

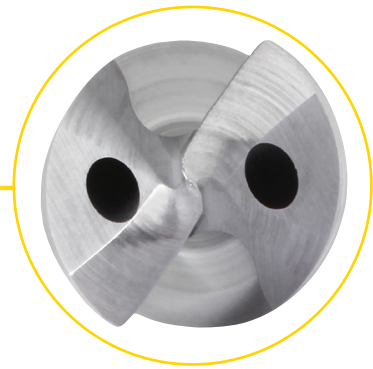


INNOVATIONS
2021 | 01 | INCH

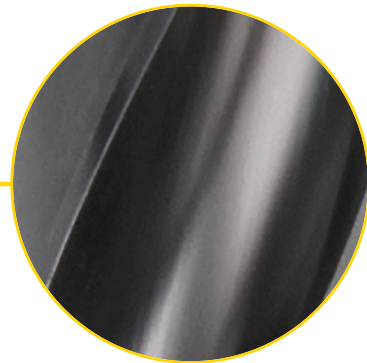
HPX DRILL

For high-volume steel production.

Material-specific HPX drill point — Patented HPX point provides excellent self-centering capabilities, reduces thrust, and enables precise center chip formation.



Material-specific HPX edge preparation — A straight cutting edge reduces build-up and chipping on cutting edge and margin land.



Ultra-high polished chip flutes reduce friction, improve chip evacuation, and increase tool life.

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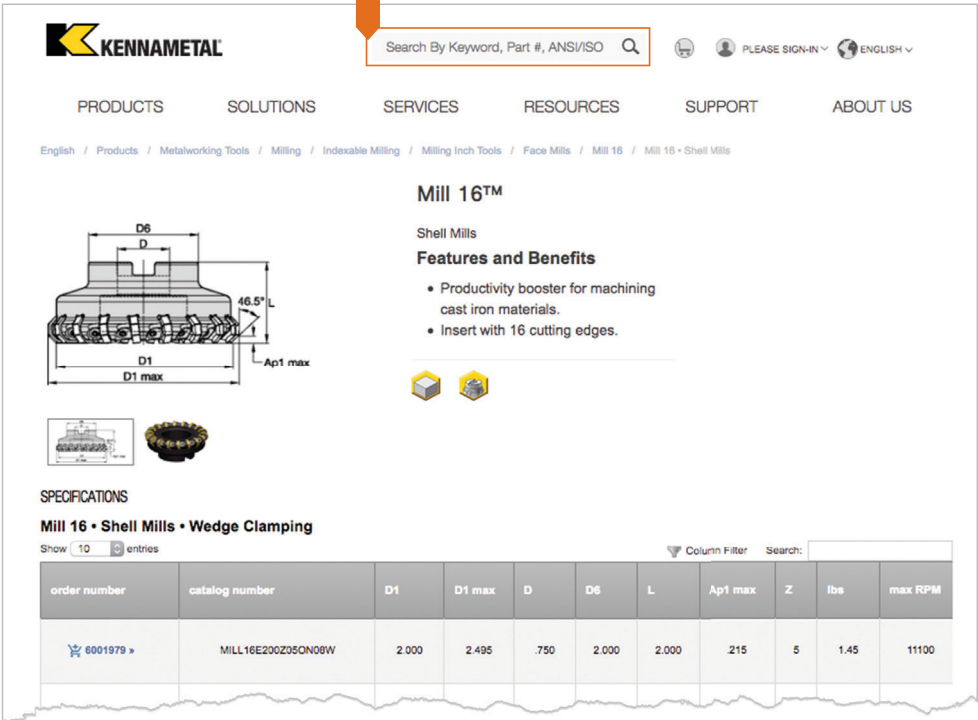


Spare Parts & Accessories Information

Lost a screw? Have to replace worn-out clamping wedges? Need to find and re-order those spare parts?

Are you in need of some accessories, like a torque wrench or coolant shower plate? These tools are at your fingertips! Go to **kennametal.com** and find what you need in seconds. Enter the catalog number of the corresponding tool, and it will display.

1 STEP 1 Enter the tool catalog number here



MILL 16™
Shell Mills
Features and Benefits

- Productivity booster for machining cast iron materials.
- Insert with 16 cutting edges.

SPECIFICATIONS
MILL 16 • Shell Mills • Wedge Clamping

Show 10 entries

order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
6001979	MILL16E200Z35ON08W	2.000	2.495	.750	2.000	2.000	.215	5	1.45	11100

2 STEP 2 Select the spare parts & accessories

PRODUCT USAGE /

Insert Selection Inserts Tool Body Speeds & Feeds Grades **Spare Parts**

Spare Parts

D1	wedge	wedge screw	in. lbs.	wrench	mounting screw with coolant grooves	adjustable torque wrench	bit SW3 for adjustable torque wrench
2.000	CW16	12748601000	62	12148044900	KLSS0714C	DTQ50140	BTQSW3L90



Digitally access spare parts and accessories information to ensure you keep your operation running.

Visit kennametal.com/novo and download today.
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Online Catalog

Can't find your paper copy of our catalog anymore?

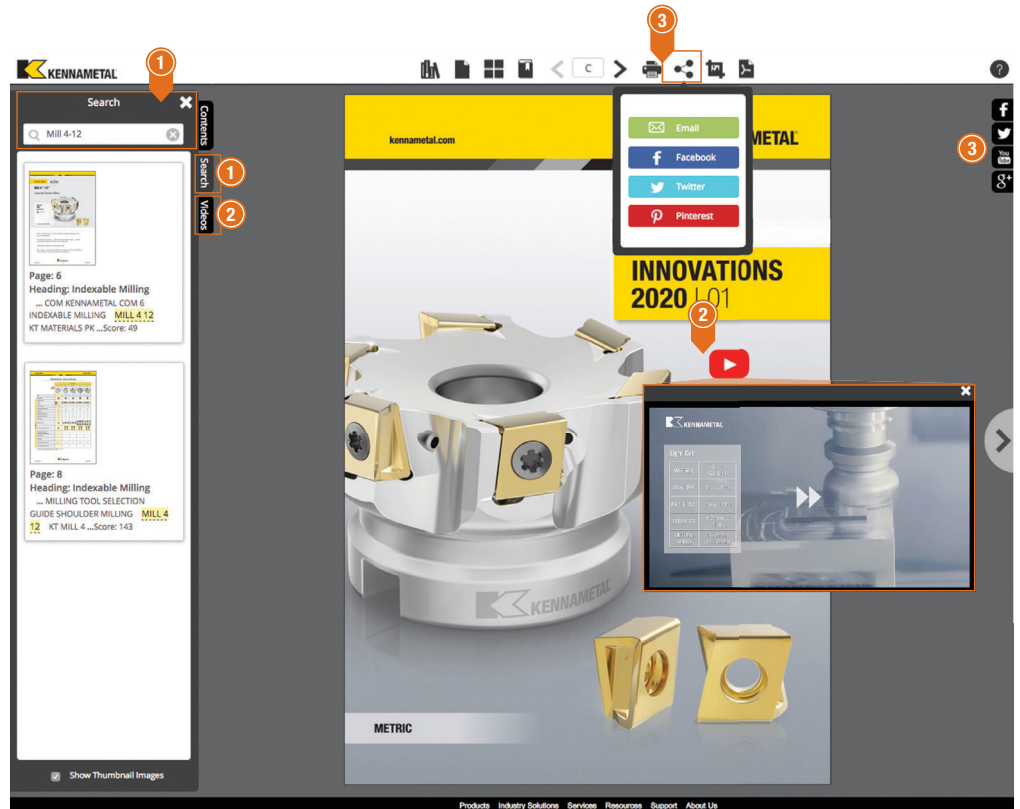
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HPX Drill

High-Performance Solid Carbide Drill

Materials

P

Applications

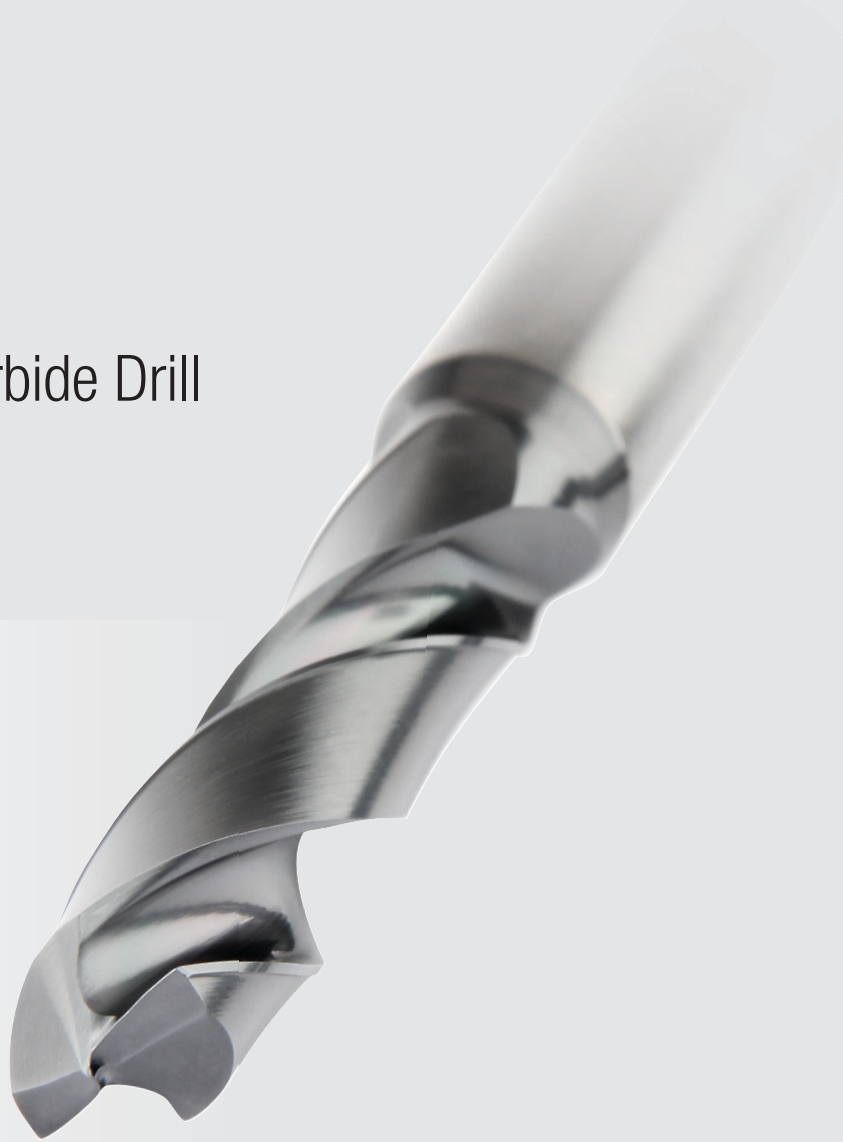


Drilling



Drilling:
Stacked Plates

kennametal.com/HPX-Drill



The new HPX drill series is the high-performance solution for any high-volume steel production.

Material-specific HPX edge preparation — A straight cutting edge reduces build-up and chipping on cutting edge and margin land.

Material-specific HPX drill point — Patented HPX point provides excellent self-centering capabilities, reduces thrust, and enables precise center chip formation.

Material-specific HPX margins — 2 margin lands provide stability and reduce friction.

Straight cutting edge — Reduces build-up and chipping on cutting edge and margin land.

140° point angle — For ideal cutting conditions. Perfect for pilot drilling of deep holes.



Corner chamfer — Built-in cutting edge corner protection, reduces chipping and extends tool life.

2 margin lands for stability and less friction.

Up to 8 x D drilling.

Standard MQL backend.



The HPX drill design — Up to 3x higher cutting parameters, saving machining time and freeing up capacity.

Ultra-high polished chip flutes reduce friction, improve chip evacuation, and increase tool life.

A continuous chip-flute cross-section reduces vibrations and cutting edge chipping.

TOOL SELECTION GUIDE • MATERIAL SPECIFIC DRILLS

	HPX Drills	HPX Drills	SGL Drills	HPS Drills	Y-TECH™ Drills	KMH Drills	KMH Drills
							
							
Series	B221_HP B222_HP	B224_HP B225_HP B226_HP	B210_SGL B211_SGL B212_SGL	B284_HPS B285_HPS B286_HPS	B291_YPL B292_YPL	B941A	B951A
Page	11, 14	16, 18, 21	G30*	G82*	G88*	G124*	G125*
Workpiece material							
Primary	P	P	M S	N	M S	H	H
Secondary	K		P		P	P K	P K
Hole tolerance	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10
Standard range							
Cutting diameter [D1]	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	2,5-20,0mm (0.0984-0.7874")	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	2,5-14,0mm (0.0984-0.5512")	3,0-16,0mm (0.1181-0.6299")
Drill length [L4 max]	14,0-85,0mm (0.55-3.03")	14,0-160,0mm (0.55-6.30")	12,0-160,0mm (0.47-6.30")	14,0-124,0mm (0.55-4.88")	14,0-77,0mm (0.55-3.03")	14,0-43,0mm (0.55-1.69")	14,0-45,0mm (0.55-1.77")
Drilling depth L/D1	3-5 x D	3-8 x D	3-8 x D	3-8 x D	3-5 x D	3 x D	3 x D
Point angle	140°	140°	140°	135°	140°	142°	140°
Flute angle	30°	30°	30°	30°	30°	15°	30°
Coolant							
Operations							
Flutes and margin							
Corner chamfer							
Shank							

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

- Primary
- Secondary

TOOL SELECTION GUIDE • VERSATILE DRILLS

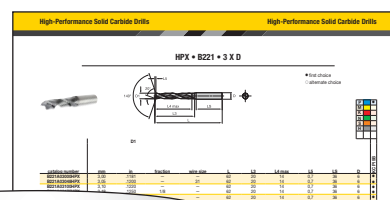
	G0drill™	G0drill	Kenna Universal™ Drills	Kenna Universal Drills
				
				
Series	B041A_CPG B042A_CPG	B051A_CPG B052A_CPG B053A_CPG	B966A B967A	B976A B977A B978A
Page	G8*	G14*	G130*	G134*, G139*
Workpiece material				
Primary	P M K N S	P M K N S	P K	P K
Secondary	H	H	M N S	M N S
Hole tolerance	IT9–IT10	IT9–IT10	IT9–IT10	IT9–IT10
Standard range				
Cutting diameter [D1]	1,0–20,0mm (0.0394–0.7874")	1,0–20,0mm (0.0394–0.7874")	3,0–20,0mm (0.1181–0.7874")	2,4–20,0mm (0.0938–0.7874")
Drill length [L4 max]	5,0–77,0mm (0.55–0.20")	5,0–124,0mm (0.55–4.88")	14,0–85,0mm (0.55–3.03")	12,0–124,0mm (0.47–4.88")
Drilling depth L/D1	3–5 x D	3–8 x D	3–5 x D	3–8 x D
Point angle	140°	140°	140°	140°/132°
Flute angle	30°	30°	30°	30°
Coolant			 	 
Operations			   	   
Flutes and margin				
Corner chamfer				
Shank	 	 	 	 

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

- Primary
- Secondary

HPX • CATALOG NUMBERING SYSTEM

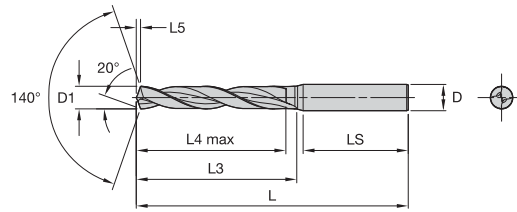
Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



B221A03000HPX

B	22	1	A	03000	HPX
Style	Drill Series	Length/ Coolant	Shank	Diameter	Point Geometry/ Application
B = Metric K = Inch	22* = Steel Drills	1 = ~3 x D non-coolant 2 = ~5 x D non-coolant 4 = ~3 x D internal coolant 5 = ~5 x D internal coolant 6 = ~8 x D internal coolant	A = Form HA, straight round shank F = Form FE, Whistle Notch 2° (B series DIN 6535–2mm steps)	03000 = 3mm 06350 = 1/4" = E = 6,35mm	HPX = Next generation HP point for steel

HPX • B221 • 3 X D



● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B221A03000HPX	3,00	.1181	—	—	62	20	14	0,7	36	6	●
B221A03048HPX	3,05	.1200	—	31	62	20	14	0,7	36	6	●
B221A03100HPX	3,10	.1220	—	—	62	20	14	0,7	36	6	●
B221A03175HPX	3,18	.1250	1/8	—	62	20	14	0,7	36	6	●
B221A03200HPX	3,20	.1260	—	—	62	20	14	0,7	36	6	●
B221A03264HPX	3,26	.1285	—	30	62	20	14	0,8	36	6	●
B221A03300HPX	3,30	.1299	—	—	62	20	14	0,8	36	6	●
B221A03400HPX	3,40	.1339	—	—	62	20	14	0,8	36	6	●
B221A03455HPX	3,46	.1360	—	—	62	20	14	0,8	36	6	●
B221A03500HPX	3,50	.1378	—	—	62	20	14	0,8	36	6	●
B221A03571HPX	3,57	.1406	9/64	—	62	20	14	0,8	36	6	●
B221A03600HPX	3,60	.1417	—	—	62	20	14	0,8	36	6	●
B221A03658HPX	3,66	.1440	—	—	62	20	14	0,8	36	6	●
B221A03700HPX	3,70	.1457	—	—	62	20	14	0,8	36	6	●
B221A03800HPX	3,80	.1496	—	—	66	24	17	0,9	36	6	●
B221A03900HPX	3,90	.1535	—	—	66	24	17	0,9	36	6	●
B221A03970HPX	3,97	.1563	5/32	—	66	24	17	0,9	36	6	●
B221A04000HPX	4,00	.1575	—	—	66	24	17	0,9	36	6	●
B221A04039HPX	4,04	.1590	—	—	66	24	17	0,9	36	6	●
B221A04100HPX	4,10	.1614	—	—	66	24	17	0,9	36	6	●
B221A04200HPX	4,20	.1654	—	—	66	24	17	0,9	36	6	●
B221A04217HPX	4,22	.1660	—	—	66	24	17	1,0	36	6	●
B221A04300HPX	4,30	.1693	—	—	66	24	17	1,0	36	6	●
B221A04366HPX	4,37	.1719	—	—	66	24	17	1,0	36	6	●
B221A04400HPX	4,40	.1732	—	—	66	24	17	1,0	36	6	●
B221A04500HPX	4,50	.1772	—	—	66	24	17	1,0	36	6	●
B221A04600HPX	4,60	.1811	—	—	66	24	17	1,0	36	6	●
B221A04623HPX	4,62	.1820	—	14	66	24	17	1,0	36	6	●
B221A04700HPX	4,70	.1850	—	—	66	24	17	1,1	36	6	●
B221A04763HPX	4,76	.1875	3/16	—	66	28	20	1,1	36	6	●
B221A04800HPX	4,80	.1890	—	—	66	28	20	1,1	36	6	●
B221A04852HPX	4,85	.1910	—	—	66	28	20	1,1	36	6	●
B221A04900HPX	4,90	.1929	—	—	66	28	20	1,1	36	6	●
B221A05000HPX	5,00	.1969	—	—	66	28	20	1,1	36	6	●
B221A05100HPX	5,10	.2008	—	—	66	28	20	1,1	36	6	●
B221A05106HPX	5,11	.2010	—	—	66	28	20	1,1	36	6	●
B221A05159HPX	5,16	.2031	—	—	66	28	20	1,1	36	6	●
B221A05200HPX	5,20	.2047	—	—	66	28	20	1,2	36	6	●
B221A05300HPX	5,30	.2087	—	—	66	28	20	1,2	36	6	●
B221A05400HPX	5,40	.2126	—	—	66	28	20	1,2	36	6	●
B221A05410HPX	5,41	.2130	—	3	66	28	20	1,2	36	6	●
B221A05500HPX	5,50	.2165	—	—	66	28	20	1,2	36	6	●
B221A05558HPX	5,56	.2188	—	—	66	28	20	1,2	36	6	●
B221A05600HPX	5,60	.2205	—	—	66	28	20	1,2	36	6	●
B221A05700HPX	5,70	.2244	—	—	66	28	20	1,3	36	6	●
B221A05791HPX	5,79	.2280	—	1	66	28	20	1,3	36	6	●
B221A05800HPX	5,80	.2283	—	—	66	28	20	1,3	36	6	●
B221A05900HPX	5,90	.2323	—	—	66	28	20	1,3	36	6	●
B221A05954HPX	5,95	.2344	15/64	—	66	28	20	1,3	36	6	●
B221A06000HPX	6,00	.2362	—	—	66	28	20	1,3	36	6	●
B221A06100HPX	6,10	.2402	—	—	79	34	24	1,3	36	8	●
B221A06200HPX	6,20	.2441	—	—	79	34	24	1,4	36	8	●
B221A06300HPX	6,30	.2480	—	—	79	34	24	1,4	36	8	●
B221A06350HPX	6,35	.2500	1/4	E	79	34	24	1,4	36	8	●
B221A06400HPX	6,40	.2520	—	—	79	34	24	1,4	36	8	●
B221A06500HPX	6,50	.2559	—	—	79	34	24	1,4	36	8	●
B221A06528HPX	6,53	.2570	—	F	79	34	24	1,4	36	8	●
B221A06600HPX	6,60	.2598	—	—	79	34	24	1,4	36	8	●
B221A06700HPX	6,70	.2638	—	—	79	34	24	1,5	36	8	●
B221A06746HPX	6,75	.2656	17/64	—	79	34	24	1,5	36	8	●

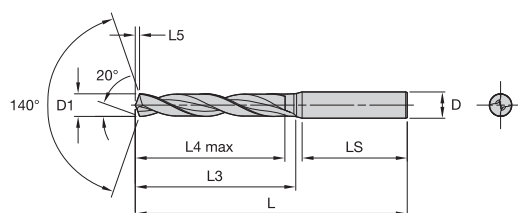
170	172	10	4	176

HPX • B221 • 3 X D

(continued)

● first choice

○ alternate choice



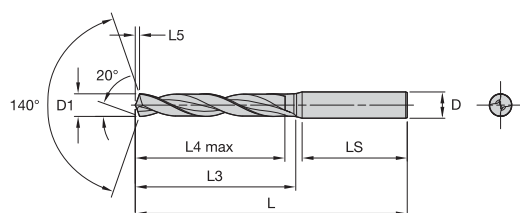
P	●
M	●
K	●
N	●
S	●
H	●

catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B221A06800HPX	6,80	.2677	—	—	79	34	24	1,5	36	8	●
B221A06900HPX	6,90	.2717	—	—	79	34	24	1,5	36	8	●
B221A07000HPX	7,00	.2756	—	—	79	34	24	1,5	36	8	●
B221A07100HPX	7,10	.2795	—	—	79	41	29	1,5	36	8	●
B221A07145HPX	7,15	.2813	9/32	—	79	41	29	1,6	36	8	●
B221A07200HPX	7,20	.2835	—	—	79	41	29	1,6	36	8	●
B221A07300HPX	7,30	.2874	—	—	79	41	29	1,6	36	8	●
B221A07400HPX	7,40	.2913	—	—	79	41	29	1,6	36	8	●
B221A07500HPX	7,50	.2953	—	—	79	41	29	1,6	36	8	●
B221A07541HPX	7,54	.2969	—	—	79	41	29	1,6	36	8	●
B221A07600HPX	7,60	.2992	—	—	79	41	29	1,6	36	8	●
B221A07700HPX	7,70	.3031	—	—	79	41	29	1,7	36	8	●
B221A07800HPX	7,80	.3071	—	—	79	41	29	1,7	36	8	●
B221A07900HPX	7,90	.3110	—	—	79	41	29	1,7	36	8	●
B221A07938HPX	7,94	.3125	5/16	—	79	41	29	1,7	36	8	●
B221A08000HPX	8,00	.3150	—	—	79	41	29	1,7	36	8	●
B221A08100HPX	8,10	.3189	—	—	89	47	35	1,7	40	10	●
B221A08200HPX	8,20	.3228	—	—	89	47	35	1,8	40	10	●
B221A08300HPX	8,30	.3268	—	—	89	47	35	1,8	40	10	●
B221A08334HPX	8,33	.3281	—	—	89	47	35	1,8	40	10	●
B221A08400HPX	8,40	.3307	—	—	89	47	35	1,8	40	10	●
B221A08500HPX	8,50	.3346	—	—	89	47	35	1,8	40	10	●
B221A08600HPX	8,60	.3386	—	—	89	47	35	1,8	40	10	●
B221A08700HPX	8,70	.3425	—	—	89	47	35	1,9	40	10	●
B221A08733HPX	8,73	.3438	—	—	89	47	35	1,9	40	10	●
B221A08800HPX	8,80	.3465	—	—	89	47	35	1,9	40	10	●
B221A08900HPX	8,90	.3504	—	—	89	47	35	1,9	40	10	●
B221A09000HPX	9,00	.3543	—	—	89	47	35	1,9	40	10	●
B221A09100HPX	9,10	.3583	—	—	89	47	35	1,9	40	10	●
B221A09129HPX	9,13	.3594	23/64	—	89	47	35	2,0	40	10	●
B221A09200HPX	9,20	.3622	—	—	89	47	35	2,0	40	10	●
B221A09300HPX	9,30	.3661	—	—	89	47	35	2,0	40	10	●
B221A09347HPX	9,35	.3680	—	U	89	47	35	2,0	40	10	●
B221A09400HPX	9,40	.3701	—	—	89	47	35	2,0	40	10	●
B221A09500HPX	9,50	.3740	—	—	89	47	35	2,0	40	10	●
B221A09525HPX	9,53	.3750	3/8	—	89	47	35	2,0	40	10	●
B221A09600HPX	9,60	.3780	—	—	89	47	35	2,0	40	10	●
B221A09700HPX	9,70	.3819	—	—	89	47	35	2,1	40	10	●
B221A09800HPX	9,80	.3858	—	—	89	47	35	2,1	40	10	●
B221A09900HPX	9,90	.3898	—	—	89	47	35	2,1	40	10	●
B221A09921HPX	9,92	.3906	25/64	—	89	47	35	2,1	40	10	●
B221A10000HPX	10,00	.3937	—	—	89	47	35	2,1	40	10	●
B221A10100HPX	10,10	.3976	—	—	102	55	40	2,1	45	12	●
B221A10200HPX	10,20	.4016	—	—	102	55	40	2,2	45	12	●
B221A10300HPX	10,30	.4055	—	—	102	55	40	2,2	45	12	●
B221A10320HPX	10,32	.4063	13/32	—	102	55	40	2,2	45	12	●
B221A10400HPX	10,40	.4094	—	—	102	55	40	2,2	45	12	●
B221A10500HPX	10,50	.4134	—	—	102	55	40	2,2	45	12	●
B221A10600HPX	10,60	.4173	—	—	102	55	40	2,2	45	12	●
B221A10700HPX	10,70	.4213	—	—	102	55	40	2,3	45	12	●
B221A10716HPX	10,72	.4219	—	—	102	55	40	2,3	45	12	●
B221A10800HPX	10,80	.4252	—	—	102	55	40	2,3	45	12	●
B221A11000HPX	11,00	.4331	—	—	102	55	40	2,3	45	12	●
B221A11100HPX	11,10	.4370	—	—	102	55	40	2,3	45	12	●
B221A11113HPX	11,11	.4375	7/16	—	102	55	40	2,3	45	12	●
B221A11200HPX	11,20	.4409	—	—	102	55	40	2,4	45	12	●
B221A11300HPX	11,30	.4449	—	—	102	55	40	2,4	45	12	●
B221A11400HPX	11,40	.4488	—	—	102	55	40	2,4	45	12	●
B221A11500HPX	11,50	.4528	—	—	102	55	40	2,4	45	12	●
B221A11509HPX	11,51	.4531	—	—	102	55	40	2,4	45	12	●

170	172	10	4	176

HPX • B221 • 3 X D

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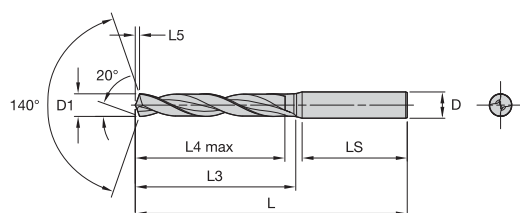
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B221A11600HPX	11,60	.4567	—	—	102	55	40	2,4	45	12	●
B221A11700HPX	11,70	.4606	—	—	102	55	40	2,5	45	12	●
B221A11800HPX	11,80	.4646	—	—	102	55	40	2,5	45	12	●
B221A11900HPX	11,90	.4685	—	—	102	55	40	2,5	45	12	●
B221A11908HPX	11,91	.4688	—	—	102	55	40	2,5	45	12	●
B221A12000HPX	12,00	.4724	—	—	102	55	40	2,5	45	12	●
B221A12100HPX	12,10	.4764	—	—	107	60	43	2,5	45	14	●
B221A12200HPX	12,20	.4803	—	—	107	60	43	2,6	45	14	●
B221A12300HPX	12,30	.4843	—	—	107	60	43	2,6	45	14	●
B221A12304HPX	12,30	.4844	31/64	—	107	60	43	2,6	45	14	●
B221A12400HPX	12,40	.4882	—	—	107	60	43	2,6	45	14	●
B221A12500HPX	12,50	.4921	—	—	107	60	43	2,6	45	14	●
B221A12600HPX	12,60	.4961	—	—	107	60	43	2,6	45	14	●
B221A12700HPX	12,70	.5000	1/2	—	107	60	43	2,7	45	14	●
B221A12800HPX	12,80	.5039	—	—	107	60	43	2,7	45	14	●
B221A12900HPX	12,90	.5079	—	—	107	60	43	2,7	45	14	●
B221A13000HPX	13,00	.5118	—	—	107	60	43	2,7	45	14	●
B221A13100HPX	13,10	.5157	—	—	107	60	43	2,7	45	14	●
B221A13300HPX	13,30	.5236	—	—	107	60	43	2,8	45	14	●
B221A13500HPX	13,50	.5315	—	—	107	60	43	2,8	45	14	●
B221A13700HPX	13,70	.5394	—	—	107	60	43	2,9	45	14	●
B221A13800HPX	13,80	.5433	—	—	107	60	43	2,9	45	14	●
B221A14000HPX	14,00	.5512	—	—	107	60	43	2,9	45	14	●
B221A14100HPX	14,10	.5551	—	—	115	65	45	2,9	48	16	●
B221A14200HPX	14,20	.5591	—	—	115	65	45	3,0	48	16	●
B221A14288HPX	14,29	.5625	9/16	—	115	65	45	3,0	48	16	●
B221A14300HPX	14,30	.5630	—	—	115	65	45	3,0	48	16	●
B221A14500HPX	14,50	.5709	—	—	115	65	45	3,0	48	16	●
B221A14600HPX	14,60	.5748	—	—	115	65	45	3,0	48	16	●
B221A14700HPX	14,70	.5787	—	—	115	65	45	3,1	48	16	●
B221A15000HPX	15,00	.5906	—	—	115	65	45	3,1	48	16	●
B221A15100HPX	15,10	.5945	—	—	115	65	45	3,1	48	16	●
B221A15300HPX	15,30	.6024	—	—	115	65	45	3,2	48	16	●
B221A15500HPX	15,50	.6102	—	—	115	65	45	3,2	48	16	●
B221A15600HPX	15,60	.6142	—	—	115	65	45	3,2	48	16	●
B221A15700HPX	15,70	.6181	—	—	115	65	45	3,3	48	16	●
B221A15800HPX	15,80	.6220	—	—	115	65	45	3,3	48	16	●
B221A15875HPX	15,88	.6250	5/8	—	115	65	45	3,3	48	16	●
B221A16000HPX	16,00	.6299	—	—	115	65	45	3,3	48	16	●
B221A16500HPX	16,50	.6496	—	—	123	73	51	3,4	48	18	●
B221A17000HPX	17,00	.6693	—	—	123	73	51	3,5	48	18	●
B221A17463HPX	17,46	.6875	—	—	123	73	51	3,6	48	18	●
B221A17500HPX	17,50	.6890	—	—	123	73	51	3,6	48	18	●
B221A17700HPX	17,70	.6969	—	—	123	73	51	3,7	48	18	●
B221A18000HPX	18,00	.7087	—	—	123	73	51	3,7	48	18	●
B221A18500HPX	18,50	.7283	—	—	131	79	55	3,8	50	20	●
B221A19000HPX	19,00	.7480	—	—	131	79	55	3,9	50	20	●
B221A19050HPX	19,05	.7500	3/4	—	131	79	55	3,9	50	20	●
B221A19500HPX	19,50	.7677	—	—	131	79	55	4,0	50	20	●
B221A20000HPX	20,00	.7874	—	—	131	79	55	4,1	50	20	●

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HPX • B222 • 5 X D



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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B222A03000HPX	3,00	.1181	—	—	66	28	23	0,7	36	6	●
B222A03048HPX	3,05	.1200	—	31	66	28	23	0,7	36	6	●
B222A03100HPX	3,10	.1220	—	—	66	28	23	0,7	36	6	●
B222A03175HPX	3,18	.1250	1/8	—	66	28	23	0,7	36	6	●
B222A03200HPX	3,20	.1260	—	—	66	28	23	0,7	36	6	●
B222A03264HPX	3,26	.1285	—	30	66	28	23	0,8	36	6	●
B222A03300HPX	3,30	.1299	—	—	66	28	23	0,8	36	6	●
B222A03400HPX	3,40	.1339	—	—	66	28	23	0,8	36	6	●
B222A03455HPX	3,46	.1360	—	—	66	28	23	0,8	36	6	●
B222A03500HPX	3,50	.1378	—	—	66	28	23	0,8	36	6	●
B222A03571HPX	3,57	.1406	9/64	—	66	28	23	0,8	36	6	●
B222A03600HPX	3,60	.1417	—	—	66	28	23	0,8	36	6	●
B222A03700HPX	3,70	.1457	—	—	66	28	23	0,8	36	6	●
B222A03800HPX	3,80	.1496	—	—	74	36	29	0,9	36	6	●
B222A03900HPX	3,90	.1535	—	—	74	36	29	0,9	36	6	●
B222A03970HPX	3,97	.1563	5/32	—	74	36	29	0,9	36	6	●
B222A04000HPX	4,00	.1575	—	—	74	36	29	0,9	36	6	●
B222A04100HPX	4,10	.1614	—	—	74	36	29	0,9	36	6	●
B222A04200HPX	4,20	.1654	—	—	74	36	29	0,9	36	6	●
B222A04300HPX	4,30	.1693	—	—	74	36	29	1,0	36	6	●
B222A04400HPX	4,40	.1732	—	—	74	36	29	1,0	36	6	●
B222A04500HPX	4,50	.1772	—	—	74	36	29	1,0	36	6	●
B222A04600HPX	4,60	.1811	—	—	74	36	29	1,0	36	6	●
B222A04700HPX	4,70	.1850	—	—	74	36	29	1,1	36	6	●
B222A04763HPX	4,76	.1875	3/16	—	82	44	35	1,1	36	6	●
B222A04800HPX	4,80	.1890	—	—	82	44	35	1,1	36	6	●
B222A04900HPX	4,90	.1929	—	—	82	44	35	1,1	36	6	●
B222A05000HPX	5,00	.1969	—	—	82	44	35	1,1	36	6	●
B222A05100HPX	5,10	.2008	—	—	82	44	35	1,1	36	6	●
B222A05106HPX	5,11	.2010	—	—	82	44	35	1,1	36	6	●
B222A05159HPX	5,16	.2031	—	—	82	44	35	1,1	36	6	●
B222A05200HPX	5,20	.2047	—	—	82	44	35	1,2	36	6	●
B222A05300HPX	5,30	.2087	—	—	82	44	35	1,2	36	6	●
B222A05400HPX	5,40	.2126	—	—	82	44	35	1,2	36	6	●
B222A05410HPX	5,41	.2130	—	3	82	44	35	1,2	36	6	●
B222A05500HPX	5,50	.2165	—	—	82	44	35	1,2	36	6	●
B222A05558HPX	5,56	.2188	—	—	82	44	35	1,2	36	6	●
B222A05600HPX	5,60	.2205	—	—	82	44	35	1,2	36	6	●
B222A05700HPX	5,70	.2244	—	—	82	44	35	1,3	36	6	●
B222A05791HPX	5,79	.2280	—	1	82	44	35	1,3	36	6	●
B222A05800HPX	5,80	.2283	—	—	82	44	35	1,3	36	6	●
B222A05900HPX	5,90	.2323	—	—	82	44	35	1,3	36	6	●
B222A06000HPX	6,00	.2362	—	—	82	44	35	1,3	36	6	●
B222A06100HPX	6,10	.2402	—	—	91	53	43	1,3	36	8	●
B222A06200HPX	6,20	.2441	—	—	91	53	43	1,4	36	8	●
B222A06300HPX	6,30	.2480	—	—	91	53	43	1,4	36	8	●
B222A06350HPX	6,35	.2500	1/4	E	91	53	43	1,4	36	8	●
B222A06400HPX	6,40	.2520	—	—	91	53	43	1,4	36	8	●
B222A06500HPX	6,50	.2559	—	—	91	53	43	1,4	36	8	●
B222A06600HPX	6,60	.2598	—	—	91	53	43	1,4	36	8	●
B222A06700HPX	6,70	.2638	—	—	91	53	43	1,5	36	8	●
B222A06746HPX	6,75	.2656	17/64	—	91	53	43	1,5	36	8	●
B222A06800HPX	6,80	.2677	—	—	91	53	43	1,5	36	8	●
B222A06900HPX	6,90	.2717	—	—	91	53	43	1,5	36	8	●
B222A07000HPX	7,00	.2756	—	—	91	53	43	1,5	36	8	●
B222A07100HPX	7,10	.2795	—	—	91	53	43	1,5	36	8	●
B222A07145HPX	7,15	.2813	9/32	—	91	53	43	1,6	36	8	●
B222A07200HPX	7,20	.2835	—	—	91	53	43	1,6	36	8	●
B222A07300HPX	7,30	.2874	—	—	91	53	43	1,6	36	8	●
B222A07400HPX	7,40	.2913	—	—	91	53	43	1,6	36	8	●

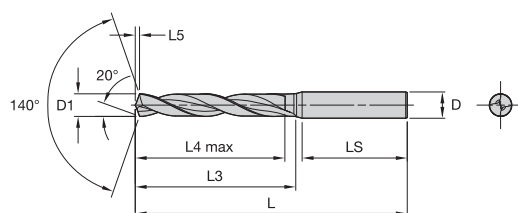
170	172	10	4	176

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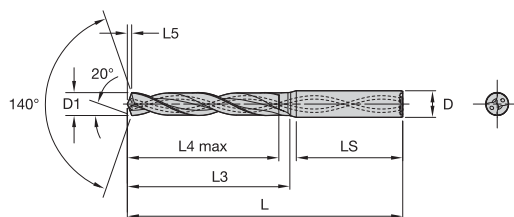


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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B222A07500HPX	7,50	.2953	—	—	91	53	43	1,6	36	8	●
B222A07541HPX	7,54	.2969	—	—	91	53	43	1,6	36	8	●
B222A07800HPX	7,80	.3071	—	—	91	53	43	1,7	36	8	●
B222A07938HPX	7,94	.3125	5/16	—	91	53	43	1,7	36	8	●
B222A08000HPX	8,00	.3150	—	—	91	53	43	1,7	36	8	●
B222A08100HPX	8,10	.3189	—	—	103	61	49	1,7	40	10	●
B222A08200HPX	8,20	.3228	—	—	103	61	49	1,8	40	10	●
B222A08334HPX	8,33	.3281	—	—	103	61	49	1,8	40	10	●
B222A08500HPX	8,50	.3346	—	—	103	61	49	1,8	40	10	●
B222A08700HPX	8,70	.3425	—	—	103	61	49	1,9	40	10	●
B222A08733HPX	8,73	.3438	—	—	103	61	49	1,9	40	10	●
B222A08800HPX	8,80	.3465	—	—	103	61	49	1,9	40	10	●
B222A09000HPX	9,00	.3543	—	—	103	61	49	1,9	40	10	●
B222A09129HPX	9,13	.3594	23/64	—	103	61	49	2,0	40	10	●
B222A09400HPX	9,40	.3701	—	—	103	61	49	2,0	40	10	●
B222A09500HPX	9,50	.3740	—	—	103	61	49	2,0	40	10	●
B222A09525HPX	9,53	.3750	3/8	—	103	61	49	2,0	40	10	●
B222A09800HPX	9,80	.3858	—	—	103	61	49	2,1	40	10	●
B222A10000HPX	10,00	.3937	—	—	103	61	49	2,1	40	10	●
B222A10200HPX	10,20	.4016	—	—	118	71	56	2,2	45	12	●
B222A10300HPX	10,30	.4055	—	—	118	71	56	2,2	45	12	●
B222A10320HPX	10,32	.4063	13/32	—	118	71	56	2,2	45	12	●
B222A10500HPX	10,50	.4134	—	—	118	71	56	2,2	45	12	●
B222A10716HPX	10,72	.4219	—	—	118	71	56	2,3	45	12	●
B222A10800HPX	10,80	.4252	—	—	118	71	56	2,3	45	12	●
B222A11000HPX	11,00	.4331	—	—	118	71	56	2,3	45	12	●
B222A11113HPX	11,11	.4375	7/16	—	118	71	56	2,3	45	12	●
B222A11500HPX	11,50	.4528	—	—	118	71	56	2,4	45	12	●
B222A11509HPX	11,51	.4531	—	—	118	71	56	2,4	45	12	●
B222A12000HPX	12,00	.4724	—	—	118	71	56	2,5	45	12	●
B222A12500HPX	12,50	.4921	—	—	124	77	60	2,6	45	14	●
B222A12700HPX	12,70	.5000	1/2	—	124	77	60	2,7	45	14	●
B222A13000HPX	13,00	.5118	—	—	124	77	60	2,7	45	14	●
B222A13500HPX	13,50	.5315	—	—	124	77	60	2,8	45	14	●
B222A14000HPX	14,00	.5512	—	—	124	77	60	2,9	45	14	●
B222A14288HPX	14,29	.5625	9/16	—	133	83	63	3,0	48	16	●
B222A14500HPX	14,50	.5709	—	—	133	83	63	3,0	48	16	●
B222A15000HPX	15,00	.5906	—	—	133	83	63	3,1	48	16	●
B222A15500HPX	15,50	.6102	—	—	133	83	63	3,2	48	16	●
B222A15875HPX	15,88	.6250	5/8	—	133	83	63	3,3	48	16	●
B222A16000HPX	16,00	.6299	—	—	133	83	63	3,3	48	16	●
B222A16500HPX	16,50	.6496	—	—	143	93	71	3,4	48	18	●
B222A17000HPX	17,00	.6693	—	—	143	93	71	3,5	48	18	●
B222A17500HPX	17,50	.6890	—	—	143	93	71	3,6	48	18	●
B222A18000HPX	18,00	.7087	—	—	143	93	71	3,7	48	18	●
B222A18500HPX	18,50	.7283	—	—	153	101	77	3,8	50	20	●
B222A19000HPX	19,00	.7480	—	—	153	101	77	3,9	50	20	●
B222A20000HPX	20,00	.7874	—	—	153	101	77	4,1	50	20	●

170	172	10	4	176

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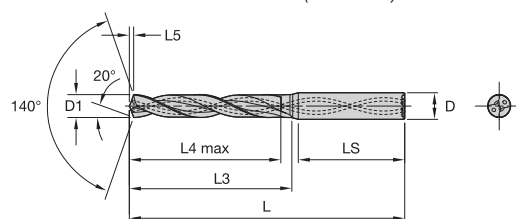
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B224A03000HPX	3,00	.1181	—	—	62	20	14	0,7	36	6	●
B224A03048HPX	3,05	.1200	—	31	62	20	14	0,7	36	6	●
B224A03100HPX	3,10	.1220	—	—	62	20	14	0,7	36	6	●
B224A03175HPX	3,18	.1250	1/8	—	62	20	14	0,7	36	6	●
B224A03200HPX	3,20	.1260	—	—	62	20	14	0,7	36	6	●
B224A03264HPX	3,26	.1285	—	30	62	20	14	0,8	36	6	●
B224A03300HPX	3,30	.1299	—	—	62	20	14	0,8	36	6	●
B224A03400HPX	3,40	.1339	—	—	62	20	14	0,8	36	6	●
B224A03455HPX	3,46	.1360	—	—	62	20	14	0,8	36	6	●
B224A03500HPX	3,50	.1378	—	—	62	20	14	0,8	36	6	●
B224A03571HPX	3,57	.1406	9/64	—	62	20	14	0,8	36	6	●
B224A03600HPX	3,60	.1417	—	—	62	20	14	0,8	36	6	●
B224A03658HPX	3,66	.1440	—	—	62	20	14	0,8	36	6	●
B224A03700HPX	3,70	.1457	—	—	62	20	14	0,8	36	6	●
B224A03800HPX	3,80	.1496	—	—	66	24	17	0,9	36	6	●
B224A03900HPX	3,90	.1535	—	—	66	24	17	0,9	36	6	●
B224A03970HPX	3,97	.1563	5/32	—	66	24	17	0,9	36	6	●
B224A04000HPX	4,00	.1575	—	—	66	24	17	0,9	36	6	●
B224A04100HPX	4,10	.1614	—	—	66	24	17	0,9	36	6	●
B224A04200HPX	4,20	.1654	—	—	66	24	17	0,9	36	6	●
B224A04217HPX	4,22	.1660	—	—	66	24	17	1,0	36	6	●
B224A04300HPX	4,30	.1693	—	—	66	24	17	1,0	36	6	●
B224A04400HPX	4,40	.1732	—	—	66	24	17	1,0	36	6	●
B224A04500HPX	4,50	.1772	—	—	66	24	17	1,0	36	6	●
B224A04600HPX	4,60	.1811	—	—	66	24	17	1,0	36	6	●
B224A04700HPX	4,70	.1850	—	—	66	24	17	1,1	36	6	●
B224A04763HPX	4,76	.1875	3/16	—	66	28	20	1,1	36	6	●
B224A04800HPX	4,80	.1890	—	—	66	28	20	1,1	36	6	●
B224A04852HPX	4,85	.1910	—	—	66	28	20	1,1	36	6	●
B224A04900HPX	4,90	.1929	—	—	66	28	20	1,1	36	6	●
B224A05000HPX	5,00	.1969	—	—	66	28	20	1,1	36	6	●
B224A05100HPX	5,10	.2008	—	—	66	28	20	1,1	36	6	●
B224A05106HPX	5,11	.2010	—	—	66	28	20	1,1	36	6	●
B224A05159HPX	5,16	.2031	—	—	66	28	20	1,1	36	6	●
B224A05200HPX	5,20	.2047	—	—	66	28	20	1,2	36	6	●
B224A05300HPX	5,30	.2087	—	—	66	28	20	1,2	36	6	●
B224A05400HPX	5,40	.2126	—	—	66	28	20	1,2	36	6	●
B224A05410HPX	5,41	.2130	—	3	66	28	20	1,2	36	6	●
B224A05500HPX	5,50	.2165	—	—	66	28	20	1,2	36	6	●
B224A05558HPX	5,56	.2188	—	—	66	28	20	1,2	36	6	●
B224A05600HPX	5,60	.2205	—	—	66	28	20	1,2	36	6	●
B224A05700HPX	5,70	.2244	—	—	66	28	20	1,3	36	6	●
B224A05791HPX	5,79	.2280	—	1	66	28	20	1,3	36	6	●
B224A05800HPX	5,80	.2283	—	—	66	28	20	1,3	36	6	●
B224A05900HPX	5,90	.2323	—	—	66	28	20	1,3	36	6	●
B224A06000HPX	6,00	.2362	—	—	66	28	20	1,3	36	6	●
B224A06100HPX	6,10	.2402	—	—	79	34	24	1,3	36	8	●
B224A06200HPX	6,20	.2441	—	—	79	34	24	1,4	36	8	●
B224A06300HPX	6,30	.2480	—	—	79	34	24	1,4	36	8	●
B224A06350HPX	6,35	.2500	1/4	E	79	34	24	1,4	36	8	●
B224A06400HPX	6,40	.2520	—	—	79	34	24	1,4	36	8	●
B224A06500HPX	6,50	.2559	—	—	79	34	24	1,4	36	8	●
B224A06600HPX	6,60	.2598	—	—	79	34	24	1,4	36	8	●
B224A06700HPX	6,70	.2638	—	—	79	34	24	1,5	36	8	●
B224A06746HPX	6,75	.2656	17/64	—	79	34	24	1,5	36	8	●
B224A06800HPX	6,80	.2677	—	—	79	34	24	1,5	36	8	●
B224A07000HPX	7,00	.2756	—	—	79	34	24	1,5	36	8	●
B224A07100HPX	7,10	.2795	—	—	79	41	29	1,5	36	8	●
B224A07145HPX	7,15	.2813	9/32	—	79	41	29	1,6	36	8	●
B224A07200HPX	7,20	.2835	—	—	79	41	29	1,6	36	8	●

