIR & RIQ Precision Reamers are designed to meet hole geometry requirements in the complex and demanding machining environment of today's manufacturing industry.

The innovative design of the RIR & RIQ system now allows machining techniques to be utilized not only on CNC but conventional, transfer, rotary and other established machines. Coupled with an easily replaceable cutting blade with a precise and positive adjusting mechanism, the Kennametal RIR & RIQ reamer becomes an efficient, operator friendly, precision reaming tool.

In most applications, the RIR & RIQ reamer will utilize a single precision ground and lapped double or 4-edged cutting blade. This is located and directly clamped into the reamer head by a unique clamping system patented by Kennametal. The reamer head also hosts a selection of guide pads that are positioned to absorb and disperse the forces created during machining. The result, perfectly cylindrical bores with exceptional straightness and superior surface finishes combined with a bore diameter tolerance held to microns.



Blade Clamping System

Kennametal precision reaming tools can be used on machines where the tool is stationary and allowed to follow the center line of an existing bore. The reamer is generally run at a slightly slower surface speed than rotating tools and the result is exceptionally straight and round bores with superior surface finish. In this type of application the location of the finished bore must have been established by a previous machining operation and the precision reamer is then allowed to "float" to follow the existing bore. Kennametal fine boring tools are used when greater positional accuracy must be established and when bore alignment is critical.

These tools are usually rotating, and can be used in conjunction with 'EDS' blade geometries, which allow for greater stock removal. In many cases, excellent results can be obtained with machining directly from "as cast" conditions, especially in aluminum and cast iron components. Tools of this type can run at high speeds when equipped with through the tool coolant, but must be held accurately in the machine spindle. Precision tool holding systems are available from Kennametal.

The RIR & RIQ reamer are precision tools manufactured to your exact requirements. Conventional straight and morse taper shanks, along with 'BT', 'DIN', 'Modular' and 'HSK' shanks are all available. The cutting blades are manufactured from Carbide, but are available in Cermet, "PCD" (Diamond) and 'CBN' options along with a variety of surface coatings. The guide pads are available in Carbide, Cermet, Ceramic and 'PCD' to suit the application requirements. Kennametal can also utilize other techniques to produce a reamer to meet your specific needs.

Causes of and remedies for reaming problems

Problem occurring	Suggested corrective action
Tapered bore	Spindle alignment to work piece must be within 0.010mm. A floating holder can correct this problem. Check blade back taper – increase the taper. Normal setting is 0.001mm per 1mm of blade length.
Oversized bore	Recheck tool setting. Make necessary adjustment. Spindle alignment to workpiece must be within 0.010mm. Floating tool holder can correct this problem.
Out-of-roundness	Check blade setting. Blade is probably set too high above the guide pad. Check blade back taper – reduce the taper. Normal setting is 0.001mm per 1mm of blade length. Make sure work holding method is not causing distortion.
Bell mouth entrance or exit	Check blade back taper. If entrance is bell mouthed, increase back taper. If exit, decrease back taper. Feed rate may be too high. Reduce feed rate. Check overall conditions of tool, especially the guide pads. Spindle alignment to workpiece must be within 0.010mm.
Poor surface finish	Check coolant mixture and type. 10:1 or higher mixture is best. Check speed and vary up or down to get optimum speed. Check machine feed rate. Reduce feed rate. Ensure stock removal is sufficient.
Tool chatter in bore	Spindle alignment to workpiece must be within 0.010 mm. A floating holder can correct this problem. Check blade back taper – increase the taper. Normal setting is 0.001 mm per 1 mm of blade length. Make sure work holding method is rigid.

The Kennametal RIR & RIQ Reamer will produce a bore that is consistent in roundness, straightness, size and surface finish. High accuracy applications require precision set-ups. We assist you within the catalogue with basic recommendations for the correct determination of tool selection and the requirements and guidelines for the reaming process.

The information given will help to address problems which may be encountered during setting up of the Kennametal reamers. For specific technical assistance please contact your Kennametal Representative.

Reamer Application Sheet

A component drawing MUST BE SUPPLIED to ensure correct interpretation of your requirements.

General Information			
KMT Sales Engineer:		Reference Number:	
Country:		Market:	
Area:		Competitor:	
Distributor:		Customer Reason for Change:	
Customer Details			
Customer:		Date:	
Address:		Contact:	
		Job Title:	
		Tel No:	
		Fax No:	
Post Code:		Email:	
Market Body Price:		**Market Blade / Insert Price:**	
Component and Machining Details			
Component Part No :		Machine to be Used:	
Component Name:		Vertical or Horizontal:	
No. of Component / Year:		Rotating or Stationary:	
No. of Holes / Component:		M/C Spindle / Turret Type (BT, ISO, etc) :	
Material Spec.:		Speed:	
Material Hardness:		Feed:	
Bore Sizes and Tolerance:		Cycle Time Required:	
Target Size and Tolerance:		Machining Allowance:	
CPK Value on Diameter:		Is the Tool Held Rigid?:	
Surface Finish Required:		Is a Floating Holder used?:	
Bore Length:		Coolant Type:	
Bore Type:		Coolant Pressure/Volume	
Preferred Blade (R-max / Q-cut)		Coolant Concentration:	
Does the Reamer m/c a Face?		Coolant Delivery:	
Interruptions in the Bore?:		Max. Tool Weight Inc. Adapter:	
Reamer Cut Length:		Max. Tool Length from Gauge Line:	
Rmr Shank (HSK, ABS, Flange, etc) :		Are there any Tool Restrictions:	
Please Specify any other Restrictions:			
Geometric Tolerances			
Straightness:		Taper:	
Roundness:		Cylindricity:	
Concentricity:			
Comments:			

RIR and RIQ Setting Fixture

A precise and simple method of presetting RIR and RIQ reamers

Available with single or dual indicators

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

KENNAMETAL

Precision Hole Finishing

PCD Customized Tooling

Drilling, Reaming, Counterboring

Primary Application

- Highest productivity and accuracy.
- Reduced tooling costs due to long tool life.
- Secure process control due to close tolerances achievable increasing your overall quality and reducing scarp rate and inspection costs.
- Able to machine various materials like aluminum, magnesium, brass, copper, and more.
- Tips brazed onto Solid Carbide shanks provide increased stiffness for optimized cutting.
- Tips brazed onto steel tooling enable direct coupling onto the machine spindle.
- PCD has less impact on the microstructure of the hole surface than carbide, providing lower surface roughness, extending tool life of follow-up tools, and generating fewer burrs.

Features and Benefits

PCD increases productivity.

- Highest chip removal rates and less tool changes reduce overall manufacturing costs.

PCD increases your process control.

- Extremely long tool life even when maintaining very tight tolerances.

PCD increases your quality.

- Reduced built-up edge and burr formation, improved concentric hole shape due to multi-step tooling, and less influence on surface microstructure of the workpiece.

Customization

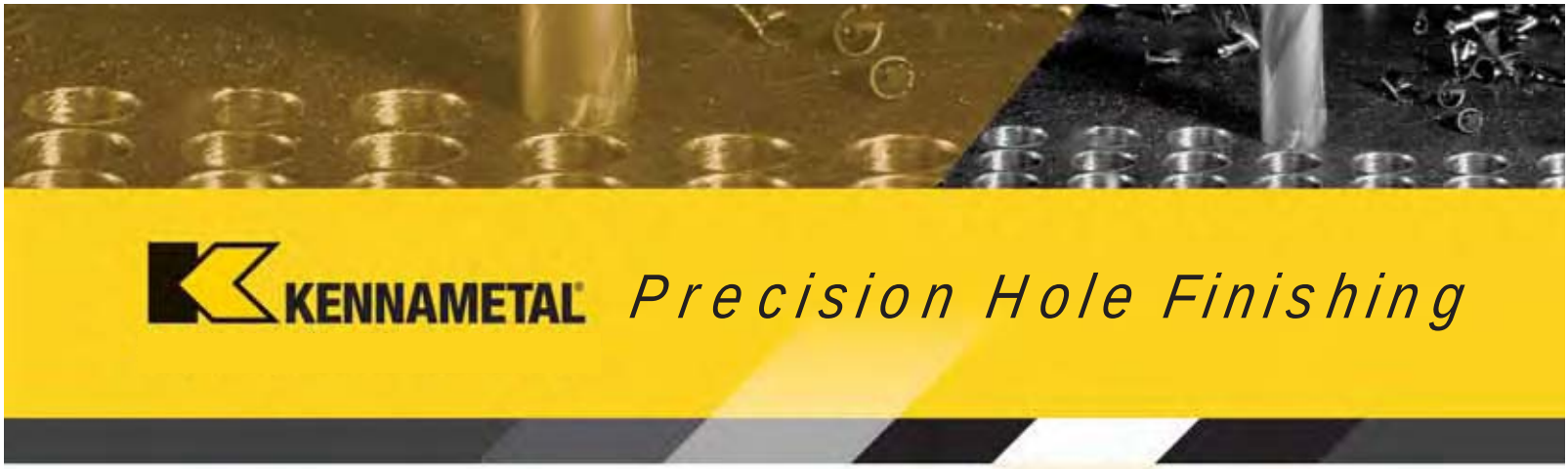
- All PCD drilling, counter-boring, and reaming tools are engineered according to your specific needs in diameter, shape, radii, and steps.
- Various PCD grades are available to match your specific material to the machine.
- PCD tips can be brazed onto carbide or steel tooling for direct clamping.

KENNAMETAL

Precision Hole Finishing

Drilling, Reaming, Counterboring

PCD Customized Tooling



KENNAMETAL *Precision Hole Finishing*

SIF™ Steerable Toolholder

Shank Tools, HSK Bushes and Hydraulic Chucks

Primary Application

- Use SIF steerable toolholder for easy compensation of radial run out and angular inaccuracies.
- Standard DV, BT, CV, and HSK adapters can be used in combination with:
- SIF Hydraulic Chucks for most precise concentric clamping and highest accuracy.
- HSK Bushes for faster tool change without repeating run out adjustment.
- SIF RIR and RIQ tooling with an SIF coupling as backend for fewer interfaces.
- The SIF coupling has eight radial screws instead of four for easy reduction of radial run out.
- 4 axial adjustment screws used for angular adjustment to reach less than 2µm in run out.
- SIF run out optimized reaming tools provide higher process stability and longer tool life.
- SIF tooling improves hole roundness for highest possible hole straightness and surface quality.

Features and Benefits

Easy compensation of radial run out and angular inaccuracies.

- Increases process control and tool life.

Eight radial screws instead of four.

- Less time-consuming adjustment to reach 2µm run out.

HSK Bushes with SIF coupling.

- Enables fast tool exchange and eliminates need for repeated run out adjustment, reducing machine downtime.

Hydraulic Chucks with SIF coupling.

- Most precise and flexible clamping method using Hydraulic Chuck Sleeves.

Customization

- Different length versions and coupling size combinations are available.

Kennametal Standard Catalog Number System

DV 40 B SIF 70 100 M

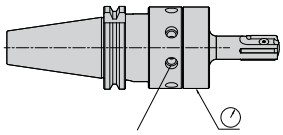
- **DV** — Shank style: DV, BT, CV
- **40** — Shank taper size: 40 = 40; 50 = 50
- **B** — Special feature optional: B = DIN form B coolant feature (design allows conversion back to A/AD style); (blank) = (no "B") tool built to DIN from A/AD
- **SIF** — Toolholder style: SIF = steerable interface
- **70** — System size
- **100** — Tool length: (taper gauge line to front of tool) metric — xxx = xxx
- **M** — Identification values: M = tool built to metric values and has metric retention threadss

HSK 63 A SIF 70 100 M

- **HSK** — Shank style
- **63** — Shank flange size: 63 = 63 [2.480] diameter; 80 = 80 [3.150] diameter; 100 = 100 [3.937] diameter
- **A** — DIN form: A = from A
- **SIF** — Toolholder style: SIF = steerable interface
- **70** — Toolholder size
- **100** — Tool length: (front of tool) metric - xxx = xxx
- **M** — Identification values: M = tool built to metric values and has metric retention threads

Steerable Toolholder Adjustment

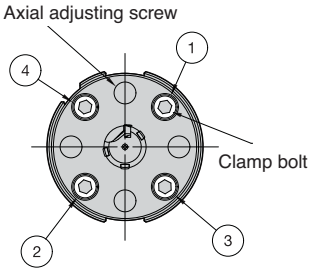
Figure 1



8 off Radial adjusting screws

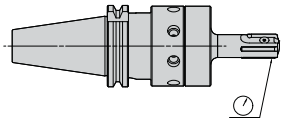
Using either a 0.0001" or a 0,002mm D.T.I. place the finger on the ground setting diameter on the shank of the tool. If the spindle is now rotated, the "high spot" will become apparent. Gently tighten the nearest radial adjusting screw to push the tool towards the true centre. Rotate the spindle again to find the new "high spot". Again gently tighten the nearest radial adjusting screw to move the tool. Carry on in this manner until the tool is within 0.002" or 0,05mm T.I.R.

Figure 2 tightening sequence



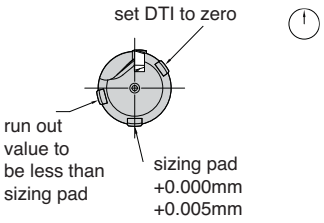
The clamp screws can now be fully tightened. This should be done in a diagonal manner to ensure parallel pull back. See fig 2. The spindle should again be rotated to find the high point and the necessary adjustments made to achieve a maximum run out of 0.0001" or 0,002mm.

Figure 3



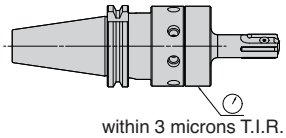
At this point all radial adjusting screws should be tight. If there are some that are loose, they should be gently tightened so as not to move during cutting. The D.T.I. should now be moved to check the end of the reamer. See figure 3 This is done to see which way the reamer is biased. If the reamer is as fig 4, then no axial adjustment is required and the axial screws can be lightly tightened just to resist movement during cutting. If the tool is running blade high then the relevant axial adjusting screws must be tightened to "lay" the reamer as in fig 4. Again make sure that all unused screws are nipped up to prevent movement.

Figure 4



The D.T.I. should be replaced back on the location diameter to check the run out of the shank end. In theory this diameter will not have changed, but if it has the radial screws will need to be adjusted to bring the run out back into the 0.0001" or 0,002mm limit. If these radial screws are readjusted then the pad run out will also need to be rechecked. If a further axial adjustment is required then the location diameter at the shank end must be checked again. These radial and axial adjustments must continue until the reamer is as fig 4.

pad readings as Figure 4.

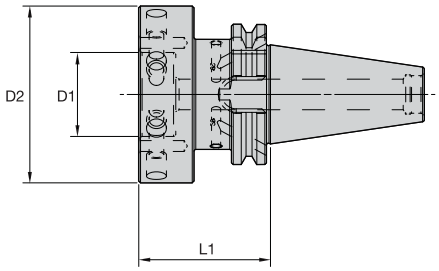


within 3 microns T.I.R.

The tool is now ready for use. It is beneficial at this stage to do some repeatability checks by doing some machine activated tool changes. Readings can be taken from the pads after each tool change to establish levels of repeatability. The machined bore should be 1–3 microns bigger than the set size. The surface finish will depend upon the material, speed and feed.

SIF Steerable Toolholder

- DV40 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.

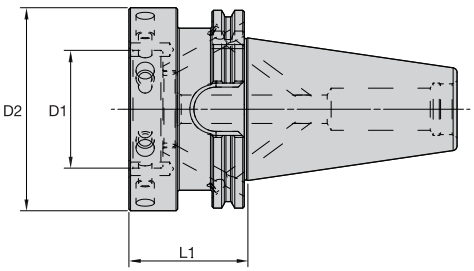


SIF-DV40 Form B/AD — Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size — lock screw	adjustment screw	wrench size — adjustment screw
DV40BSIF80061M	80	38	61	1,85	MS-1171	MW5	121.812	MW4

Ordering Example:
By catalog number DV40BSIF80061M.

- DV50 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.

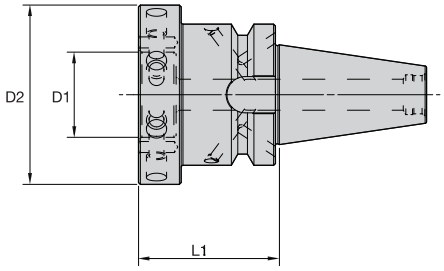


SIF-DV50 Form B/AD — Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size — lock screw	adjustment screw	wrench size — adjustment screw
DV50BSIF70060M	70	38	60	3,75	MS-1171	MW5	121.808	MW4
DV50BSIF100060M	100	58	60	4,2	MS-1294	MW6	121.812	MW4

Ordering Example:
By catalog number DV50BSIF70060M.

- BT40 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.

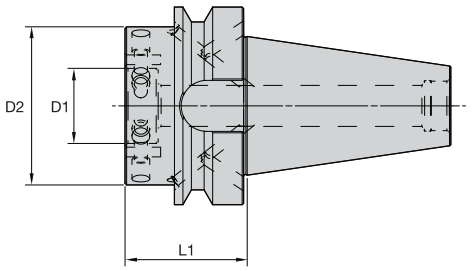


SIF-BT40 Form B/AD — Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size — lock screw	adjustment screw	wrench size — adjustment screw
BT40BSIF80063M	80	38	63	2	MS-1171	MW5	121.812	MW4

Ordering Example:
By catalog number BT40BSIF80063M.

- BT50 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.

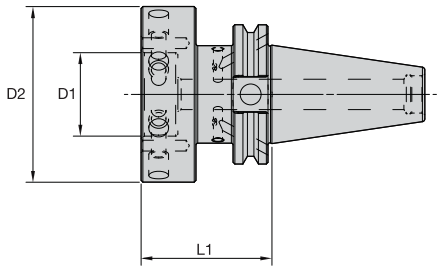


SIF-BT50 Form B/AD — Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size — lock screw	adjustment screw	wrench size — adjustment screw
BT50BSIF70063M	70	38	63	4,2	MS-1171	MW5	121.808	MW4
BT50BSIF100068M	100	58	68	4,9	MS-1294	MW6	121.812	MW4

Ordering Example:
By catalog number BT50BSIF70063M.

- CV40 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.

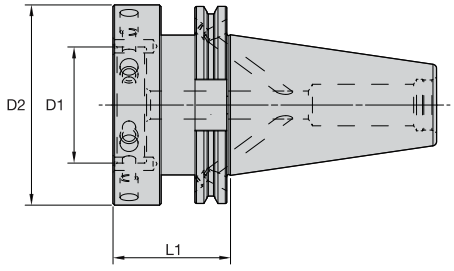


SIF-CV40 Form B/AD — Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size-lock screw	adjustment screw	wrench size — adjustment screw
CV40BSIF80063M	80	38	61	1,8	MS-1171	MW5	121.812	MW4

Ordering Example:
By catalog number CV40BSIF80061M.

- CV50 shank.
- Through-the-toolholder coolant capability — form AD or form B.
- Suitable for SIF adapters.



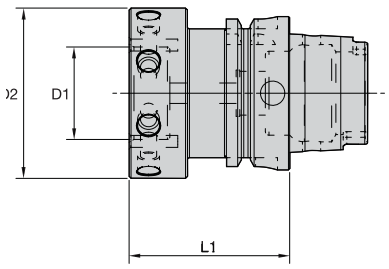
SIF-CV50 Form B/AD— Metric

catalog number	system size D2	D1	L1	kg	lock screw	wrench size — lock screw	adjustment screw	wrench size — adjustment screw
CV50BSIF70060M	70	38	60	3,7	MS-1171	MW5	121.808	MW4
CV50BSIF100060M	100	58	60	4,2	MS-1294	MW6	121.812	MW4

Ordering Example:
By catalog number CV50BSIF70060M.

SIF Steerable Toolholder

- HSK63 shank.
- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.



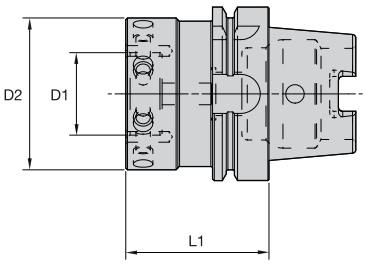
SIF-HSK63 Form A

catalog number	system size D2	D1	L1	kg	lock screw	wrench size – lock screw	adjustment screw	wrench size – adjustment screw
HSK63ASIF70066M	70	38	66	1,5	MS-1171	MW5	121.808	MW4

Ordering Example:
By catalog number HSK63ASIF70066M.

HSK coolant unit and wrench are available and must be ordered separately.

- HSK80 shank.
- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.



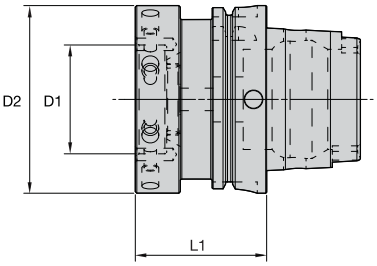
SIF-HSK80 Form A

catalog number	system size D2	D1	L1	kg	lock screw	wrench size – lock screw	adjustment screw	wrench size – adjustment screw
HSK80ASIF70066M	70	38	66	2,1	MS-1171	MW5	121.808	MW4

Ordering Example:
By catalog number HSK80ASIF70066M.

HSK coolant unit and wrench are available and must be ordered separately.

- HSK100 shank.
- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.



SIF-HSK100 Form A

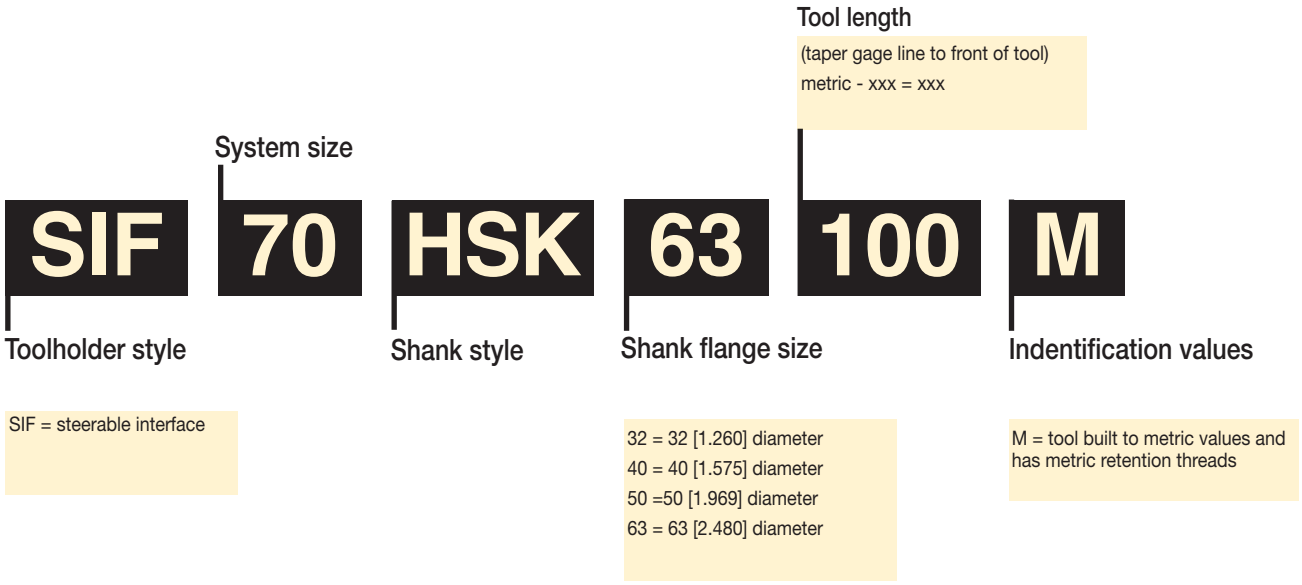
catalog number	system size D2	D1	L1	kg	lock screw	wrench size – lock screw	adjustment screw	wrench size – adjustment screw
HSK100ASIF70050M	70	38	50	2,5	MS-1171	MW5	121.808	MW4
HSK100ASIF100070M	100	58	70	3,9	MS-1294	MW6	121.812	MW4

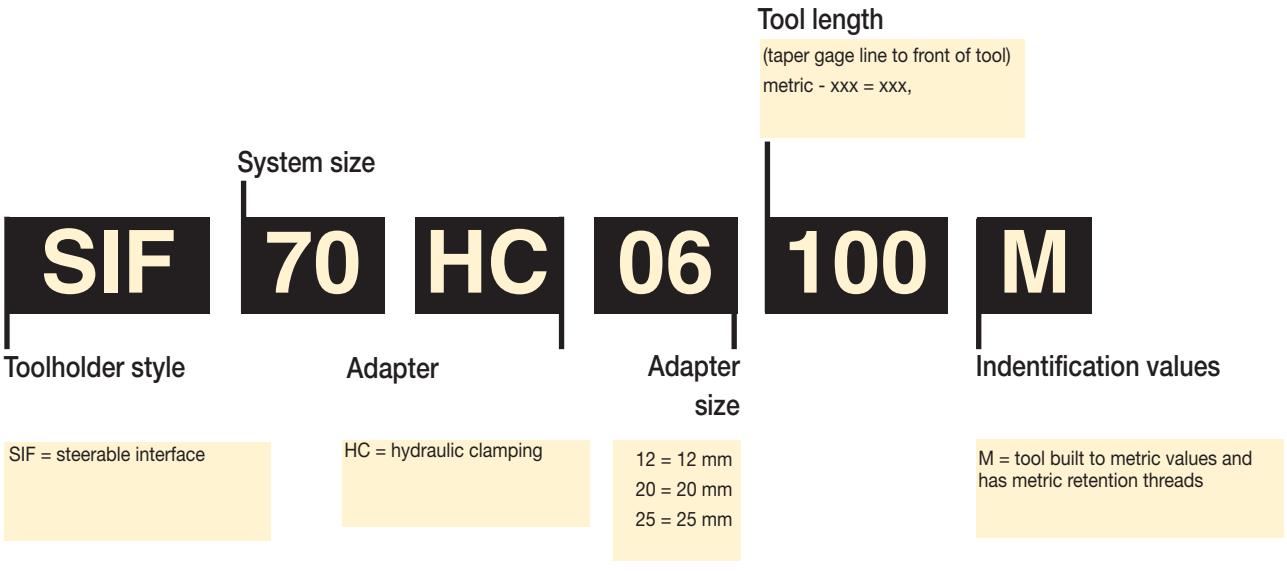
Ordering Example:
By catalog number HSK100ASIF70050M.

HSK coolant unit and wrench are available and must be ordered separately.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

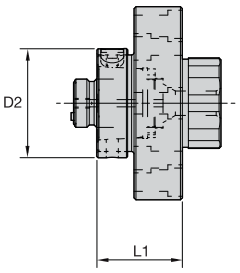
Kennametal Standard Catalog Number System





SIF Steerable Toolholder

- SIF80 bushes.
- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.



HSK-SIF80

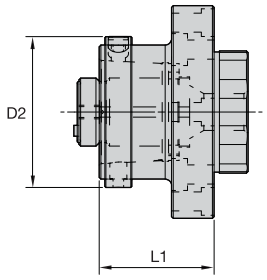
catalog number	system size	D2	L1	kg	wrench size – actuation screw	Nm
SIF80HSK32032M	HSK32	80	32	1,00	3 MM	6
SIF80HSK40035M	HSK40	80	35	1,05	3 MM	8
SIF80HSK50040M	HSK50	80	40	1,15	4 MM	15

Ordering Example:
By catalog number SIF80HSK32032M.

HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque actuation screw. Use recommended torques referenced above.
Supplied with actuation mechanism and sealing ring.

- SIF100 bushes.
- Through-the-toolholder coolant capability.
- Suitable for SIF adapters.



HSK-SIF100

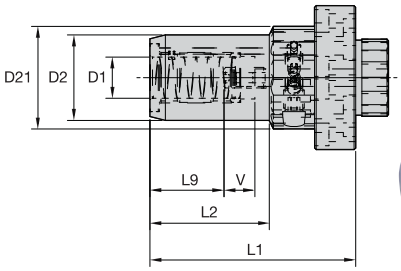
catalog number	system size	D2	L1	kg	wrench size – actuation screw	Nm
SIF100HSK32032M	HSK32	100	32	1,60	3 MM	6
SIF100HSK40035M	HSK40	100	35	1,65	3 MM	8
SIF100HSK50040M	HSK50	100	40	1,75	4 MM	15
SIF100HSK63055M	HSK63	100	55	2,05	5 MM	20

Ordering Example:
By catalog number SIF100HSK32032M.

HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque actuation screw. Use recommended torques referenced above.
Supplied with actuation mechanism and sealing ring.

- SIF70 hydraulic chucks.
- Suitable for SIF70 toolholder.
- Runout < 0,003mm (.0001").
- 10mm (⅜") axial adjustment stop through center of tool.



HC Trend — SIF70

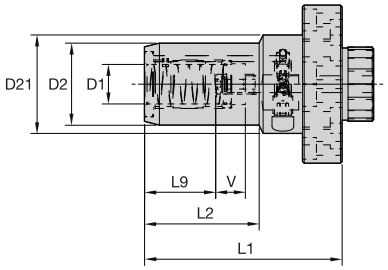
catalog number	D1	D2	D21	L1	L2	L9	V	kg	actuation wrench	wrench size — actuation screw	stop screw wrench	wrench size — stop screw
SIF70HC12090M	12	31,6	50	90	45	36	10	1,23	170.135	5 MM	170.003	3 MM
SIF70HC20100M	20	41,6	50	100	58	41	10	1,45	170.135	5 MM	170.135	5 MM

Ordering Example:
By catalog number SIF70HC12090M.

HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

- SIF80 hydraulic chucks.
- Suitable for SIF80 toolholder.
- Runout < 0,003mm (.0001").
- 10mm (⅜") axial adjustment stop through center of tool.



HC Trend — SIF80

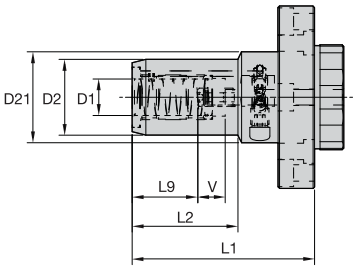
catalog number	D1	D2	D21	L1	L2	L9	V	kg	actuation wrench	wrench size — actuation screw	stop screw wrench	wrench size — stop screw
SIF80HC12090M	12	31,6	50	90	45	36	10	1,42	170.135	5 MM	170.003	3 MM
SIF80HC20100M	20	41,6	50	100	58	41	10	1,64	170.135	5 MM	170.135	5 MM
SIF80HC25100M	25	49,8	63	100	51	47	10	2,14	170.136	6 MM	170.005	5 MM

Ordering Example:
By catalog number SIF80HC12090M.

HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

- SIF100 hydraulic chucks.
- Suitable for SIF100 toolholder.
- Runout < 0,003mm (.0001").
- 10mm (⅜") axial adjustment stop through center of tool.



HC Trend — SIF100

catalog number	D1	D2	D21	L1	L2	L9	V	kg	actuation wrench	wrench size — actuation screw	stop screw wrench	wrench size — stop screw
SIF100HC12090M	12	31,6	50	90	45	36	10	2,00	170.135	5 MM	170.003	3 MM
SIF100HC20100M	20	41,6	50	100	58	41	10	2,23	170.135	5 MM	170.135	5 MM
SIF100HC25100M	25	49,8	63	100	51	47	10	3,00	170.136	6 MM	170.005	5 MM

Ordering Example:
By catalog number SIF100HC12090M.

HSK coolant unit and wrench are available and must be ordered separately.

IMPORTANT: Do not overtorque clamp screw. Use supplied wrench and tighten by hand until stop is felt.

HC-Style Sleeve Identification System

20	M	HC	160	M

System size

12 = 12mm
20 = 20mm
32 = 32mm
50 = ½"
75 = ¾"
12 = 1¼"

System value

M = previous two numbers built in metric values

Sleeve style

HC — hydraulic chuck

Sleeve bore size

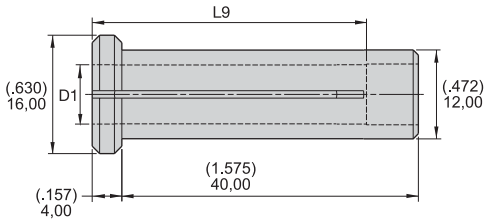
metric (xx.x)	010	=	1mm
	160	=	16mm
	250	=	25mm
inch (x.xxx)	0125	=	⅛"
	0500	=	½"
	1000	=	1"

Identification value

M = sleeve bore size built to metric values

(blank) = sleeve bore size built to inch values

- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have a through hole when using coolant.
- Capable of up to 120 bar (1,500 psi) coolant pressure.
- Sleeve must be inserted completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tools must be in full contact with the sleeve bore length (L9).
- Cutting tool shank requirement tolerance is h6 and Ra ≥ 0,3 µm (12 µ in) surface finish.
- Only metric bores are available.



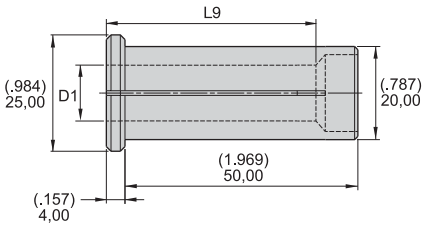
12mm HC Hydraulic Chuck Sleeves

HC12M Sleeve — Metric (12mm Sleeve with Metric Bore)

D1	order number	catalog number	sleeve series	sleeve capacity max. mm	sleeve capacity min. mm	L9
3,0	3026450	12MHC030M	HC12M	3	2,994	29
4,0	3026451	12MHC040M	HC12M	4	3,992	29
5,0	3026452	12MHC050M	HC12M	5	4,992	29
6,0	3026643	12MHC060M	HC12M	6	5,992	36
7,0	3026644	12MHC070M	HC12M	7	6,991	37
8,0	3026645	12MHC080M	HC12M	8	7,991	37
9,0	3026646	12MHC090M	HC12M	9	8,991	37
10,0	3026647	12MHC100M	HC12M	10	9,991	40

IMPORTANT: Inserting the cutting tool less than the full gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Full length of the gripping bore needs to be maintained to achieve maximum accuracy, safety, and coolant sealing feature.

20mm HC Hydraulic Chuck Sleeves



- One-piece design with slot configuration to seal coolant.
- Cutting tool must be cylindrical and have a through hole when using coolant.
- Capable of up to 120 bar (1,500 psi) coolant pressure.
- Sleeve must be inserted completely into the hydraulic chuck until shoulder mates against the hydraulic chuck front face.
- Cutting tools must be in full contact with the sleeve bore length (L9).
- Cutting tool shank requirement tolerance is h6 and Ra ≥ 0,3 µm (12 µ in) surface finish.
- Metric and inch bores are available.

HC20M Sleeve — Metric (20mm Sleeve with Metric Bore)

D1	order number	catalog number	sleeve series	sleeve capacity max. mm	sleeve capacity min. mm	L9
3,0	3026648	20MHC030M	HC20M	3	2,994	28
4,0	3026649	20MHC040M	HC20M	4	3,992	28
5,0	3026650	20MHC050M	HC20M	5	4,992	28
6,0	3026651	20MHC060M	HC20M	6	5,992	36
7,0	3026652	20MHC070M	HC20M	7	6,991	37
8,0	3026653	20MHC080M	HC20M	8	7,991	37
9,0	3026654	20MHC090M	HC20M	9	8,991	38
10,0	3026655	20MHC100M	HC20M	10	9,991	40
11,0	3026656	20MHC110M	HC20M	11	10,989	40
12,0	3026657	20MHC120M	HC20M	12	11,989	45
13,0	3026658	20MHC130M	HC20M	13	12,989	45
14,0	3026659	20MHC140M	HC20M	14	13,989	45
15,0	3026660	20MHC150M	HC20M	15	14,989	45
16,0	3026661	20MHC160M	HC20M	16	15,989	48

HC20M Sleeve — Inch (20mm Sleeve with Inch Bore)

D1	order number	catalog number	sleeve series	sleeve capacity max. inch	sleeve capacity min. inch
3/16	1093566	20HCM0188	HC20M	.1875	.1871
1/4	1093567	20HCM0250	HC20M	.2500	.2496
5/16	1093568	20HCM0312	HC20M	.3125	.3121
3/8	1093569	20HCM0375	HC20M	.3750	.4371
7/16	1093570	20HCM0438	HC20M	.4375	.4371
1/2	1093571	20HCM0500	HC20M	.5000	.4996
9/16	1093572	20HCM0562	HC20M	.5625	.5621
5/8	1093573	20HCM0625	HC20M	.6250	.6246

IMPORTANT: Inserting the cutting tool less than the full gripping length (L9) of the sleeve can permanently damage the sleeve and hydraulic chuck. Full length of the gripping bore must be maintained to achieve maximum accuracy, safety, and coolant sealing feature.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

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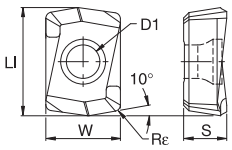
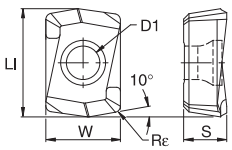


● first choice
○ alternate choice

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

DFR-GD

	LI		W		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	KC7020	KC7140	KC7225	KC7025	KC7820	KC7815
DFR020204GD	.2803	7,12	.1929	4,90	.0906	2,30	.1098	2,79	.0156	0,40	●	●				●
DFR030204GD	.3429	8,71	.2362	6,00	.0984	2,50	.1134	2,88	.0156	0,40	●	●				●
DFR040304GD	.4236	10,76	.2906	7,38	.1122	2,85	.1492	3,79	.0156	0,40	●	●				●

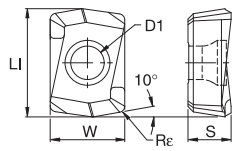


● first choice
○ alternate choice

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

DFR-LGD

	LI		W		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	KC7020	KC7140	KC7225	KC7025	KC7820	KC7815
DFR020204LGD	.2803	7,12	.1929	4,90	.0906	2,30	.1098	2,79	.0156	0,40	●	●				●
DFR030204LGD	.3429	8,71	.2362	6,00	.0984	2,50	.1134	2,88	.0156	0,40	●	●				●
DFR040304LGD	.4236	10,76	.2906	7,38	.1122	2,85	.1492	3,79	.0156	0,40	●	●				●



● first choice
○ alternate choice

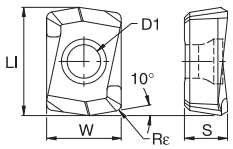
H											
S			○				○				
N			○				○				
K			○					●			
M			●					○			
P			●					●			

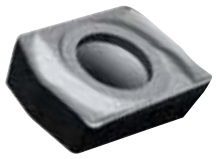
DFR-MD

	LI		W		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	KC7020	KC7140	KC7225	KC7025	KC7820	KC7815
DFR020204MD	.2803	7,12	.1929	4,90	.0906	2,30	.1098	2,79	.0156	0,40		●			●	
DFR030204MD	.3429	8,71	.2362	6,00	.0984	2,50	.1134	2,88	.0156	0,40		●			●	
DFR040304MD	.4236	10,76	.2906	7,38	.1122	2,85	.1490	3,79	.0156	0,40		●			●	

Ordering Example:
By catalog number and grade DFR020204GD KC7020.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



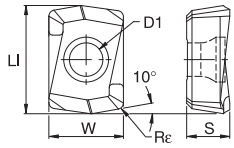


● first choice
○ alternate choice

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

DFR-LD

	LI		W		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	KC7020	KC7140	KC7225	KC7025	KC7820	KC7815
DFR020204LD	.2803	7,12	.1929	4,90	.0906	2,30	.1098	2,79	.0156	0,40		●	●	●		
DFR030204LD	.3429	8,71	.2362	6,00	.0984	2,50	.1126	2,86	.0156	0,40			●	●		
DFR040304LD	.4236	10,76	.2906	7,38	.1122	2,85	.1480	3,76	.0156	0,40			●	●		



● first choice
○ alternate choice

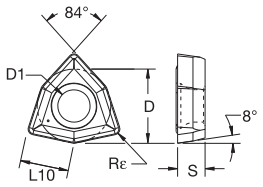
H							
S			○				
N			●				
K			●				
M			○				
P			○				

DFR-LLD

	LI		W		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	KC7020	KC7140	KC7225	KC7025	KC7820	KC7815
DFR020204LLD	.2803	7,12	.1929	4,90	.0906	2,30	.1098	2,79	.0156	0,40			●			
DFR030204LLD	.3429	8,71	.2362	6,00	.0984	2,50	.1126	2,86	.0156	0,40			●			
DFR040304LLD	.4236	10,76	.2906	7,38	.1122	2,85	.1480	3,76	.0156	0,40			●			

Ordering Example:
By catalog number and grade DFR020204LD KC7140.

DRILL-FIX DFT Inserts

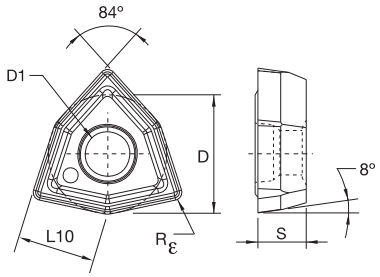


● first choice
○ alternate choice

	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
H								
S		○				○	●	
N		●				○		
K		●				●		
M		●				○	●	
P		●				●	●	

DFT-GD

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
DFT030204GD	.1560	3,97	.2360	6,00	.0890	2,25	.0960	2,45	.0156	0,40		●				●	●	
DFT030304GD	.1560	3,97	.2360	6,00	.1040	2,65	.1160	2,95	.0156	0,40		●				●	●	
DFT05T308GD	.2080	5,29	.3150	8,00	.1340	3,40	.1480	3,75	.0313	0,80		●				●	●	
DFT06T308GD	.2600	6,62	.3940	10,00	.1730	4,40	.1480	3,75	.0313	0,80		●				●	●	
DFT070408GD	.3130	7,94	.4720	12,00	.1730	4,40	.1870	4,75	.0313	0,80		●				●	●	
DFT090508GD	.3910	9,92	.5910	15,00	.2170	5,50	.2070	5,25	.0313	0,80		●				●	●	

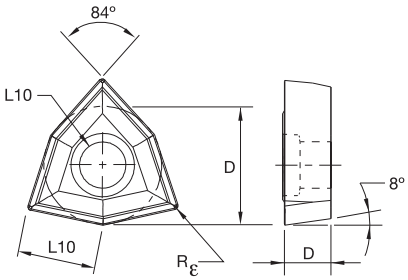


● first choice
○ alternate choice

	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
H								
S		●			○		●	
N					○			
K		●		●	○			
M		○		○	●		●	
P		●		○	●		●	

DFT-HD

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
DFT110506HD	.4580	11,63	.6929	17,60	.2300	5,85	.1941	4,93	.0236	0,60		●		●			●	
DFT110508HD	.4580	11,63	.6929	17,60	.2300	5,85	.1941	4,93	.0313	0,80		●			●			



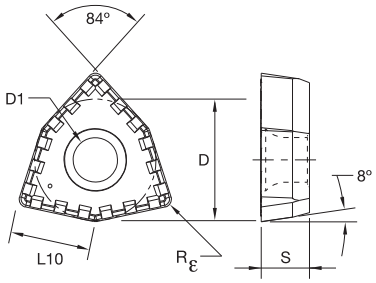
● first choice
○ alternate choice

	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
H								
S		●			○			
N		○			○			●
K		●			○			
M		○			●			
P		●			●			

DFT-HP

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
DFT030204HP	.1560	3,97	.2360	6,00	.0890	2,25	.0960	2,45	.0156	0,40		●			●			●
DFT030304HP	.1560	3,97	.2362	6,00	.1040	2,65	.1160	2,95	.0156	0,40		●			●			●
DFT05T308HP	.2080	5,29	.3150	8,00	.1370	3,50	.1480	3,75	.0313	0,80		●			●			●
DFT06T308HP	.2600	6,62	.3940	10,00	.1730	4,40	.1480	3,75	.0313	0,80		●			●			●
DFT070408HP	.3130	7,94	.4720	12,00	.1730	4,40	.1870	4,75	.0313	0,80		●			●			●
DFT090508HP	.3910	9,92	.5910	15,00	.2170	5,50	.2070	5,25	.0313	0,80		●			●			●

Ordering Example:
By catalog number and grade DFT030204GD KC7215.

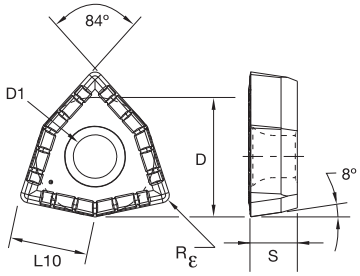


● first choice
○ alternate choice

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

DFT-LD

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
DFT030204LD	.1560	3,97	.2360	6,00	.0890	2,25	.0960	2,45	.0156	0,40			●					
DFT030304LD	.1560	3,97	.2362	6,00	.1040	2,65	.1160	2,95	.0156	0,40			●					
DFT05T308LD	.2080	5,29	.3150	8,00	.1340	3,40	.1480	3,75	.0313	0,80			●				●	
DFT06T308LD	.2600	6,62	.3940	10,00	.1730	4,40	.1480	3,75	.0313	0,80			●				●	
DFT070408LD	.3130	7,94	.4720	12,00	.1730	4,40	.1870	4,75	.0313	0,80			●				●	
DFT090508LD	.3910	9,92	.5910	15,00	.2170	5,50	.2070	5,25	.0313	0,80			●				●	

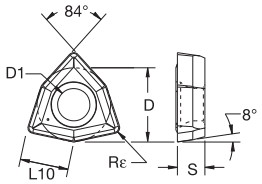


● first choice
○ alternate choice

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

DFT-MD

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7820	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF
DFT030204MD	.1560	3,97	.2360	6,00	.0890	2,25	.0960	2,45	.0156	0,40				●	●		●	
DFT030304MD	.1560	3,97	.2362	6,00	.1040	2,65	.1160	2,95	.0156	0,40				●	●		●	
DFT05T308MD	.2080	5,29	.3150	8,00	.1340	3,40	.1480	3,75	.0313	0,80	●			●	●		●	
DFT06T308MD	.2600	6,62	.3940	10,00	.1730	4,40	.1480	3,75	.0313	0,80	●			●	●		●	
DFT070408MD	.3130	7,94	.4720	12,00	.1730	4,40	.1870	4,75	.0313	0,80	●			●	●		●	
DFT090508MD	.3910	9,92	.5910	15,00	.2170	5,50	.2070	5,25	.0313	0,80	●			●	●		●	



● first choice
○ alternate choice

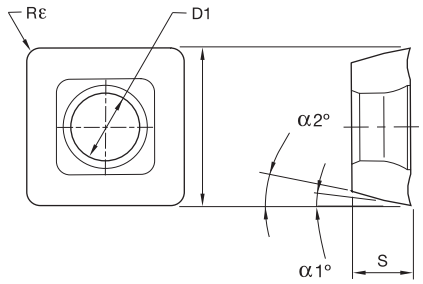
H											
S		●			○					○	
N					○					●	
K		●			○						
M		○			●					●	
P		●			●					●	

WOGX...24

catalog number	L10 in	L10 mm	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	KC7280	KC7215	KC7225	KC7935	KC7140	KC7815	KC720	KMF	CS5
WOGX03020424	.1560	3,94	.2362	6,00	.1043	2,65	.0984	2,50	.0156	0,40		●			●				●

Ordering Example:
By catalog number and grade DFT030204LD KC7225.

SP.. — Indexable Inserts for S2S Countersink and HTS-C

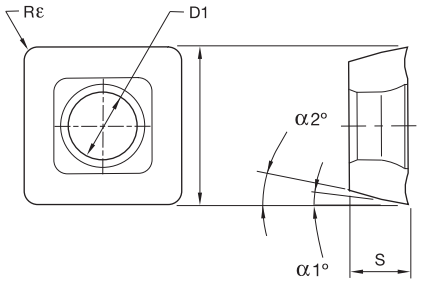


● first choice
○ alternate choice

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

SP..X..FP

	D		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPGX060304FP	.2500	6,35	.1120	2,85	.1252	3,18	.0156	0,40	12	●	●		●	
SPGX070304FP	.3124	7,94	.1120	2,85	.1252	3,18	.0156	0,40	12	●	●		●	
SPPX09T308FP	.3750	9,53	.1417	3,60	.1563	3,97	.0313	0,80	–	●	●		●	
SPPX120408FP	.5000	12,70	.1811	4,60	.1875	4,76	.0313	0,80	–	●	●		●	

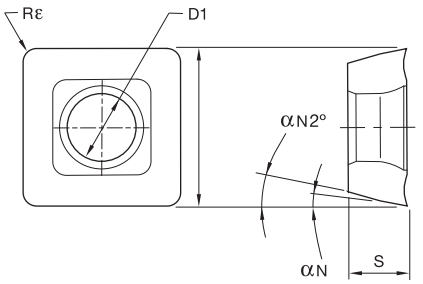


● first choice
○ alternate choice

H						
S					○	
N					○	
K					●	
M					○	
P					●	

SP..X..MD

	D		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPGX060304MD	.2500	6,35	.1040	2,65	.1252	3,18	.0156	0,40	–				●	
SPGX070304MD	.3124	7,94	.1120	2,85	.1252	3,18	.0156	0,40	–				●	
SPPX09T308MD	.3750	9,53	.1417	3,60	.1563	3,97	.0313	0,80	–				●	
SPPX120408MD	.5000	12,70	.1811	4,60	.1875	4,76	.0313	0,80	–				●	



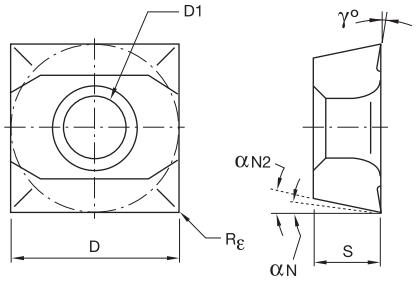
● first choice
○ alternate choice

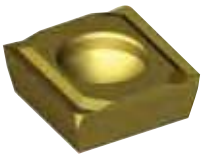
H						
S			●	○	○	
N				○	○	
K			●	○	●	
M			○	●	○	
P			●	●	●	

SP..X..RHP

	D		D1		S		Rε							
catalog number	in	mm	in	mm	in	mm	in	mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPGX060304RHP	.2500	6,35	.1040	2,65	.1252	3,18	.0156	0,40	12		●	●	●	
SPGX070304RHP	.3124	7,94	.1120	2,85	.1252	3,18	.0156	0,40	12		●	●	●	
SPPX09T308RHP	.3750	9,53	.1417	3,60	.1563	3,97	.0313	0,80	–		●	●	●	
SPPX120408RHP	.5000	12,70	.1811	4,60	.1875	4,76	.0313	0,80	–		●	●	●	

Ordering Example:
By catalog number and grade SPGX060304FP KC7210.





● first choice
○ alternate choice

	KC7210	KC7215	KC7140	KC7815	KM1
H					
S			○		
N			○		
K			○		
M			●		
P		●	●		

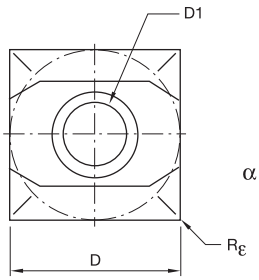
SPHX..R-20

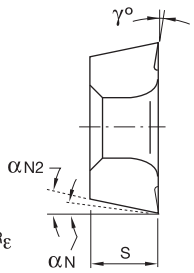
catalog number	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPHX060202R20	.2500	6,35	.1122	2,85	.0937	2,38	.0080	0,20	12		●			
SPHX060204R20	.2500	6,35	.1122	2,85	.0937	2,38	.0156	0,40	12		●	●		
SPHX060206R20	.2500	6,35	.1122	2,85	.0937	2,38	.0236	0,60	12		●			
SPHX060208R20	.2500	6,35	.1122	2,85	.0937	2,38	.0313	0,80	12		●			
SPHX070302R20	.3125	7,94	.1122	2,85	.1252	3,18	.0080	0,20	12		●			
SPHX070304R20	.3125	7,94	.1122	2,85	.1252	3,18	.0156	0,40	12		●	●		
SPHX070306R20	.3125	7,94	.1122	2,85	.1252	3,18	.0236	0,60	12		●			
SPHX070308R20	.3125	7,94	.1122	2,85	.1252	3,18	.0313	0,80	12		●			
SPHX070310R20	.3125	7,94	.1122	2,85	.1252	3,18	.0394	1,00	12		●			
SPHX070312R20	.3125	7,94	.1122	2,85	.1252	3,18	.0472	1,20	12		●			
SPHX090304R20	.3750	9,53	.1378	3,50	.1252	3,18	.0160	0,40	12		●	●		
SPHX090308R20	.3750	9,53	.1378	3,50	.1252	3,18	.0313	0,80	12		●			
SPHX090310R20	.3750	9,53	.1378	3,50	.1252	3,18	.0394	1,00	12		●			
SPHX090312R20	.3750	9,53	.1378	3,50	.1252	3,18	.0472	1,20	12		●			
SPHX090316R20	.3750	9,53	.1378	3,50	.1252	3,18	.0625	1,60	12		●			
SPHX120404R20	.5000	12,70	.1772	4,50	.1874	4,76	.0156	0,40	12		●	●		
SPHX120408R20	.5000	12,70	.1772	4,50	.1874	4,76	.0313	0,80	12		●			
SPHX120410R20	.5000	12,70	.1772	4,50	.1874	4,76	.0394	1,00	12		●			
SPHX120412R20	.5000	12,70	.1772	4,50	.1874	4,76	.0472	1,20	12		●			
SPHX120416R20	.5000	12,70	.1772	4,50	.1874	4,76	.0625	1,60	12		●			
SPHX120420R20	.5000	12,70	.1772	4,50	.1874	4,76	.0787	2,00	12		●			
SPHX150508R20	.6250	15,88	.2165	5,50	.2343	5,95	.0313	0,80	12		●			
SPHX150512R20	.6250	15,88	.2165	5,50	.2343	5,95	.0472	1,20	12		●			
SPHX150516R20	.6250	15,88	.2165	5,50	.2343	5,95	.0625	1,60	12		●			
SPHX150520R20	.6250	15,88	.2165	5,50	.2343	5,95	.0787	2,00	12		●			

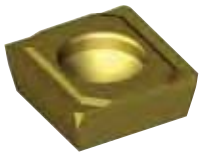
SPHX...R-20: This geometry is first choice for steel applications.

Ordering Example:
By catalog number and grade SPHX060202R20 KC7215.

SPHX – Indexable Inserts for S2S Countersink and HTS-C







● first choice
○ alternate choice

H			○
S		○	
N	○		
K	●	●	
M			○
P	○	○	

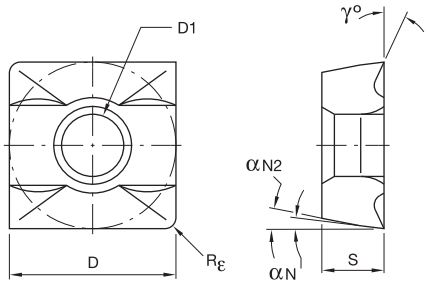
SPHX..R-21

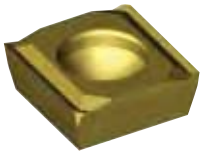
catalog number	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPHX060202R21	.2500	6,35	.1122	2,85	.0937	2,38	.0080	0,20	4		●			
SPHX060204R21	.2500	6,35	.1122	2,85	.0937	2,38	.0156	0,40	4	●	●			
SPHX060206R21	.2500	6,35	.1122	2,85	.0937	2,38	.0236	0,60	4		●			
SPHX060208R21	.2500	6,35	.1122	2,85	.0937	2,38	.0313	0,80	4		●			
SPHX070304R21	.3125	7,94	.1122	2,85	.1252	3,18	.0156	0,40	4	●	●			
SPHX070306R21	.3125	7,94	.1122	2,85	.1252	3,18	.0236	0,60	4		●			
SPHX070308R21	.3125	7,94	.1122	2,85	.1252	3,18	.0313	0,80	4		●			
SPHX070310R21	.3125	7,94	.1122	2,85	.1252	3,18	.0394	1,00	4		●			
SPHX090304R21	.3750	9,53	.1378	3,50	.1252	3,18	.0160	0,40	4	●	●			
SPHX090308R21	.3750	9,53	.1378	3,50	.1252	3,18	.0315	0,80	4		●			
SPHX090310R21	.3750	9,53	.1378	3,50	.1252	3,18	.0394	1,00	4		●			
SPHX090312R21	.3750	9,53	.1378	3,50	.1252	3,18	.0472	1,20	4		●			
SPHX090316R21	.3750	9,53	.1378	3,50	.1252	3,18	.0625	1,60	4		●			
SPHX120404R21	.5000	12,70	.1772	4,50	.1874	4,76	.0156	0,40	4	●	●			
SPHX120408R21	.5000	12,70	.1772	4,50	.1874	4,76	.0313	0,80	4		●			
SPHX120410R21	.5000	12,70	.1772	4,50	.1874	4,76	.0394	1,00	4		●			
SPHX120412R21	.5000	12,70	.1772	4,50	.1874	4,76	.0472	1,20	4		●			
SPHX120416R21	.5000	12,70	.1772	4,50	.1874	4,76	.0625	1,60	4		●			
SPHX120420R21	.5000	12,70	.1772	4,50	.1874	4,76	.0787	2,00	4		●			

SPHX...R-21: This geometry is first choice for cast iron applications.

Ordering Example:
By catalog number and grade SPHX060202R21 KC7210.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





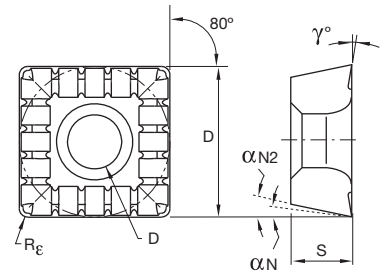
● first choice
○ alternate choice

	KC7210	KC7215	KC7140	KC7815	KM1
H					
S					
N					●
K					○
M					
P					

SPHX..R-22

catalog number	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPHX060204R22	.2500	6,35	.1122	2,85	.0937	2,38	.0156	0,40	25					●
SPHX070304R22	.3125	7,94	.1122	2,85	.1252	3,18	.0156	0,40	25					●
SPHX090304R22	.3750	9,53	.1378	3,50	.1252	3,18	.0160	0,40	25					●
SPHX120404R22	.5000	12,70	.1772	4,50	.1874	4,76	.0156	0,40	25					●
SPHX150504R22	.6250	15,88	.2165	5,50	.2343	5,95	.0156	0,40	25					●

SPHX...R-22: This geometry is first choice for aluminum applications.



● first choice
○ alternate choice

	KC7210	KC7215	KC7140	KC7815	KM1
H					
S		●	○		
N			○		
K		○	○		
M		○	●		
P		●	●		

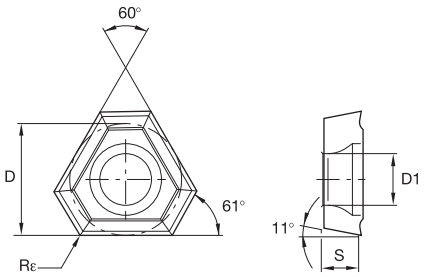
SPGX...-31(ISO)/SPGT...MD/MDT (ANSI)

ISO catalog number	ANSI catalog number	D in	D mm	D1 in	D1 mm	S in	S mm	Rε in	Rε mm	γ	KC7210	KC7215	KC7140	KC7815	KM1
SPGX06020431	SPGT060204MD	.2500	6,35	.1040	2,65	.0937	2,38	.0156	0,40	12		●	●		
SPGX07030431	SPGT070304MDT	.3125	7,94	.1120	2,85	.1252	3,18	.0156	0,40	12		●	●		
SPGX09030831	SPGT090308MDT	.3750	9,53	.1380	3,50	.1252	3,18	.0313	0,79	12		●	●		
SPGX12040831	SPGT120408MDT	.5000	12,70	.1770	4,50	.1874	4,76	.0313	0,79	12		●	●		

NOTE: *SPGX (ISO code)/ SPGT (ANSI code) are only to be used for HTS-C.*

Ordering Example:
By catalog number and grade SPHX060204R22 KC7210.

KSEM Chamfering Insert

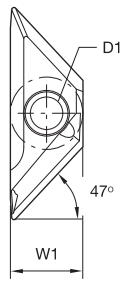


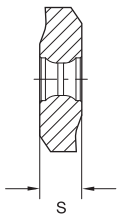
● first choice
○ alternate choice

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

TPGX-GD Geometry

	D		S		Rε		D1				
catalog number	in	mm	in	mm	in	mm	in	mm	KC7015	KC7140	KC7315
TPGX0902ZPRGD	.2188	5,56	.0938	2,38	.0080	0,20	.0980	2,50	●	●	●
TPGX1102ZPRGD	.2500	6,35	.0938	2,38	.0080	0,20	.1120	2,85	●	●	●
TPGX1303ZPRGD	.3125	7,94	.1250	3,18	.0080	0,20	.1340	3,40	●	●	●
TPGX1603ZPRGD	.3750	9,52	.1250	3,18	.0080	0,20	.1730	4,40	●	●	●





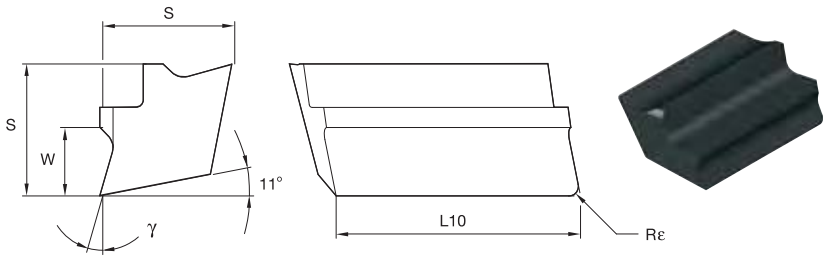
● first choice
○ alternate choice

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

FAS-GD Geometry

	W1		D1		S			
catalog number	in	mm	in	mm	in	mm	KC7015	KC7215
FAS100302GD	.2500	6,35	.1120	2,85	.1370	3,48	●	●

Ordering Example:
By catalog number and grade TPGX0902ZPRGD KC7015.

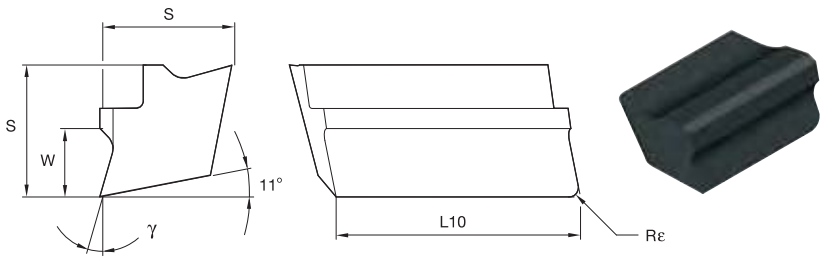


● first choice
○ alternate choice

H		
S		
N	●	
K	○	
M		
P		

BPGX...LHP

ANSI catalog number	ISO catalog number	L10 in	L10 mm	S in	S mm	W in	W mm	Rε in	Rε mm	γ	K313	KC7210	KC7235
BPGX030101LHP	BPGX030101LHP	.1181	3,00	.0669	1,70	.0315	0,80	.0020	0,05	16.000	●		
BPGX030102LHP	BPGX030102LHP	.1181	3,00	.0669	1,70	.0315	0,80	.0079	0,20	16.000	●		
BPGX050202LHP	BPGX050202LHP	.1969	5,00	.1063	2,70	.0551	1,40	.0079	0,20	16.000	●		
BPGX050204LHP	BPGX050204LHP	.1969	5,00	.1063	2,70	.0551	1,40	.0157	0,40	16.000	●		



● first choice
○ alternate choice

H			
S		●	○
N		○	
K		●	
M			●
P		○	●

BPGF...LGD

ANSI catalog number	ISO catalog number	L10 in	L10 mm	S in	S mm	W in	W mm	Rε in	Rε mm	γ	K313	KC7210	KC7235
BPGF030101LGD	BPGF030101LGD	.1181	3,00	.0512	1,30	.0670	1,70	.0020	0,05	10.000		●	●
BPGF030102LGD	BPGF030102LGD	.1181	3,00	.0512	1,30	.0670	1,70	.0080	0,20	10.000		●	●
BPGF050202LGD	BPGF050202LGD	.1969	5,00	.0835	2,12	.1102	2,80	.0080	0,20	10.000		●	●
BPGF050204LGD	BPGF050204LGD	.1969	5,00	.0835	2,12	.1102	2,80	.0157	0,40	10.000		●	●

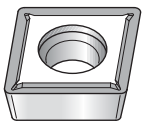
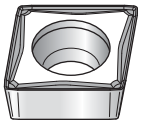
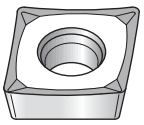
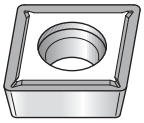
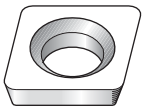
Ordering Example:
By catalog number and grade BPGX03010LHP K313.

KENNAMETAL

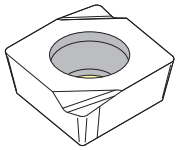
Inserts for Romicron® — Grade Selection

● first choice
○ alternate choice

		KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	K313
H												
S					●			●	●			●
N										●		●
K						●	●				●	○
M		○	○	●	●			●	●		●	
P		●	●	○	○		○	●			●	

	ANSI catalog number	KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	K313
CPMT-LF 	CPMT21505LF							●	●			●
	CPMT2151LF	●	●	●	●	●	●	●	●		●	●
	CPMT2152LF	●	●	●	●	●	●	●	●		●	●
CPMT-FW 	CPMT21505FW							●			●	
	CPMT2151FW			●		●	●	●			●	
	CPMT2152FW			●		●		●			●	
CPGT - HP 	CPGT21505HP							●	●	●		
	CPGT2151HP							●	●	●		
	CPGT2152HP							●	●	●		
CPGT - LF 	CPGT21505LF							●	●	●		
	CPGT2150LF							●	●	●		
	CPGT2151LF							●	●	●		●
	CPGT2152LF							●	●	●		●
CDHB 	CDHB120605							●	●		●	●
	CDHB12061							●	●		●	●

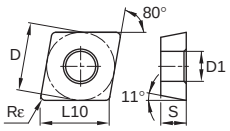
Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

		KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	K313
CPGT - FW 	CPGT2151FWL20									●		

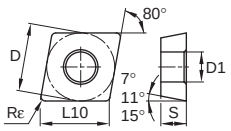
Wiper Insert for Romicron

Ordering Example:
By catalog number and grade CPMT21505LF KC5010.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



CPMT-LF



CPMT-FW, CPGT - HP, CPGT - LF, CDHB

		D		L10		S		Rε		D1		
ANSI catalog number	ISO catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	
CPMT21505LF	CPMT060202LF	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1102	2,80	CPMT-LF
CPMT2151LF	CPMT060204LF	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1102	2,80	
CPMT2152LF	CPMT060208LF	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1102	2,80	
CPMT21505FW	CPMT060202FW	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1102	2,80	CPMT-FW
CPMT2151FW	CPMT060204FW	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1102	2,80	
CPMT2152FW	CPMT060208FW	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1102	2,80	
CPGT21505HP	CPGT060202HP	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CPGT - HP
CPGT2151HP	CPGT060204HP	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CPGT2152HP	CPGT060208HP	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1102	2,80	
CPGT21505LF	CPGT060202LF	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CPGT - LF
CPGT2150LF	CPGT060201LF	1/4	6,35	.2539	6,45	3/32	2,38	0.0040	0,10	.1100	2,80	
CPGT2151LF	CPGT060204LF	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CPGT2152LF	CPGT060208LF	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1102	2,80	
CDHB120605	CDHBS4T002	5/32	3,97	.1587	4,03	.040	1,02	.0080	0,20	.0825	2,10	CDHB
CDHB12061	CDHBS4T004	5/32	3,97	.1587	4,03	.040	1,02	1/64	0,40	.0825	2,10	

Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

CPGT2151FWL20	CPGT060204FWL20	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1120	2,85	CPGT - FW

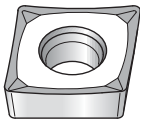
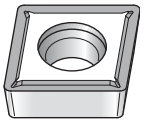
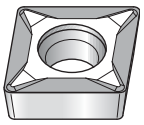
Ordering Example:
By catalog number and grade CPMT21505LF KC5010.

KENNAMETAL

ModBORE™ Screw-ON Inserts — Grade Selection

● first choice
○ alternate choice

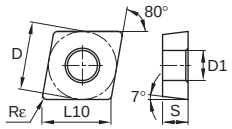
		KC9105	KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	KT325	K313	K68
H															
S									●	●				●	●
N											●			●	
K		○					●	●				●		○	
M		○	○	○	●	●			●	●		●	○		
P		●	●	●	○	○		○	●			●	●		

	ANSI catalog number	KC9105	KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	KT325	K313	K68
CCGT-HP 	CCGT21505HP								●	●	●			●	
	CCGT2151HP								●	●	●			●	
	CCGT2152HP								●	●	●				
	CCGT32505HP								●	●	●			●	
	CCGT3251HP								●	●	●			●	●
	CCGT3252HP								●	●	●				
	CCGT4305HP								●	●	●				
	CCGT431HP								●	●	●			●	●
	CCGT432HP								●	●	●			●	●
CCGT-LF 	CCGT21505LF								●	●	●			●	
	CCGT2150LF								●	●	●			●	
	CCGT2151LF								●	●	●			●	
	CCGT2152LF								●		●				
	CCGT32505LF								●	●	●				
	CCGT3250LF								●	●	●			●	
	CCGT3251LF								●	●	●			●	
	CCGT3252LF								●	●	●			●	
CCMT-11 	CCMT215111											●	●		
	CCMT325111											●	●		
	CCMT325211											●			
	CCMT43111											●			
	CCMT43211											●			

Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

Ordering Example:
By catalog number and grade CCGT21505HP KC5010.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



ANSI catalog number	ISO catalog number	D in	D mm	L10 in	L10 mm	S in	S mm	Rε in	Rε mm	D1 in	D1 mm	
CCGT21505HP	CCGT060202HP	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CCGT-HP
CCGT2151HP	CCGT060204HP	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CCGT2152HP	CCGT060208HP	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1100	2,80	
CCGT32505HP	CCGT09T302HP	3/8	9,53	.3808	9,67	5/32	3,97	.0080	0,20	.1732	4,40	
CCGT3251HP	CCGT09T304HP	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCGT3252HP	CCGT09T308HP	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCGT4305HP	CCGT120402HP	1/2	12,70	.5077	12,90	3/16	4,76	.0080	0,20	.2165	5,50	
CCGT431HP	CCGT120404HP	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2165	5,50	
CCGT432HP	CCGT120408HP	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2165	5,50	
CCGT21505LF	CCGT060202LF	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CCGT-LF
CCGT2150LF	CCGT060201LF	1/4	6,35	.2539	6,45	3/32	2,38	0.0040	0,10	.1100	2,80	
CCGT2151LF	CCGT060204LF	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CCGT2152LF	CCGT060208LF	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1100	2,80	
CCGT32505LF	CCGT09T302LF	3/8	9,53	.3808	9,67	5/32	3,97	.0080	0,20	.1732	4,40	
CCGT3250LF	CCGT09T301LF	3/8	9,53	.3808	9,67	5/32	3,97	0.0040	0,10	.1732	4,40	
CCGT3251LF	CCGT09T304LF	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCGT3252LF	CCGT09T308LF	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCMT215111	CCMT06020411	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	CCMT-11
CCMT325111	CCMT09T30411	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCMT325211	CCMT09T30811	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCMT43111	CCMT12040411	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2165	5,50	
CCMT43211	CCMT12040811	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2165	5,50	

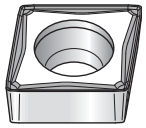
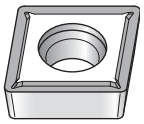
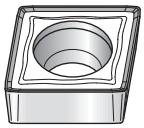
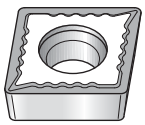
Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

Ordering Example:
By catalog number and grade CCGT21505HP KC5010.

KENNAMETAL

ModBORE™ Screw-ON Inserts — Grade Selection

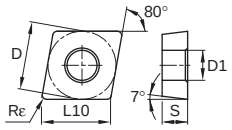
● first choice
○ alternate choice

		KC9105	KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	KT325	K313	K68
H															
S									●	●				●	●
N											●			●	
K		○					●	●				●		○	
M		○	○	○	●	●			●	●		●	○		
P		●	●	●	○	○		○	●			●	●		
ANSI catalog number		KC9105	KC9110	KC9125	KC9225	KC9240	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	KT325	K313	K68
CCMT-FW	CCMT21505FW								●			●			
	CCMT2151FW				●		●	●	●			●			
	CCMT2152FW				●		●		●			●			
	CCMT3251FW				●		●	●	●			●			
	CCMT3252FW				●		●	●	●			●			
CCMT-LF	CCMT21505LF								●	●				●	
	CCMT2151LF	●	●	●	●	●	●	●	●	●				●	●
	CCMT2152LF		●	●	●	●	●	●	●	●					
	CCMT32505LF								●	●		●		●	
	CCMT3251LF	●	●	●	●	●	●	●	●	●		●		●	●
	CCMT3252LF	●	●	●	●	●	●	●	●					●	●
	CCMT431LF		●	●	●	●	●	●	●	●					
	CCMT432LF	●	●	●	●	●	●	●	●	●					
CCMT-MW	CCMT3251MW				●		●		●			●			
	CCMT3252MW				●		●		●			●			
	CCMT431MW								●			●			
	CCMT432MW				●		●		●						
CCMT-UF	CCMT2151UF		●	●	●										
	CCMT32505UF		●	●	●										
	CCMT3251UF		●	●	●										
	CCMT3252UF		●	●	●										

Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

Ordering Example:
By catalog number and grade CCMT21505FW KC5010.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.



ANSI catalog number	ISO catalog number	D in	D mm	L10 in	L10 mm	S in	S mm	Rε in	Rε mm	D1 in	D1 mm	
CCMT21505FW	CCMT060202FW	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CCMT-FW
CCMT2151FW	CCMT060204FW	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CCMT2152FW	CCMT060208FW	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1100	2,80	
CCMT3251FW	CCMT09T304FW	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCMT3252FW	CCMT09T308FW	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCMT21505LF	CCMT060202LF	1/4	6,35	.2539	6,45	3/32	2,38	.0080	0,20	.1100	2,80	CCMT-LF
CCMT2151LF	CCMT060204LF	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	
CCMT2152LF	CCMT060208LF	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1102	2,80	
CCMT32505LF	CCMT09T302LF	3/8	9,53	.3808	9,67	5/32	3,97	.0080	0,20	.1732	4,40	
CCMT3251LF	CCMT09T304LF	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCMT3252LF	CCMT09T308LF	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCMT431LF	CCMT120404LF	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2165	5,50	
CCMT432LF	CCMT120408LF	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2165	5,50	
CCMT3251MW	CCMT09T304MW	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	CCMT-MW
CCMT3252MW	CCMT09T308MW	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	
CCMT431MW	CCMT120404MW	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2165	5,50	
CCMT432MW	CCMT120408MW	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2165	5,50	
CCMT2151UF	CCMT060204UF	1/4	6,35	.2539	6,45	3/32	2,38	1/64	0,40	.1100	2,80	CCMT-UF
CCMT32505UF	CCMT09T302UF	3/8	9,53	.3808	9,67	5/32	3,97	.0080	0,20	.1732	4,40	
CCMT3251UF	CCMT09T304UF	3/8	9,53	.3808	9,67	5/32	3,97	1/64	0,40	.1732	4,40	
CCMT3252UF	CCMT09T308UF	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40	

Additional insert styles, insert geometries and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

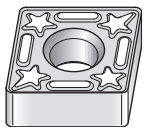
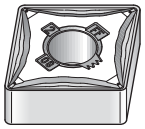
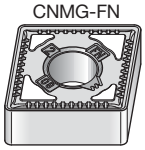
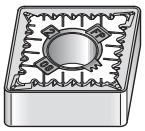
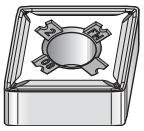
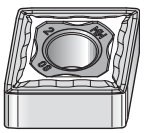
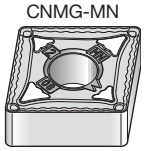
Ordering Example:
By catalog number and grade CCMT21505FW KC5010.