170	172	10	4	176

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(continued)



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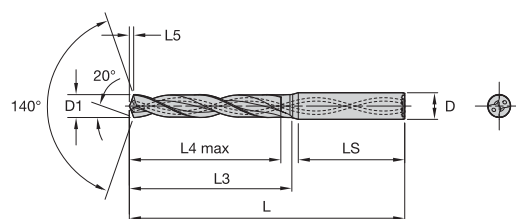
○ alternate choice

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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B224A07300HPX	7,30	.2874	—	—	79	41	29	1,6	36	8	●
B224A07400HPX	7,40	.2913	—	—	79	41	29	1,6	36	8	●
B224A07500HPX	7,50	.2953	—	—	79	41	29	1,6	36	8	●
B224A07541HPX	7,54	.2969	—	—	79	41	29	1,6	36	8	●
B224A07800HPX	7,80	.3071	—	—	79	41	29	1,7	36	8	●
B224A07938HPX	7,94	.3125	5/16	—	79	41	29	1,7	36	8	●
B224A08000HPX	8,00	.3150	—	—	79	41	29	1,7	36	8	●
B224A08100HPX	8,10	.3189	—	—	89	47	35	1,7	40	10	●
B224A08200HPX	8,20	.3228	—	—	89	47	35	1,8	40	10	●
B224A08334HPX	8,33	.3281	—	—	89	47	35	1,8	40	10	●
B224A08500HPX	8,50	.3346	—	—	89	47	35	1,8	40	10	●
B224A08700HPX	8,70	.3425	—	—	89	47	35	1,9	40	10	●
B224A08733HPX	8,73	.3438	—	—	89	47	35	1,9	40	10	●
B224A08800HPX	8,80	.3465	—	—	89	47	35	1,9	40	10	●
B224A09000HPX	9,00	.3543	—	—	89	47	35	1,9	40	10	●
B224A09100HPX	9,10	.3583	—	—	89	47	35	1,9	40	10	●
B224A09129HPX	9,13	.3594	23/64	—	89	47	35	2,0	40	10	●
B224A09400HPX	9,40	.3701	—	—	89	47	35	2,0	40	10	●
B224A09500HPX	9,50	.3740	—	—	89	47	35	2,0	40	10	●
B224A09525HPX	9,53	.3750	3/8	—	89	47	35	2,0	40	10	●
B224A09800HPX	9,80	.3858	—	—	89	47	35	2,1	40	10	●
B224A10000HPX	10,00	.3937	—	—	89	47	35	2,1	40	10	●
B224A10200HPX	10,20	.4016	—	—	102	55	40	2,2	45	12	●
B224A10300HPX	10,30	.4055	—	—	102	55	40	2,2	45	12	●
B224A10320HPX	10,32	.4063	13/32	—	102	55	40	2,2	45	12	●
B224A10500HPX	10,50	.4134	—	—	102	55	40	2,2	45	12	●
B224A10716HPX	10,72	.4219	—	—	102	55	40	2,3	45	12	●
B224A10800HPX	10,80	.4252	—	—	102	55	40	2,3	45	12	●
B224A11000HPX	11,00	.4331	—	—	102	55	40	2,3	45	12	●
B224A11113HPX	11,11	.4375	7/16	—	102	55	40	2,3	45	12	●
B224A11500HPX	11,50	.4528	—	—	102	55	40	2,4	45	12	●
B224A11509HPX	11,51	.4531	—	—	102	55	40	2,4	45	12	●
B224A12000HPX	12,00	.4724	—	—	102	55	40	2,5	45	12	●
B224A12500HPX	12,50	.4921	—	—	107	60	43	2,6	45	14	●
B224A12700HPX	12,70	.5000	1/2	—	107	60	43	2,7	45	14	●
B224A13000HPX	13,00	.5118	—	—	107	60	43	2,7	45	14	●
B224A13500HPX	13,50	.5315	—	—	107	60	43	2,8	45	14	●
B224A14000HPX	14,00	.5512	—	—	107	60	43	2,9	45	14	●
B224A14288HPX	14,29	.5625	9/16	—	115	65	45	3,0	48	16	●
B224A14500HPX	14,50	.5709	—	—	115	65	45	3,0	48	16	●
B224A15000HPX	15,00	.5906	—	—	115	65	45	3,1	48	16	●
B224A15500HPX	15,50	.6102	—	—	115	65	45	3,2	48	16	●
B224A15875HPX	15,88	.6250	5/8	—	115	65	45	3,3	48	16	●
B224A16000HPX	16,00	.6299	—	—	115	65	45	3,3	48	16	●
B224A16500HPX	16,50	.6496	—	—	123	73	51	3,4	48	18	●
B224A17000HPX	17,00	.6693	—	—	123	73	51	3,5	48	18	●
B224A17500HPX	17,50	.6890	—	—	123	73	51	3,6	48	18	●
B224A18000HPX	18,00	.7087	—	—	123	73	51	3,7	48	18	●
B224A18500HPX	18,50	.7283	—	—	131	79	55	3,8	50	20	●
B224A19000HPX	19,00	.7480	—	—	131	79	55	3,9	50	20	●
B224A20000HPX	20,00	.7874	—	—	131	79	55	4,1	50	20	●

170	172	10	4	176

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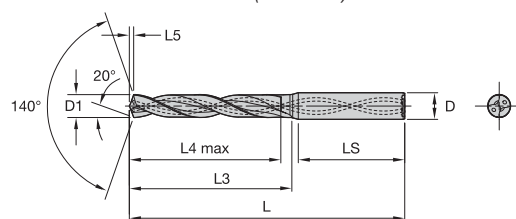
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B225A03000HPX	3,00	.1181	—	—	66	28	23	0,7	36	6	●
B225A03048HPX	3,05	.1200	—	31	66	28	23	0,7	36	6	●
B225A03100HPX	3,10	.1220	—	—	66	28	23	0,7	36	6	●
B225A03175HPX	3,18	.1250	1/8	—	66	28	23	0,7	36	6	●
B225A03200HPX	3,20	.1260	—	—	66	28	23	0,7	36	6	●
B225A03264HPX	3,26	.1285	—	30	66	28	23	0,8	36	6	●
B225A03300HPX	3,30	.1299	—	—	66	28	23	0,8	36	6	●
B225A03400HPX	3,40	.1339	—	—	66	28	23	0,8	36	6	●
B225A03455HPX	3,46	.1360	—	—	66	28	23	0,8	36	6	●
B225A03500HPX	3,50	.1378	—	—	66	28	23	0,8	36	6	●
B225A03571HPX	3,57	.1406	9/64	—	66	28	23	0,8	36	6	●
B225A03600HPX	3,60	.1417	—	—	66	28	23	0,8	36	6	●
B225A03700HPX	3,70	.1457	—	—	66	28	23	0,8	36	6	●
B225A03800HPX	3,80	.1496	—	—	74	36	29	0,9	36	6	●
B225A03900HPX	3,90	.1535	—	—	74	36	29	0,9	36	6	●
B225A03970HPX	3,97	.1563	5/32	—	74	36	29	0,9	36	6	●
B225A04000HPX	4,00	.1575	—	—	74	36	29	0,9	36	6	●
B225A04039HPX	4,04	.1590	—	—	74	36	29	0,9	36	6	●
B225A04100HPX	4,10	.1614	—	—	74	36	29	0,9	36	6	●
B225A04200HPX	4,20	.1654	—	—	74	36	29	0,9	36	6	●
B225A04300HPX	4,30	.1693	—	—	74	36	29	1,0	36	6	●
B225A04366HPX	4,37	.1719	—	—	74	36	29	1,0	36	6	●
B225A04400HPX	4,40	.1732	—	—	74	36	29	1,0	36	6	●
B225A04500HPX	4,50	.1772	—	—	74	36	29	1,0	36	6	●
B225A04600HPX	4,60	.1811	—	—	74	36	29	1,0	36	6	●
B225A04700HPX	4,70	.1850	—	—	74	36	29	1,1	36	6	●
B225A04763HPX	4,76	.1875	3/16	—	82	44	35	1,1	36	6	●
B225A04800HPX	4,80	.1890	—	—	82	44	35	1,1	36	6	●
B225A04900HPX	4,90	.1929	—	—	82	44	35	1,1	36	6	●
B225A05000HPX	5,00	.1969	—	—	82	44	35	1,1	36	6	●
B225A05100HPX	5,10	.2008	—	—	82	44	35	1,1	36	6	●
B225A05106HPX	5,11	.2010	—	—	82	44	35	1,1	36	6	●
B225A05159HPX	5,16	.2031	—	—	82	44	35	1,1	36	6	●
B225A05200HPX	5,20	.2047	—	—	82	44	35	1,2	36	6	●
B225A05300HPX	5,30	.2087	—	—	82	44	35	1,2	36	6	●
B225A05400HPX	5,40	.2126	—	—	82	44	35	1,2	36	6	●
B225A05410HPX	5,41	.2130	—	3	82	44	35	1,2	36	6	●
B225A05500HPX	5,50	.2165	—	—	82	44	35	1,2	36	6	●
B225A05558HPX	5,56	.2188	—	—	82	44	35	1,2	36	6	●
B225A05600HPX	5,60	.2205	—	—	82	44	35	1,2	36	6	●
B225A05700HPX	5,70	.2244	—	—	82	44	35	1,3	36	6	●
B225A05791HPX	5,79	.2280	—	1	82	44	35	1,3	36	6	●
B225A05800HPX	5,80	.2283	—	—	82	44	35	1,3	36	6	●
B225A05900HPX	5,90	.2323	—	—	82	44	35	1,3	36	6	●
B225A05954HPX	5,95	.2344	15/64	—	82	44	35	1,3	36	6	●
B225A06000HPX	6,00	.2362	—	—	82	44	35	1,3	36	6	●
B225A06100HPX	6,10	.2402	—	—	91	53	43	1,3	36	8	●
B225A06200HPX	6,20	.2441	—	—	91	53	43	1,4	36	8	●
B225A06300HPX	6,30	.2480	—	—	91	53	43	1,4	36	8	●
B225A06350HPX	6,35	.2500	1/4	E	91	53	43	1,4	36	8	●
B225A06400HPX	6,40	.2520	—	—	91	53	43	1,4	36	8	●
B225A06500HPX	6,50	.2559	—	—	91	53	43	1,4	36	8	●
B225A06528HPX	6,53	.2570	—	F	91	53	43	1,4	36	8	●
B225A06600HPX	6,60	.2598	—	—	91	53	43	1,4	36	8	●
B225A06700HPX	6,70	.2638	—	—	91	53	43	1,5	36	8	●
B225A06746HPX	6,75	.2656	17/64	—	91	53	43	1,5	36	8	●
B225A06800HPX	6,80	.2677	—	—	91	53	43	1,5	36	8	●
B225A06900HPX	6,90	.2717	—	—	91	53	43	1,5	36	8	●
B225A07000HPX	7,00	.2756	—	—	91	53	43	1,5	36	8	●
B225A07100HPX	7,10	.2795	—	—	91	53	43	1,5	36	8	●

170	172	10	4	176

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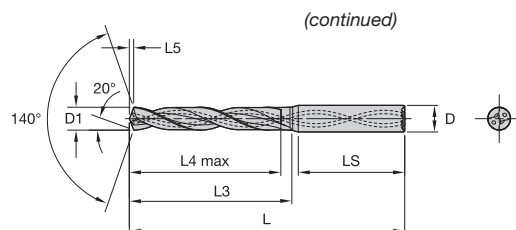
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B225A07145HPX	7,15	.2813	9/32	—	91	53	43	1,6	36	8	●
B225A07200HPX	7,20	.2835	—	—	91	53	43	1,6	36	8	●
B225A07300HPX	7,30	.2874	—	—	91	53	43	1,6	36	8	●
B225A07400HPX	7,40	.2913	—	—	91	53	43	1,6	36	8	●
B225A07500HPX	7,50	.2953	—	—	91	53	43	1,6	36	8	●
B225A07541HPX	7,54	.2969	—	—	91	53	43	1,6	36	8	●
B225A07600HPX	7,60	.2992	—	—	91	53	43	1,6	36	8	●
B225A07700HPX	7,70	.3031	—	—	91	53	43	1,7	36	8	●
B225A07800HPX	7,80	.3071	—	—	91	53	43	1,7	36	8	●
B225A07900HPX	7,90	.3110	—	—	91	53	43	1,7	36	8	●
B225A07938HPX	7,94	.3125	5/16	—	91	53	43	1,7	36	8	●
B225A08000HPX	8,00	.3150	—	—	91	53	43	1,7	36	8	●
B225A08100HPX	8,10	.3189	—	—	103	61	49	1,7	40	10	●
B225A08200HPX	8,20	.3228	—	—	103	61	49	1,8	40	10	●
B225A08300HPX	8,30	.3268	—	—	103	61	49	1,8	40	10	●
B225A08334HPX	8,33	.3281	—	—	103	61	49	1,8	40	10	●
B225A08400HPX	8,40	.3307	—	—	103	61	49	1,8	40	10	●
B225A08500HPX	8,50	.3346	—	—	103	61	49	1,8	40	10	●
B225A08600HPX	8,60	.3386	—	—	103	61	49	1,8	40	10	●
B225A08700HPX	8,70	.3425	—	—	103	61	49	1,9	40	10	●
B225A08733HPX	8,73	.3438	—	—	103	61	49	1,9	40	10	●
B225A08800HPX	8,80	.3465	—	—	103	61	49	1,9	40	10	●
B225A08900HPX	8,90	.3504	—	—	103	61	49	1,9	40	10	●
B225A09000HPX	9,00	.3543	—	—	103	61	49	1,9	40	10	●
B225A09100HPX	9,10	.3583	—	—	103	61	49	1,9	40	10	●
B225A09129HPX	9,13	.3594	23/64	—	103	61	49	2,0	40	10	●
B225A09200HPX	9,20	.3622	—	—	103	61	49	2,0	40	10	●
B225A09300HPX	9,30	.3661	—	—	103	61	49	2,0	40	10	●
B225A09347HPX	9,35	.3680	—	U	103	61	49	2,0	40	10	●
B225A09400HPX	9,40	.3701	—	—	103	61	49	2,0	40	10	●
B225A09500HPX	9,50	.3740	—	—	103	61	49	2,0	40	10	●
B225A09525HPX	9,53	.3750	3/8	—	103	61	49	2,0	40	10	●
B225A09600HPX	9,60	.3780	—	—	103	61	49	2,0	40	10	●
B225A09700HPX	9,70	.3819	—	—	103	61	49	2,1	40	10	●
B225A09800HPX	9,80	.3858	—	—	103	61	49	2,1	40	10	●
B225A09900HPX	9,90	.3898	—	—	103	61	49	2,1	40	10	●
B225A09921HPX	9,92	.3906	25/64	—	103	61	49	2,1	40	10	●
B225A10000HPX	10,00	.3937	—	—	103	61	49	2,1	40	10	●
B225A10100HPX	10,10	.3976	—	—	118	71	56	2,1	45	12	●
B225A10200HPX	10,20	.4016	—	—	118	71	56	2,2	45	12	●
B225A10300HPX	10,30	.4055	—	—	118	71	56	2,2	45	12	●
B225A10320HPX	10,32	.4063	13/32	—	118	71	56	2,2	45	12	●
B225A10400HPX	10,40	.4094	—	—	118	71	56	2,2	45	12	●
B225A10500HPX	10,50	.4134	—	—	118	71	56	2,2	45	12	●
B225A10600HPX	10,60	.4173	—	—	118	71	56	2,2	45	12	●
B225A10700HPX	10,70	.4213	—	—	118	71	56	2,3	45	12	●
B225A10716HPX	10,72	.4219	—	—	118	71	56	2,3	45	12	●
B225A10800HPX	10,80	.4252	—	—	118	71	56	2,3	45	12	●
B225A11000HPX	11,00	.4331	—	—	118	71	56	2,3	45	12	●
B225A11100HPX	11,10	.4370	—	—	118	71	56	2,3	45	12	●
B225A11113HPX	11,11	.4375	7/16	—	118	71	56	2,3	45	12	●
B225A11200HPX	11,20	.4409	—	—	118	71	56	2,4	45	12	●
B225A11300HPX	11,30	.4449	—	—	118	71	56	2,4	45	12	●
B225A11400HPX	11,40	.4488	—	—	118	71	56	2,4	45	12	●
B225A11500HPX	11,50	.4528	—	—	118	71	56	2,4	45	12	●
B225A11509HPX	11,51	.4531	—	—	118	71	56	2,4	45	12	●
B225A11600HPX	11,60	.4567	—	—	118	71	56	2,4	45	12	●
B225A11700HPX	11,70	.4606	—	—	118	71	56	2,5	45	12	●
B225A11800HPX	11,80	.4646	—	—	118	71	56	2,5	45	12	●
B225A11900HPX	11,90	.4685	—	—	118	71	56	2,5	45	12	●

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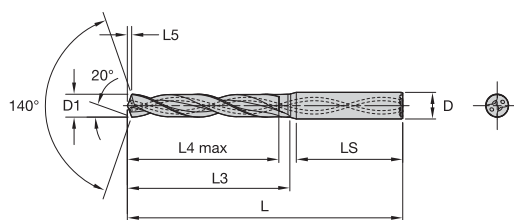
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B225A11908HPX	11,91	.4688	—	—	118	71	56	2,5	45	12	●
B225A12000HPX	12,00	.4724	—	—	118	71	56	2,5	45	12	●
B225A12100HPX	12,10	.4764	—	—	124	77	60	2,5	45	14	●
B225A12200HPX	12,20	.4803	—	—	124	77	60	2,6	45	14	●
B225A12300HPX	12,30	.4843	—	—	124	77	60	2,6	45	14	●
B225A12304HPX	12,30	.4844	31/64	—	124	77	60	2,6	45	14	●
B225A12400HPX	12,40	.4882	—	—	124	77	60	2,6	45	14	●
B225A12500HPX	12,50	.4921	—	—	124	77	60	2,6	45	14	●
B225A12600HPX	12,60	.4961	—	—	124	77	60	2,6	45	14	●
B225A12700HPX	12,70	.5000	1/2	—	124	77	60	2,7	45	14	●
B225A12800HPX	12,80	.5039	—	—	124	77	60	2,7	45	14	●
B225A12900HPX	12,90	.5079	—	—	124	77	60	2,7	45	14	●
B225A13000HPX	13,00	.5118	—	—	124	77	60	2,7	45	14	●
B225A13100HPX	13,10	.5157	—	—	124	77	60	2,7	45	14	●
B225A13300HPX	13,30	.5236	—	—	124	77	60	2,8	45	14	●
B225A13500HPX	13,50	.5315	—	—	124	77	60	2,8	45	14	●
B225A13700HPX	13,70	.5394	—	—	124	77	60	2,9	45	14	●
B225A13800HPX	13,80	.5433	—	—	124	77	60	2,9	45	14	●
B225A14000HPX	14,00	.5512	—	—	124	77	60	2,9	45	14	●
B225A14100HPX	14,10	.5551	—	—	133	83	63	2,9	48	16	●
B225A14200HPX	14,20	.5591	—	—	133	83	63	3,0	48	16	●
B225A14288HPX	14,29	.5625	9/16	—	133	83	63	3,0	48	16	●
B225A14300HPX	14,30	.5630	—	—	133	83	63	3,0	48	16	●
B225A14500HPX	14,50	.5709	—	—	133	83	63	3,0	48	16	●
B225A14600HPX	14,60	.5748	—	—	133	83	63	3,0	48	16	●
B225A14700HPX	14,70	.5787	—	—	133	83	63	3,1	48	16	●
B225A15000HPX	15,00	.5906	—	—	133	83	63	3,1	48	16	●
B225A15100HPX	15,10	.5945	—	—	133	83	63	3,1	48	16	●
B225A15300HPX	15,30	.6024	—	—	133	83	63	3,2	48	16	●
B225A15500HPX	15,50	.6102	—	—	133	83	63	3,2	48	16	●
B225A15600HPX	15,60	.6142	—	—	133	83	63	3,2	48	16	●
B225A15700HPX	15,70	.6181	—	—	133	83	63	3,3	48	16	●
B225A15800HPX	15,80	.6220	—	—	133	83	63	3,3	48	16	●
B225A15875HPX	15,88	.6250	5/8	—	133	83	63	3,3	48	16	●
B225A16000HPX	16,00	.6299	—	—	133	83	63	3,3	48	16	●
B225A16100HPX	16,10	.6339	—	—	143	93	71	3,3	48	18	●
B225A16500HPX	16,50	.6496	—	—	143	93	71	3,4	48	18	●
B225A16670HPX	16,67	.6563	21/32	—	143	93	71	3,5	48	18	●
B225A17000HPX	17,00	.6693	—	—	143	93	71	3,5	48	18	●
B225A17463HPX	17,46	.6875	—	—	143	93	71	3,6	48	18	●
B225A17500HPX	17,50	.6890	—	—	143	93	71	3,6	48	18	●
B225A17700HPX	17,70	.6969	—	—	143	93	71	3,7	48	18	●
B225A18000HPX	18,00	.7087	—	—	143	93	71	3,7	48	18	●
B225A18500HPX	18,50	.7283	—	—	153	101	77	3,8	50	20	●
B225A19000HPX	19,00	.7480	—	—	153	101	77	3,9	50	20	●
B225A19050HPX	19,05	.7500	3/4	—	153	101	77	3,9	50	20	●
B225A19500HPX	19,50	.7677	—	—	153	101	77	4,0	50	20	●
B225A20000HPX	20,00	.7874	—	—	153	101	77	4,1	50	20	●

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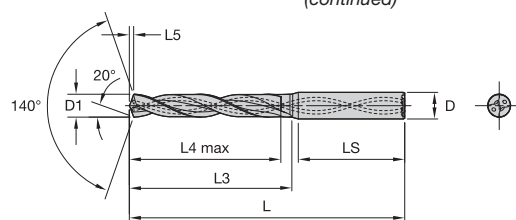
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B226A03000HPX	3,00	.1181	—	—	78	40	33	0,7	36	6	●
B226A03048HPX	3,05	.1200	—	31	78	40	33	0,7	36	6	●
B226A03100HPX	3,10	.1220	—	—	78	40	33	0,7	36	6	●
B226A03175HPX	3,18	.1250	1/8	—	78	40	33	0,7	36	6	●
B226A03200HPX	3,20	.1260	—	—	78	40	33	0,7	36	6	●
B226A03264HPX	3,26	.1285	—	30	78	40	33	0,8	36	6	●
B226A03300HPX	3,30	.1299	—	—	78	40	33	0,8	36	6	●
B226A03400HPX	3,40	.1339	—	—	78	40	33	0,8	36	6	●
B226A03455HPX	3,46	.1360	—	—	78	40	33	0,8	36	6	●
B226A03500HPX	3,50	.1378	—	—	78	40	33	0,8	36	6	●
B226A03571HPX	3,57	.1406	9/64	—	78	40	33	0,8	36	6	●
B226A03600HPX	3,60	.1417	—	—	78	40	33	0,8	36	6	●
B226A03700HPX	3,70	.1457	—	—	78	40	33	0,8	36	6	●
B226A03800HPX	3,80	.1496	—	—	87	49	41	0,9	36	6	●
B226A03900HPX	3,90	.1535	—	—	87	49	41	0,9	36	6	●
B226A03970HPX	3,97	.1563	5/32	—	87	49	41	0,9	36	6	●
B226A04000HPX	4,00	.1575	—	—	87	49	41	0,9	36	6	●
B226A04100HPX	4,10	.1614	—	—	87	49	41	0,9	36	6	●
B226A04200HPX	4,20	.1654	—	—	87	49	41	0,9	36	6	●
B226A04300HPX	4,30	.1693	—	—	87	49	41	1,0	36	6	●
B226A04500HPX	4,50	.1772	—	—	87	49	41	1,0	36	6	●
B226A04600HPX	4,60	.1811	—	—	87	49	41	1,0	36	6	●
B226A04700HPX	4,70	.1850	—	—	87	49	41	1,1	36	6	●
B226A04763HPX	4,76	.1875	3/16	—	94	56	48	1,1	36	6	●
B226A04800HPX	4,80	.1890	—	—	94	56	48	1,1	36	6	●
B226A04900HPX	4,90	.1929	—	—	94	56	48	1,1	36	6	●
B226A05000HPX	5,00	.1969	—	—	94	56	48	1,1	36	6	●
B226A05100HPX	5,10	.2008	—	—	94	56	48	1,1	36	6	●
B226A05106HPX	5,11	.2010	—	—	94	56	48	1,1	36	6	●
B226A05159HPX	5,16	.2031	—	—	94	56	48	1,1	36	6	●
B226A05200HPX	5,20	.2047	—	—	94	56	48	1,2	36	6	●
B226A05300HPX	5,30	.2087	—	—	94	56	48	1,2	36	6	●
B226A05400HPX	5,40	.2126	—	—	94	56	48	1,2	36	6	●
B226A05410HPX	5,41	.2130	—	3	94	56	48	1,2	36	6	●
B226A05500HPX	5,50	.2165	—	—	94	56	48	1,2	36	6	●
B226A05558HPX	5,56	.2188	—	—	94	56	48	1,2	36	6	●
B226A05600HPX	5,60	.2205	—	—	94	56	48	1,2	36	6	●
B226A05700HPX	5,70	.2244	—	—	94	56	48	1,3	36	6	●
B226A05800HPX	5,80	.2283	—	—	94	56	48	1,3	36	6	●
B226A05900HPX	5,90	.2323	—	—	94	56	48	1,3	36	6	●
B226A06000HPX	6,00	.2362	—	—	94	56	48	1,3	36	6	●
B226A06100HPX	6,10	.2402	—	—	105	67	57	1,3	36	8	●
B226A06200HPX	6,20	.2441	—	—	105	67	57	1,4	36	8	●
B226A06300HPX	6,30	.2480	—	—	105	67	57	1,4	36	8	●
B226A06350HPX	6,35	.2500	1/4	E	105	67	57	1,4	36	8	●
B226A06400HPX	6,40	.2520	—	—	105	67	57	1,4	36	8	●
B226A06500HPX	6,50	.2559	—	—	105	67	57	1,4	36	8	●
B226A06600HPX	6,60	.2598	—	—	105	67	57	1,4	36	8	●
B226A06700HPX	6,70	.2638	—	—	105	67	57	1,5	36	8	●
B226A06746HPX	6,75	.2656	17/64	—	105	67	57	1,5	36	8	●
B226A06800HPX	6,80	.2677	—	—	105	67	57	1,5	36	8	●
B226A06900HPX	6,90	.2717	—	—	105	67	57	1,5	36	8	●
B226A07000HPX	7,00	.2756	—	—	105	67	57	1,5	36	8	●
B226A07100HPX	7,10	.2795	—	—	113	74	64	1,5	36	8	●
B226A07145HPX	7,15	.2813	9/32	—	113	74	64	1,6	36	8	●
B226A07200HPX	7,20	.2835	—	—	113	74	64	1,6	36	8	●
B226A07300HPX	7,30	.2874	—	—	113	74	64	1,6	36	8	●
B226A07400HPX	7,40	.2913	—	—	113	74	64	1,6	36	8	●
B226A07500HPX	7,50	.2953	—	—	113	74	64	1,6	36	8	●
B226A07541HPX	7,54	.2969	—	—	113	74	64	1,6	36	8	●

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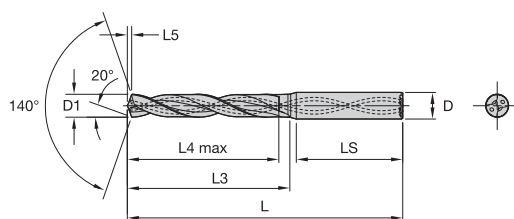
○ alternate choice

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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
B226A07800HPX	7,80	.3071	—	—	113	74	64	1,7	36	8	●
B226A07938HPX	7,94	.3125	5/16	—	113	74	64	1,7	36	8	●
B226A08000HPX	8,00	.3150	—	—	113	74	64	1,7	36	8	●
B226A08100HPX	8,10	.3189	—	—	135	92	80	1,7	40	10	●
B226A08200HPX	8,20	.3228	—	—	135	92	80	1,8	40	10	●
B226A08334HPX	8,33	.3281	—	—	135	92	80	1,8	40	10	●
B226A08500HPX	8,50	.3346	—	—	135	92	80	1,8	40	10	●
B226A08700HPX	8,70	.3425	—	—	135	92	80	1,9	40	10	●
B226A08733HPX	8,73	.3438	—	—	135	92	80	1,9	40	10	●
B226A08800HPX	8,80	.3465	—	—	135	92	80	1,9	40	10	●
B226A09000HPX	9,00	.3543	—	—	135	92	80	1,9	40	10	●
B226A09129HPX	9,13	.3594	23/64	—	135	92	80	2,0	40	10	●
B226A09400HPX	9,40	.3701	—	—	135	92	80	2,0	40	10	●
B226A09500HPX	9,50	.3740	—	—	135	92	80	2,0	40	10	●
B226A09525HPX	9,53	.3750	3/8	—	135	92	80	2,0	40	10	●
B226A09800HPX	9,80	.3858	—	—	135	92	80	2,1	40	10	●
B226A10000HPX	10,00	.3937	—	—	135	92	80	2,1	40	10	●
B226A10200HPX	10,20	.4016	—	—	158	110	96	2,2	45	12	●
B226A10300HPX	10,30	.4055	—	—	158	110	96	2,2	45	12	●
B226A10320HPX	10,32	.4063	13/32	—	158	110	96	2,2	45	12	●
B226A10500HPX	10,50	.4134	—	—	158	110	96	2,2	45	12	●
B226A10716HPX	10,72	.4219	—	—	158	110	96	2,3	45	12	●
B226A10800HPX	10,80	.4252	—	—	158	110	96	2,3	45	12	●
B226A11000HPX	11,00	.4331	—	—	158	110	96	2,3	45	12	●
B226A11113HPX	11,11	.4375	7/16	—	158	110	96	2,3	45	12	●
B226A11500HPX	11,50	.4528	—	—	158	110	96	2,4	45	12	●
B226A11509HPX	11,51	.4531	—	—	158	110	96	2,4	45	12	●
B226A12000HPX	12,00	.4724	—	—	158	110	96	2,5	45	12	●
B226A12500HPX	12,50	.4921	—	—	176	128	112	2,6	45	14	●
B226A12700HPX	12,70	.5000	1/2	—	176	128	112	2,7	45	14	●
B226A13000HPX	13,00	.5118	—	—	176	128	112	2,7	45	14	●
B226A13500HPX	13,50	.5315	—	—	176	128	112	2,8	45	14	●
B226A14000HPX	14,00	.5512	—	—	176	128	112	2,9	45	14	●
B226A14288HPX	14,29	.5625	9/16	—	197	146	128	3,0	48	16	●
B226A14500HPX	14,50	.5709	—	—	197	146	128	3,0	48	16	●
B226A15000HPX	15,00	.5906	—	—	197	146	128	3,1	48	16	●
B226A15500HPX	15,50	.6102	—	—	197	146	128	3,2	48	16	●
B226A15875HPX	15,88	.6250	5/8	—	197	146	128	3,3	48	16	●
B226A16000HPX	16,00	.6299	—	—	197	146	128	3,3	48	16	●
B226A16500HPX	16,50	.6496	—	—	214	163	144	3,4	48	18	●
B226A17000HPX	17,00	.6693	—	—	214	163	144	3,5	48	18	●
B226A17500HPX	17,50	.6890	—	—	214	163	144	3,6	48	18	●
B226A18000HPX	18,00	.7087	—	—	214	163	144	3,7	48	18	●

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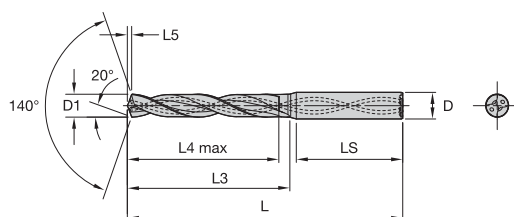
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catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
K224A01250HPX	3,18	.1250	1/8	—	2.48	.91	.69	.029	1.44	.1875	●
K224A01285HPX	3,26	.1285	—	30	2.48	.91	.69	.030	1.44	.1875	●
K224A01360HPX	3,45	.1360	—	29	2.48	.91	.69	.031	1.44	.1875	●
K224A01563HPX	3,97	.1563	5/32	—	2.48	.91	.69	.035	1.44	.1875	●
K224A01719HPX	4,37	.1719	11/64	—	2.68	1.14	.89	.039	1.44	.1875	●
K224A01875HPX	4,76	.1875	3/16	—	2.68	1.14	.89	.042	1.44	.1875	●
K224A02010HPX	5,11	.2010	—	7	2.87	1.34	1.02	.045	1.44	.2500	●
K224A02031HPX	5,16	.2031	13/64	—	2.87	1.34	1.02	.045	1.44	.2500	●
K224A02130HPX	5,41	.2130	—	3	2.87	1.34	1.02	.047	1.44	.2500	●
K224A02188HPX	5,56	.2188	7/32	—	2.87	1.34	1.02	.048	1.44	.2500	●
K224A02500HPX	6,35	.2500	1/4	E	2.87	1.34	1.02	.054	1.44	.2500	●
K224A02570HPX	6,53	.2570	—	F	3.11	1.50	1.11	.056	1.52	.3125	●
K224A02656HPX	6,75	.2656	17/64	—	3.11	1.50	1.11	.058	1.52	.3125	●
K224A02813HPX	7,15	.2813	9/32	—	3.11	1.50	1.11	.061	1.52	.3125	●
K224A02969HPX	7,54	.2969	19/64	—	3.11	1.50	1.11	.064	1.52	.3125	●
K224A03125HPX	7,94	.3125	5/16	—	3.11	1.50	1.11	.067	1.52	.3125	●
K224A03281HPX	8,33	.3281	21/64	—	3.50	1.81	1.37	.071	1.59	.3750	●
K224A03438HPX	8,73	.3438	11/32	—	3.50	1.81	1.37	.074	1.59	.3750	●
K224A03594HPX	9,13	.3594	23/64	—	3.50	1.81	1.37	.077	1.59	.3750	●
K224A03750HPX	9,53	.3750	3/8	—	3.50	1.81	1.37	.080	1.59	.3750	●
K224A03906HPX	9,92	.3906	25/64	—	3.78	2.01	1.50	.083	1.67	.4375	●
K224A04063HPX	10,32	.4063	13/32	—	3.78	2.01	1.50	.086	1.67	.4375	●
K224A04219HPX	10,72	.4219	27/64	—	3.78	2.01	1.50	.089	1.67	.4375	●
K224A04375HPX	11,11	.4375	7/16	—	3.78	2.01	1.50	.092	1.67	.4375	●
K224A04531HPX	11,51	.4531	29/64	—	4.02	2.13	1.56	.095	1.79	.5000	●
K224A04688HPX	11,91	.4688	15/32	—	4.02	2.13	1.56	.098	1.79	.5000	●
K224A04844HPX	12,30	.4844	31/64	—	4.02	2.13	1.56	.102	1.79	.5000	●
K224A05000HPX	12,70	.5000	1/2	—	4.02	2.13	1.56	.105	1.79	.5000	●
K224A05625HPX	14,29	.5625	9/16	—	4.21	2.32	1.69	.117	1.79	.5625	●
K224A06250HPX	15,88	.6250	5/8	—	4.53	2.52	1.83	.130	1.91	.6250	●

170	172	10	4	176

HPX • K225 • 5 X D • THROUGH COOLANT



● first choice

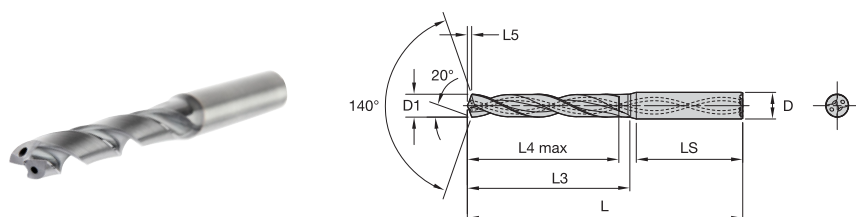
○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCP15B
K225A01250HPX	3,18	.1250	1/8	—	2.60	1.06	.84	.029	1.44	.1875	●
K225A01260HPX	3,20	.1260	—	—	2.60	1.06	.84	.029	1.44	.1875	●
K225A01285HPX	3,26	.1285	—	30	2.60	1.06	.84	.030	1.44	.1875	●
K225A01360HPX	3,45	.1360	—	29	2.60	1.06	.84	.031	1.44	.1875	●
K225A01378HPX	3,50	.1378	—	—	2.60	1.06	.84	.032	1.44	.1875	●
K225A01406HPX	3,57	.1406	9/64	—	2.60	1.06	.84	.032	1.44	.1875	●
K225A01496HPX	3,80	.1496	—	—	2.60	1.06	.84	.034	1.44	.1875	●
K225A01563HPX	3,97	.1563	5/32	—	2.60	1.06	.84	.035	1.44	.1875	●
K225A01575HPX	4,00	.1575	—	—	2.91	1.38	1.13	.035	1.44	.1875	●
K225A01590HPX	4,04	.1590	—	21	2.91	1.38	1.13	.036	1.44	.1875	●
K225A01614HPX	4,10	.1614	—	—	2.91	1.38	1.13	.036	1.44	.1875	●
K225A01654HPX	4,20	.1654	—	—	2.91	1.38	1.13	.037	1.44	.1875	●
K225A01732HPX	4,40	.1732	—	—	2.91	1.38	1.13	.039	1.44	.1875	●
K225A01772HPX	4,50	.1772	—	—	2.91	1.38	1.13	.040	1.44	.1875	●
K225A01811HPX	4,60	.1811	—	—	2.91	1.38	1.13	.041	1.44	.1875	●
K225A01875HPX	4,76	.1875	3/16	—	2.91	1.38	1.13	.042	1.44	.1875	●
K225A01890HPX	4,80	.1890	—	12	3.23	1.69	1.37	.042	1.44	.2500	●
K225A01969HPX	5,00	.1969	—	—	3.23	1.69	1.37	.044	1.44	.2500	●
K225A02008HPX	5,10	.2008	—	—	3.23	1.69	1.37	.045	1.44	.2500	●
K225A02031HPX	5,16	.2031	13/64	—	3.23	1.69	1.37	.045	1.44	.2500	●
K225A02047HPX	5,20	.2047	—	—	3.23	1.69	1.37	.045	1.44	.2500	●
K225A02130HPX	5,41	.2130	—	3	3.23	1.69	1.37	.047	1.44	.2500	●
K225A02165HPX	5,50	.2165	—	—	3.23	1.69	1.37	.048	1.44	.2500	●
K225A02188HPX	5,56	.2188	7/32	—	3.23	1.69	1.37	.048	1.44	.2500	●
K225A02344HPX	5,95	.2344	15/64	—	3.23	1.69	1.37	.051	1.44	.2500	●
K225A02362HPX	6,00	.2362	—	—	3.23	1.69	1.37	.052	1.44	.2500	●
K225A02441HPX	6,20	.2441	—	—	3.23	1.69	1.37	.053	1.44	.2500	●
K225A02500HPX	6,35	.2500	1/4	E	3.23	1.69	1.37	.054	1.44	.2500	●
K225A02559HPX	6,50	.2559	—	—	3.58	1.97	1.59	.056	1.52	.3125	●
K225A02570HPX	6,53	.2570	—	F	3.58	1.97	1.59	.056	1.52	.3125	●
K225A02656HPX	6,75	.2656	17/64	—	3.58	1.97	1.59	.058	1.52	.3125	●
K225A02677HPX	6,80	.2677	—	—	3.58	1.97	1.59	.058	1.52	.3125	●
K225A02720HPX	6,91	.2720	—	I	3.58	1.97	1.59	.059	1.52	.3125	●
K225A02756HPX	7,00	.2756	—	—	3.58	1.97	1.59	.060	1.52	.3125	●
K225A02813HPX	7,15	.2813	9/32	—	3.58	1.97	1.59	.061	1.52	.3125	●
K225A02969HPX	7,54	.2969	19/64	—	3.58	1.97	1.59	.064	1.52	.3125	●
K225A03125HPX	7,94	.3125	5/16	—	3.58	1.97	1.59	.067	1.52	.3125	●
K225A03150HPX	8,00	.3150	—	—	4.06	2.36	1.92	.068	1.59	.3750	●
K225A03281HPX	8,33	.3281	21/64	—	4.06	2.36	1.92	.071	1.59	.3750	●
K225A03307HPX	8,40	.3307	—	—	4.06	2.36	1.92	.071	1.59	.3750	●
K225A03320HPX	8,43	.3320	—	Q	4.06	2.36	1.92	.071	1.59	.3750	●
K225A03346HPX	8,50	.3346	—	—	4.06	2.36	1.92	.072	1.59	.3750	●
K225A03438HPX	8,73	.3438	11/32	—	4.06	2.36	1.92	.074	1.59	.3750	●
K225A03543HPX	9,00	.3543	—	—	4.06	2.36	1.92	.076	1.59	.3750	●
K225A03594HPX	9,13	.3594	23/64	—	4.06	2.36	1.92	.077	1.59	.3750	●
K225A03680HPX	9,35	.3680	—	U	4.06	2.36	1.92	.078	1.59	.3750	●
K225A03750HPX	9,53	.3750	3/8	—	4.06	2.36	1.92	.080	1.59	.3750	●
K225A03906HPX	9,92	.3906	25/64	—	4.37	2.60	2.09	.083	1.67	.4375	●
K225A03937HPX	10,00	.3937	—	—	4.37	2.60	2.09	.084	1.67	.4375	●
K225A04063HPX	10,32	.4063	13/32	—	4.37	2.60	2.09	.086	1.67	.4375	●
K225A04134HPX	10,50	.4134	—	—	4.37	2.60	2.09	.087	1.67	.4375	●
K225A04219HPX	10,72	.4219	27/64	—	4.37	2.60	2.09	.089	1.67	.4375	●
K225A04375HPX	11,11	.4375	7/16	—	4.37	2.60	2.09	.092	1.67	.4375	●
K225A04531HPX	11,51	.4531	29/64	—	4.65	2.76	2.19	.095	1.79	.5000	●
K225A04688HPX	11,91	.4688	15/32	—	4.65	2.76	2.19	.098	1.79	.5000	●
K225A04724HPX	12,00	.4724	—	—	4.65	2.76	2.19	.099	1.79	.5000	●
K225A04844HPX	12,30	.4844	31/64	—	4.65	2.76	2.19	.102	1.79	.5000	●
K225A05000HPX	12,70	.5000	1/2	—	4.65	2.76	2.19	.105	1.79	.5000	●
K225A05156HPX	13,10	.5156	33/64	—	4.88	2.99	2.36	.108	1.79	.5625	●
K225A05313HPX	13,50	.5313	17/32	—	4.88	2.99	2.36	.111	1.79	.5625	●

170	172	10	4	176

HPX • K225 • 5 X D • THROUGH COOLANT



● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

KCP15B

catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	
K225A05512HPX	14,00	.5512	—	—	4.88	2.99	2.36	.115	1.79	.5625	●
K225A05625HPX	14,29	.5625	9/16	—	4.88	2.99	2.36	.117	1.79	.5625	●
K225A06250HPX	15,88	.6250	5/8	—	5.24	3.23	2.54	.130	1.91	.6250	●
K225A06563HPX	16,67	.6563	21/32	—	5.63	3.62	2.87	.136	1.91	.6875	●

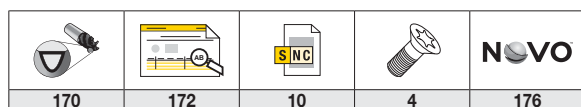
TOLERANCE

Metric

nominal size range	D1 tolerance m7	D tolerance h6
1-3	0,002/0,012	0,000/-0,006
>3-6	0,004/0,016	0,000/-0,008
>6-10	0,006/0,021	0,000/-0,009
>10-18	0,007/0,025	0,000/-0,011
>18-25,4	0,008/0,029	0,000/-0,013

Inch

nominal size range	D1 tolerance m7	D tolerance h6
.0394-.1181	.0001/.0005	.0000/- .0002
>.1181-.2362	.0002/.0006	.0000/- .0003
>.2362-.3937	.0002/.0008	.0000/- .0004
>.3937-.7087	.0003/.0010	.0000/- .0004
>.7087-1.0000	.0003/.0011	.0000/- .0005



170

172

10

4

176

HPX • FLOOD COOLANT • APPLICATION DATA

Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	80	110	170	mm/r	0,06–0,19	0,07–0,21	0,09–0,25	0,11–0,30	0,13–0,34	0,15–0,38	0,19–0,47	0,23–0,56
	1	70	110	150	mm/r	0,05–0,22	0,07–0,24	0,11–0,30	0,14–0,35	0,17–0,40	0,21–0,45	0,28–0,56	0,34–0,66
	2	90	120	160	mm/r	0,09–0,21	0,11–0,23	0,13–0,29	0,16–0,34	0,19–0,39	0,22–0,44	0,27–0,55	0,33–0,65
	3	60	90	120	mm/r	0,12–0,22	0,13–0,24	0,16–0,30	0,19–0,35	0,22–0,40	0,25–0,45	0,31–0,56	0,37–0,66
	4	50	80	120	mm/r	0,23–0,11	0,25–0,12	0,31–0,15	0,36–0,17	0,41–0,20	0,46–0,23	0,57–0,28	0,67–0,33
	5	50	60	70	mm/r	0,08–0,15	0,09–0,17	0,12–0,21	0,14–0,26	0,17–0,30	0,20–0,34	0,25–0,43	0,30–0,52
	6	50	60	70	mm/r	0,08–0,15	0,09–0,17	0,12–0,21	0,14–0,26	0,17–0,30	0,20–0,34	0,25–0,43	0,30–0,52

Material Group													
		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate per Rev								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	260	360	560	IPR	.002–.007	.003–.008	.004–.010	.004–.012	.005–.013	.006–.015	.008–.019	.009–.022
	1	230	360	490	IPR	.002–.009	.003–.010	.004–.012	.006–.014	.007–.016	.008–.018	.011–.022	.014–.026
	2	300	390	520	IPR	.004–.008	.004–.009	.005–.011	.006–.013	.008–.015	.009–.017	.011–.022	.013–.026
	3	200	300	390	IPR	.005–.009	.005–.010	.006–.012	.008–.014	.009–.016	.010–.018	.012–.022	.015–.026
	4	160	260	390	IPR	.009–.004	.010–.005	.012–.006	.014–.007	.016–.008	.018–.009	.022–.011	.026–.013
	5	160	200	230	IPR	.003–.006	.004–.007	.005–.008	.006–.010	.007–.012	.008–.014	.010–.017	.012–.021
	6	160	200	230	IPR	.003–.006	.004–.007	.005–.008	.006–.010	.007–.012	.008–.014	.010–.017	.012–.021

HPX • THROUGH COOLANT • APPLICATION DATA

Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	140	240	290	mm/r	0,13–0,24	0,14–0,26	0,15–0,30	0,17–0,34	0,19–0,38	0,21–0,42	0,24–0,50	0,28–0,58
	1	130	240	290	mm/r	0,15–0,30	0,16–0,33	0,18–0,39	0,20–0,45	0,22–0,51	0,24–0,57	0,28–0,69	0,32–0,81
	2	190	230	270	mm/r	0,14–0,29	0,15–0,32	0,18–0,38	0,21–0,43	0,24–0,49	0,27–0,55	0,33–0,66	0,39–0,77
	3	130	160	190	mm/r	0,15–0,30	0,17–0,33	0,20–0,38	0,23–0,44	0,26–0,50	0,29–0,56	0,36–0,67	0,42–0,79
	4	110	150	170	mm/r	0,13–0,25	0,15–0,27	0,19–0,33	0,22–0,38	0,26–0,43	0,30–0,48	0,37–0,59	0,44–0,69
	5	70	90	110	mm/r	0,11–0,21	0,13–0,24	0,15–0,28	0,18–0,33	0,21–0,38	0,24–0,42	0,29–0,51	0,35–0,61
	6	60	80	100	mm/r	0,11–0,21	0,13–0,24	0,15–0,28	0,18–0,33	0,21–0,38	0,24–0,42	0,29–0,51	0,35–0,61

Material Group													
		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate per Rev								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	460	790	950	IPR	.005–.009	.005–.010	.006–.012	.007–.013	.008–.015	.008–.017	.010–.020	.011–.023
	1	430	790	950	IPR	.006–.012	.006–.013	.007–.015	.008–.018	.009–.020	.009–.022	.011–.027	.013–.032
	2	620	750	890	IPR	.005–.012	.006–.013	.007–.015	.008–.017	.009–.019	.011–.022	.013–.026	.015–.030
	3	430	520	620	IPR	.006–.012	.007–.013	.008–.015	.009–.017	.010–.020	.012–.022	.014–.027	.017–.031
	4	360	490	560	IPR	.005–.010	.006–.011	.007–.013	.009–.015	.010–.017	.012–.019	.015–.023	.017–.027
	5	230	300	360	IPR	.004–.008	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.012–.020	.014–.024
	6	200	260	330	IPR	.004–.008	.005–.009	.006–.011	.007–.013	.008–.015	.009–.017	.012–.020	.014–.024

HPX • MQL • APPLICATION DATA

Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate per Rev								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	70	130	150	mm/r	0,15–0,28	0,16–0,31	0,18–0,35	0,20–0,40	0,22–0,45	0,25–0,50	0,29–0,59	0,33–0,68
	1	70	130	150	mm/r	0,18–0,35	0,19–0,39	0,21–0,46	0,24–0,53	0,26–0,60	0,28–0,67	0,33–0,81	0,38–0,96
	2	100	120	140	mm/r	0,16–0,35	0,18–0,38	0,21–0,45	0,25–0,51	0,28–0,58	0,32–0,64	0,39–0,78	0,46–0,91
	3	70	90	100	mm/r	0,18–0,35	0,19–0,38	0,23–0,45	0,27–0,52	0,31–0,59	0,35–0,66	0,42–0,80	0,50–0,93
	4	60	80	90	mm/r	0,16–0,29	0,18–0,32	0,22–0,38	0,26–0,45	0,31–0,51	0,35–0,57	0,43–0,69	0,52–0,81
	5	40	50	60	mm/r	0,13–0,25	0,15–0,28	0,18–0,33	0,21–0,39	0,25–0,44	0,28–0,50	0,35–0,61	0,41–0,71
	6	30	40	50	mm/r	0,13–0,25	0,15–0,28	0,18–0,33	0,21–0,39	0,25–0,44	0,28–0,50	0,35–0,61	0,41–0,71

Material Group													
		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate per Rev								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
P	0	230	430	490	IPR	.006–.011	.006–.012	.007–.014	.008–.016	.009–.018	.010–.020	.011–.023	.013–.027
	1	230	430	490	IPR	.007–.014	.007–.015	.008–.018	.009–.021	.010–.024	.011–.027	.013–.032	.015–.038
	2	330	390	460	IPR	.006–.014	.007–.015	.008–.018	.010–.020	.011–.023	.013–.025	.015–.031	.018–.036
	3	230	300	330	IPR	.007–.014	.008–.015	.009–.018	.011–.021	.012–.023	.014–.026	.017–.031	.020–.037
	4	200	260	300	IPR	.006–.012	.007–.013	.009–.015	.010–.018	.012–.020	.014–.022	.017–.027	.020–.032
	5	130	160	200	IPR	.005–.010	.006–.011	.007–.013	.009–.015	.010–.017	.011–.020	.014–.024	.016–.028
	6	100	130	160	IPR	.005–.010	.006–.011	.007–.013	.009–.015	.010–.017	.011–.020	.014–.024	.016–.028

KenTIP™ FS

Modular Drilling

Materials



Applications



Counterboring



Drilling



Drilling:
Inclined Entry



Drilling:
Flat Bottom



Drilling:
Inclined Exit



Drilling: Cross Hole

kennametal.com/KenTIPFS

Multi-Coolant

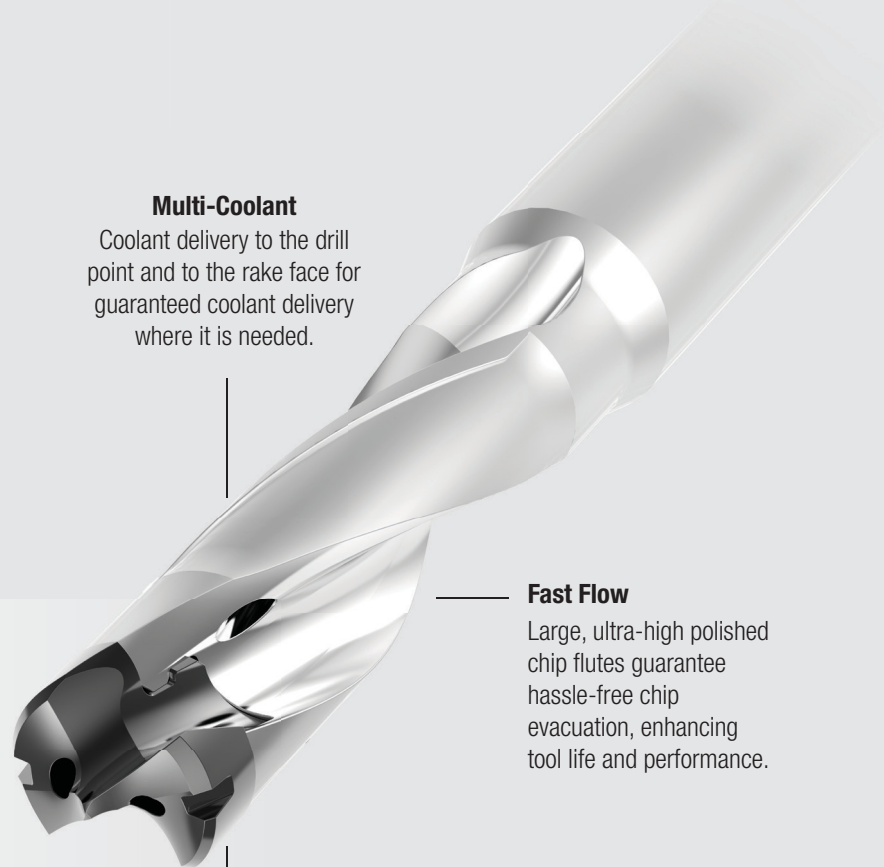
Coolant delivery to the drill point and to the rake face for guaranteed coolant delivery where it is needed.

Fast Flow

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

Quick Release

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



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

KenTIP FS inserts cover the entire front part of the drill.

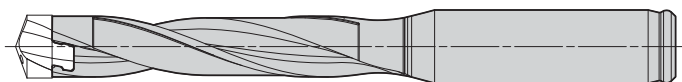
The coupling is completely protected from chip flow and contact with workpiece.

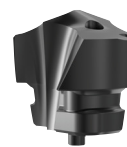
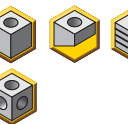
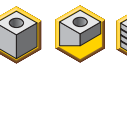


NEW! FEG inserts with 180° point geometry for holes that require a flat bottom, performing two operations in one.

In conjunction with the other KenTIP FS inserts (HPG, HPC, HPL geometries), the new FEG insert can be utilized as pilot drill point for deep-hole applications.

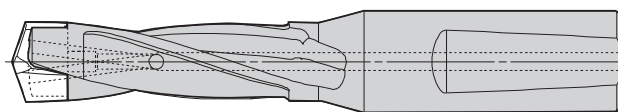
MODULAR DRILLS • TOOL SELECTION GUIDE

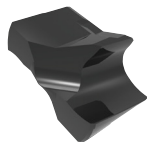
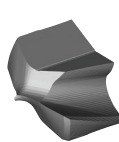
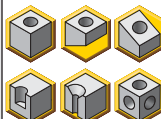


KenTIP™ FS				
	FEG	HPG	HPC	HPL
				
Page	35	H8*	H12*	H15*
Workpiece material				
Primary	P K	P	K	M
Secondary	M	K	P	S
Main operation				
Point angle	Inside 140° – Outside 180°	143°	143°	140°
Cutting diameter [D1]	6,0–26,0mm (0.2362–1.0236")	6,0–26,0mm (0.2362–1.0236")	6,0–26,0mm (0.2362–1.0236")	6,0–26,0mm (0.2362–1.0236")
Flutes and margin				
Corner chamfer				

*See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

MODULAR DRILLS • TOOL SELECTION GUIDE



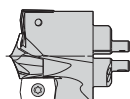
	KSEM™						
	FEG	HP	HPG	HPCCL	HPL	SPL	PC
							
Page	H36*	H32*	H52*	H60*	H62*	H64*	H70*
Workpiece material							
Primary	P K	P	P	K	M	M S	P K
Secondary	M S	K	M K			P N	M
Main operation							
Point angle	150°/180°	140°	140°	140°	140°	140°	150°
Cutting diameter [D1]	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")	12,5–40,0mm (0.4921–1.5748")
Flutes and margin							
Corner chamfer							

*See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

MODULAR DRILLS • TOOL SELECTION GUIDE

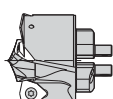
KSEM PLUS™—A1 Heads

dia.: 1.102-1.249"
(28-31,74mm)



2 x DFR

dia.: 1.250-2.794"
(31,75-70,99mm)



2 x DFT

dia.: 2.795-3.674"
(71-93,34mm)



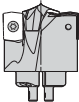
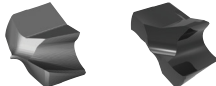
4 x DFT

dia.: 3.675-4"
(93,35-101,60mm)



6 x DFT



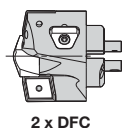
	KSEM PLUS™ A1 Heads					
Drill head style						
Center insert	HPG FEG					
						
Outboard insert	DFR-GD	DFR-MD	DFR-LD	DFT-HP	DFT-MD	DFT-DS
						
Page	H113*			H112-H113*		
Workpiece material						
Primary	P K S	P M	K N	P K S	P M	P M
Secondary	M N	K N S	P M S	M N	K N S	N S
Main operation						
Cutting diameter [D1]	28,0-31,75mm (1.1024-1.2500")			31,75-101,40mm (1.1875-4,0000")		
Flutes and margin						

*See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

MODULAR DRILLS • TOOL SELECTION GUIDE

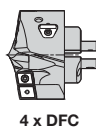
KSEM PLUS™ —B1 Heads

dia.: 1.102-2.794"
(28-70,99mm)



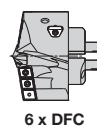
2 x DFC

dia.: 2.795-3.674"
(71-93,34mm)



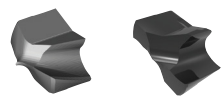
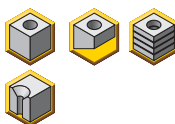
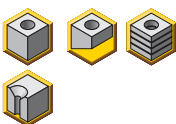
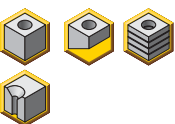
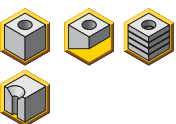
4 x DFC

dia.: 3.675-4"
(93,35-101.60mm)



6 x DFC



KSEM PLUS™ B1 Heads				
Drill head style				
Center insert	HPG FEG			
				
Outboard insert	DFC-HP	DFC-MD	DFC-DS	DFC-HPF
				
Page	H114*			44**
Workpiece material				
Primary	P K S	P M	P M	P S
Secondary	M N	K N S	N S	M K N
Main operation				
Cutting diameter [D1]	28,0-101mm (1.1024-4.0000")			
Flutes and margin				

*See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

** See page in the Kennametal Innovations 2020 • 02, A-19-06096.

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

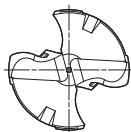
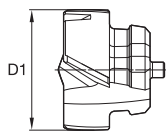
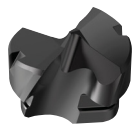


M

Suffix

M = Metric diameter
Blank = Inch diameter

KENTIP™ FS INSERTS • FEG



● first choice
○ alternate choice

P	●
M	○
K	○
N	○
S	○
H	○

order number	ISO catalog number	ANSI catalog number	D1		SSC	KCP15A
			mm	in		
6771074	KTFSS06000FEGM	KTFSS06000FEGM	6,000	.2362	A	●
6771075	KTFSS06500FEGM	KTFSS06500FEGM	6,500	.2559	B	●
6771076	KTFSS06800FEGM	KTFSS06800FEGM	6,800	.2677	C	●
6771077	KTFSS07000FEGM	KTFSS07000FEGM	7,000	.2756	D	●
6771078	KTFSS07500FEGM	KTFSS07500FEGM	7,500	.2953	E	●
6771079	KTFSS07938FEGM	KTFSS03125FEG	7,938	.3125	E	●
6771080	KTFSS08000FEGM	KTFSS08000FEGM	8,000	.3150	F	●
6771111	KTFSS08500FEGM	KTFSS08500FEGM	8,500	.3346	G	●
6771112	KTFSS08520FEGM	KTFSS08520FEGM	8,520	.3354	G	●
6771113	KTFSS09000FEGM	KTFSS09000FEGM	9,000	.3543	H	●
6771114	KTFSS09500FEGM	KTFSS09500FEGM	9,500	.3740	I	●
6771115	KTFSS09525FEGM	KTFSS03750FEG	9,525	.3750	I	●
6771116	KTFSS10000FEGM	KTFSS10000FEGM	10,000	.3937	J	●
6771117	KTFSS10200FEGM	KTFSS10200FEGM	10,200	.4016	J	●
6771118	KTFSS10500FEGM	KTFSS10500FEGM	10,500	.4134	K	●
6771119	KTFSS10800FEGM	KTFSS10800FEGM	10,800	.4252	K	●
6771120	KTFSS11000FEGM	KTFSS11000FEGM	11,000	.4331	L	●
6771121	KTFSS11113FEGM	KTFSS04375FEG	11,112	.4375	L	●
6771122	KTFSS11500FEGM	KTFSS11500FEGM	11,500	.4528	M	●
6771123	KTFSS11800FEGM	KTFSS11800FEGM	11,800	.4646	M	●
6771124	KTFSS12000FEGM	KTFSS12000FEGM	12,000	.4724	N	●
6771125	KTFSS12304FEGM	KTFSS04844FEG	12,304	.4844	N	●
6771127	KTFSS12500FEGM	KTFSS12500FEGM	12,500	.4921	O	●
6771128	KTFSS12700FEGM	KTFSS05000FEG	12,700	.5000	O	●
6771129	KTFSS13000FEGM	KTFSS13000FEGM	13,000	.5118	P	●
6771130	KTFSS13500FEGM	KTFSS13500FEGM	13,500	.5315	Q	●
6771131	KTFSS14000FEGM	KTFSS14000FEGM	14,000	.5512	R	●
6771132	KTFSS14288FEGM	KTFSS05625FEG	14,288	.5625	R	●
6771133	KTFSS14500FEGM	KTFSS14500FEGM	14,500	.5709	S	●
6771134	KTFSS15000FEGM	KTFSS15000FEGM	15,000	.5906	T	●
6771135	KTFSS15300FEGM	KTFSS15300FEGM	15,300	.6024	T	●
6771136	KTFSS15500FEGM	KTFSS15500FEGM	15,500	.6102	T	●
6771137	KTFSS15875FEGM	KTFSS06250FEG	15,875	.6250	T	●
6771138	KTFSS16000FEGM	KTFSS16000FEGM	16,000	.6299	U	●
6771139	KTFSS16500FEGM	KTFSS16500FEGM	16,500	.6496	U	●
6771140	KTFSS16670FEGM	KTFSS06563FEG	16,670	.6563	U	●
6771151	KTFSS17000FEGM	KTFSS17000FEGM	17,000	.6693	V	●
6771152	KTFSS17463FEGM	KTFSS06875FEG	17,462	.6875	V	●
6771153	KTFSS17500FEGM	KTFSS17500FEGM	17,500	.6890	V	●
6771154	KTFSS17700FEGM	KTFSS17700FEGM	17,700	.6969	V	●
6771155	KTFSS18000FEGM	KTFSS18000FEGM	18,000	.7087	W	●
6771156	KTFSS18500FEGM	KTFSS18500FEGM	18,500	.7283	W	●
6771157	KTFSS19000FEGM	KTFSS19000FEGM	19,000	.7480	X	●
6771158	KTFSS19050FEGM	KTFSS07500FEG	19,050	.7500	X	●
6771159	KTFSS19200FEGM	KTFSS19200FEGM	19,200	.7559	X	●
6771160	KTFSS19500FEGM	KTFSS19500FEGM	19,500	.7677	X	●
6771161	KTFSS20000FEGM	KTFSS20000FEGM	20,000	.7874	Y	●
6771162	KTFSS20500FEGM	KTFSS20500FEGM	20,500	.8071	Y	●
6771163	KTFSS20638FEGM	KTFSS08125FEG	20,638	.8125	Y	●
6771164	KTFSS21000FEGM	KTFSS21000FEGM	21,000	.8268	Z	●
6771165	KTFSS21500FEGM	KTFSS21500FEGM	21,500	.8465	Z	●
6771166	KTFSS22000FEGM	KTFSS22000FEGM	22,000	.8661	ZA	●
6771167	KTFSS22225FEGM	KTFSS08750FEG	22,225	.8750	ZA	●
6771168	KTFSS22500FEGM	KTFSS22500FEGM	22,500	.8858	ZA	●
6771169	KTFSS23000FEGM	KTFSS23000FEGM	23,000	.9055	ZB	●
6771170	KTFSS23500FEGM	KTFSS23500FEGM	23,500	.9252	ZB	●
6771171	KTFSS24000FEGM	KTFSS24000FEGM	24,000	.9449	ZC	●
6771172	KTFSS24500FEGM	KTFSS24500FEGM	24,500	.9646	ZC	●
6771173	KTFSS25000FEGM	KTFSS25000FEGM	25,000	.9843	ZD	●
6771174	KTFSS25400FEGM	KTFSS10000FEG	25,400	1.0000	ZD	●
6771175	KTFSS26000FEGM	KTFSS26000FEGM	26,000	1.0236	ZD	●

170	172	34	4	176

APPLICATION DATA • KENTIP™ FS • FEG INSERT

Material Group	Cutting Speed — vc Range — m/min			Metric										
	min	Starting Value	max	Recommended Feed Rate per Rev										
					6,0	8,0	10,0	12,0	14,0	16,0	20,0	24,0	26,0	
P	0	110	140	170	mm/r	0,10–0,19	0,11–0,22	0,13–0,24	0,15–0,26	0,17–0,29	0,19–0,31	0,21–0,34	0,23–0,38	0,24–0,40
	1	110	140	170	mm/r	0,10–0,19	0,11–0,22	0,13–0,24	0,15–0,26	0,17–0,29	0,19–0,31	0,21–0,34	0,23–0,38	0,24–0,40
	2	100	120	140	mm/r	0,10–0,19	0,11–0,22	0,13–0,24	0,15–0,26	0,17–0,29	0,19–0,31	0,21–0,34	0,23–0,38	0,24–0,40
	3	80	100	120	mm/r	0,10–0,17	0,11–0,20	0,12–0,22	0,14–0,24	0,16–0,26	0,18–0,28	0,20–0,31	0,21–0,35	0,22–0,36
	4	70	90	110	mm/r	0,10–0,17	0,11–0,20	0,12–0,22	0,14–0,24	0,16–0,26	0,18–0,28	0,20–0,31	0,21–0,35	0,22–0,36
	5	60	80	100	mm/r	0,09–0,16	0,10–0,18	0,11–0,20	0,13–0,22	0,15–0,24	0,16–0,26	0,18–0,29	0,19–0,33	0,20–0,34
M	6	60	80	100	mm/r	0,09–0,16	0,10–0,18	0,11–0,20	0,13–0,22	0,15–0,24	0,16–0,26	0,18–0,29	0,19–0,33	0,20–0,34
	1	40	60	80	mm/r	0,07–0,12	0,08–0,14	0,09–0,16	0,11–0,18	0,12–0,20	0,13–0,22	0,14–0,24	0,15–0,26	0,16–0,27
K	2	35	55	70	mm/r	0,07–0,12	0,08–0,14	0,09–0,16	0,11–0,18	0,12–0,20	0,13–0,22	0,14–0,24	0,15–0,26	0,16–0,27
	1	90	120	175	mm/r	0,12–0,21	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,36	0,22–0,40	0,25–0,44	0,28–0,48	0,29–0,50
	2	80	110	140	mm/r	0,12–0,21	0,14–0,24	0,16–0,28	0,18–0,32	0,20–0,36	0,22–0,40	0,25–0,44	0,28–0,48	0,29–0,50
	3	70	80	100	mm/r	0,11–0,19	0,13–0,22	0,14–0,25	0,16–0,28	0,18–0,32	0,21–0,36	0,23–0,40	0,26–0,44	0,27–0,46

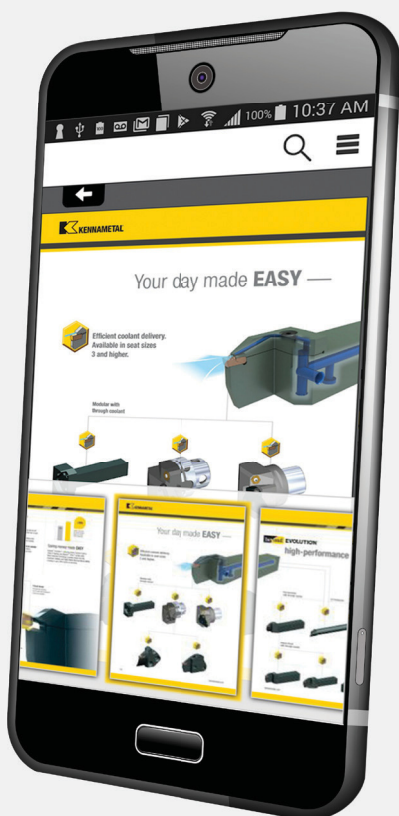
Material Group		Cutting Speed — vc Range — SFM			Inch									
					Recommended Feed Rate per Rev									
		min	Starting Value	max		.236	.315	.394	.472	.551	.630	.787	.945	1.023
P	0	360	460	560	IPR	0.004–0.007	0.004–0.009	0.005–0.009	0.006–0.010	0.007–0.011	0.007–0.012	0.008–0.013	0.009–0.015	0.009–0.016
	1	360	460	560	IPR	0.004–0.007	0.004–0.009	0.005–0.009	0.006–0.010	0.007–0.011	0.007–0.012	0.008–0.013	0.009–0.015	0.009–0.016
	2	330	400	460	IPR	0.004–0.007	0.004–0.009	0.005–0.009	0.006–0.010	0.007–0.011	0.007–0.012	0.008–0.013	0.009–0.015	0.009–0.016
	3	260	330	400	IPR	0.004–0.007	0.004–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.007–0.011	0.008–0.012	0.008–0.014	0.009–0.014
	4	230	330	360	IPR	0.004–0.007	0.004–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.007–0.011	0.008–0.012	0.008–0.014	0.009–0.014
	5	200	260	330	IPR	0.004–0.006	0.004–0.007	0.004–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.007–0.011	0.007–0.013	0.008–0.013
M	6	200	260	330	IPR	0.004–0.006	0.004–0.007	0.004–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.007–0.011	0.007–0.013	0.008–0.013
	1	130	200	260	IPR	0.003–0.005	0.003–0.006	0.004–0.006	0.004–0.007	0.005–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.006–0.011
K	2	120	180	230	IPR	0.003–0.005	0.003–0.006	0.004–0.006	0.004–0.007	0.005–0.008	0.005–0.009	0.006–0.009	0.006–0.010	0.006–0.011
	1	300	400	580	IPR	0.005–0.008	0.006–0.009	0.006–0.011	0.007–0.013	0.008–0.014	0.009–0.016	0.010–0.017	0.011–0.019	0.011–0.020
	2	260	360	460	IPR	0.005–0.008	0.006–0.009	0.006–0.011	0.007–0.013	0.008–0.014	0.009–0.016	0.010–0.017	0.011–0.019	0.011–0.020
	3	230	260	330	IPR	0.004–0.007	0.005–0.009	0.006–0.010	0.006–0.011	0.007–0.013	0.008–0.014	0.009–0.016	0.010–0.017	0.011–0.018

For insert selection, see Kennametal Master Catalog 2018 IA-16-05217, or visit kennametal.com.

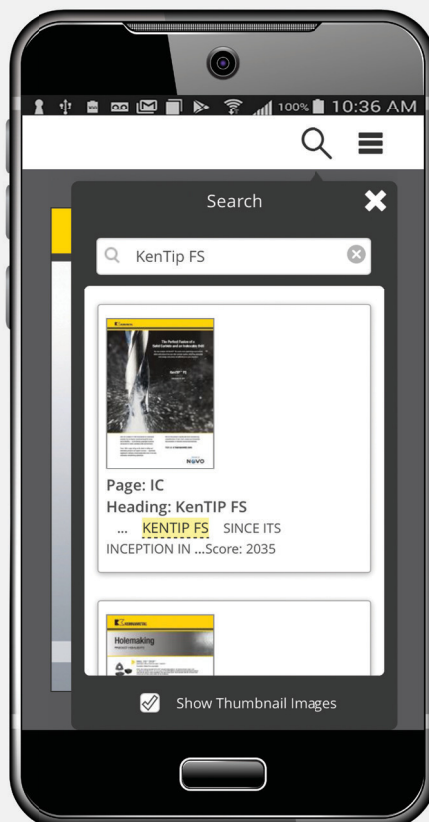


Catalog App

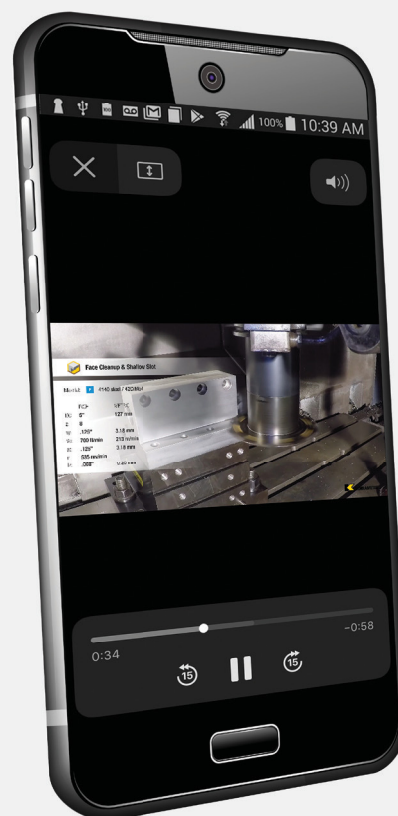
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eBore™

Digital Fine Boring System

Materials



Applications



Reaming:
Through Hole



Reaming:
Blind Hole



Reaming:
Through & Cross Holes



Reaming:
Blind & Cross Holes



One digital display for
all fine boring tools.

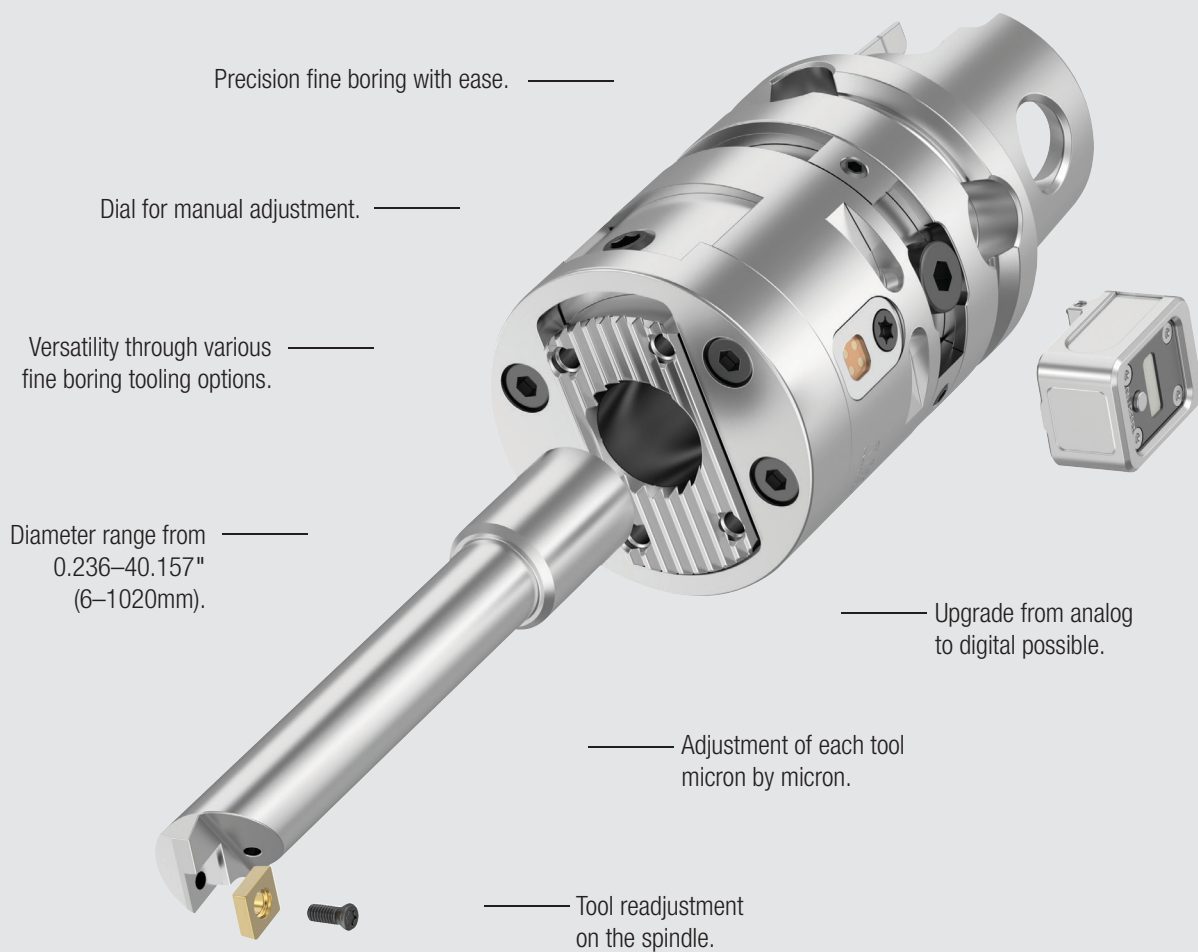
kennametal.com/eBore

The eBore boring system covers a diameter range from 0.236–40.157" (6–1020mm) by providing state-of-the-art fine boring tooling solutions that have one thing in common: all of them are digital ready.

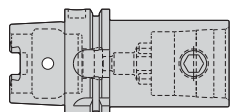
The digital eBore display provides the option to readjust the tool on the spindle, reducing setup time and idle time.

One for all — One eBore digital display serving all eBore fine boring tools.

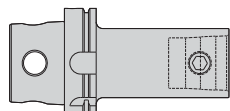
Micron by micron, the precision adjustment of each tool is just as easy as 1, 2, 3.



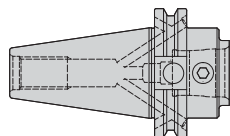
Adapters



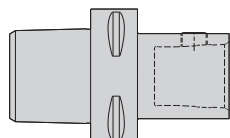
HSK to KM™



KM4X™ to KM

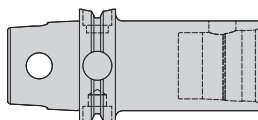


BT, CV, DV to KM

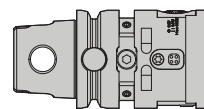


PSC to KM

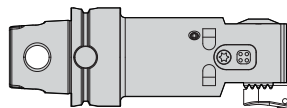
Extension



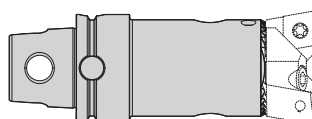
eBore™



eBore Universal

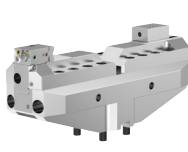


eBore Fine Boring



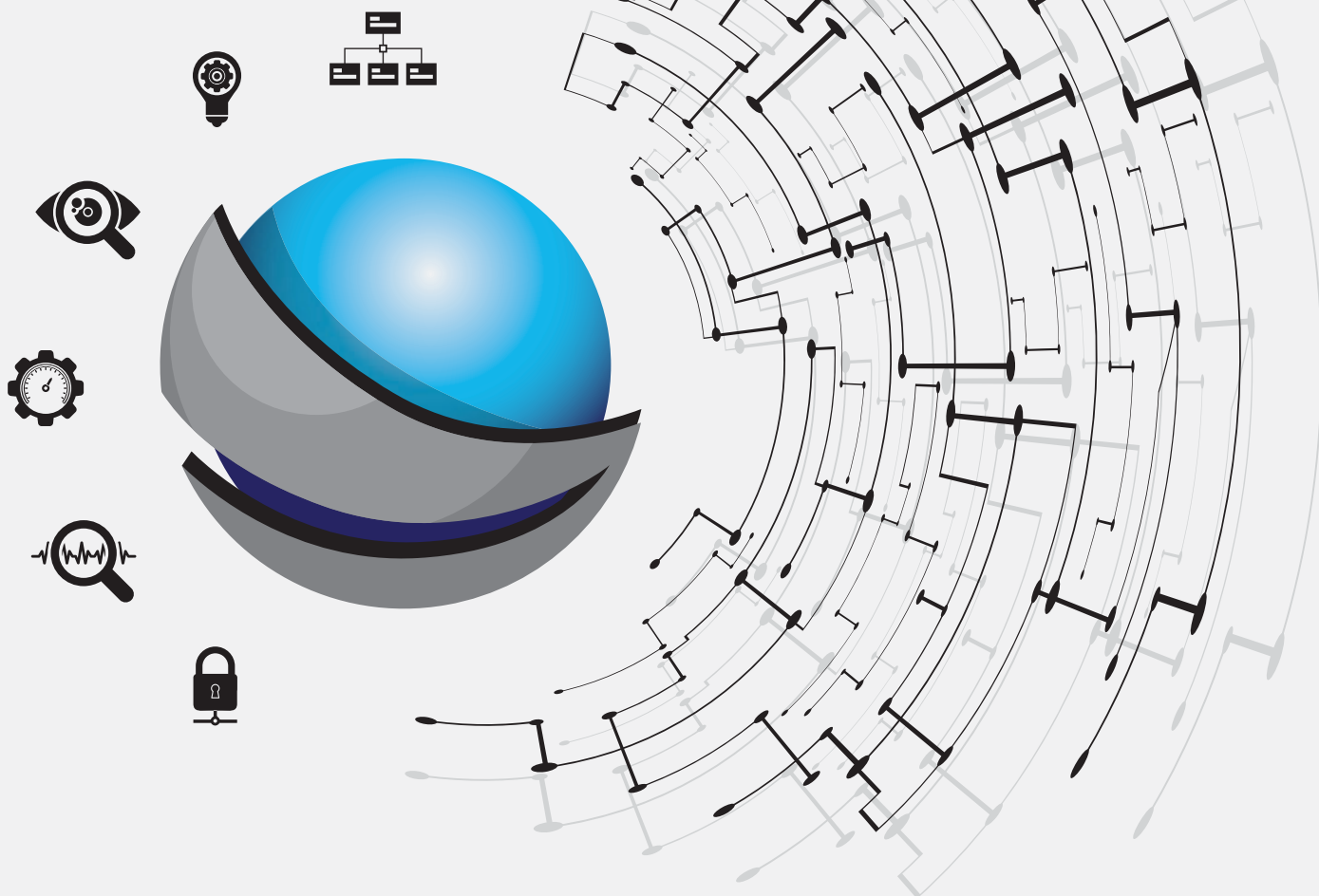
eBore Twin Cutter

Tool Selection Guide • Fine Boring

				
Series	eBore™ Universal	eBore Fine Boring Tool	eBore Bridge Finishing Tools	eBore Twin Cutters
Page	44	49	50	53
Workpiece material				
Primary	P M K N S	P M K N S	P M K N S	P M K N S
Secondary	H	H	H	
Boring range [BR1]	6–152mm (0.236–5.984")	20–205mm (0.787–8.071")	200–1020mm (7.874–40.157")	19,5–1020mm (7.677–40.157")
Accuracy	IT6			IT9
Cylindricity		5 µm (0.0002")		
Position		5–10 µm (0.0002–0.0004")		
Surface roughness (Ra)	P	0,8–2,0 µm (32–80 µ-in)		
Surface roughness (Ra)	M	0,8–2,0 µm (32–80 µ-in)		
Surface roughness (Ra)	K	0,8–2,0 µm (32–80 µ-in)		
Surface roughness (Ra)	N	0,8–2,0 µm (32–80 µ-in)		
Surface roughness (Ra)	S	0,8–2,0 µm (32–80 µ-in)		
Surface roughness (Ra)	H	< 1,2 µm (< 48 µ-in)		
Coolant				
Main Operations				

For insert selection, see Kennametal Master Catalog 2018 I A-16-05217, or visit kennametal.com.