KENNAMETAL

ModBORE™ KENLOC Inserts — Grade Selection

Additional insert styles, insert geometries, and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

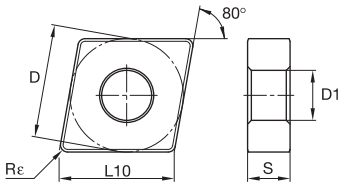
● first choice
○ alternate choice

	KC9105	KC9110	KC9125	KC9140	KC9225	KC9240	KC9240	KC9315	KC9320	KC9325	KC5010	KC5410	KC5510	KC5525	KT315	K313	K68
H																	
S						●					●		●	●		●	●
N												●				●	
K	○							●	●	●					●	○	
M	○	○	○	○	●	●	●				●				●		
P	●	●	●	●	○	○	○		○		●				●		
ANSI catalog number																	
CNGG-LF 	CNGG4305LF											●					●	
	CNGG430LF											●						
	CNGG431LF											●						
	CNGG432LF											●						
	CNGG433LF											●						
	CNGG542LF											●						
	CNGG543LF											●						
CNGP	CNGP4305											●	●					
	CNGP431											●	●				●	●
	CNGP432											●	●				●	●
	CNGP433											●	●				●	
CNMG-FF 	CNMG431FF	●	●			●						●				●		
	CNMG432FF	●	●			●						●				●		
CNMG-FN 	CNMG431FN	●	●	●					●							●		
	CNMG432FN	●	●	●					●							●		
	CNMG433FN	●	●	●					●							●		
	CNMG434FN		●	●					●							●		
CNMG-FP 	CNMG431FP					●						●				●		
	CNMG432FP					●						●				●		
	CNMG433FP					●						●						
CNMG-FW 	CNMG431FW	●	●			●			●			●				●		
	CNMG432FW	●	●			●			●			●				●		
	CNMG433FW	●	●			●			●			●				●		
CNMG-MW 	CNMG432MW	●	●	●		●		●	●		●							
	CNMG433MW	●	●	●		●		●	●		●							
CNMG-MN 	CNMG431MN	●	●	●	●													
	CNMG432MN	●	●	●	●													
	CNMG433MN	●	●	●	●													
	CNMG542MN		●	●	●													
	CNMG543MN	●	●	●	●													
	CNMG642MN		●	●	●													
	CNMG643MN		●	●	●													
	KC9105	KC9110	KC9125	KC9140	KC9225	KC9240	KC9240	KC9315	KC9320	KC9325	KC5010	KC5410	KC5510	KC5525	KT315	K313	K68

Ordering Example:
By catalog number and grade CNGG4305LF KC5010.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

ModBORE™ KENLOC Inserts — Dimensions



Additional insert styles, insert geometries, and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

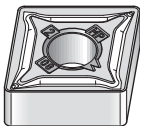
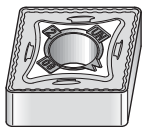
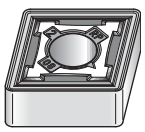
ANSI catalog number	ISO catalog number	D in	D mm	L10 in	L10 mm	S in	S mm	Rε in	Rε mm	D1 in	D1 mm	
CNGG4305LF	CNGG120402LF	1/2	12,70	.5077	12,90	3/16	4,76	.0080	0,20	.2031	5,16	CNGG-LF
CNGG430LF	CNGG120401LF	1/2	12,70	.5077	12,90	3/16	4,76	0.0040	0,10	.2031	5,16	
CNGG431LF	CNGG120404LF	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	
CNGG432LF	CNGG120408LF	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNGG433LF	CNGG120412LF	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNGG542LF	CNGG160608LF	5/8	15,88	.6346	16,12	1/4	6,35	1/32	0,80	.2500	6,35	
CNGG543LF	CNGG160612LF	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNGP4305	CNGP120402	1/2	12,70	.5077	12,90	3/16	4,76	.0080	0,20	.2031	5,16	CNGP
CNGP431	CNGP120404	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	
CNGP432	CNGP120408	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNGP433	CNGP120412	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG431FF	CNMG120404FF	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-FF
CNMG432FF	CNMG120408FF	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG431FN	CNMG120404FN	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-FN
CNMG432FN	CNMG120408FN	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433FN	CNMG120412FN	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG434FN	CNMG120416FN	1/2	12,70	.5077	12,90	3/16	4,76	1/16	1,60	.2031	5,16	
CNMG431FP	CNMG120404FP	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-FP
CNMG432FP	CNMG120408FP	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433FP	CNMG120412FP	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG431FW	CNMG120404FW	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-FW
CNMG432FW	CNMG120408FW	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433FW	CNMG120412FW	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG432MW	CNMG120408MW	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	CNMG-MW
CNMG433MW	CNMG120412MW	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG431MN	CNMG120404MN	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-MN
CNMG432MN	CNMG120408MN	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433MN	CNMG120412MN	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG542MN	CNMG160608MN	5/8	15,88	.6346	16,12	1/4	6,35	1/32	0,80	.2500	6,35	
CNMG543MN	CNMG160612MN	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNMG642MN	CNMG190608MN	3/4	19,05	.7616	19,34	1/4	6,35	1/32	0,80	.3125	7,93	
CNMG643MN	CNMG190612MN	3/4	19,05	.7616	19,34	1/4	6,35	3/64	1,20	.3125	7,93	

Ordering Example:
By catalog number and grade CNGG4305LF KC5010.

ModBORE™ KENLOC™ Inserts — Grade Selection

Additional insert styles, insert geometries, and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

● first choice
○ alternate choice

		KC9105	KC9110	KC9125	KC9140	KC9225	KC9240	KC9240	KC9315	KC9320	KC9325	KC5010	KC5410	KC5510	KC5525	KT315	K313	K68
H																		
S							●					●		●	●		●	●
N													●				●	
K		○							●	●	●					●	○	
M		○	○	○	○	●	●	●				●				●		
P		●	●	●	●	○	○	○		○		●				●		
ANSI catalog number		KC9105	KC9110	KC9125	KC9140	KC9225	KC9240	KC9240	KC9315	KC9320	KC9325	KC5010	KC5410	KC5510	KC5525	KT315	K313	K68
CNMG-MP 	CNMG431MP					●		●				●						
	CNMG432MP					●		●				●						
	CNMG433MP					●		●				●						
	CNMG542MP					●		●				●						
	CNMG543MP					●		●				●						
	CNMG642MP					●		●				●						
	CNMG643MP					●		●				●						
CNMG-UN 	CNMG431UN								●	●	●							
	CNMG432UN								●	●	●							
	CNMG433UN								●	●	●							
	CNMG542UN								●	●	●							
	CNMG543UN								●	●	●							
	CNMG642UN								●	●	●							
	CNMG643UN								●	●	●							
CNMG-RP 	CNMG431RP		●	●		●		●	●			●		●	●			
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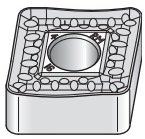
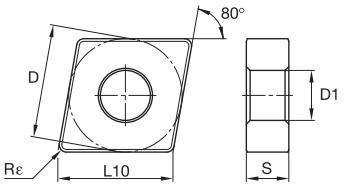
	CNMG433RP	●	●	●	●	●		●	●	●	●	●		●	●			
	CNMG542RP		●	●		●			●		●	●		●	●			
	CNMG543RP	●	●	●	●	●		●	●	●	●	●		●	●			
	CNMG544RP	●	●	●		●		●	●		●	●			●			
	CNMG643RP	●	●	●	●	●		●	●	●	●	●		●	●			
	CNMG644RP	●	●	●	●	●		●	●		●	●		●	●			
CNMG-RM 	CNMM432RM		●	●														
	CNMM433RM		●	●														
	CNMM434RM		●	●														
	CNMM543RM		●	●														
	CNMM544RM		●	●														
	CNMM643RM		●	●														
	CNMM644RM		●	●														

Ordering Example:
By catalog number and grade CNMG431MP KC9225.

ModBORE™ KENLOC™ Inserts — Dimensions



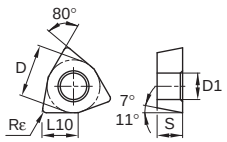
Additional insert styles, insert geometries, and grades (i.e., PCD or PCBN grades for high silicon aluminum, high temp alloys, cast materials) can be found in our latest turning catalogs.

		D		L10		S		Rε		D1		
ANSI catalog number	ISO catalog number	in	mm	in	mm	in	mm	in	mm	in	mm	
CNMG431MP	CNMG120404MP	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-MP
CNMG432MP	CNMG120408MP	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433MP	CNMG120412MP	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG542MP	CNMG160608MP	5/8	15,88	.6346	16,12	1/4	6,35	1/32	0,80	.2500	6,35	
CNMG543MP	CNMG160612MP	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNMG642MP	CNMG190608MP	3/4	19,05	.7616	19,34	1/4	6,35	1/32	0,80	.3125	7,93	
CNMG643MP	CNMG190612MP	3/4	19,05	.7616	19,34	1/4	6,35	3/64	1,20	.3125	7,93	
CNMG431UN	CNMG120404UN	1/2	12,70	.5077	12,90	3/16	4,76	1/64	0,40	.2031	5,16	CNMG-UN
CNMG432UN	CNMG120408UN	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433UN	CNMG120412UN	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG542UN	CNMG160608UN	5/8	15,88	.6346	16,12	1/4	6,35	1/32	0,80	.2500	6,35	
CNMG543UN	CNMG160612UN	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNMG642UN	CNMG190608UN	3/4	19,05	.7616	19,34	1/4	6,35	1/32	0,80	.3125	7,93	
CNMG643UN	CNMG190612UN	3/4	19,05	.7616	19,34	1/4	6,35	3/64	1,20	.3125	7,93	
CNMG431RP	CNMG120404RP	1/2	12,70	.5077		3/16	4,76	1/64	0,40	.2031	5,16	CNMG-RP
CNMG432RP	CNMG120408RP	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	
CNMG433RP	CNMG120412RP	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMG542RP	CNMG160608RP	5/8	15,88	.6346	16,12	1/4	6,35	1/32	0,80	.2500	6,35	
CNMG543RP	CNMG160612RP	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNMG544RP	CNMG160616RP	5/8	15,88	.6346	16,12	1/4	6,35	1/16	1,60	.2500	6,35	
CNMG643RP	CNMG190612RP	3/4	19,05	.7616	19,34	1/4	6,35	3/64	1,20	.3125	7,93	
CNMG644RP	CNMG190616RP	3/4	19,05	.7616	19,34	1/4	6,35	1/16	1,60	.3125	7,93	
CNMM432RM	CNMM120408RM	1/2	12,70	.5077	12,90	3/16	4,76	1/32	0,80	.2031	5,16	CNMG-RM
CNMM433RM	CNMM120412RM	1/2	12,70	.5077	12,90	3/16	4,76	3/64	1,20	.2031	5,16	
CNMM434RM	CNMM120416RM	1/2	12,70	.5077	12,90	3/16	4,76	1/16	1,60	.2031	5,16	
CNMM543RM	CNMM160612RM	5/8	15,88	.6346	16,12	1/4	6,35	3/64	1,20	.2500	6,35	
CNMM544RM	CNMM160616RM	5/8	15,88	.6346	16,12	1/4	6,35	1/16	1,60	.2500	6,35	
CNMM643RM	CNMM190612RM	3/4	19,05	.7616	19,34	1/4	6,35	3/64	1,20	.3125	7,93	
CNMM644RM	CNMM190616RM	3/4	19,05	.7616	19,34	1/4	6,35	1/16	1,60	.3125	7,93	

Ordering Example:
By catalog number and grade CNMG431MP KC9225.

KENNAMETAL

ModBORE™/Dial Set Inserts



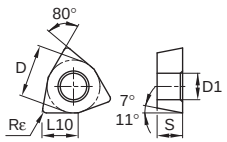
ModBORE Inserts!

● first choice
○ alternate choice

H	
S	
N	
K	
M	○
P	●

WCMT

ANSI catalog number	D in	D mm	S in	S mm	Rε in	Rε mm	M in	M mm	D1 in	D1 mm	KT608
WCMT020102	.1560	3,97	.1070	2,72	.0630	1,59	.0080	0,20	.0910	2,30	●



ModBORE Inserts!

● first choice
○ alternate choice

H	
S	
N	●
K	
M	
P	

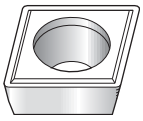
WCGT

ANSI catalog number	D in	D mm	S in	S mm	Rε in	Rε mm	M in	M mm	D1 in	D1 mm	K610
WCGT020102	.1560	3,97	.1070	2,72	.0630	1,59	.0080	0,20	.0910	2,30	●

Dial Set Inserts!

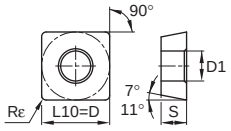
● first choice
○ alternate choice

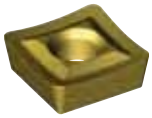
CPGM

	ANSI catalog number	KC9105	KC9110	KC9125	KC9225	KC9240NEW	KC9315	KC9320	KC5010	KC5025	KC5410	KT315	KT325	K313	K68
	H														
	S								●	●				●	●
	N										●			●	
	K	○					●	●				●		○	
	M	○	○	○	●	●			●	●		●	○		
	P	●	●	●	○	○		○	●			●	●		
CPGM 	CPGM2152	●												●	●
	CPGM3252	●	●	●	●	●	●		●	●	●	●		●	●

Ordering Example:
By catalog number and grade CPGM2152 KC9105.

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.





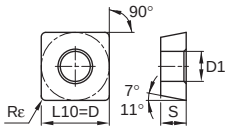
Dial Set Inserts!

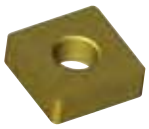
● first choice
○ alternate choice

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

SPGH

ANSI catalog number	ISO catalog number	D in	D mm	S in	S mm	Rε in	Rε mm	M in	M mm	D1 in	D1 mm	KC5410	KC850	KC9105
SPGH25152	SPGH070208	.3125	7,94	.0938	2,38	.0313	0,80	.0518	1,32	.1275	3,24	●		
SPGH322	SPGH090308	.3750	9,53	.1250	3,18	.0313	0,80	.0647	1,64	.1555	3,95	●	●	●





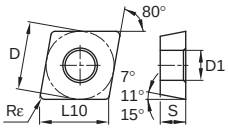
Dial Set Inserts!

● first choice
○ alternate choice

H			
S		●	●
N			
K			
M		●	●
P		●	○

SNGH

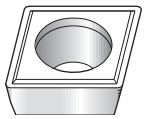
ANSI catalog number	ISO catalog number	D in	D mm	S in	S mm	Rε in	Rε mm	M in	M mm	D1 in	D1 mm	KC850	KC9240NEW
SNGH432	SNGH120408	.5000	12,70	.1875	4,76	.0313	0,80	.0906	2,30	.2165	5,50	●	●
SNGH643	SNGH643	.7500	19,05	.2500	6,35	.0469	1,20	.1359	3,45	.3120	7,92	●	



CPGM

ANSI catalog number	ISO catalog number	D in	D mm	L10 in	L10 mm	S in	S mm	Rε in	Rε mm	D1 in	D1 mm
CPGM2152	CPGT060208K	1/4	6,35	.2539	6,45	3/32	2,38	1/32	0,80	.1100	2,80
CPGM3252	CPGH09T308	3/8	9,53	.3808	9,67	5/32	3,97	1/32	0,80	.1732	4,40

CPGM



Ordering Example:
By catalog number and grade CPGM2152 KC9105.

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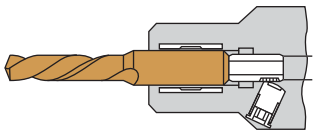
Solid Carbide Drills — General Application Instructions for SE Drills

Toolholding Systems

As with any drilling system, components of the entire system contribute to the quality of the machined hole, not just the drill itself. For maximum efficiency and accuracy, the following toolholding systems would be your best choices:

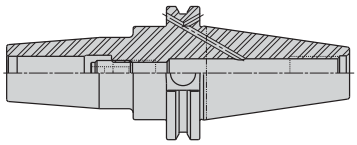
First Choice

Hydraulic chucks



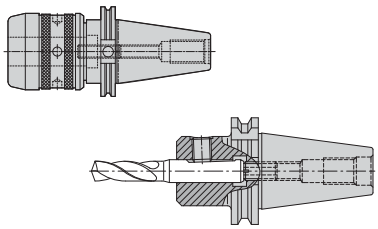
Second Choice

Shrink Fit

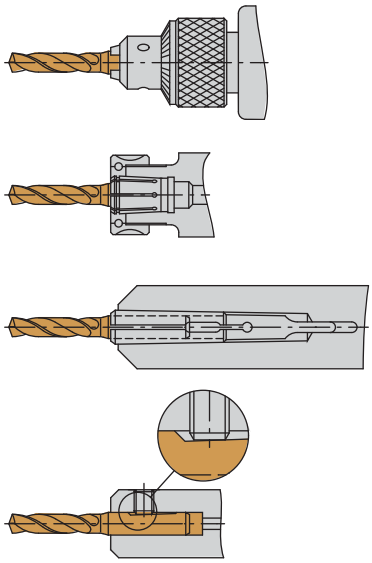


Third Choice

Powergrip milling chucks with collets



Not Recommended

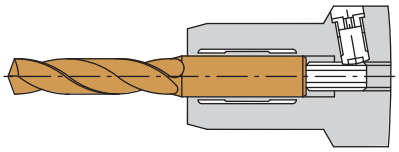


Clamping Chuck

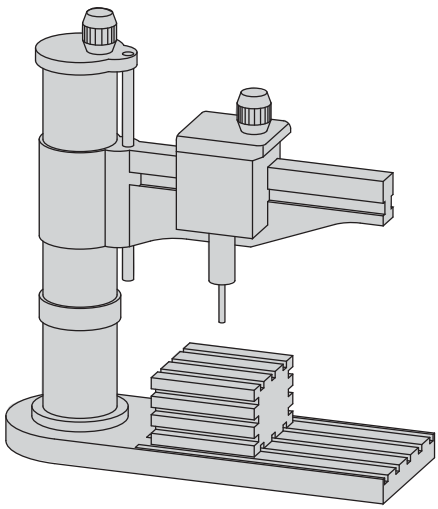
Use of all-purpose drilling chuck collets, clamping sleeves, and Weldon clamping chucks should be avoided because they do not absorb cutting forces reliably or provide insufficient precision of concentricity.

Hydraulic chucks ensure a secure torque transmission with excellent concentricity.

Highly Recommended



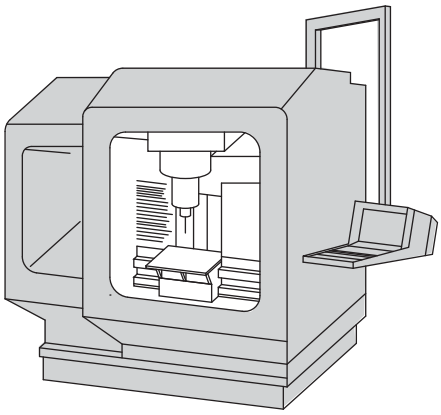
Not Recommended



Machine

Dynapoint solid carbide drills have a rigidity 5 times higher than conventional high-speed steel drills. This enables the machining of close-tolerance holes with a position accuracy of ± .001. However, it also means that Dynapoint drills require rigid machine tools with good spindles.

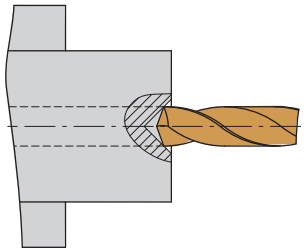
Rigid Machine Tool Recommended



Toolholding Systems

As with any drilling system, components of the entire system contribute to the quality of the machined hole, not just the drill itself. For maximum efficiency and accuracy, the following toolholding systems would be your best choices:

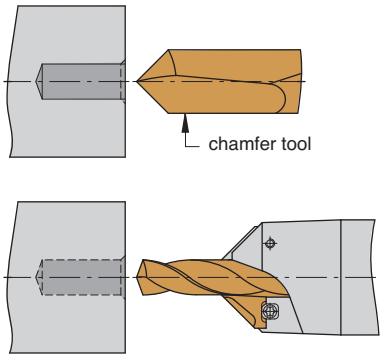
Wrong



Drilling and Chamfering

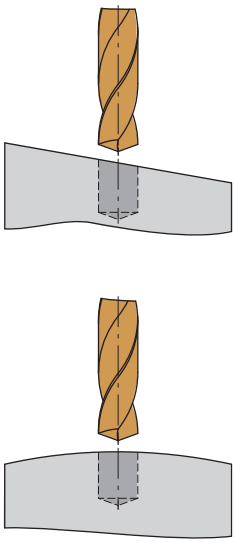
Drill into the solid first, then chamfer.

Correct



SEFAS – the optimum solution

Wrong



Drilling on Inclined Surfaces

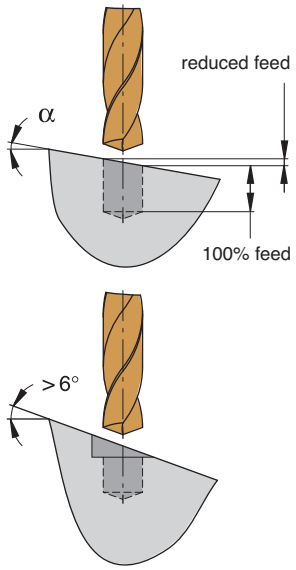
When drilling on inclined or curved surfaces, use a lower feed than the standard value. The reduction of feed required is dependent on the inclination angle of the workpiece surface and the drill type (see table).

reduced feed (% of standard value)

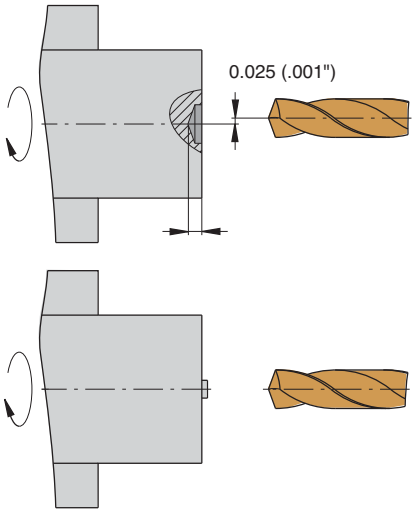
inclination α	SE210HP, SE224, SE261	TF105 SE211HP, SE212HP, SE225, SE226
1°	100%	80%
2°	80%-50%	80%-50%
3°	65%	50%
4°	50%	—
6°	30%	—

More inclined surfaces must be premachined with a mill.

Correct



Wrong



Drilling on Turning Machines

When drilling on turning machines, the drill must be on center. The tolerance range of the center position should not exceed ±.001.

On bar-turning lathes, do not drill into center pips or test drill holes. Cutoff tools must be mounted precisely.

Hole Depths Greater than 3xD

Hole depths that are deeper than three times the drill diameter may require a speed reduction. A 15% lower speed is suggested. Refer to the applicable KENNA PERFECT Workpiece Materials Group chart (page G126) for recommended operating parameters.

Solid Carbide Drills — General Application Instructions

Coolant

Kennametal drills are high-performance, solid carbide tools. To optimize their performance, they must be adequately cooled. With the proper coolant flow, tool life and higher maximum effective cutting speeds can be reached.

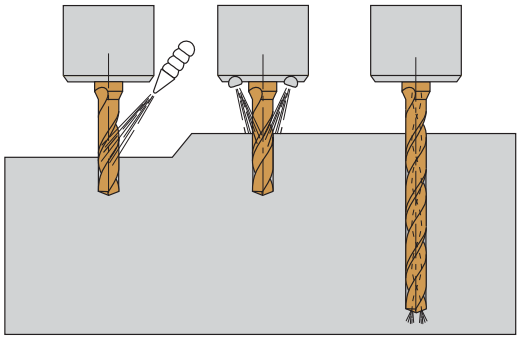
If not properly cooled, the drill will heat up rapidly. This causes the drill diameter to expand, which in turn may cause the drill to seize inside the hole.

Kennametal drills, with internal coolant channels, require deeper drilling depths to be effective. The higher the coolant pressure, the better the drilling results. Drill life and hole quality improve with ample coolant flow.

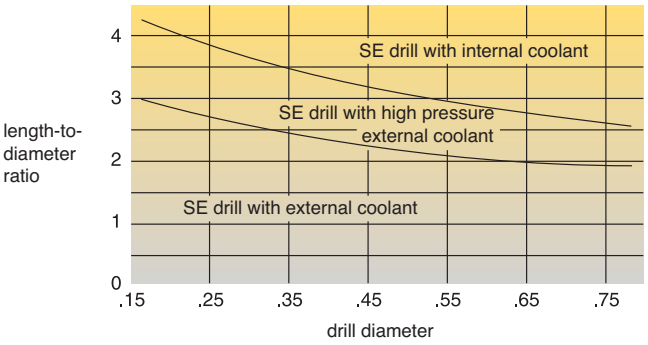
When using drills without internal coolant flow, try to get at least one coolant jet as parallel to the drill as possible.

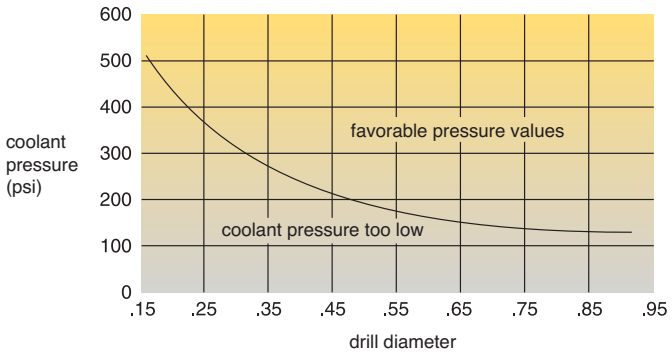
For short-hole applications, drills without internal coolant often may provide better tool life. The tool is more solid, and it does not suffer from thermal shock at the cutting edge. Typically, drills without internal coolant cost less.

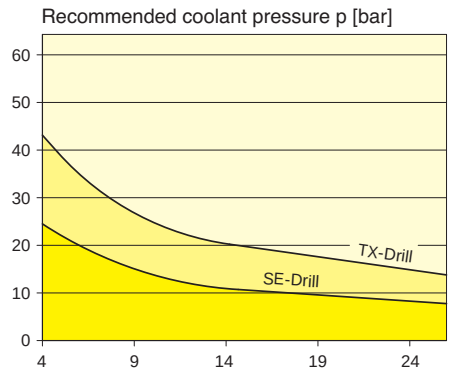
- Provide generous "volume" of coolant when drilling steels and when applying HTS drills in a vertical application to improve chip evacuation and increase tool life.
- It is important to use high coolant concentration to provide lubricity, which will aid in tool life, chip evacuation, and finer surface finishes.

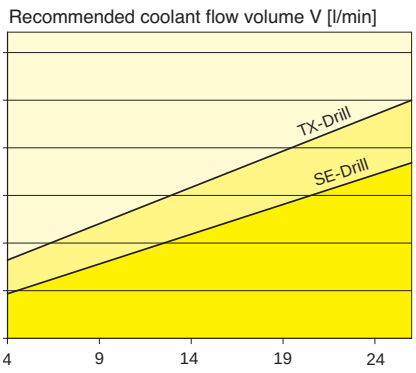


- High-pressure coolant, either through the tool or through a line adjacent and parallel to the tool, should always be considered for increased tool life and production.
- Do not use multi-coolant lines. Use one line with 100% of the flow capacity to evacuate the chips from the hole.



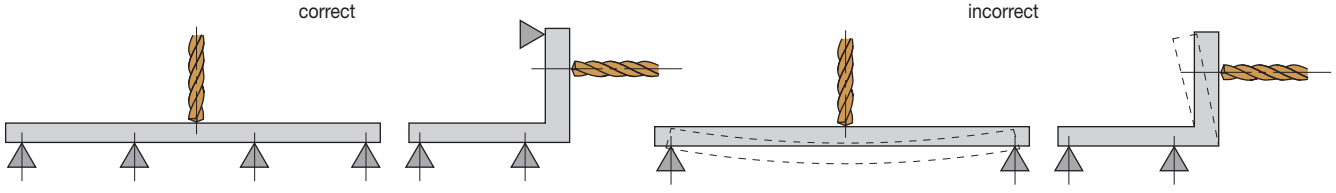






Workpiece Rigidity

Because solid carbide drills have much higher penetration rates, it is important that the workpiece has adequate support.



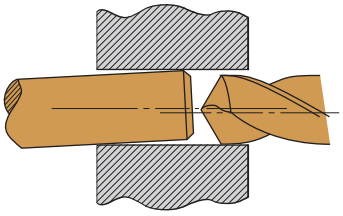
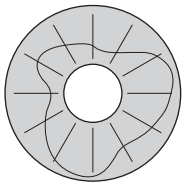
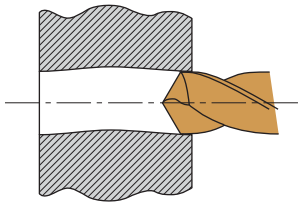
To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

problem	*source*	*solution*
heavy wear on the cutting corners	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	• Reduce cutting speed, increase feed.
splintering on the chisel edge	clamping chuck	• Check clamping accuracy. Use hydraulic clamping chuck or high-precision chucking system.
	cutting conditions	• Increase feed.
built-up edge	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	• Increase speed 20-30%.
splintering on the cutting edges	clamping chuck	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	cutting conditions caused by built-up edge	• Check cutting values and, possibly increase cutting speed. • Examine regularly for built-up edge.
thermal checking/comb cracking	cutting conditions	• Inconsistent/insufficient coolant supply.

(continued on next page)

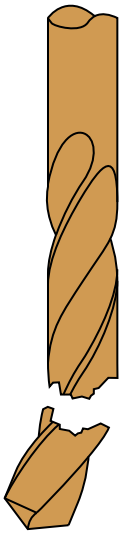
Solid Carbide Drills — Troubleshooting Guide

(continued from previous page)

problem	source	solution
heavy wear on the cutting corners	workpiece movement	• Stabilize workpiece chucking and check stability of machine tool.
	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	wrong drill	• Check drill type, drilling depth, cooling system, and workpiece material.
	cutting conditions	• Check cutting parameters at exit. Reduce feed 15-20% prior to breakout.
hole too big 	cutting conditions	• Check cutting values, increase cutting speed, or reduce feed.
	clamping chuck	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	wrong drill	• Check drill diameter. Please notice that drills are ground to a positive tolerance. Check concentric running.
hole too small 	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides.
	cutting conditions	• Reduce cutting speed; increase feed.
	wrong drill	• Check cutting-edge diameter.
hole not cylindrical 	clamping chuck	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	workpiece movement	• Stabilize workpiece chucking and check stability of machine tool.
	wrong drill	• Check drill type and drilling depth. Use longer drills.
	cutting conditions	• Reduce feed at entry.

(continued on next page)

(continued from previous page)

problem	source	solution
drill breakage 	clamping chuck	• Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	workpiece movement	• Stabilize workpiece chucking and check stability of machine tool.
	wrong drill	• Check drill type, drilling depth, ooling system, and workpiece material.
	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	• Check cutting values, and possibly reduce feed.
splintering on the cutting corners	clamping chuck	• Check torque transmission. Use hydraulic clamping chuck or high-precision chucking system.
	workpiece movement	• Stabilize workpiece chucking and check stability of machine tool.
	wrong drill	• Check drill type, drilling depth, cooling system, and workpiece material. Possibly, use longer drill.
	insufficient coolant	• Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides.
	cutting conditions	• Check cutting values and possibly reduce feed.

Solid Carbide Drill — TX Drill Applications

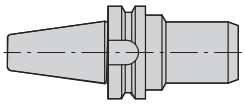
Fast, Tough, and Economical

TX drills are high-performance tools whose capacity can be fully utilized with the help of appropriate clamping fixtures. Kennametal hydraulic chucks are an ideal solution. They increase the productivity of the TX drill to the maximum level. Optimal concentricity and safe transmission of torque result in excellent repeatability and longer drill life. The simple handling of the adapters enables an easy length adjustment, even in the machine. Tool presetting costs are minimized. For more information about chucks, refer to the Systems Section of this catalog.

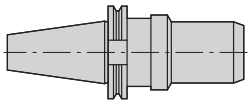
SEFAS Chamfering Rings

SEFAS chamfering rings can be mounted directly on Kennametal hydraulic chucks. High-precision drilled holes can be provided with a chamfer in the same operating cycle. The SEFAS compact tool also is compatible with TX drills. This tool style is particularly slim, enabling work in very narrow applications.

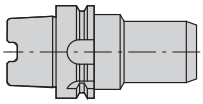
Hydraulic Chucks



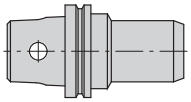
BT



CV

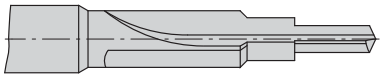


HSK

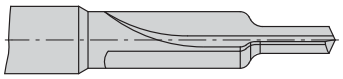


KM

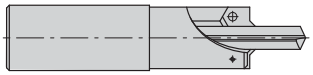
TX Drills



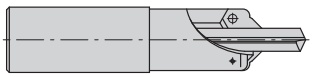
multi-stage drill (special)



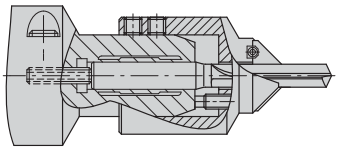
profile drilling tools (special)



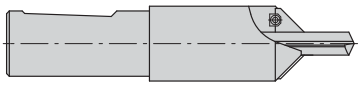
BF tool for drilling, chamfering, and spot facing



BF tool for drilling and profile countersinking

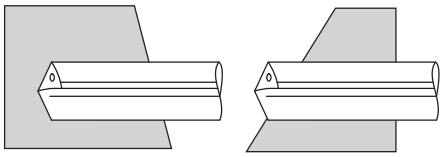


SEFAS chamfering ring for drilling and chamfering

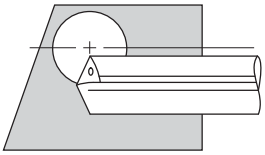


SEFAS drilling and chamfering

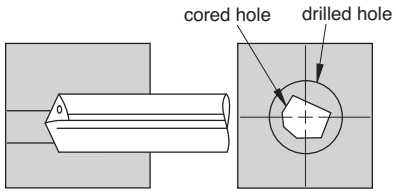
The excellent stability of the TX drill enables it to be used for drilling through inclined planes, intersecting holes, and cored holes.



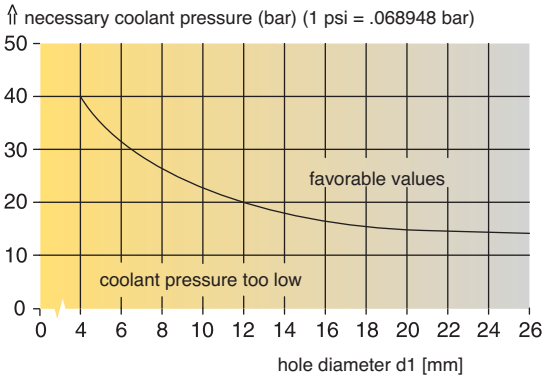
inclined planes



intersecting holes



cored holes

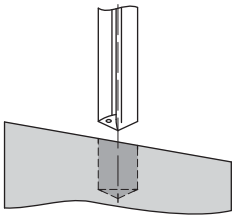


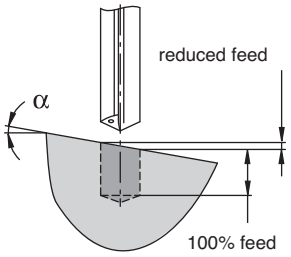
Coolant Pressure

The diagram at left shows the coolant pressure as a function of the hole diameter. The higher the coolant pressure, the better the drilling result. Tool life and hole quality improve with increasing coolant flow.

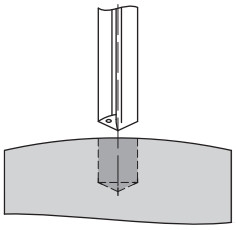
Drilling on Inclined Surfaces

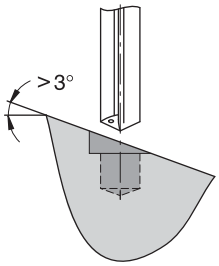
When drilling on inclined or curved surfaces, use a lower feed than the standard value. The feed reduction necessary depends on the angle of inclination of the workpiece surface. After the drill margins are fully engaged in the workpiece, increase the feed to the standard value (100%).





inclination α	reduced feed (% of standard value) TX411
1°	80%
2°	50%
3°	30%





Surfaces with a greater inclination need a spot-face (for example with a milling cutter).

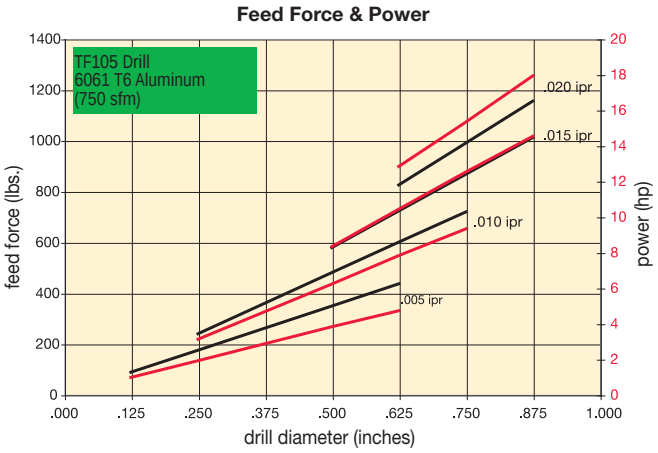
Solid Carbide Drills — Horsepower, Torque, and Thrust Values

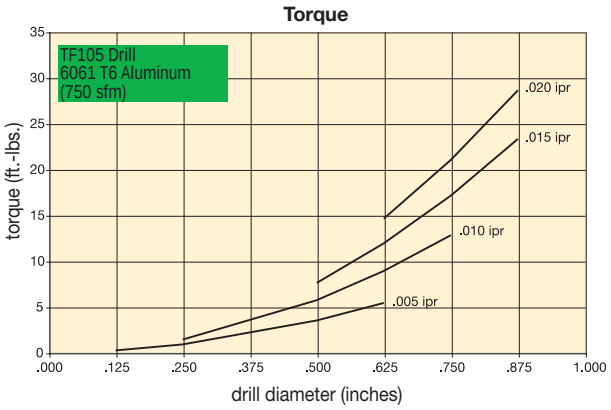
Graph Illustrations

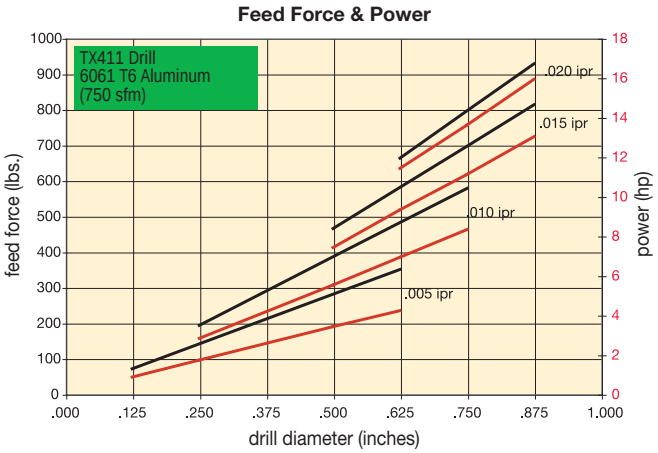
The following graphs represent actual drill values taken in an ideal machining environment under ideal operating conditions. This analysis was conducted in a machine lab with various scientific capabilities. Actual values may not be duplicated in a true manufacturing operation. In-plant results may be higher or lower, depending on a number of conditions or variables. Each graph is intended to be used as reference only. Horsepower and feed force are charted together since thrust is the largest component of overall horsepower consumed. Speeds and feeds used for the horsepower calculations are recommended starting speeds and feeds. Internal or external coolant was used during this evaluation, where applicable.

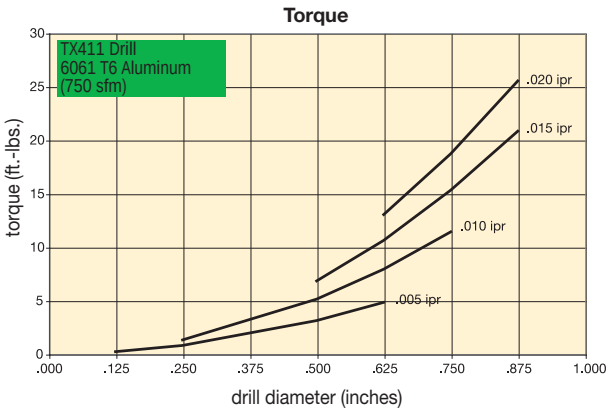
- Horsepower is calculated at the cut (HPc).

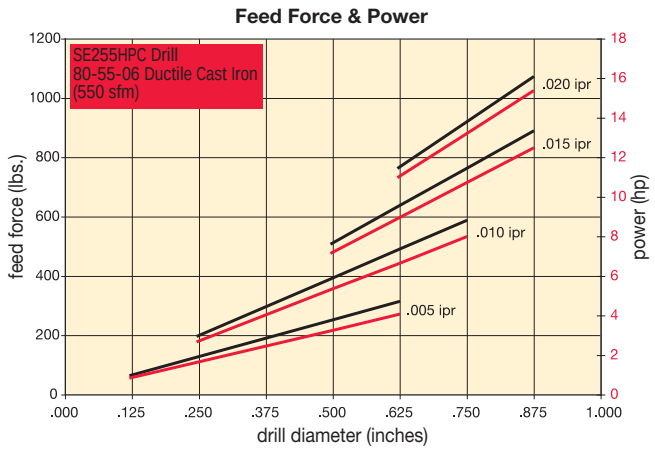
Horsepower Calculations — Aluminum

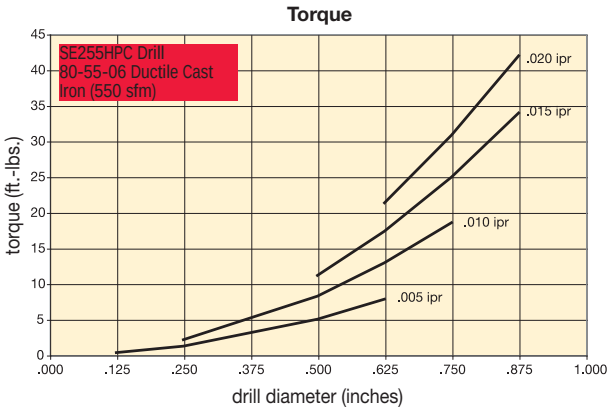


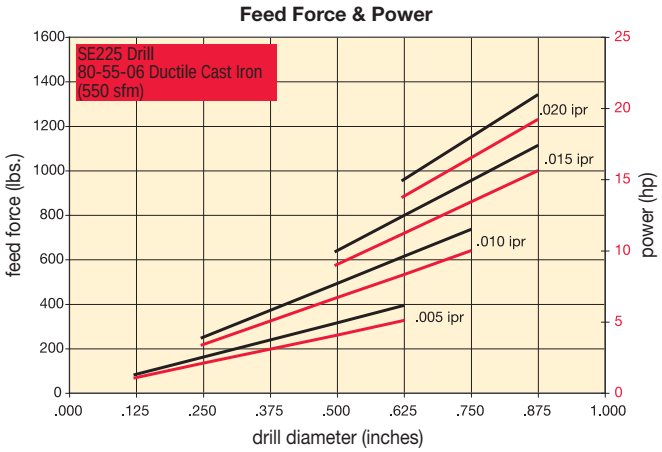


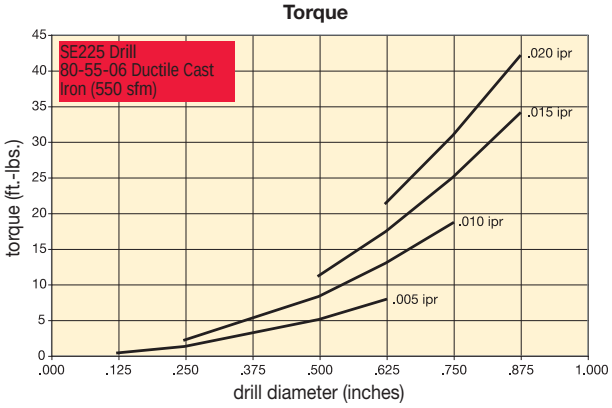





Feed Force & Power
SE255HPC Drill
80-55-06 Ductile Cast Iron
(550 sfm)
.020 ipr
.015 ipr
.010 ipr
.005 ipr
feed force (lbs.)
power (hp)
drill diameter (inches)
0
200
400
600
800
1000
1200
2
4
6
8
10
12
14
16
18
.000
.125
.250
.375
.500
.625
.750
.875
1.000

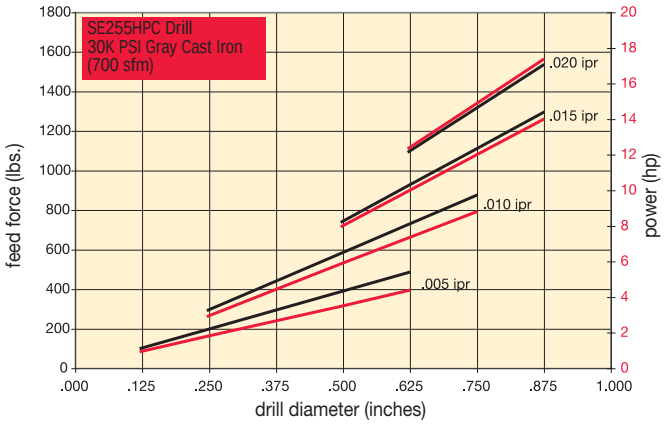

Torque
SE255HPC Drill
80-55-06 Ductile Cast Iron (550 sfm)
.020 ipr
.015 ipr
.010 ipr
.005 ipr
torque (ft.-lbs.)
drill diameter (inches)
0
5
10
15
20
25
30
35
40
45
.000
.125
.250
.375
.500
.625
.750
.875
1.000


Feed Force & Power
SE225 Drill
80-55-06 Ductile Cast Iron
(550 sfm)
.020 ipr
.015 ipr
.010 ipr
.005 ipr
feed force (lbs.)
power (hp)
drill diameter (inches)
0
200
400
600
800
1000
1200
1400
1600
5
10
15
20
25
.000
.125
.250
.375
.500
.625
.750
.875
1.000

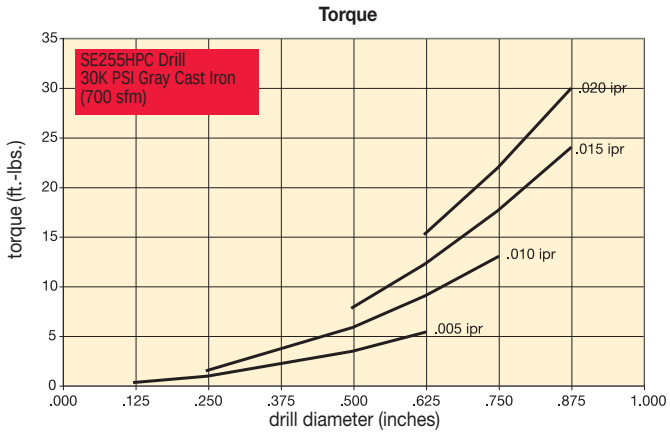

Torque
SE225 Drill
80-55-06 Ductile Cast Iron (550 sfm)
.020 ipr
.015 ipr
.010 ipr
.005 ipr
torque (ft.-lbs.)
drill diameter (inches)
0
5
10
15
20
25
30
35
40
45
.000
.125
.250
.375
.500
.625
.750
.875
1.000

Solid Carbide Drills — Horsepower Calculations — Gray Cast Iron

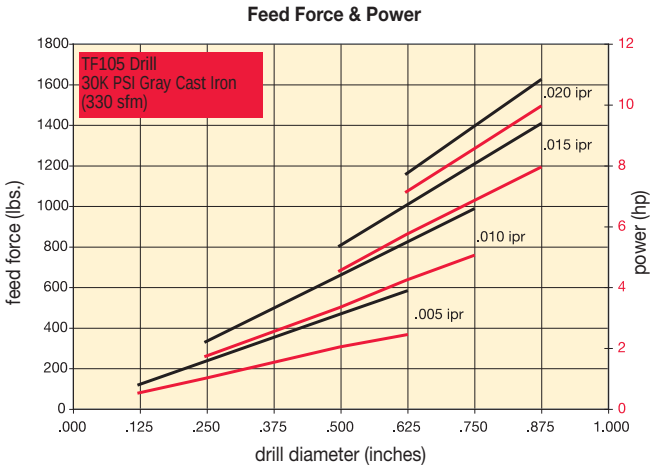
Feed Force & Power



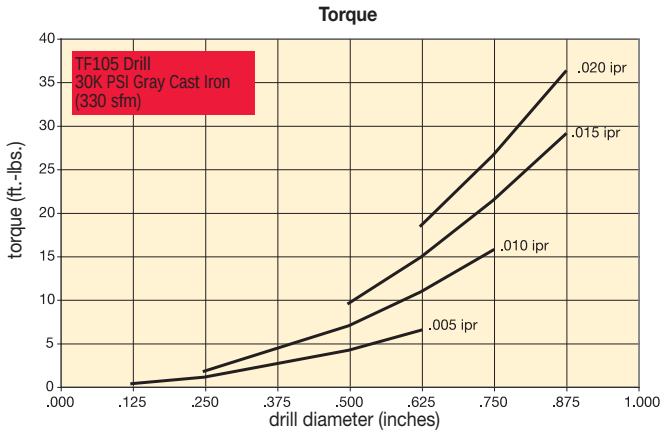
Torque



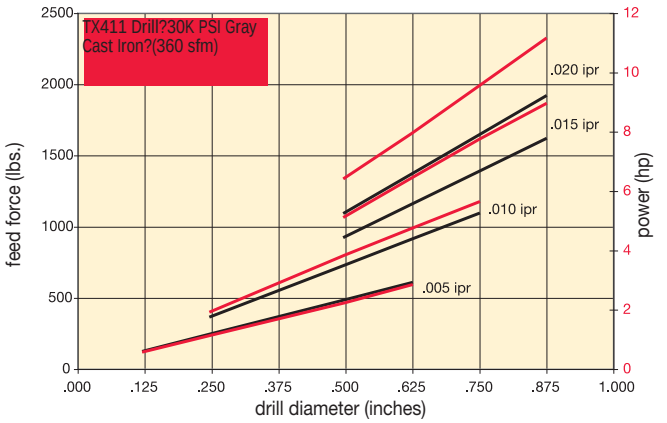
Feed Force & Power



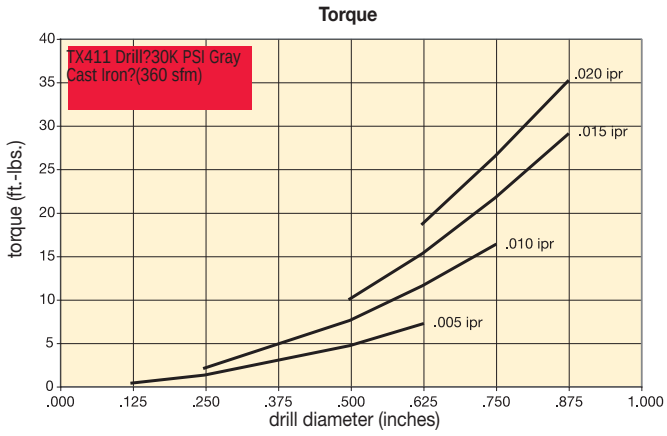
Torque



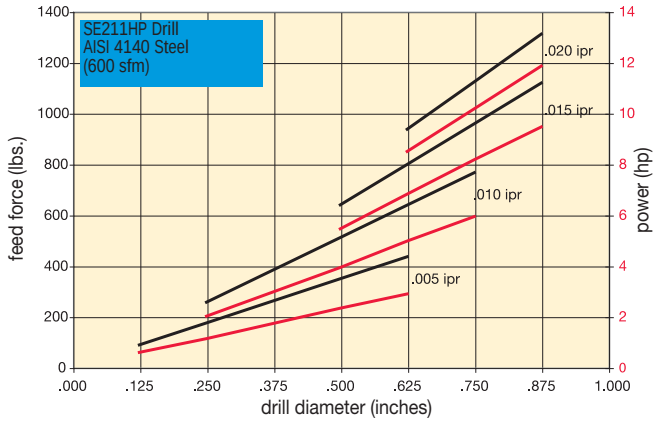
Feed Force & Power



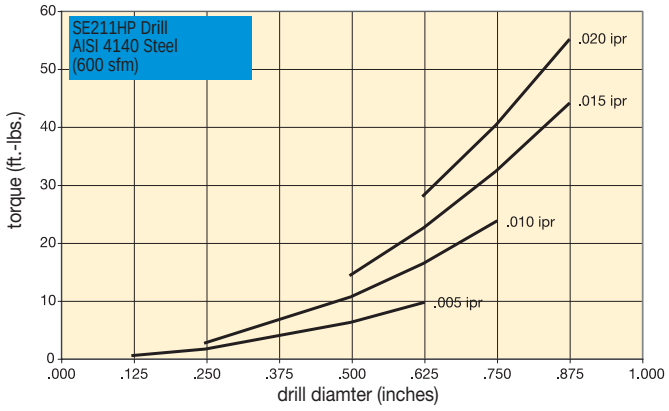
Torque



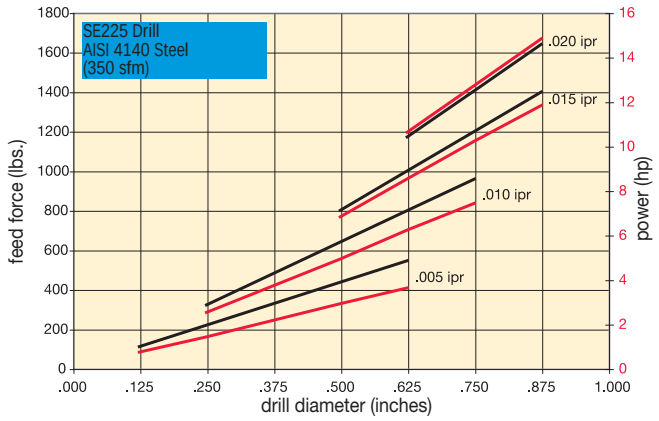
Feed Force & Power



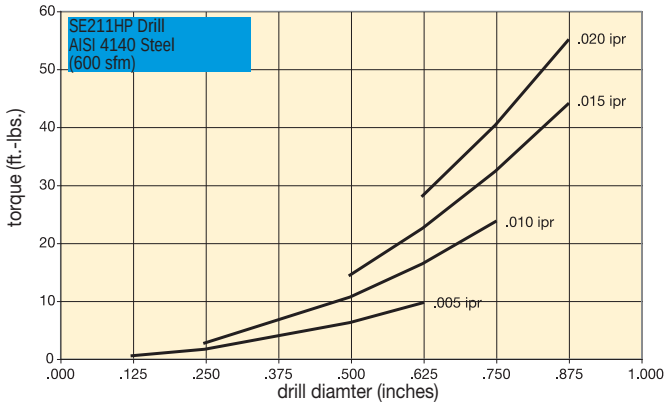
Torque



Feed Force & Power

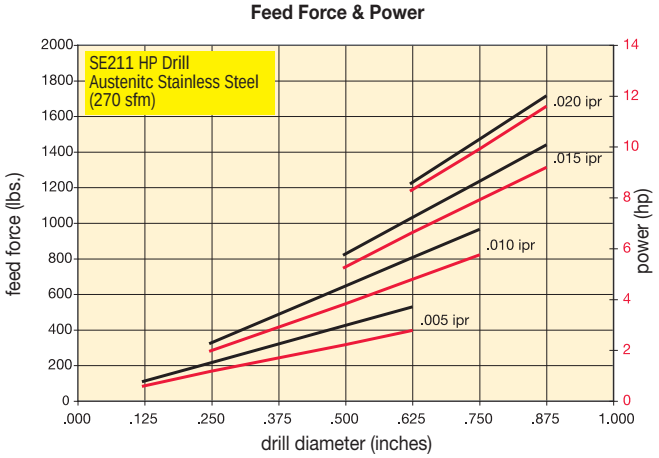


Torque

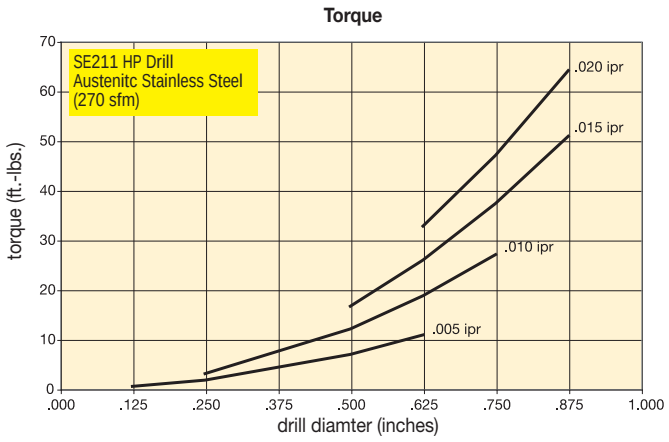


Horsepower Calculations — Stainless Steel

Feed Force & Power



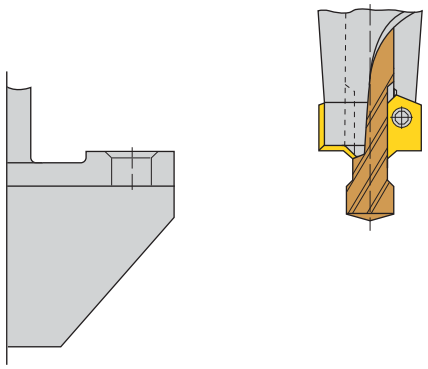
Torque



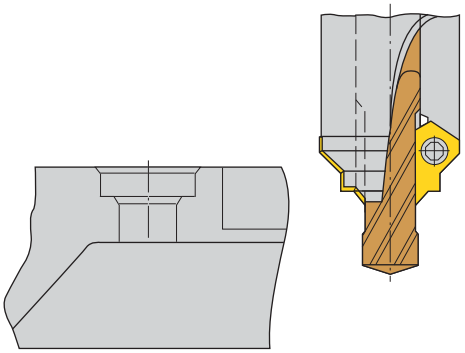
Combination Tools — Application Examples Using the BF Tool

To quote a special tool, please contact our Custom Solutions department.

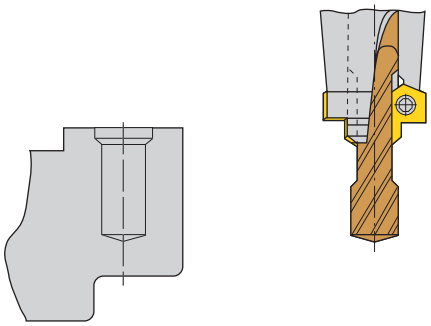
drilling, chamfering, and facing a cast bracket



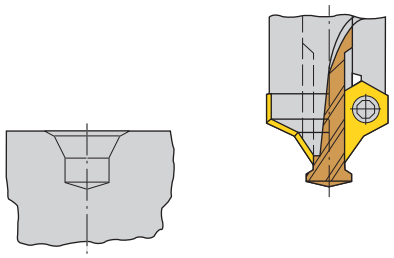
countersinking for countersunk head screws



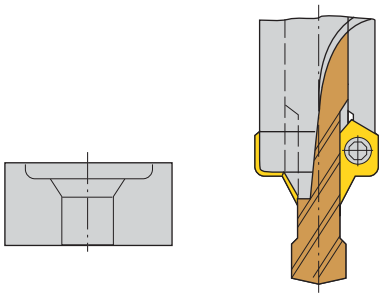
tapped hole with protection countersinking



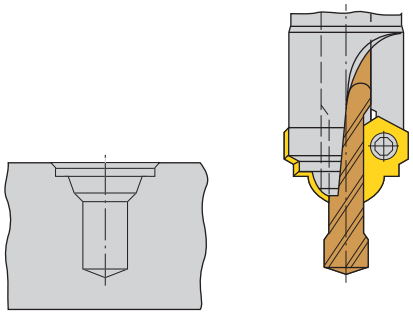
centering with protection countersinking



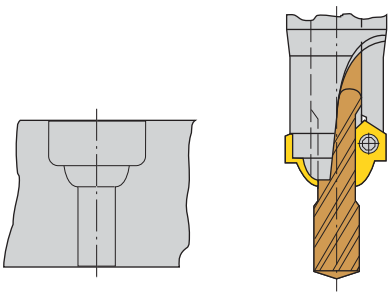
60° countersinking and plane surface with corner radius



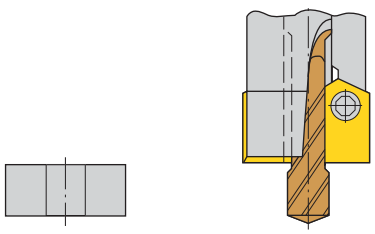
countersinking for round sealing rings



countersinking for aluminum rim



drilling and facing



1) Mount the drill into the basic body “A.” Use A-style round shanks only. Do not use F-style with clamping flat.

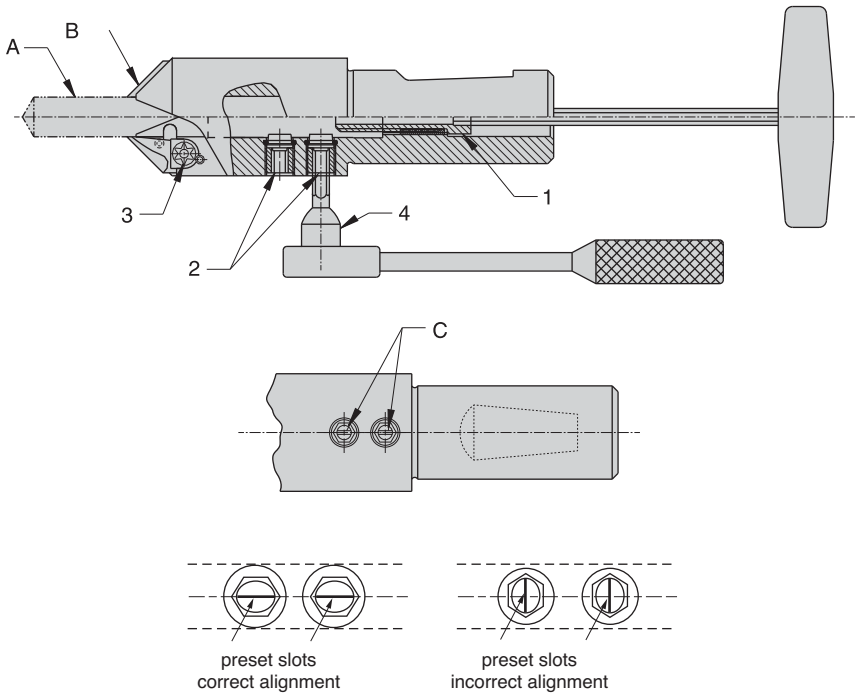
2) Mount inserts into pockets “B.”

3) Adjust to required drilling depth using axial adjustment screw “1.”

4) Rotate drill so that the inserts are behind the margin. Inserts should be aligned on the margin clearance, not the flute.

5) Tighten both clamping elements “C” with a torque wrench to specified requirements (see chart below). Preset slots should be set parallel to shank. Use a flathead screwdriver to align preset slots.

6) Press the insert against the drill and tighten the insert clamps. There will be a slight gap between drill and insert if tightened to correct torque specifications.



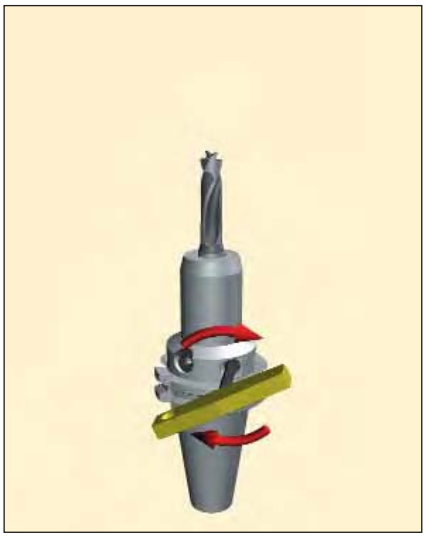
Inch

D1	1 axial adjustment screw	2 drill clamp screw	drill clamp torque Nm	drill clamp torque ft-lbs	3 insert clamp	insert clamp torque Nm	insert clamp torque ft-lbs	4 wrench adapter
.156 - .188	360.516	360.650	7	5.2	360.550	2	1.5	170.240
.188 - .250	360.510	360.651	8	5.9	360.550	2	1.5	170.240
.250 - .313	360.510	360.652	8	5.9	360.550	2	1.5	170.240
.313 - .375	360.510	360.653	10	7.4	360.550	2	1.5	170.232
.375 - .438	360.513	360.654	15	11.1	360.551	4	3.0	170.232
.438 - .500	360.513	360.655	15	11.1	360.551	4	3.0	170.232
.500 - .563	360.511	360.656	20	14.8	360.551	4	3.0	170.233
.563 - .625	360.511	360.657	30	22.1	360.551	4	3.0	170.233
.625 - .688	360.511	360.658	45	33.2	360.551	4	3.0	170.234
.688 - .750	360.511	360.659	5	33.2	360.551	4	3.0	170.234

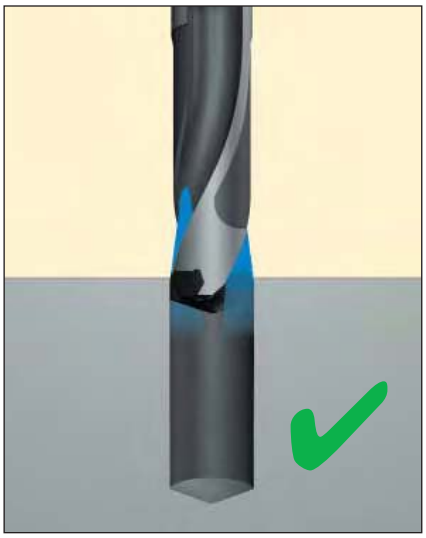
Metric

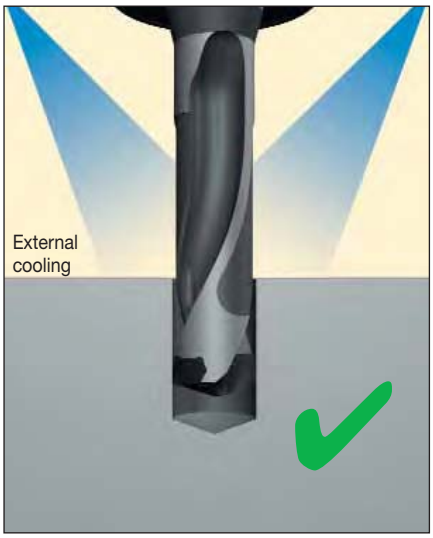
D1	1 axial adjustment screw	2 drill clamp screw	drill clamp torque Nm	drill clamp torque ft-lbs	3 insert clamp	insert clamp torque Nm	insert clamp torque ft-lbs	4 wrench adapter
4,0 - 6,0	360.510	360.650	7	5.2	360.550	2	1.5	170.240
6,0 - 8,0	360.510	360.651	8	5.9	360.550	2	1.5	170.240
8,0 - 10,0	360.510	360.652	10	7.4	360.550	2	1.5	170.232
10,0 - 12,0	360.513	360.653	15	11.1	360.551	4	3.0	170.232
12,0 - 14,0	360.511	360.654	20	14.1	360.551	4	3.0	170.233
14,0 - 16,0	360.511	360.655	30	22.1	360.551	4	3.0	170.233
16,0 - 18,0	360.511	360.633	45	3.23	360.551	4	3.0	170.234

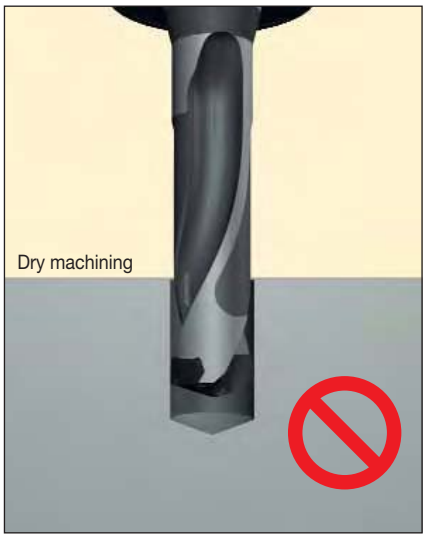
Mounting the KenTIP Inserts



Cooling the KenTIP Drill

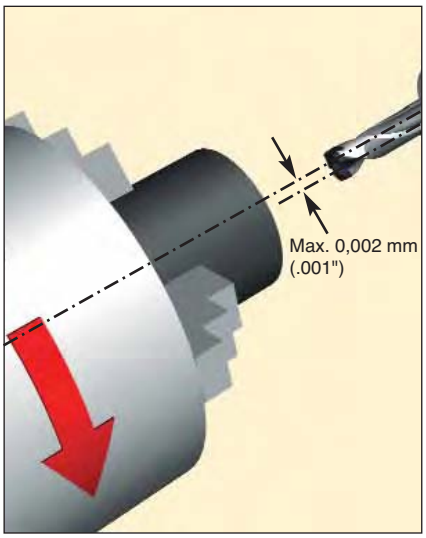


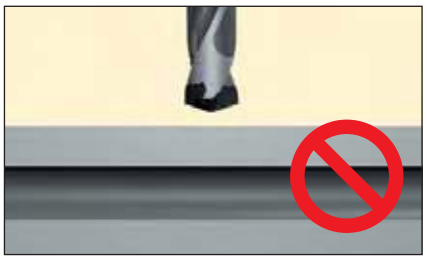




only when using the 3 x D tool bodies

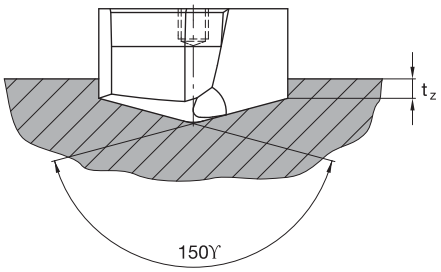
Note



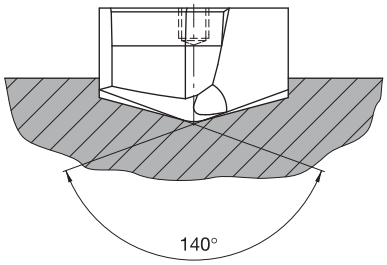


To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

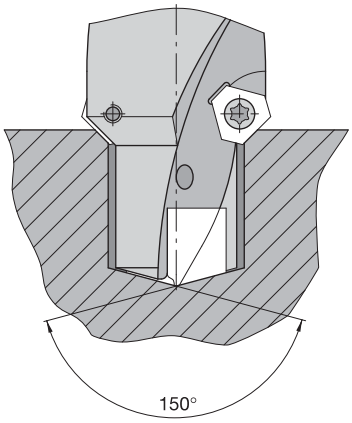
Centering using PCM inserts



HPM inserts of the follower drill



Pre-centering with FAS centering tool



Why is pre-centering necessary?

- Generally speaking, for drilling depths 5 times the nominal diameter and above (5 x d).
- In unstable conditions (workpiece and tool clamping).

Why pre-center using PCM inserts?

- Soft cut entry of follower drill due to 150° point angle of the PCM insert.
- No extension of the follower drill in the entry area.
- No breaks at the cutting edges.

What happens if...
... a center cannot be used for technical reasons?

Spot drill with “normal” insert and reduced cutting data (approximately ½ vc and approximately ½ vf) then continue drilling with regular cutting data without lifting off/stopping.

...there is no suitable PCM cutting insert in the standard range (ø)?

- Manufacture to order using PCM geometry and k7 tolerance

or

- Center using the same cutter insert as for the follower drill but without the cutting edges penetrating the workpiece (spot drill ø approximately 90% of drill ø d1).

...only one tool body is required?

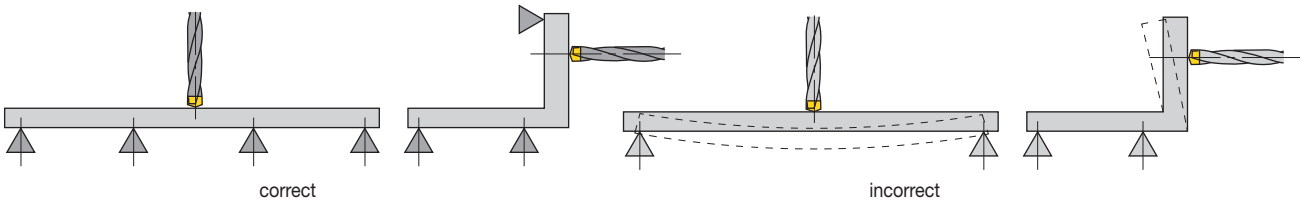
Enter the workpiece with 50% feed until the cutting edges and the heels have penetrated the hole, then continue drilling without lifting off/stopping using regular cutting data.

Other problems...

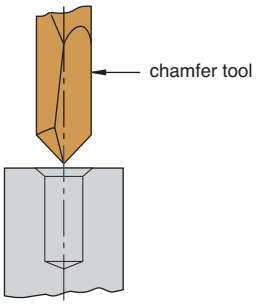
Short hole drilling with pre-centering support tool?

Up to 1 x nominal diameter (1 x d) possible.

Modular Drills — Technical Date — Workpiece Rigidity

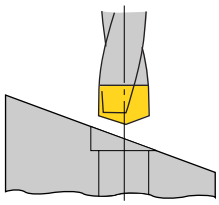


Because KSEM drills deliver much higher penetration rates, it is important that the workpiece receive adequate support.



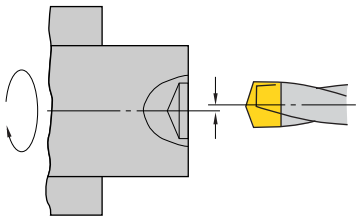
When drilling and chamfering, drill into the solid first, then chamfer.

When drilling on inclined surfaces ≤ 5°, reduce feed by 50% until entire drill margin is in the cut, then resume full feed.



Before drilling on curved or inclined surfaces >5°, pre-machining (ø D + .004) is required.

When drilling stacked plates, care must be taken. The KSEM drill will push a slug.