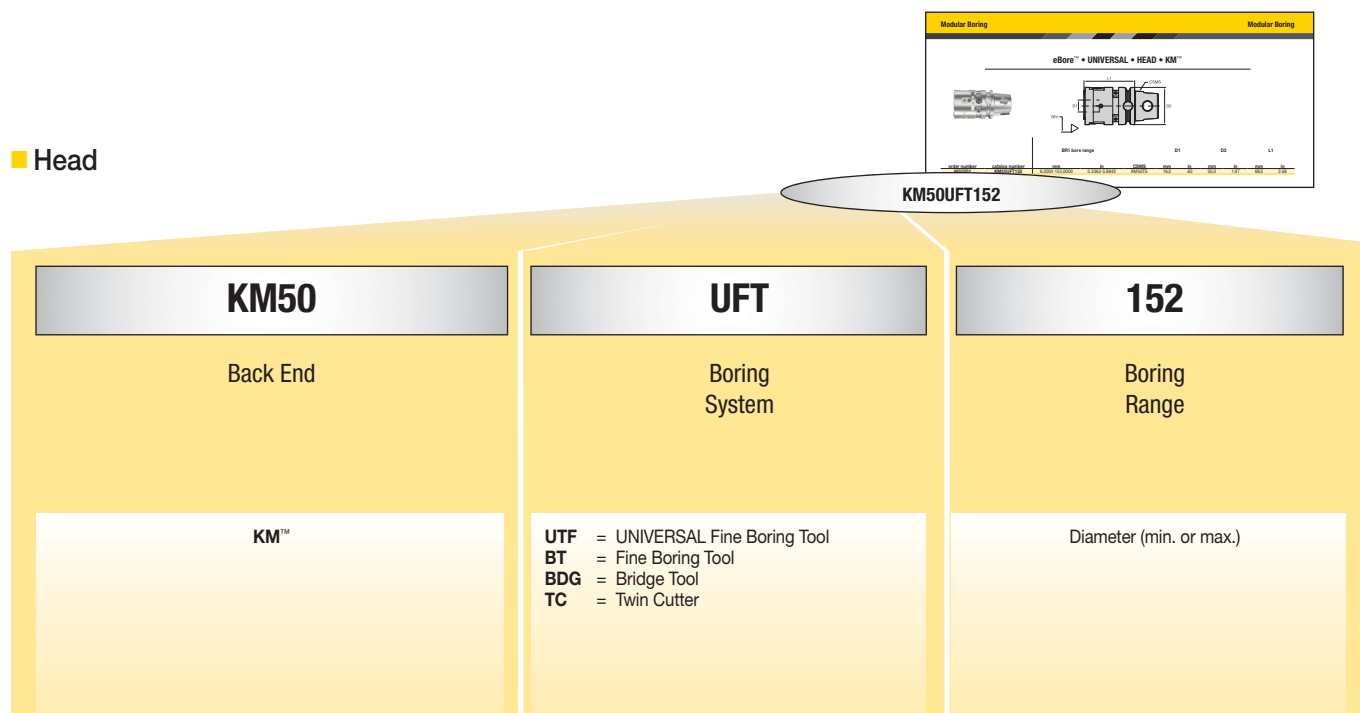
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to connect systems and processes throughout
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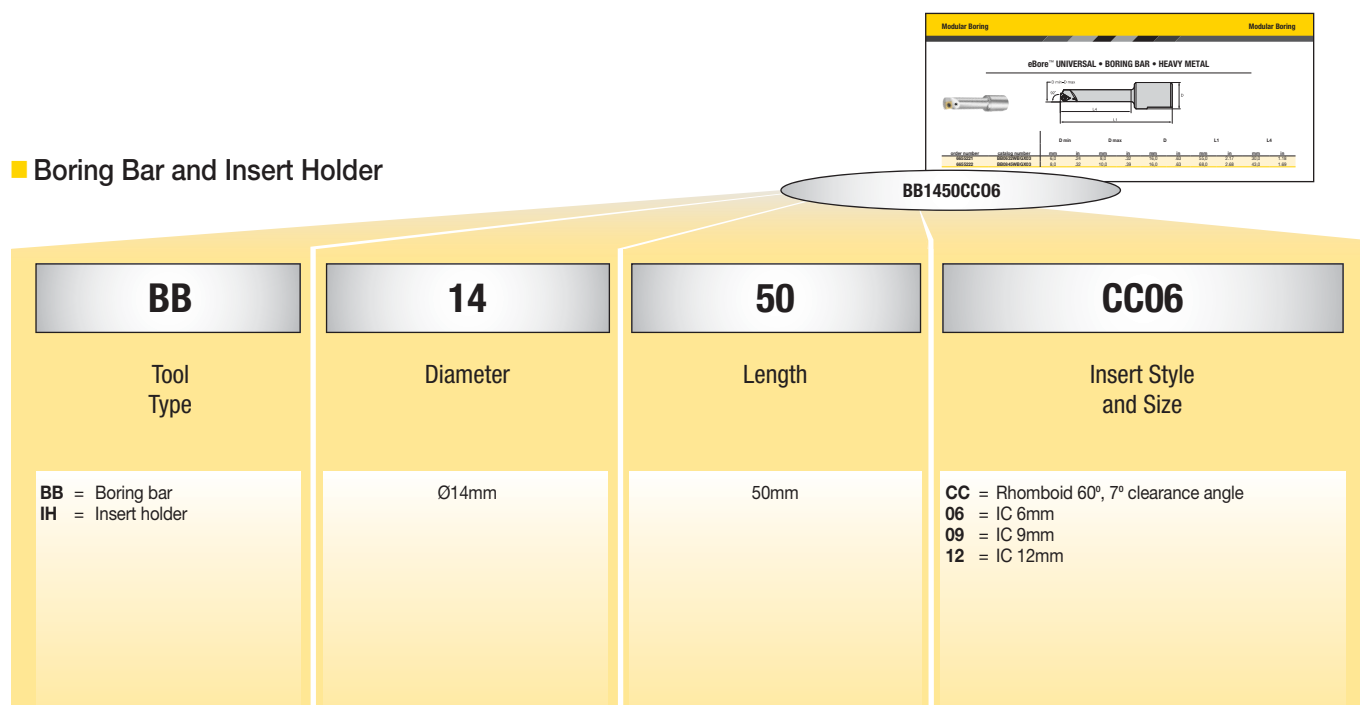
eBore™ • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

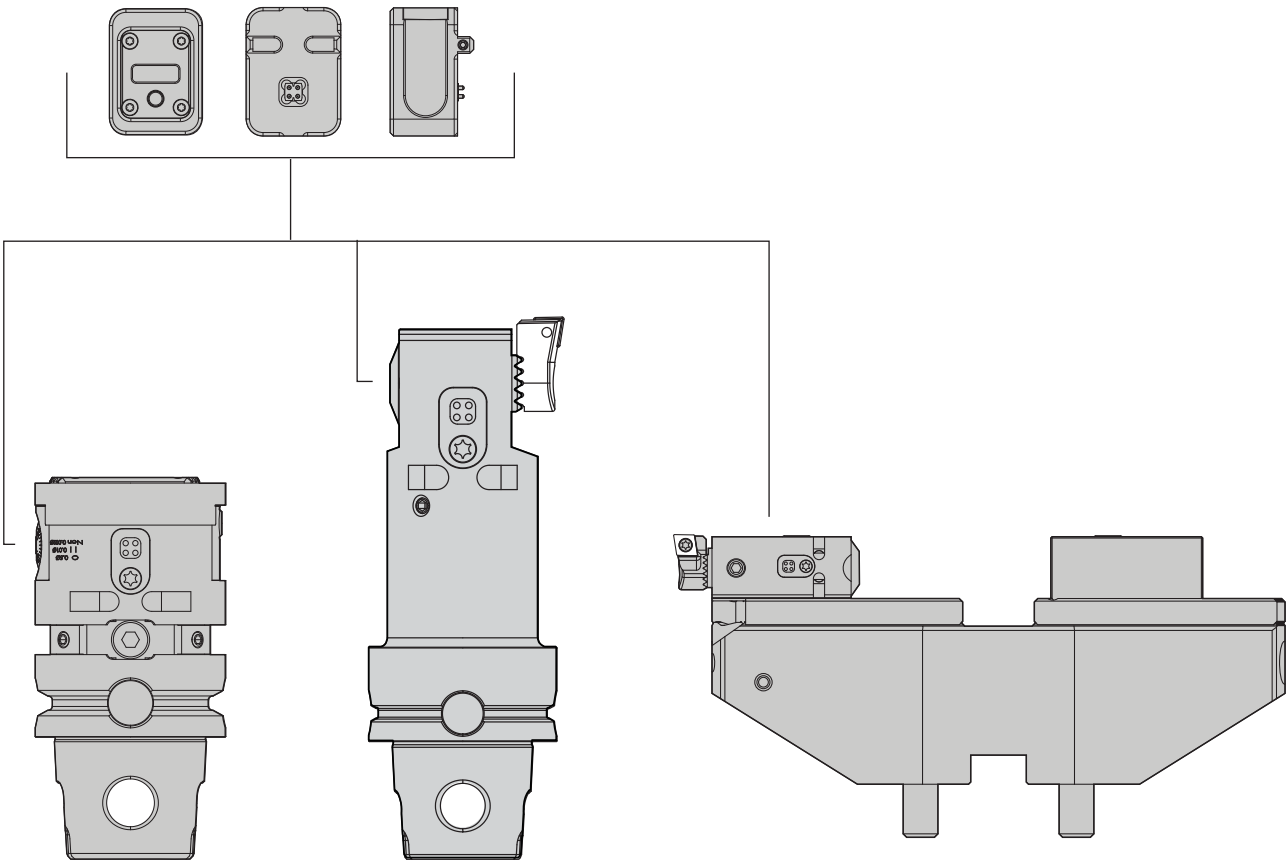
■ Head



■ Boring Bar and Insert Holder



eBore™ Digital Display Overview



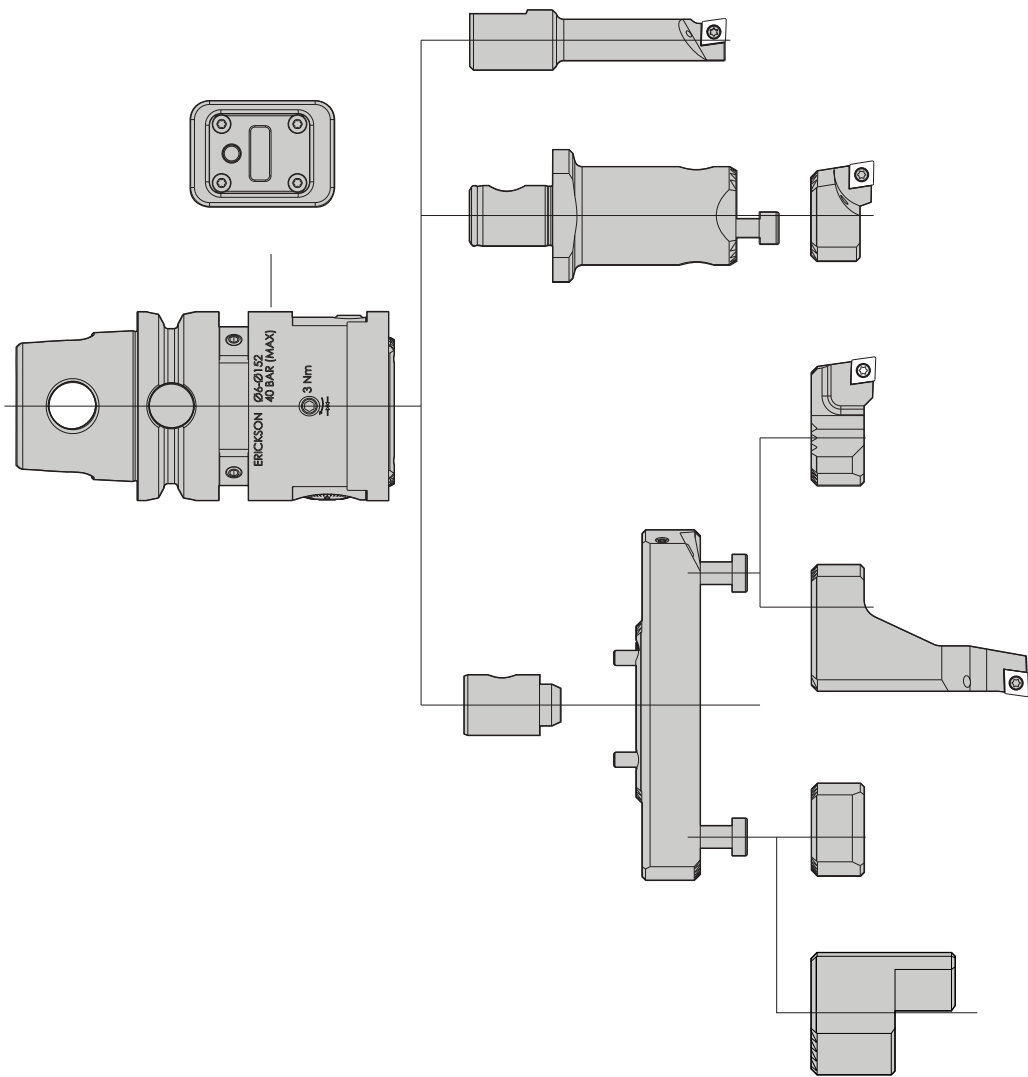
eBore DIGITAL DISPLAY



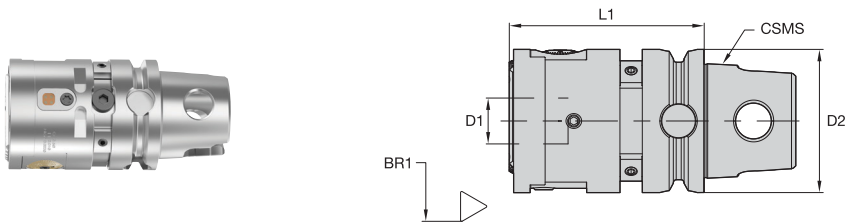
order number		catalog number
6655307		FBDD0001IN
6655306		FBDD0001M

				
170	172	42	4	176

eBore™ UNIVERSAL OVERVIEW



eBore • UNIVERSAL • HEAD • KM™

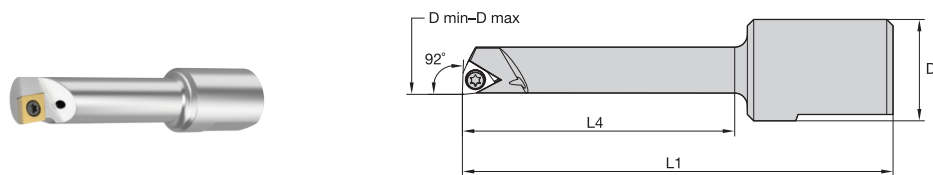


		BR1 bore range			D1		D2		L1	
order number	catalog number	mm	in	CSMS	mm	in	mm	in	mm	in
6655201	KM50UFT152	6,0000-152,0000	0.2362-5.9843	KM50TS	16,0	.63	50,0	1.97	68,0	2.68

170	172	42	4	176

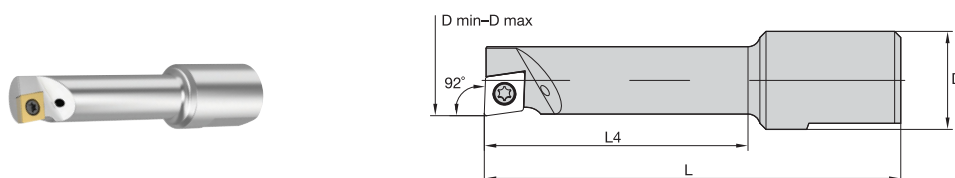


eBore™ UNIVERSAL • BORING BAR • HEAVY METAL



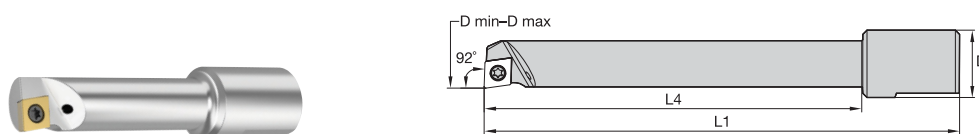
order number	catalog number	D min		D max		D		L1		L4	
		mm	in	mm	in	mm	in	mm	in	mm	in
6655221	BB0632WBGX03	6,0	.24	8,0	.32	16,0	.63	55,0	2.17	30,0	1.18
6655222	BB0845WBGX03	8,0	.32	10,0	.39	16,0	.63	68,0	2.68	43,0	1.69

eBore UNIVERSAL • BORING BAR • STEEL



order number	catalog number	D min		D max		D		L		L4	
		mm	in	mm	in	mm	in	mm	in	mm	in
6655202	BB0622WBGX03	6,0	.24	8,0	.32	16,0	.63	45,0	1.77	20,0	.79
6655203	BB0830WBGX03	8,0	.32	10,0	.39	16,0	.63	53,0	2.09	28,0	1.10
6655204	BB1025CC06	10,0	.39	12,0	.47	16,0	.63	48,0	1.89	23,0	.91
6655205	BB1035CC06	10,0	.39	12,0	.47	16,0	.63	58,0	2.28	33,0	1.30
6655206	BB1230CC06	12,0	.47	14,0	.55	16,0	.63	53,0	2.09	28,0	1.10
6655207	BB1245CC06	12,0	.47	14,0	.55	16,0	.63	68,0	2.68	43,0	1.69
6655208	BB1435CC06	14,0	.55	16,0	.63	16,0	.63	58,0	2.28	34,0	1.34
6655209	BB1450CC06	14,0	.55	16,0	.63	16,0	.63	73,0	2.87	48,4	1.91
6655210	BB1560CC06	15,0	.59	20,0	.79	16,0	.63	83,0	3.27	57,8	2.28
6655211	BB1640CC06	16,0	.63	20,0	.79	16,0	.63	63,0	2.48	40,0	1.57
6655212	BB2070CC06	20,0	.79	25,0	.87	16,0	.63	93,0	3.66	70,0	2.76
6655213	BB2570CC06	25,0	.98	30,0	1.18	16,0	.63	93,0	3.66	70,0	2.76

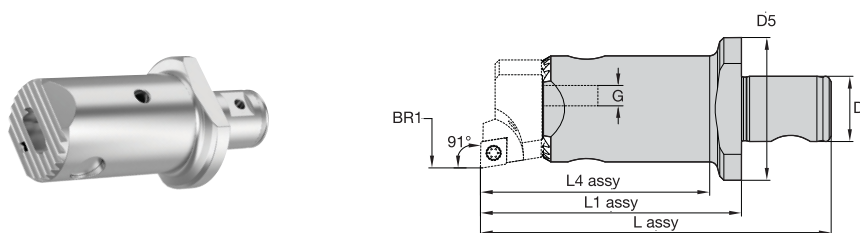
eBore UNIVERSAL • BORING BAR • CARBIDE



order number	catalog number	D min		D max		D		L1		L4	
		mm	in	mm	in	mm	in	mm	in	mm	in
6655214	BB1055CC06	10,0	.39	12,0	.47	16,0	.63	78,0	3.07	55,0	2.17
6655215	BB1075CC06	10,0	.39	12,0	.47	16,0	.63	98,0	3.86	75,0	2.95
6655216	BB1290CC06	12,0	.47	14,0	.55	16,0	.63	113,0	4.45	90,0	3.54
6655217	BB1475CC06	14,0	.55	16,0	.63	16,0	.63	98,0	3.86	75,0	2.95
6655218	BB14100CC06	14,0	.55	16,0	.63	16,0	.63	123,0	4.84	100,0	3.94
6655219	BB1690CC06	16,0	.63	20,0	.79	16,0	.63	113,0	4.45	90,0	3.54
6655220	BB16120CC06	16,0	.63	20,0	.79	16,0	.63	143,0	5.63	120,0	4.72

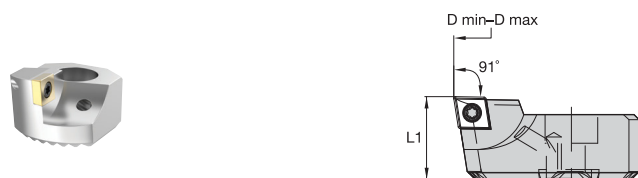
				
170	172	42	4	176

eBore™ UNIVERSAL • EXTENSION



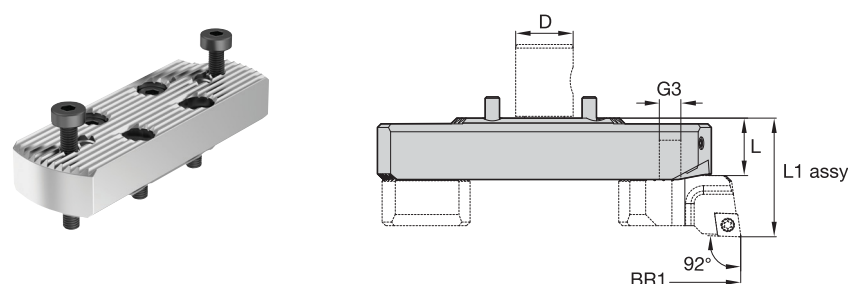
order number	catalog number	BR1		D		D5		L1 assy		L2 assy		G
		mm	in	mm	in	mm	in	mm	in	mm	in	
6655223	UFTE64	29,0000	1.1417	16,0	.63	35,0	1.38	64,0	2.52	56,2	2.21	M5X20
6655224	UFTE100	29,0000-53,0000	1.1417-2.0866	16,0	.63	35,0	1.38	100,0	3.94	92,2	3.63	M5X20

eBore UNIVERSAL • INSERT HOLDER • CC06



order number	catalog number	D min		D max		L1	
		mm	in	mm	in	mm	in
6655226	IH02916CC06	29,0	1.14	41,0	1.61	16,0	.63
6655227	IH04016CC06	40,0	1.57	53,0	2.09	16,0	.63
6655228	IH05216CC06	52,0	2.05	77,0	3.03	16,5	.65
6655229	IH07616CC06	76,0	2.99	102,0	4.02	16,5	.65

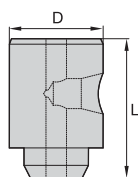
eBore UNIVERSAL • BRIDGE



order number	catalog number	BR1		D		L		L1 assy		G3
		mm	in	mm	in	mm	in	mm	in	
6655233	UFTB06816	68,0000	2.6772	16,0	.63	17,1	.67	32,5	1.28	M4X0.7
6655234	UFTB09616	96,0000	3.7795	16,0	.63	17,1	.67	32,5	1.28	M4X0.7
6655235	UFTB12416	124,0000	4.8819	16,0	.63	17,1	.67	32,5	1.28	M4X0.7

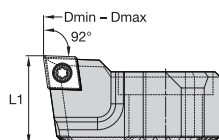
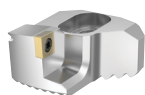
170	172	42	4	176

eBore™ UNIVERSAL • COOLANT CONNECTOR



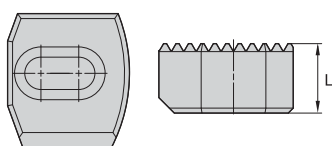
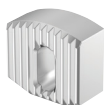
order number	catalog number	D		L	
		mm	in	mm	in
6655238	CBUFTB	16,0	.63	25,5	1.00

eBore UNIVERSAL • INSERT HOLDER I.D. • CC06



order number	catalog number	D min		D max		L1	
		mm	in	mm	in	mm	in
6655236	IHFTBCC06	68,0	2.68	152,0	5.98	16,5	.65

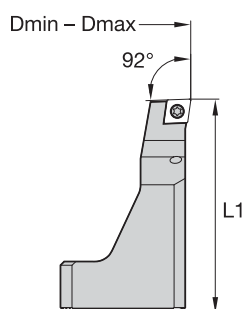
eBore UNIVERSAL • COUNTERWEIGHT I.D.



order number	catalog number	L	
		mm	in
6655237	CWUFTB	14,0	.55

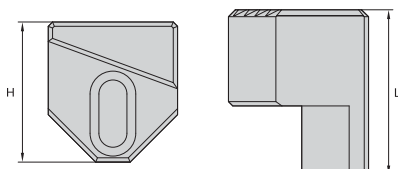
170	172	42	4	176

eBore™ UNIVERSAL • INSERT HOLDER O.D. • CC06



order number	catalog number	D min		D max		L1	
		mm	in	mm	in	mm	in
6655308	IHUFTODCC06	2,0	.08	58,0	2.28	57,0	2.24

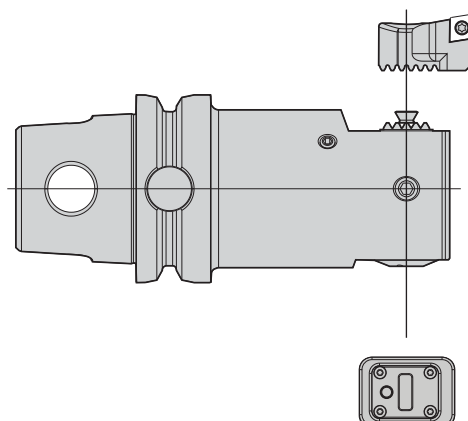
eBore UNIVERSAL • COUNTERWEIGHT O.D.



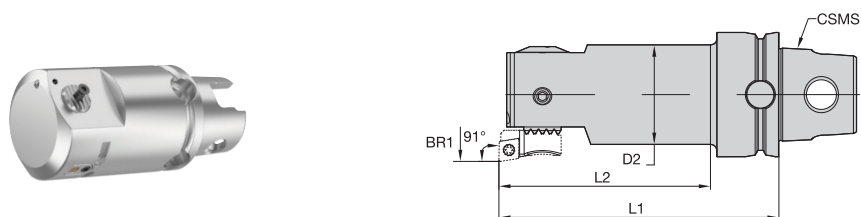
order number	catalog number	L		H	
		mm	in	mm	in
6655309	CWUFTBOD	38,3	1.51	32,5	1.28

170	172	42	4	176

eBore™ FINE BORING OVERVIEW



eBore FINE BORING • CUTTING UNIT • KM™



order number	catalog number	BR1		CSMS	D2		L1 assy		L2 assy	
		mm	in		mm	in	mm	in	mm	in
6655290	KM32BT024532	24,5000-29,5000	0.9646-1.1614	KM32TS	23,0	.91	90,0	3.54	78,0	3.07
6655292	KM32BT02942	29,0000-44,0000	1.1417-1.7323	KM32TS	27,0	1.06	100,0	3.94	88,0	3.46
6655294	KM40BT04352	43,0000-54,0000	1.6929-2.1260	KM40TS	32,0	1.26	90,0	3.54	68,0	2.68
6655295	KM50BT05357	53,0000-66,0000	2.0866-2.5984	KM50TS	42,0	1.65	90,0	3.54	68,0	2.68
6655297	KM50BT06557	65,0000-83,0000	2.5591-3.2677	KM50TS	50,0	1.97	90,0	3.54	90,0	3.54
6655298	KM63BT08272	82,0000-103,0000	3.2283-4.0551	KM63TS	63,0	2.48	100,0	3.94	100,0	3.94
6655299	KM80BT10072	100,0000-130,0000	3.9370-5.1181	KM80TS	80,0	3.15	120,0	4.74	120,0	4.74
6655300	KM80BT12572	125,0000-167,5000	4.9213-6.9545	KM80TS	—	—	120,0	4.72	120,0	4.72
6655301	KM80BT162572	162,5000-205,0000	6.3976-8.0709	KM80TS	—	—	150,0	5.91	150,0	5.91

eBore FINE FINISHING • INSERT HOLDER



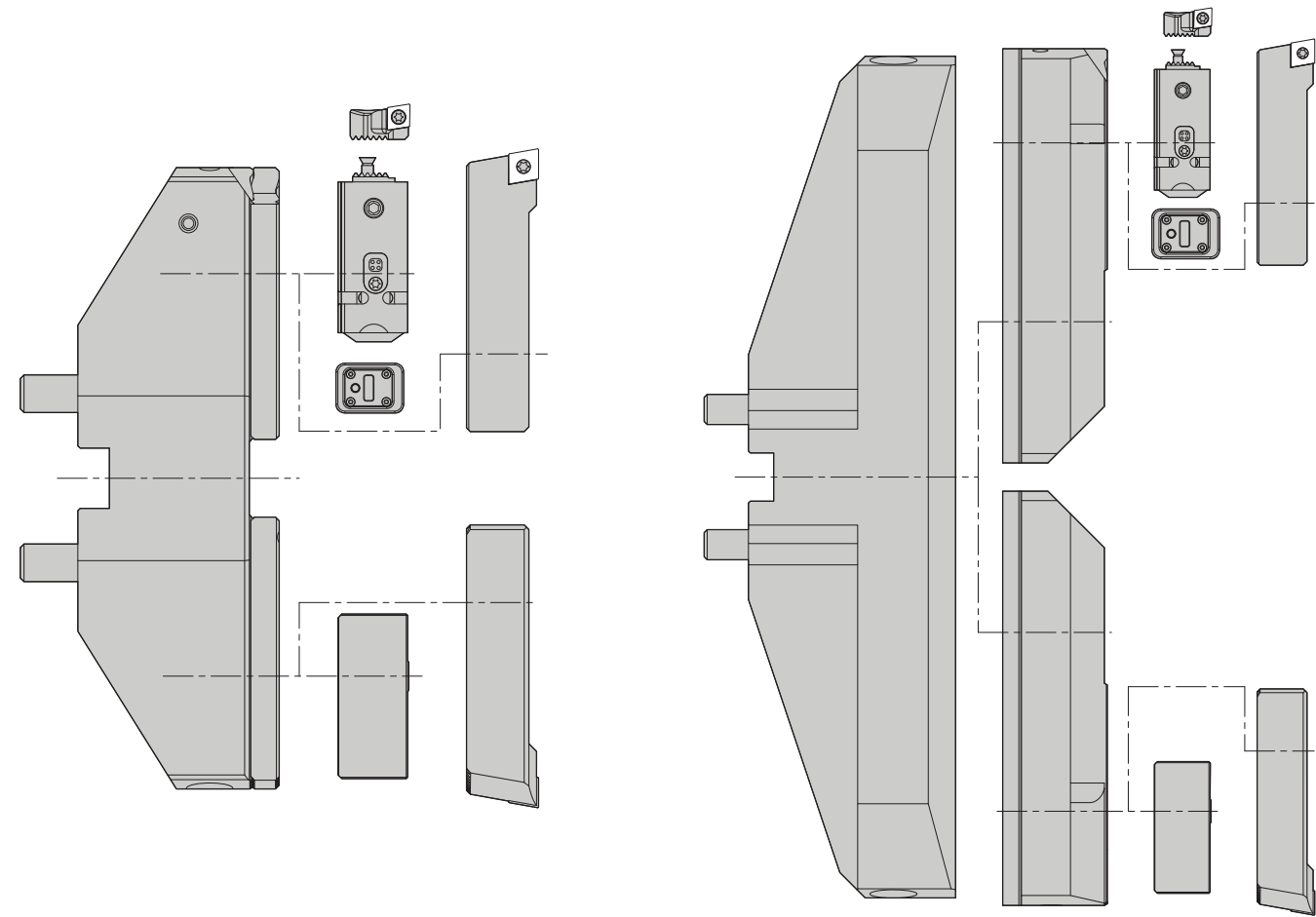
order number	catalog number	D min		D max	
		mm	in	mm	in
6655291	IHBT024CC06	24,5	.96	29,5	1.16
6655293	IHBT036CC06	29,0	1.14	42,0	1.65
6655296	IHBT053CC06	53,0	2.09	205,0	8.07

170	172	42	4	176

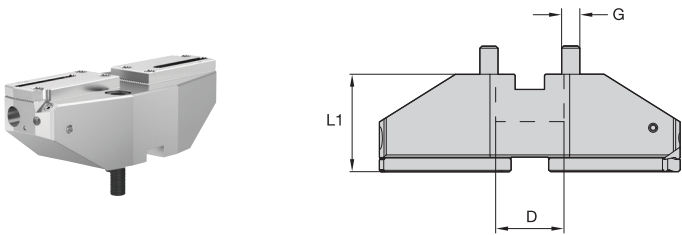
eBore™ BRIDGE TOOLS OVERVIEW

eBore — Bridge S (Small)

eBore — Bridge L (Large)



eBore • BRIDGE S



order number	catalog number	BR1		D		L1		L1 assy		G	G3
		mm	in	mm	in	mm	in	mm	in		
6655282	BDG20060	200,000-280,000	7.8740-11.0236	60,0	2.36	85,0	3.35	115,1	4.53	M10X50	M16X2
6655284	BDG27560	275,000-355,000	10.8268-13.9764	60,0	2.36	85,0	3.35	115,1	4.53	M10X50	M16X2
6655285	BDG35060	350,000-430,000	13.7795-16.9291	60,0	2.36	85,0	3.35	115,1	4.53	M10X50	M16X2
6655286	BDG42560	425,000-505,000	16.7323-19.8819	60,0	2.36	85,0	3.35	115,1	4.53	M10X50	M16X2


170


172

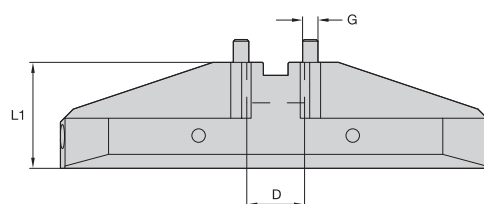

42


4


176

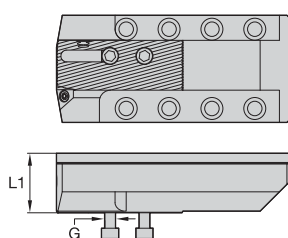


eBore™ • BRIDGE L



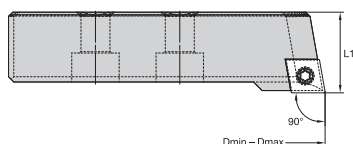
order number	catalog number	BR1		D		L1		L1 assy		G	G3
		mm	in	mm	in	mm	in	mm	in		
6655287	BDG46560	465,0000-745,0000	18.3071-29.3307	60,0	2.36	110,0	4.33	185,1	7.29	M12X55	M16X2
6655289	BDG74060	740,0000-1020,0000	29.1339-40.1575	60,0	2.36	110,0	4.33	185,1	7.29	M12X55	M16X2

eBore • BRIDGE L • EXTENDER



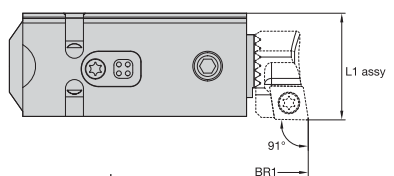
order number	catalog number	L1		G
		mm	in	
6655288	SBDG46545	45,0	1.77	M10X1,5

eBore • BRIDGE S/L • INSERT HOLDER • CC12



order number	catalog number	D min		D max		L1	
		mm	in	mm	in	mm	in
6655283	IHBDGCC12	200,0	7.87	1020,0	40.16	30,1	1.18

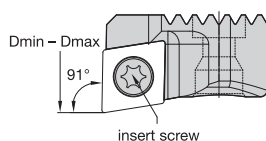
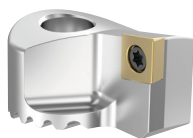
eBore • BRIDGE S/L • SLIDE



order number	catalog number	BR1		L1 assy	
		mm	in	mm	in
6655302	BFBS10012	100,0000-1020,0000	3.9370-40.1575	30,0	1.18

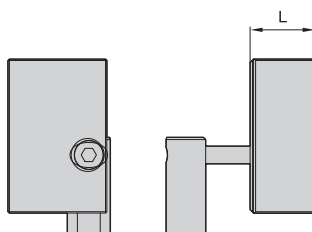
170	172	42	4	176

eBore™ • BRIDGE S/L • INSERT HOLDER • CC09



order number	catalog number	D min		D max	
		mm	in	mm	in
6655303	IHBFBSCC09	200,0	7.87	1020,0	40.16

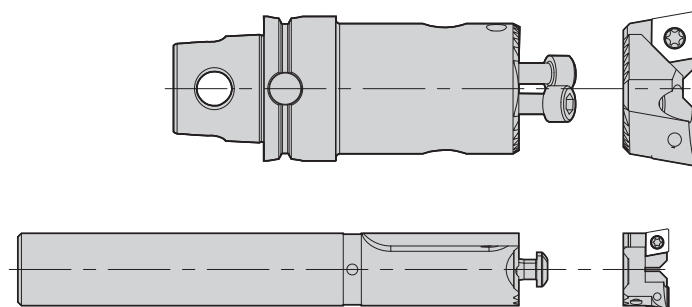
eBore • BRIDGE S/L • SLIDE • COUNTERWEIGHT



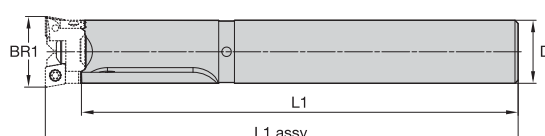
order number	catalog number	L	
		mm	in
6655305	CWBFBS	68,2	2.69

				
170	172	42	4	176

eBore™ TWIN CUTTER OVERVIEW

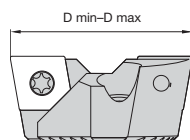


eBore • TWIN CUTTER • STRAIGHT SHANK



order number	catalog number	BR1			D		L1		L1 assv	
		mm	in	CSMS	mm	in	mm	in	mm	in
6655239	SS18TC0195	19,5000-23,0000	0.7677-0.9055	—	18,0	.71	138,0	5.43	150,0	5.91
6655241	SS20TC0225	22,2000	0.8858	—	20,0	.79	138,0	5.43	150,0	5.91
6655243	SS23TC0255	25,5000-30,0000	1.0039-1.1881	—	23,0	.91	148,2	5.83	160,0	6.30

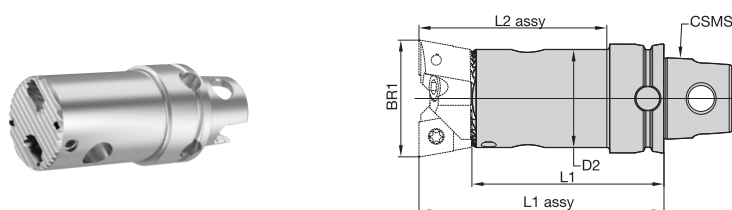
eBore • TWIN CUTTER • STRAIGHT SHANK • INSERT HOLDER



order number	catalog number	D min		D max	
		mm	in	mm	in
6655240	IHTC0195CC06	19,5	.77	23,0	.91
6655242	IHTC0225CC06	22,5	.89	26,0	1.02
6655244	IHTC0255CC06	25,5	1.00	30,0	1.18

				
170	172	42	4	176

eBore™ • TWIN CUTTER • KM™



order number	catalog number	BR1		CSMS	D2		L1		L1 assy		L2 assy	
		mm	in		mm	in	mm	in	mm	in	mm	in
6655245	KM32TC029	29,0000-37,0000	1.1417-1.4567	KM32TS	25,0	.98	86,0	3.36	100,0	3.94	88,0	3.46
6655247	KM32TC036	36,0000-44,0000	1.4173-1.7323	KM32TS	30,0	1.18	86,0	3.39	100,0	3.94	79,5	3.13
6655249	KM40TC043	43,0000-54,0000	1.6929-2.1260	KM40TS	36,0	1.42	70,0	2.76	90,0	3.54	69,0	2.72
6655271	KM40TC053	53,0000-66,0000	2.0866-2.5984	KM40TS	40,0	1.57	70,0	2.76	90,1	3.55	90,1	3.55
6655273	KM50TC065	65,0000-83,0000	2.5591-3.2677	KM50TS	50,0	1.97	70,0	2.76	90,1	3.55	90,1	3.55
6655275	KM63TC082	82,0000-103,0000	3.2283-4.0551	KM63TS	63,0	2.48	70,0	2.76	100,1	3.94	100,1	3.94
6655277	KM80TC100	100,0000-155,0000	3.9370-6.1024	KM80TS	80,0	3.15	90,0	3.54	120,1	4.73	120,1	4.73
6655280	KM80TC150	150,0000-205,0000	5.9055-8.0709	KM80TS	125,0	4.92	120,0	4.72	150,1	5.91	150,1	5.91

eBore • TWIN CUTTER • KM • INSERT HOLDER

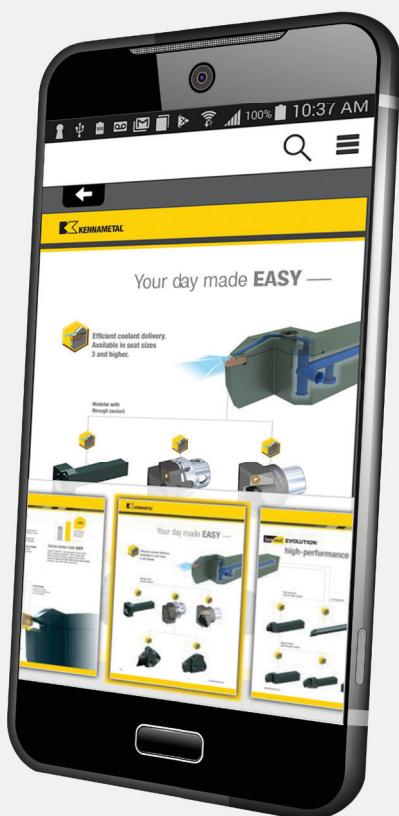


order number	catalog number	D min		D max	
		mm	in	mm	in
6655246	IHTC029CC09	29,0	1.14	37,0	1.46
6655248	IHTC036CC09	36,0	1.42	44,0	1.73
6655250	IHTC043CC12	43,0	1.69	54,0	2.13
6655272	IHTC053CC12	53,0	2.09	66,0	2.60
6655274	IHTC065CC12	65,0	2.56	83,0	3.27
6655276	IHTC082CC12	82,0	3.23	103,0	4.06
6655278	IHTC100CC12	100,0	3.94	130,0	5.12
6655279	IHTC125CC12	125,0	4.92	155,0	6.10
6655281	IHTC150CC12	150,0	5.91	205,0	8.07

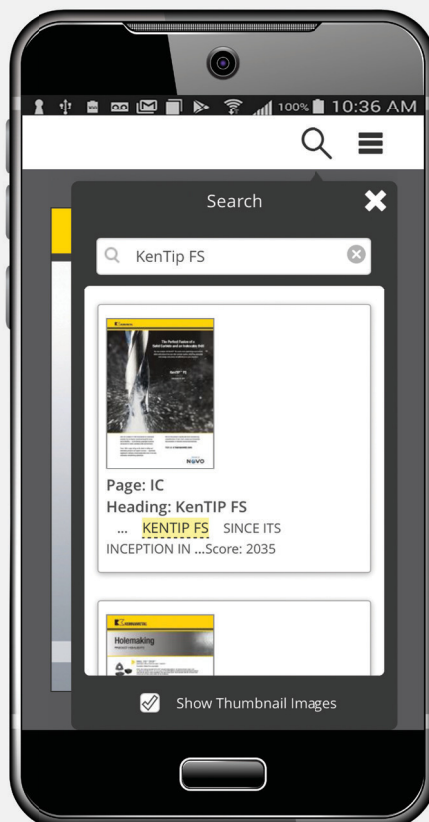
170	172	42	4	176

Catalog App

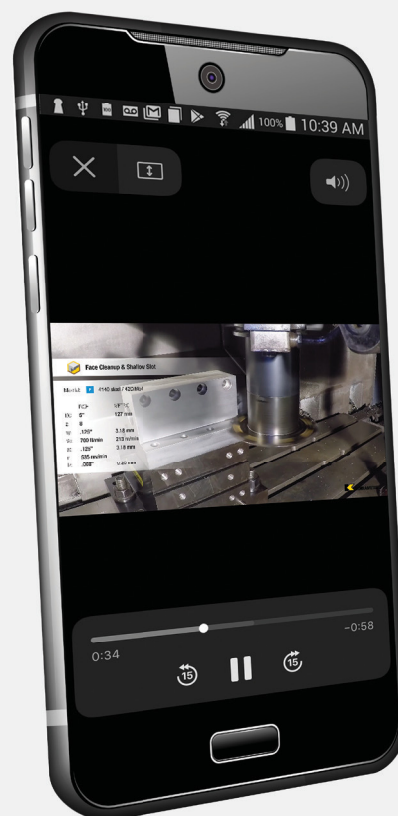
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HARVI™ I TE

High-Performance Solid End Milling

Materials



Applications



Slotting



3D Profiling



Side Milling/
Shoulder Milling



Ramping



Helical Interpolation



Plunge Milling



Trochoidal Milling



Trochoidal Milling:
Ball Nose

kennametal.com/HARVI1TE



Proprietary end face design — Twisted cutting edge increases corner stability, enabling soft cutting action even at highest ramping angles.

Proprietary core design — Increases tool stability.

Innovative end face design — Asymmetrical divided flutes and variable helix, enabling vibration dampening and unmatched feed rates.

Proprietary relief — With AVF technology. A precision-faceted eccentric relief reduces vibrations and friction. For excellent cutting conditions in multiple materials.

Proprietary flute design — Innovative chip gashes within the flutes reduce cutting forces and supports efficient chip evacuation.

- 
- Twisted end face.
 - Asymmetrical divided flutes and variable helix.
 - Faceted eccentric relief with AVF-technology.
 - Chip gashes within the flutes.



Radiused tools with neck available.

HARVI™ I TE — Innovative proprietary design features driving maximum productivity.

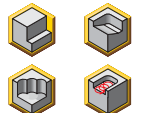
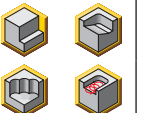
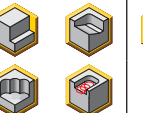
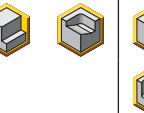
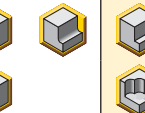
Universal character. Machines steel, stainless steel, cast iron, and high-temperature alloys with exceptional feed rates, reaching unmatched metal removal rates.

Applicable for a variety of operations, including dynamic milling and extreme ramping operations.

4-fluted end mill for high-performance roughing and finishing with only one tool.

HARVI I TE — Maximum metal removal. Maximum productivity. Maximum benefit.

HARVI™ • TOOL SELECTION GUIDE

	HARVI I	HARVI I	HARVI I	HARVI I	HARVI I	HARVI I Ball Nose	HARVI I TE
							
Series	HPHV	UADE	UBDE	HPRSHV	HPHVT	HPHVBN	H1TE4SE-4CH-4RA
Page	P16-P20*	P21*	P21*	P22*	P24*	P23*	69
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○	○	○
Chamfering							
Main operation							
Workpiece material							
Primary	P M K	P M K	M S	P M K	P S	P M	P M K S
Secondary	S H	S H	P K H		H	K S H	H
Corner style							
Corner radius [R _e]	.015-.250"	.015-.030"	.015-.120"	—	—	—	.010-.250"
Corner chamfer width [BCH]	.015-.020"	—	—	.020"	.020"	—	.015-.020"
Cutter diameter [D1]	1/8-1-1/4"	1/4-1"	1/2-1"	1/2-1"	1/2-1"	1/8-1"	1/8-1-1/4"
Length of cut	1.8-2 x D1	1.25 x D	1.25 x D	1-1.2 x D1	1.25-1.8 x D1	1.5-4 x D1	1.2-4 x D
Maximum cutting depth [Ap1 max]	1/4-2-1/2"	3/8-1-1/8"	5/8-1-1/8"	5/8-1-1/8"	5/8-1-1/2"	1/2-1-1/2"	1/4-4"
Flute helix angle	38°	38°	38°	38°	38°	38°	36°/39°
Number of flutes [ZU]	4	4	4	4	4	4	4
Center cutting	✓	✓	✓	✓	✓	✓	✓
Additional operations							

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

- Primary
- Secondary

HARVI™ • TOOL SELECTION GUIDE

	HARVI I TE	HARVI II	HARVI II	HARVI II	HARVI III	HARVI III	HARVI III Aero-space Expansion
							
Series	H1TE4RA..N..	UCDE	UCDE with Neck	UDDE	UJDE	UJDE with Neck	UJDE
Page	62	P30–P31*	P32*	P33*	P44–P45*	P46*	P60–P65*
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○	○	○
Chamfering							
Main operation							
Workpiece material							
Primary	P M K S	P M K	P M S K	P S	M S	M S	M S
Secondary	H	S H	H		P H	P H	P H
Corner style		 		 	 		
Corner radius [R _c]	.015–.250"	.015–.120"	.015–.030"	.015–.120"	.015–.250"	.015–.120"	.030–.625"
Corner chamfer width [BCH]	—	—	—	—	—	—	—
Cutter diameter [D1]	1/4–1"	3/16–1"	1/4–1"	1/2–1"	3/8–1-1/4"	3/8–1"	1/2–1-1/2"
Length of cut	1.1–1.5 x D	1.75–3.3 x D1	1.75–2 x D1	1.75–2.5 x D1	1.75–2 x D	1.75–2.25 x D	1.3–5.3 x D
Maximum cutting depth [A _{p1} max]	3/8–1-1/8"	5/8–1-3/4"	1/2–1-3/4"	1-1/4–1-3/4"	1–2-1/4"	7/8–1-3/4"	1–6"
Flute helix angle	36°/39°	38°	38°	38°	38°	38°	38°
Number of flutes [ZU]	4	5	5	5	6	6	6
Center cutting	✓	—	—	—	✓	✓	✓
Additional operations	   	  	  	  	 	 	 

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

- Primary
- Secondary

HARVI™ • TOOL SELECTION GUIDE

	HARVI™ III Ball Nose	HARVI III Ball Nose	HARVI III Aerospace Expansion Ball Nose	HARVI III Taper Ball Nose	HARVI II Long	HARVI II Long
						
Series	UJBE	UJBE with Neck	UJBE	UJBE	UGDE 3 x D	UGDE 5 x D
Page	P52*	P53*	P66–P67*	P74*	P38*	P39*
Tool type						
Rougher	○	○	○	○		
Finisher	●	●	●	●	●	●
Chamfering						
Main operation						
Workpiece material						
Primary	M S	M S	M S	M S	P M S	P M S
Secondary	P H	P H	P H	P H	K H	K H
Corner style					 	 
Corner radius [R _c]	—	—	—	—	.015–.120"	.015–.120"
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutter diameter [D1]	3/8–1"	3/8–1"	1/2–1-1/2"	1/8–7/16"	1/4–1"	1/4–1"
Length of cut	1.5–2 x D	1.5 x D1	1.3–5.3 x D	5–6 x D	3 x D	5 x D
Maximum cutting depth [A _{p1} max]	7/8–1-1/2"	1/2–1-1/4"	1–6"	1–2"	3/4–3"	1–1/4–5"
Flute helix angle	38°	38°	38°	38°	43°	43°
Number of flutes [ZU]	6	6	6	6	5	5
Center cutting	✓	✓	✓	✓	—	—
Additional operations	 	 	 			

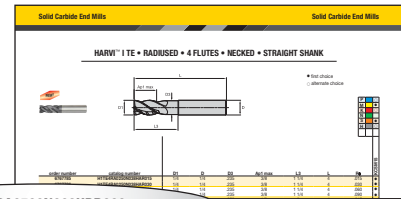
* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

● Primary

○ Secondary

HARVI™ I TE • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

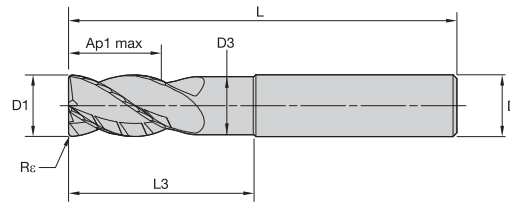


H1TE4RA0500N063HBR060

H1TE	4	RA	0500	N	063	HB	R060																																	
Series	Number of Flutes	Front End Style	Cutting Diameter D1	Flute Section Style	Length of Cut Ap1 max	Shank Style	Radius	Specific Features	Standard																															
H1TE = HARVI I TE	1 = 1-Flute 2 = 2-Flute 3 = 3-Flute 4 = 4-Flute 5 = 5-Flute 6 = 6-Flute 7 = 7-Flute 8 = 8-Flute 9 = 9-Flute M = Multi-flute	SE = Sharp Edge CH = Chamfer RA = Radius BN = Ball Nose TB = Taper Ball Nose TO = Toroidal	Metric = D1 in mm Inch = D1 in decimal inch	N = Neck E = Extended Neck S = Short Without Neck R = Regular Without Neck L = Long Without Neck X = Extra Long Without Neck	Metric = Ap1 Max in mm Inch = Ap1 Max in decimal inch	HA =Plain HB = Weldon® SL = Safe-Lock™ DL = Duo-Lock™		C = Chip Splitter I = Internal Coolant O = Coolant Grooves in Shank P = Polished Flutes	M = Metric Blank = Inch																															
					<table><tr><th>Radius Metric</th><th>Radius Inch</th></tr><tr><td>R020 = 0,2mm</td><td>R010 = .010"</td></tr><tr><td>R025 = 0,25mm</td><td>R015 = .015"</td></tr><tr><td>R030 = 0,3mm</td><td>R030 = .030"</td></tr><tr><td>R040 = 0,4mm</td><td>R060 = .060"</td></tr><tr><td>R050 = 0,5mm</td><td>R090 = .090"</td></tr><tr><td>R075 = 0,75mm</td><td>R120 = .120"</td></tr><tr><td>R100 = 1,0mm</td><td>R160 = .160"</td></tr><tr><td>R125 = 1,25mm</td><td>R250 = .250"</td></tr><tr><td>R150 = 1,5mm</td><td>R190 = .190"</td></tr><tr><td>R200 = 2,0mm</td><td>R375 = .375"</td></tr><tr><td>R250 = 2,5mm</td><td>R045 = .045"</td></tr><tr><td>R300 = 3,0mm</td><td></td></tr><tr><td>R400 = 4,0mm</td><td></td></tr><tr><td>R500 = 5,0mm</td><td></td></tr><tr><td>R600 = 6,0mm</td><td></td></tr></table>		Radius Metric	Radius Inch	R020 = 0,2mm	R010 = .010"	R025 = 0,25mm	R015 = .015"	R030 = 0,3mm	R030 = .030"	R040 = 0,4mm	R060 = .060"	R050 = 0,5mm	R090 = .090"	R075 = 0,75mm	R120 = .120"	R100 = 1,0mm	R160 = .160"	R125 = 1,25mm	R250 = .250"	R150 = 1,5mm	R190 = .190"	R200 = 2,0mm	R375 = .375"	R250 = 2,5mm	R045 = .045"	R300 = 3,0mm		R400 = 4,0mm		R500 = 5,0mm		R600 = 6,0mm			
Radius Metric	Radius Inch																																							
R020 = 0,2mm	R010 = .010"																																							
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R030 = 0,3mm	R030 = .030"																																							
R040 = 0,4mm	R060 = .060"																																							
R050 = 0,5mm	R090 = .090"																																							
R075 = 0,75mm	R120 = .120"																																							
R100 = 1,0mm	R160 = .160"																																							
R125 = 1,25mm	R250 = .250"																																							
R150 = 1,5mm	R190 = .190"																																							
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R500 = 5,0mm																																								
R600 = 6,0mm																																								

HARVI™ I TE • RADIUS • 4 FLUTES • NECKED • PLAIN SHANK

NEW!



● first choice

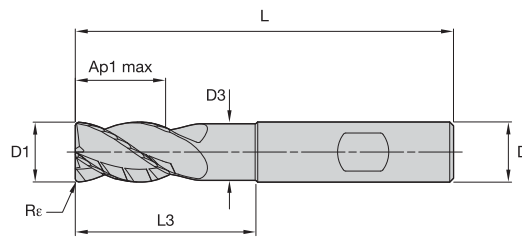
○ alternate choice

P		
M		
K		
N		
S		
H		

order number	catalog number	D1	D	D3	Ap1 max	L3	L	Rc	KCSM15
6767785	H1TE4RA0250N038HAR015	1/4	1/4	.235	3/8	1 1/4	4	.015	●
6767786	H1TE4RA0250N038HAR030	1/4	1/4	.235	3/8	1 1/4	4	.030	●
6767788	H1TE4RA0250N038HAR060	1/4	1/4	.235	3/8	1 1/4	4	.060	●
6767789	H1TE4RA0250N038HAR090	1/4	1/4	.235	3/8	1 1/4	4	.090	●
6767790	H1TE4RA0375N050HAR015	3/8	3/8	.353	1/2	2	4	.015	●
6767811	H1TE4RA0375N050HAR030	3/8	3/8	.353	1/2	2	4	.030	●
6767812	H1TE4RA0375N050HAR060	3/8	3/8	.353	1/2	2	4	.060	●
6767814	H1TE4RA0375N050HAR090	3/8	3/8	.353	1/2	2	4	.090	●
6767815	H1TE4RA0500N063HAR015	1/2	1/2	.470	5/8	2 1/4	4	.015	●
6767816	H1TE4RA0500N063HAR030	1/2	1/2	.470	5/8	2 1/4	4	.030	●
6767817	H1TE4RA0500N063HAR060	1/2	1/2	.470	5/8	2 1/4	4	.060	●
6767818	H1TE4RA0500N063HAR090	1/2	1/2	.470	5/8	2 1/4	4	.090	●
6767819	H1TE4RA0500N063HAR120	1/2	1/2	.470	5/8	2 1/4	4	.120	●
6767820	H1TE4RA0625N075HAR015	5/8	5/8	.588	3/4	2 1/4	4	.015	●
6767821	H1TE4RA0625N075HAR030	5/8	5/8	.588	3/4	2 1/4	4	.030	●
6767822	H1TE4RA0625N075HAR060	5/8	5/8	.588	3/4	2 1/4	4	.060	●
6767823	H1TE4RA0625N075HAR090	5/8	5/8	.588	3/4	2 1/4	4	.090	●
6767824	H1TE4RA0625N075HAR120	5/8	5/8	.588	3/4	2 1/4	4	.120	●
6767825	H1TE4RA0750N100HAR030	3/4	3/4	.705	1	2 1/4	4 1/2	.030	●
6767826	H1TE4RA0750N100HAR060	3/4	3/4	.705	1	2 1/4	4 1/2	.060	●
6767827	H1TE4RA0750N100HAR090	3/4	3/4	.705	1	2 1/4	4 1/2	.090	●
6767828	H1TE4RA0750N100HAR120	3/4	3/4	.705	1	2 1/4	4 1/2	.120	●
6767829	H1TE4RA0750E100HAR030	3/4	3/4	.705	1	3 1/4	5 1/2	.030	●
6767830	H1TE4RA0750E100HAR060	3/4	3/4	.705	1	3 1/4	5 1/2	.060	●
6767842	H1TE4RA0750E100HAR090	3/4	3/4	.705	1	3 1/4	5 1/2	.090	●
6767843	H1TE4RA0750E100HAR120	3/4	3/4	.705	1	3 1/4	5 1/2	.120	●
6767844	H1TE4RA1000N113HAR030	1	1	.940	1 1/8	3 1/4	5 1/2	.030	●
6767845	H1TE4RA1000N113HAR060	1	1	.940	1 1/8	3 1/4	5 1/2	.060	●
6767846	H1TE4RA1000N113HAR120	1	1	.940	1 1/8	3 1/4	5 1/2	.120	●
6767847	H1TE4RA1000N113HAR250	1	1	.940	1 1/8	3 1/4	5 1/2	.250	●

170	172	61	4	176

HARVI™ I TE • RADIUS • 4 FLUTES • NECKED • WELDON® SHANK



● first choice

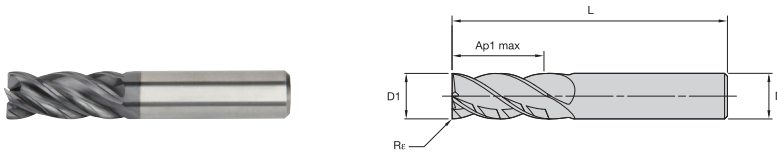
○ alternate choice

P			
M			
K			
N			
S			
H			

order number	catalog number	D1	D	D3	Ap1 max	L3	L	Re	KCSM15
6767849	H1TE4RA0375N050HBR015	3/8	3/8	.353	1/2	2	4	.015	●
6767850	H1TE4RA0375N050HBR030	3/8	3/8	.353	1/2	2	4	.030	●
6767851	H1TE4RA0375N050HBR060	3/8	3/8	.353	1/2	2	4	.060	●
6767852	H1TE4RA0375N050HBR090	3/8	3/8	.353	1/2	2	4	.090	●
6767853	H1TE4RA0500N063HBR015	1/2	1/2	.470	5/8	2 1/4	4	.015	●
6767854	H1TE4RA0500N063HBR030	1/2	1/2	.470	5/8	2 1/4	4	.030	●
6767855	H1TE4RA0500N063HBR060	1/2	1/2	.470	5/8	2 1/4	4	.060	●
6767856	H1TE4RA0500N063HBR090	1/2	1/2	.470	5/8	2 1/4	4	.090	●
6767858	H1TE4RA0500N063HBR120	1/2	1/2	.470	5/8	2 1/4	4	.120	●
6767859	H1TE4RA0625N075HBR015	5/8	5/8	.588	3/4	2 1/4	4	.015	●
6767860	H1TE4RA0625N075HBR030	5/8	5/8	.588	3/4	2 1/4	4	.030	●
6767861	H1TE4RA0625N075HBR060	5/8	5/8	.588	3/4	2 1/4	4	.060	●
6767862	H1TE4RA0625N075HBR090	5/8	5/8	.588	3/4	2 1/4	4	.090	●
6767863	H1TE4RA0625N075HBR120	5/8	5/8	.588	3/4	2 1/4	4	.120	●
6767864	H1TE4RA0750N100HBR030	3/4	3/4	.705	1	2 1/4	4 1/2	.030	●
6767865	H1TE4RA0750N100HBR060	3/4	3/4	.705	1	2 1/4	4 1/2	.060	●
6767866	H1TE4RA0750N100HBR090	3/4	3/4	.705	1	2 1/4	4 1/2	.090	●
6767868	H1TE4RA0750N100HBR120	3/4	3/4	.705	1	2 1/4	4 1/2	.120	●
6767869	H1TE4RA0750E100HBR030	3/4	3/4	.705	1	3 1/4	5 1/2	.030	●
6767870	H1TE4RA0750E100HBR060	3/4	3/4	.705	1	3 1/4	5 1/2	.060	●
6767892	H1TE4RA0750E100HBR090	3/4	3/4	.705	1	3 1/4	5 1/2	.090	●
6767893	H1TE4RA0750E100HBR120	3/4	3/4	.705	1	3 1/4	5 1/2	.120	●
6767894	H1TE4RA1000N113HBR030	1	1	.940	1 1/8	3 1/4	5 1/2	.030	●
6767896	H1TE4RA1000N113HBR060	1	1	.940	1 1/8	3 1/4	5 1/2	.060	●
6767897	H1TE4RA1000N113HBR120	1	1	.940	1 1/8	3 1/4	5 1/2	.120	●
6767898	H1TE4RA1000N113HBR250	1	1	.940	1 1/8	3 1/4	5 1/2	.250	●

170	172	61	4	176

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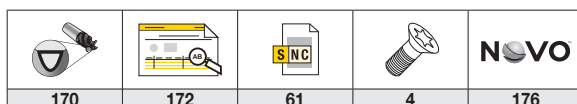


● first choice

○ alternate choice

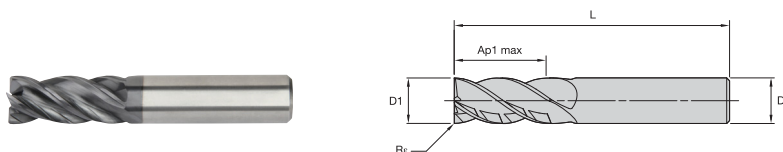
P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6676348	H1TE4RA0125R025HAR010	1/8	1/8	1/4	1 1/2	.010	●
6676349	H1TE4RA0125R025HAR015	1/8	1/8	1/4	1 1/2	.015	●
6676350	H1TE4RA0125X050HAR010	1/8	1/8	1/2	1 1/2	.010	●
6676351	H1TE4RA0125X050HAR015	1/8	1/8	1/2	1 1/2	.015	●
6676352	H1TE4RA0156L044HAR010	5/32	3/16	7/16	2	.010	●
6676353	H1TE4RA0188R038HAR010	3/16	3/16	3/8	2	.010	●
6676354	H1TE4RA0188R038HAR030	3/16	3/16	3/8	2	.030	●
6676355	H1TE4RA0188L063HAR010	3/16	3/16	5/8	2 1/4	.010	●
6676356	H1TE4RA0188L063HAR030	3/16	3/16	5/8	2 1/4	.030	●
6676357	H1TE4RA0219R044HAR010	7/32	1/4	7/16	2	.010	●
6676358	H1TE4RA0250S038HAR015	1/4	1/4	3/8	2	.015	●
6676359	H1TE4RA0250S038HAR030	1/4	1/4	3/8	2	.030	●
6676360	H1TE4RA0250R050HAR015	1/4	1/4	1/2	2 1/2	.015	●
6676361	H1TE4RA0250R050HAR030	1/4	1/4	1/2	2 1/2	.030	●
6676362	H1TE4RA0250R050HAR060	1/4	1/4	1/2	2 1/2	.060	●
6676363	H1TE4RA0250R050HAR090	1/4	1/4	1/2	2 1/2	.090	●
6676370	H1TE4RA0250L075HAR015	1/4	1/4	3/4	2 1/2	.015	●
6676371	H1TE4RA0250L075HAR030	1/4	1/4	3/4	2 1/2	.030	●
6676372	H1TE4RA0250L075HAR060	1/4	1/4	3/4	2 1/2	.060	●
6676373	H1TE4RA0250L075HAR090	1/4	1/4	3/4	2 1/2	.090	●
6676374	H1TE4RA0281R063HAR010	5/16	5/16	5/8	2 1/2	.010	●
6676375	H1TE4RA0313S050HAR015	5/16	5/16	1/2	2	.015	●
6676377	H1TE4RA0313S050HAR030	5/16	5/16	1/2	2	.030	●
6676378	H1TE4RA0313S050HAR060	5/16	5/16	1/2	2	.060	●
6676379	H1TE4RA0313R081HAR015	5/16	5/16	13/16	2 1/2	.015	●
6676380	H1TE4RA0313R081HAR030	5/16	5/16	13/16	2 1/2	.030	●
6676381	H1TE4RA0313R081HAR060	5/16	5/16	13/16	2 1/2	.060	●
6676382	H1TE4RA0375R088HAR015	3/8	3/8	7/8	2 1/2	.015	●
6676383	H1TE4RA0375R088HAR030	3/8	3/8	7/8	2 1/2	.030	●
6676384	H1TE4RA0375R088HAR060	3/8	3/8	7/8	2 1/2	.060	●
6676385	H1TE4RA0375R088HAR090	3/8	3/8	7/8	2 1/2	.090	●
6676386	H1TE4RA0375R100HAR015	3/8	3/8	1	3	.015	●
6676387	H1TE4RA0375R100HAR030	3/8	3/8	1	3	.030	●
6676388	H1TE4RA0375R100HAR060	3/8	3/8	1	3	.060	●
6676389	H1TE4RA0375R100HAR090	3/8	3/8	1	3	.090	●
6676390	H1TE4RA0375X150HAR015	3/8	3/8	1 1/2	4	.015	●
6676401	H1TE4RA0375X150HAR030	3/8	3/8	1 1/2	4	.030	●
6676402	H1TE4RA0375X150HAR060	3/8	3/8	1 1/2	4	.060	●
6676403	H1TE4RA0438R100HAR015	7/16	7/16	1	2 3/4	.015	●
6676404	H1TE4RA0438R100HAR030	7/16	7/16	1	2 3/4	.030	●
6676405	H1TE4RA0500S063HAR015	1/2	1/2	5/8	2 1/2	.015	●
6676406	H1TE4RA0500S063HAR030	1/2	1/2	5/8	2 1/2	.030	●
6676407	H1TE4RA0500S063HAR060	1/2	1/2	5/8	2 1/2	.060	●
6676408	H1TE4RA0500R100HAR015	1/2	1/2	1	3	.015	●
6676409	H1TE4RA0500R100HAR030	1/2	1/2	1	3	.030	●
6676410	H1TE4RA0500R100HAR060	1/2	1/2	1	3	.060	●
6676421	H1TE4RA0500R100HAR090	1/2	1/2	1	3	.090	●
6676422	H1TE4RA0500R100HAR120	1/2	1/2	1	3	.120	●
6676423	H1TE4RA0500R125HAR015	1/2	1/2	1 1/4	3 1/4	.015	●
6676424	H1TE4RA0500R125HAR030	1/2	1/2	1 1/4	3 1/4	.030	●
6676425	H1TE4RA0500R125HAR060	1/2	1/2	1 1/4	3 1/4	.060	●
6676426	H1TE4RA0500R125HAR090	1/2	1/2	1 1/4	3 1/4	.090	●
6676427	H1TE4RA0500R125HAR120	1/2	1/2	1 1/4	3 1/4	.120	●
6676428	H1TE4RA0500L150HAR030	1/2	1/2	1 1/2	4	.030	●
6676429	H1TE4RA0500L150HAR060	1/2	1/2	1 1/2	4	.060	●
6676430	H1TE4RA0500X200HAR030	1/2	1/2	2	4	.030	●
6676431	H1TE4RA0500X200HAR060	1/2	1/2	2	4	.060	●
6676432	H1TE4RA0625S075HAR030	5/8	5/8	3/4	3	.030	●
6676433	H1TE4RA0625S075HAR060	5/8	5/8	3/4	3	.060	●
6676434	H1TE4RA0625R125HAR015	5/8	5/8	1 1/4	3 1/2	.015	●



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(continued)



● first choice

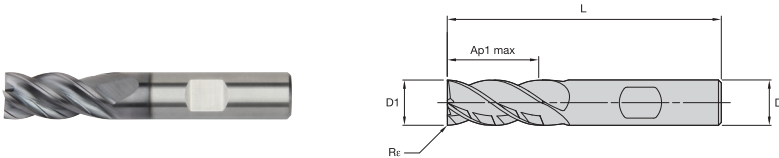
○ alternate choice

P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6676435	H1TE4RA0625R125HAR030	5/8	5/8	1 1/4	3 1/2	.030	●
6676436	H1TE4RA0625R125HAR060	5/8	5/8	1 1/4	3 1/2	.060	●
6676437	H1TE4RA0625R125HAR090	5/8	5/8	1 1/4	3 1/2	.090	●
6676438	H1TE4RA0625R125HAR120	5/8	5/8	1 1/4	3 1/2	.120	●
6676439	H1TE4RA0625X225HAR030	5/8	5/8	2 1/4	5	.030	●
6676440	H1TE4RA0625X225HAR060	5/8	5/8	2 1/4	5	.060	●
6676451	H1TE4RA0625X225HAR090	5/8	5/8	2 1/4	5	.090	●
6676452	H1TE4RA0625X225HAR120	5/8	5/8	2 1/4	5	.120	●
6676453	H1TE4RA0750S088HAR030	3/4	3/4	7/8	3 1/2	.030	●
6676454	H1TE4RA0750S088HAR060	3/4	3/4	7/8	3 1/2	.060	●
6676455	H1TE4RA0750R150HAR015	3/4	3/4	1 1/2	4	.015	●
6676456	H1TE4RA0750R150HAR030	3/4	3/4	1 1/2	4	.030	●
6676457	H1TE4RA0750R150HAR060	3/4	3/4	1 1/2	4	.060	●
6676458	H1TE4RA0750R150HAR090	3/4	3/4	1 1/2	4	.090	●
6676459	H1TE4RA0750R150HAR120	3/4	3/4	1 1/2	4	.120	●
6676460	H1TE4RA0750L225HAR030	3/4	3/4	2 1/4	5	.030	●
6676461	H1TE4RA0750L225HAR060	3/4	3/4	2 1/4	5	.060	●
6676462	H1TE4RA0750L225HAR090	3/4	3/4	2 1/4	5	.090	●
6676463	H1TE4RA0750L225HAR120	3/4	3/4	2 1/4	5	.120	●
6676464	H1TE4RA1000S150HAR030	1	1	1 1/2	4 1/2	.030	●
6676465	H1TE4RA1000S150HAR060	1	1	1 1/2	4 1/2	.060	●
6676466	H1TE4RA1000S150HAR090	1	1	1 1/2	4 1/2	.090	●
6676467	H1TE4RA1000S150HAR120	1	1	1 1/2	4 1/2	.120	●
6676468	H1TE4RA1000S150HAR250	1	1	1 1/2	4 1/2	.250	●
6676469	H1TE4RA1000R225HAR030	1	1	2 1/4	5	.030	●
6676470	H1TE4RA1000R225HAR060	1	1	2 1/4	5	.060	●
6676471	H1TE4RA1000R225HAR090	1	1	2 1/4	5	.090	●
6676472	H1TE4RA1000R225HAR120	1	1	2 1/4	5	.120	●
6676473	H1TE4RA1000R225HAR250	1	1	2 1/4	5	.250	●
6676474	H1TE4RA1000L300HAR030	1	1	3	6	.030	●
6676475	H1TE4RA1000L300HAR060	1	1	3	6	.060	●
6676476	H1TE4RA1000X400HAR030	1	1	4	7	.030	●
6676477	H1TE4RA1000X400HAR060	1	1	4	7	.060	●
6676478	H1TE4RA1250R300HAR030	1 1/4	1 1/4	3	7	.030	●
6676479	H1TE4RA1250R300HAR060	1 1/4	1 1/4	3	7	.060	●
6676480	H1TE4RA1250R300HAR120	1 1/4	1 1/4	3	7	.120	●

170	172	61	4	176

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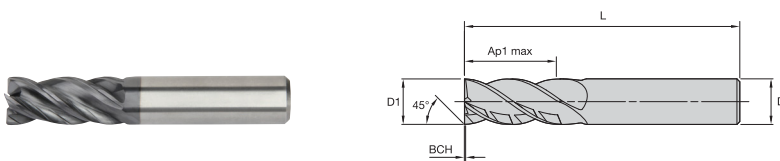
● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6676481	H1TE4RA0375R088HBR015	3/8	3/8	7/8	2 1/2	.015	●
6676482	H1TE4RA0375R088HBR030	3/8	3/8	7/8	2 1/2	.030	●
6676483	H1TE4RA0375R088HBR060	3/8	3/8	7/8	2 1/2	.060	●
6676484	H1TE4RA0375R088HBR090	3/8	3/8	7/8	2 1/2	.090	●
6676485	H1TE4RA0375R100HBR015	3/8	3/8	1	3	.015	●
6676486	H1TE4RA0375R100HBR030	3/8	3/8	1	3	.030	●
6676487	H1TE4RA0375R100HBR060	3/8	3/8	1	3	.060	●
6676488	H1TE4RA0375R100HBR090	3/8	3/8	1	3	.090	●
6676489	H1TE4RA0375X150HBR015	3/8	3/8	1 1/2	4	.015	●
6676490	H1TE4RA0375X150HBR030	3/8	3/8	1 1/2	4	.030	●
6676491	H1TE4RA0375X150HBR060	3/8	3/8	1 1/2	4	.060	●
6676492	H1TE4RA0438R100HBR015	7/16	7/16	1	2 3/4	.015	●
6676493	H1TE4RA0438R100HBR030	7/16	7/16	1	2 3/4	.030	●
6676494	H1TE4RA0500S063HBR015	1/2	1/2	5/8	2 1/2	.015	●
6676495	H1TE4RA0500S063HBR030	1/2	1/2	5/8	2 1/2	.030	●
6676496	H1TE4RA0500S063HBR060	1/2	1/2	5/8	2 1/2	.060	●
6676497	H1TE4RA0500R100HBR015	1/2	1/2	1	3	.015	●
6676498	H1TE4RA0500R100HBR030	1/2	1/2	1	3	.030	●
6676499	H1TE4RA0500R100HBR060	1/2	1/2	1	3	.060	●
6676500	H1TE4RA0500R100HBR090	1/2	1/2	1	3	.090	●
6676501	H1TE4RA0500R100HBR120	1/2	1/2	1	3	.120	●
6676502	H1TE4RA0500R125HBR015	1/2	1/2	1 1/4	3 1/4	.015	●
6676503	H1TE4RA0500R125HBR030	1/2	1/2	1 1/4	3 1/4	.030	●
6676504	H1TE4RA0500R125HBR060	1/2	1/2	1 1/4	3 1/4	.060	●
6676505	H1TE4RA0500R125HBR090	1/2	1/2	1 1/4	3 1/4	.090	●
6676506	H1TE4RA0500R125HBR120	1/2	1/2	1 1/4	3 1/4	.120	●
6676507	H1TE4RA0500L150HBR030	1/2	1/2	1 1/2	4	.030	●
6676508	H1TE4RA0500L150HBR060	1/2	1/2	1 1/2	4	.060	●
6676509	H1TE4RA0500X200HBR030	1/2	1/2	2	4	.030	●
6676510	H1TE4RA0500X200HBR060	1/2	1/2	2	4	.060	●
6676511	H1TE4RA0625S075HBR030	5/8	5/8	1/4	3	.030	●
6676512	H1TE4RA0625S075HBR060	5/8	5/8	1/4	3	.060	●
6676513	H1TE4RA0625R125HBR015	5/8	5/8	1 1/4	3 1/2	.015	●
6676514	H1TE4RA0625R125HBR030	5/8	5/8	1 1/4	3 1/2	.030	●
6676515	H1TE4RA0625R125HBR060	5/8	5/8	1 1/4	3 1/2	.060	●
6676516	H1TE4RA0625R125HBR090	5/8	5/8	1 1/4	3 1/2	.090	●
6676517	H1TE4RA0625R125HBR120	5/8	5/8	1 1/4	3 1/2	.120	●
6676518	H1TE4RA0625X225HBR030	5/8	5/8	2 1/4	5	.030	●
6676519	H1TE4RA0625X225HBR060	5/8	5/8	2 1/4	5	.060	●
6676520	H1TE4RA0625X225HBR090	5/8	5/8	2 1/4	5	.090	●
6676521	H1TE4RA0625X225HBR120	5/8	5/8	2 1/4	5	.120	●
6676522	H1TE4RA0750S088HBR030	3/4	3/4	7/8	3 1/2	.030	●
6676523	H1TE4RA0750S088HBR060	3/4	3/4	7/8	3 1/2	.060	●
6676524	H1TE4RA0750R150HBR015	3/4	3/4	1 1/2	4	.015	●
6676525	H1TE4RA0750R150HBR030	3/4	3/4	1 1/2	4	.030	●
6676526	H1TE4RA0750R150HBR060	3/4	3/4	1 1/2	4	.060	●
6676527	H1TE4RA0750R150HBR090	3/4	3/4	1 1/2	4	.090	●
6676528	H1TE4RA0750R150HBR120	3/4	3/4	1 1/2	4	.120	●
6676529	H1TE4RA0750L225HBR030	3/4	3/4	2 1/4	5	.030	●
6676530	H1TE4RA0750L225HBR060	3/4	3/4	2 1/4	5	.060	●
6676551	H1TE4RA0750L225HBR090	3/4	3/4	2 1/4	5	.090	●
6676552	H1TE4RA0750L225HBR120	3/4	3/4	2 1/4	5	.120	●
6676553	H1TE4RA1000S150HBR030	1	1	1 1/2	4 1/2	.030	●
6676554	H1TE4RA1000S150HBR060	1	1	1 1/2	4 1/2	.060	●
6676555	H1TE4RA1000S150HBR090	1	1	1 1/2	4 1/2	.090	●
6676556	H1TE4RA1000S150HBR120	1	1	1 1/2	4 1/2	.120	●
6676557	H1TE4RA1000S150HBR250	1	1	1 1/2	4 1/2	.250	●
6676558	H1TE4RA1000R225HBR030	1	1	2 1/4	5	.030	●
6676560	H1TE4RA1000R225HBR060	1	1	2 1/4	5	.060	●
6676561	H1TE4RA1000R225HBR090	1	1	2 1/4	5	.090	●
6676562	H1TE4RA1000R225HBR120	1	1	2 1/4	5	.120	●
6676563	H1TE4RA1000R225HBR250	1	1	2 1/4	5	.250	●
6676564	H1TE4RA1000L300HBR030	1	1	3	6	.030	●
6676565	H1TE4RA1000L300HBR060	1	1	3	6	.060	●
6676566	H1TE4RA1000X400HBR030	1	1	4	7	.030	●
6676567	H1TE4RA1000X400HBR060	1	1	4	7	.060	●
6676568	H1TE4RA1250R300HBR030	1 1/4	1 1/4	3	7	.030	●
6676569	H1TE4RA1250R300HBR060	1 1/4	1 1/4	3	7	.060	●
6676570	H1TE4RA1250R300HBR120	1 1/4	1 1/4	3	7	.120	●

HARVI™ | TE • CHAMFERED • 4 FLUTES • PLAIN SHANK



● first choice

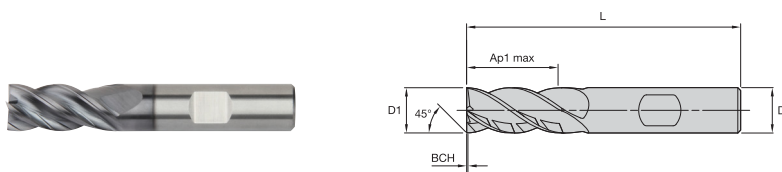
○ alternate choice

P		●
M		●
K		●
N		●
S		○
H		○

order number	catalog number	D1	D	Ap1 max	L	BCH	KCPM15
6676987	H1TE4CH0125R025HA	1/8	1/8	1/4	1 1/2	.015	●
6676988	H1TE4CH0125X050HA	1/8	1/8	1/2	2	.015	●
6676989	H1TE4CH0156L044HA	5/32	3/16	7/16	2	.015	●
6676990	H1TE4CH0188S031HA	3/16	3/16	5/16	1 1/2	.015	●
6676991	H1TE4CH0188L063HA	3/16	3/16	5/8	2 1/4	.015	●
6676992	H1TE4CH0219R044HA	7/32	1/4	7/16	2	.015	●
6676993	H1TE4CH0250S038HA	1/4	1/4	3/8	2	.015	●
6676994	H1TE4CH0250L075HA	1/4	1/4	3/4	2 1/2	.015	●
6676995	H1TE4CH0281R063HA	9/32	5/16	5/8	2 1/2	.015	●
6676996	H1TE4CH0313S050HA	5/16	5/16	1/2	2	.015	●
6676997	H1TE4CH0313R075HA	5/16	5/16	3/4	2 1/2	.015	●
6676998	H1TE4CH0375S050HA	3/8	3/8	1/2	2	.020	●
6676999	H1TE4CH0375R088HA	3/8	3/8	7/8	2 1/2	.020	●
6677000	H1TE4CH0438R100HA	7/16	7/16	1	2 3/4	.020	●
6677001	H1TE4CH0500S063HA	1/2	1/2	5/8	2 1/2	.020	●
6677002	H1TE4CH0500R100HA	1/2	1/2	1	3	.020	●
6677003	H1TE4CH0500R125HA	1/2	1/2	1 1/4	3 1/4	.020	●
6677004	H1TE4CH0500L150HA	1/2	1/2	1 1/2	4	.020	●
6677005	H1TE4CH0625S075HA	5/8	5/8	3/4	3	.020	●
6677006	H1TE4CH0625R125HA	5/8	5/8	1 1/4	3 1/2	.020	●
6677007	H1TE4CH0625X225HA	5/8	5/8	2 1/4	5	.020	●
6677008	H1TE4CH0750S088HA	3/4	3/4	7/8	3 1/2	.020	●
6677009	H1TE4CH0750R150HA	3/4	3/4	1 1/2	4	.020	●
6677010	H1TE4CH0750L225HA	3/4	3/4	2 1/4	5	.020	●
6677031	H1TE4CH0750X300HA	3/4	3/4	3	6	.020	●
6677032	H1TE4CH1000S150HA	1	1	1 1/2	4 1/2	.020	●
6677033	H1TE4CH1000R225HA	1	1	2 1/4	5	.020	●
6677034	H1TE4CH1000L300HA	1	1	3	6	.020	●
6677035	H1TE4CH1000X400HA	1	1	4	7	.020	●
6677036	H1TE4CH1250R300HA	1 1/4	1 1/4	3	7	.020	●

170	172	61	4	176

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● first choice

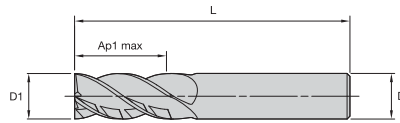
○ alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalog number	D1	D	Ap1 max	L	BCH	KCPM15
6677037	H1TE4CH0375S050HB	3/8	3/8	1/2	2	.020	●
6677038	H1TE4CH0375R088HB	3/8	3/8	7/8	2 1/2	.020	●
6677039	H1TE4CH0438R100HB	7/16	7/16	1	2 3/4	.020	●
6677040	H1TE4CH0500S063HB	1/2	1/2	5/8	2 1/2	.020	●
6677051	H1TE4CH0500R100HB	1/2	1/2	1	3	.020	●
6677052	H1TE4CH0500R125HB	1/2	1/2	1 1/4	3 1/4	.020	●
6677053	H1TE4CH0500L150HB	1/2	1/2	1 1/2	4	.020	●
6677054	H1TE4CH0625S075HB	5/8	5/8	3/4	3	.020	●
6677055	H1TE4CH0625R125HB	5/8	5/8	1 1/4	3 1/2	.020	●
6677056	H1TE4CH0625X225HB	5/8	5/8	2 1/4	5	.020	●
6677057	H1TE4CH0750S088HB	3/4	3/4	7/8	3 1/2	.020	●
6677058	H1TE4CH0750R150HB	3/4	3/4	1 1/2	4	.020	●
6677059	H1TE4CH0750L225HB	3/4	3/4	2 1/4	5	.020	●
6677060	H1TE4CH0750X300HB	3/4	3/4	3	6	.020	●
6677061	H1TE4CH1000S150HB	1	1	1 1/2	4 1/2	.020	●
6677062	H1TE4CH1000R225HB	1	1	2 1/4	5	.020	●
6677063	H1TE4CH1000L300HB	1	1	3	6	.020	●
6677064	H1TE4CH1000X400HB	1	1	4	7	.020	●
6677065	H1TE4CH1250R300HB	1 1/4	1 1/4	3	7	.020	●

170	172	61	4	176

HARVI™ I TE • SQUARE END • 4 FLUTES • PLAIN SHANK



● first choice

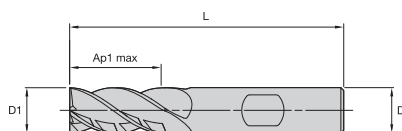
○ alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalog number	D1	D	Ap1 max	L	KCPM15
6676840	H1TE4SE0125R025HA	1/8	1/8	1/4	1 1/2	●
6676911	H1TE4SE0125X050HA	1/8	1/8	1/2	2	●
6676912	H1TE4SE0156L044HA	5/32	3/16	7/16	2	●
6676913	H1TE4SE0188S031HA	3/16	3/16	5/16	1 1/2	●
6676914	H1TE4SE0188L063HA	3/16	3/16	5/8	2 1/4	●
6676915	H1TE4SE0219R044HA	7/32	1/4	7/16	2	●
6676916	H1TE4SE0250S038HA	1/4	1/4	3/8	2	●
6676917	H1TE4SE0250R050HA	1/4	1/4	1/2	2 1/2	●
6676918	H1TE4SE0250L075HA	1/4	1/4	3/4	2 1/2	●
6676919	H1TE4SE0250X100HA	1/4	1/4	1	3	●
6676920	H1TE4SE0281R063HA	9/32	5/16	5/8	2 1/2	●
6676921	H1TE4SE0313S050HA	5/16	5/16	1/2	2	●
6676922	H1TE4SE0313R075HA	5/16	5/16	3/4	2 1/2	●
6676923	H1TE4SE0375S050HA	3/8	3/8	1/2	2	●
6676924	H1TE4SE0375R088HA	3/8	3/8	7/8	2 1/2	●
6676925	H1TE4SE0375R100HA	3/8	3/8	1	3	●
6676926	H1TE4SE0375X150HA	3/8	3/8	1 1/2	4	●
6676927	H1TE4SE0438R100HA	7/16	7/16	1	2 3/4	●
6676928	H1TE4SE0500S063HA	1/2	1/2	5/8	2 1/2	●
6676929	H1TE4SE0500R100HA	1/2	1/2	1	3	●
6676930	H1TE4SE0500R125HA	1/2	1/2	1 1/4	3 1/4	●
6676941	H1TE4SE0500L150HA	1/2	1/2	1 1/2	4	●
6676942	H1TE4SE0500X200HA	1/2	1/2	2	4	●
6676943	H1TE4SE0625S075HA	5/8	5/8	3/4	3	●
6676944	H1TE4SE0625R125HA	5/8	5/8	1 1/4	3 1/2	●
6676945	H1TE4SE0625X225HA	5/8	5/8	2 1/4	5	●
6676946	H1TE4SE0750S088HA	3/4	3/4	7/8	3 1/2	●
6676947	H1TE4SE0750R150HA	3/4	3/4	1 1/2	4	●
6676948	H1TE4SE0750L225HA	3/4	3/4	2 1/4	5	●
6676949	H1TE4SE0750X300HA	3/4	3/4	3	6	●
6676950	H1TE4SE1000S150HA	1	1	1 1/2	4 1/2	●
6676961	H1TE4SE1000R225HA	1	1	2 1/4	5	●
6676962	H1TE4SE1000L300HA	1	1	3	6	●
6676963	H1TE4SE1000X400HA	1	1	4	7	●
6676964	H1TE4SE1250R300HA	1 1/4	1 1/4	3	7	●

				
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HARVI™ I TE • SQUARE END • 4 FLUTES • WELDON® SHANK



● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalog number	D1	D	Ap1 max	L	KCPM15
6676965	H1TE4SE0375S050HB	3/8	3/8	1/2	2	●
6676966	H1TE4SE0375R088HB	3/8	3/8	7/8	2 1/2	●
6676967	H1TE4SE0375R100HB	3/8	3/8	1	3	●
6676968	H1TE4SE0375X150HB	3/8	3/8	1 1/2	4	●
6676969	H1TE4SE0438R100HB	7/16	7/16	1	2 3/4	●
6676970	H1TE4SE0500S063HB	1/2	1/2	5/8	2 1/2	●
6676971	H1TE4SE0500R100HB	1/2	1/2	1	3	●
6676972	H1TE4SE0500R125HB	1/2	1/2	1 1/4	3 1/4	●
6676973	H1TE4SE0500L150HB	1/2	1/2	1 1/2	4	●
6676974	H1TE4SE0500X200HB	1/2	1/2	2	4	●
6676975	H1TE4SE0625S075HB	5/8	5/8	3/4	3	●
6676976	H1TE4SE0625R125HB	5/8	5/8	1 1/4	3 1/2	●
6676977	H1TE4SE0625X225HB	5/8	5/8	2 1/4	5	●
6676978	H1TE4SE0750S088HB	3/4	3/4	7/8	3 1/2	●
6676979	H1TE4SE0750R150HB	3/4	3/4	1 1/2	4	●
6676980	H1TE4SE0750L225HB	3/4	3/4	2 1/4	5	●
6676981	H1TE4SE0750X300HB	3/4	3/4	3	6	●
6676982	H1TE4SE1000S150HB	1	1	1 1/2	4 1/2	●
6676983	H1TE4SE1000R225HB	1	1	2 1/4	5	●
6676984	H1TE4SE1000L300HB	1	1	3	6	●
6676985	H1TE4SE1000X400HB	1	1	4	7	●
6676986	H1TE4SE1250R300HB	1 1/4	1 1/4	3	7	●

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HARVI™ I TE • 4 FLUTES • APPLICATION DATA

Material Group													
		Side Milling (A) and Slotting (B)			KCSM15 Cutting Speed — vc SFM			Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.					
								D1 — Diameter					
		A	B	frac.	3/8	1/2	5/8	3/4	1				
ap	ae	ap	min	—	max	dec.	.3750	.5000	.6250	.7500	1.0000		
P	0	1.5 x D1	0.5 x D1	1.25 x D1	490	—	660	IPT	.0030	.0037	.0043	.0048	.0054
	1	1.5 x D1	0.5 x D1	1.25 x D1	490	—	660	IPT	.0030	.0037	.0043	.0048	.0054
	2	1.5 x D1	0.5 x D1	1.25 x D1	460	—	620	IPT	.0030	.0037	.0043	.0048	.0054
	3	1.5 x D1	0.5 x D1	1.25 x D1	390	—	520	IPT	.0025	.0032	.0038	.0042	.0050
	4	1.5 x D1	0.5 x D1	1.25 x D1	300	—	490	IPT	.0022	.0028	.0033	.0037	.0042
	5	1.5 x D1	0.5 x D1	1.25 x D1	200	—	330	IPT	.0020	.0025	.0030	.0034	.0040
M	6	1.5 x D1	0.5 x D1	1.25 x D1	160	—	250	IPT	.0017	.0021	.0025	.0027	.0031
	1	1.5 x D1	0.5 x D1	1.25 x D1	300	—	380	IPT	.0025	.0032	.0038	.0042	.0050
K	2	1.5 x D1	0.5 x D1	1.25 x D1	200	—	260	IPT	.0020	.0025	.0030	.0034	.0040
	3	1.5 x D1	0.5 x D1	1.00 x D1	200	—	230	IPT	.0017	.0021	.0025	.0027	.0031
	1	1.5 x D1	0.5 x D1	1.00 x D1	390	—	490	IPT	.0030	.0037	.0043	.0048	.0054
S	2	1.5 x D1	0.5 x D1	1.00 x D1	360	—	460	IPT	.0025	.0032	.0038	.0042	.0050
	3	1.5 x D1	0.5 x D1	1.00 x D1	360	—	430	IPT	.0020	.0025	.0030	.0034	.0040
	1	1.5 x D1	0.3 x D1	0.75 x D1	160	—	300	IPT	.0025	.0032	.0038	.0042	.0050
	2	1.5 x D1	0.3 x D1	0.75 x D1	160	—	260	IPT	.0020	.0025	.0030	.0034	.0040
H	3	1.5 x D1	0.5 x D1	0.50 x D1	80	—	130	IPT	.0013	.0017	.0020	.0023	.0027
	4	1.5 x D1	0.5 x D1	1.25 x D1	160	—	200	IPT	.0019	.0023	.0028	.0031	.0036
	1	1.5 x D1	0.5 x D1	1.00 x D1	260	—	460	IPT	.0022	.0028	.0033	.0037	.0042
	2	1.5 x D1	0.2 x D1	1.00 x D1	230	—	390	IPT	.0017	.0021	.0025	.0027	.0031

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.
 For tools with reach >5 x D1, reduce fz by 30%.
 Slot milling applications — for longest reach (L3) tools, reduce Ae by 30%.

HARVI™ I TE • 4 FLUTES • ADJUSTMENT FACTOR FOR FEED AND SPEED CALCULATION

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1 inch;

S4 material group;

Ae 0.02 inch

Cutting data recommendation: 150 SFM;

fz = 0.0033 IPT

Adjustment coefficients: Ae = 0.02 = inch equals 2.00%;

Kv = 2; KFz = 2.4

Final cutting data recommendation:

Vc new = 150 SFM * 2 = 300 SFM

Fz new = .0033 IPT * 2.4 = .0079 IPT

	Ae/D	0.50%	1.00%	1.60%	2.00%	4.00%	5.00%	8.00%	10.00%	20.00%	30.00%	40.00%	50.00%
Speed factor	Kv	2.9	2.85	2.8	2	1.5	1.45	1.4	1.35	1.25	1.2	1	1
Feed factor	KFz	2.8	2.6	2.5	2.4	2.3	2.2	2	1.7	1.25	1.02	1	1

HARVI™ I TE • APPLICATION INFORMATION • RAMPING

Angle	Ramping Style	Hole -Ø / End Mill -Ø	Vc		fz	
			Recommendation	Page	Recommendation	Page
0°–15°		—	See application data	71	See application data and reduce fz by 20%	71
		1.15–1.35*	See min. Vc of application data	71	See application data and reduce fz by 20%	71
		>1.35–1.6*	See application data	71	See application data and reduce fz by 10%	71
		>1.6–1.9*	See application data	71	See application data	71
>15°–30°		—	See min Vc of application data	71	See application data and reduce fz by 30%	71
		1.15–1.35*	See min. Vc of application data	71	See application data and reduce fz by 30%	71
		>1.35–1.6*	See medium range Vc of application data	71	See application data and reduce fz by 25%	71
		>1.6–1.9*	See application data	71	See application data and reduce fz by 20%	71
30°–45°		—	See Vc from plunging data	73	See application data and reduce fz by 40%	71
		1.15–1.35*	See Vc from plunging data	73	See application data and reduce fz by 40%	71
		>1.35–1.6*	See min. Vc of application data	71	See application data and reduce fz by 35%	71
		>1.6–1.9*	See medium range Vc of application data	71	See application data and reduce fz by 30%	71
>45°		—	See Vc from plunging data	73	See fz from plunging data	73
		1.15–1.35*	See Vc from plunging data	73	See fz from plunging data	73
		>1.35–1.6*	See Vc from plunging data	73	See fz from plunging data	73
		>1.6–1.9*	See min. speed of application data	73	See fz from plunging data	73

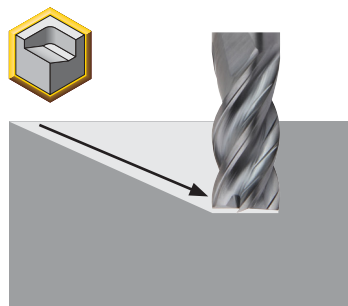
NOTE: Z effective = 2 — for all calculations.

*Calculations are based on tool path of tool-centerline.

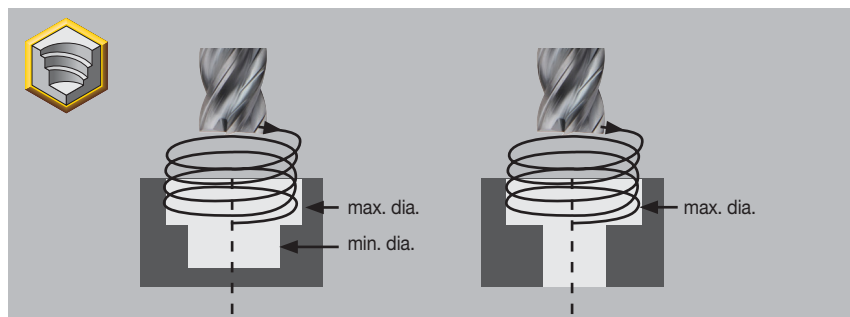
For ISO P and K materials, coolant supply into cutting zone is preferred.

For ISO M, S, and H materials, coolant supply into cutting zone is required.