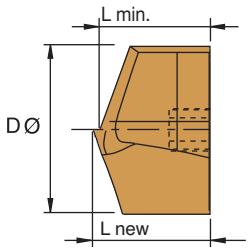


When drilling on turning machines, positioning the drill on center is a must.

CAUTION

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

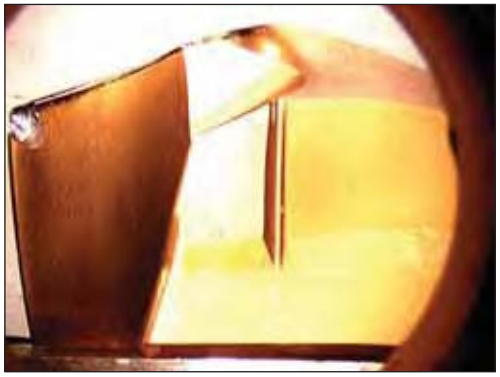
Minimum insert length after reconditioning



inch				mm		
D diameter range	L min.	L new	seat size	diameter range	L min.	L new
.492 - .531	.335	.378	C	12,50 - 13,50	8,5	9,6
.532 - .570	.350	.398	B	13,51 - 14,50	8,9	10,1
.571 - .624	.370	.417	A	14,51 - 15,87	9,4	10,6
.625 - .709	.406	.457	1	15,88 - 18,00	10,3	11,6
.710 - .786	.441	.496	2	18,01 - 19,99	11,2	12,6
.787 - .866	.476	.535	3	20,00 - 22,00	12,1	13,6
.867 - .945	.512	.575	4	22,01 - 24,00	13,0	14,6
.946 - 1.024	.547	.614	5	24,01 - 26,00	13,9	15,6
1.025 - 1.102	.583	.654	6	26,01 - 28,00	14,8	16,6
1.103 - 1.181	.618	.693	7	28,01 - 30,00	15,7	17,6
1.182 - 1.260	.654	.732	8	30,01 - 32,00	16,6	18,6
1.261 - 1.417	.724	.811	9	32,01 - 36,00	18,4	20,6
1.418 - 1.575	.795	.890	10	36,01 - 40,00	20,2	22,6

Wear or failure mechanisms to avoid when applying KSEM Insert Blades

The blades (shown below) typically cannot be reconditioned as the amount removed during the grinding process would place the cutting edge below the steel pocket of the KSEM body.



large fracture on corners

excessive margin wear

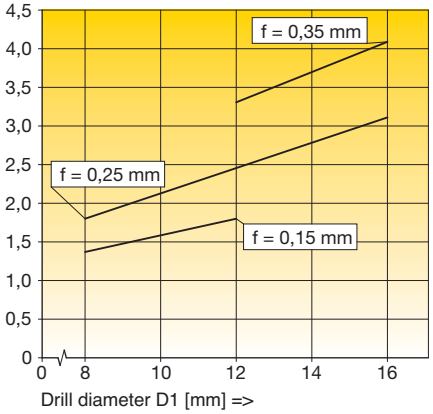
Modular Drills — Cutting Forces — KenTIP

Performance Diagrams Note:

The diagrams are used to determine the feed force, drive power, and torque. They are based on cutting force measurements in steel with a tensile strength of: Rm = 800 N/mm2. The base cutting speed used is: vc = 80 m/min (260 sfm).

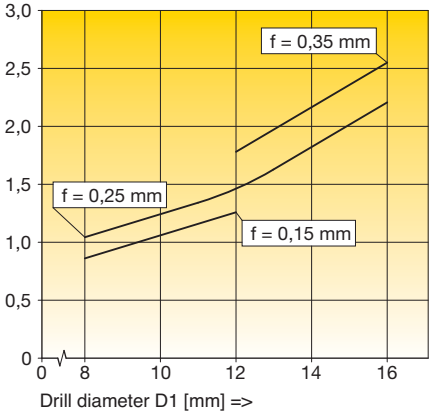
Drive Power

P_s [kW]Drive Power



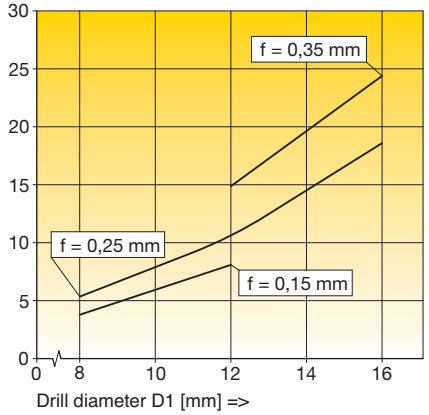
Feed Force

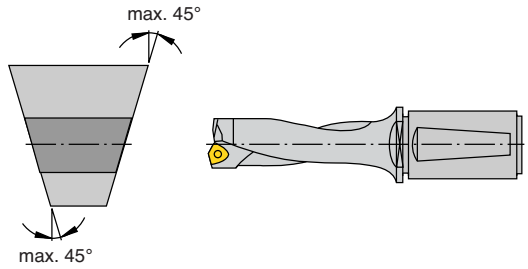
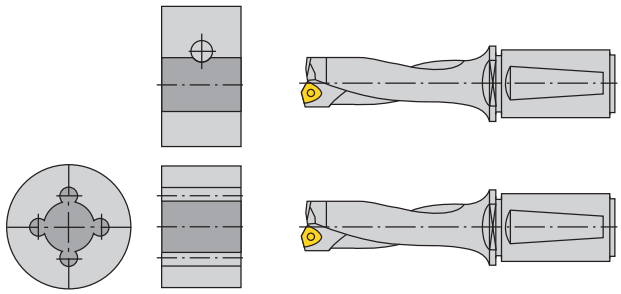
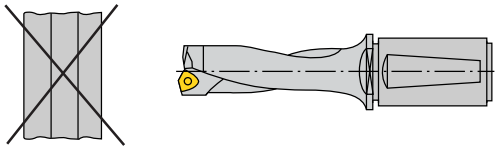
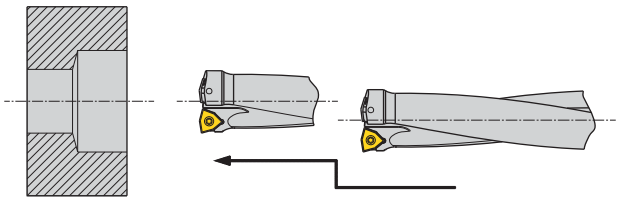
F_f [kN]Drive Power



Torque

M_d [Nm]Drive Power



operation	description
spot drilling and drilling through on inclined surfaces 	Up to a 30 inclination angle is possible without reducing the cutting parameters. For angles between 30-40, reduce feed force at incline surface by 50% (compared to values shown above in starting conditions).
interrupted cuts 	For problem-free drilling in interrupted cuts (cross drilling, etc.), reduce the cutting force and feed by 30% to maintain maximum stability of the machine and clamping mechanisms.
drilling of stacked plates 	This is not possible with the standard DRILL-FIX series drills. A final disc will form when the drill breaks through. Special DRILL-FIX drills may be quoted upon request for stacked plate drilling.
	When DRILL-FIX tools are used as a boring tool, offset the drill in the direction of the outer insert. Watch the outer insert for wear because it is cutting more metal than the inner insert and may require more frequent indexing.

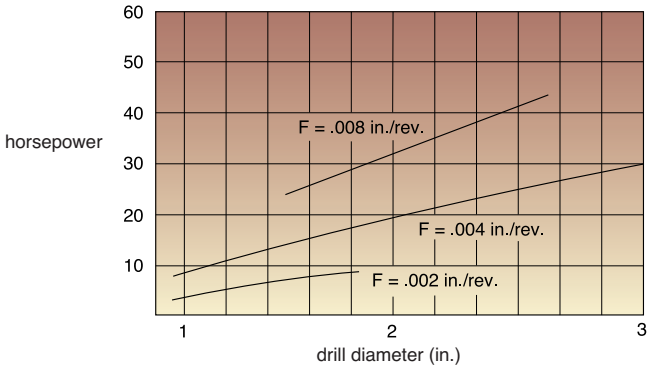
WARNING

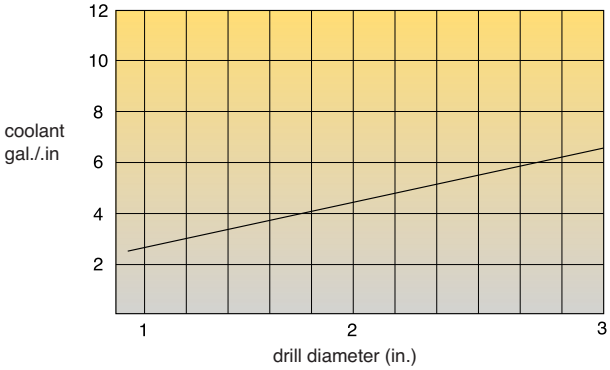
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

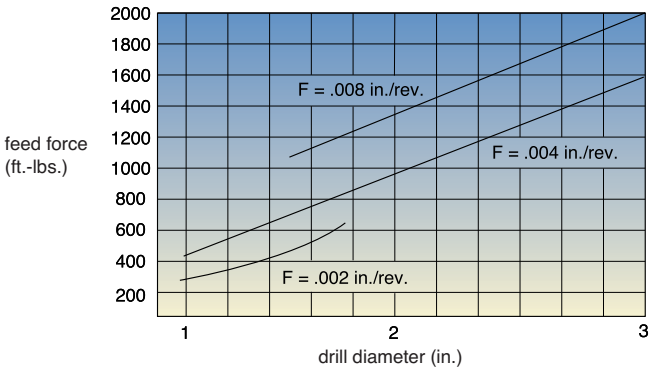
Indexable Drills — Cutting Forces — DRILL FIX — Inch

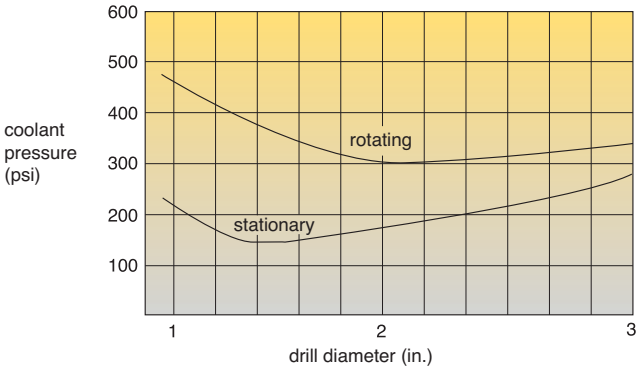
Power: These charts are based on machining experiences using steels with a hardness of 200-250 HB, and on a cutting speed of 650 sfm.

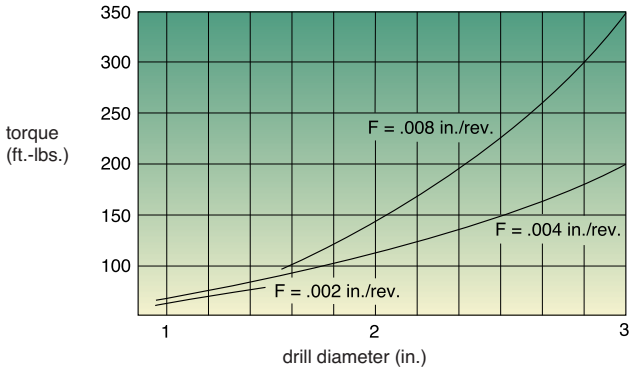
Coolant Application: DRILL-FIX drills must always be applied with coolant lubricant. The higher the coolant rate, the better the drilling performance.



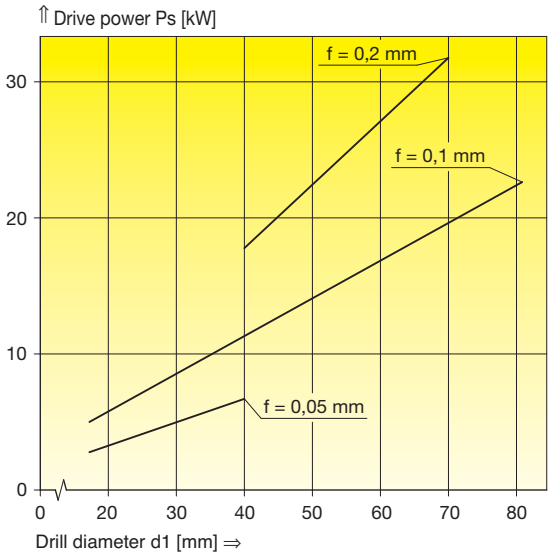




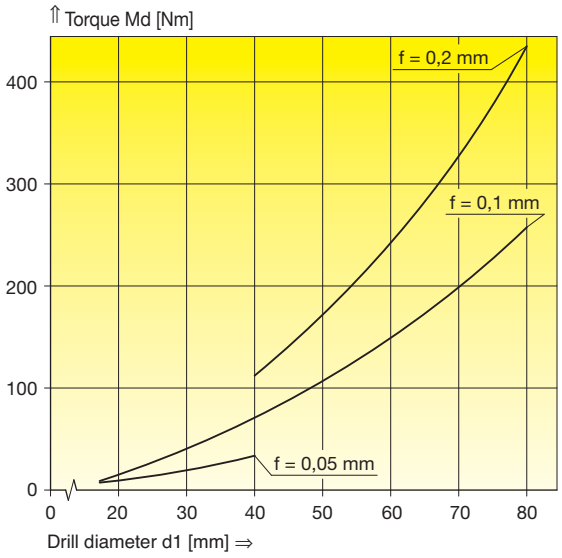




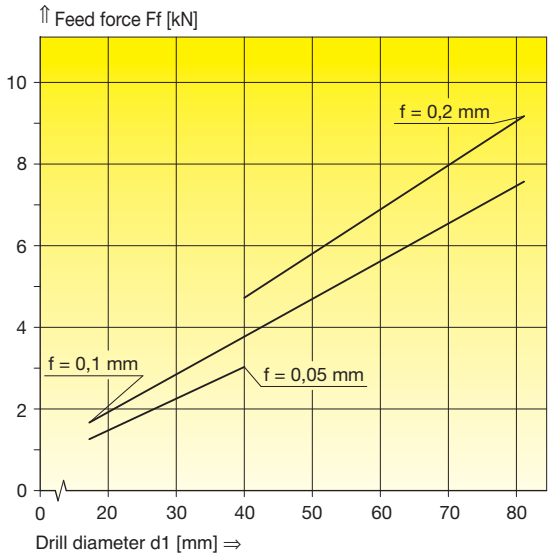
Drive power



Torque



Feed force

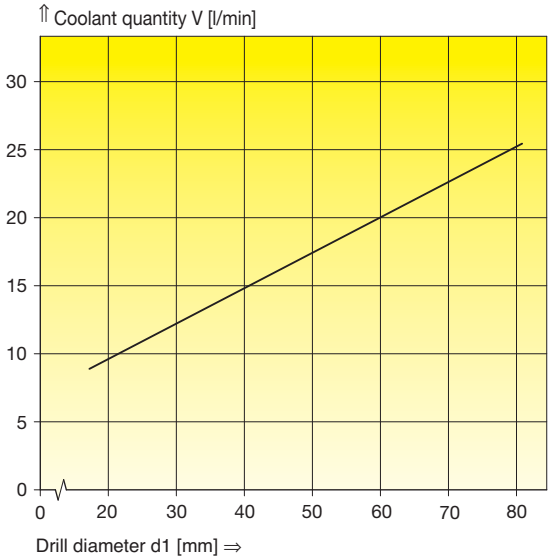


NOTE: *The diagrams are based on empirical values and apply to drilling steel materials with a strength of: Rm = 600 – 900 N/mm2. The cutting speed taken as a basis is: vc = 200 m/min.*

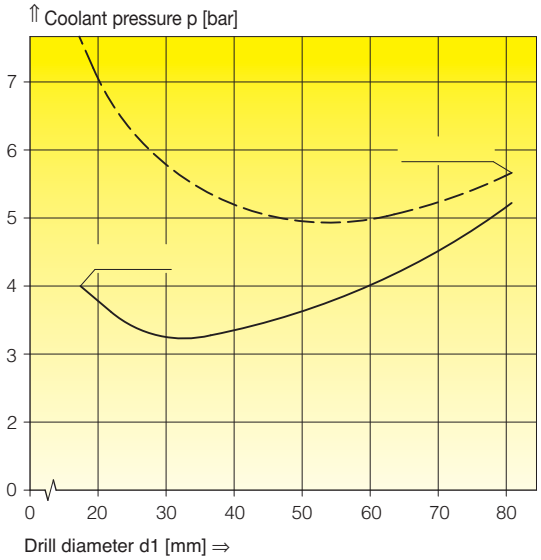
Guidelines for coolant pressure and quantity.

NOTE: *DRILL-FIX drills should always be used with cooling lubricant. The more intensive the cooling, the better the drilling performance.*

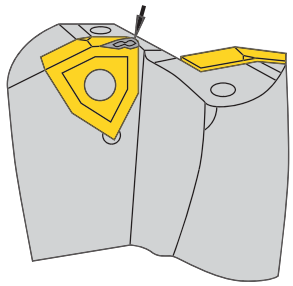
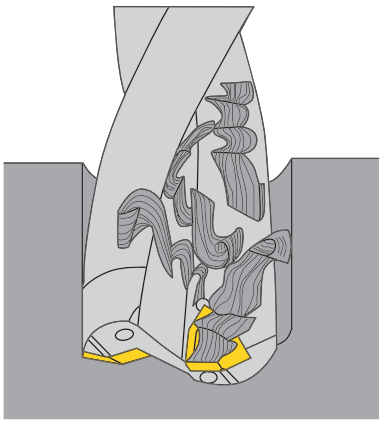
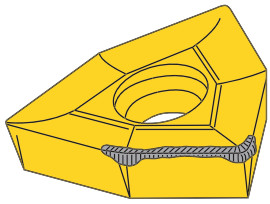
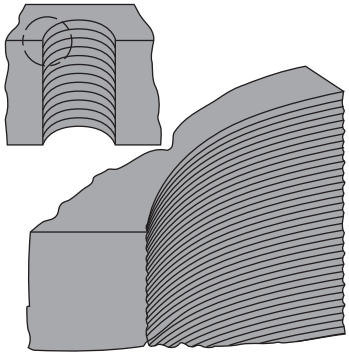
Coolant quantity

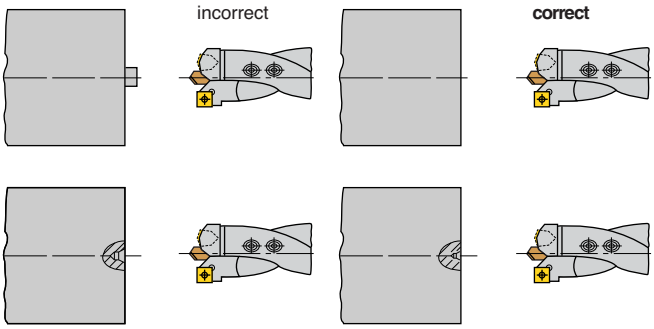


Coolant pressure

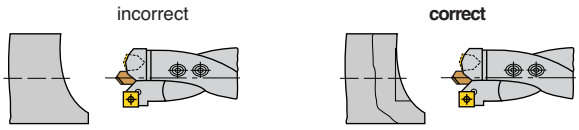


Indexable Drills — Troubleshooting Guide for DRILL-FIX

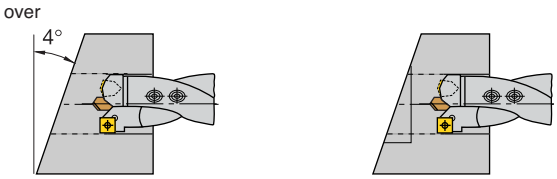
problem	solution
inner cutting edge cracking 	On lathes: • Check machine alignment. • Check clamping accuracy. If tool clamping cannot be improved and/or optimum machine stability is doubtful, reduce feed by 30%. • Use tougher carbide grade. **TIP:** Grades can be mixed to achieve optimum performance. **EXAMPLE:** Use grade KC7225 in the inside pocket with KC7140 in the outside pocket.
chip evacuation not optimal 	• Increase coolant pressure and volume (coolant helps support chip evacuation as well as cooling the cutting edges). • Optimize chip control for a given application. • Increase cutting speed by 20%.
excessive insert wear 	• Increase coolant pressure and volume. • Reduce cutting speed by 20% • Use a more wear-resistant grade.
poor drill hole quality 	• Increase coolant pressure and volume. • Increase cutting speed by 20%. • Check clamping accuracy (tool and workpiece) for possible improvement. **TIP:** Use higher speed with lighter feed to produce better hole quality.

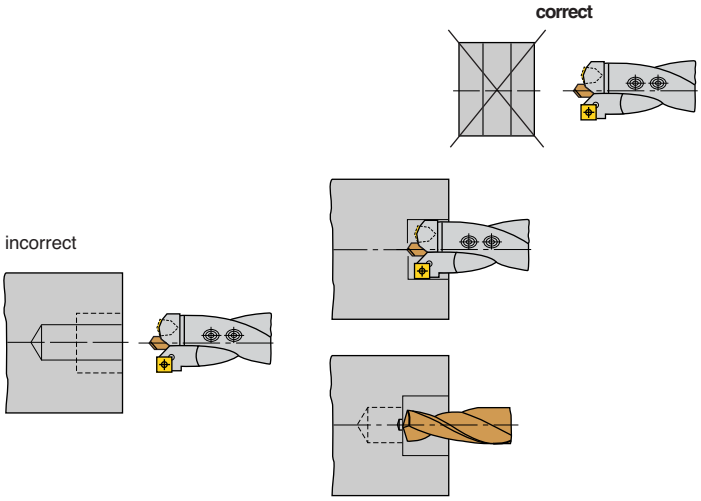


Spot drilling
For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.



Spot drilling and drilling through on inclined surfaces
Up to an 8° inclination angle is possible. Drilling through at a maximum of 4° is possible, otherwise, a pre-facing operation is necessary.



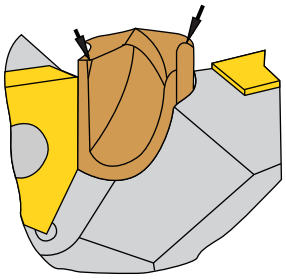
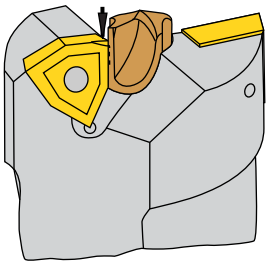
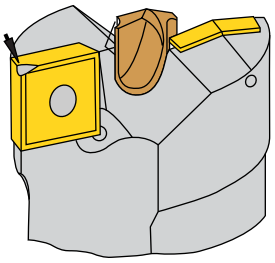
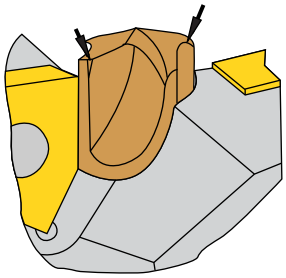


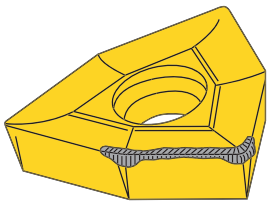
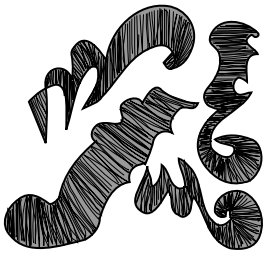
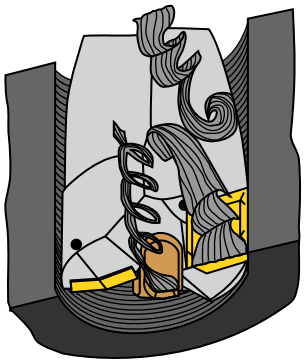
Multi-stage drill hole
HTS-C series drills are not recommended for boring operations. First, use the HTS-C drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.

Drilling of stacked plates
This is not possible with HTS-C series drills because a final disc forms when the drill breaks through.

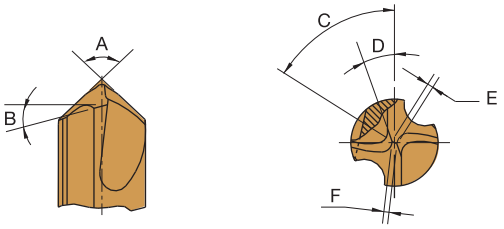
CAUTION
During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

Indexable Drills — Troubleshooting Guide for HTS-C Drills

problem	solution
pilot drill cracking 	On lathes: • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece) for possible improvement. • Use pilot drill B503 in HSS grade AS3.
inner insert cracking 	• Use tougher carbide grade. • Reduce feed by 20%. • Check clamping accuracy (tool and workpiece) for possible improvement.
outer insert cracking 	• Use tougher carbide grade and/or stronger insert geometry. • Reduce feed by 20%. • When drilling through, reduce feed by 50%. • Check clamping accuracy (tool and workpiece) for possible improvement.
extensive pilot drill wear 	• Use coated carbide pilot drill B504 in grade CS3. • Increase coolant pressure and volume. • Reduce cutting speed by 20%.

problem	solution
excessive insert wear 	On lathes: • Use a more wear-resistant carbide grade. • Increase coolant pressure and volume. • Reduce cutting speed by 20%.
chip breaking not optimal 	• Optimize chip control for given application. • Increase cutting speed by 20%; reduce feed by 20%.
chip evacuation not optimal, poor drill hole quality 	• Increase coolant pressure and volume. • Increase cutting speed by 20%.

HTS-C Pilot Drill Repointing Data

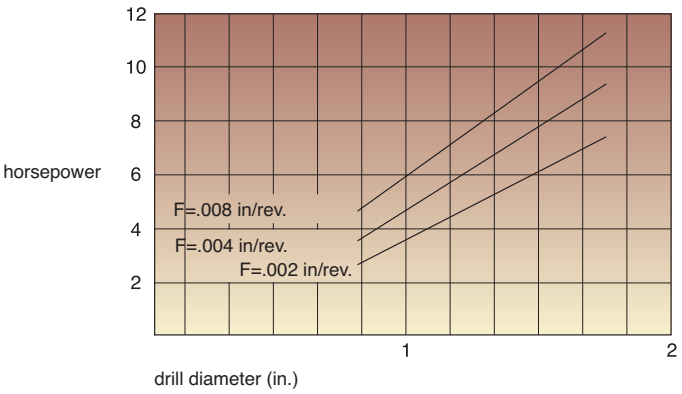


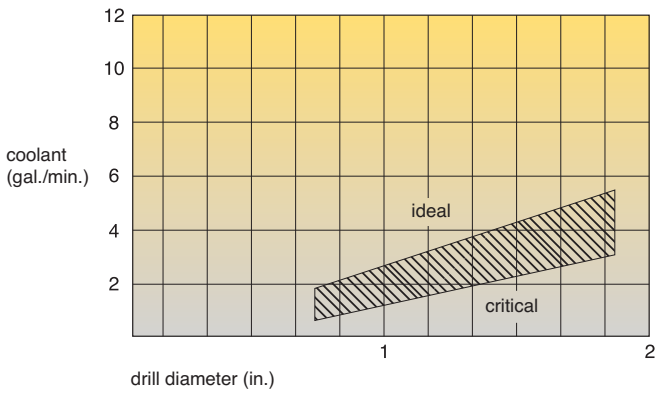
catalog number	grade	included angle A	primary relief angle B	chisel angle C	gash angle D	web thickness E	gash depth F
B504S04000	G13	130°	14°	58° ± 3°	20° ± 2°	.0118 - .004	.0196 ± .004
B504S05000	G13	130°	14°	58° ± 3°	20° ± 2°	.0114 ± .004	.0224 ± .004
B504S06000	G13	130°	14°	58° ± 3°	20° ± 2°	.0129 ± .004	.0129 ± .004
B504S08000	G13	130°	14°	58° ± 3°	20° ± 2°	.0196 ± .004	.0338 ± .004
B504S10000	G13	130°	14°	58° ± 3°	20° ± 2°	.0267 ± .004	.0452 ± .004
B504S04000	CS3	130°	14°	58° ± 3°	20° ± 2°	.0118 - .004	.0196 ± .004
B504S05000	CS3	130°	14°	58° ± 3°	20° ± 2°	.0114 ± .004	.0224 ± .004
B504S06000	CS3	130°	14°	58° ± 3°	20° ± 2°	.0129 ± .004	.0129 ± .004
B504S08000	CS3	130°	14°	58° ± 3°	20° ± 2°	.0196 ± .004	.0338 ± .004
B504S10000	CS3	130°	14°	58° ± 3°	20° ± 2°	.0267 ± .004	.0452 ± .004

Power: This chart is based on machining experiences using steels with a hardness of 200-250 HB, and on a cutting speed of 350 sfm.

Coolant Application: Efficient cooling of HTS-C drills is ensured by an internal coolant capability.

recommended coolant:	emulsion	6-8%
minimum coolant pressure:	stationary drill	30 psi
	rotating drill	90 psi

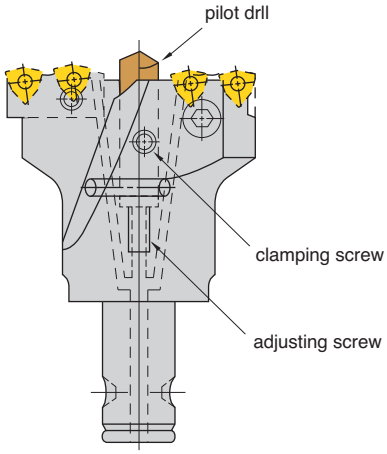




To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

When choosing indexable inserts for HTS drills, Kennametal often recommends different grades and/or geometries for inner pockets versus outer pockets. This practice optimizes chipbreaking action and insert tool life. The inner pockets are defined below.

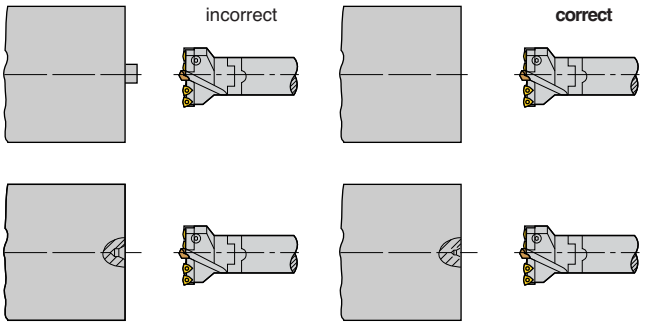
HTS-R



HTS

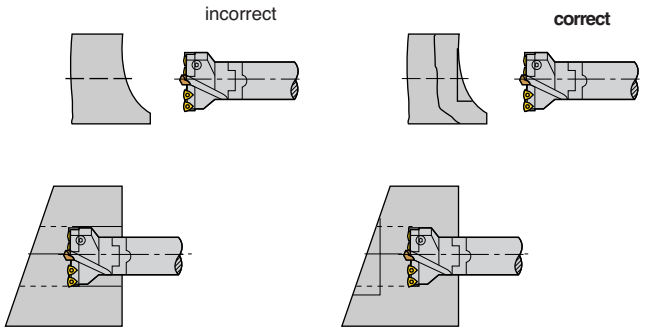
HTS–C and HTS-R, HTS Adjustable Pilot Drills

The pilot drill used the HTS, HTS–R and HTS-C modular drilling systems can be adjusted to accommodate changes in either machining conditions or length alterations due to resharpening. The pilot drill is adjusted from the rear of the drill head via an axial adjusting screw. Once the appropriate length is established, the drill is secured in position using the set screw located on the side of the drill head. The HTS-C pilot drill can be adjusted with the head mounted on the drill shank, using the side adjusting screw. The HTS-C pilot drill is secured using a radial clamping screw. See the HTS and HTS-C product pages in this catalog for the appropriate pilot drill set length.



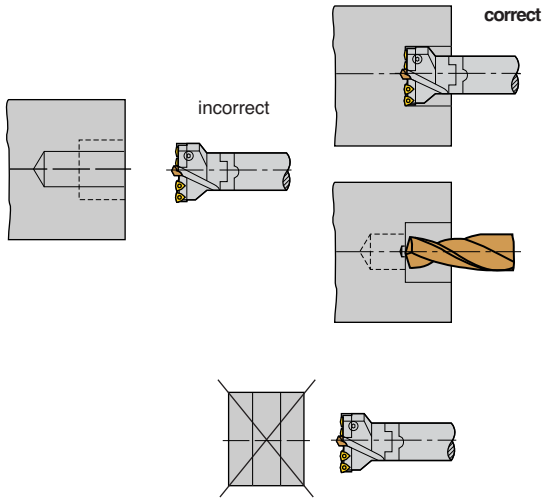
Spot drilling

For plain/straight surfaces, no spot drilling is required. Spot drilling is recommended when using HTS at a long L/D ratio, especially for horizontal applications. In this case, the center drill diameter should be considerably smaller than the pilot drill diameter.



Spot drilling and drilling through* on inclined surfaces

Spot drilling on inclined surfaces is not possible. A pre-facing operation is required for spot drilling and drilling through on inclined surfaces.



Multi-stage drill hole

HTS drills are not recommended for boring operations. First, use the HTS drill to drill a larger diameter hole. Then, use a solid carbide Dynapoint drill, KSEM, or HTS-C drill to drill the smaller holes.

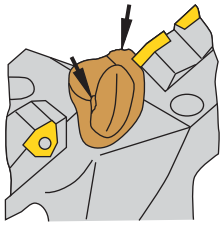
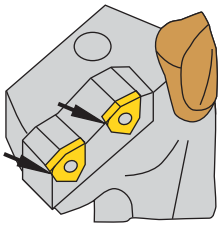
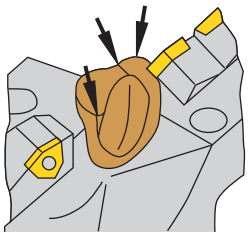
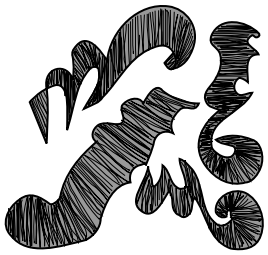
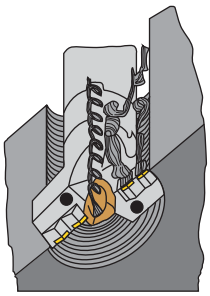
Drilling of stacked plates

Not possible with HTS drills — a final disc forms when the drill breaks through.

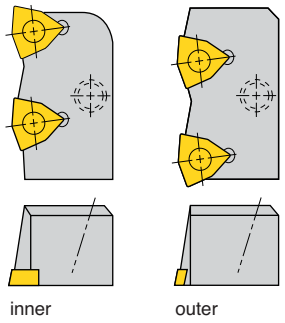
*When drilling through, a small shoulder will be produced on breakthrough as the pilot drill is no longer cutting.

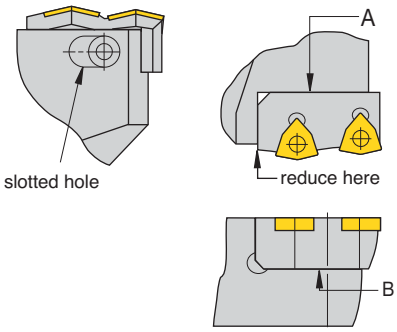
CAUTION

During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

problem	solution
pilot drill cracking 	**On lathes:** • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece) for possible runout.
insert cracking 	• Use tougher carbide grade. • Check clamping accuracy (tool and workpiece) for possible runout.
excessive insert wear 	• Use coated pilot drill AS3. • Increase coolant pressure and volume. • Reduce speed by 20%. • Use wear & resistant carbide grade.
chip breaking not optimal 	• Optimize chip control for given application by using chipbreaker geometry such as HP or MD. • Increase cutting speed by 20%; reduce feed by 20%.
chip evacuation not optimal, poor hole quality 	• Increase coolant pressure and volume. • Increase cutting speed by 20%.

Adjusting the HTS Drill Diameter





- Change drill diameter by adjusting the outer cartridge. The outer cartridge is bolted to the head and can be shortened to drill smaller diameters.
- Shorten at 90° to the contact face “A” and the support face “B.”
- Shortening reduces the effective drill diameter by double the length removed.

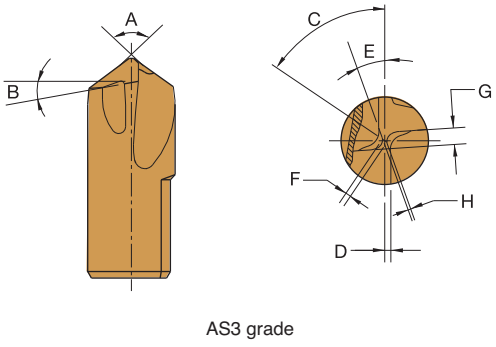
The HTS deep-hole drilling system offers a precise method of adjusting the hole diameter. The cartridges supplied with each HTS system are designed to cut the largest diameter in its range.

To adjust the HTS cutting diameter, make a trial cut, calculate the adjustment needed, remove the outer cartridge, and grind off one-half of the difference obtained by the calculation of the cut diameter to the required diameter.

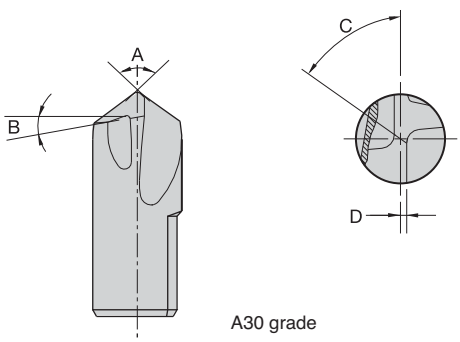
Example: If the standard drill cuts 3.400" and the required diameter is 3.350", the difference is .050. Grind .025 from the inner side of the outer cartridge.

Caution must be taken when altering a cartridge. It’s critical that the chamfers are reground on the cartridge. If the chamfers are not ground, the cartridge will not seat properly in the pocket; thus the tool will not cut the correct diameter.

HTS Pilot Drill Repointing Data



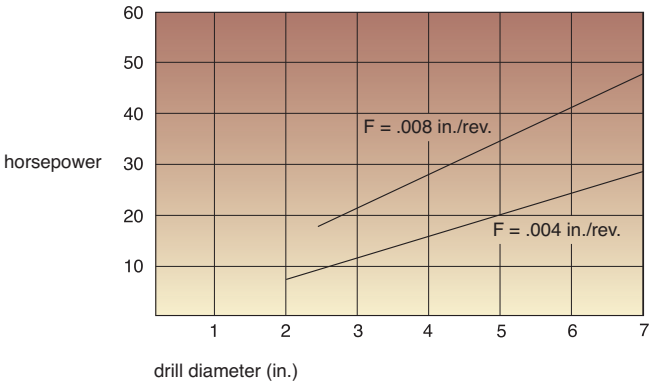
AS3 grade



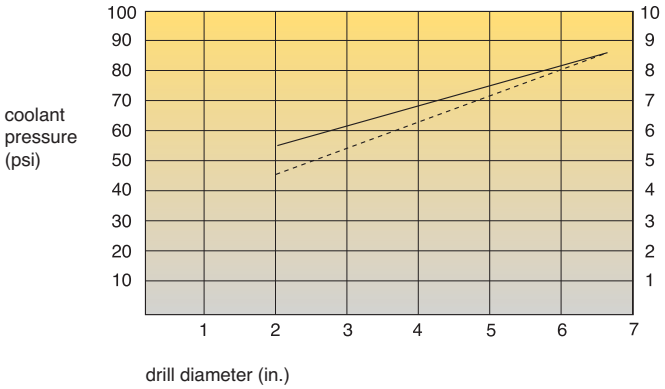
A30 grade

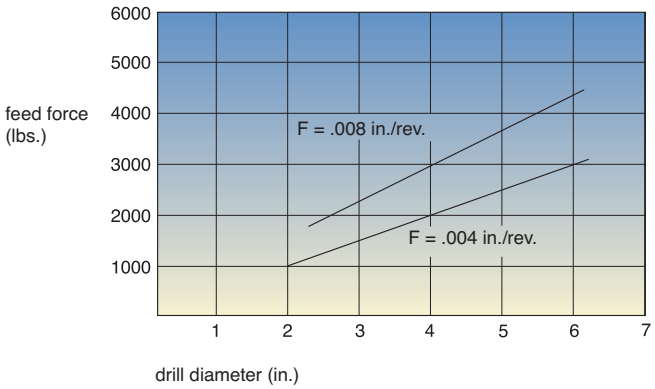
catalog number	grade	included angle A	primary relief angle B	chisel angle C	primary relief D	gash angle E	web thickness F	gash depth G	thickness H
B510S08000	AS3	118°	8° + 2°	55° ± 3°	.0275 ± .004	20° - 2°	.0196 ± .004	.0314 ± .004	.0098 ± .002
B510S10000	AS3	118°	8° + 2°	55° ± 3°	.0314 ± .004	20° - 2°	.0236 ± .004	.0393 ± .004	.0118 ± .002
B510S15000	AS3	118°	8° + 2°	55° ± 3°	.0433 ± .004	20° - 2°	.0354 ± .004	.0590 ± .004	.0177 ± .002
B510S20000	AS3	118°	8° + 2°	55° ± 3°	.0551 ± .004	20° - 2°	.0472 ± .004	.0787 ± .004	.0236 ± .002
B510S25000	AS3	118°	8° + 2°	55° ± 3°	.0629 ± .004	20° - 2°	.0590 ± .004	.0984 ± .004	.0291 ± .004
B510S30000	AS3	118°	8° + 2°	55° ± 3°	.0708 ± .004	20° - 2°	.0708 ± .001	.1181 ± .001	.0354 ± .004
B510S08000	A30	118°	8° + 2°	55° ± 3°	.0275 ± .004				
B510S10000	A30	118°	8° + 2°	55° ± 3°	.0314 ± .004				
B510S15000	A30	118°	8° + 2°	55° ± 3°	.0433 ± .004				
B510S20000	A30	118°	8° + 2°	55° ± 3°	.0551 ± .004				
B510S25000	A30	118°	8° + 2°	55° ± 3°	.0629 ± .004				
B510S30000	A30	118°	8° + 2°	55° ± 3°	.0708 ± .004				

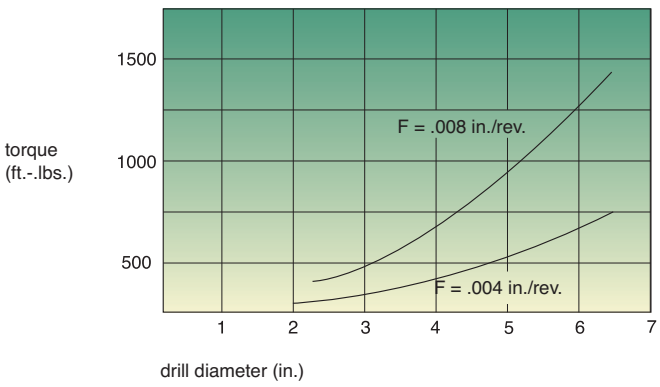
Power: These charts are based on machining experiences using steels with a hardness of 200-250 HB, and on a cutting speed of 350 sfm.



Coolant Application: HTS drills must always be applied with coolant lubricant. The higher the coolant rate, the better the drilling performance.

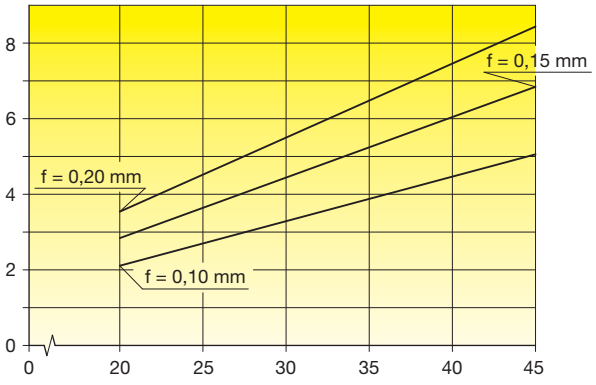






Drive power

→ Drive power Ps [kW]

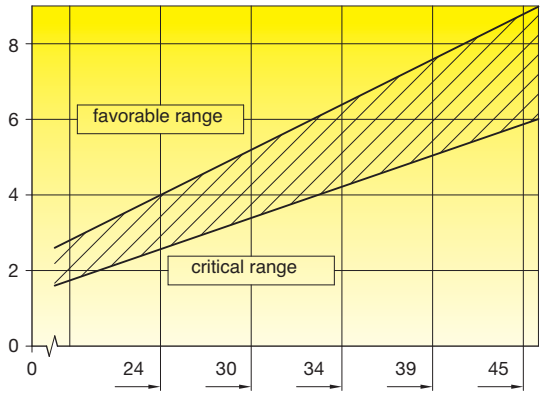


Drill diameter [mm]↑

Calculating the drive power
The diagram is based on empirical values.
It applies to drilling steels of strength:
700–900 N/mm2
The cutting speed taken as a basis is:
vc = 100 m/min

Minimum coolant quantities

→ Minimum coolant quantities V. [l/min]



Drill diameter d1 [mm] ↑

Coolant usage
Powerful cooling is provided for the
HTS-C drill tools thanks to an internal
coolant supply.

Recommendation:	Emulsion 6–8%
Minimum coolant pressure:	6 bar

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Basic Formulas

to find	formula
sfm	(d x rpm) / 3.82
rpm	(sfm x 3.82) / d
mpm	sfm / 3.27
sfm	mpm / 3.27
ipr	ipm / rpm
ipm	ipr x rpm
mm	inch x 25.4
inches	mm / 25.4
cut time	loc / ipm (min)
mrr	πd2 / 4 (ipm)

Hardness Conversion

Brinell	Rockwell		Brinell	Rockwell		Brinell	Rockwell		Brinell	Rockwell		Brinell	Rockwell	
HB	HRB	HRC	HB	HRB	HRC	HB	HRB	HRC	HB	HRB	HRC	HB	HRB	HRC
654	-	60	432	-	46	301	-	32	216	96.0	-	156	82.0	-
634	-	59	421	-	45	294	-	31	210	95.0	-	153	81.0	-
615	-	58	409	-	44	286	-	30	205	94.0	-	150	80.0	-
595	-	57	400	-	43	279	-	29	200	93.0	-	147	79.0	-
577	-	56	390	-	42	271	-	28	195	92.0	-	144	78.0	-
560	-	55	381	-	41	264	-	27	190	91.0	-	141	77.0	-
543	-	54	371	-	40	258	-	26	185	90.0	-	139	76.0	-
525	-	53	362	-	39	253	-	25	180	89.0	-	137	75.0	-
512	-	52	353	-	38	247	-	24	176	88.0	-	135	74.0	-
496	-	51	344	-	37	243	100.0	23	172	87.0	-	132	73.0	-
481	-	50	336	-	36	237	99.0	22	169	86.0	-	130	72.0	-
469	-	49	327	-	35	231	98.5	21	165	85.0	-	127	71.0	-
455	-	48	319	-	34	228	98.0	20	162	84.0	-	125	70.0	-
443	-	47	311	-	33	222	97.0	-	159	83.0	-	123	69.0	-

Abbreviations

sfm = surface feet per minute
rpm = revolutions per minute
mpm = meter per minute
ipr = inches per revolution
ipm = inches per minute
d = diameter
mm = millimeters
loc = length of cut
mrr = metal removal rate

Useful Formulas

kW = hp / 1.341022
HP = kW x 1..341022
kN = lbs / 225
lbs = kN x 2.25
Nm = ft-lbs / .7375621
ft-lbs = Nm x .7375621
1 psi = .068948 bars

Workpiece Material Conversion Table — P1

P1 Low-Carbon Steels, Long Chipping **Content: C <.25%** **Tensile Strength RM (MPa)*: <530** **Hardness (HB): <125**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0044	A 570 Gr. 40	St 44-2	4360-43 B	SM 41 B	K 02502	S 275 JR	E 28-2	Fe 430 BFN	1412
1.0123		QSt 37-3		SWRCH 12R					
1.0128		QSt 44-2							
1.0133		QSt 44-3							
1.0135		P St 44-3							
1.0146		P St 44-2							
1.0176		P St 37-3							
1.0301	1010	C 10	045 M 10	S 10 C	G10100	C 10	XC 10	C 10	
1.0310		C10D		SWRM 10		C 10 D	FM 10	C 10 D	
1.0311		C12D		SWRM 12		C 12 D		C 12 D	
1.0352		P 245 G H (Schiffkessel Blech)				P 245 GH			
1.0401	1015	C 15	080 M 15	S 15 C	G10170	C 15	C 12	C 15	1350
1.0402	1020	C 22	050 A 20	S 22 C	G10200	1 C 22	C 20	C 20	1450
1.0407		LSt 45.8				C 16		C 16	
1.0413		C15D		SWRM 15		C 15 D	FM 15	C 15 D	
1.0414		C20D		SWRM 20		C 20 D	FM 20	C 20 D	
1.0415		C26D		SWRH 27		C 26 D	FM 26	C 26 D	
1.0416		C18D		SWRM 17	C 18 D	FM 18	C 18 D		
1.0420		GS-38	A1			GE 200	230-400M		1306
1.0425		P 265 GH	151-400	SG 30	K02801	P 265 GH	A42CP	P 265 GH	1430
1.0446		GS-45	A1	SC 450	J03001	GE 230	E23-45M		1305
1.0453	1018	C16.8	080 A 17		G10180				
1.0492		11 Mn 4 Si							
1.0494		11 Mn 4 Al							
1.0495		21 Mn 5							
1.0496		12 Mn 6							
1.087		17 MnV 7							
1.1101		Alfrig 35 N						C1	
1.1108		10 Mn 4							
1.1109		12 Mn 5							
1.1114		C10D2				C 10 D 2	FM 10	C 10 D 2	
1.1117		8 Mn 4							
1.1120		GS-20 Mn 5		SMnC 420	H15220				
1.1121	1010	Ck 10	040 A 10	S 10 C	G10100	2 C 10	XC 10	C 10	1265
1.1122		Cq 10 (C 10 C)		SWRCH 10 K		C 10 KD			
1.1123		7 Mn 6							
1.1124		C12D2				C 12 D 2		C 12 D 2	
1.1125		7 Mn 7							
1.1126		C15D2				C 15 D 2	FM 15	C 15 D 2	
1.1129		C 18D2				C 18 D 2	FM 18	C 18 D 2	
1.1131		GS-16 Mn 5				G 17 Mn 5	G 17 Mn 5	G17Mn5	
1.1132		Cq 15		SWRCH 15K		C 15 KD			
1.1134		Ck 19 (C 19 E)							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.1135		C 16 E Al / Ck 16 Al							
1.1137		C20D2				C 20 D 2	FM 20	C20D 2	
1.1139		C26D2				C 26 D 2	FM 26	C26D 2	
1.1141	1015	Ck 15	080 M 15	S 15 C	G 10150	2 C 15	XC 15	C 15	1370
1.1148		C 16 E	C 16 E			C 16 E	XC 18		
1.1149		Cm 22	070 M 20	C 22 R (3 C 22)		3 C 22	XC 18 u	C 22 R	
1.1151	1023	Ck 22	050 A 20	S 22 C	G10230	2 C 22	XC 25	C 20	
1.1152		Cq 22		SWRCH 20K		C 21 KD		CB 20 FF	
1.1176	1038 H	Ck 38			G 10380		XF 38		
1.1185		C2D1				C 2 D 1		C 2 D 1	
1.1301		19 MnVS 6				19 MnVS 6			
1.5418		GS-20 MnMo 53							
1.5475		GS-20 MnNb 5							
1.5485		GS-20 MnNiTi 53							
1.5508	1021	22 B 2		SWRCHB 220	G10210	C 22 BE 69	21 B 3		
1.5523	15B21 H	19 MnB 4 420	170 H 20	SWRCHB	H15211	19 MnB 4	20 MB 5		
1.6219		G 22 MnNi 5							
1.6916		GS-12 MnCrNiMo 53							
1.7353		GS-12 CrMo 19 5	B 5						
1.7387		G 12 CrMo 9 10			S50480				
1.7903		GS-18 MnCrMo 63							
1.7906		GS-19 MnCrMo 63							
1.7909		GS-20 MnCrMo 63							
1.8958		S 235 J 0 W (Allwesta 360)	S 235 J 0 W	SMA 400 BW		S 235 JO W	S 235 J 0 W		
1.8959		S 355 J 0 W (Allwesta 510)	WR 50 B	SMA 490 BW		S 235 JO W	E24W-3	S 235 J0 W	
1.8960		WTSt 37-2 / S235JRW	WR 50 B	SMA 41 A	K11538	S 235 JR W	E 24 W-2		
1.8961		WTSt 37-3	WR 50 C	SMA 50 A	S 235 J2 W	S 235 J 2 W	Fe 360 D FF		

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Workpiece Material Conversion Table — P2

P2 Low-Carbon Steels, Free Machining, and Short Chipping **Content: C <.25%** **Tensile Strength RM (MPa)*: <650** **Hardness (HB): <220**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0030		St 00							
1.0034		R St 34-2/ S 205 G2T	34/20CR		K02502				
1.0035		St 33	HR 15	SS 330	K01400		A 33	Fe 320	
1.0036	A 570 Gr. 33	USt 37-2	4360-40 B	SS 34	K 02502	S 235 JR G1	E 24-2	Fe 360 BFU	1311
1.0037		St 37-2	HS 37/23	STKR 400	K02702	S 235 JR	E 28-2	Fe 430 C	1412
1.0038	A 570 Gr. 36	R St 37-2/ S235 JRG2	4260-40 C	SS 34	K 02502	S235 JR G 2	E 24-2 NE	Fe 360 BFN	1312
1.0040		USt 42-2		SS 41			HS 18-0-2-10		
1.0055	1013	USt 34-1			G10130				1233
1.0057		R St 34-1							
1.0065		USt 37-1							
1.0067		R St 37-1							
1.0075		USt 42-1							
1.0077		R St 42-1			K02507				
1.0159		ZSt 37-2							
1.0161		S235J2G3/ Fe 360 D1	S 235 J 2 G 3		K01501	S 235 J2 G3	E 24-4	S 235 J2G3	1313
1.0165		RZSt 37-2							
1.0167		R St 37-2 Cu3				S 235 JRG Cu 2			
1.0171		S 235 J 2 G 3 CuC				S 235 J 2 G 3 Cu C			
1.0201		USt 36-1							
1.0209		St 35-3							
1.0216		USt 38-1							
1.0218		R St 41-2							
1.0302		C 10 Pb				C 10 GPb			
1.0303		QSt 32-3		SWR CH6R		CB 4 FF KD		CB 4 F U	
1.0305		St 35.8		STPT 38	K01201				
1.0306		Fe P 06 G							
1.0307		StE 210.7						Fe 34	
1.0312		R St 15	FeP05			Fe P05	FeP05	FeP05	
1.0314		D 6-2	0 1 5 A 03	SWRM 6	G10050	C 4 D		3 CD 5	
1.0315		St 37.8		STB 35				Fe 37	
1.0320		St 22					F d 2 / C 08 RR		
1.0321		USt 23							
1.0322		USD 8							
1.0325		R R SD 8							
1.0326		R St 28 / 180G2T				180 G 2 T			
1.0327		St 24					Fd 4 / C 05 RR		
1.0330		St 12	DC 01 / Fe P01	SPCC		Fe P01	DC 01 / fe P01	DC 01 / FeP0 1	
1.0331		Ro St 2				DC 01 GT			
1.0332	1008	DD 11 (StW 22)	HR 3	SPHD		DD 11	1 C		
1.0333		St 13	CR 3	SPCD					
1.0334		USt W 23		SPHE		DD 12 G 1			
1.0335		D D 13 (StW 24)	SPHE H S 3		D D 13	3C			
1.0336		USt 4 / DC 04 G				D C 04 G 1			
1.0337		Ro St 4 / DC 04 GT				DC 04 GT			

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0338		St 4	DC 04 / FeP04	SPCE		Fe P04	Fe 14	DC04/ FeP04	
1.0340		M 2 (ArmcoEisen)							
1.0341		St S ch St r							
1.0343		D 20 EK							
1.0344		DC01Cu				DC 01 Cu			
1.0346		A St 35			K02202				
1.0347		RR St 3	CR 3	SPCD		Fe P03	F 13	DC 03 / FeP 03	
1.0348		U H I / P 195GH		SGV 480		P 195 Gh			
1.0349		ZStE 250 i							
1.0353		St 13 Cu 3							
1.0354		St 14 Cu 3				DC 04 Cu			
1.0355		Fe P 05 G							
1.0358		St 05 Z							
1.0359		RR St 23							
1.0361		VH 280-50							
1.0362		VH 370-50							
1.0363		VH 430-50							
1.0364		VH 330-65							
1.0365		VH 420-65							
1.0366		VH 500-65							
1.0367		400-100 TF 180							
1.0369		VH 1100-65							
1.0370									
1.0371		T 50							
1.0372		T 52							
1.0373		DR 550							
1.0374		DR 620							
1.0375		T 57							
1.0376		DR 660							
1.0377		T 61							
1.0378		T 65							
1.0379		TH 55							
1.0380									
1.0382		T 580							
1.0383		T 690							
1.0389		DD 14	1 CR			DD 14	DD 14		
1.0390		DC 01 EK							
1.0391		DC 12 EK							
1.0392		DC 04 EK							
1.0393		DC 13 ED							
1.0394		DC 04 ED							
1.0395		ZStE 180 BH							
1.0396		ZStE 220 BH							
1.0397		ZStE 220 P							
1.0398			3 CR			D D 12	D D 12		
1.0399		DC 03 ED							
1.0400		ZStE 260 BH							
1.0403		C 15 Pb / C15GPb				C 15 GPb			
1.0404		C 22 Pb				C 22 GPb			
1.0410		H-40							
1.0417		ZStE 260 P							

Workpiece Material Conversion Table — P2

P2 Low-Carbon Steels, Free Machining, and Short Chipping Content: C <.25% Tensile Strength RM (MPa)*: <650 Hardness (HB): <220

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0419		RSt 44-2	440		G10160				
1.0423		P265 NB		SG 295		P 265 NB	BS 2		
1.0424	1513	P265	HR 40/30		G15130		12 M 5		
1.0427		C 22.3				C 22 G 1			
1.0428		BSt 420 S				Fe B 400			
1.0432		C 21		SFVC 1	K03504	P 305 GH			
1.0439	1012	B 500 H		S 12 C	G10120	B 500 B	XC 12	B 500 B	1332
1.0447		H IV L / Z St E 280 i							
1.0464		BSt 500 G				B 500 G 1			
1.0465		BSt 500 P (BSt 500 G2)				B 500 G 2			
1.0466		BSt 500 M (BSt500 G 3)				B 500 G 3			
1.0467		C 14 / 15 Mn 3			N08020				
1.0475		Schiffbaustahl GL-D(S 235 J 2			K02104				
1.0476		Schiffbaustahl GL-E(S 235 J 4			K01801				
1.0478		P285 QH				P 285 QH			
1.0498		St 42.8		STPT 42				Fe 42	
1.0525		33 Mn 6							
1.0643		70 Mn3							
1.0660		St 140/160							
1.0662		St 150/170							
1.0664		St 160/180							
1.0702	1110	U 10 S 10		SUM 12	G11100				
1.0703		R 10 S 10 / C 10 RG 2				C 10 RG 2			
1.0706		U 10 S 6							
1.0708		C 7 RG 1							
1.0709		R 7 S 6 / C 7 RG 2				C 7 RG 2			
1.0710		15 S 10 / 15 S 20							
1.0711	B 1112 9 S 20	220 M 07	SUM 21	G 11120			CF 9 S 22		
1.0715	1213	9 SMn 28 / 11 SMn 30	230 M 07	SUM 22	G 12130	11 SMn 28	S 250	CF 9 SMn 28	1912
1.0718	12L13	9 SMnPb 28		SUM 22 L	G 12134	11 SMnPb 28	S 250 Pb	CF 9 SMnPb 28	1914
1.0719		11 30 HD							
1.0720		11 SMnPbBiTe 30							
1.0721	1108	10 S 20	210 M 15		G 11080	10 S 20	10 F 1	CF 10 S 20	
1.0722	11L08	10 SPb 20			G 11084	10 SPb 20	10 Pb F 2	CF 10 SPb 20	
1.0723		15 S 22 / 15 S 20	En32M	SUM 32		15 S 22			1922
1.0725		15 SMn 13	15 SMn 13			15 SMn 13	15 SMn 13		
1.0736	1215	9 SMn 36 / 11 S Mn 37	240 M 07	SUM 25	G 12150	11 SMn 37	S 300	CF 9 SMn 36	
1.0737	12L14	9 SMnPb 36 / 11 SMnPb 37			G 12144	11 SMnPb 37	S 300 Pb SMnPb 36	CF 9	1926
1.0738		11 SMnPbTe 37	11 SMn 37			11 SMn 37			

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0739		11 SMnPbBi 37							
1.0753		15 SPb 20 / 15 SPb 22				15 SPb 22			
1.0754		22 SPb 20							
1.0764		36 SMn 14	36SMn14			36SMn14	36SMn14		
1.0877		C 2							
1.0878		C 5							
1.1133	1022	20 Mn 5	120 M 19	SMn 420	G 10220	20 Mn 5	20 M 5	G 22 Mn 3	
1.1142		GC 16 E / GS-Ck 16				GC 16 E			
1.1177		Ck 38 Pb				25 Mn 4			
1.5506		17 MnB 3	Sep-00						
1.6220		G 20 Mn 5				G 20 Mn 5		G 20 Mn 5	
1.7015	5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3		
1.7016	5117	17 Cr 3	17 Cr 3		G51170	(15 Cr 2 KD)	18 C 3		
1.7211	4118	23 CrMoB 4		SCM 21 H	G41180	20 MoCr 4			
1.8970		StE 385.7							
1.8971		StE 385.7 TM							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0045		F 2172	En 50 B	SM 490 YA		S 1207	E36-2	Fe 510 BFN	
1.0050	A 570 Gr. 50	St 50-2	4360-50 B	SS 50		E 295	A 50-2	Fe 490	2172
1.0052		St 50-1							
1.0060		St 60-2	4360-55 E	SM 58		E 335	A 60-2	Fe 60-2	1650
1.0062		St 60-1							
1.0114		S 235 JO/ Fe 360 C	En 40C			S 235 JO	E24-3	Fe 360 CFN	
1.0116	A 570 Gr. 36	St 37-3	4360-40 C		K01501	S 235 J2 G3	Fe 360 D1(2); E 24-3	Fe 360 D1(2)	1312
1.0123		QSt 37-3		SWRCH 12R					
1.0128		QSt 44-2							
1.0129		ZSt 44-2							
1.0133		QSt 44-3							
1.0135		P St 44-3							
1.0136		St 42-3							
1.0140		S 275 J0C							
1.0141		S 275 J2 G3C							
1.0142		S 275 J2 G4C							
1.0143		S 275 J0	En43C; S275J0			S 275 J0/ Fe 430 C	S 275 J0; E 28-3	S275J0; Fe430CFN	
1.0144	A 573 Gr. 70	St 44-3	4360-43 C	SM 41 B		S 275 J2 G3 (4)	Fe 430 D1(2); E 28-4	Fe 430 D FF	1414
1.0145		S 275 J2 G4/ Fe 430 D 2	S 275 J2 G4			S 275 J2 G4	E28-4;S 275 J2 G4	S 275 J2	1414 G4
1.0146		P St 44-2							
1.0149		Ro St 44-2	43C			S 275 J0 H		S 275 J0 H	
1.0153		ZSt 44-3							
1.0168		ZSt 37-3							
1.0176		P St 37-3							
1.0179		S 275 JR Cu							
1.0219		St 41-3							
1.0254		St 37.0		STPG 38		P 235 T1			
1.0300		C4D				C 4 D	FM 5	C 4 D	
1.0304		C9D		SWRM 8		C 9 D	FM 9	C 9 D	
1.0308		St 37-2	360.0000	STKM 12 A	K02504	S 235 JR	E 24-2	Fe 360	1412
1.0313		C7D	C 7 D	SWRM 8	G10060	C 7 D	FM 8	C 7 D	
1.0319		L 210 GA				L 210 GA	TS E 220 class 2		
1.0323		USD 7 / C 8 G1 W				C 8 G 1 W			
1.0324		RSD 7 / C8G2W				C 8 G 2 W			
1.0339		RSD 10 Si / C10WSi				C 10 W Si			
1.0345		P235 GH	P 235 GH	SPV 50	K02503	P 235 GH	A 37 CP	Fe E 235	1330
1.0351		RRSD 10 / C10 W				C 10 W			
1.0405		St 45.8		STB 410	K02727				
1.0406	1025	C 25	070 M 26	S 22 C	G10250	1 C 25	C 25	C 25	
1.0409		St E 320.7							
1.0411		C 25 Pb				C 25 GPb			
1.0412		27 MnSi 5							
1.0418		L 245 MB	430.0000		K03006	L 245 MB	L 245 MB		
1.0421		St 52.0		STPG 42					

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0422		R 0550							
1.0426		P310 NB	224-410	SG 325	K02100	P280GH	BS 2	P 275 N	2103
1.0429		L 290 MB				L290MB	L 290 MB		
1.0430		St E 320.7 TM							
1.0431		B St 42/50 RK							
1.0433		B St 42 / 50 RU							
1.0434									
1.0435		H III / P285NH		Sm 38		P 285 NH			
1.0436		P310 NB	224-430	SG 325	K02100	P305GH	P 275 N	P 275 N	2103
1.0437		A St 41	P 275 N	STK 400	K02100	S 275 N	BS 3	P 275 N	2103
1.0438		B 500 A		SD 490		B 500 A		B 500 A	
1.0440	1044	GL-A							
1.0441		Schiffbaustahl GL-A							
1.0442		Schiffbaustahl GL-B(S 235 J 0							
1.0443		GS-45		SC 450					
1.0444		ZStE 300 BH							
1.0445		H IV / P295NH		SG 37	K03102			Fe 460-2 KW	
1.0448		ZStE 300 P / H 300 P							
1.0457		StE 240.7				L 245 NB	L 245 NB		
1.0458		HIII / L 235 GA				L 235 GA			
1.0459		L 245 GA / RRStE 240.7				L 245 GA	TS E 250		
1.0460		C 22 8				P 250 GH			
1.0461		St E255			K01800				
1.0462		WStE 255			K01800				
1.0463		TStE 255			K11535				
1.0468		15 Mn 3 Al				C 14 GAl			
1.0469		21 Mn 4						20 Mn 4	
1.0470		21Mn4Al							
1.0473		19 Mn 6 / P 355 GH	P 355 GH	SGV 46	K03300	P355GH	A 52 CP	Fe E355-2	2101
1.0474		Schiffbaustahl GL-D (S 235 J)							
1.0479		13 Mn 6							
1.0480		H 260 / ZSt E 260	H 240 LA			H 240 LA	E 240 C		
1.0481		17 Mn 4 / P 295 GH	224-460B	SG 37	K03501	P 295 GH	A 48 CP	Fe E 295	2102
1.0482		19 Mn 5	224-460	SG 37	K 03102		A 52 CP; AP; FP	Fe460-2 KW	
1.0483		L 290 AG				L290GA	TS E 290		
1.0484		L 290 NB				L290NB	L 290 NB		
1.0485		21 Mn 6			K12320				
1.0486		St E 285	P 275 N	SM 41 A	K 01802	P 275 N	P 275 N	Fe E 285 KG	
1.0487		W St E 285	P 275 N		K 01802	P 275 NH	P 275 N	Fe E 285 KW	
1.0488		T St E 285	P 275 NL 1	SLA 235 A	K 01803	P 275 NL 1	P 275 NL 1	Fe E 285 KT	
1.0489		H 300 / ZSt E 300	H280LA			H 280 LA	E 280 C		
1.0492		11 Mn 4 Si							
1.0493		S 275 NH	S 275 NH			S 275 NH		S 275 NH	
1.0494		11 Mn 4 Al							
1.0495		21 Mn 5							
1.0496		12 Mn 6							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0497		S 275 NLH	S275NLH			S 275 NLH		S275NLH	
1.0499		L 360 GA				L 360 GA			
1.0501	1035	C 35	060 A 35	S 35 C	G 10350	1 C 35	CC 35	C 35	1550
1.0502		C 35 Pb / C 35 GPb				C 35 Pb			
1.0503	1045	C 45	080 M 46	S 45 C	G 10450	1 C 45	CC 45	C 45	1650
1.0505		St E 315 / P 315N		SM 50 A	K11506	P 315 N		Fe E 315 KG	
1.0506		W St E 315		SNC 1	K02404	P 315 NH		Fe E 315 KW	2107
1.0507		St 55		STKM 16A				Fe 540	
1.0508		T St E315		SLA 325 A	K02404	P 315 NL			2106
1.0509		S 355 K2 G3 Cu / (St 55.4)							
1.0510		32 Mn 4							
1.0511	1040	C 40	080 M 40	S 40 C	G 10 400	1 C 40	C 40	C 40	
1.0512		C 40 Pb				C 40 G Pb			
1.0516		C38D		SWRH 37		C 38 D	FM 38	C 38 D	
1.0517		C48D		SWRH 48		C 48 D	FM 48	C 48 D	
1.0518		C56D				C 56 D	FM 56	C 56 D	
1.0519	1046	S 355 K 2 G 4 Cu			G10460	S 355 K2 G4 Cu			
1.0520		31 Mn 4							
1.0521		StSch 700 (R 0 700)				R 0700			
1.0524		StSch800 (R 0 800)				R 0800			
1.0526		Cf 45 Pb						C 46	
1.0527		C 56						C 56	
1.0528	1030	C30	080 M 30	SUP 7	G 10 300	1 C 30	C C 32	C 30	
1.0530		C32D		SWRH 32	K02701	C 32 D	FM 32	C 32 D	
1.0532		GL-A 40 (S 390 G 1 S)				S 390 G 1 S			
1.0535	1055	C 55	070 M 55	S 55 C	J05000	1 C 55	C 55	C 55	1655
1.0539		S 355 NH	S 355 NH			S 355 NH		S 355 NH	
1.0540	1050	C 50	080 M 50	S 50 C	G 10 500	1 C 50	C 50	C 50	1674
1.0541		C42D		SWRH 42 B		C 42 D	FM 42	C 42 D	
1.0542	1551	C 50 Pb			G15510	C 50 G Pb			
1.0544		Schienen 60 F (R 0600/St Sch 60				R 0600			
1.0547		S 355 JO H	50 C			S 355 J0 H		S 355 J0 H	
1.0548		ZStE 340/ H 340	H 320 L A			H 320 LA	E 315 C		
1.0549		S 335 NLH	50 EE			S 355 N LH		S 355 N L H	
1.0550		ZStE 380 / H 380	H 360 L A			H 360 LA	E 355 C		
1.0551		S 355 J R C							
1.0552		GS-52	A2			GE 260			
1.0553		S 355 JO	En 50 C; S 355 J0	SM 520 M		S 355 J0	S 355 J0; E 36-3	S 355 J0; Fe 510 C FN	
1.0554		GS-70	50 C			S 355 JO C	E 36-3	Fe 510 C	
1.0555		GS-62				S 355 GO 1			
1.0556		ZStE 420 / H 420		46/40HR, HS,CS			H 400 LA	H 400 LA	
1.0557		P355 NB		SG 365		P 355 NB	BS 4		
1.0558		GS-60	A3			GE 300	320-560M	C 45	1606
1.0559		GS-62.3				S 355 GO 2			

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0560		GL-E - 40 (S 390 G 3 S)				S 390 G 3 S			
1.0561	1037	36 Mn4	170 H 36		G10370				
1.0562	A 633 Gr. C	St E 355	P 355 N	SM 50 YB	K12000	P 355 N	E 355 R/FP	Fe E 355 KG	2132
1.0564		N 80							
1.0565		W St E 355	P 355 NH		K01600	P 355 NH	P 355 NH	Fe E 355 KW	
1.0566		T St E355	P 355 NL1	SLA 37		P 355 NL1	P 355 NL1	Fe E 355 KT	
1.0567		32 Mn 3							
1.0570		St 52-3	4360-50 B	SM 50 YB		S 355 J 2 G 3	E 36-3	Fe 510 B	2132
1.0571		P355 QH1	P 355 QH			P 355 QH	P 355 QH		
1.0572		PSt 52-3 (S 355 J2 G3 F)				S 355 J2 G3 F			FE 510 C
1.0573		QSt 52-3 (S355J2G3C)							
1.0574		ZStE 460 / H 460							
1.0577		S 355 J 2 G 4	S 355 J 2 G 4			S 355 J 2 G 4	S 355 J 2 G 4	S 355 J 2 G 4	
1.0578		L 360 MB				L 360 MB	L 360 MB		
1.0580		St 52	CFS5						
1.0581		St 52.4		STS 49					
1.0582		L 360 NB / StE 360.7				L360NB	L 360 NB		
1.0585		S 355 J 2 G 3 Cu/St 52-3 Cu3				S 355 J2 G3 Cu + CR			
1.0586		C50D				C 50 D	FM 50	C 50 D	
1.0587		QSt 52-3 Cu 3				S 355 J2 G3 Cu C			
1.0588		D 53-2		SWRH 52 B		C 52 D	FM 52	C 52 D	
1.0591		FStE 355 OS 3 / S355G03			K12000	S 355 G03			
1.0592		S 355 J 2 G 4 Cu				S 355 J2 G4 Cu			
1.0593		S 355 K2 G3 C							
1.0594		S 355 K2 G4 C							
1.0595		S355k2G3 / Fe 510 DD1 (MULTIST	S 355 K 2 G 3	SM 520 C	K02505	S 355 K 2 G 3	E36-4	S 355 K 2 G 3	
1.0596		S355K2G4 / Fe 510 DD 2 (MULTIS	S 355 K 2 G 4			S 355 K 2 G 4	S 355 K 2 G 4	S 355 K 2 G 4	
1.0597		ZSt 52-3							
1.0598		C 30 Pb				C 3 0 GPb			
1.0601	1060	C 60	080 A 62	S 60 C-CSP	G 10600	1 C 60	AF 70 C 55	C 60	
1.0602		C 60 Pb				C 60 GPb			
1.0605	1074	C 75	CS 80		G10740	1 CS 75	C 75	C 75	
1.0606		C 67 GPb / C 67 Pb				C 67 GPb			
1.0607		C 75 GPb / C 75 Pb				C 75 GPb			
1.0609	1059	C58D		S 58 C	G10590	C 58 D	FM 58	C 58 D	
1.0610		C60D				C 60 D	FM 60	C 60 D	
1.0611		C62D		SWRH 62B			C 62 D	FM 62	C 62 D
1.0612		C66D				C 66 D	FM 66	C 66 D	