Linear Ramping



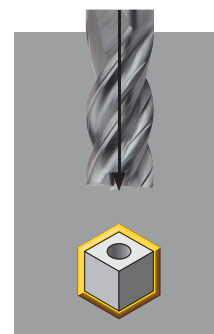
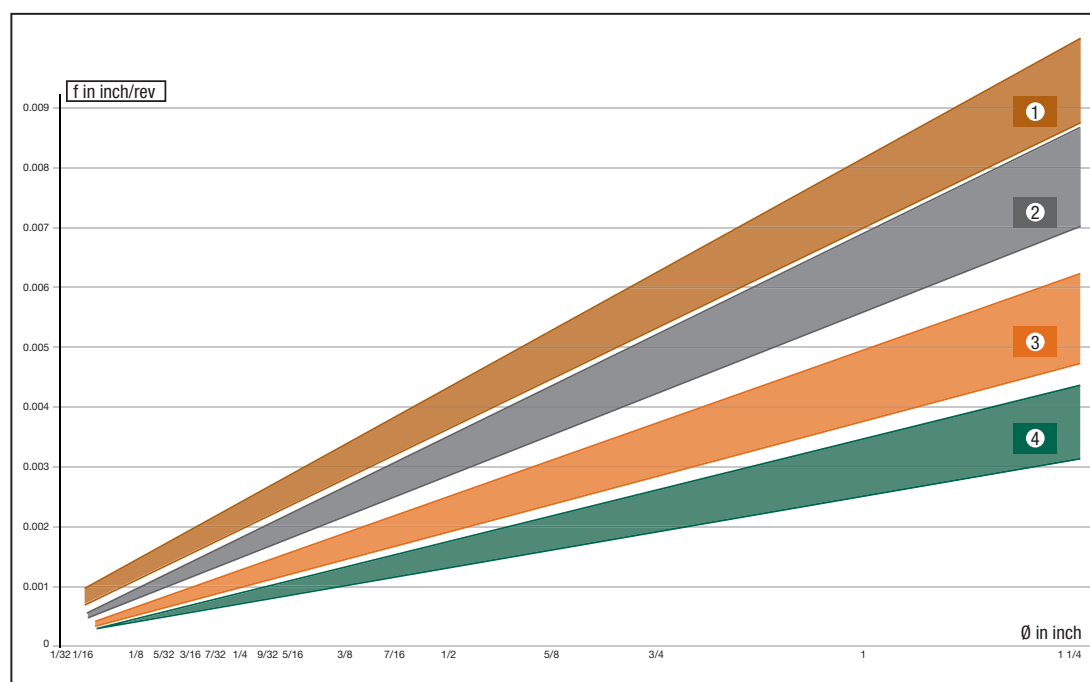
Helical Ramping



Min. hole Ø = End mill -Ø x 1.1 + 2x corner configuration (Re/CHF) size. Hole -Ø/End mill -Ø min 1:1.15

Min. hole Ø = 2x End mill -Ø 2x corner configuration (Re/CHF) size. Hole -Ø/End mill -Ø max 1:1.9

HARVI™ I TE • APPLICATION DATA • 90° PLUNGING



ISO Material		Applicable	Graph Number	Vc max m/min	Max Depth	Coolant Supply
P	0	●	1	480	1.5 x Ø	Preferred
	1	●	1	480	1.5 x Ø	Recommended
	2	●	1	475	1.5 x Ø	Recommended
	3	●	2	380	1 x Ø	Recommended
	4	●	2	300	1 x Ø	Recommended
	5	●	3	190	0.5 x Ø	Required
	6	●	3	150	0.5 x Ø	Required
M	1	●	2	300	0.75 x Ø	Required
	2	●	3	190	0.5 x Ø	Required
	3	●	3	175	0.5 x Ø	Required
K	1	●	1	380	1.5 x Ø	Recommended
	2	●	2	360	1 x Ø	Required
	3	●	2	340	1 x Ø	Required
S	1	○	2	150	0.3 x Ø	Required
	2	○	3	130	0.1 x Ø	Required
	3	○	4	65	0.1 x Ø	Required
	4	○	3	140	0.2 x Ø	Required
H	1	○	2	250	0.2 x Ø	Required
	2	○	3	210	0.2 x Ø	Required

• highly recommended

○ recommended

HARVI™ I TE • APPLICATION INFORMATION

Materials to Cut	• Steels (P0-P5). • Stainless steels (M1-M3). • Cast iron (K1-K3). • High-temp alloys (S1-S4). • Hardened materials (H1-H2).
Cutting Speed	• Refer to application data recommendation.
Feed Rate	• Refer to application data recommendation. • Works in same feed rate range as standard 4FL high-versatility tools, for productivity advantage follow application recommendation.
Depth of Cut	• Refer to application data recommendation.
Coolant	• External coolant preferred for steel, stainless, high-temp alloys, and hardened materials. • Pressurized air applicable for carbon steels. • Minimal quantity lubrication (MQL) and dry applicable for carbon steels.
Adaptation	• Hydraulic chuck with or without sleeve preferred. • Weldon® adapter for Weldon shank tools preferred for high Ap/high Ae applications, but not recommended for finishing applications. • High-performance collet (HPMC) or milling power chucks applicable. • Shrink adapter applicable.
Roughing Application	• Yes.
Finishing Application	• Yes.
Milling Strategy	• Traditional milling (full slotting, high Ae side and shoulder milling). • High-velocity milling (dynamic milling, trochoidal milling).
Application Range	• Full slotting. • Shoulder milling. • Peel milling and HPC techniques. • Center cutting. • Linear ramping at unlimited angle and 90° plunging. • Ramping into stainless and high-temperature alloys limited by coolant configuration. • Helical interpolation.
Engineered Solutions	• Available upon request.
Reconditioning Service	• Full reconditioning available with Kennametal reconditioning procedures. • Check services under Kennametal website for detailed information.

HARVI™ I TE • CAUSES AND REMEDIES FOR MILLING PROBLEMS

PROBLEM	CAUSE	REMEDIES
• Tool pullout.	• High axial forces. • Wrong adapter. • Unadapted application data.	• Use Weldon® chuck if applicable or adapter with higher clamping force. • Reduce feed per tooth.
• Unevenly colored chips when slotting deep (>1.25 x D).	• Not enough coolant in cutting zone.	• Adjust coolant method to improve coolant in cutting zone.
• Sudden breakage when milling dry in Shrink Fit or hydraulic adapter.	• Tool is too hot and loses fit in adapter.	• Check temperature on adapter/spindle. • Improve coolant provision or reduce cutting speed; eventually change to HPMC or Weldon, if applicable.
• Material build-up on cutting edge.	• Cold welding of material at cutting edge.	• Increase coolant in cutting zone. • Decrease cutting speed.
• High flank wear.	• Unadapted application data. • High tool runoff.	• Decrease feed rate. • Check tool runoff.
• Chipping on tool.	• Unadapted application data. • Insufficient coolant. • High tool runoff. • Unstable adapter. • Clamping on coating area.	• Adjust to recommended speeds and feeds. • Adjust coolant method to improve coolant in cutting zone. • Check runoff; eventually change to more stable adapter. • Adjust clamping to clamp on uncoated area only. • Minimize overhang length.



KOR™ Series

Solid End Mills for Dynamic Milling



Materials



Applications



Ramping



Trochoidal Milling



Side Milling/Shoulder
Milling: Roughing



Side Milling/Shoulder
Milling: Finishing

kennametal.com/KOR

KOR Series Features:

Designed for dynamic milling with low radial engagement and full length of cut.
Maximizes capabilities of 5-axis machines, using CAM tool path generation software.

KOR5^{DA}

Dynamic rougher for aluminum.
With chip splitters for near-perfect chip management.
Safe-Lock™ shanks available for pullout protection.



With and without internal coolant.



KOR5^{DA}



KOR5^{DS}



KOR6^{DT}

Proprietary flute forms reduce vibrations and improve tool life.

Helix angles tailored to target material to minimize vibration and optimize tool life.

Front end geometries for maximum tool life in helical and ramping operations.

KOR5^{DS}

Dynamic rougher for steel and stainless steel.

With chip deformers for near-perfect chip management at high surface quality.

Safe-Lock™ and Weldon® shanks for pullout protection.

 3 x D and 5 x D with plain and Weldon shanks.

KOR6^{DT}

Dynamic rougher for titanium.

With chip splitters for optimized chip management.

 3 x D and 5 x D with plain and Weldon shanks.

KOR™ SERIES • TOOL SELECTION GUIDE

	KOR5 ^{DA}	KOR5 ^{DA}	KOR5 ^{DS}	KOR5 ^{DS}	KOR6 ^{DT}	KOR6 ^{DT}
						
Series	KOR5..I..	KOR5..C..	KOR5..R..	KOR5..L..	KOR6..R..	KOR6..L..
Page	80	81	82	83	84–85	86
Tool type						
Rougher	●	●	●	●	●	●
Finisher	○	○	○	○		
Chamfering						
Main operation						
Workpiece material						
Primary	N	N	P M	P M	S	S
Secondary			K S H	K S H	P M K H	P M K H
Corner style	 	 				
Corner radius [R _e]	0.015–0.120"	0.015–0.120"	0.030–0.060"	0.030–0.060"	0.030–0.060"	0.030–0.060"
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutter diameter [D1]	3/8–1"	3/8–1"	1/4–1"	1/4–1"	3/8–1"	3/8–1"
Length of cut	3 x D	3 x D	3 x D	5 x D	3 x D	5 x D
Maximum cutting depth [A _{p1} max]	1 1/8–3"	1 1/8–3"	3/4–3"	1 1/4–5"	1 1/8–3"	1 7/8–5"
Flute helix angle	35°	35°	40°	40°	38°	38°
Number of flutes [ZU]	5	5	5	5	6	6
Shank type	 	 	 	 	  	  
Coolant						
Additional operations	  	  	  	  	  	  

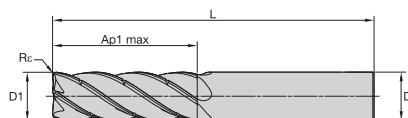
NOTE: For accessories, spare parts, and technical information, visit kennametal.com or kennametal.com/novo.

- Primary
- Secondary

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



Radius Metric	Radius Inch
R020 = 0,2mm	R010 = .010"
R025 = 0,25mm	R015 = .015"
R030 = 0,3mm	R030 = .030"
R040 = 0,4mm	R060 = .060"
R050 = 0,5mm	R090 = .090"
R075 = 0,75mm	R120 = .120"
R100 = 1,0mm	R160 = .160"
R125 = 1,25mm	R250 = .250"
R150 = 1,5mm	R190 = .190"
R200 = 2,0mm	R375 = .375"
R250 = 2,5mm	R045 = .045"
R300 = 3,0mm	
R400 = 4,0mm	
R500 = 5,0mm	
R600 = 6,0mm	

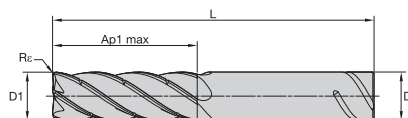
KOR5™ DA • 5 FLUTES • 3 X D • INTERNAL COOLANT • PLAIN SHANK

● first choice

○ alternate choice

P	
M	
K	
N	●
S	
H	

order number	catalog number	D1	D	Ap1 max	L	Re	K600
6754900	KOR5RA0375R113HAR015I	3/8	.375	1 1/8	3	.015	●
6754921	KOR5RA0375R113HAR030I	3/8	.375	1 1/8	3	.030	●
6754922	KOR5RA0375R113HAR060I	3/8	.375	1 1/8	3	.060	●
6754899	KOR5SE0375R113HAI	3/8	.375	1 1/8	3	—	●

KOR5 DA • 5 FLUTES • 3 X D • INTERNAL COOLANT • SAFE-LOCK® SHANK

● first choice

○ alternate choice

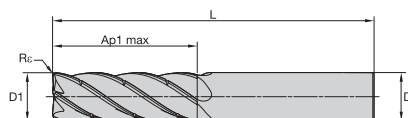
P	
M	
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N	●
S	
H	

order number	catalog number	D1	D	Ap1 max	L	Re	K600
6754924	KOR5RA0500R150SLR015I	1/2	.500	1 1/2	3 1/2	.015	●
6754925	KOR5RA0500R150SLR030I	1/2	.500	1 1/2	3 1/2	.030	●
6754926	KOR5RA0500R150SLR060I	1/2	.500	1 1/2	3 1/2	.060	●
6754923	KOR5SE0500R150SLI	1/2	.500	1 1/2	3 1/2	—	●
6754928	KOR5RA0625R188SLR030I	5/8	.625	1 7/8	4	.030	●
6754929	KOR5RA0625R188SLR060I	5/8	.625	1 7/8	4	.060	●
6754930	KOR5RA0625R188SLR090I	5/8	.625	1 7/8	4	.090	●
6754927	KOR5SE0625R188SLI	5/8	.625	1 7/8	4	—	●
6754932	KOR5RA0750R225SLR030I	3/4	.750	2 1/4	5	.030	●
6754933	KOR5RA0750R225SLR060I	3/4	.750	2 1/4	5	.060	●
6754934	KOR5RA0750R225SLR090I	3/4	.750	2 1/4	5	.090	●
6754935	KOR5RA0750R225SLR120I	3/4	.750	2 1/4	5	.120	●
6754931	KOR5SE0750R225SLI	3/4	.750	2 1/4	5	—	●
6754937	KOR5RA1000R300SLR030I	1	1.000	3	5 1/2	.030	●
6754938	KOR5RA1000R300SLR060I	1	1.000	3	5 1/2	.060	●
6754939	KOR5RA1000R300SLR090I	1	1.000	3	5 1/2	.090	●
6754936	KOR5SE1000R300SLI	1	1.000	3	5 1/2	—	●

170	172	79	4	176

KOR5™ DA • 5 FLUTES • 3 X D • PLAIN SHANK

NEW!



● first choice

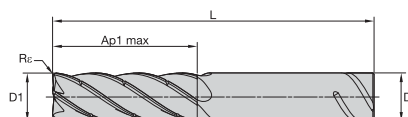
○ alternate choice

P	
M	
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N	●
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order number	catalog number	D1	D	Ap1 max	L	Re	K600
6754952	KOR5RA0375R113HAR015C	3/8	.375	1 1/8	3	.015	●
6754953	KOR5RA0375R113HAR030C	3/8	.375	1 1/8	3	.030	●
6754954	KOR5RA0375R113HAR060C	3/8	.375	1 1/8	3	.060	●
6754951	KOR5SE0375R113HAC	3/8	.375	1 1/8	3	—	●

KOR5 DA • 5 FLUTES • 3 X D • SAFE-LOCK® SHANK

NEW!



● first choice

○ alternate choice

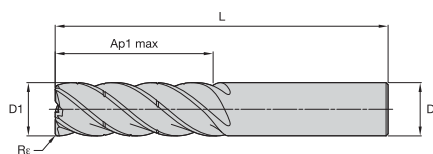
P	
M	
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N	●
S	
H	

order number	catalog number	D1	D	Ap1 max	L	Re	K600
6754956	KOR5RA0500R150SLR015C	1/2	.500	1 1/2	3 1/2	.015	●
6754957	KOR5RA0500R150SLR030C	1/2	.500	1 1/2	3 1/2	.030	●
6754958	KOR5RA0500R150SLR060C	1/2	.500	1 1/2	3 1/2	.060	●
6754955	KOR5SE0500R150SLC	1/2	.500	1 1/2	3 1/2	—	●
6754960	KOR5RA0625R188SLR030C	5/8	.625	1 7/8	4	.030	●
6754961	KOR5RA0625R188SLR060C	5/8	.625	1 7/8	4	.060	●
6754962	KOR5RA0625R188SLR090C	5/8	.625	1 7/8	4	.090	●
6754959	KOR5SE0625R188SLC	5/8	.625	1 7/8	4	—	●
6754964	KOR5RA0750R225SLR030C	3/4	.750	2 1/4	5	.030	●
6754965	KOR5RA0750R225SLR060C	3/4	.750	2 1/4	5	.060	●
6754966	KOR5RA0750R225SLR090C	3/4	.750	2 1/4	5	.090	●
6754967	KOR5RA0750R225SLR120C	3/4	.750	2 1/4	5	.120	●
6754963	KOR5SE0750R225SLC	3/4	.750	2 1/4	5	—	●
6754969	KOR5RA1000R300SLR030C	1	1.000	3	5 1/2	.030	●
6754970	KOR5RA1000R300SLR060C	1	1.000	3	5 1/2	.060	●
6754971	KOR5RA1000R300SLR090C	1	1.000	3	5 1/2	.090	●
6754968	KOR5SE1000R300SLC	1	1.000	3	5 1/2	—	●

170	172	79	4	176

KOR5™ DS • 5 FLUTES • 3 X D • PLAIN SHANK

NEW!



● first choice

○ alternate choice

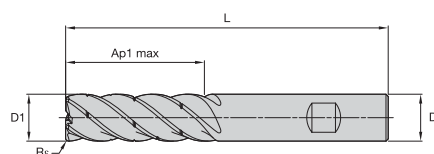
P		
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KC643M

order number	catalog number	D1	D	Ap1 max	L	Re	
6769720	KOR5RA0250R075HAR030	1/4	1/4	3/4	2 1/2	.030	●
6769781	KOR5RA0375R113HAR030	3/8	3/8	1 1/8	3	.030	●
6769782	KOR5RA0500R150HAR030	1/2	1/2	1 1/2	3 1/2	.030	●
6769783	KOR5RA0625R188HAR030	5/8	5/8	1 7/8	4	.030	●
6769784	KOR5RA0750R225HAR060	3/4	3/4	2 1/4	5	.060	●
6769785	KOR5RA1000R300HAR060	1	1	3	6	.060	●

KOR5 DS • 5 FLUTES • 3 X D • WELDON® SHANK

NEW!



● first choice

○ alternate choice

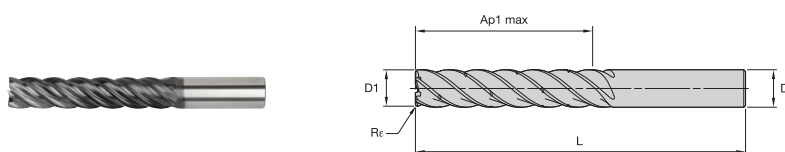
P		
M		
K		
N		
S		
H		

KC643M

order number	catalog number	D1	D	Ap1 max	L	Re	
6769786	KOR5RA0250R075HBR030	1/4	1/4	3/4	2 1/2	.030	●
6769787	KOR5RA0375R113HBR030	3/8	3/8	1 1/8	3	.030	●
6769789	KOR5RA0500R150HBR030	1/2	1/2	1 1/2	3 1/2	.030	●
6769790	KOR5RA0625R188HBR030	5/8	5/8	1 7/8	4	.030	●
6769791	KOR5RA0750R225HBR060	3/4	3/4	2 1/4	5	.060	●
6769792	KOR5RA1000R300HBR060	1	1	3	6	.060	●

170	172	79	4	176

KOR5™ DS • 5 FLUTES • 5 X D • PLAIN SHANK



● first choice

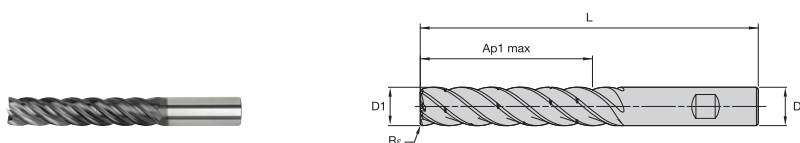
○ alternate choice

P		
M		
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H		

order number	catalog number	D1	D	Ap1 max	L	Re	
6764360	KOR5RA0250L125HAR030	1/4	1/4	1 1/4	3	.030	●
6764471	KOR5RA0375L188HAR030	3/8	3/8	1 7/8	4	.030	●
6764472	KOR5RA0500L250HAR030	1/2	1/2	2 1/2	5	.030	●
6764473	KOR5RA0625L313HAR030	5/8	5/8	3 1/8	6	.030	●
6764474	KOR5RA0750L375HAR060	3/4	3/4	3 3/4	7	.060	●
6764475	KOR5RA1000L500HAR060	1	1	5	7 1/2	.060	●

KC643M

KOR5 DS • 5 FLUTES • 5 X D • WELDON® SHANK



● first choice

○ alternate choice

P		
M		
K		
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H		

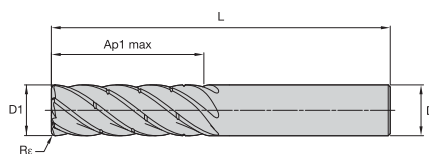
order number	catalog number	D1	D	Ap1 max	L	Re	
6764476	KOR5RA0250L125HBR030	1/4	1/4	1 1/4	3	.030	●
6764477	KOR5RA0375L188HBR030	3/8	3/8	1 7/8	4	.030	●
6764478	KOR5RA0500L250HBR030	1/2	1/2	2 1/2	5	.030	●
6764479	KOR5RA0625L313HBR030	5/8	5/8	3 1/8	6	.030	●
6764480	KOR5RA0750L375HBR060	3/4	3/4	3 3/4	7	.060	●
6764491	KOR5RA1000L500HBR060	1	1	5	7 1/2	.060	●

KC643M

170	172	79	4	176

KOR6™ DT • 6 FLUTES • 3 X D • PLAIN SHANK

NEW!



● first choice

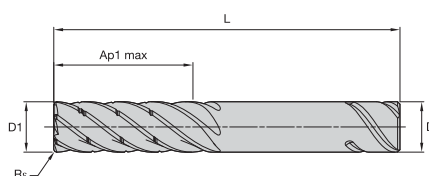
○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767671	KOR6RA0375R113HAR030C	3/8	3/8	1 1/8	3	.030	●

KOR6 DT • 6 FLUTES • 3 X D • SAFE-LOCK® SHANK

NEW!



● first choice

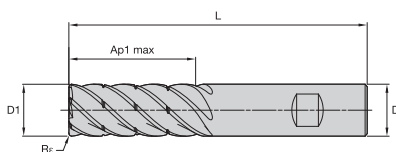
○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767672	KOR6RA0500R150SLR030C	1/2	1/2	1 1/2	3 1/2	.030	●
6767673	KOR6RA0625R188SLR030C	5/8	5/8	1 7/8	4	.030	●
6767674	KOR6RA0750R225SLR060C	3/4	3/4	2 1/4	5	.060	●
6767675	KOR6RA1000R300SLR060C	1	1	3	6	.060	●

170	172	79	4	176

KOR6™ DT • 6 FLUTES • 3 X D • WELDON® SHANK



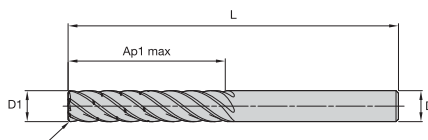
● first choice

○ alternate choice

P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767676	KOR6RA0375R113HBR030C	3/8	3/8	1 1/8	3	.030	●
6767677	KOR6RA0500R150HBR030C	1/2	1/2	1 1/2	3 1/2	.030	●
6767678	KOR6RA0625R188HBR030C	5/8	5/8	1 7/8	4	.030	●
6767679	KOR6RA0750R225HBR060C	3/4	3/4	2 1/4	5	.060	●
6767691	KOR6RA1000R300HBR060C	1	1	3	6	.060	●

KOR6 DT • 6 FLUTES • 5 X D • PLAIN SHANK



● first choice

○ alternate choice

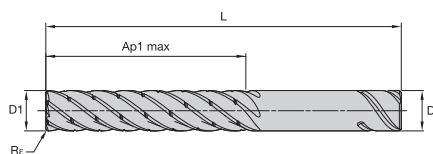
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767706	KOR6RA0375L188HAR030C	3/8	3/8	1 7/8	4	.030	●

170	172	79	4	176

KOR6™ DT • 6 FLUTES • 5 X D • SAFE-LOCK® SHANK

NEW!



● first choice

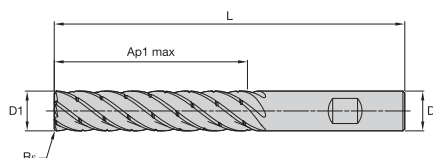
○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767707	KOR6RA0500L250SLR030C	1/2	1/2	2 1/2	5	.030	●
6767708	KOR6RA0625L313SLR030C	5/8	5/8	3 1/8	6	.030	●
6767710	KOR6RA0750L375SLR060C	3/4	3/4	3 3/4	7	.060	●
6767721	KOR6RA1000L500SLR060C	1	1	5	7 1/2	.060	●

KOR6 DT • 6 FLUTES • 5 X D • WELDON® SHANK

NEW!



● first choice

○ alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15
6767722	KOR6RA0375L188HBR030C	3/8	3/8	1 7/8	4	.030	●
6767727	KOR6RA0500L250HBR030C	1/2	1/2	2 1/2	5	.030	●
6767728	KOR6RA0625L313HBR030C	5/8	5/8	3 1/8	6	.030	●
6767729	KOR6RA0750L375HBR060C	3/4	3/4	3 3/4	7	.060	●
6767730	KOR6RA1000L500HBR060C	1	1	5	7 1/2	.060	●

170	172	79	4	176

KOR5™ DA • 5 FLUTES • APPLICATION DATA

Material Group													
	Side Milling (A) and Slotting (B)			K600			Recommended feed per tooth (IPT = inch/th)						
	A		B	Cutting Speed – vc SFM				D1 – Diameter					
	ap	ae	ap	min		max	frac. dec.	3/8	1/2	5/8	3/4	1	
N	1	0.5 x D1	0.5 x D1	0.25 x D1	640	–	6560	IPT	0.0030	0.0050	0.0060	0.0080	0.0090
	2	0.5 x D1	0.5 x D1	0.25 x D1	640	–	4920	IPT	0.0025	0.0045	0.0055	0.0070	0.0085

NOTE: These guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.

For cutting aluminum with high silicon, TiCN coating is recommended.

Ap for milling machine with ceramic bearings spindle, multiply by 0.5.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.

KOR5™ DA • 5 FLUTES • ADJUSTMENT FACTOR TABLE FOR FEED CALCULATION

To calculate application specific cutting data, please use coefficient table to the right for adaptation of feed.

Fz new = IPT * Feed Multiplier

Calculation example:

Application: D = 1";

N1 material group; Ae 0.1"

Cutting data recommendation: 640 SFM;

fz = 0.0090 IPT

Adjustment coefficients: Ae = 0.1" equals 10.00 %;

Feed Multiplier = 1.7

Final cutting data recommendation:

FZ new = .0090 IPT * 1.7 = .0153 IPT

Ae/D1	100%	50%	40%	30%	20%	10%	5%	2%
Max Ap	.25 x D1	.5 x D1	1 x D1	2 x D1	Ap1 Max	Ap1 Max	Ap1 Max	Ap1 Max
Feed Multiplier	.90	1.00	1.02	1.09	1.25	1.70	2.30	3.60

KOR5™ DS • 5 FLUTES • 3 X D • APPLICATION DATA

Material Group													
		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc			D1 — Diameter						
		ap	ae	min	SFM	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1
P	0	3 x D	0.1 x D	500	—	1440	IPT	.0022	.0033	.0041	.0047	.0053	.0059
	1	3 x D	0.1 x D	500	—	1440	IPT	.0022	.0033	.0041	.0047	.0053	.0059
	2	3 x D	0.1 x D	460	—	1370	IPT	.0022	.0033	.0041	.0047	.0053	.0059
	3	3 x D	0.1 x D	400	—	1150	IPT	.0018	.0027	.0035	.0041	.0046	.0054
	4	3 x D	0.1 x D	300	—	1080	IPT	.0017	.0025	.0031	.0036	.0040	.0046
	5	3 x D	0.1 x D	200	—	720	IPT	.0015	.0022	.0028	.0033	.0037	.0043
M	6	3 x D	0.1 x D	170	—	540	IPT	.0012	.0018	.0023	.0027	.0030	.0034
	1	3 x D	0.1 x D	300	—	830	IPT	.0018	.0027	.0035	.0041	.0046	.0054
	2	3 x D	0.1 x D	200	—	580	IPT	.0015	.0022	.0028	.0033	.0037	.0043
K	3	3 x D	0.1 x D	200	—	510	IPT	.0012	.0018	.0023	.0027	.0030	.0034
	1	3 x D	0.1 x D	400	—	1080	IPT	.0022	.0033	.0041	.0047	.0053	.0059
	2	3 x D	0.1 x D	370	—	1010	IPT	.0018	.0027	.0035	.0041	.0046	.0054
S	3	3 x D	0.1 x D	370	—	940	IPT	.0015	.0022	.0028	.0033	.0037	.0043
	1	3 x D	0.1 x D	170	—	650	IPT	.0018	.0027	.0035	.0041	.0046	.0054
	2	3 x D	0.1 x D	80	—	580	IPT	.0015	.0022	.0028	.0033	.0037	.0043
	3	3 x D	0.1 x D	80	—	290	IPT	.0010	.0015	.0018	.0022	.0025	.0029
H	4	3 x D	0.1 x D	170	—	430	IPT	.0013	.0020	.0026	.0030	.0034	.0040
	1	3 x D	0.1 x D	270	—	1010	IPT	.0017	.0025	.0031	.0036	.0040	.0046
	2	3 x D	0.1 x D	230	—	870	IPT	.0012	.0018	.0023	.0027	.0030	.0034

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR5 DS • 5 FLUTES • 3 X D • ADJUSTMENT FACTOR TABLE FOR FEED CALCULATION

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
 Fz new = IPT * KFz

Calculation example:

Application: D1 = 1";
 S4 material group;
 Ae 0.1" (Ae = 10% D)
 Cutting data recommendation: 400 SFM;
 fz = 0.0040 IPT
 Adjustment coefficients: Ae = 0.05" equals 5.00 %;
 Kv = 1.07; KFz = 1.29

Final cutting data recommendation:

Vc new = 400 SFM * 1.07 = 428 SFM
 FZ new = .0040 IPT * 1.29 = .0052 IPT

	Ae/D1	0.50%	1.00%	1.50%	2.00%	4.00%	5.00%	8.00%	10.00%
Speed factor	Kv	2.15	2.11	2.07	1.48	1.11	1.07	1.04	1.00
Feed factor	KFz	1.65	1.53	1.47	1.41	1.35	1.29	1.18	1.00

KOR5™ DS • 5 FLUTES • 5 X D • APPLICATION DATA

Material Group													
		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
		ap	ae	min	—	max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1
P	0	5 x D	0.05 x D	500	—	1770	IPT	.0029	.0044	.0054	.0063	.0070	.0078
	1	5 x D	0.05 x D	500	—	1770	IPT	.0029	.0044	.0054	.0063	.0070	.0078
	2	5 x D	0.05 x D	460	—	1680	IPT	.0029	.0044	.0054	.0063	.0070	.0078
	3	5 x D	0.05 x D	400	—	1420	IPT	.0024	.0037	.0046	.0055	.0062	.0072
	4	5 x D	0.05 x D	300	—	1330	IPT	.0022	.0033	.0041	.0048	.0054	.0062
	5	5 x D	0.05 x D	200	—	890	IPT	.0020	.0029	.0037	.0044	.0049	.0058
M	6	5 x D	0.05 x D	170	—	660	IPT	.0017	.0024	.0031	.0036	.0040	.0045
	1	5 x D	0.05 x D	300	—	1020	IPT	.0024	.0037	.0046	.0055	.0062	.0072
	2	5 x D	0.05 x D	200	—	710	IPT	.0020	.0029	.0037	.0044	.0049	.0058
K	3	5 x D	0.05 x D	200	—	620	IPT	.0017	.0024	.0031	.0036	.0040	.0045
	1	5 x D	0.05 x D	400	—	1330	IPT	.0029	.0044	.0054	.0063	.0070	.0078
	2	5 x D	0.05 x D	370	—	1240	IPT	.0024	.0037	.0046	.0055	.0062	.0072
S	3	5 x D	0.05 x D	370	—	1150	IPT	.0020	.0029	.0037	.0044	.0049	.0058
	1	5 x D	0.05 x D	170	—	800	IPT	.0024	.0037	.0046	.0055	.0062	.0072
	2	5 x D	0.05 x D	80	—	710	IPT	.0020	.0029	.0037	.0044	.0049	.0058
	3	5 x D	0.05 x D	80	—	350	IPT	.0013	.0019	.0025	.0029	.0033	.0039
H	4	5 x D	0.05 x D	170	—	530	IPT	.0017	.0027	.0034	.0040	.0045	.0053
	1	5 x D	0.05 x D	270	—	1240	IPT	.0022	.0033	.0041	.0048	.0054	.0062
	2	5 x D	0.05 x D	230	—	1060	IPT	.0017	.0024	.0031	.0036	.0040	.0045

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR5 DS • 5 FLUTES • 5 X D • ADJUSTMENT FACTOR TABLE FOR FEED CALCULATION

To calculate application specific cutting data, please use KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:

Application: D1 = 1";
S4 material group;
Ae 0.05" (Ae = 5% D)
Cutting data recommendation: 500 SFM;
fz = 0.0053 IPT
Adjustment coefficients: Ae = 0.02" equals 2.00 %;
Kv = 1.38; KFz = 1.09

Final cutting data recommendation:

Vc new = 500 SFM * 1.38 = 690 SFM
FZ new = .0053 IPT * 1.09 = .0058 IPT

	Ae/D1	0.50%	1.00%	1.50%	2.00%	4.00%	5.00%
Speed factor	Kv	2.00	1.97	1.93	1.38	1.03	1.00
Feed factor	KFz	1.27	1.18	1.14	1.09	1.05	1.00

KOR6™ DT • 6 FLUTES • 3 X D • APPLICATION DATA

Material Group												
		Side Milling (A)					Recommended feed per tooth (IPT = inch/th) for side milling (A).					
		A		KCSM15 Cutting Speed — vc SFM			D1 — Diameter					
		ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1
P	0	3 x D	0.1 x D	500	—	1440	IPT	.0033	.0041	.0047	.0053	.0059
	1	3 x D	0.1 x D	500	—	1440	IPT	.0033	.0041	.0047	.0053	.0059
	2	3 x D	0.1 x D	460	—	1370	IPT	.0033	.0041	.0047	.0053	.0059
	3	3 x D	0.1 x D	400	—	1150	IPT	.0027	.0035	.0041	.0046	.0054
	4	3 x D	0.1 x D	300	—	1080	IPT	.0025	.0031	.0036	.0040	.0046
	5	3 x D	0.1 x D	200	—	720	IPT	.0022	.0028	.0033	.0037	.0043
M	6	3 x D	0.1 x D	170	—	540	IPT	.0018	.0023	.0027	.0030	.0034
	1	3 x D	0.1 x D	300	—	830	IPT	.0027	.0035	.0041	.0046	.0054
	2	3 x D	0.1 x D	200	—	580	IPT	.0022	.0028	.0033	.0037	.0043
K	3	3 x D	0.1 x D	200	—	510	IPT	.0018	.0023	.0027	.0030	.0034
	1	3 x D	0.1 x D	400	—	1080	IPT	.0033	.0041	.0047	.0053	.0059
	2	3 x D	0.1 x D	370	—	1010	IPT	.0027	.0035	.0041	.0046	.0054
S	3	3 x D	0.1 x D	370	—	940	IPT	.0022	.0028	.0033	.0037	.0043
	1	3 x D	0.1 x D	170	—	650	IPT	.0027	.0035	.0041	.0046	.0054
	2	3 x D	0.1 x D	80	—	580	IPT	.0022	.0028	.0033	.0037	.0043
	3	3 x D	0.1 x D	80	—	290	IPT	.0015	.0018	.0022	.0025	.0029
H	4	3 x D	0.1 x D	170	—	430	IPT	.0020	.0026	.0030	.0034	.0040
	1	3 x D	0.1 x D	270	—	1010	IPT	.0025	.0031	.0036	.0040	.0046
	2	3 x D	0.1 x D	230	—	870	IPT	.0018	.0023	.0027	.0030	.0034

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR6 DT • 6 FLUTES • 3 X D • ADJUSTMENT FACTOR TABLE FOR FEED CALCULATION

To calculate application specific cutting data, please use above Kv coefficient for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:

Application: D1 = 1"; S4 material group; Ae 0.1" (Ae = 10% D)

Cutting data recommendation: 400 SFM;

fz = 0.0040 IPT

Adjustment coefficients: Ae = 0.05" equals 5.00 %;

Kv = 1.07; KFz = 1.29

Final cutting data recommendation:

Vc new = 400 SFM * 1.07 = 428 SFM

FZ new = .0040 IPT * 1.29 = .0052 IPT

	Ae/D1	0.50%	1.00%	1.50%	2.00%	4.00%	5.00%	8.00%	10.00%
Speed factor	Kv	2.15	2.11	2.07	1.48	1.11	1.07	1.04	1.00
Feed factor	KFz	1.65	1.53	1.47	1.41	1.35	1.29	1.18	1.00

KOR6™ DT • 6 FLUTES • 5 X D • APPLICATION DATA

Material Group											
	Side Milling (A)					Recommended feed per tooth (IPT = inch/th) for side milling (A).					
	A		KCSM15 Cutting Speed — vc SFM			D1 — Diameter					
	ap	ae	min		max	frac. dec.	3/8	1/2	5/8	3/4	1
P	0	5 x D	0.05 x D	500	—	1770	IPT .0044	.0054	.0063	.0070	.0078
	1	5 x D	0.05 x D	500	—	1770	IPT .0044	.0054	.0063	.0070	.0078
	2	5 x D	0.05 x D	460	—	1680	IPT .0044	.0054	.0063	.0070	.0078
	3	5 x D	0.05 x D	400	—	1420	IPT .0037	.0046	.0055	.0062	.0072
	4	5 x D	0.05 x D	300	—	1330	IPT .0033	.0041	.0048	.0054	.0062
	5	5 x D	0.05 x D	200	—	890	IPT .0029	.0037	.0044	.0049	.0058
M	6	5 x D	0.05 x D	170	—	660	IPT .0024	.0031	.0036	.0040	.0045
	1	5 x D	0.05 x D	300	—	1020	IPT .0037	.0046	.0055	.0062	.0072
	2	5 x D	0.05 x D	200	—	710	IPT .0029	.0037	.0044	.0049	.0058
K	3	5 x D	0.05 x D	200	—	620	IPT .0024	.0031	.0036	.0040	.0045
	1	5 x D	0.05 x D	400	—	1330	IPT .0044	.0054	.0063	.0070	.0078
	2	5 x D	0.05 x D	370	—	1240	IPT .0037	.0046	.0055	.0062	.0072
S	3	5 x D	0.05 x D	370	—	1150	IPT .0029	.0037	.0044	.0049	.0058
	1	5 x D	0.05 x D	170	—	800	IPT .0037	.0046	.0055	.0062	.0072
	2	5 x D	0.05 x D	80	—	710	IPT .0029	.0037	.0044	.0049	.0058
	3	5 x D	0.05 x D	80	—	350	IPT .0019	.0025	.0029	.0033	.0039
H	4	5 x D	0.05 x D	170	—	530	IPT .0027	.0034	.0040	.0045	.0053
	1	5 x D	0.05 x D	270	—	1240	IPT .0033	.0041	.0048	.0054	.0062
	2	5 x D	0.05 x D	230	—	1060	IPT .0024	.0031	.0036	.0040	.0045

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Side milling applications - for longest reach (L3) tools, reduce Ae by 30%. For better surface finish reduce feed per tooth.

KOR6 DT • 6 FLUTES • 5 X D • ADJUSTMENT FACTOR TABLE FOR FEED CALCULATION

To calculate application specific cutting data, please use above KV coefficient for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc * Kv
Fz new = IPT * KFz

Calculation example:

Application: D1 = 1"; S4 material group; Ae 0.05" (Ae = 5% D)
Cutting data recommendation: 500 SFM;
fz = 0.0053 IPT
Adjustment coefficients: Ae = 0.02" equals 2.00 %;
Kv = 1.38; KFz = 1.09

Final cutting data recommendation:

Vc new = 500 SFM * 1.38 = 690 SFM
FZ new = .0053 IPT * 1.09 = .0058 IPT

	Ae/D1	0.50%	1.00%	1.50%	2.00%	4.00%	5.00%
Speed factor	Kv	2.00	1.97	1.93	1.38	1.03	1.00
Feed factor	KFz	1.27	1.18	1.14	1.09	1.05	1.00

Solid ER Collets for DUO-LOCK®

Adapting Duo-Lock Modular End Mills
to CNC Lathes



kennametal.com/ER-Solid-Collets

Duo-Lock solid ER collets turn CNC lathe machines into multitasking machines by providing access of any Duo-Lock modular end mills to ER driven units.

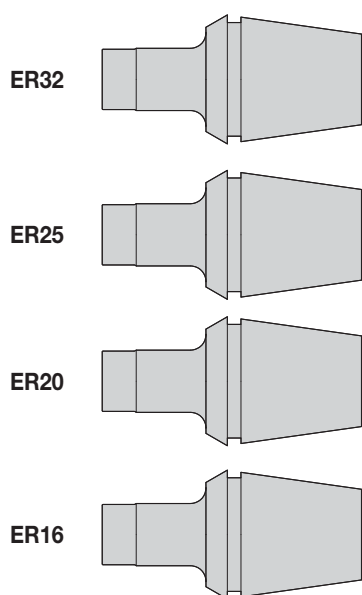
These new Duo-Lock solid ER collets maximize machine flexibility through a broad range of Duo-Lock modular end mills. From high-performance versatile tools, to roughers and finishers, as well as chamfering and corner rounding tools.

The short projection from the face of the collet nut provides rigid toolholding and requires a small machine envelope.

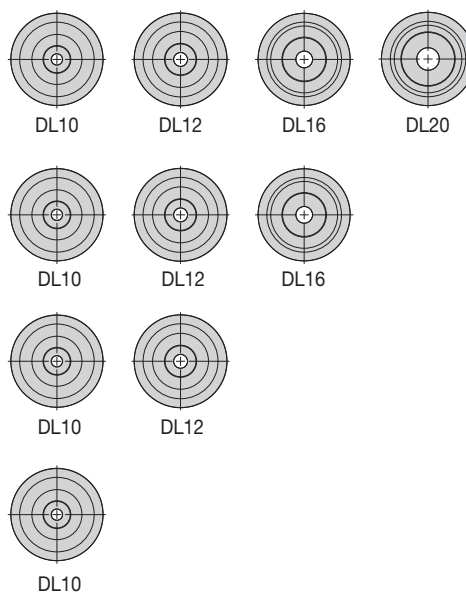
Compatible with all standard ER collet chucks and ER driven units.



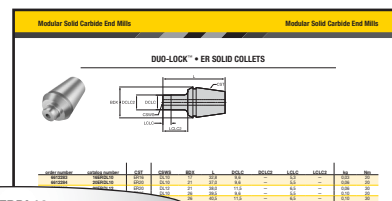
Portfolio



Thread Sizes



Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



32ERDL16

Collet
Size

16 = ER16
20 = ER 20
25 = ER 25
32 = ER 32

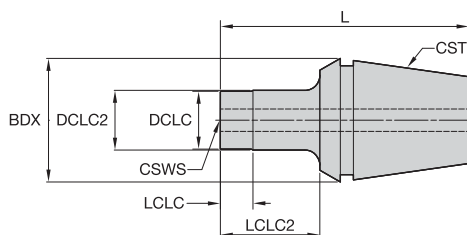
Collet
Type

ER

Duo-Lock
Coupling size

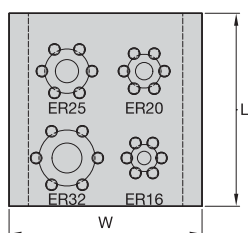
DL10
DL12
DL16
DL20

DUO-LOCK™ • ER SOLID COLLETS



order number	catalog number	CST	CSWS	BDX	L	DCLC	DCLC2	LCLC	LCLC2	kg	Nm
6612283	16ERDL10	ER16	DL10	17	32,8	9,6	—	5,3	—	0,03	20
6612284	20ERDL10	ER20	DL10	21	37,0	9,6	—	5,5	—	0,06	20
6612285	20ERDL12	ER20	DL12	21	38,0	11,5	—	6,5	—	0,06	30
6612286	25ERDL10	ER25	DL10	26	39,5	9,6	—	5,5	—	0,10	20
6612287	25ERDL12	ER25	DL12	26	40,5	11,5	—	6,5	—	0,10	30
6612288	25ERDL16	ER25	DL16	26	39,5	15,5	—	5,5	—	0,10	60
6612289	32ERDL10	ER32	DL10	33	66,5	9,6	10	5,0	26,5	0,21	20
6612290	32ERDL12	ER32	DL12	33	67,5	11,5	12	6,0	27,5	0,21	30
6612331	32ERDL16	ER32	DL16	33	66,5	15,5	16	8,0	26,5	0,22	60
6612332	32ERDL20	ER32	DL20	33	66,5	19,3	20	10,0	26,5	0,23	80

DUO-LOCK • ER SOLID COLLET MOUNTING PLATE

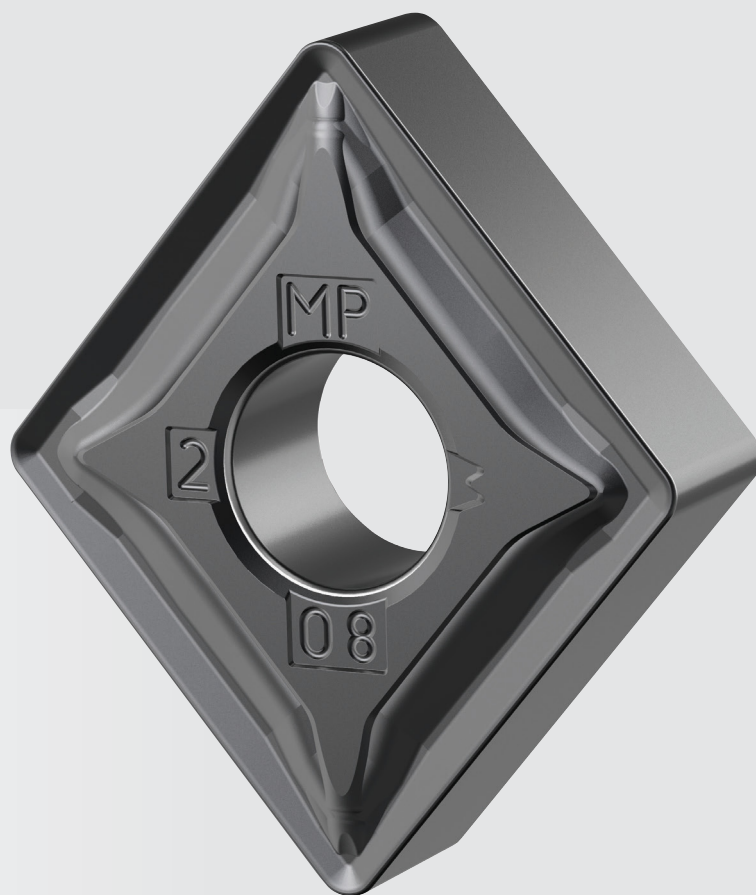


order number	catalog number	L	W	kg
6612333	DLCCDER	100	100	0,57

170	172	94	4	176

KCS10B™

Turning Grade for
High-Temperature Alloys



Materials

S

Applications



Turning



Boring



Back Boring



Profiling



Facing



I.D. Facing



Chamfer Turning

kennametal.com/KCS10B

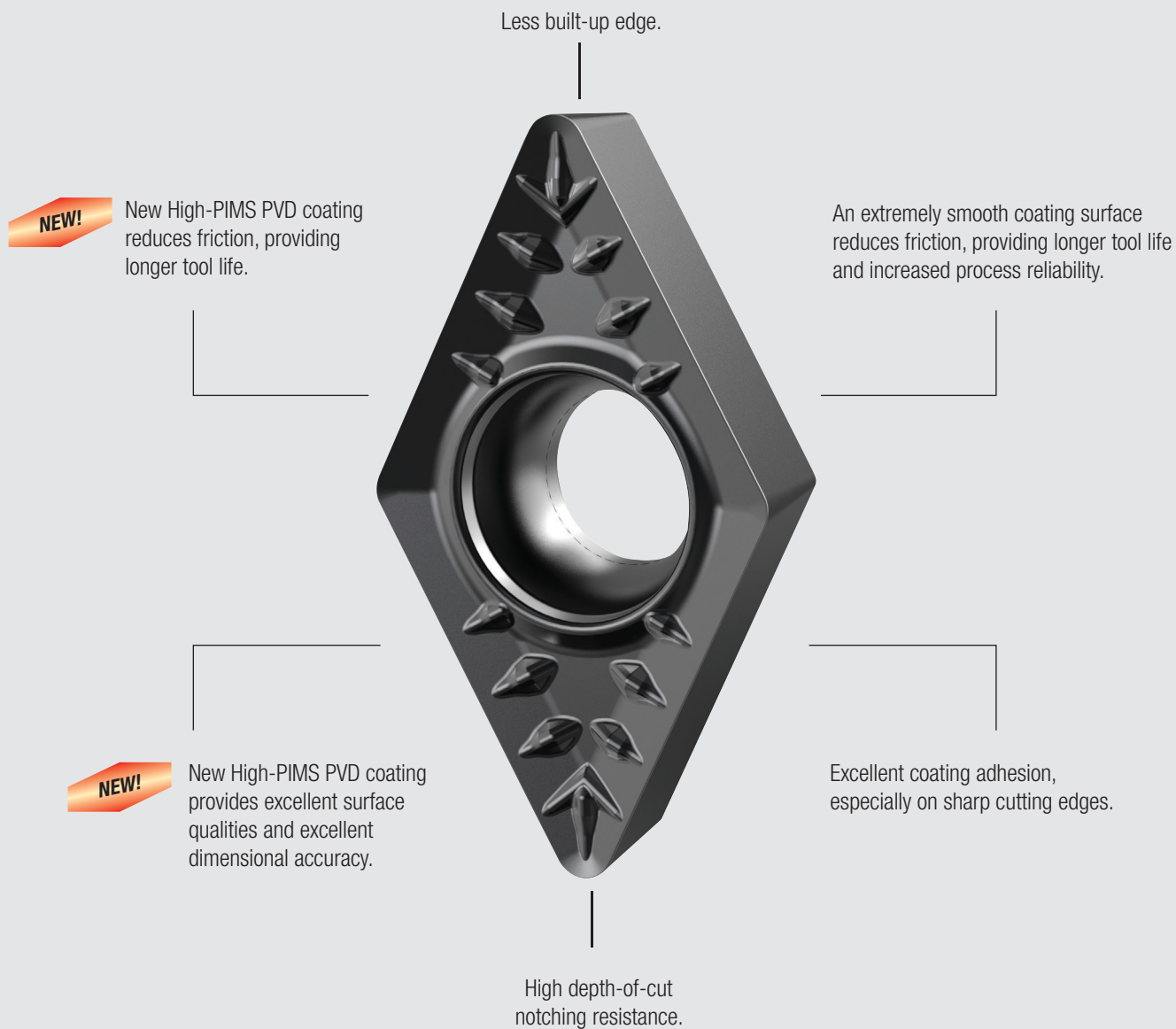
The new KCS10B turning grade, featuring the new High-Power Impulse Magnetron Sputtering (High-PIMS).