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0613		C68D		SWRH 67	B		C 68 D	FM 68	C 68 D
1.0614	1075	C76D			G10750	C 76 D	FM 76	C 76 D	
1.0615		C70D				C 70 D	FM 70	C 70 D	
1.0616	1080	C86D	CS 80		G10860	C 86 D	FM 86	C 86 D	
1.0617		C72D		SWRH 72	B		C 72 D	FM 72	C 72 D
1.0618	1095	C92D	95 CS		G10950	C 92 D		C 92 D	
1.0619		GS-C 25		SCPH 1		GP 240 GH	GP 240 GH	GP 240 Gh	
1.0620	1078	C78D		SWRH 77	B	G10780	C 78 D	FM 78	C 78 D
1.0621		GP 240 GR				GP 240 GR	GP 240 GR	GP 240 GR	
1.0622		C80D				C 80 D	FM 80	C 80 D	
1.0623		StSch 900 A (R 0900)				R 0900			
1.0624		StSch 900 B (R 0900 Mn)				R 0900 Mn			
1.0625	1345	StSch 90 C / GP 280 GH			G13450	GP 280 GH	GP 280 GH	GP 280 GH	
1.0626		C82D		SWRH 82 B		C 82 D	FM 82	C 82 D	
1.0628		C88D				C 88 D		C 88 D	
1.0631		StSch 1200 (R 1200)				R 1200			
1.0633		ZSt 70-2							
1.0724		22 S 20 / 22 S 20					20 F 2		
1.0726	1140	35 S 20	212 M 36		G 11400	35 S 20	35 MF 4		1957
1.0727	1146	45 S 20	212 M 44		G 11460	45 S 20	45 MF 4		1973
1.0728	1151	60 S 20			G11510	60 S 20	60 MF 4		
1.0729		70 S 20							
1.0756		35 SPb 20	35 SPb 20			35 SPb 20	35 SPb 20		
1.0757		45 SPb 20				46 SPb 20			
1.0758		60 SPb 20							
1.0759		70 SPb 20							
1.0760		38 SMn 28	38 SMn 28			38 SMn 28	38 SMn 28		
1.0761		38 SMnPb 28	38 SMnPb 28			38 SMnPb 28	38 SMnPb 28		
1.0762		44 SMn 28	44 SMn 28			44 SMn 28	44 SMn 28		
1.0763		44 SMnPb 28	44 SMnPb 28			44 SMnPb 28	44 SMnPb 28		
1.0765		36 SMnPb 14	36 SMnPb 14			36 SMnPb 14	36 SMnPb 14		
1.0870		17 MnV 7							
1.0871		28 MnB 5							
1.0900		38 Si 6							
1.0901		38 Si 2							
1.0902		46 Si 7					45 S 7		
1.0903	9255	51 Si 7	250 A 53		G92550		51 S 7	48 Si 7	2090
1.0904	9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085
1.0905		38 Si 3							
1.0908		60 SiMn 5							
1.0915		StSch 1100 (R 1100 Cr)				R 1100 Cr			
1.0961	9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	
1.0966		QSt E 690 TM (S 700 MC)				S 700 MC	S 690 MC	S 700 MC	
1.0970		QSt E 260 TM / 5260 MC				S 260 MC	41 S 7	Fe E 275 TM	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0971		QSt E 260 N 7 S 260 NC		AE 275 NC		S 260 NC		S 260 NCX	
1.0972	S 315	QSt E 300 TM / S 315 MC	43 F35 HR, HS, CS			S 315 MC	E 315 D		MC
1.0973		QSt E 300 N 7/ S 315 NC		AE 340 NC		S 315 NC		S 315 NC	
1.0974		QSt E340 TM	HR 40/30			S 340 MC	E 335 D		
1.0975		QSt E340 N				S 340 NC		Fe E 355 TD	
1.0976		QSt E 360TM				S 355 MC	E 355 D	Fe E 355 TM	
1.0977		QSt E360 N				S 355 NC		Fe E 355 TD	
1.0978		QSt E380 TM				S 380 MC	E 390 D		
1.0979		QSt E380 N				S 380 NC		Fe E 380 TD	
1.0980		QSt E420 TM	HR 50 F 45			S 420 MC	E 430 D	Fe E 420 TM	
1.0981		QSt E 420 N				S 420 NC		Fe E 420 TD	
1.0982		QSt E 460 TM	50/45 HR			S 460 MC	E 445 D		
1.0983		QSt E 460 N				S 460 NC		Fe E 460 TD	
1.0984		QSt E500 TM				S 500 MC	E 490 D	Fe E 490 TM	2662
1.0985		QSt E500 N				S 500 NC			
1.0986		QSt E550 TM	60/55 HS			S 550 MC	E 560 D	Fe E 560 TM	
1.0987		QSt E550 N				S 550 NC			
1.1008		Ck 8							
1.1009		C 7 K / Ck 7							
1.1010		C 5 E / Ck 5							
1.1102		FStE 355 OS 3 / S355G04				S 355 G04			
1.1103		EStE 255							
1.1104		EStE 285	P 275 NL 2	STK 400		P 275 NL 2	P 275 NL 2	P 275 NL 2	
1.1105		EStE 315				S 315 NL 1			
1.1106		EStE 355	P 355 NL 2	STK 500		P 355 NL 2	P 355 NL 2	P 355 NL 2	
1.1110		C3D2				C 3 D 2	FM 5	C 3 D 2	
1.1111		C5D2				C 5 D 2	FM 6	C 5 D 2	
1.1112		USD 5 / C 8 E1 W				C 8 E 1 W			
1.1113		C8D2				C 8 D 2	FM 8	C 8 D 2	
1.1115		C 10 E W / RSD 11				C 10 EW			
1.1116		USD 6 / C 8 E2 W				C 8 E 2 W			
1.1117		8 Mn 4							
1.1123		7 Mn 6							
1.1125		7 Mn 7							
1.1127	1141	36 Mn 6	212 M 36	S Mn 443	G 11410				
1.1128	1548	46 Mn 5			G15480				
1.1135		C 16 E Al / Ck 16 Al							
1.1136		G 24 Mn 4 / GS 24 Mn 4				G 24 Mn 4			
1.1140		C 15 R	C 15 R			C 15 R	C 15 R		
1.1143		C32D2				C 32 D 2	FM 32	C 32 D 2	
1.1145		C36D2				C 36 D 2	FM 36	C 36 D 2	
1.1146	1033	30Mn4			G10330				
1.1150		C38D2				C 38 D 2	FM 38	C 38 D 2	
1.1153		C40D2				C 40 D 2	FM 40	C 40 D 2	
1.1154		C42D2				C 42 D 2	FM 42	C 42 D 2	
1.1157	1039	40 Mn 4	150 M 36		G10390		35 M 5		
1.1158	1025	Ck 25	070 M 26	S 25 C	G10250	2 C 25	XC 25	C 25	
1.1160	1524	22 Mn 6		SS 41	G15240				
1.116	1524	22 Mn 6		SS 41	G15240				

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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UNS — Unified Numbering System

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.1161	1526	26 Mn 5			G15260				
1.1161	1526	26 Mn 5			G15260				
1.1162		C46D2				C 46 D 2	FM 46	C46D 2	
1.1163		C 25 R	C 25 R			C 25 R	C 25 R	C 25 R	
1.1164		C48D2				C 48 D 2	FM 48	C48 D 2	
1.1165	1330	GS-30 Mn 5	120 M 36	SMn 433 H; SCMn 2	K13300		35 M 5		1330
1.1166	1536	34 Mn 5	En15B	SS 55	G15360				
1.1166	1536	34 Mn 5	En15B	SS 55	G15360				
1.1167	1335	36 Mn 5	150 M 36	SMn 438 (H)	G13350		40 M 5		2120
1.1168		G 40 Mn 5 / GS 40 Mn 5				G 40 Mn 5			
1.1169		20 Mn 6	150 M 19				20 M 5	20 Mn 6	
1.1170	1330	28 Mn 6	150 M 28	SCMn 1	G 13300	28 Mn 6	35 M 5	C 28 Mn	
1.1171		C50D2				C 50 D 2	FM 50	C50D 2	
1.1172	1030	Cq 35		F.1133 (C 35 DF)	G 10300	C 35 KD		CB 35	
1.1173	1034	Ck 34	080 M 34	S 34 C	G 10340	2 C 34		C 34	
1.1177		Ck 38 Pb				25 Mn 4			
1.1178	1030	Ck 30	080 M 30	S 30 C	G 10300	2 C 30	XC 32	C 30	
1.1179		C 30 R	C 30 R	C 30 R (3 C 30)		C 30 R	C 30 R	C 30 R	
1.1180	1035	Cm 35	080 M 36		G 10350	3 C 35	38 H1 k	C 35 R	1572-03
1.1181	1034	Ck 35	080 M 36	S 35 C	G 10340	2 C 35	XC 38 H1	C 35	1572
1.1182		Ck 35 Pb				S 355 G 13			
1.1183	1035	Cf 35	060 A 35	S 35 C	G 10350	C 35 G	XC 38 TS	C 35	1572
1.1184		Ck 36				S 355 G 14			
1.1186	1040	Ck 40	080 A 40	S 40 C	G 10400	2 C 40	XC 42 H1	C 40	
1.1187		C3D1				C 3 D 1		C 3 D 1	
1.1188						C 4 D 1		C 4 D 1	
1.1189		C40R / Cm 40	C 40 R			C 40 R	C 40 R	C 40	
1.1190		C 42 E Al / Ck 42 Al				S 355 G15			
1.1191	1045	Ck 45	080 M 46	S 45 C	G10450	2 C 45	XC 42	C 40	1672
1.1192	1045	Cq 45		SWRCH 45K	G10450	C 45 KD			
1.1193	1045	Cf 45	060 A 47	S 45 C	G10450	C 45 G	XC 42 TS	C 43	1672
1.1195		C 45 Epb / Ck 45 Pb							
1.1198		C 48 Emn / Ck 48 Mn							
1.1201	1045	Cm 45	080 M 46	S 50 C	G10450	3 C 45	XC 48 H1u	C 45 R	1672
1.1202		C52D2				C 52 D 2	FM 52	C 52 D 2	
1.1203	1055	Ck 55	070 M 55	S 55 C	G10550	2 C 55	XC 55 H1	C 55	1655
1.1205		C 53 R / Cm 53				C 53 R			
1.1206	1050	Ck 50	080 M 50	S 50 C	G10500	2 C 50	XC 48 H1	C 50	1674.
1.1207		C 10 R	C 10 R			C 10 R	C 10 R		
1.1208		C 16 R	C 16 R			C 16 R	C 16 R		
1.1209	1055	Cm 55	070 M 55		G 10550	3 C 55	XC 55 H1	C 55 R	
1.1210	1053	Ck 53	En43C	S 53 C	G 10530				
1.1212		C58D2				C 58 D 2	FM 58	C 58 D 2	
1.1213	1050	Cf 53	060 A 57	S 50 C	G 10500	C 53 G	XC 48 TS	C 48	1674
1.1215		Cf 53 Pb						C 53	
1.1217		Ck 53 Pb				C 90 S			
1.1218		Cm 45 Pb							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.1219		Cf 54							
1.1220		C56D2 / D 55-2				C 56 D 2	FM 56	C 56 D 2	
1.1221	1060	Ck 60	060 A 62	S 58 C	G 10640	2 C 60	XC 60	C 60	1678
1.1222		C62D2				C 62 D 2	FM 62	C 62 D 2	
1.1223		Cm 60	C 60 R			3 C 60	C 60 R	C 60 R	
1.1225		Cm 60 Pb							
1.1226	1552	52 Mn 5			G15520				
1.1227		Ck 60 Pb							
1.1228		C60D2				C 60 D 2	FM 60	C 60 D 2	
1.1229		Cf 70 Pb							
1.1230	1065	FD (Federstahldraht)	095 A 65		G10650	C 68 D			
1.1231	1070	Ck 67	060 A 67	S 70 C-CSP	G 10700	C 67 S	XC 68	C 70	1770
1.1232		C68D2				C 68 D 2	FM 68	C 68 D 2	
1.1233		56 Mn 4							
1.1234	1069	Ck 68			G10690	C 70 D			
1.1235		37 Mn 6							
1.1236		C66D2				C 66 D 2	FM 66	C 66 D 2	
1.1237		C 70 D 3 / SKD 70							
1.1238		C 80 D 3 / SKD 80							
1.1240		65 Mn 4							
1.1241		C50R	C 50 R			C 50 R	FM 50	C 50 R	
1.1242		C72D2				C 72 D 2	FM 72	C 72 D 2	
1.1244		70 Mn 4							
1.1245		Ck 75 Pb							
1.1248	1080	Ck 75	060 A 78	C 75	G 10800	C 75 S	XC 75	C 75	1774
1.1249	1070	Cf 70			G 10700	C 70 G	XC 70		
1.1250		VD (Federstahldraht)			K06700				
1.1251		C70D2				C 70 D 2	FM 70	C 70 D 2	
1.1252		C78D2				C 78 D 2	FM 78	C 78 D 2	
1.1253		C76D2				C 76 D 2	FM 76	C 76 D 2	
1.1255		C80D2				C 80 D 2	FM 80	C 80 D 2	
1.1256		VD 66-3							
1.1257		VD 71-3							
1.1259		80 Mn 4							
1.1260	1566	66 Mn 4			G15660				
1.1262		C82D2				C 82 D 2	FM 82	C 82 D 2	
1.1265		C86D2				C 86 D 2	FM 86	C 86 D 2	
1.1267		Ck 85 Pb							
1.1269	1090	Ck 85		SK 5 - CSP	G 10900	C 85 S	XC 90	C 90	
1.1272		C88D2				C 88 D 2		C 88 D 2	
1.1273	1085	90 Mn 4	080 A 83	SUP4	G 10850				
1.1274	1095	Ck 101	060 A 96	SUP_4	G 10950	C 100 S	XC 100	C 100	1870
1.1282		C92D2				C 92 D 2		C 92 D 2	
1.1283		C98D2				C 98 D 2		C 98 D 2	
1.1304		46 MnVS 6				46 MnVS 6			
1.1305		46 MnVS 3				46 MnVS 3			
1.1331		WSt E 255 S							
1.1333		WSt E 285 S							
1.1335		WSt E315 S							
1.1337		WSt E 355							
1.1338		C 22.8 S							

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.1339		GS-C 25 S							
1.1380		St 835/1030							
1.1381		St 900/1100							
1.1520		C 70 W1				CT 70	C 70 E 2 U	C 70 K U	
1.1525	W 108	C 80 W1			T72301	C 80 U	Y1 90	C 80 KU	1880
1.1535		C 90 U				C90U			
1.1545	W 110	C 105 W1	B W 1 A		T72301	C 105 U	Y 105	C 100 KU	1880
1.1554		C 110 W				C 110 U			
1.1555		C 120 U				C120U			
1.1563	W 112	C 125 W				C 125 U			
1.1620		C 70 W2				C 70 U			
1.1625	T 8	C 80 W2	BW 1B	SKC 3	T12008		Y1 80	C 80 KU	
1.1645		C 105 W2		SK 3					
1.1654		C 110 W							
1.1663	W 112	C 125 W		SK 2	T72301	C 120 U	Y2 120	C 120 KU	
1.1673		C 135 W		SK 1			Y2 140	C 140 KU	
1.1730		C 45 W				C 45 U	Y3 42		
1.1740		C 60 W		SK 7			Y3 55		
1.1744	A-6	C 67 W			T30106		Y1 70		
1.1750	W 1	C 75 W	BW 1A						
1.1820		C 55 W							
1.1830	1084	C 85 W		SK 5	G10840	C 90 U	Y3 90		
1.2002		125 Cr 1				125 Cr 2	Y2 120 C		
1.2003		75 Cr 1							
1.2004		85 Cr 1					Y1 100 C 2		
1.2008		140 Cr 3		SKS 8		140 Cr 2	Y2 140 C		
1.2056	P21	90 Cr 3			T51621				
1.2057		105 Cr 4		SKC 11					
1.2063		145 Cr 6							
1.2067	L3	100 Cr 6	B L 3		T61203	102 Cr 6	Y 100 C 6	102 Cr 6 KU	
1.2101		62 SiMnCr 4							
1.2103	S2	58 SiCr 8	BS 2		T41902				
1.2162		21 MnCr 5		SCR 420 H			21 MnCr 5	20 NC 5	
1.2203		145 V 12							
1.2208		31 CrV 3				31 Cr V2			
1.2210	L-2	115 CrV 3			T61202	107 Cr V 3 KU	100 C 3	107 CrV 3 KU	
1.2235		80 CrV 2			T91905	80 Cr V 2			
1.2236		80 CrV 2 3							
1.2241	S6	51 CrMnV 4			T41906	51 CrMnV 4		51 CrMnV 4 KU	
1.2302		35 CrMo 7				35 CrMo 7			
1.2307		29 CrMoV 9							
1.2313		21 CrMo10							
1.2320		G 60 CrMoV 10 7							
1.2323		48 CrMoV 67					45 CDV 6		
1.2326		G 48 CrMoV 6 7							
1.2328		45 CrMoV 7							
1.2330	P-20	35 CrMo 4	BP 20		T51620		4135.0000	35 CrMo 4	
1.2332	4145	47CrMo 4			G41450		4142.0000		
1.2333		G 59 CrMoV 18 5							
1.2334		62 CrMoV 6							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2352		22 CrMoV 7							
1.2355		50 CrMoV 13 15				50 CrMoV 13-15			
1.2356		60 CrMoV 13 5							
1.2358		60 CrMoV 18 5							
1.2369		81 MoCrV 42 16							
1.2382		GX 155 CrVMo 121							
1.2414		120 W 4							
1.2419		105 WCr 6		SKS 31		105 WCr 5	(107 WCr 13)	107 WCr 5 KU	2140
1.2424		75 WCr 12							
1.2442	W 5	115 W 8			T72305				
1.2510	O 1	100 MnCrW 4	BO 1	SKS 3	T 31501	(95 Mn WCr 5)	90 MWCV 5	95 MnWCr 5 KU	2140
1.2516	A-10	120 WV 4	BF 1		T30110		110 WC 20	110 W 4 KU	
1.2519		110 WCrV 5							
1.2521		110 WCrV 8							
1.2542	S1	45 WCrV 7	BS 1		T 41901	45 WCrV 8	45 WCr V 8	45 WCrV 8 KU	2710
1.2549		50 WCrV 8				50WCrV8			
1.2550	S1	60 WCrV 7	BS1			60 WCrV 8	55 WC 20	55 WCrV 8 KU	
1.2552		80 WCrV 8							
1.2590		GS-80 CrVW 4 3							
1.2603		45 CrVMoW 5 8							
1.2604		73 WCrMoV 22							
1.2661		38 CrCoWV 18 17 17	38 CrCoWV			18-17-17			
1.2705		80 NiCr 11							
1.2708		54 NiCrMoS 6							
1.2710		45 NiCr 6							
1.2711		54 NiCrMoV 6					55 NCDV 6		
1.2713	L6	55 NiCrMoV 6	BH 224/5	SKT 4	T61206	55 NiCrMoV 7	55 NCDV 7	55 NiCrMoV 7 KU	
1.2714	P5	56 NiCrMoV 7			T51605	56 NiCrMoV 7		56 NiCrMoV 7 KU	
1.2718		55 NiCr 10							
1.2721		50 NiCr 13					55NCD13		
1.2726		26 NiCrMoV 5							
1.2735	P6	15 NiCr 14		SNC 22	T51606		10 NC 12		
1.2736		55 CrNiMo 4							
1.2737		28 NiCrV 5							
1.2738		40 CrMnNiMo 8 6 4				40 CrMnNiMo 8-6-4			
1.2739		40 CrNiMoV 3 3 4							
1.2740		28 NiCrMoV 10							
1.2741		55 CrNiMoVS 4 2 4							
1.2742		55 CrNiMoV 4 2 4							
1.2743		60 NiCrMoV 12 4							
1.2744		57 NiCrMoV 7 7				55 NiCrMoV 7			
1.2745		14 NiCr 18							
1.2762		75 CrMoNiW 6 7							

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For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2770		85 NiV 4							
1.2773		75 NiCrMo 5 3 3							
1.2778		GS-20 MoNi 33 13							
1.2823		70 Si 7							
1.2824		70 MnMoCr 8				70 MnMoCr 8			
1.2825		95 MnWCr 5				95 MnWCr 5			
1.2826		60 MnSi 4					60 MSC 4		
1.2833	W 210	100 V 1	BW 2	SKS 43	T72302	100 V 2	Y1 105 V	102 V 2 KU	
1.2838		145 V 33							
1.2840							20 MV 6		
1.2842	O 2	90 MnCrV 8	BO 2		T31502	90 Mn V 8	90 MV 8	90 MnVCr 8 KU	
1.2851		34 CrAl 6							
1.3433		GS-60 CrSi 5							
1.3502		85 Cr 2							
1.3505	E 52100	100 Cr 6	535 A 99	SUJ 2	G52986	100 Cr 6	100 C 6	100 Cr 6	2258
1.3514		101 Cr 6						102 Cr 6 KU	
1.3515		20 MnCr 4 2							
1.3518		100 CrMnSi 4 4							
1.3519		100 CrMnSi 6 6							
1.3520		100 CrMn 6			K19195	100 CrMn 6	100 CM 6		
1.3523		19 MnCr 5							
1.3531		16 CrNiMo 6	820A16				16 NCD 6	16NiCrMo6	
1.3532		16 NiCrMo 16 5							
1.3536		100 CrMn 7 3				100 CrMnMo 7	100 CD 7		
1.3537		100 CrMo 7		SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	
1.3539		100 CrMnMo 8					100 CrMnMo 8		
1.3555		13 MoCrNi 42 16 14							
1.3559		20 Cr 3							
1.3561	5046	44 Cr 2			H50460	46 Cr 1 KD	44 Cr 2		
1.3563	4142	43 CrMo 4			G41420		43 Cr Mo 4		
1.3565	4147	48 CrMo 4	817 M 40	SNC 836	H41470		48 CrMo 4		
1.3566		15 CrMo 4							
1.3567		20 CrMo 4							
1.3570		20 MnCrMo 4 2							
1.3576		20 NiCrMo 7							
1.3821		8 SiCr 7 3							
1.4475		GX 150 CrNiMo CuN 41 6 2							
1.4700		8 CrSi 7 7							
1.5021		48 Si 7							
1.5022		38 Si 6							
1.5023		38 Si 7							
1.5024		46 Si 7				45 Si	46 S 7		
1.5025	9259 H	51 Si 7				50 Si 7		48 Si 7	2090
1.5026		55 Si 7	250 A 53		G92550	56 Si 7	55 S 7	55 Si 8	2085
1.5027	9260	60 Si 7	251 A 60		G92600	60 Si 7	60 S 7	60 Si 7	
1.5028		65 Si 7		SUP 7					
1.5029		71 Si 7							
1.5069		36 Mn 7							
1.5085		51 Mn 7							
1.5086		12 Mn 8				11 Mn 8 KE			

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.5092	9262	60 SC 7			G92620	60 SiCr 8	61 SC 7	60 SiCr 8	
1.5120		38 MnSi 4							
1.5121		46 MnSi 4							
1.5122 F.130.A		37 MnSi 5					38 MS 5		
1.5131		50 MnSi 4			K04800				
1.5141		53 MnSi 4							
1.5142		60 SiMn 5							
1.5213		15 MnV 5							
1.5216		17 MnV 6							
1.5223		42 MnV 7							
1.5225		51 MnV 7							
1.5243		42 MnSiV 3 3							
1.5310		8 SiTi 4							
1.5402		15 MnMoV 4 5				15 MnMoV 4-5	15 MDV 4.05		
1.5404		21 MoV 5 3							
1.5406		17 MoV 8 4							
1.5415	A 204 Gr. A	15 Mo 3	1501	STFA 12 -240	K11820	16 Mo 3	15 D3	16 Mo 3 KW	2912
1.5419	4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	
1.5421		20 MnMo 3 5			K12121				
1.5422		G 18 Mo 5				G18Mo5		G 18 Mo5	
1.5423	4520	16 Mo 5	1503-245-420	SBC 690	K11522			16 Mo 5	
1.5425		11 MnMo 4 5			K11123	11 MnMo 45 KE			
1.5426		13 MnMo 6 5			K11424	11 MnMo 65 KE			
1.5427		13 MnMo 8 5			K11423	11 MnMo 85 KE			
1.5428		13 MnMo 12 5							
1.5432	4037	42 MnMo 7	En 16		G40370				
1.5437		70 MoMn 10 4							
1.5472		6 CuNb 15 5							
1.5509		23 B 2							
1.5510		28 B 2		SWRCHB 26		C 30 B	20 B 3		
1.5511		35 B 2		SWRCHB 237		C 35 B	35 B 3		
1.5524		37 MnB 4							
1.5525		20 MnB 4							
1.5527		40 MnB 4	170 H 41	SWRCHB 437					
1.5528		22 MnB 5							
1.5530	15B21 H		20 MnB 5		SWRCHB 620	20 MnB 5	20 MnB 5	20 MnB 5	
1.5532	15B37 H	38 Mn B 5		SWRCHB 737		38 Mn B 5	38 Mn B 5	38 MnB 5	
1.5535		23 MnB 4							
1.5537		36 MnB 4							
1.5538		37 MnB 5							
1.5622	A 350 -LF 5	14 Ni 6		SL2N26	K22103	FeE 285 Ni 6	15 N 6	14 Ni 6	
1.5633		24 Ni 8		SCPL 21	J22501	G 9 Ni 10	22 N 8	G9Ni10	
1.5637	A 350 -LF 5	10 Ni 14	503	SL 3 N 26	K31718	12 Ni 14	12Ni14	18 Ni 14 KT	

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.5639	A16 2317	Ni 14		SHY 70	K31918		3.5 Ni		
1.5713	P3	10 NC 6			T51603	15 NiCr 6	10 NC 6		
1.5714		16 NiCr 4	16 NiCr 4			16 NiCr 4	16 NiCr 4		
1.5715		16 NiCrS 4	16NiCrS4			16 NiCrS 4	16 NiCrS 4		
1.5732	3415	14 NiCr 10		SNC 415 H			14 NC 12	16 NiCr 11	
1.5733		14 NiCrPb 10							
1.5752	E 3310	14 NiCr 14	655 M 13	SNC 815 H	G33106	13 NiCr 12	16 NC 11	16 NiCr 11	
1.5805		10 NiCr 5 4	10NiCr5-4			10 NiCr 5-4	10 NiCr 5-4		
1.5807		15NiCr 6 4							
1.5860		14 NiCr 18							
1.5918		17 CrNi 6 6	17 CrNi 6-6			17 CrNi 6-6	16 CN 6		
1.5919		15 CrNi 6	S107	SNCM 420	H43200	14 CrNi 6	16 NC 6	16 CrNi 4	
1.5920		18 CrNi 8					20 NC 6		
1.6211		16 MnNi 6 3							
1.6213		12 MnNi 6 3				FeE 285 Ni 2			
1.6215		9 MnNi 4							
1.6216		17 MnNi 4							
1.6218		9 MnNi 6							
1.6308		18 MnMoNi 5 5				18 MnMoNi 5-5			
1.6311		20 MnMoNi 4 5		SQV 2 B	K12539	20 MnMoNi 4-5			
1.6312		10 NiMnMo 6 5			K11160				
1.6313		10 NiMnMoCr 6 6							
1.6342		12 MnNiMoV 5 4							
1.6343		12 MnNiMo 5 5							
1.6347		26 NiMoV 14 4							
1.6348		20 NiMoV 14 5							
1.6511	9840	36 CrNiMo 4	816 M 40		G98400	36 CrNiMo 4	40 NCD 3	38 NiCrMo 4 KB	
1.6513		28 NiCrMo 4							
1.6522		20 NiCrMo 2	605 M 36				20 NiCrMo 2		
1.6523	8620	21 NiCrMo 2	805 M 20	SNCM 220 H	G86200	20 NiCrMo 2 KD	20 NCD 2	20 NiCrMo 2	2506
1.6526		20 NiCrMoS 2 2				20 NiCrMoS 2-2	20 NiCrMoS 2-2		
1.6527		20 NiCrMo 3							
1.6540		23 MnNiCrMo 5 3							
1.6542		24 MnNiCrMo 6 2							
1.6543	8622	21 NiCrMo 2 2	805A20	SNCM 220 H	G86220	20 NiCrMo 2 KD	22 NCD 2		2506
1.6545	8630	27 CrNiMo 2			G86300	30 NiCrMo 2 KD	30 NCD 2	30 NiCrMo 2 KB	
1.6546	8640	40 NiCrMo 2 KB	7	SNCM 240	G86400	40 NiCrMo 2 KD	40 NCD 2	4 0NiCrMo 2 KB	
1.6562	E 4340	40 NiCrMo 7	817 M 40		G43406			40NiCrMo7	
1.6563		41 NiCrMo 7 3 2				41NiCrMo7-3-2	41NiCrMo7-3-2		

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6565	4340	40 NiCrMo 6	818M40	SNCM 349	G43400				
1.6571		20 NiCrMoS 6-4				20 NiCrMoS 6-4	20 NiCrMoS 6-4		
1.6580		30 CrNiMo 8	823 M 30	SNCM 431		30 CrNiMo 8 KD	30 CND 8	30 NiCrMo 8	3524
1.6582	4340	34 CrNiMo 6	817 M 40	SNCM 447	G43370	34 CrNiMo 6	35 NCD 6	35 NiCrMo 6 KB	2541
1.6583		35 CrNiMo 6							
1.6585		29 CrNiMo 8							
1.6586		31 CrNiMo 8			K23550				
1.6587		17 CrNiMo 6	820 A 16	SNCM 815		17 CrNiMo 7	18 NCD 6	18 NiCrMo 7	2523
1.6589		34 CrNiMo 6 S							
1.6655		32 NiCrMo 12 5			K34035		30 NCD 12		
1.6658								15NiCrMo 10-6	
1.6723		15 NiCrMo 16 5	835 M 15				15 NiCrMo 16-5		
1.6732		28 NiCrMo 5 5							
1.6738		40 NiCrMo 18 6							
1.6745		40 NiMoCr 10 5	4S.99						
1.6752		22 NiMoCr 67							
1.6755	4718	22 NiMoCr 4 7			G47180				
1.6757		20 NiMoCr 6 5							
1.6758		23 MnNiMoCr 5 4							
1.6782		16 NiCrMO 12 6					16 NCD 13		
1.6918		15 MnNiMoV 5 3							
1.6920		15 MnCrMoNiV 5 3				15 MnCrMo NiV 5-3			
1.6932		28 NiCrMoV 8 5				28 NiCrMoV 8-5			
1.6935		35 CrNiMoV 8							
1.6950		20 NiCrMoV 14 6							
1.6951		32 NiCrMoV 14 5							
1.6952		24 NiCrMoV 14 6							
1.6955		32 NiCrMoV 10							
1.6956		33 NiCrMoV 14 5				33 NiCrMoV 14-5	30 NCD 15		
1.7001		38 Cr 1						38 Cr 1 KB	
1.7002		46 Cr 1							
1.7003	50B 40	38 Cr 2	120 M 36	SMn 438	G50401	38 Cr 2 KD	38 C 2	38 Cr 2	
1.7005		45 Cr 2				45 Cr 2		45 Cr 2	
1.7006	5045	46 Cr 2	605 M 36	SMn 443	H51500	46 Cr 2 KD	42 C 2	45 Cr 2	
1.7007	50B 40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2		35 CB 1	
1.7012		13 Cr 2							
1.7014		17 CrS 3	17 CrS3			17 CrS 3	17 CrS 3		
1.7015	5015	15 Cr 3	523 M15	SCr 415 H	G50150	15 Cr 2	12 C 3		
1.7016	5117	17 Cr 3	17 Cr 3		G51170	(15 Cr 2 KD)	18 C 3		
1.7017		60 Cr 3							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.7020		32 Cr 2							
1.7021		32 CrS 2							
1.7027		20 Cr 4							
1.7028		20 CrS 4							
1.7030	5130	28 Cr 4	530 A 30		G51300	28 Cr 4	30 CD 4		
1.7033	5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	
1.7034	5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	
1.7035	5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	
1.7036		28 CrS 4				28CrS4	28CrS4		
1.7037		34 CrS 4	34 CrS 4			34 CrS 4	34 CrS 4	34 CrS 4	
1.7039		41 CrS 4	41 CrS 4			41 CrS 4	41 CrS 4	41 CrS 4	2245
1.7043		38 Cr 4				38 Cr 4		38 Cr 4	
1.7045	5140	42 Cr 4	530 A 40	SCr 440		40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245
1.7072		36 CrB 2							
1.7075		46 CrB 2							
1.7076		32 CrB 4							
1.7077		36 CrB 4							
1.7102		54 SiCr 6					54 SC 6		
1.7103		67 SiCr 5				67 SiCr 5		67 SiCr 5	
1.7104		55 SiCr 6 3							
1.7106		55 SiCr 7							
1.7108	9262	60 SiCr 7				60 SiCr 8			
1.7116		42 MnNiCrB 4 3							
1.7117		52 SiCrNi 5					52 SCN 5		
1.7121		20 CrMnS 3 3							
1.7131	5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173
1.7137		60 MnCrB 3							
1.7138	50 B 50 H	52 MnCrB 3		SUP 11	H50501				
1.7139		16 MnCrS 5							
1.7146		20 MnCrPb 5							
1.7147	5120	20 MnCr 5		SMnC 420 H	G51200	20 MnCr 5	20 MC 5	20 MnCr 5	
1.7149		20 MnCrS 5				20 MnCrS 5			
1.7160		16 MnCrB 5	16MnCrB5			16MnCrB5	16MnCrB5		
1.7176	5155	55 Cr 3	527 A 60	SUP 9 (A)	G51550	55 Cr 3	55 C 3	55 Cr 3	2253
1.7186		20 MnCr B5							
1.7190		35 CrSi 84							
1.7211	4118	23 CrMoB 4		SCM 21 H	G41180	20 MoCr 4			
1.7213		25 CrMoS 4	25 CrMoS 4			25 CrMoS 4	25 CD 4u	25 CrMoS 4	
1.7218	4130	25 CrMo 4	708 A 25	SCM 420	G41300	25 CrMo 4 KD	25 CD 4	25 CrMo 4 (KB)	2225
1.7220	4137	34CrMo4	708 A 37	SCM 435 H	H41350	34 CrMo 4 KD	35 CD 4	35 CrMo 4	2234
1.7223	4142	41 CrMo 4	708 M 40	SCM 440	G41420	41 CrMo 4	42 CD 4 TS	41 CrMo 4	2244
1.7225	4140	42 CrMo 4	708 A 42	SCM 440 H	G41400	42 CrMo 4	42 CD 4	42 CrMo 4	2244
1.7226		34 CrMoS 4	708 A 37			34 CrMoS 4	34 CD	34 CrMoS 4	2234
1.7227		42 CrMoS 4	708 H 42			42 CrMoS 4	42 CD	42 CrMoS 4	2244
1.7228	4150	50 CrMo 4	708 A 47	SCM 445 H	G41500	50 CrMo 4		50 CrMo 4	
1.7233		42 CrMo 5 6				42CrMo5-6	42CrMo5-6		
1.7242		16 CrMo 4	18 CrMo4	SCM 418 H		18 CrMo 4	15 CD 3.5	18 CrMo 4	
1.7243		18 CrMo 4	18CrMo4	SCM 418		18CrMo4	18CD4	18 CrMo 4	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.7244		18 CrMoS 4	18CrMoS4			18CrMoS4	18CrMoS4		
1.7255		23 CrMo 5							
1.7258		24 CrMo 5		SCM 822 H					
1.7259		26 CrMo 7							
1.7262		15 CrMo 5		SCM 415 H			12 CD 4		
1.7264		20 CrMo 5		SCM 421			18 CD 4		
1.7271		23 CrMoB 3 3							
1.7272		31 CrMoB 2 1							
1.7273		24 CrMo 10							
1.7276		10 CrMo 11					12 CD 10		
1.7281		16 CrMo 9 3					20 CD 8		
1.7305		12 CrMo 11 10							
1.7311		20 CrMo 2							
1.7315		37 CrMo 3							
1.7319		20 MoCrS 3				20 MoCrS 3	20 MoCrS 3		
1.7320		20 MoCr 3				20 MoCr 3	20 MoCr 3		
1.7321		20 MoCr 4		SCM 21 H		20 MoCr 4			
1.7323		20 MoCrS 4				20 MoCrS 4			
1.7325		25 MoCr 4						20 NiCrMo 2	
1.7326		25 MoCrS 4							
1.7333		22 CrMoS 3 5				22 CrMoS 3-5	22 CrMoS 3-5		
1.7335	A182 -F11	13 CrMo 4 4	1501-621	SFVA F 12	K11562	13 CrMo 4-5	15 CD 4.05	14 CrMo 4 5	2216
1.7337	A 387 Gr. 12 Cl. 2	16 CrMo 4 4			K11564			A 18 CrMo 4 5 KW	
1.7339		11 CrMo 5 5			K22094				
1.7340		UP S4 CrMo 1							
1.7341		GS-34 CrMo 4 4							
1.7346		11 CrMo 4 5							
1.7350		22 CrMo 44							
1.7356		7 CrMo 7 5							
1.7357		5 5	B 2	SCPH 21	J11872	5 5-5	G 17 CrMo 5-5	G17CrMo	
1.7358		12 CrMo 8 5			K21509				
1.7360		31 CrMo 12 5							
1.7361		32 CrMo 12	722 M 24			32 CrMo 12	30 CD 12	32 CrMo 12	2240
1.7362		12 CrMo 19 5	3606-625	SCMV 6	K41545	X 12 CrMo 5	Z 10 CD 5.05	16 CrMo 20 5	
1.7363		GS-12 CrMo 19 5		SCPH 61	J42045	GX 12 CrMo 5			
1.7373		X 7 CrMo 6 1	B 5		S50281	CM 5-IG			
1.7374		CM 5-UP							
1.7375		12 CrMo 9 10					12 CrMo 9-10		
1.7379		GS-18 CrMo 9 10		SCPH 32		G 17 CrMo 9 10			
1.7380	A182 -F22	10 CrMo 9 10	1502-622	SCMV 4	J21890	10 CrMo 9 10	10 CD 9.10	12 CrMo 9 10	2218
1.7381		12 CrMo 12 10							
1.7383		11 CrMo 9 10	11 CrMo 9-10	SCMV 4		11 CrMo 9-10	10 CD 9.10	11 CrMo 9-10	
1.7384		7 CrM0 11 10	A 33						
1.7385		6 CrMo 9 10							
1.7386		X 12 CrMo 9 1	629-590 S690G2QL	STFA 26	S50488	X 10 CrMo VNb 9-1			

Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.7388		SG-CrMo 9			S50480				
1.7706		GS-17 CrMoV 5 11		SCPH 23	J21610	G 17 CrMoV 5 10	G17CrMoV5-G 10	17 CrMoV 5 10	
1.7707		30 CrMo V9				30 CrMoV 9			
1.7709		21 CrMoV 5 7			K14073	21 CrmoV 5-7	20 CDV 5.07		
1.7715		14 MoV 6 3	1503-660-460		K11591	14 MoV 6-3			
1.7720		G 12 MoCrV 5 2				G 12 MoCrV 5-2	G12MoCrV 5-2	G12MoCrV 5-2	
1.7728		16 CrMoV 4							
1.7729		20 CrMoVTiB 4-10				20 CrMoVTiB 4-10	20 CrMoVTiB 4-10		
1.7734		15 CrMoV 6							
1.7735		14 CrMoV 6 9							
1.7737		45 CrMoV 6 7					45 CDV 4		
1.7745		15 CrMoV 5 10							
1.7766		17 CrMoV 10							
1.7779		20 CrMoV 13 5							
1.7792		580 CrMOV 4							
1.8062		46 SiCrMo 6 3					45 SCD 6		
1.8075		10 CrSiMoV 7							
1.8159	6150	50 CrV 4	735 A 50	SUP 10	G61500	51 CrV 4	50 CV 4	50 CrV 4	2230
1.8161		58 CrV 4							
1.8404	5150	60 MnCrTi 4	BW 2		G51500				
1.8405		70 MnCrTi 8							
1.8425		110 MnCrTi 8							
1.8504		34 CrAl 6							
1.8506		34 CrAlS 5			K23745				
1.8507	A 355 Cl.D	34 CrAlMo 5	905 M 31		K23510	(34 CrAl Mo 5)	30 CAD 6.12	34 CrAlMo 7	
1.8515		31 CrMo 12	722 M 24			31 CrMo 12	30 CD 12	31 CrMo 12	2240
1.8519		31 CrMoV 9			K42544	31 CrMoV 9		31 CrMoV 10	
1.8564			4S.106						
1.8599		8 CrMo 16							
1.8701		20 MnCr 5 3							
1.8702		21 MnCr 5 4							
1.8706		21 MnCr 7 5							
1.8708		20 MnCrNiMo 6 3							
1.8716		16 MnCrMo 3 2							
1.8717		16 MnCrMo 4 3							
1.8719		15 MnCrMo 3 2							
1.8720		18 MnCr 5 3							
1.8801		S 355 G2 N							
1.8802		S 355 G3 N							
1.8803		S 355 G4 M							
1.8804		S 355 G5 M							
1.8805		S 355 G6 M							
1.8806		S 355 G11 NM							
1.8807		13 MnNiMo 5 4							
1.8808		S 355 G7 M							
1.8809		S 355 G12 NM							
1.8810		S 355 G8 MN							
1.8811		S 355 G8 M							
1.8813		S 355 G10 M							
1.8814		S 355 G1 N							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.8819		PS 275 TMK	S 275 ML			S 275 ML	S 275 ML	S 275 ML	
1.8822		S 355 G1 M				S 355 G 1 M			
1.8829		S 500 M				S 500 m			
1.8830		S 420 G1 M				P 550 M			
1.8838		BTStE 460 TM	S 460 ML			S 460 ML	E 460	S 460 ML	
1.8839		S 500 ML				S 500 ML			
1.8843		S 275 MH				S 275 MH		S 275 MH	
1.8844		S 275 MLH				S 275 MLH		S 275 MLH	
1.8845		S 355 MH				S 355 MH		S 355 MH	
1.8846		S 355 MLH				S 355 MLH		S 355 MLH	
1.8847		S 420 MH				S 420 MH		S 420 MH	
1.8848		S 420 MLH				S 420 MLH		S 420 MLH	
1.8849		S 460 MH				S 460 MH		S 460 MH	
1.8850		S 460 MLH				S 460 MLH		S 460 MLH	
1.8851		S 420 G3 M							
1.8852		S 420 G6 Q							
1.8853		FStE 355 OS 4 / S420G5Q				S 420 G 2			
1.8857		S 420 G2 M							
1.8859		S 420 G4 M							
1.8861		St835/1030							
1.8863		54SICR7							
1.8878		P 550 QL				P 550 QL			
1.8883		S 460 G3 M							
1.8884		S 460 G6 Q							
1.8885		S 460 G5 Q							
1.8887		S 460 G2 N							
1.8889		S 460 G4 M							
1.8900		St E 380		SM 50 B		S 380 N		Fe E 390 KG	
1.8901		StE 460	S 460 N			S 460 N	E 460	S 460N	
1.8902	A 633 Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E 420 KG	2143
1.8903		TStE 460	S 460 L			S 460 NL	E460	S 460 NL	
1.8904		S 550 Q				S 550 Q	E 550	S 550 Q	
1.8905	A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143
1.8906		BGH 8906	55 F			S 460 QL	S 460 QL	S 460 QL	
1.8907		St E 500		SM 58	K02001				
1.8908		S 460 Q	55 F			S 460 Q	E 460	S 460 Q	
1.8910		TStE 380 / S380NL				S 380 NL		Fe E 390 KT	2117
1.8911		EStE 380 / S380NL1							
1.8912		S 420 NL / TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	
1.8913		EStE 420 / S420NL1		STK 540					
1.8914		S 620 Q				S 620 Q	E 620	S 620 Q	
1.8915		T St E 460 / P460NL1	P 460 NL 1		K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	
1.8916		S 460 QL1	55 F			S 460 QL 1			
1.8917		T St E 500			K02001		E 500 T-I		
1.8918		EStE 460 / P460Nl2	P 460 NL 2			P 460 NL 2	P 460 NL 2	P 460 NL 2	
1.8919		EStE 500 / S500NL1					S 500 NL 1		
1.8920		TStE 690 VA / S690G1QL				S 690 G 1 QL			
1.8921		TStE 690 VB /			K11646	S 690 G 2 QL			

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — P3

P3 Medium to High Plain-Carbon Steels and Alloy Steels Content: C >.25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.8922		S 690 G 4 QL / TStE 690 VC				S 690 G 4 QL			
1.8923		S 590 QL / TStE 590 V				S 590 QL			
1.8924		S 500 Q (StE 500 V)				S 500 Q	E 500	S 500 Q	2614
1.8925		S 890 QL 1 (EStE 90 V)				S 890 QL 1			
1.8928		S 690 QL (TStE 690 V)		SHY 685 NS		S 690 QL			
1.8929		TStE 690 VD / S690G3QL				S 690 G 3 QL			
1.8930		WSt E 380 / P380Nh				P 380 NH		Fe E 390 KW	2116
1.8931		S 690 Q / StE 690 V		SHY 685 N		S 690 Q	E 690	S 690 Q	
1.8932		WSt E 420 / P420NH	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420 KW	
1.8933		S 960 QL / TStE 960 V				S 960 QL			
1.8934		S 960 QL 1							
1.8935		WSt E 460 / P460NH	P 460 NH		K02900	P 460 NH	P 460 NH	Fe E 460 KW	
1.8936		P420 QH				P 420 QH			
1.8937		WSt E 500 / P500NH			K02001				
1.8938		TStE 770 V / S770QL				S 770 QL			
1.8939		EStE 790 V / S790QL1				S 790 QL 1			
1.8940		S 890 Q				S 890 Q	S 890 Q	S 890 Q	
1.8941		S 960 Q				S 960 Q	E 960 T-II	S 960 Q	
1.8944		S 550 G 1 QL 1 / EStE 550 VA				S 550 G 1 QL 1			
1.8945		S 355 J 0 WP	WR 50 A			S 355 J0 WP	E 36 W-A3	S 355 J0 WP	
1.8946		S 355 J 2 WP	S 355 J 2 WP			S 355 J2 WP	E36W-A4	S 355 J2 WP	
1.8947		L 415 QB				L 415 QB	L 415 QB		

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.8948		L 360 QB				L 360 QB	L 360 QB		
1.8952		L 450 QB				L 450 QB	L 450 QB		
1.8953		S 460 NH (FGS 47)				S 460 NH		S 460 NH	
1.8954		EStE620VA / S 620 G 1 QL 1				S 620 G 1 QL 1			
1.8955		L 485 QB				L 485 QB	L 485 QB		
1.8956		S 460 NLH / FG S 47				S 460 NLH		S460NLH	
1.8957		L 555 QB				L 555 QB	L 555 QB		
1.8962		9 CrNiCuP 3 2 4	WR 50 A	SPA-H	K11430				
1.8963		WTSt 52-3	WR 50 C	SMA 58 W	K11430	S 355 J 2 G 1 W	E 36 W-A2		
1.8964		EStE 690 VA				S 690 G1 QL1			
1.8965		S 355 J 2 G 2 W	S 355 J 2 G 2 W			S 355 J 2 G 2 W	S 355 J 2 G 2 W	S 355 J 2 G 2 W	
1.8966		S 355 K 2 G 1 W	S 355 K 2 G 1 W	SMA 490 CW		S 355 K2 G1 W	S 355 K2 G1 W	S 355 K 2 G 1 W	
1.8967		S 355 K 2 G 2 W	S 355 K 2 G 2 W			S 355 K2G2 W	S 355 K 2 G 2 W	S 355 K 2 G 2 W	
1.8968		L 515 MB							
1.8969		QStE 600 TM / S 600 MC				S 600 MC	E 620 D	S 600 MC	
1.8972		StE 415..7 / L 415 NB				L 415 NB	L 415 NB		
1.8973		StE 415.7 TM / L 415 MB				L 415 MB	L 415 MB		
1.8974		S 700 MC (QStE 690 TM)				S 700 MC	E 690 D	S 700 MC	
1.8975		L 450 MB / StE 445.7 TM				L 450 MB	L 450 MB		
1.8976		S 650 MC (QStE 650 TM)				S 650 MC	E 620 D	S 650 MC	
1.8977		L 485 MB / StE 480.7 TM				L 485 MB	L 485 MB		
1.8978		StE 550.7 TM / L 555 MB				L 555 MB	L 555 MB		
1.8989		22 MnCrMoV 6							

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Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels **Content: C >.25%** **Tensile Strength RM (MPa)*: 800-1100** **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0319		L 210 GA				L 210 GA	TS E 220 class 2		
1.0418		L 245 MB	430		K03006	L 245 MB	L 245 MB		
1.0429		L 290 MB				L290MB	L 290 MB		
1.0457		StE 240.7				L 245 NB	L 245 NB		
1.0458		HIII / L 235 GA				L 235 GA			
1.0459		L 245 GA / RRStE 240.7				L 245 GA	TS E 250		
1.0470		21Mn4Al							
1.0479		13 Mn 6							
1.0480		H 260 / ZSt E 260	H 240 LA			H 240 LA	E 240 C		
1.0483		L 290 AG				L290GA	TS E 290		
1.0484		L 290 NB				L290NB	L 290 NB		
1.0485		21 Mn 6			K12320				
1.0489		H 300 / ZSt E 300	H280LA			H 280 LA	E 280 C		
1.0491		TStE 275 (S 275 NL)	40EE			S 275 NL	S 275 NL	S 275 NL	
1.0499		L 360 GA				L 360 GA			
1.0519	1046	S 355 K 2 G 4 Cu			G10460	S 355 K2 G4 Cu			
1.0545		S 335 N (StE 355)	50 E			S 355 N	E 355	S 355 N	2134
1.0546		S 355 NL (TStE 355)	50 E E			S 355 NL	E 355	S 355 N L	2135
1.0548		ZStE 340/ H 340	H 320 L A		H 320 LA	E 315 C			
1.0550		ZStE 380 / H 380	H 360 L A			H 360 LA	E 355 C		
1.0556		ZStE 420 / H 420	"46/40HR, HS,CS"			H 400 LA	H 400 LA		
1.0574		ZStE 460 / H 460							
1.0585		S 355 J 2 G 3 Cu / St 52-3 Cu3				S 355 J2 G3 Cu + CR			
1.0587		QSt 52-3 Cu 3				S 355 J2 G3 Cu C			
1.0729		70 S 20							
1.0900		38 Si 6							
1.0901		38 Si 2							
1.0902		46 Si 7					45 S 7		
1.0903	9255	51 Si 7	250 A 53		G92550		51 S 7	48 Si 7	2090
1.0904	9255	55 Si 7	250 A 53	SKH 1; SKT 4	G92550	55 NiCrMoV 7	55 S 7	55 Si 8	2085
1.0905		38 Si 3							
1.0906		65 Si 7	250 A 61						
1.0908		60 SiMn 5							
1.0924		65 SiMn 5							
1.0961	9262	60 SiCr 7	250 A 61	SUP 7	G92620	60 SiCr 8	60 SC 7	60 SiCr 8	
1.0966		QSt E 690 TM (S 700 MC)				S 700 MC	S 690 MC	S 700 MC	
1.0971		QSt E 260 N 7 S 260 NC		AE 275 NC		S 260 NC		S 260 NCX	
1.0972		QSt E 300 TM / S 315 MC	"43 F35 HR,HS,CS"			S 315 MC	E 315 D	S 315 MC	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0973		QSt E 300 N 7/ S 315 NC		AE 340 NC		S 315 NC		S 315 NC	
1.0974		QSt E340 TM	HR 40/30			S 340 MC	E 335 D		
1.0975		QSt E340 N				S 340 NC		Fe E 355 TD	
1.0976		QSt E 360TM				S 355 MC	E 355 D	Fe E 355 TM	
1.0977		QSt E360 N				S 355 NC		Fe E 355 TD	
1.0978		QSt E380 TM				S 380 MC	E 390 D		
1.0979		QSt E380 N				S 380 NC		Fe E 380 TD	
1.0980		QSt E420 TM	HR 50 F 45			S 420 MC	E 430 D	Fe E 420 TM	
1.0981		QSt E 420 N				S 420 NC		Fe E 420 TD	
1.0982		QSt E 460 TM	50/45 HR			S 460 MC	E 445 D		
1.0983		QSt E 460 N				S 460 NC		Fe E 460 TD	
1.0984		QSt E500 TM				S 500 MC	E 490 D	Fe E 490 TM	2662
1.0985		QSt E500 N				S 500 NC			
1.0986		QSt E550 TM	60/55 HS			S 550 MC	E 560 D	Fe E 560 TM	
1.0987		QSt E550 N				S 550 NC			
1.1128	1548	46 Mn 5			G15480				
1.1136		G 24 Mn 4 / GS 24 Mn 4				G 24 Mn 4			
1.1197		25 MnV 5							
1.1199		49 MnVS 3	280 M 01						
1.1226	1552	52 Mn 5			G15520				
1.1235		37 Mn 6							
1.1302		30 MnVS 6				30 MnVS 6			
1.1303		38 MnVS 6				38 MnVS 6			
1.1304		46 MnVS 6				46 MnVS 6			
1.1305		46 MnVS 3				46 MnVS 3			
1.1335		WSt E315 S							
1.1337		WSt E 355							
1.2058		39 Cr 4							
1.2063		145 Cr 6							
1.2067	L3	100 Cr 6	B L 3		T61203	102 Cr 6	Y 100 C 6	102 Cr 6 KU	
1.2101		62 SiMnCr 4							
1.2108		90 CrSi 5		SFVC 2A		P 280 GH		C 100 KU	2092
1.2109		125 CrSi 5							
1.2125	5160	65 MnCr 4	En48		G51600				
1.2127		105 MnCr 4		SUJ 3				100 CrMn 4	KU
1.2129		200 CrMn 8				G 200 CrMn 8			
1.2162		21 MnCr 5		SCR 420 H			21 MnCr 5	20 NC 5	
1.2203		145 V 12							
1.2206	O 6	140 CrV 1			T31506		130 C 3		
1.2208		31 CrV 3				31 Cr V2			
1.2210	L-2	115 CrV 3			T61202	107 Cr V 3 KU	100 C 3	107 CrV 3 KU	
1.2235		80 CrV 2			T91905	80 Cr V 2			
1.2236		80 CrV 2 3							
1.2241	S6	51 CrMnV 4			T41906	51 CrMnV 4		51 CrMnV 4 KU	
1.2242		59 CrV 4							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels — **Content: C >.25%** — **Tensile Strength RM (MPa)*: 800-1100** — **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2243		61 CrSiV 5							
1.2248		38 SiCrV 6							
1.2249		45 SiCrV 6							
1.2302		35 CrMo 7				35 CrMo 7			
1.2303	L 7	100 CrMo 5							
1.2305		102 CrMo 6							
1.2307		29 CrMoV 9							
1.2311	P20	40 CrMnMo 7	BP20					35 CrMo 8 KU	
1.2312		40 CrMnMoS 8 6					40 CMD 8		
1.2313		21 CrMo10							
1.2320		G 60 CrMoV 10 7							
1.2323		48 CrMoV 67					45 CDV 6		
1.2326		G 48 CrMoV 6 7							
1.2328		45 CrMoV 7							
1.2329		46 CrSiMoV 7							
1.2330	P-20	35 CrMo 4	BP 20		T51620		4135	35 CrMo 4	
1.2332	4145	47CrMo 4			G41450		4142		
1.2333		G 59 CrMoV 18 5							
1.2334		62 CrMoV 6							
1.2355		50 CrMoV 13 15				50 CrMoV 13-15			
1.2356		60 CrMoV 13 5							
1.2358		60 CrMoV 18 5							
1.2369		81 MoCrV 42 16							
1.2382		GX 155 CrVMo 121							
1.2414		120 W 4							
1.2419		105 WCr 6		SKS 31		105 WCr 5	(107 WCr 13)	107 WCr 5 KU	2140
1.2424		75 WCr 12							
1.2442	W 5	115 W 8			T72305				
1.2510	O 1	100 MnCrW 4	BO 1	SKS 3	T 31501	(95 MnWCr 5)	90 MWCV 5	95 MnWCr 5 KU	2140
1.2511		80 WCrV 3							
1.2515		100 WV 4		SKS 21					
1.2516	A-10	120 WV 4	BF 1		T30110		110 WC 20	110 W 4 KU	
1.2519		110 WCrV 5							
1.2521		110 WCrV 8							
1.2542	S1	45 WCrV 7	BS 1		T 41901	45 WCrV 8	45 WCr V 8	45 WCrV 8 KU	2710
1.2549		50 WCrV 8				50WCrV8			
1.2550	S1	60 WCrV 7	BS1			60 WCrV 8	55 WC 20	55 WCrV 8 KU	
1.2552		80 WCrV 8							
1.2562		142 WV 13							
1.2603		45 CrVMoW 5 8							
1.2604		73 WCrMoV 22							
1.2661		38 CrCoWV 18 17 17				38 CrCoWV 18-17-17			
1.2705		80 NiCr 11							
1.2708		54 NiCrMoS 6							
1.2710		45 NiCr 6							

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2711		54 NiCrMoV 6					55 NCDV 6		
1.2713	L6	55 NiCrMoV 6	BH 224/5	SKT 4	T61206	55 NiCrMoV 7	55 NCDV 7	55 NiCrMoV 7 KU	
1.2714	P5	56 NiCrMoV 7			T51605	56 NiCrMoV 7		56 NiCrMoV 7 KU	
1.2718		55 NiCr 10							
1.2721		50 NiCr 13					55NCD13		
1.2726		26 NiCrMoV 5							
1.2735	P6	15 NiCr 14		SNC 22	T51606		10 NC 12		
1.2736		55 CrNiMo 4							
1.2737		28 NiCrV 5							
1.2738		40 CrMnNiMo 8 6 4				40 CrMnNiMo 8-6-4			
1.2739		40 CrNiMoV 3 3 4							
1.2740		28 NiCrMoV 10							
1.2741		55 CrNiMoVS 4 2 4							
1.2742		55 CrNiMoV 4 2 4							
1.2743		60 NiCrMoV 12 4							
1.2744		57 NiCrMoV 7 7				55 NiCrMoV 7			
1.2745		14 NiCr 18							
1.2747		28 NiMo 1 7							
1.2762		75 CrMoNiW 6 7							
1.2766		35 NiCrMo 16							
1.2768		25 NiCrMo 12							
1.2770		85 NiV 4							
1.2773		75 NiCrMo 5 3 3							
1.2778		GS-20 MoNi 33 13							
1.2823		70 Si 7							
1.2824		70 MnMoCr 8				70 MnMoCr 8			
1.2825		95 MnWCr 5				95 MnWCr 5			
1.2826		60 MnSi 4					60 MSC 4		
1.2833	W 210	100 V 1	BW 2	SKS 43	T72302	100 V 2	Y1 105 V	102 V 2 KU	
1.2834		105 V				105 V			
1.2838		145 V 33							
1.2840							20 MV 6		
1.2842	O 2	90 MnCrV 8	BO 2		T31502	90 Mn V 8	90 MV 8	90 MnVCr 8 KU	
1.2851		34 CrAl 6							
1.2891		34 CrAlNi 7							
1.3501	E 50100	100 Cr 2			G50986		100 C 2		
1.3503	E 51100	105 Cr 4			G51986				
1.3505	E 52100	100 Cr 6	535 A 99	SUJ 2	G52986	100 Cr 6	100 C 6	100 Cr 6	2258
1.3514		101 Cr 6						102 Cr 6 KU	

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Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels | **Content: C >.25%** | **Tensile Strength RM (MPa)*: 800-1100** | **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3515		20 MnCr 4 2							
1.3518		100 CrMnSi 4 4							
1.3519		100 CrMnSi 6 6							
1.3520		100 CrMn 6			K19195	100 CrMn 6	100 CM 6		
1.3523		19 MnCr 5							
1.3531		16 CrNiMo 6	820A16				16 NCD 6	16NiCrMo6	
1.3532		16 NiCrMo 16 5							
1.3536		100 CrMn 7 3				100 CrMnMo 7	100 CD 7		
1.3537		100 CrMo 7		SUS 4	K19965	100 CrMo 7	100 CD 7	100CrMo7	
1.3539		100 CrMnMo 8					100 CrMnMo 8		
1.3555		13 MoCrNi 42 16 14							
1.3559		20 Cr 3							
1.3565	4147	48 CrMo 4	817 M 40	SNC 836	H41470		48 CrMo 4		
1.3566		15 CrMo 4							
1.3567		20 CrMo 4							
1.3570		20 MnCrMo 4 2							
1.3576		20 NiCrMo 7							
1.4475		GX 150 CrNiMoCuN 41 6 2							
1.4560		X 3 CrNiCu 19 9 2				S 124 M	PHYHQ 4560	304 RH1	
1.4700		8 CrSi 7 7							
1.5021		48 Si 7							
1.5022		38 Si 6							
1.5023		38 Si 7							
1.5024		46 Si 7				45 Si	46 S 7		
1.5025	9259 H	51 Si 7				50 Si 7		48 Si 7	2090
1.5026		55 Si 7	250 A 53		G92550	56 Si 7	55 S 7	55 Si 8	2085
1.5027	9260	60 Si 7	251 A 60		G92600	60 Si 7	60 S 7	60 Si 7	
1.5028		65 Si 7		SUP 7					
1.5067	1335	30 Mn 7			G13350				
1.5085		51 Mn 7							
1.5086		12 Mn 8				11 Mn 8 KE			
1.5094		38 MnS 6				38 MnS 6			
1.5111		9 MnSi 5							
1.5112		10 MnSi 5				9 MnSi 53 KE			
1.5120		38 MnSi 4							
1.5121		46 MnSi 4							
1.5122 F.130.A		37 MnSi 5					38 MS 5		
1.5125		11 Mn Si 6				10 MN Si 63 KE			
1.5126		12 MnSi 5							
1.5128		10 MnSi 44							
1.5130		10 MN Si 7				10 Mn Si 74 KE			
1.5142		60 SiMn 5							
1.5213		15 MnV 5							
1.5216		17 MnV 6							
1.5217		20 MnV 6			K02304				
1.5218		22 MnV 6							
1.5219		41 MnVS 5							
1.5223		42 MnV 7							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.5225		51 MnV 7							
1.5231		38 MnSiVS 5							
1.5232		27 MnSiVS 6							
1.5233		44 MnSiVS 6							
1.5243		42 MnSiV 3 3							
1.5309		8 MnTi 4							
1.5402		15 MnMoV 4 5				15 MnMo V 4-5	15 MDV 4.05		
1.5403		17 MnMoV 6 4	1501-261	SBV 3	K12766				
1.5407		10 MnMoCrV 4 7							
1.5408		30 MoB 1							
1.5419	4419	GS-22 Mo 4	243-430	SCPH 11	G44190	G 20 Mo 5	G20Mo5	G 22 Mo 5	
1.5420		27 MnMo 33 Pb							
1.5421		20 MnMo 3 5			K12121				
1.5422		G 18 Mo 5				G18Mo5		G 18 Mo5	
1.5424		10 MnMo 4 5							
1.5425		11 MnMo 4 5			K11123	11 MnMo 45 KE			
1.5426		13 MnMo 6 5			K11424	11 MnMo 65 KE			
1.5427		13 MnMo 8 5			K11423	11 MnMo 85 KE			
1.5428		13 MnMo 12 5							
1.5432	4037	42 MnMo 7	En 16		G40370				
1.5437		70 MoMn 10 4							
1.5465		26 MnMoB 6 4							
1.5472		6 CuNb 15 5							
1.5473		6 Nb 5							
1.5520		17 MnB 4							
1.5524		37 MnB 4							
1.5526		30 MnB 4							
1.5527		40 MnB 4	170 H 41	SWRCHB 437					
1.5528		22 MnB 5							
1.5531	15B 28 H	30 Mn B 5		SWRCHB 634			30 Mn B 5	30 Mn B 5	
1.5532	15B 37 H	38 Mn B 5		SWRCHB 737		38 Mn B 5	38 Mn B 5	38 MnB 5	
1.5535		23 MnB 4							
1.5536		27 MnB 4							
1.5538		37 MnB 5							
1.5622	A 350 -LF 5	14 Ni 6		SL2N26	K22103	FeE 285 Ni 6	15 N 6	14 Ni 6	
1.5634		75 Ni 8							
1.5639	A2317	16 Ni 14		SHY 70	K31918		3.5 Ni		
1.5710	3135	36 NiCr 6	640 A 35	SNC 236	K22033		30 NC 6		
1.5714		16 NiCr 4	16 NiCr 4			16 NiCr 4	16 NiCr 4		
1.5715		16 NiCrS 4	16NiCrS4			16 NiCrS 4	16 NiCrS 4		
1.5732 NiCr 11	3415	14 NiCr 10		SNC 415 H				14 NC 12	16
1.5733		14 NiCrPb 10							
1.5736	3435	36 NiCr 1 0		SNC 631 H			30 NC 11	35 NiCr 9	
1.5737		30 NiCr 11					30NC12		
1.5752	E	14 NiCr 14	655 M 13	SNC	G33106	13 NiCr 12	16 NC 11	16 NiCr 11	

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For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
			3310			815 H			
1.5755		31 NiCr 14	653 M 31	SNC 836			18 NC 13		
1.5807		15NiCr 6 4							
1.5808		26 NiCr 64							
1.5815		36 NiCr 6 4							
1.5860		14 NiCr 18							
1.5918		17 CrNi 6 6	17 CrNi 6-6			17 CrNi 6-6	16 CN 6		
1.5919		15 CrNi 6	S107	SNCM 420	H43200	14 CrNi 6	16 NC 6	16 CrNi 4	
1.5920		18 CrNi 8					20 NC 6		
1.6211		16 MnNi 6 3							
1.6213		12 MnNi 6 3				FeE 285 Ni 2			
1.6215		9 MnNi 4							
1.6216		17 MnNi 4							
1.6218		9 MnNi 6							
1.6222		9 NiMn 5			K10940				
1.6223		11 NiMn 84							
1.6225		11 NiMn 54							
1.6227		11 NiMn 9 4			K21010				
1.6310		20 MnMoNi 5 5					18 MND 5		
1.6341		11 NiMoV 5 3							
1.6342		12 MnNiMoV 5 4							
1.6343		12 MnNiMo 5 5							
1.6347		26 NiMoV 14 4							
1.6348		20 NiMoV 14 5							
1.6368		15 NiCuMoNb 5	3604-591	SBV 2	K12039				
1.6369		15 NiCuMoNb 5 S							
1.6511	9840	36 CrNiMo 4 4 KB	816 M 40		G98400	36 CrNiMo 4	40 NCD 3	38 NiCrMo	
1.6513		28 NiCrMo 4							
1.6522		20 NiCrMo 2	605 M 36				20 NiCrMo 2		
1.6523	8620	21 NiCrMo 2	805 M 20	SNCM 220 H	G86200	20 NiCrMo 2 KD	20 NCD 2	20 NiCrMo 2	2506
1.6526		20 NiCrMoS 2 2				20 NiCrMoS 2-2	20 NiCrMoS 2-2		
1.6527		20 NiCrMo 3							
1.6540		23 MnNiCrMo 5 3							
1.6542		24 MnNiCrMo 6 2							
1.6543	8622	21 NiCrMo 2 2	805A20	SNCM 2 KD	G86220	20 NiCrMo 220 H	22 NCD 2		2506
1.6545	8630	27 CrNiMo 2			G86300	30 NiCrMo 2 KD	30 NCD 2	30 NiCrMo 2 KB	
1.6546	8640	40 NiCrMo 2 KB	7	SNCM 240	G86400	40 NiCrMo 2 KD	40 NCD 2	4 0NiCrMo 2 KB	
1.6562	E4340	40 NiCrMo 7	817 M 40		G43406			40NiCrMo7	
1.6563		41 NiCrMo 7 3 2				41NiCrMo 7-3-2	41NiCrMo 7-3-2		
1.6565	4340	40 NiCrMo 6	818M40	SNCM	G43400 349				
1.6571		20 NiCrMoS 6 4				20 NiCrMoS 6-4	20 NiCrMoS 6-4		
1.6580		30 CrNiMo 8	823 M 30 431	SNCM		30 CrNiMo 8 KD	30 CND 8	30 NiCrMo 8	3524
1.6581		32 NiCrMo 8 5							

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6582	4340	34 CrNiMo 6	817 M 40	SNCM 447	G43370	34 CrNiMo 6	35 NCD 6	35 NiCrMo 6 KB	2541
1.6583		35 CrNiMo 6							
1.6585		29 CrNiMo 8							
1.6586		31 CrNiMo 8			K23550				
1.6587		17 CrNiMo 6	820 A 16	SNCM 815		17 CrNiMo 7	18 NCD 6	18 NiCrMo 7	2523
1.6589		34 CrNiMo 6 S							
1.6655		32 NiCrMo 12 5			K34035		30 NCD 12		
1.6658								15NiCrMo 10-6	
1.6723		15 NiCrMo 16 5	835 M 15				15 NiCrMo 16-5		
1.6732		28 NiCrMo 5 5							
1.6738		40 NiCrMo 18 6							
1.6739		30 NiCrMo 9 5							
1.6743		32 NiCrMo 10 4	826 M 31						
1.6745		40 NiMoCr 10 5	4S.99						
1.6746		32 NiCrMo 14 5	830 M 31				35 NCD 14		
1.6747		30 NiCrMo 16 6					35 NCD 16		
1.6752		22 NiMoCr 67							
1.6755	4718	22 NiMoCr 4 7			G47180				
1.6757		20 NiMoCr 6 5							
1.6758		23 MnNiMoCr 5 4							
1.6782		16 NiCrMO 12 6					16 NCD 13		
1.6785		3 NiMoCr 12 20							
1.6918		15 MnNiMoV 5 3							
1.6919		11 NiMnCrMo 5 5							
1.6920		15 MnCrMoNiV 5 3				15 MnCrMoNiV 5-3			
1.6932		28 NiCrMoV 8 5				28 NiCrMoV 8-5			
1.6935		35 CrNiMoV 8							
1.6946		30 CrMoNiV 5.11 V							
1.6947		30 NiCrMo 14 5							
1.6948		26 NiCrMoV 11 5							
1.6949		35 NiCrMoV 11 5						30NiCrMoV 12	
1.6950		20 NiCrMoV 14 6							
1.6951		32 NiCrMoV 14 5							
1.6953		26 NiCrMo 14 5					25NCD15		
1.6955		32 NiCrMoV 10							
1.6956		33 NiCrMoV 14 5				33 NiCrMoV 14-5	30 NCD 15		
1.6957		26 NiCrMoV 14 5							
1.6959		35 NiCrMoV 12 5							
1.6971		79 Ni 1							

Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels — **Content: C >.25%** — **Tensile Strength RM (MPa)*: 800-1100** — **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6972		83 Ni 1							
1.7001		38 Cr 1						38 Cr 1 KB	
1.7002		46 Cr 1							
1.7003	50 B40	38 Cr 2	120 M 36	SMn 438	G50401	38 Cr 2 KD	38 C 2	38 Cr 2	
1.7005		45 Cr 2				45 Cr 2		45 Cr 2	
1.7006	5045	46 Cr 2	605 M 36	SMn 443	H51500	46 Cr 2 KD	42 C 2	45 Cr 2	
1.7007	50 B40	37 CrB 1	120 M 36	SMnC 3 H	H50401	38 Cr 2		35 CB 1	
1.7012		13 Cr 2							
1.7014		17 CrS 3	17 CrS3			17 CrS 3	17 CrS 3		
1.7017		60 Cr 3							
1.7020		32 Cr 2							
1.7021		32 CrS 2							
1.7023		38 CrS 2	38 CrS 2			38 CrS 2	38 C 2u	38 CrS 2	
1.7025		46 CrS 2	46 CrS 2	46 CrS 2		46 CrS 2	46 CrS 2	46 CrS 2	
1.7027		20 Cr 4							
1.7028		20 CrS 4							
1.7030	5130	28 Cr 4	530 A 30		G51300	28 Cr 4	30 CD 4		
1.7033	5130 H	34 Cr 4	530 A 32	SCr 430 H	G51300	34 Cr 4 KD	32 C 4	34 Cr 4 KB	
1.7034	5132 H	37 Cr 4	530 A 36	SCr 435 H	G51320	37 Cr 4	38 C 4	36 CrMn 4	
1.7035	5140	41 Cr 4	530 M 40	SCr 440 H	G51400	41 Cr 4	42 C 4	41 Cr 4	
1.7036		28 CrS 4				28CrS4	28CrS4		
1.7037		34 CrS 4	34 CrS 4			34 CrS 4	34 CrS 4	34 CrS 4	
1.7038	5135	37 CrS 4	37 CrS 4			37 CrS 4	38 C 4 u	37 CrS 4	
1.7039		41 CrS 4	41 CrS 4			41 CrS 4	41 CrS 4	41 CrS 4	2245
1.7043		38 Cr 4				38 Cr 4		38 Cr 4	
1.7045	5140	42 Cr 4	530 A 40	SCr 440		40 NiCrMo 3	42 C 4 TS	40 NiCrMo 3	2245
1.7072		36 CrB 2							
1.7075		46 CrB 2							
1.7076		32 CrB 4							
1.7077		36 CrB 4							
1.7102		54 SiCr 6					54 SC 6		
1.7103		67 SiCr 5				67 SiCr 5		67 SiCr 5	
1.7104		55 SiCr 6 3							
1.7105		65 SiCr 5 2							
1.7106		55 SiCr 7							
1.7107		65 SiCr 7							
1.7108	9262	60 SiCr 7				60 SiCr 8			
1.7116		42 MnNiCrB 4 3							
1.7117		52 SiCrNi 5					52 SCN 5		
1.7121		20 CrMnS 3 3							
1.7131	5115	16 MnCr 5	527 M 17	SCR 415	G 51150	16 MnCr 5 KD	16 MC 5	16 MnCr 5	2173
1.7135		8 MnCrB 3							
1.7137		60 MnCrB 3							
1.7138	50 B 50 H	52 MnCrB 3		SUP 11	H50501				
1.7139		16 MnCrS 5							
1.7146		20 MnCrPb 5							
1.7147	5120	20 MnCr 5		SMnC 420 H	G51200	20 MnCr 5	20 MC 5	20 MnCr 5	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.7148		30 MnCrB 4 2							
1.7149		20 MnCrS 5				20 MnCrS 5			
1.7160		16 MnCrB 5	16MnCrB5			16MnCrB5	16MnCrB5		
1.7162		17 MnCrB 5 5							
1.7176	5155	55 Cr 3	527 A 60	SUP 9 (A)	G51550	55 Cr 3	55 C 3	55 Cr 3	2253
1.7182		27 MnCrB 5 2 27 MnCrB 5-2				27MnCrB5-2		27MnCrB5-2	
1.7185		33 MnCrB 5 2 MnCrB 5-2				33MnCrB5-2		32MCB5	33
1.7186		20 MnCr B5							
1.7189		39 MnCrB 6 2 39 MnCrB 6-2				39MnCrB6-2		39MnCrB6-2	
1.7190		35 CrSi 84							
1.7213		25 CrMoS 4	25 CrMoS 4			25 CrMoS 4	25 CD 4u	25 CrMoS 4	
1.7214		25 CrMo 4						25 CrMo 4 F	
1.7217		25 CrMoPb 4							
1.7218	4130	25 CrMo 4	708 A 25	SCM 420	G41300	25CrMo4KD	25 CD 4	25CrMo4(KB)	2225
1.7219		26 CrMo 4			K13047				
1.7220	4137	34CrMo4 CrMo 4	708 A 37 2234	SCM435H		H41350	34 CrMo 4 KD	35 CD 4	35
1.7222		42 CrMoPb 4							
1.7223	4142	41 CrMo 4	708 M 40	SCM 440	G41420	41 CrMo 4	42 CD 4 TS	41 CrMo 4	2244
1.7225	4140	42 CrMo 4	708 A 42	SCM 440 H	G41400	42 CrMo 4	42 CD 4	42 CrMo 4	2244
1.7226		34 CrMoS 4	708 A 37			34 CrMoS 4	34 CD	34 CrMoS 4	2234
1.7227		42 CrMoS 4	708 H 42			42 CrMoS 4	42 CD	42 CrMoS 4	2244
1.7228	4150	50 CrMo 4	708 A 47	SCM 445 0H	G41500	50 CrMo 4		50 CrMo 4	
1.7233		42 CrMo 5 6				42CrMo5-6	42CrMo5-6		
1.7243		18 CrMo 4	18CrMo4	SCM 418		18CrMo4	18CD4	18 CrMo 4	
1.7244		18 CrMoS 4	18CrMoS4			18CrMoS4	18CrMoS4		
1.7255		23 CrMo 5							
1.7262		15 CrMo 5		SCM 415 H			12 CD 4		
1.7264		20 CrMo 5		SCM 421			18 CD 4		
1.7271		23 CrMoB 3 3							
1.7272		31 CrMoB 2 1							
1.7305		12 CrMo 11 10							
1.7311		20 CrMo 2							
1.7315		37 CrMo 3							
1.7319		20 MoCrS 3				20 MoCrS 3	20 MoCrS 3		
1.7320		20 MoCr 3				20 MoCr 3	20 MoCr 3		
1.7321		20 MoCr 4		SCM 21 H		20 MoCr 4			
1.7323		20 MoCrS 4				20 MoCrS 4			
1.7325		25 MoCr 4						20 NiCrMo 2	
1.7326		25 MoCrS 4							
1.7335	A182 -F11	13 CrMo 4 4	1501-621	SFVA F 12	K11562	13 CrMo 4-5	15 CD 4.05	14 CrMo 4 5	2216
1.7339		11 CrMo 5 5			K22094				
1.7340		UP S4 CrMo 1							
1.7341		GS-34 CrMo 4 4							
1.7346		11 CrMo 4 5							
1.7356		7 CrMo 7 5							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels — **Content: C >.25%** — **Tensile Strength RM (MPa)*: 800-1100** — **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.7357		GS-17 CrMo 55	B 2	SCPH 21	J11872	G 17 CrMo 5 5	G17CrMo5-5	G 15 CrMo 5 5	
1.7360		31 CrMo 12 5							
1.7361		32 CrMo 12	722 M 24			32 CrMo 12	30 CD 12	32 CrMo 12	2240
1.7363		GS-12 CrMo 19 5		SCPH 61	J42045	GX 12 CrMo 5			
1.7379		GS-18 CrMo 9 10		SCPH 32		G 17 CrMo 9 10			
1.7380	A182 -F22	10 CrMo 9 10	1502-622	SCMV 4	J21890	10 CrMo 9 10	10 CD 9.10	12 CrMo 9 10	2218
1.7383		11 CrMo 9 10	11 CrMo 9-10	SCMV 4		11 CrMo 9-10	10 CD 9.10	11 CrMo 9-10	
1.7384		7 CrM0 11 10	A 33						
1.7385		6 CrMo 9 10							
1.7386		X 12 CrMo 9 1	629-590	STFA 26	S50488	X 10 CrMoVNb 9-1			
1.7389		GX 12 CrMo 101							
1.7503		67 Cr V22							
1.7700							100 HLES		
1.7706		GS-17 CrMoV 5 11		SCPH 23	J21610	G 17 CrMoV 5 10	G17CrMoV 5-10	G 17 CrMoV 5 10	
1.7707		30 CrMo V9				30 CrMoV 9			
1.7711		40 CrMoV 47	1506-670-860	SNB 21-1-5	K14072	40 CrMoV 4-6	42 CDV 4		
1.7715		14 MoV 6 3	1503-660-460		K11591	14 MoV 6-3			
1.7720		G 12 MoCrV 5 2				G 12 MoCrV 5-2	G12MoCrV5-2	G12MoCrV 5-2	
1.7725		GS-30 CrMoV 6 4							
1.7733		24 CrMoV 5 5					20 CDV 6	24 CrMoV 5 5	
1.7734		15 CrMoV 6							
1.7735		14 CrMoV 6 9							
1.7737		45 CrMoV 6 7					45 CDV 4		
1.7741		42 CrMoV 73							
1.7745		15 CrMoV 5 10							
1.7755		GS-45 CrMoV 10 4							
1.7756		GS-36 CrMoV 104				G 36 CrMoV 10 4			
1.7792		580 CrM0V 4							
1.8062		46 SiCrMo 6 3					45 SCD 6		
1.8070		21 CrMoV 5 11						21 CrMoV 5 11	
1.8075		10 CrSiMoV 7							
1.8150		67 CrV 2							
1.8159	6150	50 CrV 4	735 A 50	SUP 10	G61500	51 CrV 4	50 CV 4	50 CrV 4	2230
1.8161		58 CrV 4							
1.8212		21 CrVMoW 12							
1.8401	5130	30 MnCrTi 4	En18A		G51300		28 C 4		
1.8404	5150	60 MnCrTi 4	BW 2		G51500				
1.8405		70 MnCrTi 8							
1.8425		110 MnCrTi 8							
1.8500							100 HLES		
1.8504		34 CrAl 6							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.8506		34 CrAlS 5			K23745				
1.8507	A 355 Cl.D	34 CrAlMo 5	905 M 31		K23510	(34 CrAlMo 5)	30 CAD 6.12	34 CrAlMo 7	
1.8509	E 71400	41 CrAlMo 7	905 M 39	SACM 645	J24056	41 CrAlMo 7	40 CAD 6. 12	41 CrAlMo 7	2940
1.8515		31 CrMo 12	722 M 24			31 CrMo 12	30 CD 12	31 CrMo 12	2240
1.8519		31 CrMoV 9			K42544	31 CrMoV 9		31 CrMoV 10	
1.8521		15 CrMoV 59							
1.8523		39 CrMoV 13 9	897 M 39			39 CrMoV 13 9		36 CrMoV 13 9	
1.8550		34 CrAlNi 7			K52440	34 CrAlMo 5			
1.8564			4S.106						
1.8599		8 CrMo 16							
1.8701		20 MnCr 5 3							
1.8702		21 MnCr 5 4							
1.8706		21 MnCr 7 5							
1.8708		20 MnCrNiMo 6 3							
1.8715		17 MnCr 5 3							
1.8716		16 MnCrMo 3 2							
1.8717		16 MnCrMo 4 3							
1.8719		15 MnCrMo 3 2							
1.8720		18 MnCr 5 3							
1.8721		26 MnCr 6 3							
1.8722		24 MnCr 5 5							
1.8734		28 MnCr 4 3							
1.8807		13 MnNiMo 5 4							
1.8812		18 MnMoV 5 2		SG 30	K12003				
1.8815		18 MnMoV 6 3	591						
1.8818		PS 275 TM	S 275 M			S 275 M	S 275 M	S 275 M	
1.8823		DI-MC 355 B				S 355 M	E 355	S 355 M	
1.8825		DI-MC 420 B	S 420 M			S 420 M	E 420	S 420 M	
1.8827		S 460 M	S 460 M			S 460 M	E460;S460M	S460M	
1.8834		BTStE 355 TM	S 355 ML			S 355 ML	E 355	S 355 ML	
1.8836		BTStE 420 TM	S 420 MI			S 420 ML	E 420	S 420 ML	
1.8863		54SICR7							
1.8886		14 MnTi 5							
1.8900		St E 380		SM 50 B		S 380 N		Fe E 390 KG	
1.8902 420 KG	A 633 2143	Gr. E	St E 420	S 420 N	SM 50 C	K02002	FeE 420 KGN	E 420-I	Fe E
1.8904		S 550 Q				S 550 Q	E 550	S 550 Q	
1.8905	A 633 Gr. E	St E 460	P 460 N	SM 53 B	K02900	P 460 N	E 460-I	Fe E 460 KG	2143
1.8906		BGH 8906	55 F			S 460 QL	S 460 QL	S 460 QL	
1.8907		St E 500		SM 58	K02001				
1.8910		TStE 380 / S380NL				S 380 NL		Fe E 390 KT	2117
1.8911		EStE 380 / S380NL1							
1.8912		S 420 NL / TStE 420	S 420 NL	STK 540	K02002	S 420 NL	E 420 T-I	Fe E 420 KT	
1.8913		EStE 420 / S420NL1		STK 540					
1.8914		S 620 Q				S 620 Q	E 620	S 620 Q	
1.8915		T St E 460 / P460NL1	P 460 NL 1		K02900	P 460 NL1	E 460 T-I	Fe E 460 KT	

Workpiece Material Conversion Table — P4

P4 Alloy Steels and Tool Steels **Content: C >.25%** **Tensile Strength RM (MPa)*: 800-1100** **Hardness (HB): 350-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.8916		S 460 QL1	55 F			S 460 QL 1			
1.8917		T St E 500			K02001		E 500 T-I		
1.8918		EStE 460 / P460NI2	P 460 NL 2			P 460 NL 2	P 460 NL 2	P 460 NL 2	
1.8919		EStE 500 / S500NL1				S 500 NL 1			
1.8920		TStE 690 VA / S690G1QL				S 690 G 1 QL			
1.8921		TStE 690 VB / S690G2QL			K11646	S 690 G 2 QL			
1.8922		S 690 G 4 QL / TStE 690 VC				S 690 G 4 QL			
1.8923		S 590 QL / TStE 590 V				S 590 QL			
1.8924		S 500 Q (StE 500 V)				S 500 Q	E 500	S 500 Q	2614
1.8925		S 890 QL 1 (EStE 90 V)				S 890 QL 1			
1.8928		S 690 QL (TStE 690 V)		SHY 685 NS		S 690 QL			
1.8929		TStE 690 VD /				S 690 G 3 QL			
1.8930		WSt E 380 / P380Nh				P 380 NH		Fe E 390 KW	2116
1.8931		S 690 Q / StE 690 V		SHY 685 N		S 690 Q	E 690	S 690 Q	
1.8932		WSt E 420 /	S 420 NL	STK 540	K02002	S 420 NL	S 420 NL	Fe E 420	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
		P420NH						KW	
1.8935		WSt E 460 / P460NH	P 460 NH		K02900	P 460 NH	P 460 NH	Fe E 460 KW	
1.8936		P420 QH				P 420 QH			
1.8937		WSt E 500 / P500NH			K02001				
1.8938		TStE 770 V / S770QL				S 770 QL			
1.8939		EStE 790 V / S790QL1				S 790 QL 1			
1.8940		S 890 Q				S 890 Q	S 890 Q	S 890 Q	
1.8941		S 960 Q				S 960 Q	E 960 T-II	S 960 Q	
1.8944		S 550 G 1 QL 1 / EStE 550 VA				S 550 G 1 QL 1			
1.8954		EStE620VA / S 620 G 1 QL 1				S 620 G 1 QL 1			
1.8964		EStE 690 VA				S 690 G1 QL1			
1.8969		QStE 600 TM / S 600 MC				S 600 MC	E 620 D	S 600 MC	
1.8974		S 700 MC (QStE 690 TM)				S 700 MC	E 690 D	S 700 MC	
1.8976		S 650 MC (QStE 650 TM)				S 650 MC	E 620 D	S 650 MC	
1.8981		17 MnCrTi 6							
1.8989		22 MnCrMoV 6							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P5

P5 Ferritic, Martensitic, and PH Stainless Steels **Content: C=0-.4%** **Tensile Strength RM (MPa)*: 600-850** **Hardness (HB): <330**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3542		X 65 Cr 14							
1.3811		X 10 Cr 25							
1.3936		X 2 NiCoTiNb 42 3 2							
1.3937		X 68 NiMnCrVNb 12 5							
1.3950		GX 5 CrNiMo 18 15							
1.4000	403	X 6 Cr 13	403 S 17	SUS 403	S 40300	X 6 Cr 13	Z 6 C 13	X 6 Cr 13	2301
1.4001	410 S	X 7 Cr 14							
1.4002	405	X 6 CrAl 13	405 S 17	SUS 405	S 40500	X 6 CrAl 13	Z 6 CA 13	X 6 CrAl 13	2302
1.4005	416	X 12 CrS 1 3	416 S 21	SUS 416	S 41600	X 12 CrS 13	Z 12 CF 13	X 12 CrS 13	2380
1.4006	410	X 10 Cr 13	410 S 21	SUS 410	S 41000	(X 12 Cr 13 KD)	Z 12 C 13	X 12 Cr 13	2302
1.4007		X 35 Cr 1 4							
1.4008	414	GX 8 CrNi 1 3	410 C 21	SCS 1	S41400	GX 7 CrNiMo 12-1	Z 12 CN 13 M	GX 12 Cr 13	
1.4011		GX 12 Cr 1 2				GX12Cr12	GX12Cr12		
1.4014		N 3 2 0 (LW)							
1.4016	430	X 6 Cr 17	430 S 15	SUS 430	S 43000	X 8 Cr 17	Z 8 C 17	X 8 Cr 17 KD	2320
1.4021	420	X 20 Cr 13	420 S 37	SUS 420 J1	S 42000	X 20 Cr 13	Z 20 C 13	X 20 Cr 13	2303
1.4024		X 15 Cr 13	420 S 29	SUS 410 J1	J91201	X 15 Cr 13	Z 12 C 13 M	X 12 Cr 13	
1.4027		GX 20 Cr 1 4	420 C 29	SCS 2			Z 20 C 13 M		
1.4028	420	X 30 Cr 13	420 S 45	SUS 420 J2	J91153	X 30 Cr 13	Z 30 C 13	X 30 Cr 13	2304
1.4029	416	X 29 CrS 13	416 S 37	SUS 416		X 29 CrS 13	Z29CF13	X 29 CrS 13	
1.4031	420	X 40 Cr 13		SUS 420	S42080	X 40 Cr 13	Z 40 C 14	X 40 Cr 14	2304
1.4034	420	X 45 Cr 13	(420 S45)			X 45 Cr 13	Z 40 C 14	X 40 Cr 14	
1.4057	431	X 19 CrNi 17 2	431 S 29	SUS 431	S 43100	X 19 CrNi 17 2	Z 15 CN 16.02	X 16 CrNi 16	2321
1.4059		GX 22 CrNi 17	ANC 2		J91803		Z 20 CN 17.2 M		
1.4085		GX 70 Cr 29							
1.4086		GX 120 Cr 29	425 C 11						
1.4104	430 F	X 12 CrMoS 17	441 S 29	SUS 430 F	S 43020	X 14 CrMoS 17	Z 10 CF 17	X 10 CrS 17	2383
1.4105	430	X 4 CrMoS 18		SUS 430 F		X 6 CrMoS 17	Z 6 CDF 18 - 02		
1.4106		X 10 CrMo 13			J91151				
1.4107		GX 8 CrNi 1 2				GX 8 CrNi 12	GX8CrNi 12	G X 8 CrNi 12	
1.4109	440A	X 65 CrMo 14		SUS 440 A	S44002	X 70 CrMo 15	Z 70 CD 14		
1.4110		X 55 CrMo 14					Z 50 CD 13		
1.4111		X 110 CrMoV 15		SUS 430 LX			Z 4 CN b 17	X 6 CrNb 17	
1.4112	440 B	X 90 CrMoV 18	409 S 1 9	SUS 440 B	S44003	X 90 CrMoV 18	Z 3 CT 1 2	X 6 Cr Ti 1 2	
1.4113	434	X 6 CrMo 17 1	434 S 17	SUS 434	S43400	(X 8 CrMo 17)	Z 8 CD 17.01	X 8 CrMo 17	2325
1.4115		X 20 CrMo 17 1							
1.4116		X 45 CrMoV 15				X 50 CrMoV 15	Z 50 CD 15	X 50 CrMo V 15	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4117		X 38 CrMoV 15							
1.4119		X 15 CrMo 13							
1.4120		X 20 CrMo 13					Z 20 CD 14		
1.4121		X 22 CrMoNiS 13 1							
1.4122		X 35 CrMo 17				X 39 CrMo 17 1	X39CrMo17-1	X 35 CrMo 17	
1.4125	440 C	X 105 CrMo 17		SUS 440 C	S44004	X 105 CrMo 17	Z 100 CD 17	X 105 CrMo 17	
1.4136		GX 70 CrMo 29 2					Z 60 CD x 29 2		
1.4138		GX 120 CrMo 29 2							
1.4302		X 5 CrNi 19 9	308 S 96		S30888	X 6CrNi 20 10 KE			
1.4305	303	X 10 CrNiS 18 9	303 S 21	SUS 303	S30300	X 10 CrNiS 18 9	Z 10 CNF 18.09	X 10 CrNiS 18 09	2346
1.4306	304 L	X 2 CrNi 19 11	304 C 12	SUS 304 L	S30403	(X 3 CrNi18 10 KD)	Z 2 CN 18.09 19 10	GX 2 CrNi	2352
1.4309		GX 2 CrNi 19 11	304 C 12		J92500	GX2CrNi 19-11	GX2CrNi19-11	GX2CrNi 19-11	
1.4313	CA 6 -NM	X 5 CrNi 134	425 C 11	SCS 5	J91540	X 3 CrNiMo 13 4	Z 4 CDN 13.4	X 6 CrNi 13 04	2385
1.4316		X 2 CrNi 19 9	308 S 92	SUS Y 308L	S30883	X 2 CrNi 20 10 KE	Z 2 CN 20.10		
1.4319		X 3 CrNiN 17 8	302 S 26	SUS 302	S20200			X 10 CrNi 18 09	
1.4321		X 2 NiCr 18 16					Z 3 CDT 18-02		
1.4332		X 2 CrNi 24 12	309 S 93			X 2 CrNi 24 13 KE	Z 2 CN 24-14		
1.4337		X 10 CrNi 30 9	312 S 94			X 12 CrNi 30 09 KE	Z 10 CN 31-10		
1.4340		GX 40 CrNi 27 4			J92615			GX 35 CrNi 28 05	
1.4347		GX 6 CrNiN 26 7				GX 6 CrNiN 26-7			
1.4351		X 3 CrNi 13 4			S41086	X 3 CrNi 14 04 KE			
1.4370		X 15 CrNiMn 18 8	307 S 98			X 15 CrNiMn 18 08 KE	Z 8 CNM 19-09-07		
1.4403		X 5 CrNiMo 19 11			S30882				
1.4405		GX 5 CrNiMo 16 5				GX 4 CrNiMo 16-5-1	GX4CrNiMo 16-5-1	G X 4 CrNiMo 16-5-1	
1.4407		GX 5 CrNiMo 13 4			J91550		Z 6 CND 16-05-01		
1.4409		GX 2 CrNiMo 19 11 2				GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	GX 2 CrNiMo 19-11-2	
1.4416		ERO 4416 AHCRMo				GX 2 NiCrMoN 25-20-5	GX2NiCrMoN 25-20-5		
1.4417	S 31500	X 2 CrNiMoSi 19 5			S39215	GX 2 CrNiMoN 25-7-3	GX 2 CrNiMoN 25-7-3		2376

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Workpiece Material Conversion Table — P5

P5 Ferritic, Martensitic, and PH Stainless Steels **Content: C=0-.4%** **Tensile Strength RM (MPa)*: 600-850** **Hardness (HB): <330**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4418		X 4 CrNiMo 16 51				X 4 CrNiMo 16 5 1	Z 6 CND 16.05.01		2387
1.4419		X 38 CrMo 14							
1.4420		X 5 CrNiMo 18 11	315 S 16						2340
1.4430		X 2 CrNiMo 19 12	316 S 93		S31683	x 2 CrNiMo 19 13 03 KE	Z 2 CND 19-12-03		
1.4437		GX 6 CrNiMo 18 12	317 C 12						
1.4440		X 2 CrNiMo 18 16 5			S31780				
1.4446		GX 2 CrNiMoN 17 1 3 4				GX 2 CrNiMoN 17 1 3 4			
1.4448		GX 6 CrNiMo 17 13	317 C 16		J93000				
1.4449	317	X 5 CrNiMo 17 13	317 S 16	SUS 317	S31700			X 5 CrNiMo 18 15	
1.4452		X 5 CrNiCuNb 16 4					Z7CNU16.04		
1.4455		X 2 CrNiMnMoN 20 16				X 2 CrNiMnMoN 20 15 08 KE			
1.4458		GX 2 NiCrMo 28 20 2				GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	GX 2 NiCrMo 28-20-2	
1.4463		GX 6 CrNiMo 24 8 2							
1.4468		GX 2 CrNiMoN 25 6 3				GX 2 CrNiMoN 25-6-3	GX 2 CrNiMoN 25-6-3		
1.4469		GX 2 CrNiMoN 26 7 4			J93404	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	GX 2 CrNiMoN 26-7-4	
1.4470		GX 2 CrNiMoN 22 5 3				GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	GX 2 CrNiMoN 22-5-3	
1.4502		X 8 CrTi 18				X 6 Cr 18 KE			
1.4505		X 5 NiCrMoCuNb 20 18							
1.4510	430 Ti	X 6 CrTi 17		SUS 430 LX	S 43036	X 8 CrTi 1 7	Z 8 CT 1 7	X 6 CrTi 17	
1.4511	430 Nb	X 6 CrNb 17		SUS 430 LX		X 3 CrNb 17	Z 8 CNb 17	X 6 CrNb 17	
1.4512	409	X 6 CrTi 12	409 S 19	SUH 409	S40900	X 5 CrTi 12	Z 6 CT 12	X 6 CrTi 12	
1.4514					S15789				
1.4517		GX 2 CrNiMoCuN 25 6 3 3				GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	GX 2 CrNiMoCuN 25-6-3-3	
1.4519		X 2 CrNiMoCu 20 25	904 S 92						
1.4520		X 2 CrTi 17		SUS 430 LX		X 2 CrTi 17	F 20T	X 2 CrTi 17	
1.4523		X 8 CrMoTi 17				X 2 CrMoTiS 18 2	X2CrMoTiS 18-2		
1.4528		X 105 CrCoMo 18 2							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4531		GX 2 NiCrMoCuN 2018							
1.4535		X 90 CrCoMoV 17							
1.4536		GX 2 NiCrMoCuN 25 20			J94650	GX 2 CrNiMoCuN 25-20-6			
1.4543		X 3 CrNiCuTi 12 9						X 6 CrNiNb 18 11	
1.4551		X 5 CrNiNb 19 9		SUS Y 347	S34780	X 5 CrNiNb 20 10 KE	Z 6 CNNb 20-10		
1.4557		GX 2 CrNiMoCuN 20 18 6				GX 2 CrNiMoCuN 20-18-6	GX 2 CrNiMoCuN 20-18-6		
1.4567		X 3 CrNiCu 18 9 4	394 S 17	SUS XM7		X3CrNiCu 18-9-4	304CU	304K	
1.4576		X 5 CrNiMoNb 19 12	318 S 96		S31980	X 5 CrNiMoNb 19 12 03 KE	Z 4 CNDSNb 19-12-03		
1.4584		GX 2 NiCrMoCu 25 2 0 5				GX 2 NiCrMoCu 25-20-5	GX 2 NiCrMoCu 25-20-5		
1.4587		GX 2 NiCrMoCuN 29 25 5				GX 2 NiCrMoCuN 29-25-5	GX 2 NiCrMoCuN 29-25-5		
1.4588		GX 2 NiCrMoCuN 25 20 6				GX 2 NiCrMoCuN 25-20-6	GX 2 NiCrMoCuN 25-20-6		
1.4650		X 2 CrNiCu 19 10				X 2 CrNiCu 19-10	TX 304L		
1.4651		X 6 CrNiCuS 18 9 4							
1.4724	H-12	X 10 CrAl 13	BH 12	SUS 405	T20812	X 10 CrAl 13	Z 10 C 13	X 10 CrAl 12	
1.4729		GX 40 CrSi 13		SCH 1				GX 35 Cr 13	
1.4740		GX 40 CrSi 17						GX 35 Cr 17	
1.4742	430	X 10 CrAl 18	(430 S 15)	SUH 21	S43000		Z 10 CAS 18	(X 8 Cr 17)	
1.4745		GX 40 CrSi 23							
1.4747	HNV 6	X 80 CrNiSi 20	443 S 65	SUH 4	S65006	X 80 CrNiSi 20	Z 80 CSN 20.02	X 80 CrSiNi 20	
1.4762	446	X 10 CrAl 25		SUH 442	S44600	X 10 CrAl 24	Z 10 CAS 24	X 16 Cr 26	2322
1.4776		GX 40 CrSi 29	452 C 11	SCH 2	J92605			GX 35 Cr 28	
1.4871	EV 8	X 53 CrMnNiN 21 9	349 S 54	SUH 35	S63008	X 53 CrMnNiNS 21 - 9	Z 52 CMN 21.09	X 53 CrMnNiN 21 9	
1.4882		X 50 CrMnNiNbN 21 9				X 50 CrMnNiNbN 21-9	Z 50 CMNNb 21.09		
1.4923		X 22 CrMoV 12 1	762			X 22 CrMoV 12-1	Z 21 CDV 12	X 22 CrMoV 121	
1.4931		GX 22 CrMoV 12 1				G-X 22 CrMoV 12 1	GX23CrMoV 12-1	G X 23 CrMoV 12-1	
1.4946		GX 20 CrNiW 23 1 2 3							
1.6351		GX 2 NiCoMoTi 1 7 10							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P5

P5 Ferritic, Martensitic, and PH Stainless Steels Content: C=0-.4% Tensile Strength RM (MPa)*: 600-850 Hardness (HB): <330

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6781		G 17 NiCrMo 13 6				G 17 NiCrMo 13-6	G17NiCrMo 13-6	G 17 NiCrMo 13-6	
1.6980		X 2 CrNiCoMo 12 8 5							
1.7365		GX 15 CrMo5				GX15CrMo5	GX15CrMo5	G X 15 CrMo 5	
1.7390		X 15 CrMo 5 1				X 15 CrMo 5-1	X 15 CrMo 5-1		

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.4537		G-NiMo 16 CrW							
2.4631		NiCr 20 TiAl	NA 20	NCF 80A			NC 20 TA	Nimonic 80A	
2.4697		G-NiCr 20 Mo 15 (CorresistG20/							
	XM-19				S20910				

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

AISI — American Iron and Steel Institute
AFNOR — French National Organization for Standardization
AMS — Aerospace Material Specifications
ASTM — American Society of Mechanical Engineers
BS — British Standards
DIN — German Institute for Standardization
EN — European Standards
JIS — Japanese Industrial Standards
SAE — Society of Automotive Engineers
SIS — Swedish Standards Institute
UNI — Italian Organization for Standardization
UNS — Unified Numbering System

Workpiece Material Conversion Table — P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels Content: C = .1-.6% Tensile Strength RM (MPa)*: 900-1350 Hardness (HB): 350-450

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0021		S 240 GP	S 240 GP			S 240 GP			
1.0023		S 270 GP	S 270 GP			S 270 GP			
1.0028		USt 34-2/ S 250 G1T				S 250 G 1 T			
1.0032		Ust 34-2/ S 250 GT	CEW2	STKM 13 B		S 250 GT			
1.0039		S 235 JRH	S 235 JRH			S235JRH	E 24-2	S 235 JRH	
1.0046		S 320 GP	S 320 GP			S 320 GP			
1.0083		S 355 GP	S 355 GP			S 355 GP			
1.0115		S 235 J0C							
1.0117		S 235 J2 G4	En 40 D			S 235 J2 G4	E24-4	Fe 360 D	
1.0118		S 235 J2 G3C							
1.0119		S 235 J2 G4C							
1.0120		St 37-2				S 235 JRC	E 24-2	S 235 JRC	
1.0121		S 235 JR G1C							
1.0138		Ro St 44-3	43D			S 275 J2 H	E 28-4	S 275 J 2H	
1.0160		S 235 JR G1F				S 235 JRG 1 F			
1.0162		S 235 J 0 Cu				S 235 J0 Cu			
1.0163		S 235 J 2 G 4 Cu				S 235 J 2 G 4 Cu			
1.0164		S 235 JR G1 CuC				S 235 JRG 1 CuC			
1.0166		S 235 J2 G3 Cu							
1.0169		St 37-2 Cu 3G (S 235 JRCu+CR)				S 235J R Cu+CR			
1.0211		St 30 Si	HF W2						
1.0212		St 30 Al							
1.0241		S 220 GD + Z							
1.0318		S 180 GT	CE W 1	STKM 12 B		S 180 GT			
1.0357		S 180 G1 T		STPL 450		S 180 G 1 T			
1.0408		S 45.4 GT	430		K03006	L 245 MB	L 245 MB		
1.0490		StE 285	43D			S 275 N	S 275 N	S 275 N	
1.0522		S 390 GP	S 390 GP			S 390 GP			
1.0523		S 430 GP	S 430 GP			S 430 GP			
1.0576		S 355 J2H (RoSt 52-3)	50D			S355J2H		S355J2H	
1.0960		S 320 MC							
1.0962		S 400 MC							
1.0963		S 600 MGC							
1.0964		S 750 MC							
1.0965		S 900 MC							
1.2080	D3	X 210 Cr 12	BD 3	SKD 1	T30403	X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	
1.2082		X 21 Cr 13				X 21 Cr 1 3		X 21 Cr 13 KU	
1.2083	420	X 42 Cr 13		SUS 420 J2		X 42 Cr 1 3	Z 40 C 14	X 41 CR 13 KU	2314
1.2085		X 33 CrS 16							
1.2086		X 290 Cr 12							
1.2201		G-X 165 CrV 12							
1.2285		X 230 CrV 12 4							
1.2316	D-4	X 36 CrMo 17			T30404	X 36 CrMo 17	X38CrMo 16-1	X 38 CrMo 16 1 KU	
1.2341	P4	X 6 CrMo 4			T51604	X 6 CrMo 4		67 SiCr 5	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2342		X 35 CrMoV 5 1 1							
1.2343	H 11	X 38 CrMoV 5 H1	BH 11	SKD 6	T20811	X 38 CrMoV 5 H1	Z 38 CDV 5	X 37 CrMoV 5 1 KU	
1.2344	H 13	X 40 CrMoV 5 1	BH 13	SKD 61	T20813	X 40 CrMoV 5 1	Z 40 CDV 5	X 40 CrMoV 5 1 1 KU	2242
1.2345		X 50 CrVMo 5 1							
1.2347		X 40 CrMoVS 5 1							
1.2357		50 CrMoV 13 14							
1.2362		X 63 CrMoV 5 1							
1.2363	A-2 5 1	X 100 CrMoV	BA 2	SKD 12	T 30102	X 100 CrMoV 5 1	Z 100 CDV 5	X 100 KU CrMoV 5 1	2260
1.2365	H 10	X 32 CrMoV 3 3	BH 10	SKD 7	T 20810	X 32 CrMoV	32 DCV 28 12H-28	30 CrMoV 12 27 KU	
1.2367		X 38 CrMoV 5 3					Z 38 CDV 5-3		
1.2368		X 41 CrMoV 5 3 1							
1.2375		83 CrMoV 9							
1.2376		X 96 CrMoV 12							
1.2378	D-7	X 220 CrVMo 12 2			T30407				
1.2379	D2	X 155 CrVMo 12 1	BD 2	SKD 11	T 30402	X 153 CrMoV 12	Z 160 CDV 12	X 155 KU CrVMo 12 1	2310
1.2390		X 32 CrMoV 4 1							
1.2392		GX 28 CrMoV 5 1							
1.2398		X 70 CrVMo 8.2.2					X70		
1.2436		X 210 CrW 12		SKD 2		X 210 CrW 12	Z 210 CW1 2	X 215 CrW 121 KU	2312
1.2453		X 130 W 5							
1.2564		X 30 WCrV 4 1				30 WCrV 15 1			
1.2567		X 30 WCrV 53		SKD 4	T20814	X 30 WCrV 5 3	Z 32 WCV 5	X 30 WCrV 5 3 KU	
1.2581	H 21	X 30 WCrV 93	BH 21	SKD 5	T 20821	X 30 WCrV 9 3	Z 30 WCV 9	X 30 WCrV 9 3 KU	
1.2601		X 165 CrMoV 12				X 165 CrMoV 12		X 165 KU CrMoW 12	2310
1.2605		X 35 CrWMoV 5				X 35 CrWMoV 5			
1.2606	H 12	X 37 CrMoW 5 1	BH 12	SKD 62	T20812		Z 35 CWDV 5	X 35 CrMoW 05 KU	
1.2607		GX 37 CrMoW 5 1							
1.2622		X 60 WCrMoV 9 4							
1.2625		X 33 WCrVMo 12 12							
1.2631		X 50CrMoW 9 1 1							
1.2662		X 30 WCrCoV 9 3							
1.2678	H19	X 45 CrCoVW 5 5 5							

Workpiece Material Conversion Table — P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels Content: C = .1-.6% Tensile Strength RM (MPa)*: 900-1350 Hardness (HB): 350-450

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2709		X 3 NiCoMoTi 18 9 5							
1.2731		X 50 NiCrWV 13 13							
1.2764		X 19 NiCrMo 4							
1.2767	A-9	X 45 NiCrMo 4			T30109	40 NiCrMo 4	Y 35 NCD 16	42 NiCrMo 15 7 KU	
1.2779		X 6 NiCrTi 26 15							
1.2786		X 13 NiCrSi 36 15				X 13 CrNiSi x 36 15	Z 15 NCS 37-18		
1.2787		X 23 CrNi 17	BM 2	SKH 9		(HS 6-5-2)	Z 85 WDCV 06-05-04-02	HS 6-5-2-2	2722
1.2790		72 SiNiCrMoV 54							
1.2880	D-5	X 165 CrCoMo 12			T30405				
1.2884		X 210 CrCoW 1 2							
1.2885		X 32 CrMoVoV 3 3 3	BH 10 A						
1.2888		X 20 CoCrWMo 10 9							
1.2889		X 45 CoCrMoV 5 5 3							
1.3202	T 15	S 1-2-1-4-5	BT 15		T12015	(HS12-1-5-5)	HS 12-1-5-5	HS 12-1-5-5	
1.3207	M-44	S 1-0-4-3-1-0	BT 42	SKH 57	T11334	HS10-4-3-10	Z130WKCDV 10-10-04-04	HS 10-4-3-10	
1.3241		S 6-7-6-10							2727
1.3243	M 35	S 6-5-2-5	BM 35	SKH 55	T11336	(HS6-5-2-5)	KCV 06-05-05-04-02	HS 6-5-2-5	2723
1.3244		ASP 2030				HS6-5-3-8			
1.3246	M 41	S 7-4-2-5	(HS 7-4-2-5)		T11341	HS1-8-1	Z110 WKCDV 07-05-04	HS 7-4-2-5	
1.3247	M 42	S 2-1-0-1-8	BM 42		T11342	HS2-9-1-8	Z110 DKCWV 09-08-04	HS 2-9-1-8	2716
1.3249	M-34	S 2-9-2-8	BM 34		T11334	HS 2-9-2-8			
1.3255	T 4	S 1-8-1-2-5	BT 4	SKH 3	T12004	(HS18-1-1-5)	Z80 WKCV 18-05-04-01	HS18-1-1-5	
1.3257	T 6	S 1-8-1-2-1-5			T12006	HS 18-1-2-15			
1.3265	T 5	S 1-8-1-2-1-0	BT 5	SKH 4A	T12005	(HS 1-8-0-1-10)		HS18-0-1-10	
1.3302	A-7	S 1-2-1-4			T30107	HS 12-1-4		(X 150 WV 1305 KU)	
1.3318		S 1-2-1-2				HS 12-1-2			
1.3325		HS 0-4-1				HS 0-4-1			
1.3326		ASP 2015				HS 1-4-2			
1.3327		HS 1-8-1				HS 1-8-1			
1.3333		S 3-3-2						HS 3-3-2	
1.3335		S 3-3-2 Si							
1.3339		BGH 3339				HS 6-5-2			
1.3342	M 3	SC 6-5-2			T11313	(HS 6-5-2)	Z90WDCV06-05-04-02	HSC 6-5-3	
1.3343	M 2	S 6-5-2	BM 2	SKH 51	T11302	HS 6-5-3	Z85WDCV06-05-04-02	HS 6-5-2	2722

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3344	M 3 Cl.2	S 6-5-3	BM 4	SKH 52	T11323	HS 6-5-4	Z120WDCV 06-05-04-03	HS 6-5-3	2725
1.3345		GarantDOMO1				HS 6-5-3C			
1.3346	M 1	S 2-9-1	BM 1		T20842	HS 1-8-1	Z85DCWV 08-04-02-01	HS 1-8-1	
1.3348	M 7	S 2-9-2			T11307	HS 2-9-2	Z100DCWV 09-04-02-02	HS 2-9-2	2782
1.3350		HS 6-6-2				HS 6-6-2			
1.3351		HS 6-5-4				HS 6-5-4			
1.3355	T 1	S 1-8-0-1	BT 1	SKH 2	T12001	HS 1-8-0-1	Z80WCV 18-04-01	HS 18-0-1	
1.3395		ASP 2004							
1.3401	A 128	X 120 Mn 12	BW 10	SCMnH 1	J91109		Z 120 M 12	X G 120 Mn 12	2183
1.3533		18 NiCrMo 14 6				18 NiCrMo 14	16 NCD 13		
1.3541		X 45 Cr 13				X 45 Cr 13	X44Cr14	X 41 Cr 13	
1.3543		X 102 CrMo 17			J91639	X 102 Crmo 17	X100CrMo17	X 105 CrMo 17	
1.3549		X 89 CrMoV 18 1							
1.3551	M 50	80 MoCrV 42 16					80 DCV 40	X 80 MoCrV 4 4	
1.3553		X 82 WMoCrV 6 5 4	BM 2	SKH 51		X 80 WMoCrV 654	RAPIDEM	X 82 WMoV 65	
1.3558		X 75 WCrV 18 4 1	BT 1	SKH 2		X 75 WCrV 18 4 1	X75WCrV 18-4-1	X 75 WCrV 18	
1.3802		X 120 Mn 13							
1.3805		X 35 Mn 18							
1.3813		X 40 MnCrN 19							
1.3815		X 40 MnCr 182							
1.3816		X 8 CrMnN 18 18							
1.3817		X 40 MnCr 18							
1.3819		X 50 MnCrV 20 14							
1.3820		X 8 CrMnN 20 10							
1.3917		Ni 42					Fe-Ni 42		
1.3919		X 3 Ni 44							
1.3922		Ni 48					Fe-Ni 48		
1.3923		Ni 51					Fe-Ni 50 Cr 1		
1.3940		GX 2 CrNiN 18 13	VGs 5.100						
1.3941		X 4 CrNi 18 13							
1.3942		X 15 NiCr 22 3							
1.3943		X 20 NiCr 36 10							
1.3945		X 2 CrNiN 18 11	S.160						
1.3946		NiCr 42 6 (Dilaton 42 Cr 6)					Fe-Ni 42 Cr 6		
1.3949		X 5 MnCr 18 13							
1.3952		X 4 CrNiMoN 18 14	316 S 63						
1.3953		X 2 CrNiMo 18 15							
1.3958		X 5 CrNi 18 11							

Workpiece Material Conversion Table — P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels Content: C = .1-.6% Tensile Strength RM (MPa)*: 900-1350 Hardness (HB): 350-450

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100. For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3960		X 45 MnNiCrV 13 76							
1.3962		X 15 CrNiMn 12 10							
1.3964		X 4 CrNiMnMoN 19 1 6 5							
1.3965		X 8 CrMnNi 18 8							
1.3967		X 50 CrMnNiN 22 9							
1.3968		X 12 MnCr 18 12							
1.3974		X 3 CrNiMoNbN 23 17							
1.3987		X 8 CoNiCr 26 20							
1.4526		X 6 CrMoNb 17 1				X 6 CrMoNb 17-1	X6CrMoNb 17-1	F 17 MNb	
1.4527		GX 4 NiCrCuMo 30 20 4				GX 4 NiCrCuMo 30-20-4	GX 4 NiCrCuMo 30-20-4		
1.4559		GX 7 NiCrMoCuNb 42 20				GX 7 NiCrMoCuNb 4220			
1.4572		GX 5 CrNiMoNb 23 9							
1.4704	HNV 2	X 45 SiCr 4			S64006				
1.4710		GX 30 CrSi 6							
1.4712		X 10 CrSi 6							
1.4713		X 10 CrAl 7				X 10 CrAl 7			
1.4716		X 8 Cr 9							
1.4718	HNV 3	X 45 CrSi 93	401 S 45	SUH 1	S65007	X 45 CrSi 8	Z 45 CS 9	X 45 CrSi 8	
1.4721		215 Cr 12							
1.4722		X 10 CrSi 13							
1.4725		Cr Al 14 4			K91670				
1.4731		X 40 CrSiMo 10 2		SUH 3		X 40 CrSiMo 10-2	Z 40 CSD 10		
1.4732		X 80 CrSiMoW 15 2							
1.4741		X 10 CrSi 18							
1.4743		GX 160 CrSi 18							
1.4748		X 85 CrMoV 18 2				X 85 CrMoV 18 2	Z 85 CDMV 18.02	X 85 CrMoV 19 3	
1.4765		CrAl 25 5							
1.4767		CrAl 20 5							
1.4773		X 8 Cr 30							
1.4777		GX 130 CrSi 29							
1.4785		X 60 CrMnMoVNbN 21 10					Z 60 CMDVNb 21-10 Az		
1.4820		X 12 CrNi 25 4							
1.4822		GX 40 CrNi 24 5							
1.4829		X 12 CrNi 22 12	311 S 94	SUS Y 309	S30980	X 15 CrNi 23 13		X 16 CrNi 23 14	
1.4842		X 12 CrNi 25 20	310 S 94		S31080	X 12 CrNi 26 21 KE	Z 12 CN 26-21		
1.4843		CrNi 25 20		SCS 18	J94202				
1.4846		X 40 CrNi 25 21	310 S 98	SCH 13					
1.4860		NiCr 30 20							
1.4861		X 10 NiCr 32 20							
1.4873		X 45 CrNiW 18 9	331 S 40	SUH 31		X 45 CrNiW 18 9	Z 35 CNWS 14.14	X 45 CrNiW 18 9	
1.4875	EV 12	X 55 CrMnNiN 20 8			S63012	X 55 CrMnNiN 20-8	Z 55 CMN 2 0.08 Az		
1.4903		X 10 CrMoV 9-1			S59180	X 10 CrMoV 9-1			
1.4911		X 8 CrCoNiMo 10 6	Z 9 CKD 11						
1.4912		X 7 CrNiNb 18 10				X7CrNiNb 18-10	X7CrNiNb 18-10		
1.4913		X 19 CrMoVNbN 11 1					Z 21 CDNbV 11		
1.4920		X 15 CrMoV 1 2 1							
1.4921		X 19 CrMoV 12 1							
1.4922		X 20 CrMoV 12 1				X 20 CrMoV 11-1		X 20 CrMoV 12 01 KW	2317
1.4925		X 20 CrMoNV 15 1							
1.4926		X 21 CrMoV 12 1						X21CrMoV 121	
1.4935	422	X 20 CrMoWV 12 1		SUH 616	S42200			X 22 CrMoWV 121	
1.4936		X 24 CrMoV 12 1							
1.4945		X 6 CrNiWNb 16 16							
1.4960		X 40 CrNiCoNb 13 13							
1.4962		X 12 CrNiWTi 16 13							
1.4971	661	X 12 CrCoNi 21 20		SUH 661	R30155	X 12 CrCoNi MoWNb 21 20 20	Z 12 CKNDWNb 21-20-20		
1.4978		X 50 CoCrNi 20 20							
1.4986		X 8 CrNiMoBNb 16 16				X 7 C rNiMoBNb 16-16			
1.5662	A 353	X 8 Ni 9	509	SL 9 N 53	K81340	FeE 490 Ni 36	9 Ni	X 10 Ni 9	
1.5663		X 7 Ni 9	X 7 Ni 9	SL9 N590		X 7 Ni 9	X 7 Ni 9	X 7 Ni 9	
1.5680	E 2515	12 Ni 19	12 Ni 19	SL5N60	K41583	X 12 Ni 5	Z 18 N 5	112 Ni 19	
1.5708		12 NiCr 3					12 NC 2	12 NiCr 3	
1.5810	3115	18 NiCr 6 4	18NiCr5-4			18 NiCr 6-4	20 NC 6		
1.6340		12 NiMnMo 5 5							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — P6

P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels Content: C =.1-.6% Tensile Strength RM (MPa)*: 900-1350 Hardness (HB): 350-450

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6566		17 NiCrMo 6 4	17NiCrMo 6-4			17 NiCrMo 6-4	17 NiCrMo 6-4		
1.6569		17 NiCrMoS 6 4	17NiCrMo 6-4			17 NiCrMoS 6-4	17 NiCrMoS 6-4		
1.6657	E 9310 H	14 NiCrMo 13 4	832 M 13		G93106	14 NiCrMo 13-4	14 NiCrMo 13-4	15 NiCrMo 13	
1.6773		36 NiCrMo 16				36 NiCrMo 1 6	35 NCD 16	34 NiCrMo 16	
1.6784		12 NiMoCr 17 4							
1.6903		X 10 CrNiTi 18 10							
1.6905		GX 5 CrNiNb 18 10							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6906		X 5 CrNi 18 10							
1.7141									
1.7366		X 16 CrMo 5 1				X 16 CrMo 5-1			
1.7716		UP S2 MoV							
1.8949		S 695 MC							
1.8997		S 720 MC							
1.8998		S 680 MC							
2.4651		S-NiCr 20 Mo 9							
2.4802		S-NiMo 28							
2.4803		S-NiCr 15 FeTi							

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Workpiece Material Conversion Table — M1

M1 Austenitic Stainless Steels **Content: C=.05-.15%** **Tensile Strength RM (MPa)*: <650** **Hardness (HB): 130-200**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.2765		GX 19 NiCrMo 4							
1.2780	442	X 15 CrNiSi 20 12	En61	SUS 309 S	S44200	X 16 CrNiSi 20 12	Z 15 CN 24.13		
1.2782		X 15 CrNiSi 25 20		SUS 309 S		X 16 CrNiSi 25 20	Z 15 CN 24.13	X 16 CrNiSi 25 20	
1.3956		X 8 CrNi 18 12							
1.4003		X 2 CrNi 1 2				Hyfab3/12	CLC4003	F12N (Mn<1,50)	
1.4009		X 8 Cr 14		SUS Y 410	S41080	X 8 Cr 13 KE			
1.4015		X 8 Cr 18		SUS Y 430	S43080				
1.4017		X 6 CrNi 17 1				X6CrNi17-1	F17N	X6CrNi17-1	
1.4108		X 100 CrMo 13							
1.4123		X 15 TN							
1.4300		X 12 CrNi 18 8	302						
1.4301	304 H	X 5 CrNi 18 10	304 S 15	SUS 304	S30400	X 6 CrNi 18 10 KD	Z 6 CN 18.09	X 5 CrNi 18 10	2332
1.4303	305	X 5 CrNi 18 12	305 S 19	SUS 305	S30500	X 8 CrNi18 12 KD	Z 8 CN 18.12	X 8 CrNi 19 10	
1.4307	304L	X 2 CrNi 18 9	304 S 11	SUS 304L		X 2 CrNi 18 9	CLC18.9.L	X 2 CrNi 18-9	
1.4308	CF-8	GX 6 CrNi 18 9	304 C 15	SCS 13		X 2 CrNiN 18 7	Z 6 CN 18.10 M	G X 5 CrNi 19-10	2333
1.4310	301	X 12 CrNi 17 7	301 S 21	SUS 301	S30100	X 12 CrNi 17	Z 12 CN 17.07	X 12 CrNi 17	2331
1.4311	304	X 2 CrNiN 18 10	304 S 62	SUS 304 LN	S30453	X 2 CrNiN 18 10	Z 8 CN 18.12	X 8 CrNi 19 10	2371
1.4312		GX 10 CrNi 18 8	302 C 25	SCS 12			Z 10 CN 18.9 M		
1.4317		GX 4 CrNi 13 4				GX 4 CrNi 13-4	GX 4 CrNi 13-4	GX 4 CrNi 13-4	
1.4318		X 2 CrNiN 18 7				X 2 CrNiN 18-7	18-7L	18-7L	
1.4350	304	X5CrNi189	304S31	-	304	1	Z6CN18.09	X5CrNi1810	1
1.4362	S3 2304	X 2 CrNiN 23 4				SAF 2304	35 N	X 2 CrNiN 23-4	2327
1.4401	316	X 5 CrNiMo 17 12 2	316 S 16	SUS 316	S31600	X6 CrNiMo 17 X 12 2 KD	Z 6 CND 17.11	X 5 CrNiMo 17 12	2347
1.4404	316 L	X 2 CrNiMo 17 13 2	316 S 12	SUS 316 L	S31603	GX 3 CrNiMo 17 12 2 KD	Z 3 CND 19.10 M	GX 2CrNiMo 19 11	2348
1.4406	316	X 2 CrNiMoN 17	316 S 61 LN	SUS 316 LN 12 2	S31653	X 3 CrNiMoN 17 12 2	Z 2 CND 17.12 Az	X 2CrNiMoN 17 12	2353
1.4408	CF-8M	GX 6 CrNiMo 18 10	316 C 16	SCS 14	J92900	GX 5 CrNiMo 19-11-2	GX5CrNiMo 19-11-2	G X 5CrNiMo 19-11-2	2343
1.4410	S3 2750	GX 10 CrNiMo 18 9		SCS 14 A		X 2 CrNiMoN 25-7-4	Z 5 CND 20.10 M	X 2 CrNiMoN 25-7-4	
1.4411		ERO 4411 A				GX 4 CrNiMo 16-5-2	GX 4 CrNiMo 16-5-2		
1.4412		ERO 4412 AHMo				GX 5 CrNiMo 19-11-3	GX 5 CrNiMo 19-11-3		
1.4429	316 LN	X 2 CrNiMoN 17 13 3	316 S 62	SUS 316 LN	S31653	X 3 CrNiMoN 17 13 3	Z 2 CND 17.13 Az	X 2 CrNiMoN 17 13	2375
1.4434		X 2 CrNiMoN 18 12 4				317 LN	CLC 18.12.4.LN	X2CrNiMoN1 812-4	
1.4435	316 L	X 2 CrNiMo 18 14 3	316 S 11	SCS 16	S31603	X 2 CrNiMo 18 16	Z 2 CND 17.13	X 2 CrNiMo 17 13	2353
1.4436	316	X 5 CrNiMo 17 1 3 3	316 S 16	SUS 316	S31600	X6 CrNiMo 18 13 3 KD	Z 6 CND 17.12	X 5 CrNiMo 17 13	2343

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4438	317 L	X 2 CrNiMo 18 16 4	317 S 12	SUS 317 L	S31703	X 3 CrNiMo 18 16 4	Z 2 CND 19.15	X 2 CrNiMo 18 15	2367
1.4439		X 2 CrNiMoN 17 13 5				X 3 CrNiMo 17 13 5	Z 3 CND 1 8.14-05 AZ		
1.4442		X 2 CrNiMo 18 15 4					X 3 CrNiMoN 19-14		
1.4465		X 1 CrNiMoN 25 2 5 2			S31050				
1.4503		X 3 NiCrCuMoTi 27 2 3							
1.4506		X 5 NiCrMoCuTi 20 18							
1.4516		X 6 CrNiTi 12				X 6 CrNiTi 12	X 6 CrNiTi 12	X 6 CrNiTi 12	
1.4525		GX 5 CrNiCu 16 4				GX 5 CrNiCu 16-4	GX 5 CrNiCu 16-4		
1.4529		X 1 NiCrMoCuN 25206							
1.4532	15-7 PH	X 8 CrNiMoAl 15 7 2				X 8 CrNiMoAl 15-7-2	X15D2	X 8 CrNiMoAl 15-7-2	
1.4539		X 1 NiCrMoCuN 25 20	904 S 13		N 08904	X 1 NiCrMoCu 25-20-5	Z 1 NCDU 25.20		52662
1.4541	321	X 6 CrNiTi 18 10	321 S 12	SUS 321	S32100 10	X 6 CrNiTi 18	Z 6 CNT 18.10	X 6 CrNiTi 18 11	2337
1.4542	630	X 5 CrNiCuNb 16 4		SUS 630		X 5 CrNiCuNb 16-4	Z6CNU17.04		
1.4550	347	X 6 CrNiNb 18 10	347 S 17	SUS 347	S34700	X 6 CrNiNb 18 10	Z 6 CNNb 18.10	X 6 CrNiNb 18 11	2338
1.4552		GX 5 CrNiNb 18 9	347 C 17	SCS 21	J92710	GX 5 CrNiNb 19-11	Z 4 CNNb 19.10 M	G-X 5 Cr NiNb 19-11	
1.4571	316 Ti	X 6 CrNiMoTi 17 12 2	320 S 31	SUS 316 Ti		X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17.12	X 6 CrNiMo Ti 17 12	2350
1.4573	316 Ti	X 10 CrNiMoTi 18 12	320 S 33	SUS 316 Ti	S31635			X 6 CrNiMo Ti 17 13	
1.4575		X 1 CrNiMoNb 28 42							
1.4577		X 3 CrNiMoTi 25 25							
1.4580	316 Cb	X 6 CrNiMoNb 17 12 2	318 S 17			X 6 CrNiMoNb 17.12	Z 6 CNDNb Nb 17.12	X 6 CrNiMo 17 12 2	
1.4581		GX 5 CrNiMoNb 18 10	318 C 17	SCS 22		GX 5 CrNiMo Nb 19-11-2	Z 4 CNDNb 18.12 M	GX 6 20 11 CRNOMONB	
1.4582		X 4 CrNiMoNb 25 7		SCS 22					
1.4583	318	X 10 CrNiMoNb 18 12						X 6 CrNiMo 13 Nb 17	
1.4585		GX 7 CrNiMo CuNb 18 18			J94651				
1.4586		X 5 CrNiMoCuNb 22 18							
1.4818		153 MA				X 6 CrNiSiN Ce 19-10			
1.4825		GX 25 CrNiSi 18 9	302 C 35		J92602			G X 16 CrNi 20 10	
1.4826		GX 40 CrNiSi 22 9		SCH 12	J92603				
1.4828	309	X 15 CrNiSi 20 12	309 S 24	SUH 309	S30900	X 15 CrNiSi 20 12	Z 15 CNS 20.12	X 16 CrNiSi 25, 20	

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Workpiece Material Conversion Table — M1

M1 Austenitic Stainless Steels ***Content: C=.05-.15%*** ***Tensile Strength RM (MPa)*: <650*** ***Hardness (HB): 130-200***

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4833	309 S	X 7 CrNi 23 14	309 S 24	SUS 309 S	J93400	X 12 CrNi 23 13	Z 15 CN 24.13	X 6 CrNi 23 14	
1.4835		X 9 CrNiSiNCe 21 11 2				X 9 CrNiSiN Ce 21-11-2			
1.4837		GX 40 CrNiSi 25 12	309 C 30	SCS 17	J93503			GX 35 CrNi 25 12	
1.4841	310	X 15 CrNiSi 25 20	314 S 25	SUH 310	S31000	X 15 CrNiSi 25 20	Z 15 CNS 25.20	X 16 CrNiSi 25.20	
1.4845	310 S	X 12 CrNi 25 21	310 S 24	SUS 310 S	S31008	X 8 CrNi 25 21	Z 12 CN 25.20	X 6 CrNi 25 20	2361
1.4848	HK	GX 40 CrNiSi 25 20	310 C 40	SCH 21	J94204			GX 40 CrNi 26 20	
1.4854		353 MA				X 6 NiCrSiN Ce 35-25			
1.4877		X 6 NiCrNbCe 32 27				X 6 NiCrNb Ce 32-27			
1.4878	321	X 12 CrNiTi 18 9	321 S 20	SUS 321	S32100	X 10 CrNiTi 18 10	Z 6 CNT 18.12	X 6 CrNiTi 18.11	2337
1.4881	EV 11	X 70 CrMnNiN 21 6			S63011			X 70 CrMnNiN 21 6	
1.4910		X 3 CrNiMoN 17 13				X 3 CrNiMoN 17-13-3		X 2 CrNiMoN 17 12	
1.4919	316 H	X 6 CrNiMo 17 13	316 S 51		S31609	X 6 CrNiMo 17 12 2	Z 6 CND 17-13 B		
1.4941		X 8 CrNiTi 18 10			X 6 CrNiTiB 18-10	Z 6 CNT 18-10 B	X 6 CrNiTiB 11		
1.4948		X 6 CrNi 18 11	304 S 51		S30480	X 6 CrNi 18 10	Z 6 CN 18-09	X 5 CrNi 18 10 KW	2333
1.4949		X 3 CrNi 18 11						X 2 CrNiN 18 11	
1.4950		X 6 CrNi 23 13				309 H			
1.4951		X 6 CrNi 25 20				310 H			
1.4961		X 8 CrNiNb 16 13	347 S 51						
1.4981		X 8 CrNiMoNb 16 16							
1.4988		X 8 CrNiMoVNb 16 13							
1.6907			304 S 71					AR 304 N	
1.6909							CLC 004 BC		
1.6982		GX 3 CrNi 13 4				GX 3 CrNi 13-4	GX3CrNi13-4	GX 3 CrNi 13-4	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI	DIN	BS	JIS	UNS	AFNOR	UNI	SIS	AMS
AMS Materials – M1									
1.4319	302	X3CrNi-N17-8	301 S 26; 302 S 26	SUS 302 S 26, 302 S 26					5629
1.4305	303	X8CrNiS18-9 (X 10 Cr-NiS 18 9)	303 S 22, 303 S 31	SUS 303 S22, 303 S 31				2346	5640E
1.4828	309	X15Cr-NiSi20-12	309 S 24	SUH 309					5650
1.4401	316	X 5CrNiMo 17 12 2 (X4 CrNiMo 17-12-2)	316 S 13, 17, 19, 31, 33"	SUS 316				2347	5362
1.4000; 1.4001	403, 410S	X6Cr13, X7Cr14	403 S 17	SUS 403, 410 S, 429			2301	5504C	
1.4005	416	X12CrS13	416 S 21	SUS 416				2380	5610D
1.4021	420	X20Cr13	420 S 37	SUS 420 J1				2303	5621
1.4016	430	X6Cr17	430 S 17; 430 S 18	SUS 430				2320	5627
1.4057	431	X17CrNi16-2	431 S 29, 6 S. 80	SUS 431				2321	5623
1.4303	305, 30	X4Cr-Ni18-12 (X 5 Cr-Ni 18 12)	305 S 17; 305 S 19	SUS 305 J 1; SUS 305				5514A	
1.4301	304, 304 H	X5CrNi18 10 (X 4 Cr-Ni18-10)	304 S 11, 304 S 15; 304 S 16; 304 S 17; LW21; LWCF 21; 304 S 31	SUS 304				2332; 2333	5513
1.4842	310 S	X12Cr-Ni25-20		SUS 310 S				2361	5521B
1.4841	314, 310	X15Cr-NiSi25-20; X15Cr-NiSi25-21	314 S 25	SUH 310					5652
1.455	347, 348"	X6CrNi-Nb 18-10	347 S 20, 31, 51; ANC 3 B	SUS 347				2338	5512B
1.4125	440 C	X105CrMo17		SUS 440 C					5352
1.4876	B163	X10NiCr-AlTi32-20; X10NiCr-AlTi32-21	NA 15 (H)	NCF 800 (TP)					

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — M2

M2 High-Strength Austenitic Stainless and Cast Stainless Steels Content: C=.05-.15% Tensile Strength RM (MPa)*: 500-700 Hardness (HB): 150-230

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3912		Ni 36			K93601		Fe-Ni 36		
1.3984		X 3 CrNiMnMoN	24 21 7 4						
1.3986		X 1 CrNiMnMoN	22-17-7						
1.4320		X 2 CrNiMo 13 4							
1.4324		X 10 CrNi18 9	302 S 26		J92501	X 10 CrNi 18 9			
1.4333		X 5 NiCr 32 21			S33200				
1.4372		X 12 CrMnNiN 17 7 5	284 S 16	SUS 201		X 12 CrMnNiN 17-7-5	X 12 CrMnNiN 17-7-5	X 12 CrMnNiN 17-7-5	
1.4375		X 2 CrMnNiN 20 9 7					DMV500		
1.4413		X 3 CrNiMo 13 4			S42400		X3CrNiMo 13-4		
1.4432	316L	X 2 CrNiMo 17 12 3	316 S 13	SUS 316L		X 2 CrNiMo 17 12 2	Z 3 CND 17-13-30	X 2 CrNiMo 17-12-3	
1.4441		X 2 CrNiMo 18 15 3					DMV 4441		
1.4454									
1.4466		X 1 CrNiMoN 25 22 2				725 LN	DMV 25.22.2	X 1 CrNiMoN 25-22-2	
1.4501		X 2 CrNiMoCuWN 25-7-4				X 2 CrNiMoCuWN 25 7 4	X 2 CrNiMoCuWN 25 7 4	X 2 CrNiMo CuWN 25 7 4	
1.4504					S17780				
1.4507		X 2 CrNiMoCuN 25 6 3				X 2 CrNiMo CuN 25-6-3	DMV25.7Cu	329SK	
1.4508		GX 2 CrNiMo CuWN 25 8 4				X 6 CrNiCu 18 10 4 KD	Z 4 CNUD 17-11-03 FF		
1.4530		X 3 CrNiMoNbVN	25 6 4						
1.4534	13-8 PH	X 3 CrNiMoAl 13 8 2			S13800		Z4 CNDAT 13-09		
1.4537						X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	X 1 CrNiMoCuN 25-25-5	
1.4540	15-5 PH	X 4 CrNiCuNb 16 4			J92200		Z 4 CNUNb 16.4 M		
1.4544		A 700	304 S 31		J92630			X 6 CrNiTi 18 11	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4545		X 15 U 5 W							
1.4546	348	X 5 CrNiNb 18 10	S 527		J92640			X 6 CrNiNb 18 11	
1.4547		X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7			X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	X 1 CrNiMoCuN 20-18-7	
1.4548	17-4 PH	X 5 CrNiCuNb 17 4 4		SUS 630	S17400	X 5 CrNiCuNb 16-4	X5CrNiCuNb 16-4		
1.4561		X 1 CrNiMoTi 18-13-2							
1.4564		17-7 PH							
1.4568		X 7 CrNiAl 17 7	301 S 81	SUS 631	S17700	X 7 CrNiAl 17-7	X7CrNiAl17-7; Z9CNA17-07	X 7 CrNiAl 17-7	2388
1.4574		N 752							
1.4578		X 3 CrNiCuMo 17 11 3 2				X 3 CrNiCuMo 17 11 3 2	X3CrNiCuMo 17-11-3-2	X 3 CrNiCuMo 17-11-3-2	
1.4593		BGH 4593							
1.4594		X 5 CrNiMoCuNb 14 5				X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCuNb 14-5	X 5 CrNiMoCu Nb 14-5	
1.4605		X 2 CrAlTi 18 2				X 2 CrAlTi 18-2	DMV 59	X 2 CrAlTi 18-2	
1.4652		654 SMO							
1.4840		G-X 15 CrNi 25-20							
1.4847		X 8 CrNiAlTi 20 20			S33400				
1.4866		X 33 CrNiMnN 23 8				X 33 CrNiMnN 23-8	X 33 CrNiMnN 23-8		
1.4892		BGH 4892							
1.4938		X 12 CrNiMoV 12 3				X 12 CrNiMoV 12-3	X 12 CrNiMoV 12-3		
1.4982		Esshete12 50				X 10 CrNiMoMnN bVB 15-10-1	X 10 CrNiMoMnN bVB 15-10-1		
1.6960		X 1 CrNiCoMo 13-8-5							

Workpiece Material Conversion Table — M3

M3 Duplex Steels Content: C=.05-.2% Tensile Strength RM (MPa)*: <900 Hardness (HB): 135-275

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3985		X 2 CrNiMoN 23 15							
1.4460	329	X 4 CrNiMo 27 5 2		SUS 329 J1	S32900	X 3 CrNiMo 27 5 2	X 2 CrNiMo 25-7-3	X 3 CrNiMo 27-5-2	2324
1.4462	S318 03	X 2 CrNiMoN 22 5 3	318 S 13	SUS 329J 3L		X 2 CrNiMoN 22 5 3	Z 3 CND 22.05 AZ	X 2 CrNiMoN 22-5-3	2377

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4821		X 20 CrNiSi 25 4		S44635	X 15 CrNiSi 25 4	Z 20 CNS 25.04	X 20 CrNiSi 254		
1.4823		GX 40 CrNiSi 27 4			J92605				

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — K1

K1 Gray Cast Irons and Low-Strength Ductile Irons — Tensile Strength RM (MPa)*: 150-400 — Hardness (HB): 120-290

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.6010	A48-20 B	GG-10	Grade 100	FC 100		GJL-100	FGL 100	G 10	0110-00
0.6012		GG-150HB				GJL-HB 170			
0.6015	A48-25 B	GG-15	Grade 150	FC 150		GJL-150	FGL 150	G 15	0115-00
0.6017		GG-170HB			N06985	GJL-HB 205			
0.6020	A48-30 B	GG- 20	Grade 220	FC 200	W06020	GJL-200	FGL 200	G 20	0120-00
0.6022		GG-190HB			N06022	GJL-HB 230			
0.6025	A48-35 B	GG -25	Grade 260	FC 250		GJL-250	FGL 250	G 25	0125-00
0.6026		GG- 26		FC260				G 26	0126-00

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.6027		GG -220HB			W06027	GJL-HB 250	FGL 250		
0.6030	A48-45 B	GG- 30	Grade 300	FC 300		GJL-300	FGL 300	G 30	0130-00
0.6032		GG -240HB				GJL-HB 275			
0.6035	A48-50 B	GG- 35	Grade 350	FC 350		GJL-350	FGL 350	G 35	0135-00
0.6037		GG- 260HB				GJL-HB 275			
0.6040	A48-55 B	GG- 40	Grade 400			GJL-400	FGL 400		0140-00
0.9990		GGV-40				GJV-400			

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — K2

K2 Low- and Medium-Strength CGI and Ductile Irons — Tensile Strength RM (MPa)*: 400-600 — Hardness (HB): 130-260

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.6652		GGL-NiMn137	L-NiMn 13 7	FCA NiMn 13 7	F43000	GJLA-XNiMn 13-7	L-NM 13 7		
0.6655	A 436 Type 1	GGL-NiCuCr1562	L-NiCuCr 15 6 2	FCA - NiCuCr 15 6 2	F41000	GJLA-XNiCuCr 15-6-2	L-NUC 15 6 2		
0.6656	A 436 Type 1b	GGL-NiCuCr1563	L-NiCuCr 15 6 3	FCA-NiCuCr 15 6 3	F41001	GJLA-XNiCuCr 15-6-3	L-NUC 15 6 3		
0.6660	A 436 Type 2	GGL-NiCr202	L-NiCr 20 2	FCA-NiCr 20 2	F41002	GJLA-XNiCr 20-2	L-NC 20 2		0523-00
0.6661	A 436 Type 2b	GGL-NiCr203	L-NiCr 20 3	FCA-NiCr 20 3	F41003	GJLA-XNiCr 20-3	L -NC 20 3		
0.6667		GGL-NiSiCr2053	L-NiSiCr 20 5 3	FCA-NiSiCr 20 5 3		GJLA-XNiSiCr 20-5-3	L-NSC 20 5 3		
0.7033		GGG-35.3				GJS-350-22			0717-15
0.7040	60-40-18	GGG-40	SNG 420/12	FCD 400	F32800 class 1	GJS-400-15	FGS400-12	GS400-12	0717-02
0.7043		GGG- 40.3	SNG 370/17	FCD 370		GJS-400-18	FGS 370-17	GSO 42/15	0717-15
0.7045		GGG-45		FCD 450					
0.7049							FGS450.10		
0.7050	65-45-12	GGG-50	SNG 500/7	FCD 500	F33100	GJS-500-7	FGS 500-7	GS 500/7	0727-02

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.7060	80-55-06	GGG -60	SNG 600/3	FCD 600	F33800	GJS-600-3	FGS 600-3	GS 600/3	0732-03
0.7065		GGG-65							
0.7070	100-70-03	GGG-70	SNG 700/2	FCD 700	F34800	GJS-700-2	FGS 700-2	GS 700-2	0737-01
0.7652		GGG-NiMn137	S-NiMn 13 7	FCDA-137		GJSA-XNiMn 13-7	S-Mn 13 7		0772-00
0.7659		GGG-NiCrNb202 S2W	FCDA-NiCrNb 20 2			GJSA-XNiCrNb 20-2			
0.7660	A 439 Type D-2	GGG-NiCr202	L-NiCuCr 20 2	FCDA-NiCr 20 2		GJSA-20 2; A32-301	S-L-NC XNiCr 20-2		0523-00
0.7665		GGG-NiSiCr2052	S-NiSiCr 20 5 2	FCDA-NiSiCr 20 5 2		GJSA-XNiSiCr 20-5-2	S-NSC 20 5 2		
0.7670	A 439 Type D-2C	GGG-Ni22	S-Ni 22	FCDA-Ni 22	F43002	GJSA-XNi 22	S-N 22		
0.7673	A 571 Type D-2M	GGG-NiMn234	S-NiMn 23 4	FCDA-NiMn 23 4		GJSA-XNiMn 23-4	S-NM 23 4		
0.9991		GGV-30				GJV-300			

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — K3

K3 High-Strength Ductile and Austempered Ductile Irons Tensile Strength RM (MPa)*: 600-900 Hardness (HB): 180-350

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.7080	120-90-02	GGG-80	SNG 800/2	FCD 800	F36200	GJS-800-2	FGS 800-2	GS 800-2	
0.7661	A 439 Type D-2B	GGG-NiCr203	S-NiCr 20 3	FCDA-NiCr 20 3	F43001	GJSA-XNiCr 20-3			
0.8035		GTW-35-04	W 35-04	FCMW 330 class 1		GJMW-35-0-4	MB 35-7	W 35-04	
0.8038		GTW-S-38-1 2	W 38-12			GJMW-360-12	MB 300-12	5922 W38-12	
0.8040		GTW-40-05	W 40-05	FCMW 370		GJMW-400-5	MB 400-5	GMB 40	
0.8045		GTW-45-07	W 45-07	FCMWP 440 class 3		GJMW-450-7	MB 450-7	GMB 45	
0.8055		GTW-55						GMB 55	

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.8065		GTW-65						GMB 65	
0.8070									
0.8135	32510	GTS-35-10	B 340/12	FCMP 330		GJMB-350-10	MN 350-10	5922 B35-10	0815
0.8145	40010	GTS-45-06	P 440/7	FCMP 440	GJMB-450-6	MN 450 - 6	P 45-06		0852
0.8155	50005	GTS-55-04	P 510/4	FCMP 490	GJMB-550-4	MN 550-4	P 55-04		0854
0.8165	70003	GTS-65-02	P 570/3	FCMP 540	GJMB-650-2	MN 650-3	P 65-02		"0858-00, 0856-00"
0.8170	90001	GTS-70-02	P 690/2	FCMP 690	GJMB-700-2	MN 700-2	P 70-02		0862-03; 0864-03

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — N1

N1 Wrought Aluminum Alloys ***Tensile Strength RM (MPa)*: <520*** ***Hardness (HB) or HRC: 60-90***

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
—	—	AlMg3Mn	—	—	—	1	1	1	1
1.0226		Algafort / DX51D (St 02 Z)		—		DX51D	GC	FeP 02 G	1151-10
1.0250		St E 320-3Z				S 320 GD + ZA			
1.0309		St 35.4				DX 55 D + AS			
1.0350		Alugal AL3							
1.0531		AluzincAC550 (S550 GD + Z)				S 550 GD + Z			
1.0579		Aldur 50							
1.3711		AlNiCo 3/5p							
1.3713		AlNiCo 5/6p							
1.3715		AlNiCo 7/8p							
1.3728		AlNiCo 9/5							
1.3743		AlNiCo 12/6							
1.3756		AlNiCo 18/9							
1.3757		AlNiCo 44/5							
1.3758		AlNiCo 30/10							
1.3759		AlNiCo 52/6							
1.3760		AlNiCo 26/6							
1.3761		AlNiCo 35/5							
1.3763		AlNiCo 60/11							
1.3765		AlNiCo 30/14							
1.6528		AISI 8660			G 86600, H 86600				
1.8909		S 500 QL				S500QL	S 500 QL	S 500 QL	2615
1.8926		S 550 QL (TStE 500 V)				S 550 QL	S 550 QL	S 550 QL	
1.8927		S 620 QL (TStE 620 V)				S 620 QL	S 620 QL	S 620 QL	
3.0250	1000	Al99.5H	L31				A59050C		
3.0255	1000	Al99.5	L 31				A 59050 C		
3.0259		SG-Al 99,5							
3.0280		Al99.8							

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
3.0286		SG-Al99,8							
3.0305		Al 99.9							
3.0515		G-Al99,5							
3.0615		AlMgSiPb							
3.0805		SG-Al 99,5Ti							
3.1325	2017	AlCuMg 1				AW-2017 A			
3.1355	2024	AlCuMg 2				AW-2024			
3.1371		G-AlCu 4 TiMg							
3.1645		AlCuMgPb							
3.1655	2011	AlCuBiPb							
3.1754		G-AlCu 5 Ni 1,5							
3.2245		SG-AlSi 5							
3.2315	6351	AlMgSi 1				AW-6005 A			
3.3206	6063	AlMgSi0.5							
3.3292		G-D AlMg 9							
3.3315	5005	AlMg 1				AW-6082			
3.3316	5050	—	—	—	—	1	1	1	1
3.3455		AlZnMg 3							
3.3523	5052	—	—	—	—	1	1	1	1
3.3525		AlMg 2							
3.3535	5754	AlMg 3							
3.3536		SG-AlMg 3							
3.3541		G-AlMg 3							
3.3545	5086	—	—	—	—	1	1	1	1
3.3547	5083	AlMg4,5Mn							
3.3548		SG-AlMg 4,5 Mn							
3.3549	5056	—	—	—	—	1	1	1	1
3.3555		AlMg 5							
3.3556		SG-AlMg 5							
3.4345	7050	AlZnMgCu0,5; AlZnMgCu1	L 86				AZ 4 GU/9051	811-04	
3.4365	—	AlZn5,5MgCu	—	—	—	1	1	1	1

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Workpiece Material Conversion Table — N2

N2 Cast Aluminums — Content: Si<12.2% — Tensile Strength RM (MPa)*: <350 — Hardness (HB): 70-100

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.1871		G-AlCu 4 TiMg							
3.0805		SG-Al 99,5 Ti							
3.0928		G-AlCu 5 Si 3							
3.1263		GK-AlCu 5 Si 3							
3.1841		G-AlCu 4 Ti							
3.2131		G-AlSi 5 Cu 1							
3.2151		G-AlSi 6 Cu 4							
3.2153		G-AlSi 7 Cu 3							
3.2161		G-AlSi 8 Cu 3							
3.2163		G-AlSi 9 Cu 3							
3.2211		G-AlSi 1 1							
3.2245		SG-AlSi 5							
3.2341		G-AlSi 5 Mg							
3.2341		G-AlSi 5 Mg							
3.2371	4218 B	G-AlSi 7 Mg							
3.2373		G-AlSi 9 Mg							
3.2381		G-AlSi 10 Mg							
3.2382		G-D AlSi 10 Mg							
3.2383	A 360.2	G-AlSi 10 Mg(Cu)	LM 9						4253
3.2515		AlMgSi 1							
3.2573		G-AlSi 9 (Cu)							
3.2581	A	G-AlSi 12	LM 6						4261
3.2582	A 413.0	G-D AlSi 12							4247
3.2583	A 413.1	G-AlSi 12(Cu)	LM 20						4260
3.2585		SG-AlSi 12							
3.2982		G-D AlSi 12(Cu)							
3.3241		G-AlMg 3 Si							
3.3245		AlMg 3 Si							

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
3.3261		G-AlMg 5 Si							
3.3308		Al 99.9 Mg 5							
3.3458		G-AlMg5Si (Cu,Mn)							
3.3546		SG-Al Mg 4,5 Mn Zr							
3.3561		G-AlMg 5							
3.3591		G-AlMg 10							
3.5100									
3.5101	ZE 41	G-MgZn 4 SE 1 Zr 1	MAG 5			MCMgZn 4 RE 1 Zr	G-Z 4 TR		
3.5102		G-MgZn 5 Th 2 Zr 1							
3.5103	EZ 33	MgSE 3 Zn 2 Zr 1	MAG 6			MCMgRE 3 Zn 2 Zr	G-TR 3 Z 2		
3.5104		MgAl 9 Zn 1							
3.5105		G-MgTh 3 Zn 2 Zr 1							
3.5106	QE 22	G-MgAg 3 SE 2 Zr 1	MAG 12			MCMgRE 2 Ag 2 Zr	G-Ag 22, 5		
3.5200		G-MgAl 8 Zn 1							
3.5312		MgAl 3 Zn							
3.5470	AS 41	G-D MgAl 4 Si 1				MCMgAl4Si	G-A4S 1		
3.5612		G-D MgAl 6 Zn 1							
3.5632		G-MgAl 6 Zn 3							
3.5662		G-D MgAl 6							
3.5812	AZ 81	G-MgAl 8 Zn 1	MAG 1			MCMgAl 8 Zn 1	G-A 9		
3.5912	AZ 91	G-MgAl 9 Zn 1	MAG 7			MCMgAl 9 Zn 1	G-A 9 Z 1		
3.5922		GD-MgAl 9 Zn 2							
		G-AlZn10Si8Mg							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — N2

N2 Cast Aluminums — Content: Si<12.2% — Tensile Strength RM (MPa)*: <350 — Hardness (HB): 70-100

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	AFNOR	UNI	SIS	AMS
AMS Materials – N1									
	2014	3.1255, AlCuSiMn	2014A, H15, L102, L103, L105, L158, L159, L168, 6L37, 3L62, 2L77, 2L87, 2L93, 5010A"				A2014, A3x1	14 4338	4028, 4029, 4133, 4134, 4135, 4314, 4153
	2024	3.1355, AlCuMg2	2L97, 2L98"				A2024, A3x4		4007, 4035, 4037, 4086, 4119, 4120, 4193, 4112, 4152, 4164, 4165, 4087, 4088, 7223, 4031, 4066, 4068, 4143, 4144, 4162, 4163, 4313
	2618								4132
	6061	3.321, AlMgSiCu	606, H20,L117, L118				A6061, A2x4		4025, 4026, 4027, 4079, 4080, 4081, 4083, 4113, 4115, 4116, 4117, 4127, 4128, 4146, 4150, 4160, 4161, 4172, 4173, 4312
	7075	3.4365, AlZnMg-Cu1.5	7075, 2L95, L160, L161, L162"				A7075, A3x6		4044, 4078, 4122, 4123, 4126, 4141, 4147, 4154, 4166, 4167, 4168, 4169, 4186, 4187, 4310, 4311, 4124

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — N3

N3 Cast Aluminums Content: Si>12.2% Tensile Strength RM (MPa)*: 200-320 Hardness (HB): 60-120

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
		G-AlSi17 Cu4Mg							
		GK-AlSi18 CuNiMg							
		GK-AlSi21 CuNiMg							
		GK-AlSi12 CuNiMg							
		GK-AlSi25 CuNiMg							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — N4

N4 MMCs (Aluminum-Based Metal Matrix Composites) Tensile Strength RM (MPa)*: <700 Hardness (HB): 210

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.0966	C 63000	CuAl 10 Ni 5 Fe 4	Ca 104				U-A 10 N		
3.5104		MgAl 9 Zn 1							
		GFK							
		CFK							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — N5

N5 Copper and Copper Alloys — **Tensile Strength RM (MPa)*: 200-650** — **Hardness (HB): 60-200**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.6261		17 CuNi 4							
1.8980		5 CuNi 123 (S 500 A)				S 500 A	S 500 A	S 500 A	
2.0040		OF-Cu							
2.0060	B-120	E-Cu 57							
2.0065	C 11000	E-Cu 58	C 101				Cn-a2		
2.0070	C 10300	SE-Cu	C 101				Cu-c1		
2.0082	C 81100	G-CuL 45	HCC 1						
2.0085	C 81100	G-Cu L 50	HCC 1						
2.0220		CuZn 5							
2.0240	C 23000	CuZn 15	CZ 102	C 2300			CuZn 15		
2.0241		CuZn 40 MnPb							
2.0250		CuZn 20							
2.0265	C 26000	CuZn 30	CZ 102	C 2600			CuZn 30		
2.0280		CuZn 33							
2.0290		G-CuZn 33 Pb							
2.0321	C 27200	CuZn 37	CZ 108				CuZn 37	C 2720	
2.0330		CuZn 36 Pb 1.5							
2.0331		CuZn 36 Pb 1,5							
2.0332		CuZn 37 Pb 0,5							
2.0340		G-CuZn 37 Pb							
2.0366		L-CuZn40Si							
2.0380		CuZn 39 Pb 2							
2.0401		CuZn 39 Pb 3 + D567							
2.0402		CuZn 40 Pb 2							
2.0460		CuZn 20 Al 2							
2.0490		CuSn 2							
2.0492	B-198	G-CuZn 15Si 4							
2.0510		CuZn 37Al 1							
2.0550		CuZn 40 Al 2							
2.0561		CuZn 40Al 1							
2.0590		G-CuZn 40 Fe							
2.0591		G-KCuZn 38 Al							
2.0592	C 86500	G-CuZn 35 Al 1	HTB 1				U-Z 36 N 3		
2.0595		G-KCuZn 37 Al 1							
2.0596	C 86200	G-CuZn 34 Al 2	HTB 1				U-Z 36 N 3		
2.0598		G-CuZn 25 Al 5							
2.0790		CuNi 18 Zn 19 Pb							
2.0837		S - CuNi 30 Fe							
2.0855		CuNi 2 Si							
2.0857		CuNi 3 Si							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.0872		CuNi 10 Fe 1 Mn							
2.0873		S - CuNi 10 Fe							
2.0882		CuNi 30 Mn 1 Fe							
2.0916		CuAl 5							
2.0920		CuAl 8							
2.0921		SG-Cu Al 8							
2.0922		SG-CuAl 8 Ni 2							
2.0923		SG - CuAl 8 Ni 6							
2.0927		SG-CuAl 9 Ni5 Fe							
2.0928		G-CuAl 9							
2.0932		CuAl 8 Fe							
2.0936		CuAl 10 Fe 3 Mn 2	CA 103				U-A 10 Fe		
2.0937		SG-Cu Al 10 Fe							
2.0940		G-CuAl 10 Fe							
2.0960		CuAl 9 Mn							
2.0966	C 63000	CuAl 10 Ni 5 Fe 4	Ca 104				U-A 10 N		
2.0970		G-CuAl 9 Ni							
2.0975	B-148-52	G-CuAl 10 Ni							
2.0980		CuAl 11 Ni							
2.1006		SG-Cu Sn							
2.1016		CuSn 12							
2.1022		SG-Cu Sn 6							
2.1025		EL - CuSn 7							
2.1050	C 90700	G-CuSn 10	CT 1						
2.1052	C 90800	G-CuSn 12	Pb 2				UE 12 P		
2.1060	C 91700	G-CuSn 12 Ni							
2.1061		G-CuSn 12 Pb							
2.1086		G-CuSn 10 Zn							
2.1090	C 93200	G-CuSn 7 ZnPb					U-E 7 Z 5 Pb 4		
2.1093		G-CuSn 6 ZnNi	LG 4						
2.1096	C 83600	G-CuSn 5 ZnPb	LG 2				U-E 5 Pb 5 Z 5		
2.1096		G-CuSn 5 PbZn							
2.1098		G-CuSn 2 ZnPb							
2.1170		CuPb 5 Sn 5							
2.1176	C 93700	G-CuPb 10 Sn	LB 2				U-E 10 Pb 10		
2.1182	C 93800	G-CuPb 15 Sn	LB 1				U-Pb 15 E 8		
2.1188	C 94100	G-CuPb 20 Sn	LB 5				U-Pb 20		
2.1202		CuAg							
2.1211		SG - CuAg							
2.1243		"CuBe 1,2"							
2.1245		"CuBe 1,7"							

Workpiece Material Conversion Table — N5

N5 Copper and Copper Alloys — **Tensile Strength RM (MPa)*: 200-650** — **Hardness (HB): 60-200**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.1247		CuBe 2							
2.1265		"CuCd 0,7"							
2.1266		CuCd 1							
2.1270		CuCdSn							
2.1285		CuCoBe							
2.1291		CuCr							
2.1292	C 81500	G-CuCrF 35	CC1-FF						
2.1293	C 81500	CuCrZr	CC 102				"U-Cr 0,8 Zr"		

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Numberw	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.1322		"CuMg 0,4"							
2.1323		"CuMg 0,7"							
2.1355		CuMn 2							
2.1363		CuMn 2							
2.1366		CuMn 5							
2.1367		SG-Cu Mn 13 Al 7							
2.1461		SG-Cu Si 3							
2.1522		CuSi 2 Mn							
2.1525		CuSi 3 Mn							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — S1

S1 Iron-Based, Heat-Resistant Alloys **Tensile Strength RM (MPa)*: 500-1200** **Hardness (HB): 160-260**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.6676	A 436 Type 3	GGL- NiCr303	L-NiCr 30 3	FCA-NiCr 30 3	F41004	GJLA-XNiCr 30-3	L-NC 30 3		
0.6680	A 436 Type 4	GGL-NiSiCr3055	L-NiSiCr 30 5 5	FCA-NiSiCr 30 5 5	F41005	GJLA-XNiSiCr 30-5-5	L-NSC 30 5 5		
0.7676	A 439 Type D-3	GGG-NiCr303	S-NiCr 30 3	FCDA-NiCr 30 3	F43003	GJSA-XNiCr 30-3	S-NC 30 3		
0.7677	A 439 Type D-3A	GGG-NiCr301	S-NiCr 30 1	FCDA-NiCr 30 1	F43004	GJSA-XNiCr 30-1	S-NC 30 1		
0.7679		GGG-NiSiCr3055		FCDA-NiSiCr 30 5 5		GJSA-XNiSiCr 30-5-5			
0.7680	A 439 Type D-4	GGG-NiSiCr3053	FCDA-S-NiSiCr 30 5 5	F43005 NiSiCr 30 5 4	GJSA-XNiSiCr 30-5-3	S-NSC 30 5 5			
0.7683	A 439	Type D-5	GGG-Ni35	S-Ni 35	FCDA-Ni 35	F43006	GJSA-XNi 35	S-N 35	
0.7685	A 439 Type D-5A	GGG-NiCr353	S-NiCr 35 3	FCDA-NiCr 35 3	F43007	GJSA-XNiCr 35-3	S-NC 35 3		
0.7688		GGG-NiSiCr3552	FCDA-NiSiCr 35 5 2		GJSA-XNiSiCr 35-5-2	FGS Ni35 Si 5 Cr2			
1.2789		X 7 NiCrCoMo 54 20							
1.3910		D 1							
1.3915		D 1 a							
1.3916		D 3	BD 3			X 210 Cr 1 2	Z 200 C 12	X 205 Cr 12 KU	
1.3920		Ni 46							
1.3926		RNi 12							
1.3927		Ni 48							
1.3938		X 8 NiCr 17 10							
1.4335		X 1 CrNi 25 21				X 1 CrNi 25 21	X1CrNi25-21	X 1 CrNi 25-21	
1.4361		X 1 CrNiSi 18 15			X 1 CrNiSi 18-15-4	Z 1 CNS 18.15	X 1 CrNiSi 18-15-4		
1.4500		GX 7 NiCrMoCuNb 25 20		SCS 23	J95150	10.204.3.1B	Z 3 NCDU 25.20 M	GX 5 NiCrCuMo 29 21	
1.4558		X 2 NiCrAlTi 32 20		NCF 800 TB					
1.4562		X 1 NiCrMoCu 32 28 7							
1.4563		X 1 NiCrMoCuN 31 27 4				X 1 NiCrMoCu 31 27 4	X 1 NiCrMoCuN 31 -27-4	X 1 -27-4 NiCrMoCuN 31	2584
1.4836		GX 50 CrNiNb 25 22							
1.4849		GX 40 NiCrSiNb 38 18			N08004				
1.4850		X 15 NiCrNb 32 21							

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.4852		GX 40 NiCrSiNb 35 25							
1.4853		X 40 NiCrNb 35 25							
1.4857		GX 40 NiCrSi 35 25			J95705			GX 50 NiCr 35 25	
1.4859		GX 10 NiCrNb 32 20			J95151				
1.4862		X 8 NiCrSi 38 18	NA 17				Z 12 NCS 37.18		
1.4863		X 12 NiCr 36 18							
1.4864	330	X 12 NiCrSi 35 16	NA 17	SUH 330	N08330	X 12 NiCrSi 35 1 6	Z 12 NCS 37.18		
1.4865		GX 40 NiCrSi 38 18	330 C 40	SCH 15	J94605			GX 50 NiCr 39 19	
1.4876	B 163	X 10 NiCrAlTi 32 20	NA 15	NCF 800		X 10 NiCrAlTi 32 20	Z 8 NC 32.21		
1.4886		X 10 NiCrSi 35 19				X10NiCrSi 35-19			
1.4887		X 10 NiCrSiNb 35 22				X10NiCrSiNb 35-22			
1.4958		X 5 NiCrAlTi 31 20							
1.4977		X 40 CoCrNi 20 20					Z 42 CNKDWNb		
	R 30188							Haynes 188	
	S 66286							A-286	
	S 41800							Greek Ascology	
	R 30556							Haynes 556	HS556
	R 30155							N155	

Material Number	AISI**	DIN	BS	JIS	UNS	AFNOR	UNI	SIS	AMS
AMS Materials – S1									
	A-286								5525, 5731, 5732, 5737, 5805, 5895, 7235, 7477, 7478
	Haynes 188								5608, 5772, 5801
	In-100								5397

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Workpiece Material Conversion Table — S2

S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys — Tensile Strength RM (MPa)*: 1000-1450 — Hardness (HB): 250-450

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.0513		GL-A 32 (S 315 G 1 S)			K11846	S 315 G 1 S			
1.0583		GL-A36 (S 355 G 1 S)			K11852	S 355 G1 S			
1.0874		A0							
1.0875		A 2				X 100 CrMoV 5 1			
1.0876		A 3							
1.3901		Ni 25							
1.3913		Ni 38							
1.3918		Ni 43							
1.3921		Ni 46							
1.3924		Ni 54							
1.3928		Ni 52							
1.3935		X 12 CrNiMn 18 88							
1.4939		X 12 CrNiMo 12	S.151			Z 12 CNDV 12-03			
1.4943		X 4 NiCrTi 25 15	HR251	SUH 660	S66286		Z 6 NCTDV 25.15 B		
1.4944		A 286		SUH 660					
1.4959		X 5 NiCrAlTi 32 21							
1.4980	660	X 5 CrNiTi 26 15	286 S 31		S66286	X 6 NiCrTiMoVB 21-15-2	Z 6 NCTDV 25.15 B		
2.4053		Alloy 222 (Ni99,7Mg0,07)							
2.4060		Ni 99,6	NA 46						
2.4061		LC-Ni 99, 6							
2.4066	N 02200	Ni 99, 2	NA 11						
2.4068		LC-Ni 99	NA 12						
2.4106		NiMn 1							
2.4108		NiMn 1 C							
2.4109		NiMn 1, 5							
2.4110		NiMn 2							
2.4122		NiMn 3 Al							
2.4126		NiMn 3 SiMg							
2.4145		NiCr 2 Mn							
2.4146		NiCr 2 MnSi							
2.4151		NiCr 5 MnSi							
2.4155		SG-NiTi 4	NA32			NA 32			
2.4170	SZ-100	G-Ni 95							
2.4175	CZ-100	G-Ni 93 C							
2.4180		G-Ni 93 Si							
2.4199		NiCr 4 Mn							
2.4360	N 04400	NiCu 30 Fe	NA 13				NU 30	Monel 400	
2.4365	M 35 -1/2	G-NiCu 30 Nb			N24030				
2.4366		EL-NiCu 30 Mn			N04402				
2.4367	M 30-H	G-NiCu 30 Si 3							
2.4368	M-255	G-NiCu 30 Si 4							

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Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.4370		NiCu 30 Ti							
2.4374		NiCu 30 Al							
2.4375	N 05500	NiCu 30 Al	NA 18				NU 30 AT	Monel K-500	
2.4377		SG-NiCu 30 MnTi	NA 33						
2.4420		NiFe 44							
2.4500		NiFe16 CuCr							
2.4520		NiFe16 CuMo							
2.4560		NiFeK 6040							
2.4602		NiCr 21 Mo 14 W			N26022			Inconel 622	
2.4603		NiCr 30 FeMo							
2.4604		NiMo 23 Cr 8 Fe							
2.4605		NiCr 23 Mo 16 Al							
2.4607		SG/UP-NiCr 23 Mo 16							
2.4608		NiCr 26 MoW							
2.4610	N 06455	NiMo 16 Cr 16 Ti	NA 45	N26455			Hastelloy C-4		
2.4615		SG(UP)-NiMo 27							
2.4617	N 10665	NiMo 28					NiMo 28		
2.4618		NiCr 22 Mo 6 Cu							
2.4619	N 06985	NiCr 22 Mo 7 Cu							
2.4626		SG-NiCr 23 Al	NA 49						
2.4627		SG-NiCr 22 Co 12 Mo	NA 50						
2.4630	N 06075	NiCr 20 Ti	HR5				NC 20 T	Nimonic 75	
2.4632		NiCr 20 Co 18 Ti	NA 36		N07090			Nimonic 90	
2.4634		NiCo 20 Cr 15 MoAlTi			N13021			Nimonic 105	
2.4636		NiCr 15 Cr 15 MoAlTi(Alloy115)	HR4					Nimonic 115	
2.4637		NiCr 22 Mo 8 AlCuTi							
2.4639		SG-NiCr 20	NA 34						
2.4641		NiCr 21 Mo 6 Cu		NCF 600 TP					
2.4642	N 06690	NiCr 29 Fe		NCF 690			NC 30 Fe	Inconel 690	
2.4647		NiCr 25 FeAlYC							
2.4650	N 07263	NiCo 20 Cr 20 MoTi	NA 38				NCK 20 D	Nimonic C-263	
2.4652		EL-NiCr 26 Mo							
2.4654		NiCr 19 Co 14 Mo 4 Ti						Waspaloy	
2.4656		SG-NiCr 29 Mo							
2.4658		NiCr 70 30			N06008				
2.4659		SG-NiCr 30 Mo 5 W							
2.4660	N 08020	NiCr 20 CuMo							
2.4661		EL-NiCr 29 Mo 5 W							

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Workpiece Material Conversion Table — S2

S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys **Tensile Strength RM (MPa)*: 1000-1450** **Hardness (HB): 250-450**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.4662		NiCr 13 Mo 6 Ti 3						Nimonic 901	
2.4663	N 06617	NiCr 23 Co 12 Mo						Inconel 617	
2.4665		NiCr 22 Fe 18 Mo	NA 40					Hastelloy X	
2.4666		NiCr 18 CoMo							
2.4667		SG-NiCr 19 NbMoTi	NA 51						
2.4668	N 07718	NiCr 19 FeNbMo	INCONEL 718				NC 19 Fe Nb	Inconel 718	
2.4669	N 07750	NiCr 15 Fe 7 TiAl		N07750			NC 15 Fe 7 TA	Inconel X-750	
2.4670		G-NiCr 13 Al 6 Mo Nb							
2.4671		G-NiCr 12 Al 6 MoNb							
2.4672		G-NiCr 20 Co 20 MoTi							
2.4674		G-NiCo 15 Cr 10 AlTiMo							
2.4676		G-NiCo 10 W 10 CrAlNb							
2.4678		G-NiCr 50							
2.4679		G-NiCr 35							
2.4680		G-NiCr 50 Nb							
2.4681		CoCr 26 Ni 9 Mo							
2.4682		G-CoCr 25 NiW							
2.4683		CoCr 22 NiW							
2.4685	N-7 M	G-NiMo 28						Hastelloy B	
2.4686	CW-12 MW	G-NiMo 17 CrW							
2.4691		G-CoCr 28 Mo							
2.4693		NiCr 25 Mo 7 Ti							
2.4710		NiMo 23 Cr 8 Fe							
2.4711		CoCr 20 Ni15Mo							
2.4723		G-CoCr 29 Mo							
2.4733		NiCr 22 W 14 Mo							
2.4764		NiCr 20 AlY							
2.4765		NiCr 17 AlWY							
2.4772		G-NiCr 20 Co 20 MoTi							
2.4775		CoCr33W							
2.4778		G-CoCr 28							
2.4779		G-CoCr 28 Nb							
2.4806		SG-NiCr 20 Nb	NA 35						
2.4810	N-12 MV	NiMo 30	ANC 15				Ni-Mo 28	Hastelloy C	
2.4813		G-NiCr 50 Nb							
2.4816	N 06600	NiCr 15 Fe	NA 14	NCF 600	N06040		NC 15 Fe	Inconel 600	
2.4819	N 10276	NiMo 16 Cr 15 W					NC 17 D	Nimonic C-276	

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
2.4831		SG-NiCr 21 Mo 9 Nb							
2.4836		NiCr 20 Mo 15							
2.4839		SG-NiCr 20 Mo 15							
2.4851	N 06601	NiCr 23 Fe		NCF 601			NC 23 Fe A	Inconel 601	
2.4854		NiFe 33 Cr 25 Co							
2.4855		NiCr 19 Mo9Si							
2.4856	N 06625	NiCr 22 Mo 9 Nb	NA 21	NCF 625	N26625		NC 22 Fe DNb	Inconel 625	
2.4858	N 08825	NiCr 21 Mo	NA 16	NCF 825 TB			NC 21 Fe DU	Incoloy 825	
2.4867		NiCr 60 15							
2.4869		NiCr 80 20							
2.4872		NiCr 20 AlSi							
2.4879		G-NiCr 28 W							
2.4883		G-NiMo 16 Cr							
2.4886		Sg-NiMo 16 cr 16 W	NA 48						
2.4888		G-NiCr 13 MoAl							
2.4890		NiCr 45 23							
2.4916		G-NiCr 19 Co							
2.4951	N 06075	NiCr 20 Ti	HR 5		N06621		NC 20 T		
2.4952	N 07080	NiCr 20 TiAl	NA 20	NCF 80 A		NiCr 20 TiAl	NC 20 TA		
2.4955		NiFe 25 Cr 20 NbTi				NiFe 25 Cr 20 NbTi		NiFe 25 Cr 20 NbTi	
2.4956									
2.4964	R 30605	CoCr 20 W 15 Ni	HR 240				KC 22 WN	L605 Haynes 25	
2.4969		NiCr 20 Co 18 Ti	NA 19		N07090				
2.4971									
2.4972		NiCr 22 W 12 Fe							
2.4973	AMS 5399	NiCr 19 Co 11 MoTi					NC 19 KDT		
2.4974									
2.4975		NiFeCr 12 Mo							
2.4976		NiCr 20 Mo							
2.4979		CoCr 28 MoNi							
2.4982		NiCr 20 CoMo							
2.4983		NiCr 18 Co			N07500				
2.4987		NiCo 20 Cr 15 MoAlTi							
2.4989		CoCr20NiW							
—		NiCr17Mo 17FeW					NC17DWY	Hastelloy C	

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — S2

S2 Nickel-Based or Cobalt-Based, Heat-Resistant Alloys — Tensile Strength RM (MPa)*: 1000-1450 — Hardness (HB): 250-450

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100. For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	JIS	BS	UNS	AFNOR	UNI	SIS	AMS
	AMS Materials - S2								
	Hastelloy C								5530
	Hastelloy N								5607
	Hastelloy S								5711
	Hastelloy W								5587, 5755
	Hastelloy X								5390, 5536, 5587, 5588, 5798, 7237
	Haynes 188								5608, 5772 5801
	In-100								5397
	Incoloy 901								5660 5661
	Inconel 600								7232
	Inconel 625								5401
	Inconel 625								5666
	Inconel 713 C								5391
	Inconel 713 LC								5377
	Inconel 718								5383, 5589, 5596, 5662, 5663, 5832
	Inconel X-750								5542, 5582, 5598, 5667, 5668, 5670, 5671, 5698, 5699
	Stellite 31								5382, 5789
	Waspaloy								5704, 5706, 5707, 5708, 5709, 7253

Workpiece Material Conversion Table — S3

S3 Titanium — Tensile Strength RM (MPa)*: 900-1600 — Hardness (HB): 300-400

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100. For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
1.3993		NiCr 16 11							
2.4694	N 07751	NiCr 16 Fe 7 TiAl					Inconel 751		
3.7025	R 50250	Ti 1	2 TA 1						
3.7035	R 50400	Ti 2	2 TA 2-5						
3.7036		SG-Ti 2							
3.7055	R 50550	Ti 3	TA 3						
3.7065	R 50700	Ti 4	2 TA 6-9						
3.7124		TiCu 2	2 TA 21-24						
3.7195		TiAl 3 V2.5							
3.7225	R 52250	Ti 1 Pd	TP 1						
3.7235	R 52400	Ti 2 Pd							
3.7255		Ti 3 Pd							

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — S4

S4 Titanium Alloys — **Tensile Strength RM (MPa)*: 900-1600** — **Hardness (HB): 300-400**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
3.7105		"TiNi 0,8 Mo 0,3"							
3.7110		"TiAl 5 Fe 2,5"							
3.7115		TiAl 5 Sn 2							
3.7145	R 54620	TiAl 6 Sn 2 Zr 4	Mo 2 Si						
3.7155		"TiAl 6 ZrMo 0,5"	TA 43						
3.7165	R 56400	TiAl 6 V 4	TA 10-13				T-A 6 V		
3.7175	R 56620	TiAl 6 V 6 Sn 2							
3.7185		TiAl 4 Mo 4 Sn 2	TA 45-51						
6Al-4V	Ti-6Al-4V								4911, 4928, 4930, 4935, 4954, 4956, 7460

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	JIS	BS	UNS	AFNOR	UNI	SIS	AMS
AMS Materials – M1									
	Ti-6Al-4V								4911, 4928, 4930, 4935, 4954, 4956, 7460

* 1 Mpa = 145 psi. ** Includes ASTM and SAE material specifications.

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Workpiece Material Conversion Table — H1

H1 Hardened Steels and Irons — **Hardness (HB): 450-750 / HRC: 48-65**

For Best Solid Carbide, Modular, and Indexable Drilling Tools, pages A1–A130, B1–B78, E1–E100.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.96		GX 200 CrNiMo 14 1							
0.961		G-X 300 NiMo 3 Mg				GJH-X300NiMo 3 Mg			
0.962	A 532 I B NiCr-LC	GX 260 NiCr 42	Grade 2 A	0512-00	F45001	GJH-X260NiCr 4-2			0512-00
0.9625	A 532 I A NiCr-HC	G-X 330 NiCr 42	Grade 2 B	0513-00	F45000	GJH-X330NiCr 4-2	FB Ni 4 Cr2 HC		0513-00
0.963	A 532 I D Ni-HiCr	G-X 300 CrNiSi 95 2	Grade 2 C	0457-00	F45003	GJH-X300CrNiSi 9-5-2			
0.9635	A 532 IIC15% CrMo-HC	G-X 300CrMo 15 3	Grade 3 A			GJH-X300CrMo 15-3			

For Best Tapping, Boring, and Reaming Solutions, pages D1–D61, F1–F3, G1–G194.

Material Number	AISI**	DIN	BS	JIS	UNS	EN	AFNOR	UNI	SIS
0.964		G-X 300 CrMoNi 15 2 1	Grade 3 B		F45005	GJH-X300CrMoNi 15-2-1			
0.9645	A 532 IID20% CrMo-LC	GX 260 CrMoNi 20 2 1	Grade 3 C		F45007	GJH-X260CrMoNi 20-2-1			
0.965	A 532 III A 25% Cr	GX 260 Cr 27	Grade 3 D	0466-00		GJH-X 260Cr 27			
0.9655	A 532 III A 25% Cr	G-X 300 CrMo 27 1	Grade 3 E			GJH-X300CrMo 27-1			

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Best Tool Selector — Drilling – P1

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through/MQL	3xD, 5xD	A53	B224-B225 K224-K225	KC7315	.118 - .787"	3,00 - 20,00 mm	755 230	656 200 ◊ 833 260
Flood	3xD, 5xD	A41	B221-B222	KC7315	.118 - .787"	3,00 - 20,00 mm	354 105	230 70 ◊ 459 140
Dry Applications	3xD, 5xD	A42	B221-B222	KC7315	.118 - .787"	3,00 - 20,00 mm	279 85	197 60 ◊ 361 110
Through	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	436 133	322 98 ◊ 551 168
Through	15xD, 20xD, 30xD	A83	B271-B272-B274 (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	262 80	230 70 ◊ 295 90
Through	3xD, 5XD	A107	B731-B732 (Step Drill)	KC7315	.315 - .630"	10,00 - 16,00 mm	722 220	424 140 ◊ 727 240
Through	5XD	B3	2X2D HPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	427 130	328 100 ◊ 525 160
Through	3xD, 5xD, 8xD	B9	KTIP - HP(M)	KC7315	.314 - .826"	8,00 - 20,99 mm	410 125	262 90 ◊ 558 170
Through	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM - HP(M)	KC7315	.492 - 1.575"	12,5 mm - 40,00 mm	295 90	230 70 ◊ 361 110
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E4	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7815 GD I - KC7225 LD			985 300	788 240 ◊ 1030 314
Unstable				O- KC7140 MD I - KC7225 LD			636 194	621 189 ◊ 667 203
Interrupted				O- KC7140 MD I - KC7225 LD			409 125	394 120 ◊ 424 129
Through	**2.5xD, 4xD**	E10	**DFT**		**.625 - 3.25"**	**24 - 82 mm**		
Stable				O- KC7815 GD I - KC7140 HP			1066 325	853 260 ◊ 1116 340
Unstable				O- KC7140 MD I - KC7225 HP			673 205	689 210 ◊ 722 220
Interrupted				O- KC7140 MD I - KC7140 HP			443 135	427 130 ◊ 459 140
Through	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7215 SPHX...R-20 I - KC7215 DFT-HP			656 200	350 107 ◊ 800 244
Unstable				O- KC7140 SPHX...R-20 I - KC7140 DFT-HP			459 140	244 74 ◊ 558 170
Through	**3xD - 10XD+**	E72	**HTS-DFR**	P- B504 CS3	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7820 MD I - KC7140 GD			623 190	260 79 ◊ 750 229
Unstable				O- KC7820 MD I - KC7140 GD			427 130	231 71 ◊ 561 171
Interrupted				O- KC7820 MD I - KC7140 GD			262 80	143 44 ◊ 348 106
Through	**3xD - 10XD+**	E78	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45 - 270,00 mm**		
Stable				O- KC7215 GD I - KC7935 MD			623 190	260 94 ◊ 750 309
Unstable				O- KC7815 GD I - KC7935 MD			427 130	231 71 ◊ 561 171
Interrupted				O- KC720 GD I - KC720 MD			262 80	143 44 ◊ 348 106

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Low Carbon Steels, Long Chipping	• Content <.25%	• Tensile Strength RM (Mpa) <530	• Hardness (HB) <125
Cutting Groups	• 1.1		

HOLE diameter

inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0

FEED RATE by diameter

ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .011	007 - .015	.007 - .017	.009 - .019	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,08- 0,16	0,10 - 0,19	0,13 - 0,29	0,17 - 0,37	0,19 - 0,44	022 - 0,49	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .006	.003 - .009	.003 - .011	.004 - .016	.009 - .020	.012 - .025	—	—	—	—	—	—	—
mm/r	0,08 - 0,15	0,07 - 0,16	0,08 - 0,23	0,08 - 0,28	0,11 - 0,40	0,24 - 0,52	0,31 - 0,64	—	—	—	—	—	—	—
ipr	.003 - .004	.003 - .005	.005 - .008	.006 - .011	.009 - .016	.013 - .019	.016 - .026	—	—	—	—	—	—	—
mm/r	0,07 - 0,11	0,07- 0,13	0,12 - 0,20	0,16 - 0,27	0,24 - 0,40	0,32 - 0,48	0,40 - 0,66	—	—	—	—	—	—	—
ipr	.003 - .006	.005 - .008	.004 - .009	.005 - .011	.007 - .015	.007 - .017	.009 - .019	—	—	—	—	—	—	—
mm/r	0,07 - 0,16	0,12- 0,20	0,10 - 0,23	0,13 - 0,29	0,17 - 0,37	0,19 - 0,44	0,22 - 0,49	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22- 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .008	.004 - .009	.005 - .011	.007 - .015	.007 - .017	—	—	—	—	—	—	—	—
mm/r	0,07 - 0,16	0,09 - 0,20	0,10 - 0,23	0,13 - 0,29	0,17 - 0,37	0,19 - 0,44	—	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .007	.004 - .009	.005 - .011	—	—	—	—	—	—	—	—	—	—
mm/r	0,07 - 0,15	0,08 - 0,18	0,11 - 0,23	0,13 - 0,29	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.004 - .008	.006 - .012	.007 - .018	.010 - .019	—	—	—	—	—	—	—
mm/r	—	—	—	0,11 - 0,20	0,14 - 0,31	0,19 -0,45	0,25 - 0,48	—	—	—	—	—	—	—
ipr	—	—	—	—	.007 - .014	.007 - .016	.010 - .021	.011 - .024	.013 - .027	—	—	—	—	—
mm/r	—	—	—	—	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,29 - 0,60	0,33 - 0,69	—	—	—	—	—

FEED RATE by diameter

ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.003 - .005	.003 - .005	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,08 - 0,12	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.003 - .005	.003 - .005	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,08 - 0,12	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .005	.004 - .006	.005 - .007
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .005	.004 - .006	.005 - .007
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .005	.004 - .006	.005 - .007
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,10	0,08 - 0,12	0,10 - 0,14	0,13 - 0,19

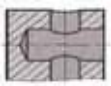
* 1 Mpa = 145 psi

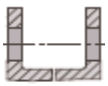
Best Tool Selector – Hole Finishing / Tapping - P1

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
																				ipr	tooth feed inch
								sfm	45	91	152	242	303	364	455	606	758	909	1061		
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	115 35		82 ◊ 148 25 ◊ 45										.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	230 70			164 ◊ 295 50 ◊ 90									.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	180 55			131 ◊ 230 40 ◊ 70									.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	180 55			131 ◊ 230 40 ◊ 70									.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	180 55			131 ◊ 230 40 ◊ 70									.010 - .035 0,25 - 0,90	— —
Straight Flute Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	394 120					295 ◊ 509 90 ◊ 155							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	394 120					295 ◊ 509 90 ◊ 155							010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	394 120					295 ◊ 509 90 ◊ 155							.010 - .035 0,25 - 0,90	— —
Helical Flute Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	180 55			131 ◊ 230 40 ◊ 70									.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	180 55			131 ◊ 230 40 ◊ 70									.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	180 55			131 ◊ 230 40 ◊ 70									.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	394 120					295 ◊ 509 90 ◊ 155							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	394 120					295 ◊ 509 90 ◊ 155							.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	394 120					295 ◊ 509 90 ◊ 155							.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	180 55			131 ◊ 230 40 ◊ 70									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	180 55			131 ◊ 230 40 ◊ 70									— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	394 120					295 ◊ 509 90 ◊ 155							— —	.002 - .008 0,05 - 0,20
Straight Flute Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	394 120					295 ◊ 509 90 ◊ 155							— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	492 150						410 ◊ 558 125 ◊ 170						— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	492 150						410 ◊ 558 125 ◊ 170						— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	180 55			131 ◊ 230 40 ◊ 70									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	394 120					295 ◊ 509 90 ◊ 155							— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	492 150						410 ◊ 558 125 ◊ 170						— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6005	E13	236 – 13.77	6,00 – 350,00	197 60		98 ◊ 328 30 ◊ 100										.004 - .012 0,10 - 0,30	— —
Single Padded Reamer	1, 3				E30	236 – 13.77	6,00 – 350,00	197 60		98 ◊ 328 30 ◊ 100										.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	197 60		98 ◊ 328 30 ◊ 100										.004 - .008 0,10 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Low Carbon Steels, Long Chipping	• Content <.25%	• Tensile Strength RM (Mpa) <530	• Hardness (HB) <125
Cutting Groups	• 1.1		

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPGM…	KC9110	G107	1.375"- 6.500"	34,93mm- 165,10mm	1312 400	591 180 ◊ 1493 455	.010 - .016 0,25 - 0,40
	CPGM…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	919 280	492 150 ◊ 1181 360	.010 - .016 0,25 - 0,40
	CPGM…SPGH...	KC9105		1.375"- 6.500"	34,93mm- 165,10mm	1312 400	591 180 ◊ 1476 450	.010 - .016 0,25 - 0,40
	SPGH…SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	1212 400	591 180 ◊ 1476 450	.010 - .016 0,25 - 0,40
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	919 280	492 150 ◊ 1181 360	.010 - .016 0,25 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	1444 440	591 180 ◊ 1641 500	.010 - .016 0,25 - 0,40
Modbore™	CNMG…MW CNMG…MN CNMG…RP	KC9105	G4	.384" – 25.787"	9,70mm – 655,00mm	1312 400	591 180 ◊ 1476 450	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	1312 400	591 180 ◊ 1493 455	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	919 280	492 150 ◊ 1181 360	.010 - .016 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	919 280	492 150 ◊ 1181 360	.010 - .016 0,25 - 0,40
	CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	591 180 ◊ 1641 500	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G10	.384" – 25.787"	9,70mm – 655,00mm	1312 400	591 180 ◊ 1476 450	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	1312 400	591 180 ◊ 1493 455	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	919 280	492 150 ◊ 1181 360	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	919 280	492 150 ◊ 1181 360	.002 -.010 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	591 180 ◊ 1641 500	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron®**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB	KC5010	G46	.157"- 8.110"	4,00mm – 213,00mm	918 280	492 150 ◊ 1148 360	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	1312 400	591 180 ◊ 1476 450	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9125		.157"- 8.110"	4,00mm – 213,00mm	918 280	492 150 ◊ 1148 360	.002 - .008 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	1443 440	591 180 ◊ 1640 500	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 170	492 150 ◊ 689 210	.001 - .003 0,02 - 0,08
Tapping								
Solid Carbide Taps – Through Holes	T320, T381	KC7542	D2	—	—	328 100	230 70 ◊ 427 130	—
Solid Carbide Taps – Blind Holes	T331, T391	KC7542	D2	—	—	246 75	230 70 ◊ 328 100	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – P2

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through Coolant/MQL	3xD, 5xD	A53	B224HP, B225HP / K224HP, K225HP	KC7315	.118 - .787"	3,00 - 20,00 mm	722 220	591 853 180 260
Flood Coolant	3xD, 5xD	A41	B221HP, B222HP/	KC7315	.118 - .787"	3,00 - 20,00 mm	361 110	295 492 90 150
Dry Applications	3xD, 5xD, 7xD	A42	B221HP, B222HP	KC7315	.118 - .787"	3,00 - 20,00 mm	279 85	197 361 60 110
Through Coolant	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	505 154	413 597 126 182
With Coolant	15xD, 20xD, 30xD	A83	B271-B272-B274	KC7425 (Deep Hole)	.118 - .394"	3,00 - 10,00 mm	262 80	230 295 70 90
Through Coolant	3xD, 5xD	A107	B731-B732 (Step Drill)	KC7315	.118 - .630"	3,00 - 20,00 mm	689 210	591 787 180 240
Through Coolant	5XD	B3	2X2DHPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	427 130	328 525 100 160
Though Coolant	3xD, 5xD, 8xD	B9	KenTIP – HP(M)	KC7315	.314 - .826"	8,0 - 20,99 mm	459 140	345 591 105 180
Through Coolant	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM – HP(M)	KC7315	0.492 - 1.575"	12,5 - 40,0 mm	328 100	262 394 80 120
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E4	**DFR**		**.500 - 1.00"**	**12,5 - 24,00mm**		
Stable				O- KC7815 GD I - KC7225 LD			936 285	749 979 228 298
Unstable				O- KC7140 MD I - KC7225 LD			590 180	604 634 184 193
Interrupted				O- KC7140 MD I - KC7225 LD			389 118	374 403 114 123
Through	**2.5xD, 4xD**	E10	**DFT**		**.625 - 3.250"**	**16,00 - 82,00 mm**		
Stable				O- KC7815 GD I - KC7140 LD			1013 309	387 738 247 323
Unstable				O- KC7140 MD I - KC7225 LD			639 195	655 686 200 209
Interrupted				O- KC7140 MD I - KC7225 LD			421 128	405 436 124 133
Through	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3	**.750 - 2.000"**	**20.00 - 45.00 mm**		
Stable				O- KC7215SPHX...R-20 I - KC7215 DFT-HP			558 170	333 760 101 232
Unstable				O- KC7215SPHX...R-20 I - KC7215 DFT-HP			390 119	226 517 69 158
Through	**3xD - 10XD**	E72	**HTS DFR**	P- B514 KC7030	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7820 MD I - KC7140 GD			591 180	247 712 75 217
Unstable				O- KC7820 MD I - KC7140 GD			394 120	231 561 71 171
Interrupted				O- KC7820 MD I - KC7140 GD			230 70	143 348 44 106
Through	**3xD - 10XD+**	E78	**HTS DFT**	P- B510, AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7215 GD I - KC7935 MD			591 180	309 750 94 229
Unstable				O- KC7815 GD I - KC740 MD			394 120	231 561 71 171
Interrupted				O- KC720 GD I - KC720 MD			230 70	143 348 44 106

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Low Carbon Steels, Free Machining and Short Chipping	• Content C < .25% • Tensile Strength RM (MPa): <650 • Hardness (HB) or HRC: <220
Cutting Groups	• 1.2

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.003 - .006	.003 - .006	.004 - .007	.005 - .011	.007 - .015	.007 - .017	.009 - .019	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,08-0,16	0,10-0,19	0,13-0,29	0,17 - 0,37	0,19 - 0,44	0,22 - 0,49	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .006	.003 - .009	.005 - .011	.007 - .015	.009 - .019	.012 - .022	—	—	—	—	—	—	
mm/r	0,08 - 0,14	0,07 - 0,16	0,08 - 0,23	0,13 - 0,28	0,18 - 0,38	0,24 - 0,48	0,31 - 0,57	—	—	—	—	—	—	—
ipr	.003 - .005	.003 - .005	.005 - .008	.006 - .011	.009 - .016	.013 - .019	.016 - .026	—	—	—	—	—	—	
mm/r	0,07 - 0,12	0,07 - 0,13	0,12 - 0,20	0,16 - 0,27	0,24 - 0,40	0,32 - 0,48	0,40 - 0,66	—	—	—	—	—	—	—
ipr	.003 - .005	.004 - .006	.006 - .007	.005 - .009	.007 - .012	.007 - .014	.009 - .015	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,10 - 0,16	0,16 - 0,19	0,13 - 0,23	0,17 - 0,30	0,19 - 0,35	0,22 - 0,39	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .009	.006- .010	.007 - .012	.007 - .014	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,09 - 0,16	0,10 - 0,19	0,13 - 0,23	0,15 - 0,27	0,17 - 0,30	0,19 - 0,35	—	—	—	—	—	—	—
ipr	.003 - .005	.003 - .006	.004 - .007	.005 - .009	—	—	—	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,08 - 0,15	0,11 - 0,19	0,13 - 0,23	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.004 - .009	.006 - .013	.007 - .018	.010 - .019	—	—	—	—	—	—	—
mm/r	—	—	—	0,11 - 0,24	0,14 - 0,33	0,19 -0,45	0,25 - 0,48	—	—	—	—	—	—	—
ipr	—	—	—	—	.007 - .014	.007 - .016	.010 - .021	.014 - .024	.016 - .027	—	—	—	—	
mm/r	—	—	—	—	0,17 - 0,36	0,19 - 0,41	0,25 - 0,53	0,36 - 0,60	0,41 - 0,69	—	—	—	—	
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .005	.002 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,12	0,06 - 0,15	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.002 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,12	0,06 - 0,15	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.002 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,12	0,06 - 0,15	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,06 - 0,10	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.003 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,10 - 0,16	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.003 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—			0,04 - 0,06	0,05 - 0,07	0,08 - 0,12	0,10 - 0,16	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 1,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 1,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.044 - .046	.044 - .081
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20

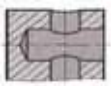
* 1 Mpa = 145 psi

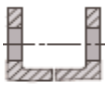
Best Tool Selector — Hole Finishing / Tapping - P2

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	115 35		82 25	◊	148 45								.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	230 70			164 50	◊	295 90							.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	180 55			131 40	◊	230 70							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	180 55			131 40	◊	230 70							.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	180 55			131 40	◊	230 70							.010 - .035 0,25 - 0,90	— —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	394 120					295 90	◊	509 155					.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	394 120					295 90	◊	509 155					.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	394 120					295 90	◊	509 155					.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	180 55			131 40	◊	230 70							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	180 55			131 40	◊	230 70							.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	180 55			131 40	◊	230 70							.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	394 120					295 90	◊	509 155					.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	394 120					295 90	◊	509 155					.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	394 120					295 90	◊	509 155					.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	180 55			131 40	◊	230 70							—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	180 55			131 40	◊	230 70							—	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	394 120					295 90	◊	509 155					—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	394 120					295 90		509 155					—	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	492 150						410 125	◊	558 170				—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	492 150						410 125	◊	558 170				—	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	180 55			131 40	◊	230 70							—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	394 120					295 90	◊	509 155					—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	492 150						410 125	◊	558 170				—	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	164 50			66 20	◊	295 90							.004 - .012 0,10 - 0,30	— —
Single Padded Reamer	1, 3				E30	.236 – 13.77	6,00 – 350,00	164 50			66 20	◊	295 90							.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	164 50			66 20	◊	295 90							.004 - .008 0,10 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Low Carbon Steels, Free Machining and short chipping	• **Content C < .25%** • **Tensile Strength RM (MPa): <650** • **Hardness (HB): <220**
Cutting Groups	• 1.2

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPMG… SPGH…	KC9105	G107	1.375"- 6.500"	34,93mm- 165,10mm	656 200	492–1312 / 150–400	.010 - .016 0,25 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	492 150	394–837 / 120–255	.010 - .016 0,25 - 0,40
	CPGM…	KC9110		1.375"- 6.500"	34,93mm- 165,10mm	820 250	591–1148 / 180–350	.010 - .016 0,25 - 0,40
	CPGM…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	656 200	492–984 / 150–300	.010 - .016 0,25 - 0,40
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	656 200	492–1181 / 150–360	.010 - .016 0,25 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	886 270	656–1312 / 200–400	.010 - .016 0,25 - 0,40
Modbore	CNMG…MW CNMG…MN CNMG…RP	KC9105	G4	.384" – 25.787"	9,70mm – 655,00mm	656 200	492–1312 / 150–400	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	820 250	591–1148 / 180–350	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	656 200	492–984 / 150–300	.010 - .016 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	656 200	492–1181 / 150–360	.010 - .016 0,25 - 0,40
	CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	886 270	656–1312 / 200–400	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G10	.384" – 25.787"	9,70mm – 655,00mm	656 200	492–1312 / 150–400	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	820 250	591–1148 / 180–350	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	656 200	492–984 / 150–300	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	656 200	492–1181 / 150–360	.002 -.010 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	886 270	656–1312 / 200–400	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G46	.157"- 8.110"	4,00mm – 213,00mm	656 200	492–1181 / 150–360	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	820 250	591–1116 / 180–340	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9125		.157"- 8.110"	4,00mm – 213,00mm	656 200	492–1181 / 150–360	.002 - .008 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	885 270	656–1312 / 200–400	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 170	492–689 / 150–210	.001 - .003 0,02 - 0,08
Tapping								
Solid Carbide Taps – Through Holes	T320, T381	KC7542	D2	—	—	295 75	197–394 / 60–120	—
Solid Carbide Taps – Blind Holes	T331, T391	KC7542	D2	—	—	246 75	164–328 / 50–100	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – P3

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through/MQL	3xD, 5xD	A53	K224HP, K225HP	KC7315	.118 - .787"	3,00 - 20,00 mm		
Flood Coolant	3xD, 5xD	A41	B221HP, B222HP	KC7315	.118 - .787"	3,00 - 20,00 mm	295 90	197/60 ◊ 377/115
Dry Applications	3xD, 5xD	A42	B221-B222	KC7315	.118 - .787"	3,00 - 20,00 mm		
Through Coolant	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	348 106	282/86 ◊ 413/126
With Coolant	15xD, 20xD, 30xD	A83	B271, B272, B274 (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	246 75	197/60 ◊ 295/90
Through Coolant	3xD, 5XD	A107	B731HP, B732HP (Step Drill)	KC7315	.118 - .630"	3,00 - 16,00 mm	492 150	394/120 ◊ 591/180
Through Coolant	5XD	B3	2X2DHPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	394 120	262/80 ◊ 525/160
Through Coolant	3xD, 5xD, 8xD	B9	KenTIP – HP(M)	KC7315	.314 - .826"	8,00 - 20,99 mm	246 75	164/50 ◊ 328/100
Through Coolant	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM – HP(M)	KC7315	0.492 - 1.575"	12,00- 40,0 mm	246 75	213/65 ◊ 262/80
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E4	**DFR**		**.500 - 1.00"**	**12,50 - 24,00mm**		
Stable				O- KC7815 GD I - KC7225 LD			887 270	709/216 ◊ 927/283
Unstable				O- KC7140 MD I - KC7225 LD			559 170	572/174 ◊ 600/183
Interrupted				O- KC7140 MD I - KC7225 LD			368 112	355/108 ◊ 382/116
Through	**2.5xD, 4xD**	E10	**DFT**		**.625 - 3.250"**	**16,00 - 82,00 mm**		
Stable				O- KC7815 GD I - KC7140 LD			960 293	387/234 ◊ 738/306
Unstable				O- KC7140 MD I - KC7225 LD			605 185	620/189 ◊ 650/198
Interrupted				O- KC7140 MD I - KC7225 LD			399 122	384/117 ◊ 413/126
Through	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3	**.750 - 2.000"**	**20,00 - 45,00 mm**		
Stable				O- KC7215 SPHX...R-20 I - KC7215 DFT-HP			492 150	316/96 ◊ 722/220
Unstable				O- KC7140 SPHX...R-20 I - KC7140 DFT-HP			345 105	210/64 ◊ 479/146
Through	**3xD - 10XD+**	E72	**HTS DFR**	P- B514 KC7030	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7820 MD I - KC7140 GD			459 140	197/75 ◊ 555/269
Unstable				O- KC7820 MD I - KC7140 GD			328 100	231/50 ◊ 396/121
Interrupted				O- KC7820 MD I - KC7140 GD			197 60	98/30 ◊ 238/72
Through	**3xD - 10XD+**	E78	**HTS DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7215 GD I - KC7935 MD			459 140	229/70 ◊ 555/169
Unstable				O- KC7815 GD I - KC7140 MD			328 100	163/50 ◊ 396/121
Interrupted				O- KC720 GD I - KC720 MD			197 60	98/30 ◊ 238/72

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Medium to High Plain-Carbon Steels and Alloy Steels	• Content C > .25% • Tensile Strength RM (MPa)*: 600-850 • Hardness (HB) <330
Cutting Groups	• 2.1, 2.2, 3, 4, 6 • Hardness HRC: <35

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .015	.010 - .017	.011 - .019	—	—	—	—	—	—	—
mm/r	0,01 - 0,16	0,11 - 0,20	0,13 - 0,23	0,16 - 0,29	0,21 - 0,37	0,25 - 0,44	0,28 - 0,49	—	—	—	—	—	—	—
ipr	.004 - .006	.004 - .006	.006 - .010	.007 - .012	.007- .013	.012 - .020	.014 - .025	—	—	—	—	—	—	
mm/r	0,09 - 0,15	0,09 - 0,16	0,14 - 0,26	0,17 - 0,31	0,19 - 0,33	0,31 - 0,52	0,35 - 0,64	—	—	—	—	—	—	—
ipr	.002 - .003	.003 - .005	.004 - .007	.005 - .008	.008 - .012	.011 - .016	.013 - .020	—	—	—	—	—	—	—
mm/r	0,05 - 0,07	0,07 - 0,12	0,10 - 0,18	0,13 - 0,20	0,20 - 0,31	0,27 - 0,40	0,34 - 0,50	—	—	—	—	—	—	—
ipr	.004 - .006	.005 - .008	.005 - .009	.006 - .009	.008 - .015	.010 - .017	.011 - .018	—	—	—	—	—	—	—
mm/r	0,09 - 0,16	0,13 - 0,20	0,13 - 0,23	0,16 - 0,24	0,21 - 0,37	0,25 - 0,44	0,28 - 0,46	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .015	.010 - .017	—	—	—	—	—	—	—	—
mm/r	0,09 - 0,16	0,11 - 0,20	0,13 - 0,23	0,16- 0,29	0,21 - 0,37	0,25 - 0,44	—	—	—	—	—	—	—	—
ipr	.003 - .006	.004 - .007	.005 - .008	.005 - 0.009	—	—	—	—	—	—	—	—	—	—
mm/r	0,08 - 0,15	0,10 - 0,18	0,12 - 0,21	0,13 - 0,23	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.004 - .011	.006 - .015	.009 - .018	.012 - .020	—	—	—	—	—	—	—
mm/r	—	—	—	0,11 - 0,28	0,16 - 0,37	0,23 -0,46	0,30 - 0,51	—	—	—	—	—	—	—
ipr	—	—	—	—	.006 - .011	.007 - .012	.007 - .014	.010 - .018	.009 - .021	.013 - .024	—	—	—	—
mm/r	—	—	—	—	0,15 - 0,28	0,17 - 0,31	0,19 - 0,36	0,25 - 0,46	0,23 - 0,53	0,33 - 0,60	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.002 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,05 - 0,10	0,06 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	—	.002 - .003	.002 - .004	.003 - .005	.004 - .007	—	—	—	—
mm/r	—	—	—	—	—	—	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,09 - 0,17	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .003	.002 - .004	.003 - .005	.004 - .007	—	—	—	—
mm/r	—	—	—	—	—	—	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,09 - 0,17	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - P3

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm / m/min	45 / 15	91 / 30	152 / 50	242 / 80	303 / 100	364 / 120	455 / 150	606 / 200	758 / 250	909 / 300	1061 / 350	ipr / mm/r	tooth feed inch / mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	328 / 100				246 ◊ 427 / 75 ◊ 130								.004-.008 / 0,10-0,20	— / —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	213 / 65			148 ◊ 262 / 45 ◊ 80									.004-.008 / 0,10-0,20	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	164 / 50		115 ◊ 197 / 35 ◊ 60										.008 - .024 / 0,20 - 0,60	— / —
						.282 – .378	7,16 – 9,59	164 / 50		115 ◊ 197 / 35 ◊ 60										.010 - .026 / 0,25 - 0,65	— / —
						.378 – .551	9,6 – 14,0	164 / 50		115 ◊ 197 / 35 ◊ 60										.010 - .035 / 0,25 - 0,90	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	328 / 100			246 ◊ 427 / 75 ◊ 130									.008 - .024 / 0,20 - 0,60	— / —
						.282 – .378	7,16 – 9,59	328 / 100			246 ◊ 427 / 75 ◊ 130									.010 - .026 / 0,25 - 0,65	— / —
						.378 – .551	9,6 – 14,0	328 / 100			246 ◊ 427 / 75 ◊ 130									.010 - .035 / 0,25 - 0,90	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	164 / 50		115 ◊ 197 / 35 ◊ 60										.008 - .024 / 0,20 - 0,60	— / —
						.282 – .378	7,16 – 9,59	164 / 50		115 ◊ 197 / 35 ◊ 60										.010 - .026 / 0,25 - 0,65	— / —
						.378 – .551	9,6 – 14,0	164 / 50		115 ◊ 197 / 35 ◊ 60										.010 - .035 / 0,25 - 0,90	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	328 / 100				246 ◊ 427 / 75 ◊ 130								.010 - .035 / 0,25 - 0,90	— / —
						.282 – .378	7,16 – 9,59	328 / 100				246 ◊ 427 / 75 ◊ 130								.010 - .026 / 0,25 - 0,65	— / —
						.378 – .551	9,6 – 14,0	328 / 100				246 ◊ 427 / 75 ◊ 130								.010 - .035 / 0,25 - 0,90	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	131 / 40		98 ◊ 164 / 30 ◊ 50										— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	131 / 40		98 ◊ 164 / 30 ◊ 50										— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	328 / 100				246 ◊ 427 / 75 ◊ 130								— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	328 / 100				246 ◊ 427 / 75 ◊ 130								— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	394 / 120					361 ◊ 492 / 110 ◊ 150							— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	394 / 120					361 ◊ 492 / 110 ◊ 150							— / —	.002 - .008 / 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	131 / 40		98 ◊ 164 / 30 ◊ 50										— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	394 / 120					295 ◊ 509 / 90 ◊ 155							— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	394 / 120					361 ◊ 492 / 110 ◊ 150							— / —	.002 - .008 / 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	131 / 40	66 ◊ 262 / 20 ◊ 80											.002 - .010 / 0,05 - 0,25	— / —
Single Padded Reamer	1, 3				E30	.236 – 13.77	6,00 – 350,00	131 / 40	66 ◊ 262 / 20 ◊ 80											.004 - .012 / 0,10 - 0,30	— / —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	131 / 40	66 ◊ 262 / 20 ◊ 80											.004 - .008 / 0,10 - 0,20	— / —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Medium to High Plain-Carbon Steels and Alloy Steels	• Content C > .25% • Tensile Strength RM (MPa)*: 600-850 • Hardness (HB): <330
Cutting Groups	• 2.1, 2.2, 3, 4, 6

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPMG… SPGH…	KC9105	G108	1.375"- 6.500"	34,93mm- 165,10mm	623 / 190	455 – 820 / 150 – 250	.010 - .016 / 0,25 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	394 / 120	197 – 492 / 60 – 150	.010 - .016 / 0,25 - 0,40
	CPGM…	KC9110		1.375"- 6.500"	34,93mm- 165,10mm	623 / 190	492 – 682 / 150 – 250	.010 - .016 / 0,25 - 0,40
	CPGM…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	509 / 155	443 – 738 / 135 – 225	.010 - .016 / 0,25 - 0,40
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	509 / 155	443 – 738 / 135 – 225	.010 - .016 / 0,25 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	689 / 210	591 – 902 / 180 – 275	.010 - .016 / 0,25 - 0,40
Modbore	CNMG…MW CNMG…MN CNMG…RP	KC9105	G4	.384" – 25.787"	9,70mm – 655,00mm	623 / 190	492 – 820 / 150 – 250	.010 - .016 / 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	623 / 190	492 – 820 / 150 – 250	.010 - .016 / 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	509 / 155	443 – 738 / 135 – 225	.010 - .016 / 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	509 / 155	443 – 738 / 135 – 225	.010 - .016 / 0,25 - 0,40
	CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	689 / 210	591 – 902 / 180 – 275	.010 - .016 / 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G10	.384" – 25.787"	9,70mm – 655,00mm	623 / 190	492 – 820 / 150 – 250	.002 -.010 / 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	623 / 190	492 – 820 / 150 – 250	.002 -.010 / 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	509 / 155	443 – 738 / 135 – 225	.002 -.010 / 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	509 / 155	443 – 738 / 135 – 225	.002 -.010 / 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	689 / 210	591 – 902 / 180 – 275	.002 -.006 / 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G46	.157"- 8.110"	4,00mm – 213,00mm	509 / 155	443 – 738 / 135 – 225	.002 - .008 / 0,06 - 0,20
	CPMT...LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	623 / 190	492 – 984 / 150 – 300	.002 - .008 / 0,06 - 0,20
	CPMT...LF	KC9125		.157"- 8.110"	4,00mm – 213,00mm	509 / 155	443 – 738 / 135 – 225	.002 - .008 / 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	689 / 210	591 – 902 / 180 – 275	.002 - .010 / 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 / 170	492 – 689 / 150 – 210	.001 - .003 / 0,02 - 0,08
Tapping								
Solid Carbide Taps – Through Holes	T320, T381	KC7542	D2	—	—	262 / 80	164 – 361 / 50 – 110	—
Solid Carbide Taps – Blind Holes	T331, T391	KC7542	D2	—	—	213 / 65	131 – 295 / 40 – 90	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – P4

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through/MQL	3xD, 5xD	A53	B224HP, B225HP, K224HP, K225HP	KC7315	.118 - .787"	3,00 - 20,00 mm	459 / 140	328/100 ◊ 525/160
Flood Coolant	3xD, 5xD	A41	B221HP, B222HP	KC7315	.118 - .787"	3,00 - 20,00 mm	262 / 80	164/50 ◊ 377/115
Through Coolant	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	322 / 98	230/70 ◊ 413/126
With Coolant	15xD, 20xD, 30xD	A83	B271HPG, B272HPG, B274HPG (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	230 / 70	197/60 ◊ 262/80
Through Coolant	3xD, 5xD	A107	B731HP, B732HP (Step Drill)	KC7315	.118 - .630"	3,00 - 16,00 mm	459 / 140	328/100 ◊ 591/180
Through Coolant	5XD	B3	2X2DHPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	328 / 100	197/60 ◊ 459/140
Though Coolant	3xD, 5xD, 8xD	B9	KenTIP – HP(M)	KC7315	.314 - .826"	8,0 - 20,99 mm	246 / 75	164/50 ◊ 328/100
Through Coolant	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM – HP(M)	KC7315	.492 - 1.575"	12,5 - 40,0 mm	213 / 65	164/50 ◊ 246/75
Indexable Drills							**CUTTING SPEED**	
Through Stable	**2xD, 3xD, 4xD**	E5	**DFR**	O- KC7820 MD I - KC7140 MD	**.500 - 1.00"**	**12,5 - 24,00mm**	788 / 240	630/192 ◊ 824/251
Unstable				O- KC7820 MD I - KC7140 MD			497 / 151	509/155 ◊ 534/163
Interrupted				O- KC7820 MD I - KC7140 MD			327 / 100	315/96 ◊ 339/103
Through Stable	**2.5xD, 4xD**	E10	**DFT**	O- KC7820 MD I - KC7140 MD	**.625 - 3.250"**	**16,00 - 82,00 mm**	853 / 260	387/208 ◊ 738/272
Unstable				O- KC7820 MD I - KC7140 MD			538 / 164	551/168 ◊ 577/176
Interrupted				O- KC7820 MD I - KC7140 MD			354 / 108	341/104 ◊ 367/112
Through Stable	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3 O- KC7215 SPHX...R-20 I - KC7215 DFT-HP	**.750 - 2.000"**	**20,00 - 45,00 mm**	427 / 130	246/75 ◊ 563/172
Unstable				O- KC7140 SPHX...R-20 I - KC7140 DFT-HP			293 / 89	172/52 ◊ 393/120
Through Stable	**3xD - 10XD+**	E73	**HTS DFR**	P- B514 KC7030 O- KC7020 GD I - KC7140 GD	**1.57 - 2.17"**	**40,00 - 55,00 mm**	394 / 120	260/79 ◊ 750/229
Unstable				O- KC7020 GD I - KC7140 GD			328 / 100	231/71 ◊ 561/171
Interrupted				O- KC7020 GD I - KC7140 GD			262 / 80	143/44 ◊ 348/106
Through Stable	**3xD - 10XD+**	E79	**HTS DFT**	P- B510 AS3 O- KC7815 GD I - KC7215 GD	**1.77 - 10.63"**	**45,00 - 270,00 mm**	394 / 120	309/94 ◊ 750/229
Unstable				O- KC720 GD I - KC720 GD			328 / 100	231/71 ◊ 561/171
Interrupted				O- KC720 GD I - KC720 GD			262 / 80	143/44 ◊ 348/106

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Alloy Steels and Tool Steels	• Content C > .25%	• Tensile Strength RM (MPa)*: 800-1100	• Hardness (HB) 350-450
Cutting Groups	• 5, 7, 8, 9		• Hardness HRC: 35-48

HOLE diameter

inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0

FEED RATE by diameter

ipr	.003 - .006	.004 - .007	.004 - .007	.006 - .011	.007 - .014	.008 - .016	.009 - .018	—	—	—	—	—	—	—
mm/r	0,07 - 0,14	0,09 - 0,17	0,11 - 0,19	0,14 - 0,27	0,18 - 0,35	0,21 - 0,41	0,24 - 0,46	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .006	.005 - .010	.006 - .012	.008- .017	.010 - .020	.012 - .023	—	—	—	—	—	—	
mm/r	0,08 - 0,15	0,08 - 0,16	0,12 - 0,26	0,15 - 0,31	0,20 - 0,42	0,25 - 0,51	0,30 - 0,59	—	—	—	—	—	—	—
ipr	.003 - .006	.005 - .007	.004 - .009	.006 - .011	.007 - .014	.008 - .016	.009 - .018	—	—	—	—	—	—	—
mm/r	0,08 - 0,16	0,12 - 0,19	0,11 - 0,22	0,14 - 0,27	0,18 - 0,35	0,21 - 0,41	0,24 - 0,46	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.003 - .006	.004 - .007	.004 - .009	.006 - .011	.007 - .014	.008 - .016	—	—	—	—	—	—	—	—
mm/r	0,08 - 0,16	0,10 - 0,19	0,11 - 0,22	0,14 - 0,27	0,18 - 0,35	0,21 - 0,41	—	—	—	—	—	—	—	—
ipr	.003 - .006	.004 - .006	.005 - .009	.006 - .011	—	—	—	—	—	—	—	—	—	—
mm/r	0,08 - 0,14	0,09 - 0,16	0,12 - 0,23	0,14 - 0,29	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.004 - .011	.006 - .015	.007 - .018	.009 - .018	—	—	—	—	—	—	—
mm/r	—	—	—	0,11 - 0,28	0,16 - 0,37	0,18 -0,46	0,23 - 0,46	—	—	—	—	—	—	—
ipr	—	—	—	—	.005 - .011	.006 - .012	.006 - .014	.008 - .018	.009 - .021	.012 - .024	—	—	—	—
mm/r	—	—	—	—	0,12 - 0,28	0,14 - 0,31	0,16 - 0,36	0,20 - 0,46	0,23 - 0,53	0,30 - 0,60	—	—	—	—

FEED RATE by diameter

ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	0,03 - 0,06	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,12	0,08 - 0,15	0,11 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006- .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .005	.003 - .005	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,12	0,08 - 0,13	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .005	.003 - .005	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,12	0,08 - 0,13	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .006	.005 - .007	.005 - .007	.005 - .008
mm/r	—	—	—	—	—	—	—	—	—	—	0,10 - 0,14	0,12 - 0,18	0,12 - 0,18	0,12 - 0,20

* 1 Mpa = 145 psi

Best Tool Selector — Hole Finishing / Tapping - P4

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	66 20	49 15	◊	82 25									.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	164 50		131 40	◊	213 65								.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	115 35		82 25	◊	148 45								.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	115 35		82 25	◊	148 45								.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	115 35		82 25	◊	148 45								.010 - .035 0,25 - 0,90	— —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	262 80			197 60	◊	344 105							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	262 80			197 60	◊	344 105							.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	262 80			197 60	◊	344 105							.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	115 35		82 25	◊	148 45								.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	115 35		82 25	◊	148 45								.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	115 35		82 25	◊	148 45								.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	262 80			197 60	◊	344 105							.008 - .024 0,20 - 0,60	— —
						.282 – .378	7,16 – 9,59	262 80			197 60	◊	344 105							.010 - .026 0,25 - 0,65	— —
						.378 – .551	9,6 – 14,0	262 80			197 60	◊	344 105							.010 - .035 0,25 - 0,90	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	115 35		82 25	◊	148 45								— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	115 35		82 25	◊	148 45								— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	262 80			197 60	◊	344 105							— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	262 80			197 60	◊	344 105							— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	295 90				246 75	◊	344 105						— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	295 90				246 75	◊	344 105						— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	115 35		82 25	◊	148 45								— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	262 80			197 60	◊	344 105							— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	295 90				246 75	◊	344 105						— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6105	E13	.236 – 13.77	6,00 – 350,00	98 30	49 15	◊	164 50									.002 - .010 0,05 - 0,25	— —
Single Padded Reamer	1, 3				E30	.236 – 13.77	6,00 – 350,00	98 30	49 15	◊	164 50									.004 - .012 0,10 - 0,30	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	98 30	49 15	◊	164 50									.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Alloy Steels and Tool Steels	• Content C > .25% • Tensile Strength RM (MPa)*: 800-1100 • Hardness (HB) 350-450
Cutting Groups	• 5, 7, 8, 9 • Hardness HRC: 35-48

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPMG… SPGH…	KC9105	G108	1.375"- 6.500"	34,93mm- 165,10mm	492 150	295 90 ◊ 656 200	.010 - .016 0,25 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	328 100	131 40 ◊ 492 150	.010 - .016 0,25 - 0,40
	CPGM…	KC9110		1.375"- 6.500"	34,93mm- 165,10mm	492 150	328 100 ◊ 1493 455	.010 - .016 0,25 - 0,40
	CPGM…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	361 110	246 75 ◊ 591 180	.010 - .016 0,25 - 0,40
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	361 110	246 75 ◊ 591 180	.010 - .016 0,25 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	1444 440	591 180 ◊ 1441 500	.010 - .016 0,25 - 0,40
Modbore	CNMG…MW CNMG…MN CNMG…RP	KC9105	G5	.384" – 25.787"	9,70mm – 655,00mm	492 150	295 90 ◊ 656 200	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	492 150	295 90 ◊ 656 200	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	361 110	246 75 ◊ 591 180	.010 - .016 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	361 110	246 75 ◊ 591 180	.010 - .016 0,25 - 0,40
	CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	328 100 ◊ 1641 500	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G11	.384" – 25.787"	9,70mm – 655,00mm	492 150	295 90 ◊ 656 200	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	492 150	328 100 ◊ 1493 455	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	361 110	246 75 ◊ 591 180	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	361 110	246 75 ◊ 591 180	.002 -.010 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	328 100 ◊ 1641 500	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G47	.157"- 8.110"	4,00mm – 213,00mm	361 110	246 75 ◊ 606 180	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	427 130	295 90 ◊ 656 200	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9125		.157"- 8.110"	4,00mm – 213,00mm	361 110	246 75 ◊ 606 180	.002 - .008 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	525 160	295 90 ◊ 722 220	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 170	492 150 ◊ 689 210	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – P5

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM - HP(M)	KC7315	.492 - 1.575"	12,50 - 40,00 mm	164 50	148–213 45–65
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E5	**DFR**		**.500 - 1.00"**	**12,50 - 24,00 mm**		
Stable				O- KC7820 MD I - KC7140 MD			636 194	576–667 176–203
Unstable				O- KC7820 MD I - KC7140 MD			439 134	394–485 120–148
Interrupted				O- KC7820 MD I - KC7140 MD			318 97	273–364 83–111
Through	**2.5xD, 4xD**	E11	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			689 210	387–738 160–220
Unstable				O- KC7820 MD I - KC7820 MD			476 145	263–502 130–160
Interrupted				O- KC7140 MD I - KC7140 MD			279 85	163–311 80–90
Through	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7215 SPHX.R-20 I - KC7215 DFT-HP			328 100	190–434 58–132
Unstable				O- KC7140 SPHX.R-20 I - KC7140 DFT-HP			197 60	114–260 35–79
Through	**3xD - 10XD+**	E73	**HTS-DFR**	P- B514 KC7030	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			328 100	205–622 62–190
Unstable				O- KC7140 MD I - KC7140 MD			197 60	154–373 47–114
Interrupted				O- KC7140 MD I - KC7140 MD			131 40	103–250 31–75
Through	**3xD - 10XD+**	E79	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC720 GD I - KC720 LD			328 100	257–622 78–190
Unstable				O- KC720 GD I - KC720 LD			197 60	154–373 47–114
Interrupted				O- KC720 GD I - KC720 LD			131 40	103–250 31–76

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Ferritic, Martensitic, and PH Stainless Steels	• Content C = 0-.4%	• Tensile Strength RM (MPa)*: 600-850	• Hardness (HB) <330
Cutting Groups	• 12, 13.1, 13.2		• Hardness HRC: <35

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	—	—	—	—	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .013	—	—	—	—
mm/r	—	—	—	—	0,09 - 0,15	0,11 - 0,18	0,12 - 0,21	0,15 -0,25	0,17 - 0,29	0,20 - 0,33	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	004 - .006	.004 - .007	.005 - .009	.005 - .009	—	—
mm/r	—	—	—	—	—	0,05 - 0,10	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23	—	
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	004 - .006	.004 - .007	.005 - .009	.005 - .009	—	—
mm/r	—	—	—	—	—	0,05 - 0,10	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	004 - .006	.004 - .007	.005 - .009	.005 - .009	—	—
mm/r	—	—	—	—	—	0,05 - 0,10	0,05 - 0,10	0,07 - 0,13	0,09 - 0,15	0,11 - 0,18	0,12 - 0,23	0,12 - 0,23	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.002 - .004	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,07	0,06 - 0,10	0,06 - 0,11	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.002 - .004	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,07	0,06 - 0,10	0,06 - 0,11	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .006	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,11	0,07 - 0,14	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .006	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,11	0,07 - 0,14	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.003 - .006	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,11	0,07 - 0,14	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,05 - 0,07	0,06 - 0,08	0,06 - 0,10	0,08 - 0,12

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - P5

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	49 15	33 10	◊	66 20									.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	98 30		66 20	◊	115 35								.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	66 20	40 15	◊	62 25									.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	40 15	◊	62 25									.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	40 15	◊	62 25									.006 - .020 0,15 - 0,50	— —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	148 45		98 30	◊	180 55								.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	148 45		98 30	◊	180 55								.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	148 45		98 30	◊	180 55								.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	66 20	49 15	◊	82 25									.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	15 25	◊	82 25									.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	15 25	◊	82 25									.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	148 45		98 30	◊	180 55								.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	148 45		98 30	◊	180 55								.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	148 45		98 30	◊	180 55								.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	66 20	33 10	◊	98 30									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	66 20	33 10	◊	98 30									— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	148 45		98 30	◊	180 55								— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	148 45		98 30	◊	180 55								— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	180 55		115 35	◊	246 75								— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	180 55		115 35	◊	246 75								— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	66 20	33 10	◊	98 30									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	148 45		98 30	◊	180 55								— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	180 55		115 35	◊	246 75								— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6105	E13	.236 – 13.77	6,00 – 350,00	82 25	33 10	◊	131 40									.002 - .008 0,05 - 0,20	— —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	197 60		98 30	◊	328 100								.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Ferritic, Martensitic, and PH Stainless Steels	• Content C = 0-.4%	• Tensile Strength RM (MPa)*: 600-850	• Hardness (HB) <330
Cutting Groups	• 12, 13.1, 13.2		• Hardness HRC: <35