The AlTiN PVD coating is ideal for iron-based alloys (S1), cobalt-based alloys (S2), and nickel-based alloys (S3).

The High-PIMS coating technology is characterized by:

- Smooth coating surface.
- Optimum layer adhesion, especially on sharp cutting edges.
- High depth-of-cut notching resistance.
- Long tool life and high process reliability.

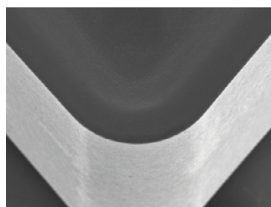
Applied on an extremely hard and wear-resistant ultra fine-grain carbide substrate, the KCS10B grade is ideal for medium machining and finishing operations.



The High-PIMS AlTiN PVD coating under the microscope.

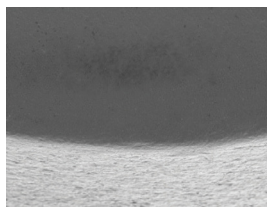
High-PIMS PVD coating on KCS10B

50X



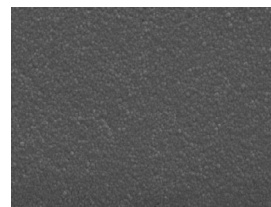
1mm

500X



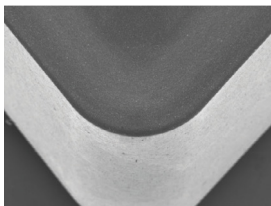
100µm

1000X

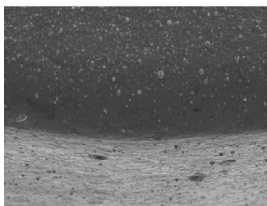


50µm

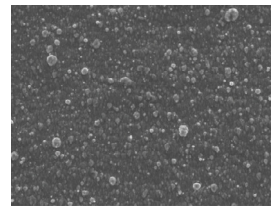
Conventional PVD coating



1mm

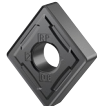
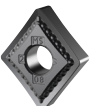


100µm



50µm

HIGH TEMPERATURE ALLOYS • TOOL SELECTION GUIDE

	Ceramic Inserts		Negative Inserts Geometry			
	NG	GV	RP	MR	MP	MS
Geometry						
Profile						
Edge Preparation						
<i>T-Land</i>	✓					
<i>Honed</i>		✓	✓	✓	✓	
<i>Slightly Honed to Sharp</i>						✓
<i>Sharp</i>						
Application						
<i>Roughing</i>	✓	✓	✓			
<i>Light Roughing</i>	✓	✓	✓	✓	✓	
<i>Medium Machining</i>				✓	✓	✓
<i>Semi-Finishing</i>						✓
<i>Finishing</i>						
Cutting Condition						
<i>Heavily Interrupted Cut</i> 	•		•			
<i>Lightly Interrupted Cut</i> 	•	•	•	•	•	○
<i>Varying Depth of Cut, Casting or Forging Skin</i> 	•	•	•	•	•	•
<i>Smooth Cut, Pre-Turned Surface</i> 	•	•		•	•	•

● Primary

○ Secondary

HIGH TEMPERATURE ALLOYS • TOOL SELECTION GUIDE

	Negative Inserts Geometry (continued)		Positive Inserts Geometry		
	FP	FS	MP	LF	FP
Geometry					
Profile					
Edge Preparation					
T-Land					
Honed	✓		✓		
Slightly Honed to Sharp				✓	✓
Sharp		✓			
Application					
Roughing					
Light Roughing			✓		
Medium Machining			✓		
Semi-Finishing	✓	✓		✓	✓
Finishing	✓	✓		✓	✓
Cutting Condition					
Heavily Interrupted Cut 					
Lightly Interrupted Cut 	○		●	○	○
Varying Depth of Cut, Casting or Forging Skin 	●	●	●	●	●
Smooth Cut, Pre-Turned Surface 	●	●	●	●	●

● Primary

○ Secondary

HIGH-TEMPERATURE ALLOYS • APPLICATION DATA

Maximum and minimum depth of cut and feed									
Geometry	fn (mm/rev)			ap (mm)		fn (in/rev)		ap (in)	
FS	0,04–0,25			0,10–2,5		.001–.009		.003–.098	
FP	0,08–0,35			0,15–5,0		.003–.013		.005–.197	
MS	0,05–0,55			0,20–11,0		.001–.021		.007–.433	
MP	0,12–0,07			0,60–9,0		.004–.002		.023–.354	
Recommended grade and speeds									
	FS	FP			MS			MP	
—				—			—		
KCS10B™ Vc 15–140 m/min Vc 50–450 SFM		○		KCS10B Vc 15–140 m/min Vc 50–450 SFM	○		KCS10B Vc 15–140 m/min Vc 50–450 SFM	●	
KCS10B Vc 15–140 m/min Vc 50–450 SFM	●	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM	●	
KCS10B Vc 15–140 m/min Vc 50–450 SFM	●	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM	●	

Maximum and minimum depth of cut and feed									
Geometry	fn (mm/rev)			ap (mm)		fn (in/rev)		ap (in)	
LF	0,01–0,4			0,05–2,3		.000–.015		.001–.090	
FP	0,10–0,45			0,20–4,0		.003–.017		.007–.157	
Recommended grade and speeds									
	LF							MP	
—			—						
KCS10B Vc 15–140 m/min Vc 50–450 SFM	○		KCS10B Vc 15–140 m/min Vc 50–450 SFM					●	
KCS10B Vc 15–140 m/min Vc 50–450 SFM	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM					●	
KCS10B Vc 15–140 m/min Vc 50–450 SFM	●		KCS10B Vc 15–140 m/min Vc 50–450 SFM					●	

HIGH-TEMPERATURE ALLOYS • APPLICATION DATA

Iron-Based, Heat-Resistant Alloys (135–320 HB) (<34 HRC)				Speed — m/min (SFM)						Starting Conditions	
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (850)	m/min	SFM
S1	KCS10B									80	260

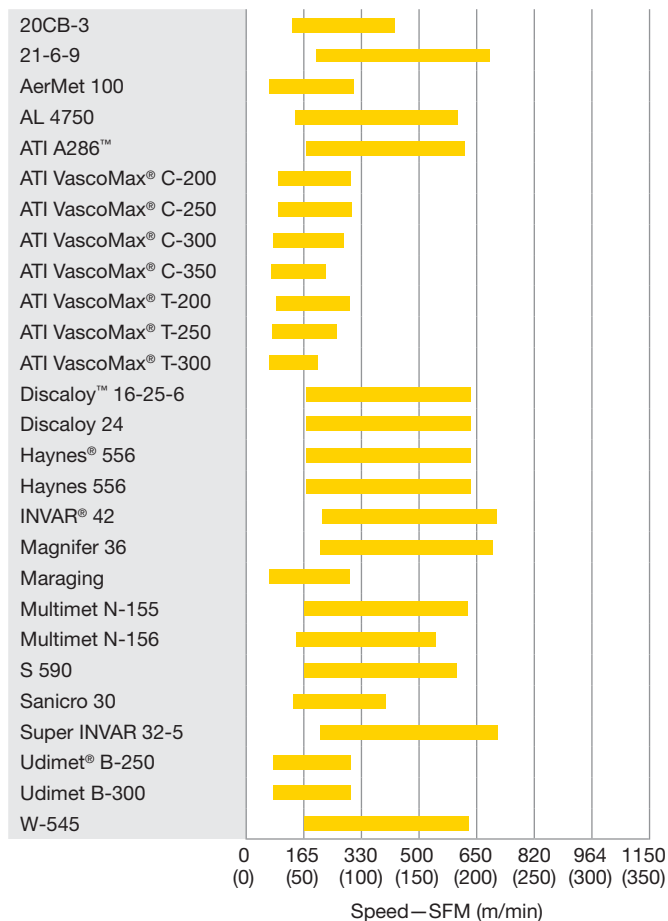
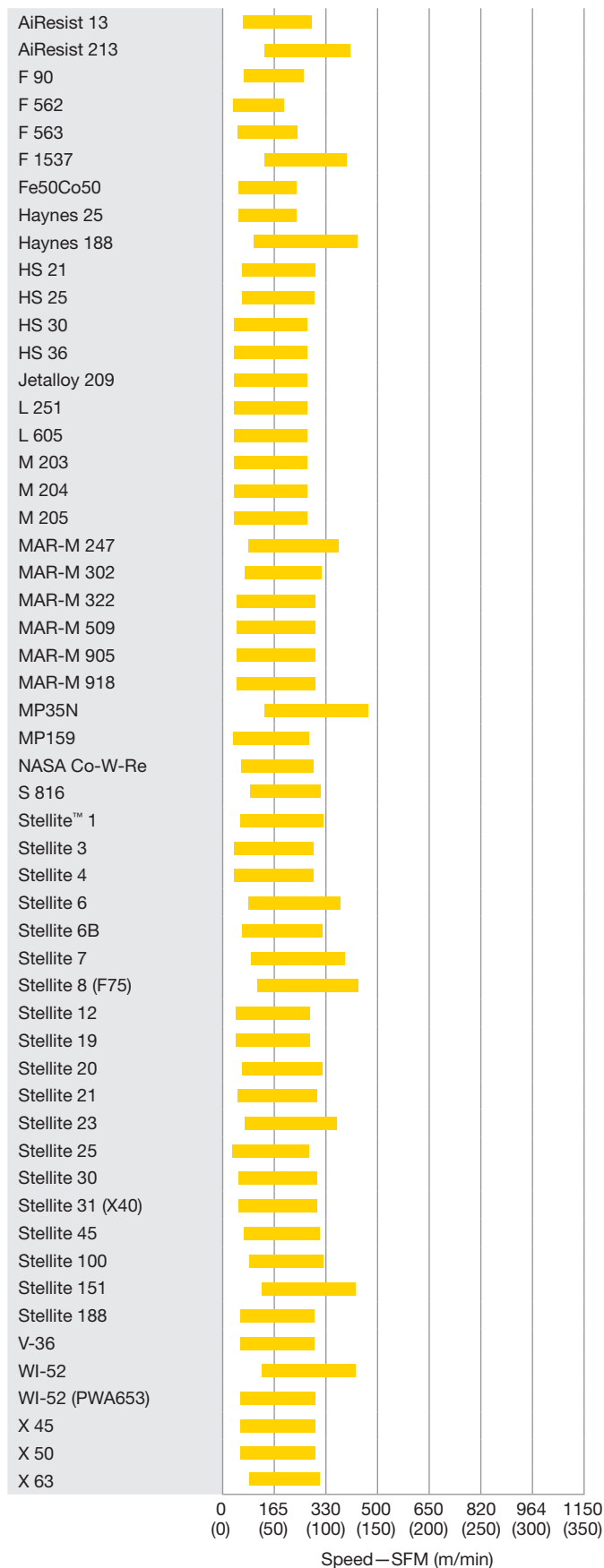
Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (<45 HRC)				Speed — m/min (SFM)						Starting Conditions	
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (850)	m/min	SFM
S2	KCS10B									50	165

Nickel-Based, Heat-Resistant Alloys (140–475 HB) (<48 HRC)				Speed — m/min (SFM)						Starting Conditions	
material group	grade	15 (50)	45 (150)	75 (250)	105 (350)	140 (450)	170 (550)	200 (650)	230 (850)	m/min	SFM
S3	KCS10B									70	230

HIGH-TEMPERATURE ALLOYS • APPLICATION DATA

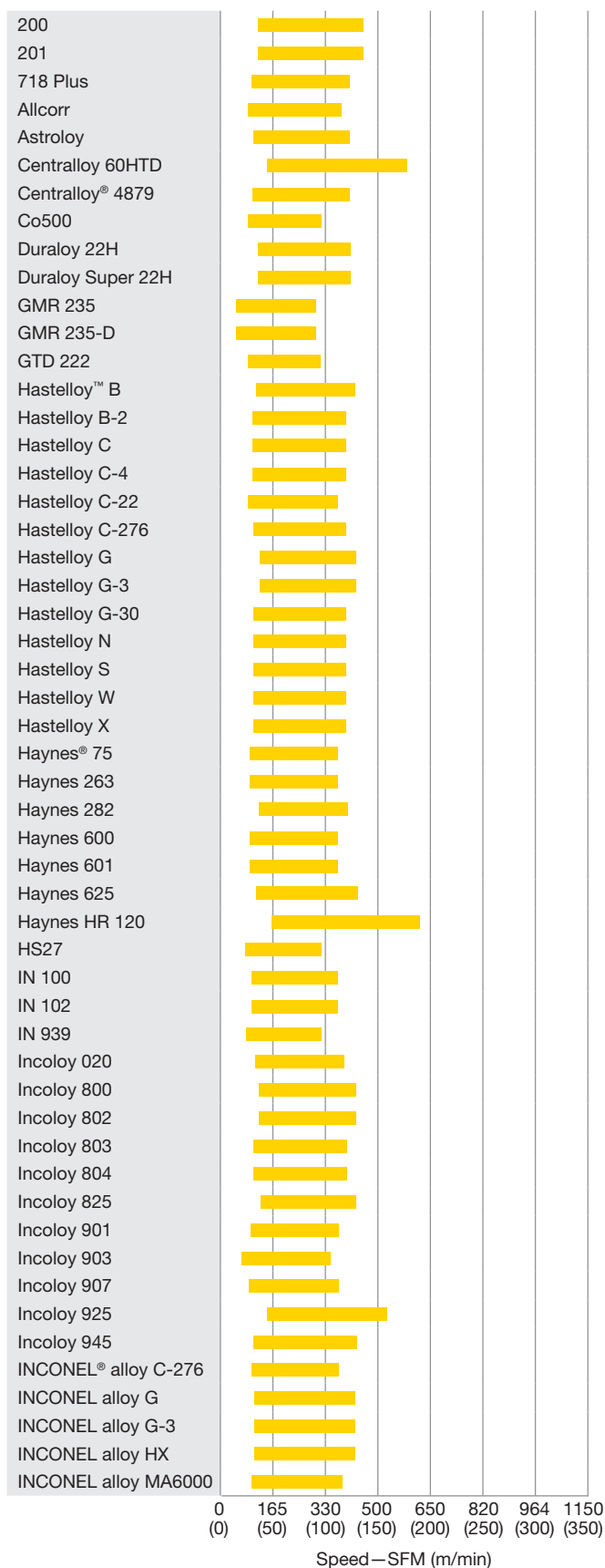
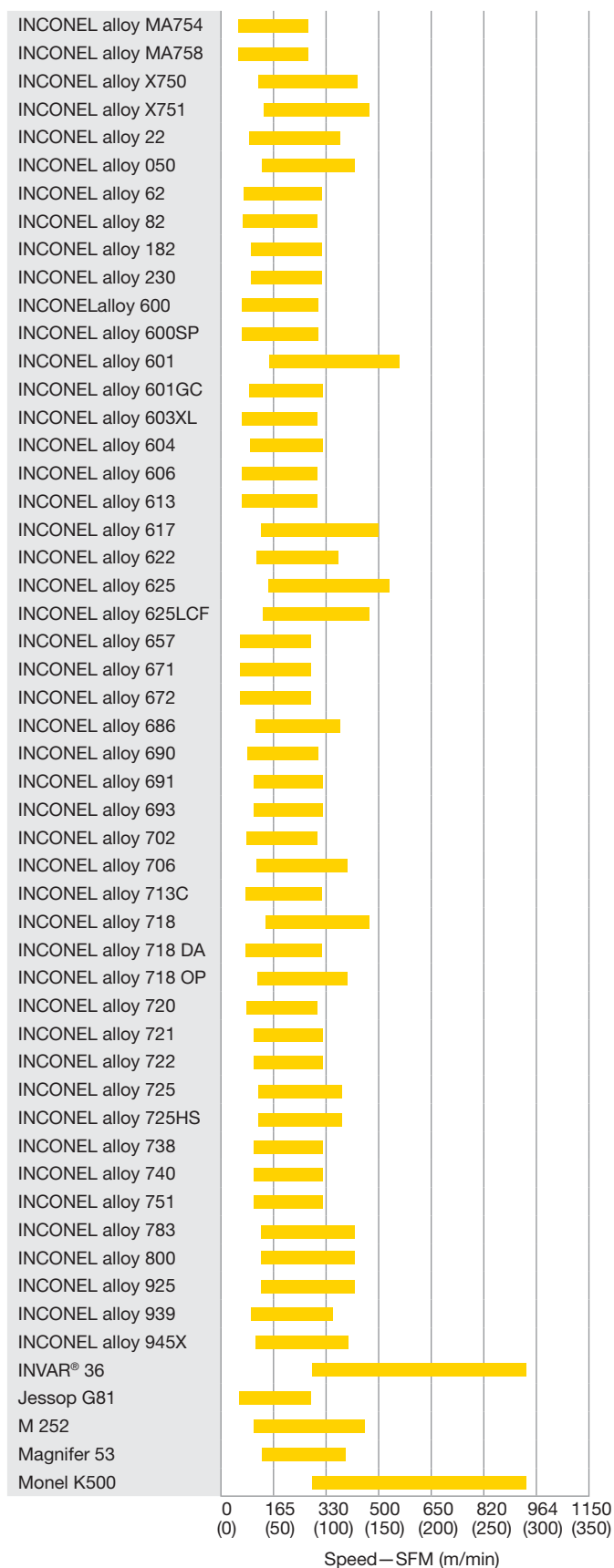
S1 Iron-Based, Heat-Resistant Alloys (135–320 HB) (≤34 HRC)

The most common HRSA alloys

**S2** Cobalt-Based, Heat-Resistant Alloys (150–425 HB) (≤45 HRC)

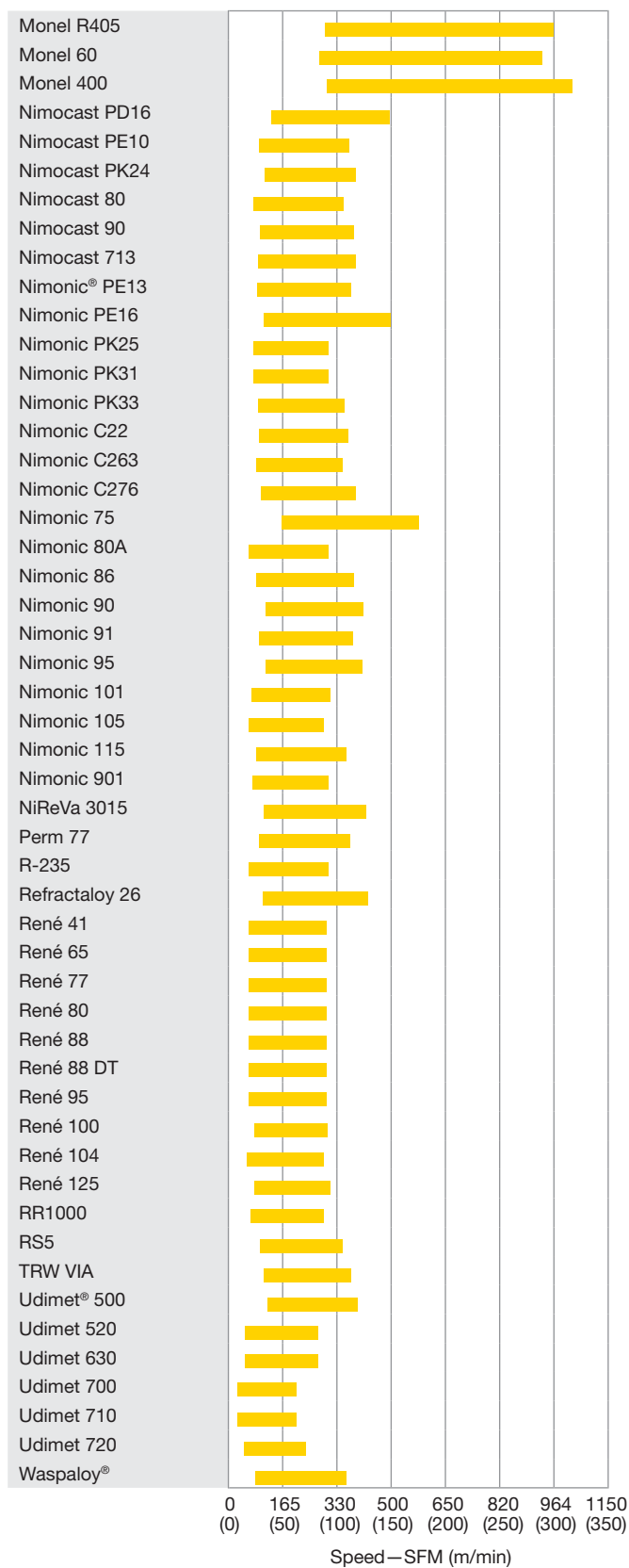
HIGH-TEMPERATURE ALLOYS • APPLICATION DATA

(continued)

S3 Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)**S3** Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)

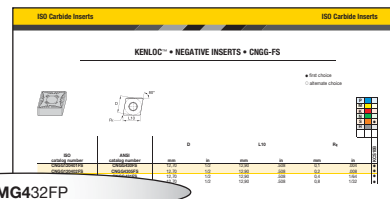
HIGH-TEMPERATURE ALLOYS • APPLICATION DATA

(continued)

S3 Nickel-Based, Heat-Resistant Alloys (140–475 HB) (≤48 HRC)

ISO INSERTS • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

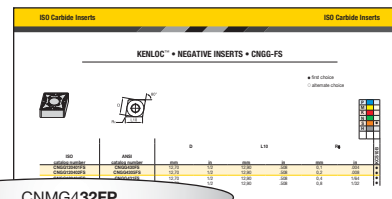


C	N	M	G	4																																																																																																																																																																																																																								
Insert Shape	Insert Clearance Angle	Tolerance Class	Insert Features	Size																																																																																																																																																																																																																								
H Hexagon 120°	A 3°	Tolerances apply prior to edge prep and coating D = Theoretical diameter of the insert inscribed circle S = Thickness B = See figures below	N	Code for inch cutting edge length "L10" <table><thead><tr><th>inch</th><th>"D"</th><th>C</th><th>D</th><th>R</th><th>S</th><th>T</th><th>V</th><th>W</th></tr></thead><tbody><tr><td>1.2 (5)</td><td>5/32</td><td>S4</td><td>04</td><td>03</td><td>03</td><td>06</td><td>—</td><td>—</td></tr><tr><td>1.5 (6)</td><td>3/16</td><td>04</td><td>05</td><td>04</td><td>04</td><td>08</td><td>08</td><td>S3</td></tr><tr><td>1.8 (7)</td><td>7/32</td><td>05</td><td>06</td><td>05</td><td>05</td><td>09</td><td>09</td><td>03</td></tr><tr><td>—</td><td>.236</td><td>—</td><td>—</td><td>06</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>2</td><td>1/4</td><td>06</td><td>07</td><td>06</td><td>06</td><td>11</td><td>11</td><td>04</td></tr><tr><td>2.5</td><td>5/16</td><td>08</td><td>09</td><td>07</td><td>07</td><td>13</td><td>13</td><td>05</td></tr><tr><td>—</td><td>.315</td><td>—</td><td>—</td><td>08</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>3</td><td>3/8</td><td>09</td><td>11</td><td>09</td><td>09</td><td>16</td><td>16</td><td>06</td></tr><tr><td>—</td><td>.394</td><td>—</td><td>—</td><td>10</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>3.5</td><td>7/16</td><td>11</td><td>13</td><td>11</td><td>11</td><td>19</td><td>19</td><td>07</td></tr><tr><td>—</td><td>.472</td><td>—</td><td>—</td><td>12</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>4</td><td>1/2</td><td>12</td><td>15</td><td>12</td><td>12</td><td>22</td><td>22</td><td>08</td></tr><tr><td>4.5</td><td>9/16</td><td>14</td><td>17</td><td>14</td><td>14</td><td>24</td><td>24</td><td>09</td></tr><tr><td>5</td><td>5/8</td><td>16</td><td>19</td><td>15</td><td>15</td><td>27</td><td>27</td><td>10</td></tr><tr><td>—</td><td>.630</td><td>—</td><td>—</td><td>16</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>5.5</td><td>11/16</td><td>17</td><td>21</td><td>17</td><td>17</td><td>30</td><td>30</td><td>11</td></tr><tr><td>6</td><td>3/4</td><td>19</td><td>23</td><td>19</td><td>19</td><td>33</td><td>33</td><td>13</td></tr><tr><td>—</td><td>.787</td><td>—</td><td>—</td><td>20</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>7</td><td>7/8</td><td>22</td><td>27</td><td>22</td><td>22</td><td>38</td><td>38</td><td>15</td></tr><tr><td>—</td><td>.984</td><td>—</td><td>—</td><td>25</td><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>8</td><td>1</td><td>25</td><td>31</td><td>25</td><td>25</td><td>44</td><td>44</td><td>17</td></tr><tr><td>10</td><td>1-1/4</td><td>32</td><td>38</td><td>31</td><td>31</td><td>54</td><td>54</td><td>21</td></tr><tr><td>—</td><td>1.260</td><td>—</td><td>—</td><td>32</td><td>—</td><td>—</td><td>—</td><td>—</td></tr></tbody></table>	inch	"D"	C	D	R	S	T	V	W	1.2 (5)	5/32	S4	04	03	03	06	—	—	1.5 (6)	3/16	04	05	04	04	08	08	S3	1.8 (7)	7/32	05	06	05	05	09	09	03	—	.236	—	—	06	—	—	—	—	2	1/4	06	07	06	06	11	11	04	2.5	5/16	08	09	07	07	13	13	05	—	.315	—	—	08	—	—	—	—	3	3/8	09	11	09	09	16	16	06	—	.394	—	—	10	—	—	—	—	3.5	7/16	11	13	11	11	19	19	07	—	.472	—	—	12	—	—	—	—	4	1/2	12	15	12	12	22	22	08	4.5	9/16	14	17	14	14	24	24	09	5	5/8	16	19	15	15	27	27	10	—	.630	—	—	16	—	—	—	—	5.5	11/16	17	21	17	17	30	30	11	6	3/4	19	23	19	19	33	33	13	—	.787	—	—	20	—	—	—	—	7	7/8	22	27	22	22	38	38	15	—	.984	—	—	25	—	—	—	—	8	1	25	31	25	25	44	44	17	10	1-1/4	32	38	31	31	54	54	21	—	1.260	—	—	32	—	—	—	—
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P Pentagon 108°	C 7°		A																																																																																																																																																																																																																									
R Round —	D 15°		M																																																																																																																																																																																																																									
S Square 90°	E 20°		G																																																																																																																																																																																																																									
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tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.005"
M	See tables on next page		±.005"
U	See tables on next page		±.005"

ISO INSERTS • CATALOG NUMBERING SYSTEM

(continued)

**3**Thickness
S

symbol	thickness
inch	inch
.5 (1)	1/32
.6	.040
1 (2)	1/16
1.2	5.64
1.5	3/32
2	1/8
2.5	5/32
3	3/16
3.5	7/32
4	1/4
5	5/16
6	3/8
7	7/16
18	1/2

2Corner
Radius "R_c"

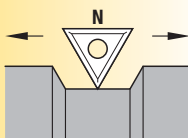
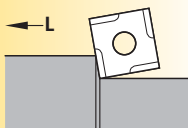
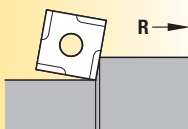
symbol	corner radius
inch	inch
X0	.0015
0	.004
.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8
—	round insert

Hand of Insert
(optional)

R = Right hand

L = Left hand

N = Neutral

Cutting Edge
(optional)

F	Sharp
E	Rounded
T	Chamfered
S	Chamfered and Rounded
K	Double-Chamfered
P	Double-Chamfered and Rounded

FPChipbreaker
(optional)

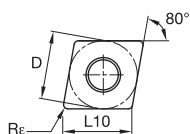
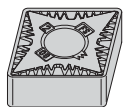
F	= Sharp
FF	= Fine Finishing
FN	= Finishing Negative
MN	= Medium Negative
MR	= Medium Roughing
RN	= Roughing Negative
UN	= Universal Medium
FP	= Finishing Positive
MP	= Medium Positive
RP	= Roughing Positive
RM	= Roughing Medium
RH	= Roughing Heavy
FW	= Finishing Wiper
MW	= Medium Wiper
FS	= Finishing Sharp
MS	= Medium Sharp
RW	= Roughing Wiper
HP	= High Positive
UP	= Universal Positive
K	= Light-Feed Chip Control
UF	= Ultra-Fine Finishing
LF	= Light Finishing
MF	= Medium Finishing
E	= Hone Only
T	= Negative Land
S	= Negative Land Plus Hone
MP-K	= Medium Positive
MG-P	= Medium Positive

“D”	± Tolerance on “D”				“D”	± Tolerance on “B”			
	Class M Tolerance			Class U Tolerance		Class M Tolerance			Class U Tolerance
	Shapes S, T, C, R, & W	Shape D	Shape V			Shapes S, T, C, R, & W	Shape D	Shape V	
inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
5/32	.002	—	—	—	5/32	.003	—	—	—
3/16	.002	—	—	.003	3/16	.003	—	—	.005
7/32	.002	.002	.002	.003	7/32	.003	.004	—	.005
1/4	.002	.002	.002	.003	1/4	.003	.004	—	.005
5/16	.002	.002	.002	.003	5/16	.003	.004	—	.005
3/8	.002	.002	.002	.003	3/8	.003	.004	.007	.005
7/16	.003	.003	.003	.005	7/16	.005	.006	—	—
1/2	.003	.003	.003	.005	1/2	.005	.006	.010	.008
9/16	.003	.003	.003	.005	9/16	.005	.006	—	—
5/8	.004	.004	.004	.007	5/8	.006	.007	—	.011
11/16	.004	.004	.004	.007	11/16	.006	.007	—	.011
3/4	.004	.004	.004	.007	3/4	.006	.007	—	.011
7/8	.005	—	—	.010	7/8	.006	—	—	.015
1	.005	—	—	.010	1	.007	—	—	.015
1 1/4	.006	—	—	.010	1 1/4	.008	—	—	.015

KENLOC™ • NEGATIVE INSERTS • CNGG-FS

● first choice

○ alternate choice



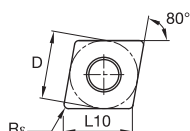
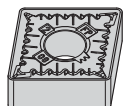
P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CNGG120401FS	CNGG430FS	12,70	1/2	12,90	.508	0,1	.004	●
CNGG120402FS	CNGG4305FS	12,70	1/2	12,90	.508	0,2	.008	●
CNGG120404FS	CNGG431FS	12,70	1/2	12,90	.508	0,4	1/64	●
CNGG120408FS	CNGG432FS	12,70	1/2	12,90	.508	0,8	1/32	●

KENLOC • NEGATIVE INSERTS • CNMG-FP

● first choice

○ alternate choice



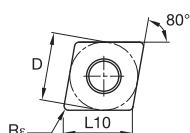
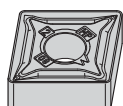
P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CNMG120404FP	CNMG431FP	12,70	1/2	12,90	.508	0,4	1/64	●
CNMG120408FP	CNMG432FP	12,70	1/2	12,90	.508	0,8	1/32	●
CNMG120412FP	CNMG433FP	12,70	1/2	12,90	.508	1,2	3/64	●

KENLOC • NEGATIVE INSERTS • CNMG-MP

● first choice

○ alternate choice



P	
M	
K	
N	
S	●
H	

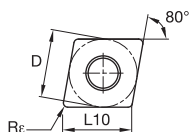
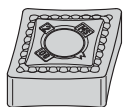
ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CNMG120404MP	CNMG431MP	12,70	1/2	12,90	.508	0,4	1/64	●
CNMG120408MP	CNMG432MP	12,70	1/2	12,90	.508	0,8	1/32	●
CNMG120412MP	CNMG433MP	12,70	1/2	12,90	.508	1,2	3/64	●

171	172	104	4	176

KENLOC™ • NEGATIVE INSERTS • CNMG-MS

● first choice

○ alternate choice



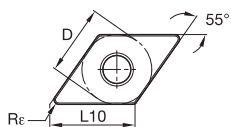
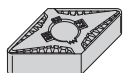
P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Re		KCS10B
		mm	in	mm	in	mm	in	
CNMG120404MS	CNMG431MS	12,70	1/2	12,90	.508	0,4	1/64	●
CNMG120408MS	CNMG432MS	12,70	1/2	12,90	.508	0,8	1/32	●
CNMG120412MS	CNMG433MS	12,70	1/2	12,90	.508	1,2	3/64	●

KENLOC • NEGATIVE INSERTS • DNMG-FS

● first choice

○ alternate choice



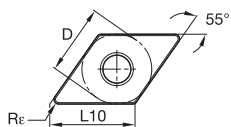
P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Re		KCS10B
		mm	in	mm	in	mm	in	
DNMG150401FS	DNMG430FS	12,70	1/2	15,50	.610	0,1	.004	●
DNMG150601FS	DNMG440FS	12,70	1/2	15,50	.610	0,1	.004	●
DNMG150602FS	DNMG4405FS	12,70	1/2	15,50	.610	0,2	.008	●
DNMG150402FS	DNMG4305FS	12,70	1/2	15,50	.610	0,2	.008	●
DNMG150404FS	DNMG431FS	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150604FS	DNMG441FS	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150408FS	DNMG432FS	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150608FS	DNMG442FS	12,70	1/2	15,50	.610	0,8	1/32	●

KENLOC • NEGATIVE INSERTS • DNMG-FP

● first choice

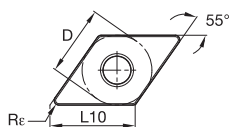
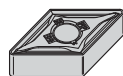
○ alternate choice



P	
M	
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S	●
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ISO catalog number	ANSI catalog number	D		L10		Re		KCS10B
		mm	in	mm	in	mm	in	
DNMG110404FP	DNMG331FP	9,53	3/8	11,63	.458	0,4	1/64	●
DNMG110408FP	DNMG332FP	9,53	3/8	11,63	.458	0,8	1/32	●
DNMG150404FP	DNMG431FP	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150604FP	DNMG441FP	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150408FP	DNMG432FP	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150608FP	DNMG442FP	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150412FP	DNMG433FP	12,70	1/2	15,50	.610	1,2	3/64	●
DNMG150612FP	DNMG443FP	12,70	1/2	15,50	.610	1,2	3/64	●

KENLOC™ • NEGATIVE INSERTS • DNMG-MP



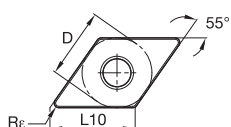
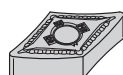
● first choice

○ alternate choice

P		
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H		

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
DNMG150404MP	DNMG431MP	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150604MP	DNMG441MP	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150408MP	DNMG432MP	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150608MP	DNMG442MP	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150412MP	DNMG433MP	12,70	1/2	15,50	.610	1,2	3/64	●
DNMG150612MP	DNMG443MP	12,70	1/2	15,50	.610	1,2	3/64	●

KENLOC • NEGATIVE INSERTS • DNMG-MS



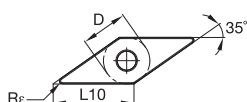
● first choice

○ alternate choice

P		
M		
K		
N		
S		
H		

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
DNMG150404MS	DNMG431MS	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150604MS	DNMG441MS	12,70	1/2	15,50	.610	0,4	1/64	●
DNMG150408MS	DNMG432MS	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150608MS	DNMG442MS	12,70	1/2	15,50	.610	0,8	1/32	●
DNMG150412MS	DNMG433MS	12,70	1/2	15,50	.610	1,2	3/64	●
DNMG150612MS	DNMG443MS	12,70	1/2	15,50	.610	1,2	3/64	●

KENLOC • NEGATIVE INSERTS • VNKG-FS



● first choice

○ alternate choice

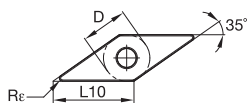
P		
M		
K		
N		
S		
H		

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
VNKG160401FS	VNKG330FS	9,53	3/8	16,61	.654	0,1	.004	●
VNKG160402FS	VNKG3305FS	9,53	3/8	16,61	.654	0,2	.008	●
VNKG160404FS	VNKG331FS	9,53	3/8	16,61	.654	0,4	1/64	●
VNKG160408FS	VNKG332FS	9,53	3/8	16,61	.654	0,8	1/32	●

171	172	104	4	176

KENLOC™ • NEGATIVE INSERTS • VNMG-FP

- first choice
○ alternate choice

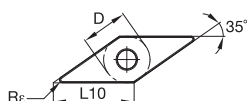


P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
VNMG160404FP	VNMG331FP	9,53	3/8	16,61	.654	0,4	1/64	●
VNMG160408FP	VNMG332FP	9,53	3/8	16,61	.654	0,8	1/32	●

KENLOC • NEGATIVE INSERTS • VNMG-MP

- first choice
○ alternate choice

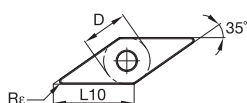


P	
M	
K	
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S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
VNMG160404MP	VNMG331MP	9,53	3/8	16,61	.654	0,4	1/64	●
VNMG160408MP	VNMG332MP	9,53	3/8	16,61	.654	0,8	1/32	●
VNMG160412MP	VNMG333MP	9,53	3/8	16,61	.654	1,2	3/64	●

KENLOC • NEGATIVE INSERTS • VNMG-MS

- first choice
○ alternate choice

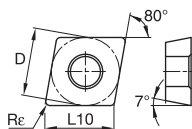
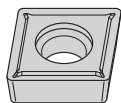


P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
VNMG160402MS	VNMG3305MS	9,53	3/8	16,61	.654	0,2	.008	●
VNMG160404MS	VNMG331MS	9,53	3/8	16,61	.654	0,4	1/64	●
VNMG160408MS	VNMG332MS	9,53	3/8	16,61	.654	0,8	1/32	●
VNMG220404MS	VNMG431MS	12,70	1/2	22,14	.872	0,4	1/64	●
VNMG220408MS	VNMG432MS	12,70	1/2	22,14	.872	0,8	1/32	●

171	172	104	4	176

SCREW-ON • POSITIVE INSERTS • CCGT-LF



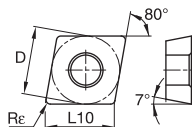
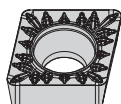
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CCGT060202LF	CCGT21505LF	6,35	1/4	6,45	.254	0,2	.008	●
CCGT060204LF	CCGT2151LF	6,35	1/4	6,45	.254	0,4	1/64	●
CCGT060208LF	CCGT2152LF	6,35	1/4	6,45	.254	0,8	1/32	●
CCGT09T302LF	CCGT32505LF	9,53	3/8	9,67	.381	0,2	.008	●
CCGT09T304LF	CCGT3251LF	9,53	3/8	9,67	.381	0,4	1/64	●
CCGT09T308LF	CCGT3252LF	9,53	3/8	9,67	.381	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • CCMT-MP



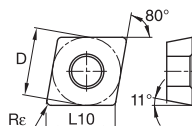
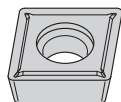
● first choice

○ alternate choice

P	
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ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CCMT060204MP	CCMT2151MP	6,35	1/4	6,45	.254	0,4	1/64	●
CCMT060208MP	CCMT2152MP	6,35	1/4	6,45	.254	0,8	1/32	●
CCMT09T304MP	CCMT3251MP	9,53	3/8	9,67	.381	0,4	1/64	●
CCMT09T308MP	CCMT3252MP	9,53	3/8	9,67	.381	0,8	1/32	●
CCMT120404MP	CCMT431MP	12,70	1/2	12,90	.508	0,4	1/64	●
CCMT120408MP	CCMT432MP	12,70	1/2	12,90	.508	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • CPGT-LF



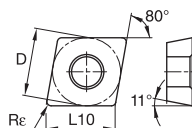
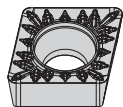
● first choice

○ alternate choice

P	
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S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CPGT060202LF	CPGT21505LF	6,35	1/4	6,45	.254	0,2	.008	●
CPGT060204LF	CPGT2151LF	6,35	1/4	6,45	.254	0,4	1/64	●
CPGT060208LF	CPGT2152LF	6,35	1/4	6,45	.254	0,8	1/32	●
CPGT09T302LF	CPGT32505LF	9,53	3/8	9,67	.381	0,2	.008	●
CPGT09T304LF	CPGT3251LF	9,53	3/8	9,67	.381	0,4	1/64	●
CPGT09T308LF	CPGT3252LF	9,53	3/8	9,67	.381	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • CPMT-MP



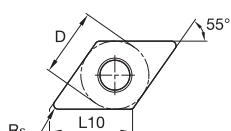
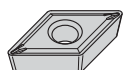
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
CPMT060204MP	CPMT2151MP	6,35	1/4	6,45	.254	0,4	1/64	●
CPMT060208MP	CPMT2152MP	6,35	1/4	6,45	.254	0,8	1/32	●
CPMT09T304MP	CPMT3251MP	9,53	3/8	9,67	.381	0,4	1/64	●
CPMT09T308MP	CPMT3252MP	9,53	3/8	9,67	.381	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • DCGT-LF



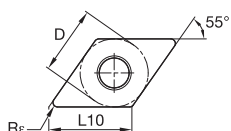
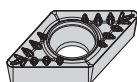
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
DCGT11T302LF	DCGT32505LF	9,53	3/8	11,63	.458	0,2	.008	●
DCGT11T304LF	DCGT3251LF	9,53	3/8	11,63	.458	0,4	1/64	●
DCGT11T308LF	DCGT3252LF	9,53	3/8	11,63	.458	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • DCMT-MP



● first choice

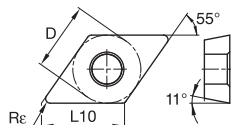
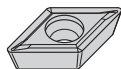
○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
DCMT11T304MP	DCMT3251MP	9,53	3/8	11,63	.458	0,4	1/64	●
DCMT11T308MP	DCMT3252MP	9,53	3/8	11,63	.458	0,8	1/32	●
DCMT11T312MP	DCMT3253MP	9,53	3/8	11,63	.458	1,2	3/64	●

171	172	104	4	176

SCREW-ON • POSITIVE INSERTS • DPGT-LF



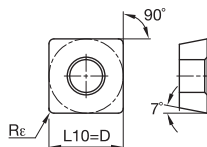
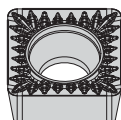
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rø		KCS10B
		mm	in	mm	in	mm	in	
DPGT070202LF	DPGT21505LF	6,35	1/4	7,75	.305	0,2	.008	●
DPGT070204LF	DPGT2151LF	6,35	1/4	7,75	.305	0,4	1/64	●
DPGT070208LF	DPGT2152LF	6,35	1/4	7,75	.305	0,8	1/32	●
DPGT11T302LF	DPGT32505LF	9,53	3/8	11,63	.458	0,2	.008	●
DPGT11T304LF	DPGT3251LF	9,53	3/8	11,63	.458	0,4	1/64	●
DPGT11T308LF	DPGT3252LF	9,53	3/8	11,63	.458	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • SCMT-MP



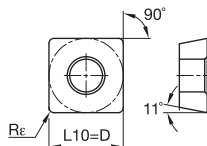
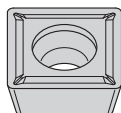
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rø		KCS10B
		mm	in	mm	in	mm	in	
SCMT09T304MP	SCMT3251MP	9,53	3/8	9,53	.375	0,4	1/64	●
SCMT09T308MP	SCMT3252MP	9,53	3/8	9,53	.375	0,8	1/32	●
SCMT120404MP	SCMT431MP	12,70	1/2	12,70	.500	0,4	1/64	●
SCMT120408MP	SCMT432MP	12,70	1/2	12,70	.500	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • SPGT-LF



● first choice

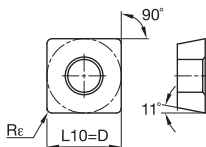
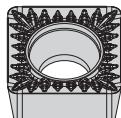
○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rø		KCS10B
		mm	in	mm	in	mm	in	
SPGT09T304LF	SPGT3251LF	9,53	3/8	9,53	.375	0,4	1/64	●
SPGT09T308LF	SPGT3252LF	9,53	3/8	9,53	.375	0,8	1/32	●

171	172	104	4	176
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SCREW-ON • POSITIVE INSERTS • SPMT-MP



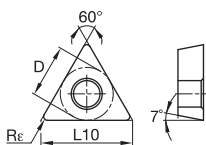
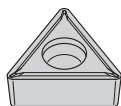
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
SPMT09T304MP	SPMT3251MP	9,53	3/8	9,53	.375	0,4	1/64	●
SPMT09T308MP	SPMT3252MP	9,53	3/8	9,53	.375	0,8	1/32	●
SPMT120404MP	SPMT431MP	12,70	1/2	12,70	.500	0,4	1/64	●
SPMT120408MP	SPMT432MP	12,70	1/2	12,70	.500	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • TCGT-LF



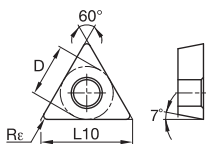
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
TCGT110204LF	TCGT2151LF	6,35	1/4	11,00	.433	0,4	1/64	●
TCGT110208LF	TCGT2152LF	6,35	1/4	11,00	.433	0,8	1/32	●
TCGT16T302LF	TCGT32505LF	9,53	3/8	16,50	.650	0,2	.008	●
TCGT16T304LF	TCGT3251LF	9,53	3/8	16,50	.650	0,4	1/64	●
TCGT16T308LF	TCGT3252LF	9,53	3/8	16,50	.650	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • TCMT-MP



● first choice

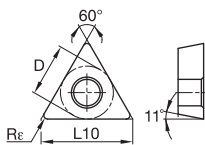
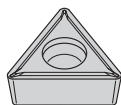
○ alternate choice

P	
M	
K	
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S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
TCMT110204MP	TCMT2151MP	6,35	1/4	11,00	.433	0,4	1/64	●
TCMT110208MP	TCMT2152MP	6,35	1/4	11,00	.433	0,8	1/32	●
TCMT16T304MP	TCMT3251MP	9,53	3/8	16,50	.650	0,4	1/64	●
TCMT16T308MP	TCMT3252MP	9,53	3/8	16,50	.650	0,8	1/32	●

171	172	104	4	176

SCREW-ON • POSITIVE INSERTS • TPGT-LF



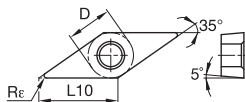
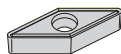
● first choice

○ alternate choice

P	
M	
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H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
TPGT090202LF	TPGT181505LF	5,56	7/32	9,62	.379	0,2	.008	●
TPGT090204LF	TPGT18151LF	5,56	7/32	9,62	.379	0,4	1/64	●
TPGT110202LF	TPGT21505LF	6,35	1/4	11,00	.433	0,2	.008	●
TPGT110204LF	TPGT2151LF	6,35	1/4	11,00	.433	0,4	1/64	●
TPGT110208LF	TPGT2152LF	6,35	1/4	11,00	.433	0,8	1/32	●

SCREW-ON • POSITIVE INSERTS • VBGT-LF



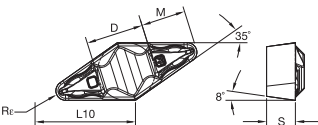
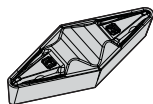
● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		Rε		KCS10B
		mm	in	mm	in	mm	in	
VBGT110302LF	VBGT2205LF	6,35	1/4	11,07	.436	0,2	.008	●
VBGT110304LF	VBGT221LF	6,35	1/4	11,07	.436	0,4	1/64	●
VBGT110308LF	VBGT222LF	6,35	1/4	11,07	.436	0,8	1/32	●
VBGT160402LF	VBGT3305LF	9,53	3/8	16,61	.654	0,2	.008	●
VBGT160404LF	VBGT331LF	9,53	3/8	16,61	.654	0,4	1/64	●
VBGT160408LF	VBGT332LF	9,53	3/8	16,61	.654	0,8	1/32	●

TOP NOTCH™ • PROFILING INSERTS • VCGR-FP



● first choice

○ alternate choice

P	
M	
K	
N	
S	●
H	

ISO catalog number	ANSI catalog number	D		L10		S		M		Rε		KCS10B
		mm	in	mm	in	mm	in	mm	in	mm	in	
VCGR160402FP	VCGR3305FP	9,52	3/8	16,61	.654	4,76	3/16	10,60	.417	0,2	.008	●
VCGR160404FP	VCGR331FP	9,52	3/8	16,61	.654	4,76	3/16	10,15	.400	0,4	1/64	●
VCGR160408FP	VCGR332FP	9,52	3/8	16,61	.654	4,76	3/16	9,23	.363	0,8	1/32	●
VCGR160412FP	VCGR333FP	9,52	3/8	16,61	.654	4,76	3/16	8,31	.327	1,2	3/64	●

171	172	104	4	176

HIGH-TEMPERATURE ALLOYS • TROUBLESHOOTING

Material Characteristics

- High forces at the cutting edge.
- High heat concentration in cutting area.
- High cutting speed may cause insert failure by plastic deformation.
- Relatively poor tool life.
- Small depths of cut are difficult.
- Rapid work-hardening.
- Usually abrasive rather than hard.