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPMG… SPGH…	KC9105	G109	1.375"- 6.500"	34,93mm- 165,10mm	820 250	492 1181 / 150 360	.010 - .016 0,25 - 0,40
	SPGH…SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	459 140	197 492 / 60 150	.010 - .016 0,25 - 0,40
	CPMG…	KC9110		1.375"- 6.500"	34,93mm- 165,10mm	722 220	492 984 / 150 300	.010 - .016 0,25 - 0,40
	CPMG…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	656 200	394 902 / 120 275	.010 - .016 0,25 - 0,40
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	656 200	394 902 / 120 275	.010 - .016 0,25 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	1444 440	591 1641 / 180 500	.010 - .016 0,25 - 0,40
Modbore	CNMG…MW CNMG…MN CNMG…RP	KC9105	G5	.384" – 25.787"	9,70mm – 655,00mm	820 250	492 1181 / 150 360	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	722 220	492 984 / 150 300	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	656 200	394 902 / 120 275	.010 - .016 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	656 200	394 902 / 120 275	.010 - .016 0,25 - 0,40
	CCMT…11 CCMT…FW CCMT…LF	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	591 1641 / 180 500	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G11	.384" – 25.787"	9,70mm – 655,00mm	820 250	492 1181 / 150 360	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	722 220	492 984 / 150 300	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	656 200	394 902 / 120 275	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	656 200	394 902 / 120 275	.002 -.010 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	1444 440	591 1641 / 180 500	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…HP CDHB….	KC5010	G47	.157"- 8.110"	4,00mm – 213,00mm	656 200	394 902 / 120 275	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	656 200	492 984 / 150 300	.002 - .008 0,06 - 0,20
	CPMT...LF	KC9125		.157"- 8.110"	4,00mm – 213,00mm	656 200	394 902 / 120 275	.002 - .008 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	820 250	492 984 / 150 300	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 170	492 689 / 150 210	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – P6

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through/MQL	3xD, 5xD	A53	B224HP, B225HP / K224HP, K225HP	KC7315	.118 - .787"	3,00 - 20,00 mm	459 / 140	328 / 100 ◊ 591 / 180
Flood	3xD, 5xD	A41	B221HP, B222HP	KC7315	.118 - .787"	3,00 - 20,00 mm	262 / 80	164 / 50 ◊ 377 / 115
Dry Applications	3xD, 5xD	A42	B221HP, B222HP	KC7315	.118 - .787"	3,00 - 20,00 mm	247 / 75	197 / 60 ◊ 296 / 90
Through	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	322 / 98	230 / 70 ◊ 413 / 126
Through	3xD, 5xD	A107	B731HP, B732HP (Deep Hole)	KC7315	.118 - .630"	3,00 - 16,00 mm	459 / 140	328 / 100 ◊ 591 / 180
Through	1xD, 3xD, 5xD, 7xD, 10xD	B32	KSEM-HP(M) (Step Drill)	KC7315	.492 - 1.575"	12,50 - 40,00 mm	164 / 50	148 / 45 ◊ 213 / 65
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E5	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7140 MD I - KC7820 MD			604 / 184	547 / 167 ◊ 634 / 193
Unstable				O- KC7140 MD I - KC7820 MD			417 / 138	374 / 124 ◊ 461 / 152
Interrupted				O- KC7140 MD I - KC7820 MD			302 / 81	259 / 76 ◊ 346 / 86
Through	**2.5xD, 4xD**	E12	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7820 MD I - KC7140 MD			655 / 200	387 / 152 ◊ 738 / 209
Unstable				O- KC7820 MD I - KC7140 MD			452 / 138	405 / 124 ◊ 499 / 152
Interrupted				O- KC7820 MD I - KC7140 MD			265 / 81	249 / 76 ◊ 281 / 86
Through	**5xD, 8xD**	E59	**HTS-C**	P- B504 CS3 O- KC7215 SPHX...R-20 I - KC7215 DFT-HP	**.750 - 2.00"**	**20,00 - 45,00 mm**	312 / 95	246 / 75 ◊ 563 / 172
Unstable				O- KC7140 SPHX...R-20 I - KC7140 DFT-HP			246 / 75	172 / 52 ◊ 393 / 120
Through	**3xD - 10XD+**	E73	**HTS-DFR**	P- B514 KC7030	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			312 / 95	195 / 59 ◊ 591 / 180
Unstable				O- KC7140 MD I - KC7140 MD			187 / 57	146 / 45 ◊ 355 / 108
Interrupted				O- KC7140 MD I - KC7140 MD			125 / 38	98 / 30 ◊ 238 / 72
Through	**3xD - 10XD+**	E79	**HTS-DFT**	P- B510 AS3 O- KC720 GD I - KC720 LD	**1.77 - 10.63"**	**45 - 270,00 mm**	312 / 95	244 / 74 ◊ 591 / 180
Unstable				O- KC720 GD I - KC720 LD			187 / 57	146 / 45 ◊ 355 / 108
Interrupted				O- KC720 GD I - KC720 LD			125 / 38	98 / 30 ◊ 238 / 72

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

High-Strength Ferritic, Martensitic, and PH Stainless Steels	• Content C = .1-.6% • Tensile Strength RM (MPa)* 900-1350 • Hardness (HB) 350-450
Cutting Groups	• 10, 11 • Hardness HRC: 25-48

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.003 - .005	.003 - .006	.004 - .006	.005 - .009	.006 - .010	.007 - .014	.008 - .015	—	—	—	—	—	—	—
mm/r	0,07 - 0,12	0,10 - 0,14	0,10 - 0,16	0,12 - 0,23	0,16 - 0,26	0,18 - 0,35	0,21 - 0,39	—	—	—	—	—	—	—
ipr	.002 - .004	.003 - .005	.004 - .006	.005 - .009	.007 - .011	.009 - .015	.011 - .019	—	—	—	—	—	—	—
mm/r	0,06 - 0,10	0,07 - 0,12	0,09 - 0,16	0,12 - 0,23	0,17 - 0,29	0,22 - 0,38	0,27 - 0,47	—	—	—	—	—	—	—
ipr	.002 - .003	.003 - .005	.004 - .007	.005 - .008	.008 - .012	.011 - .016	.013 - .020	—	—	—	—	—	—	—
mm/r	0,05 - 0,07	0,07- 0,12	0,10 - 0,18	0,13 - 0,20	0,20 - 0,31	0,27 - 0,40	0,34 - 0,50	—	—	—	—	—	—	—
ipr	.003 - .005	.004 - .006	.004 - .006	.005 - .008	.006 - .010	.007 -.012	.008 - .013	—	—	—	—	—	—	—
mm/r	0,07 - 0,12	0,10 - 0,14	0,10 - 0,16	0,12 - 0,20	0,16 - 0,26	0,18 - 0,31	0,21 - 0,34	—	—	—	—	—	—	—
ipr	.003 - .005	.003 - .006	.004 - .006	.005 - .008	.006 - .010	.007 - .012	—	—	—	—	—	—	—	—
mm/r	0,07 - 0,12	0,09 - 0,14	0,10 - 0,16	0,12 - 0,20	0,16 - 0,26	0,18 - 0,31	—	—	—	—	—	—	—	—
ipr	—	—	—	—	.005 - .009	.006 - .010	.006 - .011	.008 - .015	.009 - .017	.010 - .021	—	—	—	—
mm/r	—	—	—	—	0,12 - 0,23	0,14 - 0,26	0,16 - 0,29	0,20 -0,38	0,23 -0,43	0,26 - 0,54	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .003	.002 - .004	.002 - .005	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,07	0,04 - 0,09	0,05 - 0,13	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—	—
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	.002 - .004	.004 - .006	.004 - .007	.006 - .010	.007 - .012	.007 - .012	—	—	
mm/r	—	—	—	—	—	0,06 - 0,10	0,09 - 0,15	0,11 - 0,18	0,15 - 0,25	0,19 - 0,31	0,19 - 0,31	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.003 - .004	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,05 - 0,07	0,06 - 0,10	0,07 - 0,11	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.003 - .004	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,05 - 0,07	0,06 - 0,10	0,07 - 0,11	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.003 - .005	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,08 - 0,13	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.003 - .005	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,08 - 0,13	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.003 - .005	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,08 - 0,13	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.002 - .004	.003 - .005
mm/r	—	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,06 - 0,10	0,08 - 0,12

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - P6

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	49 15	33 66 10 20											.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	98 30	66 115 20 35											.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	66 20	49 82 15 25											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 82 15 25											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 82 15 25											.006 - .020 0,15 - 0,50	— —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	148 45		98 180 30 55										.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	148 45		98 180 30 55										.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	148 45		98 180 30 55										.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	66 20	49 82 15 25											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 82 15 25											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 82 15 25											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	148 45		98 180 30 55										.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	148 45		98 180 30 55										.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	148 45		98 180 30 55										.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	66 20	33 98 10 30											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	66 20	33 98 10 30											— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	148 45		98 180 30 55										— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G147	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	148 45		98 180 30 55										— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	180 55		115 246 35 75										— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	180 55		115 246 35 75										— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	66 20	33 98 10 30											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	148 45		98 180 30 55										— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	180 55		115 246 35 75										— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6105	E13	.236 – 13.77	6,00 – 350,00	82 25	33 131 10 40											.002 - .008 0,05 - 0,20	— —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	82 25	33 131 10 40											.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

High-Strength Ferritic, Martensitic, and PH Stainless Steels	• Content C = .1-.6% • Tensile Strength RM (MPa)* 900-1350 • Hardness (HB) 350-450
Cutting Groups	• 10, 11 • Hardness HRC: 25-48

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPMG… SPGH…	KC9105	G109	1.375"- 6.500"	34,93mm- 165,10mm	591 180	410 125 ◊ 902 275	.008 - .024 0,20 - 0,60
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	361 110	164 50 ◊ 410 125	.008 - .024 0,20 - 0,60
	CPGM…	KC9110		1.375"- 6.500"	34,93mm- 165,10mm	591 180	410 125 ◊ 902 275	.008 - .024 0,20 - 0,60
	CPGM…	KC9125		1.375"- 6.500"	34,93mm- 165,10mm	492 150	345 105 ◊ 738 225	.008 - .024 0,20 - 0,60
	CPMG…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	492 150	345 105 ◊ 738 225	.008 - .024 0,20 - 0,60
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	820 250	492 150 ◊ 984 300	.008 - .024 0,20 - 0,60
Modbore	CNMG…MW CNMG…MN CNMG…RP	KC9105	G5	.384" – 25.787"	9,70mm – 655,00mm	591 180	410 125 ◊ 902 275	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9110		.384" – 25.787"	9,70mm – 655,00mm	591 180	410 125 ◊ 902 275	.010 - .016 0,25 - 0,40
	CNMG…MW CNMG…MN CNMG…RP CNMG…RM	KC9125		.384" – 25.787"	9,70mm – 655,00mm	492 150	345 105 ◊ 738 225	.010 - .016 0,25 - 0,40
	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	492 150	345 105 ◊ 738 225	.010 - .016 0,25 - 0,40
	CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	820 250	492 150 ◊ 984 300	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9105	G11	.384" – 25.787"	9,70mm – 655,00mm	591 180	410 125 ◊ 902 275	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FF CNMG…FN CNMG…FW	KC9110		.384" – 25.787"	9,70mm – 655,00mm	591 180	410 125 ◊ 902 275	.002 -.010 0,06 - 0,25
	CCMT…LF CCMT…UF CNMG…FN	KC9125		.384" – 25.787"	9,70mm – 655,00mm	492 150	345 105 ◊ 738 225	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010		.384" – 25.787"	9,70mm – 655,00mm	492 150	345 105 ◊ 738 225	.002 -.010 0,06 - 0,25
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	820 250	492 150 ◊ 984 300	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G47	.157"- 8.110"	4,00mm – 213,00mm	492 150	345 105 ◊ 738 225	.002 - .008 0,06 - 0,20
	CPMT... LF	KC9110		157"- 8.110"	4,00mm – 213,00mm	705 215	427 130 ◊ 886 270	.002 - .008 0,06 - 0,20
	CPMT... LF	KC9125		157"- 8.110"	4,00mm – 213,00mm	492 150	345 105 ◊ 738 225	.002 - .008 0,06 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		157"- 8.110"	4,00mm – 213,00mm	656 200	424 140 ◊ 879 290	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	558 170	492 150 ◊ 689 210	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – M1

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A26	B210, B211, B212/ K210, K211, K212	KC7515	.118 - .787"	3,00 - 20,00 mm	246 / 75	197 / 60 ◊ 295 / 90
Through	3xD, 5xD, 7xD	B10	KTIP - HPL(M)	KC7320	.314 - .826"	8,00 - 20,99 mm	182 / 60	164 / 50 ◊ 295 / 90
Through	3xD, 5xD, 7xD, 10xD	B34	KSEM - HPL(M)	KC7320	.492 - 1.575"	12,5 mm - 40,00 mm	197 / 60	**98 / 30 ◊ 295 / 90**
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E6	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			623 / 190	325 / 99 ◊ 738 / 225
Unstable				O- KC7140 MD I - KC7140 MD			427 / 130	263 / 80 ◊ 502 / 153
Interrupted				O- KC7140 MD I - KC7140 MD			262 / 80	163 / 50 ◊ 311 / 95
Through	**2.5xD, 4xD**	E11	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			686 / 209	357 / 109 ◊ 812 / 247
Unstable				O- KC7140 MD I - KC7140 MD			469 / 143	290 / 88 ◊ 552 / 152
Interrupted				O- KC7140 MD I - KC7140 MD			289 / 88	180 / 55 ◊ 311 / 104
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7140 SPGX..-31 I - KC7140 DFT-HP			367 / 112	180 / 55 ◊ 450 / 137
Unstable				O- KC7140 SPGX..-31 I - KC7140 DFT-HP			276 / 84	135 / 41 ◊ 337 / 103
Through	**3xD - 10XD+**	E74	**HTS-DFR**	P- B513 AS3	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			361 / 110	130 / 40 ◊ 439 / 134
Unstable				O- KC7140 MD I - KC7140 MD			230 / 70	101 / 31 ◊ 281 / 86
Interrupted				O- KC7140 MD I - KC7140 MD			164 / 50	72 / 22 ◊ 199 / 61
Through	**3xD - 10XD+**	E80	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7935 MD I - KC720 LD			361 / 110	159 / 48 ◊ 439 / 134
Unstable				O- KC7215 GD I - KC720 LD			230 / 70	101 / 31 ◊ 281 / 86
Interrupted				O- KC720 MD I - KC720 GD			164 / 50	72 / 22 ◊ 199 / 61

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Austenitic Stainless Steels	• Content C=.05-.15% • Tensile Strength RM (MPa)*: <650 • Hardness (HB) 130-200
Cutting Groups	• 14.1

HOLE diameter														
inch	**.118**	**.157**	**.236**	**.315**	**.472**	**.630**	**.787**	**1.00**	**1.260**	**1.575**	**1.968**	**2.992**	**3.937**	**≥5.905**
mm	**3,0**	**4,0**	**6,0**	**8,0**	**12,0**	**16,0**	**20,0**	**25,4**	**32,0**	**40,0**	**50,0**	**76,0**	**100,0**	**≥150,0**
FEED RATE by diameter														
ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005 - .009	.006 - .010	.007 - .011	—	—	—	—	—	—	—
mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28	—	—	—	—	—	—	—
ipr	—	—	—	.002 - .004	.004 - .006	.004 - .007	.005 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	0,06 - 0,11	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	—	—	—	—	—	—	—
ipr	—	—	—	—	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012	—	—	—	—
mm/r	—	—	—	—	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - M1

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	26 8	20 ◊ 33 6 ◊ 10											.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	49 15	30 ◊ 59 9 ◊ 18											.004-.008 0,10-0,20	— —
Straight Flute Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 12	26 ◊ 49 8 ◊ 15											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	39 12	26 ◊ 49 8 ◊ 15											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	39 12	26 ◊ 49 8 ◊ 15											.006 - .020 0,15 - 0,50	— —
Straight Flute Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 20	49 ◊ 92 15 ◊ 28											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 ◊ 92 15 ◊ 28											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 ◊ 92 15 ◊ 28											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 12	26 ◊ 49 8 ◊ 15											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	39 12	26 ◊ 49 8 ◊ 15											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	39 12	26 ◊ 49 8 ◊ 15											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 20	49 ◊ 92 15 ◊ 28											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 ◊ 92 15 ◊ 28											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 ◊ 92 15 ◊ 28											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 15	33 ◊ 66 10 ◊ 20											— —	.002 - .008 0,05 - 0,20
Straight Flute Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 15	33 ◊ 66 10 ◊ 20											— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 35		82 ◊ 148 25 ◊ 45										— —	.002 - .008 0,05 - 0,20
Straight Flute Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 35		82 ◊ 148 25 ◊ 45										— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	49 15	33 ◊ 66 10 ◊ 20											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	115 35		82 ◊ 148 25 ◊ 45										— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	82 25	33 ◊ 131 10 ◊ 40											.002 - .008 0,05 - 0,20	— —
Single Padded Reamer	1, 3				E30	236 – 13.77	6,00 – 350,00	82 25	33 ◊ 131 10 ◊ 40											.004 - .010 0,10 - 0,25	— —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	82 25	33 ◊ 131 10 ◊ 40											.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Austenitic Stainless Steels	• Content C=.05-.15% • Tensile Strength RM (MPa)*: <650 • Hardness (HB) 130-200
Cutting Groups	• 14.1

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM…	KC9225	G110	1.375"- 6.500"	34,93mm- 165,10mm	607 185	410 820 / 125 250	.002 - .016 0,05 - 0,40
	CPGM…SNGH…	KC9240NEW		1.375"- 6.500"	34,93mm- 165,10mm	492 150	328 656 / 100 200	.002 - .016 0,05 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	705 215	443 755 / 135 230	.002 - .016 0,05 - 0,40
	CPGM…	KC5025		1.375"- 6.500"	34,93mm- 165,10mm	591 180	328 656 / 100 200	.002 - .016 0,05 - 0,40
	CPGM…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	755 230	541 919 / 165 280	.002 - .016 0,05 - 0,40
	SPGH…SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	558 170	410 853 / 125 260	.002 - .016 0,05 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G6	.384" – 25.787"	9,70mm – 655,00mm	705 215	410 820 / 125 250	.002 - .016 0,05 - 0,40
	CCGT…HP CCGT…LF CNMG…MP CNMG…RP	KC9225		.384" – 25.787"	9,70mm – 655,00mm	607 185	328 820 / 100 250	.006 - .016 0,16 - 0,40
	CNMG…MW CNMG…MP CNMG…RP	KC9240NEW		.384" – 25.787"	9,70mm – 655,00mm	492 150	295 591 / 90 180	.006 - .016 0,16 - 0,40
	CCMT…MW CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	755 230	492 984 / 150 300	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G12	.384" – 25.787"	9,70mm – 655,00mm	705 215	410 820 / 125 250	.004 -.010 0,10 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	591 180	410 656 / 125 200	.002 -.012 0,05 - 0,30
	CCMT…FW CCMT…LF CCMT…UF	KC9225		.384" – 25.787"	9,70mm – 655,00mm	607 185	328 820 / 100 250	.003 -.010 0,08 - 0,25
	CCMT…LF CNMG…FN CNMG…FW	KC9240NEW		.384" – 25.787"	9,70mm – 655,00mm	492 150	295 591 / 90 180	.003 -.010 0,08 - 0,25
Boring — Fine Finishing ▼▼▼▼								
Romicron **	CPMT...LF CPMT...FW	KC9225	G48	.157"- 8.110"	4,00mm – 213,00mm	607 185	328 820 / 100 250	.002 - .008 0,05 - 0,20
	CPMT...LF CPGT...HP CPGT...LF	KC5025		.157"- 8.110"	4,00mm – 213,00mm	591 180	328 656 / 100 200	.002 - .008 0,05 - 0,20
	CPMT...LF CPMT...FW CPGT...FW CPGT...LF CPGT...HP CDHB...	KC5010		.157"- 8.110"	4,00mm – 213,00mm	705 215	410 820 / 125 250	.002 - .008 0,05 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	755 230	492 984 / 150 300	.002 - .008 0,05 - 0,20
	CPMT...LF	KC9240NEW		.157"- 8.110"	4,00mm – 213,00mm	492 150	295 591 / 90 180	.002 - .008 0,05 - 0,20
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	607 185	410 820 / 125 250	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – M2

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A26	B210, B211, B212/ K210, K211, K212	KC7515	.118 - .787"	3,00 - 20,00 mm	197 / 60	164/50 ◊ 262/80
Through	3xD, 5xD, 8xD	B10	KTIP - HPL(M)	KC7320	.314 - .826"	8,00 - 20,99 mm	152 / 50	98/30 ◊ 295/90
Through	1xD, 3xD, 5xD, 7xD, 10xD	B34	KSEM - HPL(M)	KC7320	.492 - 1.575"	12,5 mm - 40,00 mm	164 / 50	98/30 ◊ 295/90
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E6	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			561 / 171	293/89 ◊ 664/202
Unstable				O- KC7140 MD I - KC7140 MD			384 / 130	237/80 ◊ 452/153
Interrupted				O- KC7140 MD I - KC7140 MD			262 / 80	147/50 ◊ 311/95
Through	**2.5xD, 4xD**	E11	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			623 / 190	387/99 ◊ 738/225
Unstable				O- KC7140 MD I - KC7140 MD			427 / 130	263/80 ◊ 502/153
Interrupted				O- KC7140 MD I - KC7140 MD			262 / 80	163/50 ◊ 311/95
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7140 SPGX...-31 I - KC7140 DFT-HP			331 / 101	180/55 ◊ .380/116
Unstable				O- KC7140 SPGX...-31 I - KC7140 DFT-HP			248 / 76	135/41 ◊ 284/87
Through	**3xD - 10XD+**	E74	**HTS-DFR**	P- B513 AS3	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			325 / 99	124/38 ◊ 417/127
Unstable				O- KC7140 MD I - KC7140 MD			207 / 63	101/31 ◊ 281/86
Interrupted				O- KC7140 MD I - KC7140 MD			148 / 45	72/22 ◊ 199/61
Through	**3xD - 10XD+**	E80	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7935 MD I - KC720 LD			325 / 99	159/48 ◊ 439/134
Unstable				O- KC7215 GD I - KC720 LD			207 / 63	101/31 ◊ 281/86
Interrupted				O- KC720 MD I - KC720 GD			148 / 45	72/22 ◊ 199/61

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

High-Strength Austenitic Stainless and Cast Stainless Steels • Content C =.05-.15% • Tensile Strength RM (Mpa)*: 500-700 • Hardness (HB): 150-230

Cutting Groups • 14.3 • Hardness HRC: <25

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005 - .009	.006 - .010	.007 - .011	—	—	—	—	—	—	—
mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28	—	—	—	—	—	—	—
ipr	—	—	—	.002 - .004	.004 - .006	.004 - .007	.005 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	0,06 - 0,11	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	—	—	—	—	—	—	—
ipr	—	—	—	—	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012	—	—	—	—
mm/r	—	—	—	—	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - M2

Hole Type 1 Hole Type 2 Hole Type 3 Hole Type 4 Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE	
										ipr	tooth feed inch
								sfm / m/min	45 91 152 242 303 364 455 606 758 909 1061 / 15 30 50 80 100 120 150 200 250 300 350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED		
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	49 / 15	20 ◊ 33 / 6 ◊ 10	.004-.008 / 0,10-0,20	— / —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	49 / 15	30 ◊ 59 / 9 ◊ 18	.004-.008 / 0,10-0,20	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 / 12	26 ◊ 49 / 8 ◊ 15	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	39 / 12	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	39 / 12	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 ◊ 92 / 15 ◊ 28	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50	— / —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 / 12	26 ◊ 49 / 8 ◊ 15	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	39 / 12	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	39 / 12	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 ◊ 92 / 15 ◊ 28	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	33 ◊ 66 / 10 ◊ 20	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	33 ◊ 66 / 10 ◊ 20	— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 / 35	82 ◊ 148 / 25 ◊ 45	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 / 35	82 ◊ 148 / 25 ◊ 45	— / —	.002 - .008 / 0,05 - 0,20
Reamers — Expandable											
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	49 / 15	33 ◊ 66 / 10 ◊ 20	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	115 / 35	82 ◊ 148 / 25 ◊ 45	— / —	.002 - .008 / 0,05 - 0,20
Reamers — Insertable											
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.002 - .008 / 0,05 - 0,20	— / —
Single Padded Reamer	1, 3				E30	236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.004 - .010 / 0,10 - 0,25	— / —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.002 - .008 / 0,05 - 0,20	— / —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

High-Strength Austenitic Stainless and Cast Stainless Steels	• Content C =.05-.15%	• Tensile Strength RM (Mpa)*: 500-700	• Hardness (HB): 150-230
Cutting Groups	• 14.3		• Hardness HRC: <25

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value sfm / m/min	Range sfm	Range m/min	FEED RATE ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED		
Dial Set	CPGM…	KC9225	G110	1.375"- 6.500"	34,93mm-165,10mm	558 / 170	410 738	125 225	.010 - .016 / 0,25 - 0,40
	CPGM… SNGH…	KC9240 NEW		1.375"- 6.500"	34,93mm-165,10mm	459 / 140	295 591	90 180	.010 - .016 / 0,25 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm-165,10mm	656 / 200	410 820	125 250	.010 - .016 / 0,25 - 0,40
	CPGM…	KC5025		1.375"- 6.500"	34,93mm-165,10mm	541 / 165	410 738	125 225	.010 - .016 / 0,25 - 0,40
	CPGM…	KT315		1.375"- 6.500"	34,93mm-165,10mm	705 / 215	492 984	150 300	.010 - .016 / 0,25 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm-165,10mm	492 / 150	295 590	90 180	.010 - .016 / 0,25 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G6	.384" – 25.787"	9,70mm – 655,00mm	656 / 200	410 820	125 250	.002 - .016 / 0,05 - 0,40
	CCGT…HP CCGT…LF CNMG…MP CNMG…RP	KC9225		.384" – 25.787"	9,70mm – 655,00mm	541 / 165	328 738	100 225	.006 - .016 / 0,16 - 0,40
	CNMG…MW CNMG…MP CNMG…RP	KC9240 NEW		.384" – 25.787"	9,70mm – 655,00mm	459 / 140	295 591	90 180	.006 - .016 / 0,16 - 0,40
	CCMT…MW CNMG…RP	KC5010		.384" – 25.787"	9,70mm – 655,00mm	705 / 215	492 984	150 300	.010 - .016 / 0,25 - 0,40
Boring — Finishing ▼▼▼									
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G12	.384" – 25.787"	9,70mm – 655,00mm	656 / 200	410 820	125 250	.002 -.010 / 0,06 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	541 / 165	328 656	100 200	.002 -.010 / 0,06 - 0,25
	CCMT…LF CCMT…UF CCMT…UF	KC9225		.384" – 25.787"	9,70mm – 655,00mm	541 / 165	328 738	100 225	.002 -.010 / 0,06 - 0,25
	CCMT…LF CNMG…FN CNMG…FW	KC9240 NEW		.384" – 25.787"	9,70mm – 655,00mm	459 / 140	295 591	90 180	.002 -.010 / 0,06 - 0,25
Boring — Fine Finishing ▼▼▼▼									
Romicron**	CPMT...LF CPMT…FW	KC5010	G48	.157"- 8.110"	4,00mm – 213,00mm	541 / 165	328 738	100 225	.002 - .008 / 0,05 - 0,20
	CPMT…LF CPGT…HP CPGT…LF	KC9110		.157"- 8.110"	4,00mm – 213,00mm	541 / 165	328 656	100 200	.002 - .008 / 0,05 - 0,20
	CPMT...LF CPMT...FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC9125		.157"- 8.110"	4,00mm – 213,00mm	656 / 200	410 820	125 250	.002 - .008 / 0,05 - 0,20
	CPMT…LF CPMT…FW CDHB….	KT315		.157"- 8.110"	4,00mm – 213,00mm	705 / 215	492 984	150 300	.002 - .008 / 0,05 - 0,25
	CPMT…LF	KC9240 NEW		.157"- 8.110"	4,00mm – 213,00mm	459 / 140	295 591	90 180	.002 - .008 / 0,05 - 0,25
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – 25,3mm	607 / 185	410 820	125 250	.001 - .003 / 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – M3

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A26	B210, B211, B212/ K210, K211, K212	KC7515	.118 - .787"	3,00 - 20,00 mm	180 / 55	131 / 40 ◊ 230 / 70
Through	3xD, 5xD, 8xD	B10	KTIP - HPL(M)	KC7320	.314 - .826"	8,00 - 20,99 mm	121 / 40	66 / 20 ◊ 197 / 60
Through	1xD, 3xD, 5xD, 7xD, 10xD	B34	KSEM - HPL(M)	KC7320	.492 - 1.575"	12,5 mm - 40,00 mm	131 / 40	66 / 20 ◊ 197 / 60
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E6	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			505 / 171	263 / 106 ◊ 598 / 202
Unstable				O- KC7140 MD I - KC7140 MD			345 / 117	213 / 72 ◊ 407 / 138
Interrupted				O- KC7140 MD I - KC7140 MD			213 / 72	132 / 45 ◊ 252 / 85
Through	**2.5xD, 4xD**	E12	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			561 / 171	292 / 89 ◊ 664 / 202
Unstable				O- KC7140 MD I - KC7140 MD			384 / 117	237 / 72 ◊ 452 / 138
Interrupted				O- KC7140 MD I - KC7140 MD			236 / 72	147 / 45 ◊ 280 / 85
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7140 SPGX...-31 I - KC7140 DFT-HP			294 / 90	180 / 55 ◊ 350 / 107
Unstable				O- KC7140 SPGX...-31 I - KC7140 DFT-HP			220 / 67	135 / 41 ◊ 262 / 80
Through	**3xD - 10XD+**	E74	**HTS-DFR**	P- B513 AS3	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7140 MD I - KC7140 MD			289 / 88	104 / 32 ◊ 351 / 107
Unstable				O- KC7140 MD I - KC7140 MD			184 / 56	101 / 31 ◊ 281 / 86
Interrupted				O- KC7140 MD I - KC7140 MD			131 / 40	72 / 22 ◊ 199 / 61
Through	**3xD - 10XD+**	E80	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45 - 270,00 mm**		
Stable				O- KC7935 MD I - KC720 LD			289 / 88	159 / 48 ◊ 439 / 134
Unstable				O- KC7215 GD I - KC720 LD			184 / 56	101 / 31 ◊ 281 / 86
Interrupted				O- KC720 MD I - KC720 GD			131 / 40	72 / 22 ◊ 199 / 61

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Duplex Steels	• Content C=.05-.2%	• Tensile Strength RM (Mpa)*: <900	• Hardness (HB) 135-275
Cutting Groups	• 14.2		• Hardness HRC: <30

HOLE diameter														
inch	**.118**	**.157**	**.236**	**.315**	**.472**	**.630**	**.787**	**1.00**	**1.260**	**1.575**	**1.968**	**2.992**	**3.937**	**≥5.905**
mm	**3,0**	**4,0**	**6,0**	**8,0**	**12,0**	**16,0**	**20,0**	**25,4**	**32,0**	**40,0**	**50,0**	**76,0**	**100,0**	**≥150,0**
FEED RATE by diameter														
ipr	.001 - .003	.002 - .005	.003 - .007	.004 - .008	.005 - .009	.006 - .010	.007 - .011	—	—	—	—	—	—	—
mm/r	0,03 - 0,08	0,06 - 0,13	0,08 - 0,18	0,10 - 0,20	0,13 - 0,23	0,15 - 0,25	0,18 - 0,28	—	—	—	—	—	—	—
ipr	—	—	—	.002 - .004	.004 - .006	.004 - .007	.005 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	0,06 - 0,11	0,09 - 0,14	0,11 - 0,17	0,13 - 0,20	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.004 - .007	.005 - .008	.006 - .010	.007 - .011	.008 - .012	—	—	—	—
mm/r	—	—	—	—	—	0,11 - 0,17	0,13 - 0,20	0,16 -0,25	0,18 - 0,28	0,21 - 0,31	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.002 - .004	.003 - .006	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,04 - 0,09	0,05 - 0,10	0,08 - 0,16	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	.002 - .004	.002 - .004	.003 - .005	.003 - .006	.004 - .007	.004 - .008	.004 - .008	—	—
mm/r	—	—	—	—	—	0,05 - 0,09	0,05 - 0,09	0,07 - 0,13	0,08 - 0,16	0,10 - 0,18	0,11 - 0,21	0,11 - 0,21	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .003	.002 - .003	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,05 - 0,07	0,05 - 0,07	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22
ipr	—	—	—	—	—	—	—	—	—	—	.003 - .004	.005 - .007	.006 - .008	.006 - .009
mm/r	—	—	—	—	—	—	—	—	—	—	0,07 - 0,11	0,12 - 0,18	0,14 - 0,20	0,16 - 0,22

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - M3

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	26 8	20 33 6 10											.004-.008 0,10-0,20	— —
Straight Flute – External Coolant	1, 3, 5	G132	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	49 15	30 59 9 18											.004-.008 0,10-0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 12	26 49 8 15											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	39 12	26 49 8 15											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	39 12	26 49 8 15											.006 - .020 0,15 - 0,50	— —
Straight Flute – Internal Coolant - Axial	2, 4	G136	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 20	49 92 15 28											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 92 15 28											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 92 15 28											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	39 12	26 49 8 15											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	39 12	26 49 8 15											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	39 12	26 49 8 15											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G140	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 20	49 92 15 28											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	66 20	49 92 15 28											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	66 20	49 92 15 28											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	33 10	16 49 5 15											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	33 10	16 49 5 15											— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	82 25	33 131 10 40											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	82 25	49 115 15 35											— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	33 10	16 49 5 15											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G159	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	82 25	49 115 15 35											— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	82 25	33 131 10 40											.004 - .012 0,10 - 0,30	— —
Single Padded Reamer	1, 3		RIR/RIQ†	KC6305	E30	236 – 13.77	6,00 – 350,00	82 25	33 131 10 40											.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4		RIR/RIQ†	KC6305	E06	236 – 13.77	6,00 – 350,00	82 25	33 131 10 40											.004 - .008 0,10 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Duplex Steels	• **Content C=.05-.2%**	• **Tensile Strength RM (Mpa)*: <900**	• **Hardness (HB) 135-275**
Cutting Groups	• 14.2		• **Hardness HRC: <30**

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM…	KC9225	G111	1.375"- 6.500"	34,93mm- 165,10mm	492 150	410 125 ◆ 820 250	.002 - .016 0,05 - 0,40
	CPGM… SNGH…	KC9240NEW		1.375"- 6.500"	34,93mm- 165,10mm	394 120	295 90 ◆ 591 180	.002 - .016 0,05 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	607 185	410 125 ◆ 820 250	.002 - .016 0,05 - 0,40
	CPGM…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	492 150	328 100 ◆ 656 200	.002 - .016 0,05 - 0,40
	CPGM…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	656 200	541 165 ◆ 984 300	.002 - .016 0,05 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	459 140	328 100 ◆ 656 200	.002 - .016 0,05 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G6	.384" – 25.787"	9,70mm – 655,00mm	607 185	410 125 ◆ 820 250	.002 - .016 0,05 - 0,40
	CCGT…HP CCGT…LF CNMG…MP CNMG…RP	KC9225		.384" – 25.787"	9,70mm – 655,00mm	492 150	328 100 ◆ 820 250	.006 -.016 0,16 - 0,40
	CNMG…MW CNMG…MP CNMG…RP	KC9240NEW		.384" – 25.787"	9,70mm – 655,00mm	394 120	295 90 ◆ 591 180	.006 -.016 0,16 - 0,40
	CCMT…MW CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	656 200	492 150 ◆ 984 300	.010 -.016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G12	.384" – 25.787"	9,70mm – 655,00mm	607 185	410 125 ◆ 820 250	.004 -.010 0,10 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	607 185	328 100 ◆ 820 250	.002 -.012 0,05 - 0,30
	CCMT…FW CCMT…LF CCMT…UF	KC9225		.384" – 25.787"	9,70mm – 655,00mm	492 150	328 100 ◆ 820 250	.003 -.010 0,08 - 0,25
	CCMT…LF CNMG…FN CNMG…FW	KC9240NEW		.384" – 25.787"	9,70mm – 655,00mm	394 150	295 90 ◆ 591 180	.003 -.010 0,08 - 0,25
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT...LF CPMT…FW	KC9225	G48	.157"- 8.110"	4,00mm – 213,00mm	492 150	328 100 ◆ 820 250	.002 - .008 0,05 - 0,20
	CPMT...LF CPGT…HP CPGT…LF	KC5025		.157"- 8.110"	4,00mm – 213,00mm	492 150	328 100 ◆ 656 200	.002 - .008 0,05 - 0,20
	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010		.157"- 8.110"	4,00mm – 213,00mm	607 185	410 125 ◆ 820 250	.002 - .008 0,05 - 0,20
	CPMT...LF CPMT...FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	656 200	492 150 ◆ 984 300	.002 - .008 0,05 - 0,20
	CPMT…LF	KC9240 NEW		.157"- 8.110"	4,00mm – 213,00mm	394 120	295 90 ◆ 591 180	.002 - .008 0,05 - 0,20
Kendex Precision	BPGF…LGD	KC7235	G121	.299"- .996"	5,8mm – -25,3mm	607 185	410 125 ◆ 820 250	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – K1

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A65	B254-B255-B256 / K254-K255-K256	KC7315	.118 - .787"	3,00 - 20,00 mm	492 / 150	394/120 ◊ 656/200
Flood	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	459 / 140	262/80 ◊ 528/161
Dry Applications	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	361 / 110	197/60 ◊ 492/150
Through	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	279 / 85	230/70 ◊ 322/98
Through	15xD, 20xD, 30xD	A83	B271-B272-B274 (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	262 / 80	197/60 ◊ 328/100
Through	3xD, 5xD	A107	B731-B732 (Step Drill)	KC7315	.118 - .630"	3,00 - 16,00 mm	525 / 160	459/140 ◊ 591/180
Through	5XD	B3	2X2D HPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	443 / 135	328/100 ◊ 558/170
Through	3xD, 5xD, 8xD	B10	KTIP - HPC(M)	KC7410	.314 - .826"	8,00 - 20,00 mm	574 / 175	328/100 ◊ 656/200
Through	1xD, 3xD, 5xD, 7xD, 10xD	B34	KSEM - HPC(M)	KC7410	.492 - 1.575"	12,5 mm - 40,00 mm	574 / 175	328/100 ◊ 656/200
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E7	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7815 GD I - KC7225 LD			727 / 222	545/166 ◊ 788/240
Unstable				O- KC7225 LD I - KC7225 LD			485 / 148	424/129 ◊ 585/178
Interrupted				O- KC7020 GD I - KC7225 LD			303 / 92	273/83 ◊ 545/166
Through	**2.5xD, 4xD**	E12	**DFT**		**.625 - 3.25"**	**16,0 - 82,0 mm**		
Stable				O- KC7815 GD I - KC7225 MD			787 / 240	591/180 ◊ 853/260
Unstable				O- KC7225 LD I - KC7225 LD			525 / 160	459/140 ◊ 591/180
Interrupted				O- KC7020 GD I - KC7225 LD			328 / 100	295/90 ◊ 361/110
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7215 SPHX..R21 I - KC7215 DFT-GD			623 / 190	348/106 ◊ 754/230
Unstable				O- KC7215 SPHX..R21 I - KC7815 DFT-GD			427 / 130	243/74 ◊ 557/160
Through	**3xD - 10XD+**	E75	**HTS-DFR**	P- B514 KC7030	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7815 GD I - KC7020 GD			561 / 171	260/79 ◊ 750/229
Unstable				O- KC7815 GD I - KC7020 GD			384 / 117	211/64 ◊ 510/156
Interrupted				O- KC7815 GD I - KC7020 GD			236 / 72	131/40 ◊ 316/96
Through	**3xD - 10XD+**	E81	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7815 GD I - KC7225 LD			561 / 171	309/94 ◊ 750/229
Unstable				O- KC7815 GD I - KC7225 LD			384 / 117	211/64 ◊ 510/156
Interrupted				O- KC7815 GD I - KC7225 LD			236 / 72	131/40 ◊ 316/96

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

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Gray Cast Irons and Low-Strength Ductile Irons	• Content	• Tensile Strength RM (MPa)*: 150-400	• Hardness (HB) 120-290
Cutting Groups	• 15, 16, 17		• Hardness HRC: <32

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.003 - .004	.006 - .008	.008 - .011	.010 - .014	.013 - .017	.014 - .020	.016 - .021	—	—	—	—	—	—	—
mm/r	0,08 - 0,11	0,14- 0,20	0,20 - 0,28	0,25 - 0,35	0,32 - 0,43	0,36 - 0,50	0,40 - 0,55	—	—	—	—	—	—	—
ipr	.005 - .008	.006 - .009	.007 - .012	.008 - .015	.011 - .020	.013 - .024	.014 - .028	—	—	—	—	—	—	—
mm/r	0,13 - 0,20	0,14 - 0,24	0,17 - 0,31	0,20 - 0,39	0,29 - 0,51	0,33 - 0,62	0,36 - 0,70	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.012 - .019	.015 - .023	.020 - .028	—	—	—	—	—	—	—
mm/r	0,10 - 0,20	0,13- 0,24	0,16 - 0,31	0,20 - 0,39	0,27 - 0,51	0,33 - 0,62	0,36 - 0,70	—	—	—	—	—	—	—
ipr	.004 - .007	.005 - .008	.005 - .010	.006 - .012	.008 - .015	.009 - .018	.010 - .020	—	—	—	—	—	—	—
mm/r	0,09 - 0,17	0,13 - 0,21	0,12 - 0,25	0,15 - 0,31	0,20 - 0,39	0,23 - 0,46	0,26 - 0,52	—	—	—	—	—	—	—
ipr	.007 - .008	.007 - .008	.008 - .011	.010 - .013	—	—	—	—	—	—	—	—	—	—
mm/r	0,17 - 0,20	0,18 - 0,21	0,21 - 0,27	0,25 - 0,33	—	—	—	—	—	—	—	—	—	—
ipr	.004 - .007	.004 - .008	.005 - .010	.006 - .012	.008 - .015	.009 - .018	—	—	—	—	—	—	—	—
mm/r	0,09 - 0,17	0,11 - 0,21	0,12 - 0,25	0,15 - 0,31	0,20 - 0,39	0,23 - 0,46	—	—	—	—	—	—	—	—
ipr	.004 - .006	.004 - .008	.005 - .011	.006 - 0.013	—	—	—	—	—	—	—	—	—	—
mm/r	0,09 - 0,15	0,10 - 0,20	0,13 - 0,27	0,15 - 0,34	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.006 - .013	.007 -.017	.010 - .022	.012 - .024	—	—	—	—	—	—	—
mm/r	—	—	—	0,14 - 0,32	0,19 - 0,43	0,26 - 0,55	0,30 - 0,61	—	—	—	—	—	—	—
ipr	—	—	—	—	.007 - .014	.008 - .017	.010 - .019	.012 - .023	.015 - .028	.017 - .032	—	—	—	—
mm/r	—	—	—	—	0,17 - 0,35	0,21 - 0,42	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .005	.003 - .006	.004 - .008	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,13	0,07 - 0,16	0,10 - 0,21	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.003 - .005	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—
ipr	—	—	—	—	—	.003 - .005	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—
ipr	—	—	—	—	—	.003 - .005	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—
ipr	—	—	—	—	—	—	.003 - .005	.004 - .006	.004 - .006	.005 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,08 - 0,13	0,09 - 0,15	0,10 - 0,16	0,12 - 0,20	—	—	—	—
ipr	—	—	—	—	—	—	.003 - .005	.004 - .006	.004 - .006	.005 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,08 - 0,13	0,09 - 0,15	0,10 - 0,16	0,12 - 0,20	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .004	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
ipr	—	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33

Best Tool Selector — Hole Finishing / Tapping - K1

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
									45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								sfm	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	98 30	66 20	◊ 115 35										.004-.007 0,09-0,17	— —
Straight Flute – External Coolant	1, 3, 5	G133	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	213 65			148 45	◊ 262 80								.004 - .007 0,09 - 0,17	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	164 50		115 35	◊ 197 60									.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	164 50		115 35	◊ 197 60									.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	164 50		115 35	◊ 197 60									.012 - .047 0,30 - 1,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G137	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	328 100				246 75	◊ 427 130							.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	328 100				246 75	◊ 427 130							.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	328 100				246 75	◊ 427 130							.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	164 50		115 35	◊ 197 60									.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	164 50		115 35	◊ 197 60									.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	164 50		115 35	◊ 197 60									.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G141	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	328 100				246 75	◊ 427 130							.012 - .031 0,30- 0,80	— —
						.282 – .378	7,16 – 9,59	328 100				246 75	◊ 427 130							.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	328 100				246 75	◊ 427 130							.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	148 45		98 30	◊ 197 60									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	148 45		98 30	◊ 197 60									— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G153	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	394 120				262 80	◊ 427 130							— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	344 105				262 80	◊ 427 130							— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	410 125					328 100	◊ 492 150						— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	410 125					328 100	◊ 492 150						— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	148 45		98 30	◊ 197 60									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G160	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	344 105				262 80	◊ 427 130							— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	410 125					328 100	◊ 492 150						— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.004 - .007 0,09 - 0,17	— —
Single Padded Reamer	1, 3				E30	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.004 - .007 0,11 - 0,19	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.005 - .008 0,12 - 0,21	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.006 - .012 0,15 - 0,31	— —
Single Padded Reamer	1, 3, 5				EGS	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.007 - .014 0,18 - 0,35	— —
Single Padded Reamer	1, 3, 5				EGU	.236 – 13.77	6,00 – 350,00	230 70	66 20				◊ 328 100							.008 - .015 0,20 - 0,39	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Gray Cast Irons and Low-Strength Ductile Irons	• Content	• Tensile Strength RM (MPa)*: 150-400	• Hardness (HB) 120-290
Cutting Groups	• 15, 16, 17		• Hardness HRC: <32

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value sfm / m/min	Range sfm	98	164	262	328	394	492	656	820	984	1148	1640	2460	3281	FEED RATE ipr
							m/min	30	50	80	100	120	150	200	250	300	350	500	750	1000	mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED														
Dial Set	CPGM…	KC9315	G111	1.375"- 6.500"	34,93mm- 165,10mm	902 275							492 150	◊				1476 450			.005 - .016 0,12 - 0,40
	CPGM…	KC9320		1.375"- 6.500"	34,93mm- 165,10mm	951 290								574 175	◊			1641 500			.010 - 016 0,25 - 0,40
	CPGM…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	902 275								574 175	◊			1476 450			.010 - .016 0,25 - 0,40
Modbore	CCMT…MW CNMG…MW CNMG…UN CNMG…RP	KC9315	G7	.384" – 25.787"	9,70mm – 655,00mm	902 275					328 100	◊						1476 450			.005 -.016 0,12 - 0,40
	CNMG…UN CNMG…RP	KC9320		.384" – 25.787"	9,70mm – 655,00mm	920 275					328 100	◊						1476 450			.010 -.016 0,25 - 0,40
	CNMG…MW CNMG…UN CNMG…RP	KC9325		.384" – 25.787"	9,70mm – 655,00mm	902 275					328 100	◊						1476 450			.010 -.016 0,25 - 0,40
	CCMT…MW CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	902 275							492 150	◊				1476 450			.010 -.016 0,25 - 0,40
Boring — Finishing ▼▼▼																					
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9315	G13	.384" – 25.787"	9,70mm – 655,00mm	902 275							492 150	◊				1444 440			.003 -.012 0,08 - 0,30
	CCMT…FW CCMT…LF	KC9110		.384" – 25.787"	9,70mm – 655,00mm	951 290					328 100	◊						1476 450			.005 -.020 0,12 - 0,50
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	902 275							525 160	◊				1476 450			.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼																					
Romicron**	CPMT..LF CPMT…FW	KC9315	G49	.157"- 8.110"	4,00mm – 213,00mm	902 275							492 150	◊				1444 440			.002 - .010 0,06 - 0,25
	CPMT..LF CPMT…FW	KC9320		.157"- 8.110"	4,00mm – 213,00mm	951 290					328 100	◊						1476 450			.002 - .010 0,06 - 0,25
	CPMT..LF CPMT…FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	902 275							525 160	◊				1476 450			.002 - .010 0,06 - 0,25
Kendex Precision	BPGF… LGD	KC7210	G121	.299"- .996"	5,8mm – 25,3mm	820 250							492 150	◊			1148 350				.001 - .003 0,02 - 0,08
Tapping																					
Solid Carbide Taps – Through Holes	T340	KC7542	D2	—	—	345 105				262 80	◊	427 130									—
Solid Carbide Taps – Blind Holes	T351	KC7542	D2	—	—	246 75			164 50	◊	328 100										—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – K2

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range (sfm / m/min)
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A65	B254-B255-B256 / K254-K255-K256	KC7315	.118 - .787"	3,00 - 20,00 mm	394 / 120	263 / 80 ◇ 525 / 160
Flood	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	394 / 120	262 / 80 ◇ 394 / 120
Dry Applications	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	308 / 94	197 / 60 ◇ 328 / 100
Through	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	371 / 113	322 / 98 ◇ 413 / 126
Through	15xD, 20xD, 30xD	A83	B271HPG, B272HPG, B274HPG (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	230 / 70	197 / 60 ◇ 262 / 80
Through	3xD, 5XD	A107	B731HP, B732HP (Step Drill)	KC7315	0.118 - 0.630"	3,00 - 16,00 mm	492 / 150	328 / 100 ◇ 656 / 200
Through	5XD	B3	2X2DHPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	394 / 120	262 / 80 ◇ 525 / 160
Through	3xD, 5xD, 8xD	B10	KTIP - HPC(M)	KC7410	.314 - .826"	8,00 - 20,99 mm	525 / 160	328 / 100 ◇ 591 / 180
Through	1xD, 3xD, 5xD, 7xD, 10xD	B34	KSEM - HPC(M)	KC7410	.492 - 1.575"	12,5 mm - 40,00 mm	525 / 160	328 / 100 ◇ 591 / 180
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E7	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7225 LD I - KC7225 LD			566 / 173	425 / 129 ◇ 614 / 187
Unstable				O- KC7225 LD I - KC7225 LD			378 / 144	413 / 126 ◇ 532 / 162
Interrupted				O- KC7020 GD I - KC7020 LD			236 / 90	266 / 81 ◇ 325 / 99
Through	**2.5xD, 4xD**	E12	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7225 LD I - KC7225 LD			748 / 228	387 / 171 ◇ 738 / 247
Unstable				O- KC7225 LD I - KC7225 LD			499 / 152	263 / 133 ◇ 502 / 171
Interrupted				O- KC7020 GD I - KC7020 LD			312 / 95	163 / 85 ◇ 311 / 104
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3 O- KC7215 SPHX..R21 I - KC7215 DFT-GD	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable							561 / 171	348 / 106 ◇ 754 / 230
Unstable				O- KC7215 SPHX..R21 I - KC7815 DFT-GD			384 / 117	243 / 74 ◇ 527 / 160
Through	**3xD - 10XD+**	E75	**HTS-DFR**	P- B514 KC7030 O- KC7815 GD I - KC7020 GD	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable							533 / 162	247 / 75 ◇ 712 / 217
Unstable				O- KC7815 GD I - KC7020 GD			365 / 111	211 / 64 ◇ 510 / 156
Interrupted				O- KC7815 GD I - KC020 GD			224 / 68	131 / 40 ◇ 316 / 96
Through	**3xD - 10XD+**	E81	**HTS-DFT**	P- B510 AS3 O- KC7815 GD I - KC720 GD	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable							533 / 162	309 / 94 ◇ 750 / 229
Unstable				O- KC7815 GD I - KC720 GD			365 / 111	211 / 64 ◇ 510 / 156
Interrupted				O- KC7815 GD I - KC720 GD			224 / 68	131 / 40 ◇ 316 / 96

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Low- and Medium-Strength CGI and Ductile Irons	• Tensile Strength RM (MPa)*: 400-600 • Hardness (HB) 130-260 • Hardness HRC: <28
Cutting Groups	• 17

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.003 - .004	.005 - .007	.007 - .010	.009 - .012	.012 - .016	.013 - .018	.015 - .020	—	—	—	—	—	—	—
mm/r	0,08 - 0,11	0,13 - 0,17	0,19 - 0,26	0,23 - 0,30	0,30 - 0,40	0,34 - 0,46	0,37 - 0,50	—	—	—	—	—	—	—
ipr	.005 - .008	.006 - .009	.007 - .011	.009 - .013	.011 - .017	.013 - .020	.014 - .021	—	—	—	—	—	—	—
mm/r	0,13 - 0,20	0,15 - 0,23	0,19- 0,28	0,23 - 0,34	0,29 - 0,43	0,34 - 0,50	0,36 - 0,54	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.012 - .019	.015 - .023	.020 - .028	—	—	—	—	—	—	—
mm/r	0,13 - 0,20	0,16 - 0,23	0,20 - 0,28	0,23 - 0,34	0,29 - 0,43	0,34 - 0,50	0,36 - 0,54	—	—	—	—	—	—	—
ipr	.004 - .006	.005 - .007	.005 - .008	.006 - .010	.008 - .013	.009 - .015	.010 - .017	—	—	—	—	—	—	—
mm/r	0,09 - 0,15	0,12 - 0,18	0,12 - 0,21	0,15 - 0,26	0,20 - 0,33	0,23 - 0,39	0,26 - 0,44	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.004 - .006	.004 - .007	.005 - .008	.006 - .010	.008 - .013	.009 - .015	—	—	—	—	—	—	—	—
mm/r	0,09 - 0,15	0,11 - 0,18	0,12 - 0,21	0,15 - 0,26	0,20 - 0,33	0,23 - 0,39	—	—	—	—	—	—	—	—
ipr	.004 - .006	.004 - .007	.005 - .009	.006 - .010	—	—	—	—	—	—	—	—	—	—
mm/r	0,09 - 0,15	0,10 - 0,17	0,13 - 0,22	0,15 - 0,26	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.006 - .013	.007 -.017	.010 - .022	.012 - .024	—	—	—	—	—	—	—
mm/r	—	—	—	0,14 - 0,32	0,19 - 0,43	0,26 - 0,55	0,30 - 0,61	—	—	—	—	—	—	—
ipr	—	—	—	—	.007 - .014	.008 - .017	.010 - .019	.012 - .023	.015 - .028	.017 - .032	—	—	—	—
mm/r	—	—	—	—	0,17 - 0,35	0,21 - 0,42	0,25 - 0,48	0,31 - 0,59	0,37 - 0,70	0,43 - 0,81	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—	—	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—		.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—		0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—	—	—	.003 - .005	.004 - .006	.004 - .006	.005 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,08 - 0,13	0,09 - 0,15	0,10 - 0,16	0,12 - 0,20	—	—	—	—
ipr	—	—	—	—	—	—	.003 - .005	.004 - .006	.004 - .006	.005 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,08 - 0,13	0,09 - 0,15	0,10 - 0,16	0,12 - 0,20	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,17 - 0,33
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - K2

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range												FEED RATE	
								sfm / m/min	45 / 15	91 / 30	152 / 50	242 / 80	303 / 100	364 / 120	455 / 150	606 / 200	758 / 250	909 / 300	1061 / 350	ipr / mm/r	tooth feed inch / mm
Reamers — Monoblock								CUTTING SPEED														
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	82 / 25	49 ◊ 15	98 ◊ 30											.004 - .006 / 0,09 - 0,15	— / —
Straight Flute – External Coolant	1, 3, 5	G133	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	180 / 55			131 ◊ 40	230 ◊ 70									.004 - .006 / 0,09 - 0,15	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .031 / 0,30 - 0,80	— / —
						.282 – .378	7,16 – 9,59	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .039 / 0,30 - 1,00	— / —
						.378 – .551	9,6 – 14,0	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .047 / 0,30- 1,20	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G137	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .031 / 0,30 - 0,80	— / —
						.282 – .378	7,16 – 9,59	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .039 / 0,30 - 1,00	— / —
						.378 – .551	9,6 – 14,0	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .047 / 0,30 - 1,20	— / —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .031 / 0,30 - 0,80	— / —
						.282 – .378	7,16 – 9,59	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .039 / 0,30 - 1,00	— / —
						.378 – .551	9,6 – 14,0	148 / 45		82 ◊ 25	164 ◊ 50										.012 - .047 / 0,30- 1,20	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G141	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .031 / 0,30 - 0,80	— / —
						.282 – .378	7,16 – 9,59	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .039 / 0,30 - 1,00	— / —
						.378 – .551	9,6 – 14,0	295 / 90			197 ◊ 60	361 ◊ 110									.012 - .047 / 0,30 - 1,20	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G150	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	115 / 35		82 ◊ 25	148 ◊ 45										— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G145	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	115 / 35		82 ◊ 25	148 ◊ 45										— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5		RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	279 / 85				213 ◊ 65	361 ◊ 110								— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	279 / 85				213 ◊ 65	361 ◊ 110								— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	328 / 100				262 ◊ 80	394 ◊ 120								— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	328 / 100				262 ◊ 80	394 ◊ 120								— / —	.002 - .008 / 0,05 - 0,20
Reamers — Expandable																						
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G157	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	115 / 35		82 ◊ 25	148 ◊ 45										— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G160	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	279 / 85				213 ◊ 65	361 ◊ 110								— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	328 / 100				262 ◊ 80	394 ◊ 120								— / —	.002 - .008 / 0,05 - 0,20
Reamers — Insertable																						
Single Padded Reamer	1, 3	G171	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.004 - .007 / 0,09 - 0,17	— / —
Single Padded Reamer	1, 3				E30	236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.004 - .007 / 0,11 - 0,19	— / —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.005 - .008 / 0,12 - 0,21	— / —
Single Padded Reamer	1, 3, 5				EDS	236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.006 - .012 / 0,15 - 0,31	— / —
Single Padded Reamer	1, 3, 5				EGS	236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.007 - .014 / 0,18 - 0,35	— / —
Single Padded Reamer	1, 3, 5				EGU	236 – 13.77	6,00 – 350,00	197 / 60		66 ◊ 20			328 ◊ 100								.008 - .015 / 0,20 - 0,39	— / —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Low- and Medium-Strength CGI and Ductile Irons	• Tensile Strength RM (MPa)*: 400-600 • Hardness (HB) 130-260 • Hardness HRC: <28
Cutting Groups	• 17

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value sfm / m/min	Range sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000	FEED RATE ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPGM…	KC9315	G111	1.375"- 6.500"	34,93mm- 165,10mm	902 / 275	591–1181 / 180–360	.010 - .016 / 0,25 - 0,40
	CPGM…	KC9320		1.375"- 6.500"	34,93mm- 165,10mm	869 / 265	558–1312 / 170–400	.010 - .016 / 0,25 - 0,40
	CPGM…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	902 / 275	591–1181 / 180–360	.010 - .016 / 0,25 - 0,40
Modbore	CCMT…MW CNMG…MW CNMG…UN CNMG…RP	KC9315	G7	.384" – 25.787"	9,70mm – 655,00mm	853 / 260	492–1181 / 150–360	.010 - .016 / 0,25 - 0,40
	CNMG…UN CNMG…RP	KC9320		.384" – 25.787"	9,70mm – 655,00mm	853 / 260	492–1181 / 150–360	.010 - .016 / 0,25 - 0,40
	CNMG…MW CNMG…UN CNMG…RP	KC9325		.384" – 25.787"	9,70mm – 655,00mm	902 / 275	443–1050 / 135–320	.010 - .016 / 0,25 - 0,40
	CCMT…MW CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	902 / 275	591–1181 / 180–360	.010 - .016 / 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…LF CNMG…FF CNMG…FN CNMG…FW	KC9315	G13	.384" – 25.787"	9,70mm – 655,00mm	853 / 260	427–1148 / 130–350	.003 -.012 / 0,08 - 0,30
	CCMT…FW CCMT…LF	KC9320		.384" – 25.787"	9,70mm – 655,00mm	869 / 265	262–1312 / 80–400	.005 -.020 / 0,12 - 0,50
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KC9125		.384" – 25.787"	9,70mm – 655,00mm	902 / 275	591–1181 / 180–360	.002 -.006 / 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW	KC9315	G49	.157"- 8.110"	4,00mm – 213,00mm	853 / 260	427–1148 / 130–350	.002 - .010 / 0,06 - 0,25
	CPMT..LF CPMT…FW	KC9320		.157"- 8.110"	4,00mm – 213,00mm	869 / 265	262–1312 / 80–400	.002 - .010 / 0,06 - 0,25
	CPMT..LF CPMT…FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	902 / 275	591–1181 / 180–360	.002 - .010 / 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7210	G121	.299"- .996"	5,8mm – 25,3mm	820 / 250	492–1148 / 150–350	.001 - .003 / 0,02 - 0,08
Tapping								
Solid Carbide Taps – Through Holes	T340	KC7542	D2	—	—	345 / 105	262–427 / 80–130	—
Solid Carbide Taps – Blind Holes	T351	KC7542	D2	—	—	246 / 75	164–1148 / 50–100	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – K3

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	49 98 164 262 328 394 492 656 820 984 1148
							m/min	15 30 50 80 100 120 150 200 250 300 350
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD, 7xD	A65	B254-B255-B256 / K254-K255-K256	KC7315	.118 - .787"	3,00 - 20,00 mm	263 / 80	197 / 60 ◊ 394 / 120
Flood	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	276 / 84	197 / 60 ◊ 427 / 130
Dry Applications	5xD	A7	B105 / K105	KC7210	.118 - .787"	3,00 - 20,00 mm	276 / 84	164 / 50 ◊ 361 / 110
Through	3xD	A96	B707FBG (Flat Bottom)	KC7315	.118 - .787"	3,00 - 20,00 mm	345 / 105	230 / 70 ◊ 459 / 140
Through	15xD, 20xD, 30xD	A83	B271HPG, B272HPG, B274HPG (Deep Hole)	KC7425	.118 - .394"	3,00 - 10,00 mm	230 / 70	131 / 40 ◊ 328 / 100
Through	3xD, 5XD	A107	B731HP, B732HP (Step Drill)	KC7315	0.118 - 0.630"	3,00 - 16,00 mm	459 / 140	328 / 100 ◊ 591 / 180
Through	5XD	B3	2X2DHPGM	KC7915	.118 - .315"	3,00 - 8,00 mm	361 / 110	262 / 80 ◊ 459 / 140
Through	3xD, 5xD, 8xD	B10	KTIP - HPC(M)	KC7410	.314 - .826"	8,00 - 20,99 mm	279 / 85	230 / 70 ◊ 328 / 100
Through	1xD, 3xD, 5xD, 7xD, 10xD	B34	KSEM - HPC(M)	KC7410	.492 - 1.575"	12,5 mm - 40,00 mm	297 / 85	230 / 70 ◊ 328 / 100
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E7	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7225 LD I - KC7225 LD			691 / 211	518 / 158 ◊ 749 / 228
Unstable				O- KC7225 LD I - KC7225 LD			461 / 140	403 / 123 ◊ 556 / 169
Interrupted				O- KC7020 GD I - KC7020 LD			288 / 88	259 / 79 ◊ 518 / 158
Through	**2.5xD, 4xD**	E12	**DFT**		**.625 - 3.25"**	**16,0 - 82,0 mm**		
Stable				O- KC7225 LD I - KC7225 LD			709 / 216	532 / 162 ◊ 768 / 234
Unstable				O- KC7225 LD I - KC7225 LD			472 / 144	413 / 126 ◊ 532 / 162
Interrupted				O- KC7020 GD I - KC7020 LD			295 / 90	266 / 81 ◊ 325 / 99
Through	**5xD, 8xD**	E60	**HTS-C**	P- B504 CS3 O- KC7215 SPHX..R21 I - KC7215 DFT-GD	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable							499 / 152	331 / 101 ◊ 716 / 218
Unstable				O- KC7215 SPHX..R21 I - KC7815 DFT-GD			341 / 104	220 / 67 ◊ 476 / 145
Through	**3xD - 10XD+**	E75	**HTS-DFR**	P- B514 KC7030 O- KC7815 GD I - KC7020 GD	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable							480 / 146	222 / 68 ◊ 641 / 195
Unstable				O- KC7815 GD I - KC7020 GD			328 / 100	195 / 59 ◊ 473 / 144
Interrupted				O- KC7815 GD I - KC7020 GD			202 / 62	113 / 35 ◊ 274 / 84
Through	**3xD - 10XD+**	E81	**HTS-DFT**	P- B510 AS3 O- KC7815 GD I - KC720 GD	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable							480 / 146	294 / 90 ◊ 712 / 217
Unstable				O- KC7815 GD I - KC720 GD			328 / 100	195 / 59 ◊ 473 / 144
Interrupted				O- KC7815 GD I - KC720 GD			202 / 62	113 / 35 ◊ 274 / 84

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

High-Strength Ductile and Austempered Ductile Irons	• Tensile Strength RM (MPa)*: 600-900	• Hardness (HB) 180-350
Cutting Groups	• 18, 19, 20	• Hardness HRC: <38

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.003 - .004	.004 - .006	.006 - .008	.007 - .010	.009 - .013	.011 - .015	.012 - .016	—	—	—	—	—	—	—
mm/r	0,07 - 0,10	0,10 - 0,14	0,15 - 0,21	0,19 - 0,26	0,24 - 0,33	0,28 - 0,38	0,30 - 0,41	—	—	—	—	—	—	—
ipr	.004 - .008	.005 - .009	.006 - .010	.008 - .015	.010 - .016	.012 - .019	.013 - .020	—	—	—	—	—	—	—
mm/r	0,11- 0,20	0,13 - 0,24	0,17 - 0,26	0,21 - 0,38	0,27 - 0,41	0,32 - 0,48	0,34 - 0,52	—	—	—	—	—	—	—
ipr	.003 - .006	.003 - .007	.004 - .009	.006 - .012	.012 - .019	.015 - .023	.020 - .028	—	—	—	—	—	—	—
mm/r	0,10 - 0,19	0,13 - 0,20	0,16 - 0,31	0,20 - 0,37	0,26 - 0,48	0,31 - 0,58	0,33 - 0,64	—	—	—	—	—	—	—
ipr	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.007 - .012	.008 - .014	.009 - .015	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,10 - 0,16	0,11 - 0,19	0,13 - 0,23	0,17 - 0,30	0,20 - 0,35	0,22 - 0,37	—	—	—	—	—	—	—
ipr	.006 - .007	.006 - .007	.007 - .010	.009 - .012	—	—	—	—	—	—	—	—	—	—
mm/r	0,15 - 0,18	0,16 - 0,19	0,18 - 0,25	0,22 - 0,30	—	—	—	—	—	—	—	—	—	—
ipr	.003 - .005	.004 - .006	.004 - .007	.005 - .009	.007 - .012	.008 - .014	—	—	—	—	—	—	—	—
mm/r	0,07 - 0,13	0,09 - 0,16	0,11 - 0,19	0,13 - 0,23	0,17 - 0,30	0,20 - 0,35	—	—	—	—	—	—	—	—
ipr	.003 - .006	.004 - .007	.004 - .008	.005 - .008	—	—	—	—	—	—	—	—	—	—
mm/r	0,08 - 0,14	0,09 - 0,17	0,10 - 0,20	0,12 - 0,22	—	—	—	—	—	—	—	—	—	—
ipr	—	—	—	.005 - .010	.007- .014	.008 - .017	.011 - .020	—	—	—	—	—	—	—
mm/r	—	—	—	0,13 - 0,26	0,17 - 0,35	0,21 - 0,44	0,28 - 0,51	—	—	—	—	—	—	—
ipr	—	—	—	—	.006 - .014	.008 - .016	.008- .017	.009 - .019	.010 - .021	.011 - .022	—	—	—	—
mm/r	—	—	—	—	0,16 - 0,36	0,20 - 0,41	0,21 - 0,44	0,23 - 0,48	0,25 - 0,53	0,27 - 0,57	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.002 - .004	.003 - .005	.004 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,06 - 0,10	0,07 - 0,13	0,10 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—	—	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—	—	.003 - .005	.004 - .007	.006 - .010	.007 - .013	.008 - .015	.008 - .015	—	—	—
mm/r	—	—	—	—	—	0,07 - 0,13	0,10 - 0,18	0,14 - 0,26	0,18 - 0,33	0,21 - 0,39	0,21 - 0,39	—	—	—
ipr	—	—	—	—	—	—	.002 - .005	.003 - .006	.004 - .006	.004 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,06 - 0,13	0,08 - 0,15	0,10 - 0,16	0,11 - 0,2	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .005	.003 - .006	.004 - .006	.004 - .008	—	—	—	—
mm/r	—	—	—	—	—	—	0,06 - 0,13	0,08 - 0,15	0,10 - 0,16	0,11 - 0,2	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.004 - .008	.005 - .011	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,11 - 0,20	0,13 - 0,27	—	—	—
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31
ipr	—	—	—	—	—	—	—	—	—		.004 - .008	.005 - .011	.006- .012	.007 - .013
mm/r	—	—	—	—	—	—	—	—	—		0,11 - 0,20	0,13 - 0,27	0,15 - 0,31	0,15 - 0,31

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - K3

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock								CUTTING SPEED													
Straight Flute – External Coolant	1, 3, 5	G130	RMS	K605*	—	.055 – .163	1,40 – 4,15	66 20	49 ◊ 82 15 ◊ 25											.003-.005 0,07-0,13	— —
Straight Flute – External Coolant	1, 3, 5	G133	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	164 50		131 ◊ 213 40 ◊ 65										.003-.005 0,07-0,13	— —
Straight Flute – Internal Coolant - Axial	2, 4	G134	RMS	K605*	—	.164 – .281	4,16 – 7,15	115 35		66 ◊ 148 20 ◊ 45										.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	115 35		66 ◊ 148 20 ◊ 45										.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	115 35		66 ◊ 148 20 ◊ 45										.012 - .047 0,30 - 1,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G137	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	262 80			197 ◊ 344 60 ◊ 105									.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	262 80			197 ◊ 344 60 ◊ 105									.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	262 80			197 ◊ 344 60 ◊ 105									.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G138	RMS	K605*	—	.164 – .281	4,16 – 7,15	115 35	66 20	◊ 148 ◊ 45										.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	115 35	66 20	◊ 148 ◊ 45										.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	115 35	66 20	◊ 148 ◊ 45										.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G141	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	262 80				197 ◊ 344 60 ◊ 105								.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	262 80				197 ◊ 344 60 ◊ 105								.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	262 80				197 ◊ 344 60 ◊ 105								.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	98 30	66 20	◊ 131 ◊ 40										— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	98 30	66 20	◊ 131 ◊ 40										— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G152	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	230 70			164 ◊ 295 50 ◊ 90									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	230 70			164 ◊ 295 50 ◊ 90									— —	.002 - .008 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1	G154	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	279 85			197 ◊ 361 60 ◊ 110									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2	G149	RMB	KT6215***	—	.551 – 1.260	14,00 – 32,00	279 85			197 ◊ 361 60 ◊ 110									— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	98 30	66 20	◊ 131 ◊ 40										— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G160	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	230 70			164 ◊ 295 50 ◊ 90									— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 5	G161	RMA	KT6215***	—	.220 – 1.795	5,60 – 45,59	279 85			197 ◊ 361 60 ◊ 110									— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										.003 - .005 0,07 - 0,13	— —
Single Padded Reamer	1, 3				E30	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										.004 - .006 0,09 - 0,16	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										0.004 - .007 0,11 - 0,19	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										.005 - .009 0,13 - 0,23	— —
Single Padded Reamer	1, 3, 5				EGS	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										.006 - .010 0,15 - 0,27	— —
Single Padded Reamer	1, 3, 5				EGU	.236 – 13.77	6,00 – 350,00	197 60		66 ◊ 328 20 ◊ 100										.007 - .012 0,17 - 0,30	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

High-Strength Ductile and Austempered Ductile Irons	• Tensile Strength RM (MPa)*: 600-900	• Hardness (HB) 180-350
Cutting Groups	• 18, 19, 20	• Hardness HRC: <38

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼						CUTTING SPEED		
Dial Set	CPGM…	KC9325	G111	1.375"- 6.500"	34,93mm- 165,10mm	492 150	328 100 ◊ 902 275	.005 - .016 0,12 - 0,40
	CPGM…	KC9320		1.375"- 6.500"	34,93mm- 165,10mm	705 215	443 135 ◊ 902 275	.016 - 0.025 0,25 - 0,40
	CPGM…	KC9325		1.375"- 6.500"	34,93mm- 165,10mm	755 230	591 180 ◊ 984 300	.010 - .016 0,25 - 0,40
Modbore	CCMT…MW CNMG…MW CNMG…UN CNMG…RP	KC9315	G7	.384" – 25.787"	9,70mm – 655,00mm	705 215	492 150 ◊ 902 275	.005 -.016 0,12 - 0,40
	CNMG…UN CNMG…RP	KC9320		.384" – 25.787"	9,70mm – 655,00mm	705 215	492 150 ◊ 902 275	.010 -.016 0,25 - 0,40
	CNMG…MW CNMG…UN CNMG…RP	KC9325		.384" – 25.787"	9,70mm – 655,00mm	705 215	443 135 ◊ 902 275	.010 -.016 0,25 - 0,40
	CCMT…MW CNMG…RP	KT315		.384" – 25.787"	9,70mm – 655,00mm	755 230	591 180 ◊ 1050 275	.010 - .016 0,25 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCMT…FW CCMT…LF CNMG…FN CNMG…FW	KC9315	G13	.384" – 25.787"	9,70mm – 655,00mm	705 215	427 130 ◊ 1148 350	.003 -.012 0,08 - 0,30
	CCMT…FW CCMT…LF	KC9320		.384" – 25.787"	9,70mm – 655,00mm	722 220	262 80 ◊ 1312 400	.005 -.020 0,12 - 0,50
	CCMT…11 CCMT…FW CCMT…LF CNMG…FF CNMG…FP CNMG…FN CNMG…FW	KT315		.384" – 25.787"	9,70mm – 655,00mm	755 230	591 180 ◊ 1148 350	.002 -.006 0,04 - 0,16
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW	KC9315	G49	.157"- 8.110"	4,00mm – 213,00mm	705 215	427 130 ◊ 902 275	.002 - .010 0,06 - 0,25
	CPMT..LF CPMT…FW	KC9320		.157"- 8.110"	4,00mm – 213,00mm	722 220	591 180 ◊ 984 300	.002 - .010 0,06 - 0,25
	CPMT..LF CPMT…FW CDHB…	KT315		.157"- 8.110"	4,00mm – 213,00mm	755 230	591 180 ◊ 738 225	.002 - .010 0,06 - 0,25
Kendex Precision	BPGF…LGD	KC7210	G121	.299"- .996"	5,8mm – 25,3mm	820 250	492 150 ◊ 1148 350	.001 - .003 0,02 - 0,08
Tapping								
Solid Carbide Taps – Through Holes	T340	KC7542	D2	—	—	345 105	262 80 ◊ 427 130	—
Solid Carbide Taps – Blind Holes	T351	KC7542	D2	—	—	246 75	164 50 ◊ 328 100	—

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – N1

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Flood Coolant	5xD	A7	B105/K105	K10	.118 - .787"	3,0 - 20,0 mm	689 210	328 100 — 1345 410
Through Coolant	5xD	A20	B411 / K411	KF1	.118 - 1"	3,0 - 25,4 mm	820 250	328 100 — 1476 450
Indexable Drills							**CUTTING SPEED**	
Through Stable	**2xD, 3xD, 4xD**	E8	**DFR**	O- KC7025 LD I - KC7025 LD	**.500 - 1.00"**	**12,5 - 24,00 mm**	2362 720	1300 396 — 2760 841
Unstable				O- KC7025 LD I - KC7025 LD			1575 480	1040 317 — 1840 561
Interrupted				O- KC7020 GD I - KC7025 LD			984 300	645 197 — 1141 348
Through Stable	**2.5xD, 4xD**	E13	**DFT**	O- KC7025 LD I - KC7025 LD	**.625 - 3.25"**	**16,00 - 82,00 mm**	2362 720	1560 475 — 2760 841
Unstable				O- KC7025 LD I - KC7025 LD			1575 480	1040 317 — 1840 561
Interrupted				O- KC7020 GD I - KC7025 LD			984 300	645 197 — 1141 348
Through Stable	**5xD, 8xD**	E61	**HTS-C**	P- B503 AS3 O- KM1 SPHX...R-22 I - KMF DFT-HP	**.750 - 2.00"**	**20,00 - 45,00 mm**	965 294	600 183 — 1500 457
Unstable				O- KM1 SPHX...R-20 I - KMF DFT-HP			643 196	398 121 — 996 304
Through Stable	**3xD - 10XD+**	E76	**HTS-DFR**	P- B514 G13 O- KC7025 LD I - KC7025 LD	**1.57 - 2.17"**	**40,00 - 55,00 mm**	787 240	420 128 — 1176 358
Unstable				O- KC7025 LD I - KC7025 LD			525 160	336 102 — 784 239
Interrupted				O- KC7025 LD I - KC7025 LD			341 104	218 67 — 510 155
Through Stable	**3xD - 10XD+**	E82	**HTS-DFT**	P- B510 AS3 O- KC7935 HP I - KC720 HP	**1.77 - 10.63"**	**45,00 - 270,00 mm**	787 240	504 154 — 1176 358
Unstable				O- KC7935 HP I - KC720 HP			525 160	336 102 — 784 239
Interrupted				O- KC7935 HP I - KC720 HP			341 104	218 67 — 510 155

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Wrought Aluminum Alloys	• **Tensile Strength RM (MPa)*: <520** • **Hardness (HB) 60-90**
Cutting Groups	• 21, 22

HOLE diameter														
inch	**.118**	**.157**	**.236**	**.315**	**.472**	**.630**	**.787**	**1.00**	**1.260**	**1.575**	**1.968**	**2.992**	**3.937**	**≥5.905**
mm	**3,0**	**4,0**	**6,0**	**8,0**	**12,0**	**16,0**	**20,0**	**25,4**	**32,0**	**40,0**	**50,0**	**76,0**	**100,0**	**≥150,0**
FEED RATE by diameter														
ipr	.003 - .007	.004 - .008	.007 - .013	.008 - .015	.013 - .020	.017 -.023	.025 - .031	—	—	—	—	—	—	—
mm/r	0,09 - 0,15	0,10 - 0,20	0,18 - 0,33	0,20 - 0,38	0,33 - 0,51	0,43 - 0,58	0,64 - 0,79	—	—	—	—	—	—	—
ipr	.006 -.010	.007 - .011	.009 - .014	.011 - .017	.014 - .022	.017 - .027	.020 - .032	.024 -.038	—	—	—	—	—	—
mm/r	0,16 - 0,25	0,19 - 0,29	0,23 - 0,35	0,27 - 0,42	0,36 - 0,57	0,44 - 0,69	0,52 - 0,82	0,62 - 0,96	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .002	.001 - 0.003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.050 - .002	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.002 - .002	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,06 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

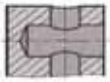
* 1 Mpa = 145 psi

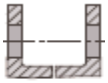
Best Tool Selector — Hole Finishing / Tapping - N1

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	295 90				230 70	◊	377 115						.004-.012 0,10-0,30	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	645 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	645 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	645 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						492 120	◊	591 180				—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				— —	.002 - .008 0,25 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	492 150						394 120	◊	591 180				—	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	K605	E13	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.004 - .010 0,10 - 0,25	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.002 - .010 0,05 - 0,25	— —
Single Padded Reamer	1, 3, 5				EGS	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Wrought Aluminum Alloys	• **Tensile Strength RM (MPa)*: <520** • **Hardness (HB) 60-90**
Cutting Groups	• 21, 22

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM… SPGH…	KC5410	G112	1.375"- 6.500"	34,93mm-165,10mm	1805 / 550	328 / 100 ◊ 3281 / 1000	.006 - .016 / 0,16 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm-165,10mm	853 / 260	328 / 100 ◊ 1969 / 600	.006 - .016 / 0,16 - 0,40
Modbore	CNGP….	KC5410	G8	.384" – 25.787"	9,70mm – 655,00mm	1805 / 550	328 / 100 ◊ 3281 / 1000	.006 - .016 / 0,16 - 0,40
	CNGP….	K313		.384" – 25.787"	9,70mm – 655,00mm	853 / 260	328 / 100 ◊ 1969 / 600	.006 - .016 / 0,16 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF	KC5410	G14	.384" – 25.787"	9,70mm – 655,00mm	1805 / 550	328 / 100 ◊ 3281 / 1000	.004 -.016 / 0,10 - 0,40
	CCGT…HP CCGT…LF CCMT…LF CNGG…LF	K313		.384" – 25.787"	9,70mm – 655,00mm	853 / 260	328 / 100 ◊ 1969 / 600	.004 -.016 / 0,10 - 0,40
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT…LF CPMT…FW CPGT…LF CDHB…	K313	G50	.157"- 8.110"	4,00mm – 213,00mm	853 / 260	328 / 100 ◊ 1969 / 600	.004 - .008 / 0,10 - 0,40
	CPGT…HP CPGT…LF	KC5410		.157"- 8.110"	4,00mm – 213,00mm	1805 / 550	328 / 100 ◊ 3281 / 1000	.002 - .002 / 0,04 - 0,06
Kendex Precision	BPGX…LHP	K313	G122	.299"- .996"	5,80mm – 25,30mm	525 / 160	492 / 150 ◊ 656 / 200	.001 - .003 / 0,16 - 0,40
Tapping								
Solid Carbide Taps – Through Holes	T461, T481	KC7512	D2	—	—	476 / 145	328 / 100 ◊ 623 / 190	—
Solid Carbide Taps – Blind Holes	T471, T491	KC7512	D2	—	—	328 / 110	230 / 70 ◊ 427 / 130	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – N2

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through Coolant	5xD	A20	B411 / K411	KF1	.118 - 1.00"	3,0 - 25,4 mm	656 200	328 100 — 984 300
Flood Coolant	5xD	A7	B105/K105	KC7210	.118 - .787"	3,0 - 20,0 mm	978 298	328 100 — 984 300
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E8	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2197 670	1209 369 — 2567 782
Unstable				O- KC7025 LD I - KC7025 LD			1465 446	1040 317 — 1840 561
Interrupted				O- KC7020 GD I - KC7025 LD			915 279	645 197 — 1141 348
Through	**2.5xD, 4xD**	E13	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2197 670	1560 475 — 2760 841
Unstable				O- KC7025 LD I - KC7025 LD			1465 446	1040 317 — 1840 561
Interrupted				O- KC7020 GD I - KC7025 LD			915 279	645 197 — 1141 348
Through	**5xD, 8xD**	E61	**HTS-C**	P- B503 AS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KM1 SPHX...R-22 I - KMF DFT-HP			868 265	600 183 — 1500 457
Unstable				O- KM1 SPHX...R-20 I - KMF DFT-HP			579 176	398 121 — 996 304
Through	**3xD - 10XD+**	E76	**HTS-DFR**	P- B514 G13	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			732 223	391 119 — 1094 333
Unstable				O- KC7025 LD I - KC7025 LD			488 149	336 102 — 784 239
Interrupted				O- KC7025 LD I - KC7025 LD			317 97	218 67 — 510 155
Through	**3xD - 10XD+**	E82	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7215 HP I - KC7215 HP			735 223	504 154 — 1176 358
Unstable				O- KC7215 HP I - KC7215 HP			488 149	336 102 — 784 239
Interrupted				O- KC7215 HP I - KC7215 HP			317 97	218 67 — 510 155

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Cast Aluminums	• **Content: Si<12.2%** • **Tensile Strength RM (MPa)*: <350** • **Hardness (HB): 70-100**
Cutting Groups	• 23, 24

HOLE diameter														
inch	**.118**	**.157**	**.236**	**.315**	**.472**	**.630**	**.787**	**1.00**	**1.260**	**1.575**	**1.968**	**2.992**	**3.937**	**≥5.905**
mm	**3,0**	**4,0**	**6,0**	**8,0**	**12,0**	**16,0**	**20,0**	**25,4**	**32,0**	**40,0**	**50,0**	**76,0**	**100,0**	**≥150,0**
FEED RATE by diameter														
ipr	.006 - .009	.007 - .011	.008 - .013	.010 - .015	.013 - .021	.017 - .026	.020 - .032	.024 - .038	—	—	—	—	—	—
mm/r	0,15 -0,23	0,17 -0,28	0,21 - 0,34	0,25 - 0,39	0,34 - 0,54	0,42 - 0,67	0,52 - 0,82	0,61 - 0,96	—	—	—	—	—	—
ipr	.003 - .007	.004 - .008	.007 - .013	.008 - .015	.013 - .020	.017 - .023	.025 - .031	—	—	—	—	—	—	—
mm/r	0,10 - 0,19	0,12 - 0,21	0,18 - 0,33	0,25 - 0,42	0,35 - 0,58	0,44 - 0,74	0,52 - 0,88	—	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

* 1 Mpa = 145 psi

Best Tool Selector – Hole Finishing / Tapping - N2

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	295 90				230 70	◊	377 115						.004 - .012 0,10-0,30	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	492 150						394 120	◊	591 180				— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊			820 250				.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	328 100			164 50		◊			820 250				.004 .- 010 0,10 - 0,25	— —
Single Padded Reamer	1, 3, 5				EDS	236 – 13.77	6,00 – 350,00	328 100			164 50		◊			820 250				.006 - 010 0,15 - 0,25	— —
Single Padded Reamer	1, 3, 5				EGS	236 – 13.77	6,00 – 350,00	328 100			164 50		◊			820 250				.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Cast Aluminums	• **Content: Si<12.2%** • **Tensile Strength RM (MPa)*: <350** • **Hardness (HB): 70-100**
Cutting Groups	• 23, 24

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM… SPGH…	KC5410	G112	1.375"- 6.500"	34,93mm- 165,10mm	1805 550	328 100 ◊ 3281 1000	.006 - .016 0,16 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm- 165,10mm	853 260	328 100 ◊ 1969 600	.006 - .016 0,25 - 0,40
Modbore	CNGP….	KC5410	G8	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.006 -.016 0,16 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF	KC5410	G14	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.004 -.016 0,10 - 0,40
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPGT…HP CPGT…LF	KC5410	G50	.157"- 8.110"	4,00mm – 213,00mm	1805 550	328 100 ◊ 3281 1000	.002 - .008 0,06 - 0,20
Kendex Precision	BPGX…LHP	K313	G122	.299"- .996"	5,8mm – 25,3mm	525 160	591 180 ◊ 656 200	.002 - .004 0,06 - 0,10
Tapping								
Solid Carbide Taps – Through Holes	T461, T481	KC7512	D2	—	—	394 120	262 80 ◊ 623 190	—
Solid Carbide Taps – Blind Holes	T471, T491	KC7512	D2	—	—	279 85	197 60 ◊ 427 110	—

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – N3

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E8	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2032 619	1118/341 ◊ 2374/723
Unstable				O- KC7025 LD I - KC7025 LD			1354 413	1040/317 ◊ 1840/561
Interrupted				O- KC7020 GD I - KC7025 LD			845 258	645/197 ◊ 1141/348
Through	**2.5xD, 4xD**	E13	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2032 619	1560/475 ◊ 2760/841
Unstable				O- KC7025 LD I - KC7025 LD			1354 413	1040/317 ◊ 1840/561
Interrupted				O- KC7020 GD I - KC7025 LD			846 258	645/197 ◊ 1141/348
Through	**5xD, 8xD**	E61	**HTS-C**	P- B503 AS3 O- KM1 SPHX...R-22 I - KMF DFT-HP	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable							772 235	372/113 ◊ 930/283
Unstable				O- KM1 SPHX...R-20 I - KMF DFT-HP			514 157	259/79 ◊ 648/198
Through	**3xD - 10XD+**	E76	**HTS-DFR**	P- B514 G13	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			677 206	361/110 ◊ 1011/308
Unstable				O- KC7025 LD I - KC7025 LD			451 138	336/102 ◊ 784/239
Interrupted				O- KC7025 LD I - KC7025 LD			293 89	218/67 ◊ 510/155
Through	**3xD - 10XD+**	E82	**HTS-DFT**	P- B510 AS3 O- KC7215 HP I - KC7215 HP	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable							677 206	504/154 ◊ 1176/358
Unstable				O- KC7215 HP I - KC7215 HP			451 138	336/102 ◊ 784/239
Interrupted				O- KC7215 HP I - KC7215 HP			293 89	218/67 ◊ 510/155

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Cast Aluminums	• Content: Si>12.2%	• Tensile Strength RM (MPa)*: 200-320	• Hardness (HB): 60-120
Cutting Groups	25,1		

HOLE diameter

inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0

FEED RATE by diameter

ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

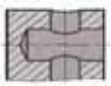
* 1 Mpa = 145 psi

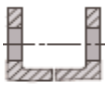
Best Tool Selector — Hole Finishing / Tapping - N3

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	295 90				230 70	◊	377 115						.004-.012 0,10-0,30	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				— —	.002 - .008 0,25 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	492 150						394 120	◊	591 180				— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	K605	E13	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.004 - .010 0,10 - 0,25	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.006 - .010 0,15 - 0,25	— —
Single Padded Reamer	1, 3, 5				EGS	.236 – 13.77	6,00 – 350,00	328 100			164 50		◊				820 250			.002 - .008 0,05 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Cast Aluminums	• **Content: Si>12.2%** • **Tensile Strength RM (MPa)*: 200-320** • **Hardness (HB): 60-120**
Cutting Groups	25,1

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM… SPGH…	KC5410	G112	1.375"- 6.500"	34,93mm- 165,10mm	1805 550	328 100 ◊ 3281 1000	.006 - .016 0,16 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm- 165,10mm	853 260	328 100 ◊ 1969 600	.006 - .016 0,16 - 0,40
Modbore	CNGP….	KC5410	G8	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.006 -.016 0,16 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF	KC5410	G14	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.004 -.016 0,10 - 0,40
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPGT…HP CPGT…LF	KC5410	G50	.157"- 8.110"	4,00mm – 213,00mm	1805 550	328 100 ◊ 3281 1000	.002 - .002 0,04 - 0,06
Kendex Precision	BPGX…LHP	K313	G122	.299"- .996"	5,80mm – 25,30mm	525 160	492 150 ◊ 656 200	.002 - .004 0,06 - 0,10
Tapping								
Solid Carbide Taps – Through Holes	T461	KC7512	D2	—	—	328 100	197 70 ◊ 427 130	—
Solid Carbide Taps – Blind Holes	T471	KC7512	D2	—	—	279 85	197 60 ◊ 361 110	—

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – N4

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E8	**DFR**		**.500 - 1.00"**	**12,50 - 24,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2362 720	1560 475 ◊ 2760 841
Unstable				O- KC7025 LD I - KC7025 LD			1575 480	1040 317 ◊ 1840 561
Interrupted				O- KC7020 GD I - KC7025 LD			984 300	645 197 ◊ 1141 348
Through	**2.5xD, 4xD**	E13	**DFT**		**.625 - 3.25"**	**16,00 - 76,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			2197 670	1560 475 ◊ 2760 841
Unstable				O- KC7025 LD I - KC7025 LD			1465 446	967 295 ◊ 1711 522
Interrupted				O- KC7020 GD I - KC7025 LD			915 279	600 183 ◊ 1061 323
Through	**3xD - 10XD+**	E77	**HTS-DFR**	P- B514 G13	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			732 223	391 119 ◊ 1094 333
Unstable				O- KC7025 LD I - KC7025 LD			488 149	336 102 ◊ 784 239
Interrupted				O- KC7025 LD I - KC7025 LD			317 97	218 67 ◊ 510 155
Through	**3xD - 10XD+**	E83	**HTS-DFT**	P- B510 AS3	**1.77 - 10.63"**	**45,00 - 270,00 mm**		
Stable				O- KC7225 LD I - KC7225 LD			732 223	504 154 ◊ 1176 358
Unstable				O- KC7225 LD I - KC7225 LD			488 149	336 102 ◊ 784 239
Interrupted				O- KC7225 LD I - KC7225 LD			317 97	218 67 ◊ 510 155

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

MMCs (Aluminum-Based Metal Matrix Composites)	• Tensile Strength RM (MPa)*: <700 • Hardness (HB): 210
Cutting Groups	• 25.2

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	.003 - .004	.004 - .005	.005 - .007	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,09	0,09 - 0,12	0,12 - 0,18	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	003 - .004	.004 - .006	005 - .006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

* 1 Mpa = 145 psi

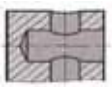
Best Tool Selector – Hole Finishing / Tapping - N4

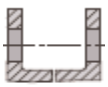
MMCs (Aluminum-Based Metal Matrix Composites)	• Tensile Strength RM (MPa)*: <700 • Hardness (HB): 210
Cutting Groups	• 25.2

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	295 90			230 70	◊		377 115						.004 - .012 0,10 - 0,30	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Internal Coolant - Axial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	492 150						361 110	◊	640 195				.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	492 150						361 110	◊	640 195				.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	492 150						361 110	◊	640 195				.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				—	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	492 150						394 120	◊	591 180				—	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	492 150						394 120	◊	591 180				—	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	328 100			164 50	◊				820 250				Upon —	request —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	328 100			164 50	◊				820 250				Upon —	request —
Single Padded Reamer	1, 3, 5				EDS	236 – 13.77	6,00 – 350,00	328 100			164 50	◊				820 250				Upon —	request —
Single Padded Reamer	1, 3, 5				EGS	236 – 13.77	6,00 – 350,00	328 100			164 50	◊				820 250				Upon —	request —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Best Tool Selector — Drilling – N5

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through Coolant	5xD	A20	B411 / K411	KF1	.118 - 1.00"	3,0 - 25,4 mm	568 173	328 – 820 100 – 250
Flood Coolant	5xD	A7	B105/K105	KC7210	.118 - .787"	3,0 - 20,0 mm	738 225	197 – 984 60 – 300
Indexable Drills							**CUTTING SPEED**	
Through	**2.5xD, 4xD**	E14	**DFT**		**.625 - 3.250"**	**16,00 - 82,00 mm**		
Stable				O- KC7025 LD I - KC7025 LD			1636 540	1454 – 1818 480 – 600
Unstable				O- KC7025 LD I - KC7025 LD			1091 360	970 – 1212 320 – 400
Interrupted				O- KC7020 GD I - KC7025 LD			682 225	606 – 758 200 – 250
Through	**5xD, 8xD**	E61	**HTS-C**	P- B503 AS3 O- KM1 SPHX...R-20 I - KMF DFT-HP	**.750 - 2.000"**	**20,00 - 45,00 mm**		
Stable							2362 720	1560 – 2760 475 – 841
Unstable				O- KM1 SPHX...R-20 I - KMF DFT-HP			1575 480	1040 – 1840 317 – 561
Through	**3xD - 10XD+**	E77	**HTS DFR**	P- B514 G13 O- KC7025 LD I - KC7025 LD	**1.57 - 2.17"**	**40,00 - 55,00 mm**	722 220	302 – 858 92 – 262
Unstable				O- KC7025 LD I - KC7025 LD			459 140	235 – 549 72 – 167
Interrupted				O- KC7025 LD I - KC7025 LD			295 90	151 – 351 46 – 107
Through	**3xD - 10XD+**	E83	**HTS-DFT**	P- B510 AS3 O- KC7215 GD I - KC7215 GD	**1.77 - 10.63"**	**45,00 - 270,00 mm**	722 220	368 – 858 112 – 262
Unstable				O- KC7215 GD I - KC7215 GD			459 140	235 – 549 72 – 167
Interrupted				O- KC7215 GD I - KC7215 GD			295 90	151 – 351 46 – 107

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Copper and Copper Alloys	• Tensile Strength RM (MPa)*: 200-650	• Hardness (HB): 60-200
Cutting Groups	• 26, 27, 28	

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.006 - .011	.006 - .013	.007 - .014	.009 - .016	.011 - .019	.013 - .022	.014 - .025	.017 - .028	—	—	—	—	—	—
mm/r	0,16 - 0,28	0,15 - 0,32	0,19 - 0,36	0,23 - 0,40	0,28 - 0,48	0,32 - 0,56	0,35 - 0,63	0,42 - 0,72	—	—	—	—	—	—
ipr	.003 - .006	.005- .007	.007 - .013	.008 - .014	.013 - .018	.015 - .019	.023 - .030	—	—	—	—	—	—	—
mm/r	0,08 - 0,15	0,13 - 0,18	0,18 - 0,33	0.20 - 0.36	0,33 - 0,46	0,38 - 0,48	0,58 - 0,76	—	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.004 - .006	.005 -.006	.006 - .007	.006 - .007	—	—
mm/r	—	—	—	—	—	0,05 - 0,07	0,05 - 0,07	0,07 - 0,09	0,10 - 0,14	0,12 - 0,16	0,14 - 0,18	0,14 - 0,18	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	.002 - .002	.002 - .002	.004 - .005	.004 - .006	—	—	—	—
mm/r	—	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,09 - 0,12	0,10 - 0,14	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	—	—	—
mm/r	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	—	—	—
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25
ipr	—	—	—	—	—	—	—	—	—	—	.002 - .004	.004 - .007	.005 - .008	.006 - .010
mm/r	—	—	—	—	—	—	—	—	—	—	0,06 - 0,09	0,11 - 0,19	0,12 - 0,20	0,14 - 0,25

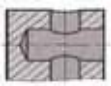
* 1 Mpa = 145 psi

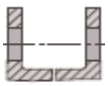
Best Tool Selector — Hole Finishing / Tapping - N5

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
																				ipr	tooth feed inch
								sfm	45	91	152	242	303	364	455	606	758	909	1061		
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	295 90			213 65	◊	361 110							.004-.012 0,10-0,30	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	459 140					344 105	◊	591 180					.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	459 140					344 105	◊	591 180					.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	459 140					344 105	◊	591 180					.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	459 140					344 105	◊	591 180					.012 - .031 0,30 - 0,80	— —
						.282 – .378	7,16 – 9,59	459 140					344 105	◊	591 180					.012 - .039 0,30 - 1,00	— —
						.378 – .551	9,6 – 14,0	459 140					344 105	◊	591 180					.012 - .047 0,30 - 1,20	— —
Helical Flute – LH Internal Coolant Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	459 140					361 110	◊	525 160					— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant Axial	2, 4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	459 140					361 110	◊	525 160					— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMB	K605**	—	.220 – 1.795	5,60 – 45,59	459 140					361 110	◊	525 160					— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3,	G172	RIR/RIQ†	KC6005	E13	.236 – 13.77	6,00 – 350,00	328 100			164 50	◊					820 250			.004 - .016 0,10 - 0,40	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	328 100			164 50	◊					820 250			.004 - .008 0,10 - 0,20	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	328 100			164 50	◊					820 250			.004 - .008 0,10 - 0,20	— —
Single Padded Reamer	1, 3, 5				EGS	.236 – 13.77	6,00 – 350,00	328 100			164 50	◊					820 250			.002 - .008 0,05 - 0,15	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Copper and Copper Alloys	• **Tensile Strength RM (MPa)*: 200-650** • **Hardness (HB): 60-200**
Cutting Groups	• 26, 27, 28

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	CPGM… SPGH…	KC5410	G112	1.375"- 6.500"	34,93mm- 165,10mm	1805 550	328 100 ◊ 3281 1000	.006 - .016 0,16 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm- 165,10mm	853 260	328 100 ◊ 1969 600	.006 - .016 0,16 - 0,40
Modbore	CNGP….	KC5410	G8	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.006 - .016 0,16 - 0,40
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF	KC5410	G14	.384" – 25.787"	9,70mm – 655,00mm	1805 550	328 100 ◊ 3281 1000	.004 -.016 0,10 - 0,40
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT…LF CPMT…FW CPGT…LF CDHB…	K313	G50	.157"- 8.110"	4,00mm – 213,00mm	853 260	328 100 ◊ 1969 600	.004 - .016 0,10 - 0,40
Kendex Precision	BPGX…LHP	K313	G122	.299"- .996"	5,80mm – 25,30mm	525 160	492 150 ◊ 656 200	.002 - .004 0,06 - 0,10
Tapping								
Solid Carbide Taps – Through Holes	T461, T481	KC7512	D2	—	—	312 95	197 60 ◊ 427 130	—
Solid Carbide Taps – Blind Holes	T471, T491	KC7512	D2	—	—	230 70	164 50 ◊ 295 90	—

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – N6

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	262 328 394 492 656 820 984 1148 1640 2460 3281
							m/min	80 100 120 150 200 250 300 350 500 750 1000
Solid Carbide / Modular Drills							CUTTING SPEED	
Dry	3xD, 5xD	A101	B531, B532 / K531, K532	KDF400	.118 - .472"	3,0 - 12,0 mm	394 120	295 ◊ 492 90 ◊ 150

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Carbon and Graphite Composites	• Tensile Strength RM (MPa)*: 600-1500
Cutting Groups	

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.001 - .008	.001 - .008	.001 - .008	.001 - .008	.001 - .008	—	—	—	—	—	—	—	—	—
mm/r	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	0,03 - 0,20	—	—	—	—	—	—	—	—	—

* 1 Mpa = 145 psi

Best Tool Selector — Drilling - S1

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	0 49 98 164 262 328 394 492 656 820 984
							m/min	0 15 30 50 80 100 120 150 200 250 300
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD	A90	B283-B284 / K283-K284	K715	.118 - .787"	3,00 - 20,00 mm	82 / 25	66 / 20 ◊ 98 / 30
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E9	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			164 / 50	75 / 23 ◊ 200 / 61
Unstable				O- KC7020 LD I - KC7225 LD			98 / 30	60 / 18 ◊ 133 / 41
Interrupted				O- KC7020 GD I - KC7225 LD			66 / 20	45 / 14 ◊ 100 / 30
Through	**2.5xD, 4xD**	E14	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			164 / 50	75 / 23 ◊ 200 / 61
Unstable				O- KC7020 GD I - KC7225 LD			98 / 30	60 / 18 ◊ 133 / 41
Interrupted				O- KC020 GD I - KC7225 LD			66 / 20	45 / 14 ◊ 100 / 30
Through	**5xD, 8xD**	E61	**HTS-C**	P- B504 CS3	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable				O- KC7215 SPHX...-31 I - KC7215 DFT-GD			131 / 40	70 / 21 ◊ 160 / 49
Unstable				O- KC7215 SPHX...-31 I - KC720 DFT-GD			98 / 30	60 / 18 ◊ 120 / 33
Through	**3xD - 10XD+**	E84	**HTS-DFT**	P- B510 AS3	**1.77 - 2.17"**	**45,00 - 270,00 mm**		
Stable				O- KC720 GD I - KC720 GD			131 / 40	80 / 24 ◊ 160 / 49
Unstable				O- KC720 GD I - KC720 GD			98 / 30	60 / 18 ◊ 120 / 37
Interrupted				O- KC720 GD I - KC720 GD			82 / 25	50 / 15 ◊ 100 / 30

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Iron-Based, Heat-Resistant Alloys	• Content	• Tensile Strength RM (MPa)*: 500-1200	• Hardness (HB) 160-260
Cutting Groups	• 31, 32		

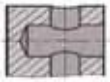
HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.001 - .002	.002 - .002	.002 - .004	.003 - .005	.004 - .006	.006 - .007	.006 - .009	—	—	—	—	—	—	—
mm/r	0,03 - 0,05	0,04- 0,06	0,06 - 0,09	0,08 - 0,12	0,11 - 0,16	0,14 - 0,19	0,16 - 0,23	—	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .004	.002 - .002	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,07 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.002 - .002	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,14	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .002	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06	—	—	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .002	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10

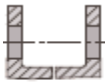
Best Tool Selector – Hole Finishing / Tapping - S1

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
								sfm / m/min	45 91 152 242 303 364 455 606 758 909 1061 / 15 30 50 80 100 120 150 200 250 300 350	ipr / mm/r — tooth feed inch / mm
Reamers — Monoblock									CUTTING SPEED	
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	26 / 8	20 ◊ 33 / 6 ◊ 10	.004-.008 / 0,10-0,20 — —
Straight Flute – External Coolant	1, 3, 5	G133	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	66 / 20	49 ◊ 92 / 15 ◊ 28	.004-.008 / 0,10-0,20 — —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	33 / 10	26 ◊ 49 / 8 ◊ 15	.004 - .018 / 0,10 - 0,45 — —
						.282 – .378	7,16 – 9,59	33 / 10	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50 — —
						.378 – .551	9,6 – 14,0	33 / 10	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50 — —
Straight Flute – Internal Coolant - Axial	2, 4	G137	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 ◊ 92 / 15 ◊ 28	.004 - .018 / 0,10 - 0,45 — —
						.282 – .378	7,16 – 9,59	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50 — —
						.378 – .551	9,6 – 14,0	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50 — —
Helical Flute – LH Helix Internal Coolant - Axial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	33 / 10	26 ◊ 49 / 8 ◊ 15	.004 - .018 / 0,10 - 0,45 — —
						.282 – .378	7,16 – 9,59	33 / 10	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50 — —
						.378 – .551	9,6 – 14,0	33 / 10	26 ◊ 49 / 8 ◊ 15	.006 - .020 / 0,15 - 0,50 — —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G141	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 ◊ 92 / 15 ◊ 28	.004 - .018 / 0,10 - 0,45 — —
						.282 – .378	7,16 – 9,59	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50 — —
						.378 – .551	9,6 – 14,0	66 / 20	49 ◊ 92 / 15 ◊ 28	.006 - .020 / 0,15 - 0,50 — —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	26 ◊ 82 / 8 ◊ 25	— — .002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	26 ◊ 82 / 8 ◊ 25	— — .002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G152	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 / 35	66 ◊ 148 / 20 ◊ 45	— — .002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	115 / 35	66 ◊ 148 / 20 ◊ 45	— — .002 - .008 / 0,05 - 0,20
Reamers — Expandable										
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	49 / 15	26 ◊ 82 / 8 ◊ 25	— — .002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G160	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	115 / 35	66 ◊ 148 / 20 ◊ 45	— — .002 - .008 / 0,05 - 0,20
Reamers — Insertable										
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.004 - .016 / 0,10 - 0,40 — —
Single Padded Reamer	2, 4				E06	236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.004 - .008 / 0,10 - 0,20 — —
Single Padded Reamer	1, 3, 5				EDS	236 – 13.77	6,00 – 350,00	82 / 25	33 ◊ 131 / 10 ◊ 40	.006 - .010 / 0,15 - 0,25 — —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Iron-Based, Heat-Resistant Alloys	• Content • Tensile Strength RM (MPa)*: 500-1200 • Hardness (HB) 160-260
Cutting Groups	• 31, 32

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	sfm: 98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 m/min: 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	SNGH…	KC9240 NEW	G112	1.375"- 6.500"	34,93mm- 165,10mm	115 35	33 197 / 10 60	.005 - .016 0,12 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	197 60	98 410 / 30 125	.005 - .016 0,12 - 0,40
	CPGM…	KC5025		1.375"- 6.500"	34,93mm- 165,10mm	98 30	66 197 / 20 60	.005 - .016 0,12 - 0,40
	SPGH…SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	230 70	148 591 / 45 180	.005 - .016 0,12 - 0,40
	CPMG…	K313		1.375"- 6.500"	34,93mm- 165,10mm	180 55	66 295 / 20 90	.005 - .016 0,12 - 0,40
	CPMG…	KT315		1.375"- 6.500"	34,93mm- 165,10mm	148 45	66 246 / 20 75	.005 - .016 0,12 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G9	.384" – 25.787"	9,70mm – 655,00mm	180 55	98 394 / 30 120	.005 -.016 0,12 - 0,40
	CNGP….	K313		.384" – 25.787"	9,70mm – 655,00mm	98 30	33 164 / 10 50	.004 -.010 0,10 - 0,25
	CNMG….RP	KC5510		.384" – 25.787"	9,70mm – 655,00mm	197 60	98 410 / 30 125	.008 -.016 0,20 - 0,40
	CNGP….	KC5525		.384" – 25.787"	9,70mm – 655,00mm	180 55	98 394 / 30 120	.008 -.025 0,20 - 0,63
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G14	.384" – 25.787"	9,70mm – 655,00mm	180 55	98 394 / 30 120	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	131 40	98 197 / 30 60	.025 -.010 0,63 - 0,25
	CCGT…HP CCGT…LF CCMT…LF CNGG…LF	K313		.384" – 25.787"	9,70mm – 655,00mm	98 30	33 164 / 10 50	.004 -.010 0,10 - 0,25
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G50	.157"- 8.110"	4,00mm – 213,00mm	197 60	98 410 / 30 125	.002 - .012 0,04 - 0,30
	CPMT...LF CPGT…HP CPGT…LF	KC5025		.157"- 8.110"	4,00mm – 213,00mm	98 30	66 197 / 20 60	.002 - .012 0,04 - 0,30
	CPMT...LF CPMT...FW CPGT…LF CDHB…	KT313		.157"- 8.110"	4,00mm – 213,00mm	115 35	33 213 / 10 65	.002 - .012 0,04 - 0,30
Kendex Precision	BPGF…	KC7210	G122	.299"- .996"	5,8mm – 25,3mm	197 60	98 410 / 30 125	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi

For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling - S2

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	0 49 98 164 262 328 394 492 656 820 984
							m/min	0 15 30 50 80 100 120 150 200 250 300
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD	A90	B284-B285 / K284-K285	KC715	.118 - .787"	3,00 - 20,00 mm	49 / 15	33 / 10 ◊ 66 / 20
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E9	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			148 / 45	68 / 23 ◊ 180 / 55
Unstable				O- KC7020 GD I - KC7225 LD			82 / 25	60 / 18 ◊ 106 / 32
Interrupted				O- KC7020 GD I - KC7225 LD			66 / 20	45 / 14 ◊ 80 / 24
Through	**2.5xD, 4xD**	E14	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			148 / 45	75 / 23 ◊ 160 / 49
Unstable				O- KC7020 GD I - KC7225 LD			82 / 25	60 / 18 ◊ 106 / 32
Interrupted				O- KC020 GD I - KC7225 LD			66 / 20	45 / 14 ◊ 100 / 30
Through	**5xD, 8xD**	E61	**HTS-C**	P- B504 CS3 O- KC7215 SPHX...-31 I - KC7215 DFT-GD	**.750 - 2.00"**	**20,00 - 45,00 mm**		
Stable							115 / 35	61 / 19 ◊ 139 / 42
Unstable				O- KC7215 SPHX...-31 I - KC720 DFT-GD			82 / 25	58 / 18 ◊ 112 / 34
Through	**3xD - 10XD+**	E84	**HTS-DFT**	P- B510 AS3 O- KC720 GD I - KC720 GD	**1.57 - 2.17"**	**40,00 - 55,00 mm**		
Stable							115 / 35	82 / 25 ◊ 158 / 48
Unstable				O- KC720 GD I - KC720 GD			82 / 25	58 / 18 ◊ 112 / 34
Interrupted				O- KC720 GD I - KC720 GD			66 / 20	46 / 14 ◊ 90 / 27

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Nickel-Based or Cobalt-Based, Heat-Resistant Alloys	• Content	• Tensile Strength RM (MPa)*: 1000-1450	• Hardness (HB) 250-450
Cutting Groups	• 33, 34, 35		• Hardness HRC: 25-48

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.001 - .001	.002 - .002	.002 - .003	.003 - .004	.004 - .005	.005 - .006	.006 - .007	—	—	—	—	—	—	—
mm/r	0,03 - 0,04	0,04- 0,05	0,06 - 0,08	0,08 - 0,10	0,11 - 0,13	0,12 - 0,16	0,14 - 0,18	—	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .003	.002 -.004	.003 - .005	.003 - .005	—	—
mm/r	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,08 - 0,13	0,08 - 0,13	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .002	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06	—	—	—	—
ipr	—	—	—	—	—	—	.001 - .002	.001 - .002	.002 - .002	.002 - .002	—	—	—	—
mm/r	—	—	—	—	—	—	0,03 - 0,05	0,03 - 0,05	0,04 - 0,06	0,04 - 0,06	—	—	—	—
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10
ipr	—	—	—	—	—	—	—	—	—	.002 - .003	.002 - .003	.003 - .004	.003 - .004	.003 - .004
mm/r	—	—	—	—	—	—	—	—	—	0,04 - 0,07	0,05 - 0,08	0,07 - 0,10	0,07 - 0,10	0,07 - 0,10

* 1 Mpa = 145 psi

Best Tool Selector — Hole Finishing / Tapping - S2

Hole Type 1 | Hole Type 2 | Hole Type 3 | Hole Type 4 | Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE ipr	FEED RATE tooth feed inch
								sfm / m/min	45 91 152 242 303 364 455 606 758 909 1061 / 15 30 50 80 100 120 150 200 250 300 350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED		
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	26 / 8	20 – 33 / 6 – 10	.004 - .008 / 0,10-0,20	— / —
Straight Flute – External Coolant	1, 3, 5	G133	RMS	KC6305*	—	.055 – .163	1,40 – 4,15	66 / 20	49 – 92 / 15 – 28	.004-.008 / 0,10-0,20	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	33 / 10	26 – 49 / 8 – 15	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	33 / 10	26 – 49 / 8 – 15	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	33 / 10	26 – 49 / 8 – 15	0,15 - 0,50 / 0,25 - 0,65	— / —
Straight Flute – Internal Coolant - Axial	2, 4	G137	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 – 92 / 15 – 28	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	66 / 20	49 – 92 / 15 – 28	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	66 / 20	49 – 92 / 15 – 28	.006 - .020 / 0,15 - 0,50	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	33 / 10	26 – 49 / 8 – 15	.004 - .018 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	33 / 10	26 – 49 / 8 – 15	.006 - .020 / 0,15 - 0,50	— / —
						.378 – .551	9,6 – 14,0	33 / 10	26 – 49 / 8 – 15	.006 - .020 / 0,15 - 0,50	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G141	RMS	KC6305*	—	.164 – .281	4,16 – 7,15	66 / 20	49 – 92 / 15 – 28	.004 - .014 / 0,10 - 0,45	— / —
						.282 – .378	7,16 – 9,59	66 / 20	49 – 92 / 15 – 28	.006 - .018 / 0,15 - 0,45	— / —
						.378 – .551	9,6 – 14,0	66 / 20	49 – 92 / 15 – 28	.006 - .018 / 0,15 - 0,45	— / —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	26 – 82 / 8 – 25	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	49 / 15	26 – 82 / 8 – 25	— / —	.002 - .008 / 0,05 - 0,20
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G152	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	82 / 25	49 – 131 / 15 – 40	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G148	RMB	KC6305**	—	.551 – 1.260	14,00 – 32,00	82 / 25	49 – 131 / 15 – 40	— / —	.002 - .008 / 0,05 - 0,20
Reamers — Expandable											
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	49 / 15	26 – 82 / 8 – 25	— / —	.002 - .008 / 0,05 - 0,20
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G160	RMA	KC6305**	—	.220 – 1.795	5,60 – 45,59	82 / 25	49 – 131 / 15 – 40	— / —	.002 - .008 / 0,05 - 0,20
Reamers — Insertable											
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC6305	E13	.236 – 13.77	6,00 – 350,00	82 / 25	33 – 131 / 10 – 40	.004 - .016 / 0,10 - 0,40	— / —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	82 / 25	33 – 131 / 10 – 40	.004 - .008 / 0,10 - 0,20	— / —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	82 / 25	33 – 131 / 10 – 40	.006 - .010 / 0,15 - 0,25	— / —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Nickel-Based or Cobalt-Based, Heat-Resistant Alloys	• Content	• Tensile Strength RM (MPa)*: 1000-1450	• Hardness (HB) 250-450
Cutting Groups	• 33, 34, 35		• Hardness HRC: 25-48

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	SNGH…	KC9240NEW	G113	1.375"- 6.500"	34,93mm- 165,10mm	230 70	148 45 ◊ 591 180	.005 - .016 0,12 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm- 165,10mm	180 55	66 20 ◊ 2951 90	.005 - .016 0,12 - 0,40
	CPGM…	KC5025		1.375"- 6.500"	34,93mm- 165,10mm	115 35	33 10 ◊ 197 60	.005 - .016 0,12 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm- 165,10mm	197 60	98 30 ◊ 410 125	.005 - .016 0,12 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm- 165,10mm	98 30	66 20 ◊ 197 60	.005 - .016 0,12 - 0,40
	CPGM…	K68		1.375"- 6.500"	34,93mm- 165,10mm	230 70	148 45 ◊ 591 180	.005 - .016 0,12 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G9	.384" – 25.787"	9,70mm – 655,00mm	197 60	98 30 ◊ 410 125	.005 -.016 0,12 - 0,40
	CNGP….	K313		.384" – 25.787"	9,70mm – 655,00mm	115 35	33 10 ◊ 197 60	.004 -.010 0,10 - 0,25
	CNMG….RP	KC5510		.384" – 25.787"	9,70mm – 655,00mm	197 60	98 30 ◊ 410 125	.008 -.016 0,20 - 0,40
	CNGP….	KC5525		.384" – 25.787"	9,70mm – 655,00mm	98 30	33 10 ◊ 197 60	.008 -.025 0,20 - 0,63
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G14	.384" – 25.787"	9,70mm – 655,00mm	197 60	98 30 ◊ 410 125	.002 -.010 0,06 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	98 30	66 20 ◊ 197 60	.025 -.010 0,63 - 0,25
	CCGT…HP CCGT…LF CCMT…LF CNGG…LF	K313		.384" – 25.787"	9,70mm – 655,00mm	115 35	33 10 ◊ 197 60	.004 -.010 0,10 - 0,25
Boring — Fine Finishing ▼▼▼▼								
Romicron**	CPMT..LF CPMT…FW CPGT…FW CPGT…LF CPGT…HP CDHB….	KC5010	G50	.157"- 8.110"	4,00mm – 213,00mm	197 60	98 30 ◊ 410 125	.002 - .012 0,04 - 0,30
	CPMT...LF CPGT…HP CPGT…LF	KC5025		.157"- 8.110"	4,00mm – 213,00mm	98 30	66 20 ◊ 197 60	.002 - .012 0,04 - 0,30
	CPMT…LF CPMT…FW CPGT…LF CDHB…	K313		.157"- 8.110"	4,00mm – 213,00mm	115 35	33 10 ◊ 197 60	.002 - .012 0,04 - 0,30
Kendex Precision	BPGF…	KC7210	G122	.299"- .996"	5,8mm – 25,3mm	180 55	66 20 ◊ 295 90	.001 - .003 0,02 - 0,08

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

**Diameter Range for Romicron represents standard product offering shown within current catalog. Romicron custom solutions can be manufactured for an unlimited hole diameter size. For more information, contact your local KMT representative.

Best Tool Selector — Drilling – S3

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	0 49 98 164 262 328 394 492 656 820 984
							m/min	0 15 30 50 80 100 120 150 200 250 300
Indexable Drills								
Through	**2xD, 3xD, 4xD**	E9	**DFR**		**.500 - 1.00"**	**12,50 - 24,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			230 70	125 315 38 96
Unstable				O- KC7020 GD I - KC7225 LD			131 40	100 180 30 55
Interrupted				O- KC7020 GD I - KC7225 LD			98 30	75 135 23 41
Through	**2.5xD, 4xD**	E15	**DFT**		**.625 - 3.25"**	**16,00 - 82,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			230 70	125 315 38 96
Unstable				O- KC7020 GD I - KC7225 LD			131 40	100 180 30 55
Interrupted				O- KC020 GD I - KC7225 LD			98 30	75 135 23 41

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Titanium	• **Tensile Strength RM (Mpa)*: 900-1600**	• **Hardness (HB) 300-400**
Cutting Groups	• 36	• **Hardness HRC: 33-43**

HOLE diameter

inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0

FEED RATE by diameter

ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .002	.002 - .004	.002 - .003	.002 -.004	.004 - .006	.004 - .006	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .002	.002 - .003	.002 - .004	.002 -.004	.004 - .006	.004 - .006	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .002	.002 - .003	.002 - .004	.002 -.004	.004 - .006	.004 - .006	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—

* 1 Mpa = 145 psi

Best Tool Selector — Hole Finishing / Tapping - S3

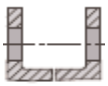
Titanium		• **Tensile Strength RM (Mpa)*: 900-1600**	• **Hardness (HB) 300-400**
Cutting Groups	• 36		• **Hardness HRC: 33-43**

Hole Type 1

Hole Type 2

Hole Type 3

Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm / m/min	45 / 15	91 / 30	152 / 50	242 / 80	303 / 100	364 / 120	455 / 150	606 / 200	758 / 250	909 / 300	1061 / 350	ipr / mm/r	tooth feed inch / mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	61 20	45 ◊ 76 15 ◊ 25											.004 - .008 0,10 - 0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	82 25	49 ◊ 115 15 ◊ 35											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	82 25	49 ◊ 115 15 ◊ 35											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	K605	E13	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.008 - .010 0,20 - 0,25	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.008 - .008 0,20 - 0,20	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.004 - .008 0,10 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

Best Tool Selector — Drilling – S4

Coolant Method / Application	Drilling Depth	Ref. Pg. No.	Catalog Series	* Grade/ Geometry	Diameter Range Inch	Diameter Range Metric	Starting Value	Range
							sfm	0 49 98 164 262 328 394 492 656 820 984
							m/min	0 15 30 50 80 100 120 150 200 250 300
Solid Carbide / Modular Drills							**CUTTING SPEED**	
Through	3xD, 5xD	A90	B284-B285 / K284-285	KC715	.118 - .787"	3,00 - 20,00 mm	115 35	66 ◊ 164 20 ◊ 50
Indexable Drills							**CUTTING SPEED**	
Through	**2xD, 3xD, 4xD**	E9	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			148 45	88 ◊ 226 27 ◊ 69
Unstable				O- KC7020 GD I - KC7225 LD			115 35	75 ◊ 150 23 ◊ 46
Interrupted				O- KC7020 GD I - KC7225 LD			98 30	62 ◊ 125 19 ◊ 38
Through	**2xD, 3xD, 4xD**	E15	**DFR**		**.500 - 1.00"**	**12,5 - 24,00 mm**		
Stable				O- KC7020 GD I - KC7225 LD			148 45	89 ◊ 226 27 ◊ 69
Unstable				O- KC7020 GD I - KC7225 LD			115 35	75 ◊ 150 23 ◊ 46
Interrupted				O- KC7020 GD I - KC7225 LD			98 30	62 ◊ 125 19 ◊ 38

* Indexable Drill Grade/Geometry: O = Outboard, I = Inboard, P = Pilot Drill

Titanium Alloys	• Tensile Strength RM (Mpa)* 900-1600	• Hardness (HB) 300-400
Cutting Groups	• 37	• Hardness HRC: 33-43

HOLE diameter														
inch	.118	.157	.236	.315	.472	.630	.787	1.00	1.260	1.575	1.968	2.992	3.937	≥5.905
mm	3,0	4,0	6,0	8,0	12,0	16,0	20,0	25,4	32,0	40,0	50,0	76,0	100,0	≥150,0
FEED RATE by diameter														
ipr	.001 - .001	.002 - .002	.002 - .003	.003 - .004	.005 - .006	.005 - .007	.006 - .008	—	—	—	—	—	—	—
mm/r	0,03 - 0,04	0,04- 0,05	0,06 - 0,08	0,08 - 0,10	0,13 - 0,15	0,14 - 0,18	0,16 - 0,21	—	—	—	—	—	—	—
FEED RATE by diameter														
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	.001 - .002	.001 - .003	.002 - .003	—	—	—	—	—	—	—
mm/r	—	—	—	—	0,03 - 0,05	0,04 - 0,06	0,05 - 0,08	—	—	—	—	—	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006	—	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006	—	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—	—
ipr	—	—	—	—	—	.002 - .002	.002 - .003	.002 - .004	.002 - .004	.004 - .006	.004 - .006	—	—	—
mm/r	—	—	—	—	—	0,04 - 0,06	0,05 - 0,08	0,06 - 0,10	0,06 - 0,10	0,09 - 0,15	0,09 - 0,15	—	—	—

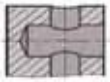
* 1 Mpa = 145 psi

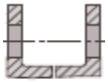
Best Tool Selector — Hole Finishing / Tapping - S4

Hole Type 1

Hole Type 2

Hole Type 3


Hole Type 4


Hole Type 5

Type	Hole Type	Ref. Pg. No.	Catalog Series	Grade	Lead Type	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range											FEED RATE	
								sfm	45	91	152	242	303	364	455	606	758	909	1061	ipr	tooth feed inch
								m/min	15	30	50	80	100	120	150	200	250	300	350	mm/r	mm
Reamers — Monoblock									CUTTING SPEED												
Straight Flute – External Coolant	1, 3, 5	G131	RMS	K605*	—	.055 – .163	1,40 – 4,15	61 20	45 ◊ 76 15 ◊ 25											.004 - .008 0,10 - 0,20	— —
Straight Flute – Internal Coolant - Axial	2, 4	G135	RMS	K605*	—	.164 – .281	4,16 – 7,15	82 25	49 ◊ 115 15 ◊ 35											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G139	RMS	K605*	—	.164 – .281	4,16 – 7,15	82 25	49 ◊ 115 15 ◊ 35											.004 - .018 0,10 - 0,45	— —
						.282 – .378	7,16 – 9,59	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
						.378 – .551	9,6 – 14,0	82 25	49 ◊ 115 15 ◊ 35											.006 - .020 0,15 - 0,50	— —
Helical Flute – LH Helix Internal Coolant - Radial	1, 3, 5	G151	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Straight Flute – Internal Coolant - Axial	2,4	G146	RMB	K605**	—	.551 – 1.260	14,00 – 32,00	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Reamers — Expandable																					
Straight Flute – Internal Coolant	1, 2, 3, 4, 5	G158	RMA	K605**	—	.220 – 1.795	5,60 – 45,59	82 25	49 ◊ 115 15 ◊ 35											— —	.002 - .008 0,05 - 0,20
Reamers — Insertable																					
Single Padded Reamer	1, 3	G172	RIR/RIQ†	KC605	E13	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.008 - .010 0,20 - 0,25	— —
Single Padded Reamer	2, 4				E06	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.008 - .008 0,20 - 0,20	— —
Single Padded Reamer	1, 3, 5				EDS	.236 – 13.77	6,00 – 350,00	66 20	66 ◊ 20 ◊											.004 - .008 0,10 - 0,20	— —

*RMS = Solid Carbide, **K605, KC6305 = Carbide Tipped, ***KT6215 = Cermet Tipped, †RIQ starts at .630"/16,00mm

To place an order, contact Kennametal or your authorized Kennametal distributor, or visit www.kennametal.com.

Titanium Alloys	• **Tensile Strength RM (Mpa)* 900-1600**	• **Hardness (HB) 300-400**
Cutting Groups	• 37	• **Hardness HRC: 33-43**

Type	Geometry	Grade	Ref. Pg. No.	Diameter Range Inch	Diameter Range Metric (mm)	Starting Value	Range	FEED RATE
						sfm / m/min	98 164 262 328 394 492 656 820 984 1148 1640 2460 3281 / 30 50 80 100 120 150 200 250 300 350 500 750 1000	ipr / mm/r
Boring — Medium Finishing ▼▼							CUTTING SPEED	
Dial Set	SNGH…	KC9240NEW	G113	1.375"- 6.500"	34,93mm-165,10mm	180 / 55	66 / 20 ◊ 295 / 90	.005 - .016 / 0,12 - 0,40
	CPGM…	KC5010		1.375"- 6.500"	34,93mm-165,10mm	148 / 45	66 / 20 ◊ 246 / 75	.005 - .016 / 0,12 - 0,40
	CPGM…	KC5025		1.375"- 6.500"	34,93mm-165,10mm	230 / 70	148 / 45 ◊ 591 / 180	.005 - .016 / 0,12 - 0,40
	SPGH… SNGH…	KC850		1.375"- 6.500"	34,93mm-165,10mm	180 / 55	66 / 20 ◊ 295 / 90	.005 - .016 / 0,12 - 0,40
	CPGM…	K313		1.375"- 6.500"	34,93mm-165,10mm	230 / 70	148 / 45 ◊ 591 / 180	.005 - .016 / 0,12 - 0,40
	CPGM…	K68		1.375"- 6.500"	34,93mm-165,10mm	180 / 55	66 / 20 ◊ 295 / 90	.005 - .016 / 0,12 - 0,40
Modbore	CCMT…MW CNGP… CNMG…MW CNMG…MP CNMG…RP	KC5010	G9	.384" – 25.787"	9,70mm – 655,00mm	230 / 70	148 / 45 ◊ 591 / 180	.005 -.016 / 0,12 - 0,40
	CNGP….	K313		.384" – 25.787"	9,70mm – 655,00mm	148 / 45	66 / 20 ◊ 246 / 75	.004 -.010 / 0,10 - 0,25
	CNMG….RP	KC5510		.384" – 25.787"	9,70mm – 655,00mm	230 / 70	148 / 45 ◊ 591 / 180	.008 -.016 / 0,20 - 0,40
	CNGP….	KC5525		.384" – 25.787"	9,70mm – 655,00mm	180 / 55	66 / 20 ◊ 295 / 90	.008 -.025 / 0,20 - 0,63
Boring — Finishing ▼▼▼								
ModBore	CCGT…HP CCGT…LF CCMT…FW CCMT…LF CNGG…LF CNMG…FF CNMG…FP CNMG…FW	KC5010	G14	.384" – 25.787"	9,70mm – 655,00mm	230 / 70	148 / 45 ◊ 591 / 180	.002 -.010 / 0,06 - 0,25
	CCGT…HP CCGT…LF	KC5025		.384" – 25.787"	9,70mm – 655,00mm	180 / 55	66 / 20 ◊ 295 / 90	.025 -.010 / 0,63 - 0,25
	CCGT…HP CCGT…LF CCMT…LF CNGG…LF	K313		.384" – 25.787"	9,70mm – 655,00mm	148 / 55	66 / 20 ◊ 246 / 75	.004 -.010 / 0,10 - 0,25
Boring — Fine Finishing ▼▼▼▼								
Kendex Precision	BPGF…	KC7210	G122	.299"- .996"	5,8mm – 25,3mm	148 / 45	66 / 20 ◊ 246 / 75	.001 - .003 / 0,02 - 0,08

* 1 MPa = 145 psi
For more information on insert selection see KMT Lathe Tooling Catalog.

AA (Arithmetic Average) — See "Ra."

Abrasion Wear — Wear that occurs when hard particles on the underside of the chip pass over the tool face and remove tool material by mechanical action. These particles could be abrasive inclusions in the workpiece, fragments of a built-up edge, or particles of tool material which have been removed by adhesion.

Adhesion — Metal build-up on cutting edge, usually caused by operation at too low speeds.

Adhesion Wear — Wear caused by the fracture of welds which are formed as part of the friction mechanism between the chip and the tool. When these minute junctions are fractured, small bits of tool material are torn out and carried away on the underside of the chip or by the workpiece.

Advanced Cutting Tool Materials — Cutting tool materials able to withstand the extremely harsh environment of elevated cutting tool speeds and the resulting temperatures. These materials include ceramic, PCD, and PCBN substrates.

Amorphous — Noncrystalline; having no molecular lattice structure, which is characteristic of the solid state.

ANSI — American National Standards Institute.

Arbor — A device designed to carry and drive an arbor-type cutting tool. It can be mounted in or on the spindle of a machine tool.

Backlash — A reaction during the metalcutting process where the potential energy of the object in motion is suddenly released when the object stops, typically causing the device to quickly snap backwards relative to the last direction of motion.

Base — The surface of the shank which bears against the support and takes the tangential pressure of the cut.

Black Oxide — A black finish on a metal produced by immersing it in hot oxidizing salts or salt solutions.

Boring — A machining process in which internal diameters are made in true relation to the centerline of the spindle. It is most commonly used for enlarging or finishing holes or other circular contours.

Breakout — Term used to describe an uneven break of workpiece material as the insert exits the part.

Brinell Hardness (BHN) — A test to determine the hardness of metallic materials. It consists in applying a known load to the material surface to be tested through a hardened steel ball of known diameter. The diameter of the resulting permanent impression in the metal is measured and then calculated in the Brinell hardness number.

Built-Up Edge (BUE) — An insert edge condition problem that is characterized by the adhesion, or build-up, of layers of workpiece material to the top rake surface of the insert.

Burring — A condition whereby small slivers of workpiece material roll out over the shoulders and points of the workpiece as the tool exits the cut.

CAD (Computer-Aided Design) — Product-design functions performed with the help of computers and special software.

CAE (Computer-Aided Engineering) — Engineering functions performed with the help of computers and special software.

CAM (Computer-Aided Manufacturing) — The use of computers to control machining and manufacturing.

Cemented Carbide — A sintered combination of cobalt or other binder metal and refractory metal carbides suitable for use as a cutting tool material.

Ceramics — A cutting tool material (substrate) comprised of aluminum oxide and metal alloys (i.e.: TiC) or silicon nitride. Ceramics are capable of higher speed machining than carbides on steel, irons, and super-alloys but have less toughness and thermal shock resistance.

Cermets — A cutting tool material (substrate) comprised of titanium carbonitride and metallic binder, usually nickel and/or cobalt. Cermets combine some of the high-speed characteristics of ceramics with improved toughness for semi-finish and finish machining of steel and stainless steels. Cermets have greater chemical wear resistance than most tungsten carbide grades but have less toughness and thermal shock resistance.

Chamfer —
(1) A beveled surface to eliminate an otherwise sharp corner.

(2) A relieved angular cutting edge at a tooth corner.

(3) The surface formed by cutting away sharp corners and edges formed by two faces of a piece of metal.

(4) A bevel on the cutting edge of a carbide cutting tool for the purpose of increasing its strength. The angle is measured from the cutting face downward and may vary from 1 to 45 degrees.

Chamfering — Metal turning operation used to remove sharp edges from workpiece diameter.

Chatter — Chatter is a condition of vibration involving the machine, workpiece and cutting tool. Once this condition arises it is often self-sustaining until the problem is corrected. Chatter can be identified when lines or grooves appear at regular intervals in the workpiece.

Chemical Vapor Deposition — See CVD.

Chipping — An insert edge condition problem that is characterized by breakage of the insert's cutting tip during the cutting action.

Chuck — An attachment for holding a workpiece or a tool in a machine.

Chucker — Machine normally used to cut a part whose diameter is larger than length.

CIM (Computer-Integrated Manufacturing) — The use of interconnected computers and special software to assist in all phases of production.

Clearance — The angle below or behind the cutting edge to be forced into the work. Without clearance, the tool will not cut. It is also the term used for secondary relief in some cases.

Coated Carbide — Coated carbides have a thin layer of very hard material deposited on their surface. This material can be deposited by either physical or chemical vapor deposition. Coated carbides permit a significant increase in cutting speed and add crater and abrasion resistance in high-productivity machining operations. Also see CVD and PVD.

Collet — Flexible-sided device that secures a tool or workpiece in a similar fashion as a chuck but can accommodate only a narrow size range. Collets typically provide greater gripping force and precision than do chucks.

Composites — Materials composed of different elements held together by a compatible binder.

Counterbore — As applied to a milling cutter. An enlargement of the cutter bore at one or both ends to provide space for a nut, screw, or bolts or to provide clearance for a shoulder on arbor or spindle. A recess to facilitate manufacturing.

Crater Wear — An insert edge condition problem that resembles a relatively smooth, regular depression produced on the top of the insert (rake face).

Crest (screw thread) — The outer most surface of the thread form which joins the flanks.

Cubic Boron Nitride — See PCBN.

CVD (Chemical Vapor Deposition) — A process that deposits or coats a film of hard refractory material on the cutting tool in a sealed reactor to about 1000° C with gaseous hydrogen at atmospheric or lower pressure. Volatile compounds are then added to the hydrogen to supply the constituents of the coating. The higher temperature CVD process provides improved abrasion and crater wear than the PVD process, although it causes poorer toughness through residual tensile stresses in the coatings.

Cycle Time — The time required to complete all machining operations on the workpiece.

Deformation — The permanent change in the shape of a cutting tool due to cutting forces and temperature. Deformation generally occurs in high-speed or heavy machining. Deformation can be "plastic" (permanent) or "elastic" (non-permanent).

Depth of Cut (doc) — The perpendicular distance between the original and final surfaces of the workpiece.

Depth of Cut Notch (docn) — An insert edge problem that appears as chipping or wear at the doc line on the rake face and flank of the insert.

DIN — German Institute for Normalization (DIN) standards that are developed by a non-profit organization of approximately 130 standards committees with representatives from all technical areas.

Drilling — Hole making with a rotary, end-cutting tool having one or more cutting lips and one or more helical or straight flutes or tubes for the ejection of chips and the passage of cutting fluid.

Ductility — The ability of a material to deform plastically without fracturing, being measured by elongation or reduction of area in a tensile test, by height of cupping in an Erichsen test, or by other means.

Economics — Economics dictate that the cutting tool material or grade you select should ideally be one that will yield the highest productivity (metal removal rate) at the lowest cost while providing correct and consistent tool life.

Edge Preparation (insert) — A conditioning of the cutting edge. Edge preparations include chamfering, honing, and T-land or a combination of hones and lands.

Edge Wear — Edge wear appears as wear along the flank of the insert, below, and immediately adjacent to the cutting edge. Uniform edge wear is the preferred method of insert failure because it can be predicted. Also referred to as flank wear.

End Cutting Angle — The angle between the cutting edge on the end of the tool and a line perpendicular to the side edge of the straight portion of the tool shank.

Engine Lathe — A floor mounted machine on which work is rotated about a horizontal axis and shaped by a cutting tool. This definition can also apply to CNC lathes. The term "engine lathe" is a carry-over from when lathes were powered by steam engines.

Face —
(1) The surface of the cutting tool on which the chip impinges as it is separated from the workpiece.

(2) To machine the flat, or end surface of the workpiece, such as facing a surface of a bar before or after turning.

Facing — Machining along the centerline towards the center of the end of the workpiece. Cleaning of one end of material for the purpose of ultrasonic evaluation. This process is also used to make two ends parallel to each other.

Feed Rate — The rate of change of position of the insert relative to the work while cutting. Usually expressed in inches per minute (ipm) when milling and inches per revolution (ipr) when turning.

Finish (surface) — See Surface Finish.

Flank — That surface which is adjacent to the cutting edge and below it when the tool is in a horizontal position for turning. The flank of a thread is either surface connecting the crest with the root. The flank surface intersection with an axial plane is theoretically a straight line.

Flatness — An even, smooth horizontal surface without depressions or elevations when gauged along the same plane. Also see Surface Finish.

FMS (Flexible Manufacturing System) — An automated or near-automated manufacturing system that is designed to manufacture a variety of similar parts. Also associated with machine tools grouped in "cells" for efficient production.

Forging — Squeezing red-hot steel between dies to strengthen it.

Fracture (insert) — When a large enough part of the insert breaks off to cause immediate failure of the cutting edge.

Fracture Toughness — A measure of the energy a material will absorb prior to fracture.

Galling — Developing a condition on the rubbing surface of one or both mating parts where excessive friction between high spots results in localized welding with subsequent spalling and a further roughening of the surface.

Geometry (insert) — The physical characteristics of an insert.

Grade — A designation given to a composition for a particular coated or uncoated cemented carbide cutting tool material.

High-Speed Spindles — Generally speaking, high-speed spindles are regarded as high-performance spindles that run over 8,000 rpm and are balanced and/or able to balance.

Honed (Edge Preparation) — The process of blunting and strengthening the cutting edge by means of abrasives. It may be done by hand or machine. Also see Edge Preparation.

Hot Hardness — See Red Hardness.

Hypereutectic — An aluminum alloy containing more than 12.2% silicon (Si). Silicon is added to aluminum to improve casting qualities in addition to providing corrosion resistance, low thermal expansion, and high-thermal conductivity. Also see Hypoeutectic.

Hypoeutectic — An aluminum alloy containing less than 12.2% silicon (Si). Also see Hypereutectic.

Inscribed Circle — The circle which can be constructed internal to any closed figure or shape such that all sides of the figure are tangent to the circle. The inscribed circle is most often used to describe the dimensions of a triangle, pentagon, hexagon, or octagon.

Insert Lock Screw — Usually identifies a screw with a Torx or hex socket that is used to retain inserts in the toolholder.

ipr (advance (inch) per revolution) — A feed value reporting how far the insert advances during one revolution, defined as:

$$ipr = \frac{ipm}{rpm}$$

ISO — From the Greek word Isosceles meaning "the same as." The International Organization for Standardization located in Geneva, Switzerland, issues these standards for the purpose of setting standards which all countries can agree upon.

"K" Factor — The "K" factor is a power constant that represents the number of cubic inches of metal per minute that can be removed by one horsepower input.

K-Land — See T-land.

Knoop hardness — Microhardness determined from the resistance of metal to indentation by a pyramidal diamond indenter, having edge angles of 172° 30' and 130°, making a rhomodedral impression with one long and one short diagonal.

Land — Area immediately behind cutting edges.

Lead (screw thread) — The distance a screw thread advances axially in one revolution. On a single start, the pitch and lead are identical. The lead is equal to the pitch times the number of starts.

Lead Angle (chip thickness) — Increasing the lead angle reduces chip thickness for any given feed rate. This chip thinning process occurs by spreading the same amount of material over a greater length of the insert cutting edge.

Lead Angle (cutting forces) — Increasing lead angle allows the cutting edge to gradually enter and exit the workpiece surface. This helps reduce radial pressure. However, increasing the lead angle increases axial pressure and can cause deflection of the machined surface of thin cross-section parts.

Lead Angle (defined) — The angle between the cutting edge of the insert.

Lead Angle (screw thread) — On a straight thread, the lead angle is the angle created by the helix of the thread at the pitch diameter with a plane perpendicular to the axis. The helix angle is the complement to the lead angle.

Lubricity — Slipperiness; the property that diminishes friction. Tantalum carbide and titanium carbide are used to produce lubricity in steel cutting grades of tungsten carbide to reduce crater and wear.

Machinability — The relative difficulty of a machining operation with regard to tool life, surface roughness, and power consumption.

Machinability Factor (Cm) — Indicator of the machinability, or degree of difficulty, in machining various workpiece materials.

Machinability Rating — A rating expressed as a percentage rating to the difficulty of machining a given material. It is usually based on the 100% rating of A.I.S.I. B-1112, Cold Rolled Steel when turned at 180 sfm under normal cutting conditions. A high rating number means the material is easier to machine.

Major Diameter (screw thread) — The largest diameter of a straight screw thread. This applies to both internal and external threads.

Mandrel — Workholder for turning that fits in the inner diameter of workpieces. Three common types of mandrels are expanding, pin, and threaded.

Microstructure — The structure of polished and etched metals as revealed by a microscope at a magnification greater than 10.

Minor Diameter (screw thread) —The smallest diameter of a straight screw thread. This applies to both internal and external threads.

Negative Rake — A rake angle that is less than 90° between insert rake face and surface of work.

Nest — A removable part of a toolholder or milling cutter designed to support the cutting insert. Also called anvil or seat.

Nose — The corner angle formed by joining the side-cutting and end-cutting edges of a tool.

Nose Radius — The radius on the tool between the end and side cutting edges.

Notching, Depth of Cut — See Depth of Cut Notch (docn).

Overshoot — A condition resulting in the deviation from the normal path or designated value caused by momentum carried over from the previous step, as when a tool is rapidly traversed over a considerable distance to begin a cut.

PCBN (Polycrystalline Cubic Boron Nitride) — An ultra-hard cutting tool material (substrate) consisting of polycrystalline cubic boron nitride with a metallic or ceramic binder. PCBN is available either as a tip brazed to a carbide insert carrier or as a solid insert. Primarily used to machine hardened ferrous material.

PCD (Polycrystalline Diamond) — An ultra-hard cutting tool material (substrate) consisting of a synthetic polycrystalline diamond tip brazed to a carbide insert carrier. Primarily used to machine non-ferrous materials at high speeds.

Pitch (screw thread) — The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the thread axis.

Pitch Diameter (simple effective diameter) — On a straight thread, the pitch diameter is the diameter of the imaginary co-axial cylinder, the surface of which would pass through the thread profiles at such points as to make the width of the groove equal to one-half of the basic pitch. On a perfect thread, this occurs at the point where the widths of the thread and groove are equal. On a taper thread, the pitch diameter at a given position on the thread axis is the diameter of the pitch cone at that position.

Positive Rake — A rake angle that is more than 90° between insert rake face and work surface.

Profiling — Machine operation where the tool does not move parallel to the workpiece but follows contours.

PVD (Physical Vapor Deposition) — PVD is a process that deposits, or coats, a film of hard refractory materials on the cutting tool by heating the tools in a sealed reactor to about 500° C in a vacuum chamber. A vaporized or ionized compound is then deposited on the tools by ion plating, magnetron sputtering, or arc evaporation. The PVD process is designed to improve coating toughness and prevent chipping of the cutting edge.

Quick-Change Tooling — This tool changing procedure involves changing an entire pre-gauged cutting unit as opposed to changing an individual insert. Quick-change tooling helps to minimize time lost for changing tools and making setups.

Ra — A measure of roughness. An arithmetical average (also referred to as "AA") that is very close to root mean square (rms) except the Ra(AA) measures 11% lower. The squaring process used in obtaining the rms average gives added weight to the larger ordinates of the surface roughness.

Radial Runout — The total variation in a radial direction of all cutting edges in a plane of rotation. Also known as total indicator reading.

Rake Angle — The angle between the face of the cutting tool and the work. If the face of the tool lies perpendicular to the work, it has a zero-degree, or neutral rake. If the angle of the tool face makes the cutting edge more acute, then it has a positive rake, if more blunt, then it has a negative rake.

Red Hardness (Hot Hardness) — Ability of a cutting tool material to withstand extremely high temperatures without softening or degrading.

Refractory Metal — A metal having an extremely high melting point. The term is typically used in reference to metals that have a melting point above the range of iron.

Relief — The clearance angle behind or below the cutting edge which allows the cutting edge to be forced into the work. It is sometimes divided into primary relief (adjacent to the cutting edge) and secondary relief (beyond the primary relief). See Clearance.

Rigidity — The inflexibility or stiffness of a machine set-up and the associated fixtures. Rigidity is extremely important for successful metalcutting.

RMS (root mean square) — A measure of roughness or average deviation from the mean surface of the machined workpiece. The mean surface is the perfect surface that would be formed if all of the roughness peaks were cut off and filled into the valleys below the surface.

Rockwell Hardness (HRC) — A measure of hardness calculated from the difference in depth of penetration of an indenture between a major and a minor load. The more commonly used Rockwell scales are Rockwell "C" (HRC), using a diamond spheroconical penetrator, and a Rockwell "B" (HRB), using a 1/16 inch diameter steel ball penetrator.

Root (screw thread) — The inner most surface of the thread form which joins the flanks.

Roughness — Fine irregularities in the part of the surface texture produced by the cutting action. See Surface Finish.

rpm (revolution per minute) — defined as

$$rpm = \frac{12 \times sfm}{\pi \times D}$$

Semisynthetic Cutting Fluid — Water-based chemical solution that contains some amount of oil.

sfm (surface feet per minute) — defined as

$$sfm = \frac{\pi \times D \times rpm}{12}$$

Shank — The main body of a single point tool or toolholder.

Side Cutting Edge Angle — The angle between the side cutting edge and the projected side of the shank or holder (also see Lead Angle).

Soluble-Oil Cutting Fluid — Fluid in which oil is suspended in water. Also known as emulsified oil, the fluid is a mix of oil and water in ratios of 1:5 to 1:100, depending on the oil and the machining application.

Square Shoulder — Lead angles of 0° create 90°, or square, shoulders.

Starting Feeds and Speeds — The process of correctly setting the initial cutting specifications. Correct starting feeds and speeds will dramatically increase productivity and reduce costs.

Surface Finish —
(1) Condition of a surface as a result of a final treatment.

(2) Measured surface profile characteristics, the preferred term being roughness.

(3) Physical characteristics of the machined workpiece surface.

Surface Symbols — ANSI approved symbols that are used to designate control of workpiece surface irregularities.

Synthetic Cutting Fluid — Water-based solution that contains no oil.

T-Land — A negative land that is ground on the face of the insert from the cutting edge inward. T-land and T-land with honed edge preparations offer maximum insert edge protection and strength, although significantly increasing the cutting pressure of the operation. See Edge Preparation.

Tangential Force — Action in a direction tangential to the revolving workpiece and represents the resistance to the rotation of the workpiece.

Thermal Cracks — Separations in the cutting tool generally visible in the crater or top face of the cutting tool due to high-temperature gradients encountered in some metalcutting operations. To decrease thermal cracking effects, a more heat-resistant grade is selected.

Thread Angle (included) — The included angle between the individual flanks of the thread form.

Threading — Producing external threads on a cylindrical surface. Three common types of threading are die threading, single-point threading, and thread milling.

threads per inch (tpi) — The number of threads per inch measured axially. The terms pitch and tpi are often used interchangeably.

TIR (total indicator reading) — See Radial Runout.

Tool Wear Factor (Cw) — Indicator of approximate tool wear.

Torque — The torque generated by tangential forces is calculated using the following formula:

$$T = Ft \times D/2 \text{ (in.-lb.)}$$

Trepanning — Cutting a groove in a solid part in the form of a circle and removing the center core in one piece. Shallow trepanning, also called face grooving, is usually performed with a curved blade.

True Rake Angle (TRA) — Describes the angle between the reference plane and the face of the insert, as measured in a plane normal to the cutting edge. It affects horsepower consumption, cutting forces, and tool life and is derived from the combined angles of the axial rake, radial rake, and lead angle. The true rake equals the radial rake when the lead angle equals zero.

Turning — A machining process in which a workpiece is held and rotated against a single-point tool to form flat or contoured surfaces concentric with the longitudinal axis of the workpiece.

Turning Center — A lathe-type NC machine tool capable of automatically boring, turning outer and inner diameters, threading, and facing parts. It is often equipped with a system for automatically changing or indexing cutting tools.

Turret Lathe — Differs from the engine lathe in that the normal compound rest is replaced by pivoting, multi-tool turrets mounted on the cross slide and tailstock.

Ultimate Material Strength — The maximum strength or stress that a material is capable of withstanding without breaking under a gradually and uniformly applied load.

Uncoated Carbide — Uncoated cemented carbide was first produced by combining tungsten carbide with a cobalt binder, and today this material can be modified with other materials. Uncoated tungsten carbide grade usage, in standard insert configurations, is slowly fading from the metalcutting scene due to productivity gains promised by coated carbides.

Undercut — A cut shorter than the programmed cut resulting in a command change in direction. Also a condition in generated gear teeth when any part of the fillet curve lies inside of a line drawn tangent to the working profile at its point of juncture with the fillet.

Undershoot — The tendency of a machine to round off the corners of a programmed path because of servo log, backlash, and overall quality and rigidity of the machine.

Waviness — The widest-spaced irregularities measured along the workpart surface. Also see Surface Finish.

Workhardening — When the cutting condition is such that a high temperature is produced at the cutting point engagement of the workpiece, the high temperature will cause the material to harden at a higher Rockwell rating than it was originally.

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VDI60HTS70075M	E99
VDI60HTS90075M	E99
WCGT020102 K610	H22
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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 Kennametal's 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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