Troubleshooting

Problem	Solution	
Depth-of-cut notch	1. Increase toolholder lead angle. 2. Use tougher grades like KC5025™ and KY4300™ in -MS, -MP, and -RP geometries, or ceramic grade KYS30™/KYS25™. 3. Use a 0,63mm/.025" or greater depth of cut. 4. Depth of cut should be greater than the work-hardened layer resulting from the previous cut (>0,12mm/.005"). 5. Program a ramp to vary depth of cut. 6. Feed greater than 0,12mm/.005 IPR. 7. Use strongest insert shape possible. 8. When possible, use round inserts in carbide grade KCS10B™, or ceramic grade KYS30/KYS25. 9. Decrease depth to 1/7 of insert diameter for round inserts (i.e.: 1,90mm/.075" max. depth for 12,7mm/1/2" IC RNG45).	 Depth-of-cut notch
Built-up edge	1. Increase speed. 2. Use grades KYS30 or KY4300. 3. Use positive rake, sharp PVD coated grade KCS10B. 4. Use flood coolant.	 Built-up edge
Chipping	1. Use MG-MS geometry in place of MG-FS geometries. 2. For interrupted cutting, maintain speed and decrease feed. 3. Use a tougher grade like KC5025.	 Chipping

KCS10B™ • WEAR IDENTIFICATION

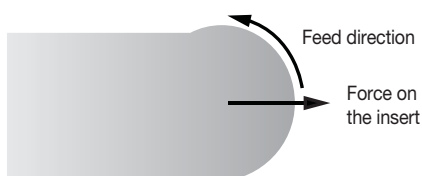


The new KCS10B coating provides easy wear identification. The shown wear pattern indicates end of tool life is near.

An extremely smooth coating surface, reducing friction, providing longer tool life, increasing process reliability.

The new KCS10B turning grade, featuring the new High-Power Impulse Magnetron Sputtering (High-PIMS) is ideal for iron-based alloys (S1), cobalt-based alloys (S2), and nickel-based alloys (S3).

KCS10B • PROFILING WITH TOP NOTCH™



Multiple feed direction profiling with highest accuracy and excellent surface finishes.

Rigid clamping mechanism holds insert precisely in place and eliminates insert movement.



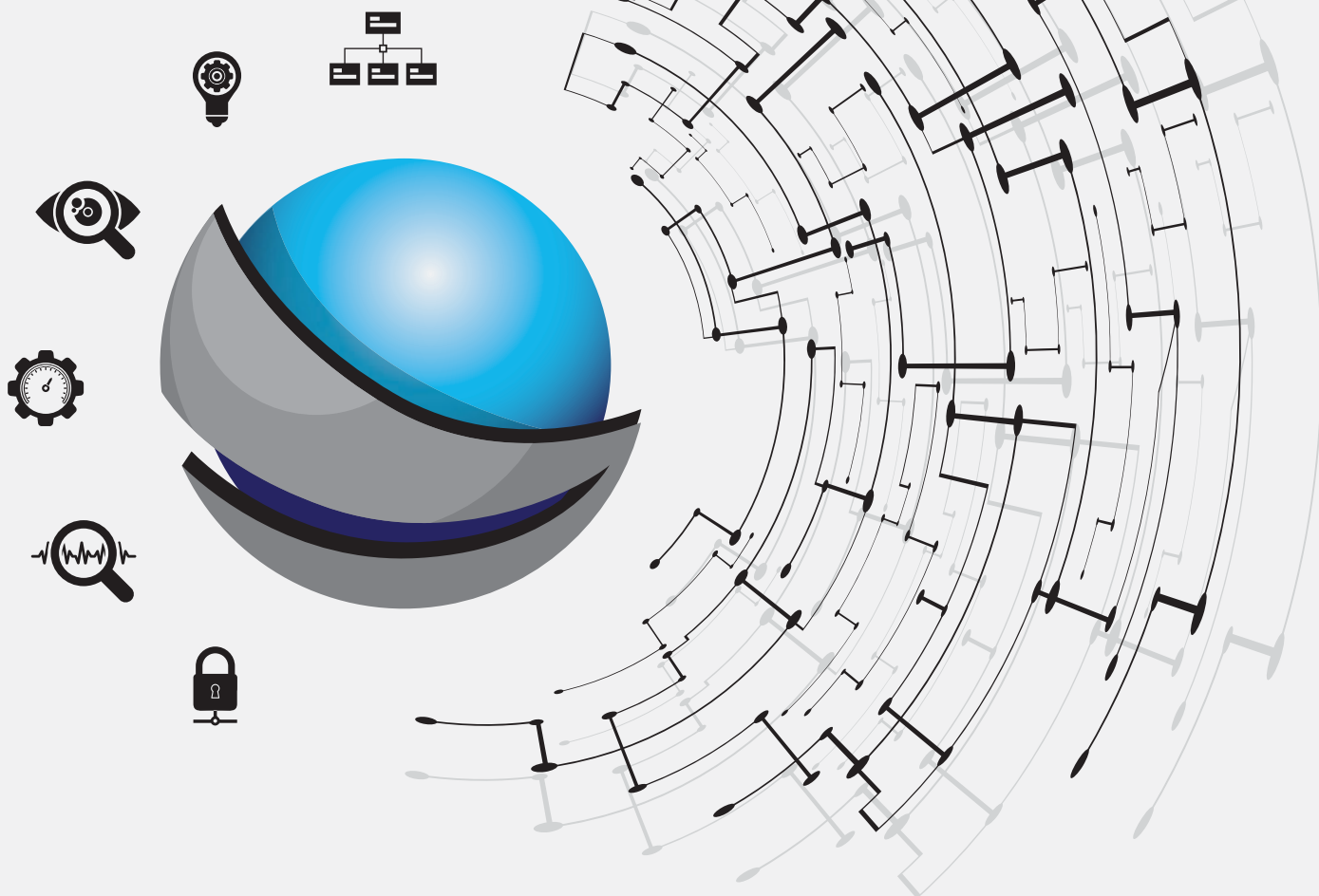
———— Desired shape = Programmed shape.

———— Strong insert design.

———— Accurate indexing.

———— Superior clamping forces.

———— Second cutting edge protected from chip hammering.



**Digitally access and leverage product data and knowledge
to connect systems and processes throughout
the entire manufacturing lifecycle.**

VISIT **KENNAMETAL.COM/NOVO** AND DOWNLOAD TODAY.

Vibration-Free Boring Bars With Bolt-On Heads

Materials



Applications



Boring



Back Boring



Chamfering

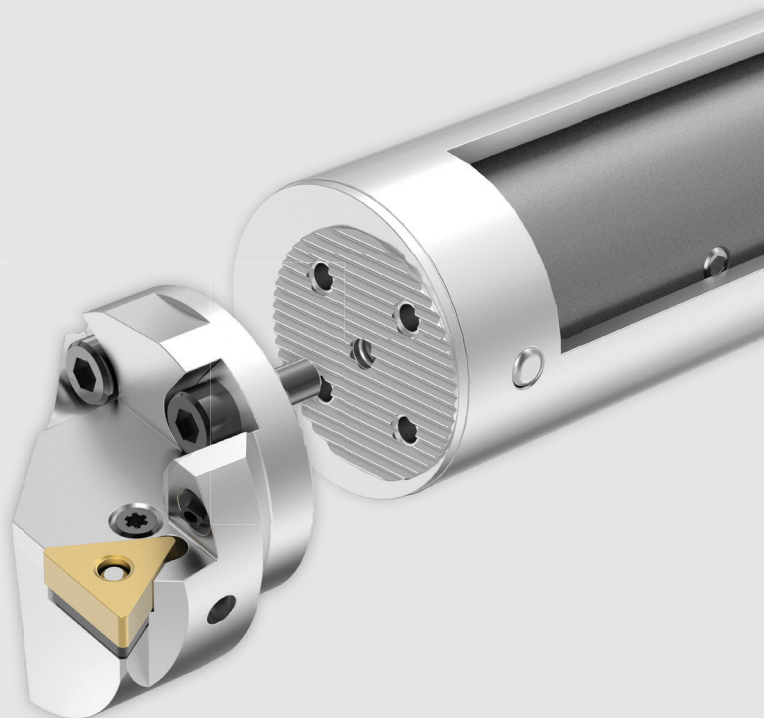


ID Grooving



ID Threading

kennametal.com/Vibration-FreeBoringBars



Coupled with our bolt-on heads, the vibration-free boring bars provide stability and rigidity when boring at extended overhangs up to 10 x D.

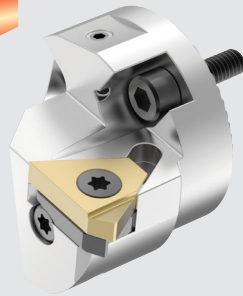
Vibration-free boring bars are a plug-and-play solution designed to work out of the box with no manual adjusting required or possible. The internal dampening package is designed to provide process stability by increasing the stiffness of the bar and dampening out chatter.



Serrated connection provides higher connection strengths, enabling an increased accuracy of insert positioning.

Short design bolt-on heads result in low weight, providing high stability and consistent repeatability.

NEW!



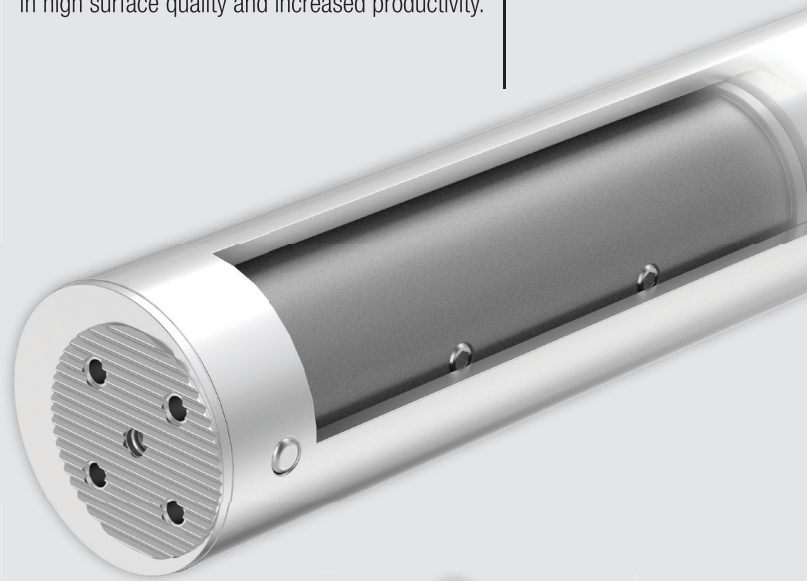
NEW!



Through coolant bolt-on heads to achieve optimum insert performance and tool life.

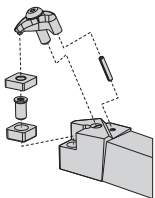
Serrated design interface creates a secure connection.

Internal dampening package ensures vibration- and chatter-free machining, allowing high metal removal rates and large depths-of-cut, resulting in high surface quality and increased productivity.



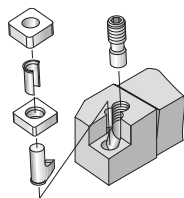
Lightweight Bolt-On Heads with Through Coolant

Kenclamp™



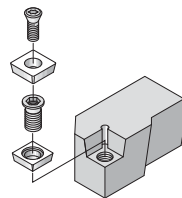
H-DCLN 95°
H-DDUN 93°
H-DTFN 90°
H-DVUN 93°
H-DWLN 95°

Kenlever™



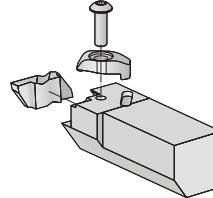
H-PCLN 95°
H-PDUN 93°
H-PTFN 90°

Screw-On



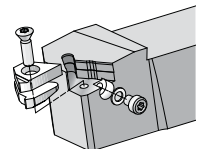
H-SCLC 95°
H-SDPC 62.5°
H-SDUC 93°
H-STFC 90°
H-SVUB 93°
H-SWLP 95°

Top Notch™ Grooving



NG...
NF...
NR...
NT...
NA...
ND...
NJ...
NW...

Laydown Threading



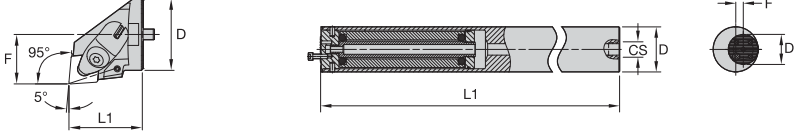
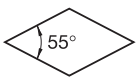
LT...

VIBRATION-FREE • BOLT-ON HEADS • SELECTION GUIDE

	H-N...	H-LS...	H-DCLN	H-DDUN	H-DTFN	H-DVUN
Page	128	129	129	130	131	132
Bolt-On "D" diameter = "D1" on the vibration-free boring bar						
Clamping Style	Top Notch™	Laydown Threading	D	D	D	D
Lead Angle	45–90°	90°	95°	93°	90°	93°
Bolt-On Head Diameter [D]	1.260–1.970" (32–50mm)	0.980–1.970" (25–50mm)	1.260–1.969" (32–50mm)	1.260–1.969" (32–50mm)	1.575–1.969" (40–50mm)	1.575–1.969" (40–50mm)
Minimum Boring Diameter [DMIN]	1.575–2.480" (40–63mm)	1.260–2.480" (32–63mm)	1.575–2.480" (40–63mm)	1.575–2.480" (40–63mm)	1.969–2.480" (50–63mm)	1.969–2.480" (50–63mm)
Center of Boring Bar to Insert Tip [F]	0.866–1.378" (22–35mm)	0.720–1.456" (18,3–37mm)	0.866–1.378" (22–35mm)	0.866–1.378" (22–35mm)	1.063–1.378" (27–35mm)	1.063–1.378" (27–35mm)
Boring Head Length [L1]	1.269–1.561" (32,2–39,6mm)	0.994–1.387" (25,2–35,2mm)	1.299–1.417" (33–36mm)	1.299–1.521" (33–39mm)	1.364–1.403" (35–36mm)	1.378–1.417" (35–36mm)
Insert Shape						
Gage Inserts	NG_3L NG_4L NG_6L NG_3R NG_4R NU_3L	LT16NR LT22NR LT27NR	CN..120408 CN..160612 CN..190612	DN..110408 DN..150408 DN..150608	TN..160408 TN..220408	VN..160408

	H-DWLN	H-PCLN	H-PDUN	H-PTFN	H-SCLC	H-SDPC
Page	133	130	131	132	133	134
Bolt-On "D" diameter = "D1" on the vibration-free boring bar						
Clamping Style	D	P	P	P	Screw-On	Screw-On
Lead Angle	95°	95°	93°	90°	95°	62.5°
Bolt-On Head Diameter [D]	1.260" (32mm)	0.980–1.970" (25–50mm)	0.984–1.969" (25–50mm)	0.980–1.970" (25–50mm)	0.984–1.575" (25–40mm)	0.984" (25mm)
Minimum Boring Diameter [DMIN]	1.575" (40mm)	1.299–2.480" (33–63mm)	1.260–2.480" (32–63mm)	1.260–2.480" (33–63mm)	1.260–1.969" (32–50mm)	1.260" (32mm)
Center of Boring Bar to Insert Tip [F]	0.866" (22mm)	0.669–1.378" (17–35mm)	0.669–1.378" (17–35mm)	0.669–1.378" (17–35mm)	0.669–1.063" (17–27mm)	0.669" (17mm)
Boring Head Length [L1]	1.299" (33mm)	1.009–1.417" (26–36mm)	1.063–1.417" (27–36mm)	0.970–1.403" (25–36mm)	0.748–1.260" (19–32mm)	0.709" (18mm)
Insert Shape						
Gage Inserts	WN..060408	CN..090308 CN..120408 CN..160612	DN..110408 DN..150608	TN..160408	CCMT09T308 CCMT120408	DCMT070204

VIBRATION-FREE • BOLT-ON HEADS • SELECTION GUIDE

				
	H-SDUC	H-STFC	H-SVUB	H-SWLP
Page	134	135	135	135
Bolt-On "D" diameter = "D1" on the vibration-free boring bar				
Clamping Style	Screw-On	Screw-On	Screw-On	Screw-On
Lead Angle	93°	90°	93°	95°
Bolt-On Head Diameter [D]	0.984–1.969" (25–50mm)	0.980–1.570" (25–40mm)	0.984–1.969" (25–50mm)	0.984" (25mm)
Minimum Boring Diameter [DMIN]	1.260–2.480" (32–63mm)	1.260–1.969" (32–50mm)	1.260–2.480" (32–63mm)	1.260" (32mm)
Center of Boring Bar to Insert Tip [F]	0.669–1.378" (17–35mm)	0.669–1.063" (17–27mm)	0.669–1.378" (17–35mm)	0.669" (17mm)
Boring Head Length [L1]	0.709–1.417" (18–36mm)	0.694–1.246" (18–32mm)	0.709–1.417" (18–36mm)	0.709" (18mm)
Insert Shape				
Gage Inserts	DCMT070204 DCMT11T308	TCMT16T308	VBMT110304 VBMT160408	WPMT040204

VIBRATION-FREE • BORING BARS • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

Boring Bars

Boring Bars

VIBRATION-FREE • STEEL BAR • THROUGH COOLANT

Metric

order number	catalog number	D	D1	L1	F	CS	kg
400000000	400000000	25	25	2000.00	1.125	100	1.125
400000000	400000000	16	16	1000.00	0.625	50	0.625
400000000	400000000	10	10	500.00	0.375	25	0.375
400000000	400000000	8	8	250.00	0.312	20	0.312
400000000	400000000	6	6	125.00	0.250	15	0.250
400000000	400000000	4	4	62.50	0.125	7.5	0.125
400000000	400000000	3	3	31.25	0.062	3.75	0.062
400000000	400000000	2	2	15.62	0.031	1.87	0.031

D25HBB356

D16HBB14

Metric			
D	25	HBB	356
Inch			
D	16	HBB	14
Dampened Bar with Coolant	Bar Diameter	Vibration-Free Boring Bar	Total Assembled Length
	Metric: A two-digit number indicates the bar diameter in mm. Inch: A two-digit number indicates the bar diameter in 1/16" increments		Metric: Measured in mm when using a standard bolt-on head. Round up or down to the nearest 0,5mm increment. Inch: Measured in inches when using a standard bolt-on head. Round up or down to the nearest 1/2" increment.

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

[illegible]

H3240DCNLR12

C

Insert Shape

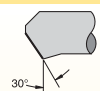
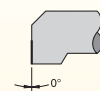
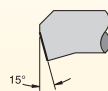
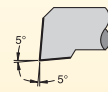
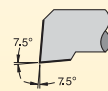
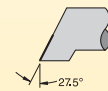
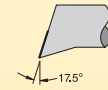
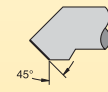
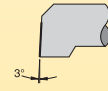
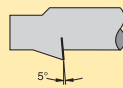
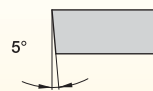
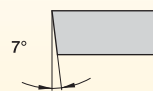
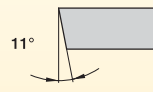
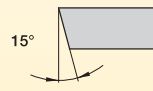
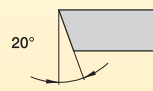
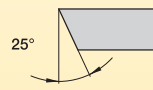
A	
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T	
V	
W	

VIBRATION-FREE • BOLT-ON HEADS • CATALOG NUMBERING SYSTEM

(continued)

Boring Bars									
VIBRATION-FREE • BOLT-ON HEADS • TOP NOTCH • NE 90°									
Bar Style	Lead Angle	Insert Clearance Angle	Hand of Tool	Insert Size	Cutting Edge Length L10	D	D max	F	L1
E	30°	N	R	H	10	1.00	1.05	0.01	1.00
F	0°	B	R	O	10	1.00	1.05	0.01	1.00
K	15°	C	R	P	10	1.00	1.05	0.01	1.00
L (E-style inserts)	5°	P	R	S	10	1.00	1.05	0.01	1.00
L	7.5°	D	R	T	10	1.00	1.05	0.01	1.00
P	27.5°	E	R	CDE	10	1.00	1.05	0.01	1.00
Q	17.5°	F	R	M	10	1.00	1.05	0.01	1.00
S	45°		R	V	10	1.00	1.05	0.01	1.00
U	3°		R	W	10	1.00	1.05	0.01	1.00
X	5°		R	L	10	1.00	1.05	0.01	1.00

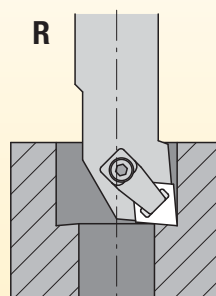
H3240DCNLR12

NBar Style or
Lead Angle**E****F****K****L**
(E-style inserts)**L****P****Q****S****U****X****L**Insert Clearance
Angle**N****B****C****P****D****E****F****R**

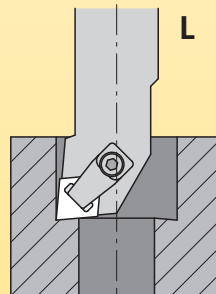
Hand of Tool

R =

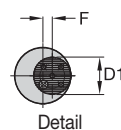
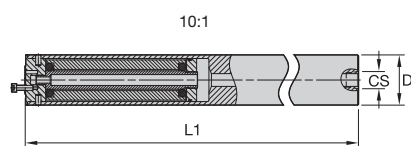
Right-hand boring bar

R**L =**

Left-hand boring bar

L**12**Insert Size
Cutting Edge
Length L10**H****O****P****S****T****CDE**
M
V**W****L****A**
B
K**R**

VIBRATION-FREE • STEEL BAR • THROUGH COOLANT

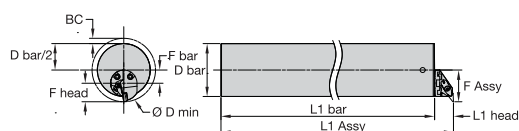


■ Metric

order number	catalog number	D	D1	L1	F	CS	kg
6517231	D25MHBB356	25	25	329,30	0,00	RP 1/4-19	1,21
6517232	D32MHBB448	32	32	414,98	0,00	RP 1/4-19	2,55
6517233	D40MHBB563	40	40	524,26	0,00	RP 1/4-19	5,18
6517234	D50MHBB702	50	40	663,78	5,00	RP 3/8-19	10,14
6517235	D60MHBB860	60	40	821,29	10,00	RP 3/8-19	18,08
6549456	D80MHBB1125	80	50	1089,64	13,10	RP 3/8-19	39,94
6549457	D100MHBB1445	100	50	1409,29	25,00	RP 3/8-19	81,20

■ Inch

order number	catalog number	D1		L1	F	CS	lbs
		D	mm				
6517215	D16HBB14	1.000	25	.984	13.17	.000	2.81
6517216	D20HBB17	1.250	32	1.260	16.20	.000	5.77
6517217	D24HBB21	1.500	40	1.570	19.58	.000	9.97
6517218	D28HBB25	1.750	40	1.575	23.28	.088	13.89
6517219	D32HBB28	2.000	40	1.575	26.57	.197	23.62
6517220	D40HBB35	2.500	40	1.575	33.58	.394	47.47
6549454	D48HBB43	3.000	50	1.969	41.12	.516	76.83
6549455	D64HBB56	4.000	50	1.969	54.58	.984	182.26

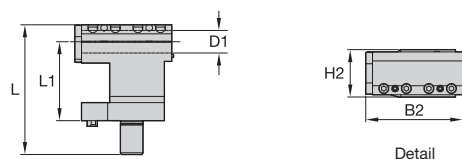


$$D \text{ min} = F \text{ head} + F \text{ bar} + D/2 + BC$$

Metric		Inch	
Bar Diameter	Bore Clearance	Bar Diameter	Bore Clearance
32-50mm	3mm	1.500-2.000	.120
50-100mm	7mm	2.000-4.000	.250

171	172	121	4	176

VIBRATION-FREE • SPLIT BLOCK • MAZAK™



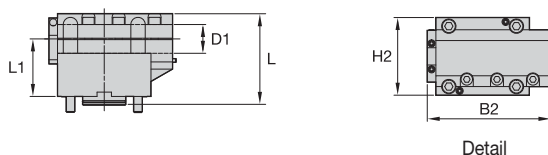
■ Metric

order number	catalog number	D1	L1	L	H2	B2	series
6423189	SB40QTN200M065	40	140	230,0	84,0	172,0	QTN200M
6423190	SB40QTN300M175	40	175	285,0	100,0	172,0	Nexus 300/350/400/450M
6423201	SB50QTN300M175	50	175	290,0	100,0	212,0	SQT28, 30, 300 - QT Nexus 300/350M, 400/450M

■ Inch

order number	catalog number	D1	L1	L	H2	B2	series
6549931	ASB15QTN300M175	1.500	6.89	11.42	3.94	6.47	QTN300M
6549932	ASB2QTN300M175	2.000	6.89	11.42	3.94	8.47	SQT28, 30, 300 - QT Nexus 300/350M, 400/450M

VIBRATION-FREE • SPLIT BLOCK • DMG MORI

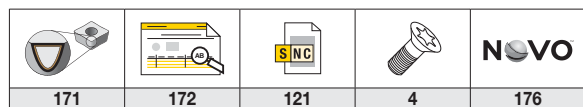


■ Metric

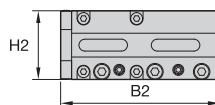
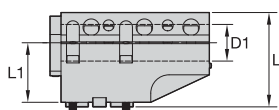
order number	catalog number	D1	L1	L	H2	B2	series
6423204	SB40NL2000080	40	80	127,0	108,0	172,0	DMG Mori NL1500, NL2000, NL2500, NL3000, NT5400DCG
6423205	SB60NZX4000080	60	80	144,0	135,0	252,0	DMG Mori NZX4000080

■ Inch

order number	catalog number	D1	L1	L	H2	B2	series
6549935	ASB15NL2000080	1.500	3.15	4.69	3.94	6.50	DMG Mori NLX2500 & NZX2500
6549936	ASB25NZX4000080	2.500	3.15	5.79	5.35	10.47	DMG Mori NZX4000



VIBRATION-FREE • SPLIT BLOCK • DOOSAN™



Detail

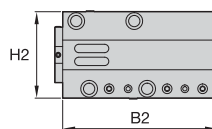
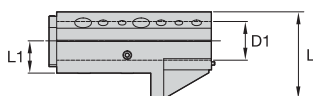
Metric

order number	catalog number	D1	L1	L	H2	B2	series
6423207	SB40PU230M060	40	60	115,0	93,0	172,0	PUMA 230M, 240M, 280M, 1500, 2000, 2500SY&LSY, TT1500, 18 LYNX L220LM/M (BMT45 TURRET)
6423206	SB40L220M065	40	65	103,0	75,0	174,0	
6423208	SB40PU300M072	40	70	139,0	110,0	172,0	PUMA 300M, MA, LMA, LM, LMB, MB, MC, LMC, MS (BMT65 TURRET) PUMA 400MA, 400MB, 400LMA, 400LMB (BMT75 TURRET)
6423209	SB60PU400MB060	60	60	150,0	120,0	252,0	

Inch

order number	catalog number	D1	L1	L	H2	B2	series
6549938	ASB15PU230M060	1.500	2.36	4.53	3.35	6.50	PUMA 230M, 240M, 280M, 1500, 2000, 2100, 2500, 2600SY & LSY, TT 15000, 1800 (BMT55 TURRET) LYNX L220LM/M (BMT45 TURRET)
6549937	ASB15L220M065	1.500	2.56	4.06	2.95	6.47	
6549939	ASB15PU300M072	1.500	2.84	4.72	3.94	6.47	PUMA 300M, MA, LMA, LM, LMB, MB, MC, LMC, MS (BMT65 TURRET) PUMA 400MB
6549940	ASB2PU400MB065	2.000	2.17	4.72	4.72	8.47	

VIBRATION-FREE • SPLIT BLOCK • OKUMA™



Detail

Metric

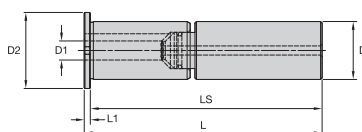
order number	catalog number	D1	L1	L	H2	B2	series
6423221	SB40LB4000EX085	40	85	130,0	100,0	172,0	LB4000 EX (M,MY) LU35, LB35 (2 AXIS)
6423222	SB50LU35035	50	35	100,0	120,0	212,0	
6423223	SB60LU45050	60	50	120,0	134,0	252,0	LB45II & LU45 LB45II & LU45/M
6423210	SB60LU45M050	60	50	135,0	134,0	252,0	

Inch

order number	catalog number	D1	L1	L	H2	B2	series
6549942	ASB15LB4000EX085	1.500	3.35	5.12	3.94	6.00	LB4000 EX (M,MY) LU35, LB35 (2 AXIS)
6549943	ASB2LU35035	2.000	1.38	3.94	4.72	8.47	
6549944	ASB25LU45050	2.500	1.97	4.72	5.28	10.47	LB45II & LU45 LU45M
6549941	ASB25LU45M050	2.500	1.97	5.32	5.28	10.47	

				
171	172	121	4	176

VIBRATION-FREE • REDUCER SLEEVES

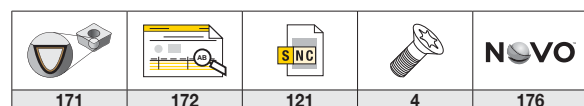


■ Metric

order number	catalog number	D	D1	D2	L1	L	LS
6423264	SL040025	40	25	50	10	170	160
6423263	SL040032	40	32	50	4	164	160
6423262	SL050032	50	32	60	4	204	200
6423261	SL050040	50	40	60	4	204	200
6423260	SL060032	60	32	70	4	244	240
6423259	SL060040	60	40	70	4	244	240
6423258	SL080050	80	50	90	6	326	320
6423256	SL080060	80	60	90	4	324	320
6423255	SL100060	100	60	110	4	404	400
6423254	SL100080	100	80	110	4	404	400
6423253	SL120080	120	80	138	8	395	387
6423252	SL120100	120	100	138	8	488	480

■ Inch

order number	catalog number	D	D1	D2	L1	L	LS
6423224	SL150050	1.500	.500	1.969	.157	6.157	6.000
6423225	SL150075	1.500	.750	1.969	.157	6.157	6.000
6423226	SL150100	1.500	1.000	1.969	.394	6.394	6.000
6423228	SL150125	1.500	1.250	1.969	.157	6.157	6.000
6423229	SL200100	2.000	1.000	2.362	.394	8.394	8.000
6423230	SL200125	2.000	1.250	2.362	.157	8.157	8.000
6423241	SL200150	2.000	1.500	2.362	.157	8.157	8.000
6423243	SL250125	2.500	1.250	2.913	.157	10.157	10.000
6423244	SL250150	2.500	1.499	2.913	.157	10.157	10.000
6423245	SL250175	2.500	1.750	2.913	.157	10.157	10.000
6423246	SL250200	2.500	2.000	2.913	.157	10.157	10.000
6423247	SL300175	3.000	1.750	3.543	.157	12.146	11.989
6423248	SL300200	3.000	2.000	3.543	.236	12.000	11.764
6423249	SL300250	3.000	2.500	3.543	.158	12.000	11.842
6423250	SL400250	4.000	2.500	4.331	.157	16.157	16.000
6423251	SL400300	4.000	3.000	4.331	.157	16.157	16.000



171

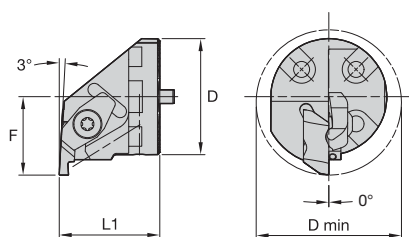
172

121

4

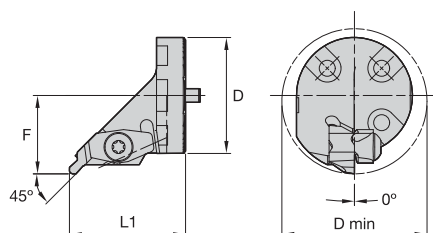
176

VIBRATION-FREE • BOLT-ON HEADS • TOP NOTCH™ • NE 90°



		D		D min		F		L1		
order number	catalog number	mm	in	mm	in	mm	in	mm	in	GI
right hand										
6754856	H3240NER3W	32	1.260	40	1.575	22,0	.866	32,2	1.269	NG_3L
6754859	H4050NER3W	40	1.570	50	1.969	27,0	1.063	34,2	1.348	NG_3L
6754893	H5063NER3W	50	1.970	63	2.480	35,0	1.378	35,2	1.387	NG_3L
6754894	H5063NER4W	50	1.970	63	2.480	35,0	1.378	35,2	1.387	NG_4L
6754895	H5063NER6W	50	1.970	63	2.480	35,0	1.378	38,6	1.521	NG_6L
left hand										
6754855	H3240NEL3W	32	1.260	40	1.575	22,0	.866	32,2	1.269	NG_3R
6754858	H4050NEL3W	40	1.570	50	1.969	27,0	1.063	34,2	1.348	NG_3R
6754891	H5063NEL3W	50	1.970	63	2.480	35,0	1.378	35,2	1.387	NG_3R
6754892	H5063NEL4W	50	1.970	63	2.480	35,0	1.378	35,2	1.387	NG_4R

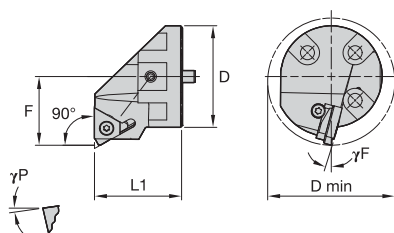
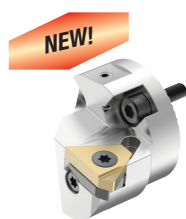
VIBRATION-FREE • BOLT-ON HEADS • TOP NOTCH • NE 45°



		D		D min		F		L1		
order number	catalog number	mm	in	mm	in	mm	in	mm	in	GI
right hand										
6754857	H3240N45R3W	32	1.260	40	1.575	22,0	.866	37,1	1.462	NU_3L
6754860	H4050N45R3W	40	1.570	50	1.969	27,0	1.063	39,6	1.561	NU_3L

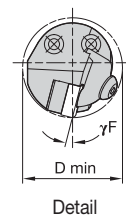
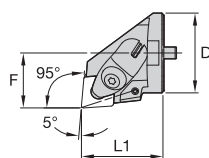
171	172	122	4	176

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • LS 90°



		D		D min		F		L1				
order number	catalog number	mm	in	mm	in	mm	in	mm	in	γF°	γP°	GI
right hand												
6752815	H2532LSER16W	25	.980	32	1.260	18,3	.720	25,2	.994	-15.0	-1.5	LT16NR
6752816	H3240LSER16W	32	1.260	40	1.575	23,3	.917	32,2	1.269	-15.0	-1.5	LT16NR
6752817	H4050LSER16W	40	1.570	50	1.969	28,3	1.113	34,2	1.348	-15.0	-1.5	LT16NR
6752819	H4050LSER22W	40	1.570	50	1.969	28,7	1.129	34,2	1.348	-15.0	-1.5	LT22NR
6752818	H5063LSER16W	50	1.970	63	2.480	36,3	1.428	35,2	1.387	-15.0	-1.5	LT16NR
6752820	H5063LSER22W	50	1.970	63	2.480	36,7	1.444	35,2	1.387	-15.0	-1.5	LT22NR
6752841	H5063LSER27W	50	1.970	63	2.480	37,0	1.456	35,2	1.387	-15.0	-1.5	LT27NR

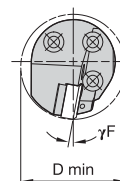
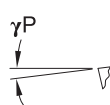
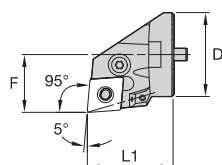
VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DCLN 95°



order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6550556	H3240DCLNR12	32	1.260	40	1.575	22,0	.866	32,6	1.285	-14.0	-5.0	CNMA120408
6550558	H4050DCLNR12	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-12.0	-5.0	CNMA120408
6550560	H4050DCLNR16	40	1.570	50	1.969	27,0	1.063	35,6	1.403	-14.0	-5.0	CNMA160612
6550632	H5063DCLNR12	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA120408
6549432	H5063DCLNR16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA160612
6549434	H5063DCLNR19	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA190612
left hand												
6550557	H3240DCLNL12	32	1.260	40	1.575	22,0	.866	32,6	1.285	-14.0	-5.0	CNMA120408
6550559	H4050DCLNL12	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-12.0	-5.0	CNMA120408
6550631	H4050DCLNL16	40	1.570	50	1.969	27,0	1.063	35,6	1.403	-14.0	-5.0	CNMA160612
6550633	H5063DCLNL12	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA120408
6549431	H5063DCLNL16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA160612
6549433	H5063DCLNL19	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-12.0	-5.0	CNMA190612

171	172	122	4	176

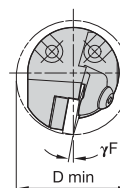
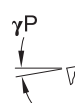
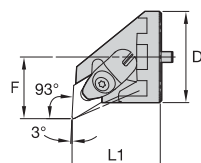
VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PCLN 95°



Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6549409	H2532PCLNR09	25	.980	33	1.299	17,0	.669	25,6	1.009	-10.0	-5.0	CNMA090308
6550656	H3240PCLNR12	32	1.260	40	1.575	22,0	.866	32,6	1.285	-10.0	-5.0	CNMA120408
6550658	H4050PCLNR12	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	CNMA120408
6550660	H4050PCLNR16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-11.0	-5.0	CNMA160612
6549442	H5063PCLNR12	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-10.0	-5.0	CNMA120408
left hand												
6549408	H2532PCLNL09	25	.980	33	1.299	17,0	.669	25,6	1.009	-10.0	-5.0	CNMA090308
6550657	H3240PCLNL12	32	1.260	40	1.575	22,0	.866	32,6	1.285	-10.0	-5.0	CNMA120408
6550659	H4050PCLNL12	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	CNMA120408
6550671	H4050PCLNL16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-11.0	-5.0	CNMA160612
6549441	H5063PCLNL12	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-10.0	-5.0	CNMA120408

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DDUN 93°

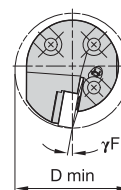
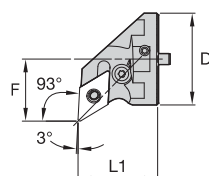


Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6550634	H3240DDUNR11	32	1.260	40	1.575	22,0	.866	32,6	1.285	-10.0	-5.0	DNMA110408
6550636	H4050DDUNR15	40	1.570	50	1.969	27,0	1.063	38,6	1.521	-10.0	-5.0	DNMA150408
6549436	H5063DDUNR15	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	DNMA150608
left hand												
6550635	H3240DDUNL11	32	1.260	40	1.575	22,0	.866	32,6	1.285	-10.0	-5.0	DNMA110408
6550637	H4050DDUNL15	40	1.570	50	1.969	27,0	1.063	38,6	1.521	-10.0	-5.0	DNMA150408
6549435	H5063DDUNL15	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	DNMA150608

171	172	122	4	176

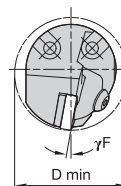
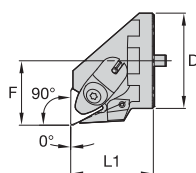
VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PDUN 93°



Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6550672	H2532PDUNR11	25	.980	32	1.260	17,0	.669	26,6	1.049	-11.0	-5.0	DNMA110408
6550674	H3240PDUNR15	32	1.260	40	1.575	22,0	.866	32,6	1.285	-12.0	-5.0	DNMA150608
6550676	H4050PDUNR15	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	DNMA150608
6549444	H5063PDUNR15	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-10.0	-5.0	DNMA150608
left hand												
6550673	H2532PDUNL11	25	.980	32	1.260	17,0	.669	26,6	1.049	-11.0	-5.0	DNMA110408
6550675	H3240PDUNL15	32	1.260	40	1.575	22,0	.866	32,6	1.285	-12.0	-5.0	DNMA150608
6550677	H4050PDUNL15	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	DNMA150608
6549443	H5063PDUNL15	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-10.0	-5.0	DNMA150608

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DTFN 90°

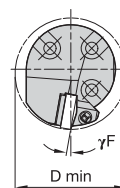
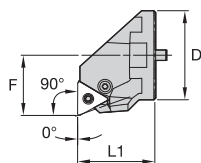


Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6550638	H4050DTFNR16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	TNMA160408
6549438	H5063DTFNR22	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	TNMA220408
left hand												
6550639	H4050DTFNL16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	TNMA160408
6549437	H5063DTFNL22	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	TNMA220408

171	172	122	4	176

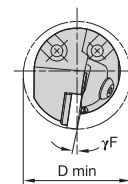
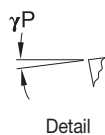
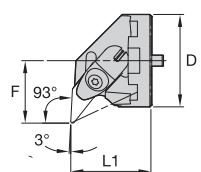
VIBRATION-FREE • BOLT-ON HEADS • KENLEVER™ • PTFN 90°



Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6549411	H2532PTFNR16	25	.980	32	1.260	17,0	.669	24,6	.970	-12.0	-15.0	TNMA160408
6550678	H3240PTFNR16	32	1.260	40	1.575	22,0	.866	32,6	1.285	-12.0	-5.0	TNMA160408
6550680	H4050PTFNR16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	TNMA160408
6549446	H5063PTFNR16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	TNMA160408
left hand												
6549410	H2532PTFNL16	25	.980	32	1.260	17,0	.669	24,6	.970	-12.0	-15.0	TNMA160408
6550679	H3240PTFNL16	32	1.260	40	1.575	22,0	.866	32,6	1.285	-12.0	-5.0	TNMA160408
6550681	H4050PTFNL16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-10.0	-5.0	TNMA160408
6549445	H5063PTFNL16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-8.0	-5.0	TNMA160408

VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DVUN 93°

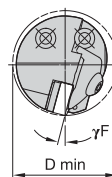
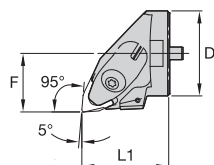


Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6550640	H4050DVUNR16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-9.0	-4.0	VNMA160408
6549440	H5063DVUNR16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-9.0	-5.0	VNMA160408
left hand												
6550651	H4050DVUNL16	40	1.570	50	1.969	27,0	1.063	34,6	1.364	-9.0	-4.0	VNMA160408
6549439	H5063DVUNL16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-9.0	-5.0	VNMA160408

171	172	122	4	176

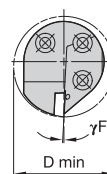
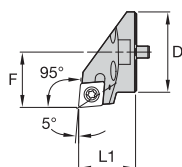
VIBRATION-FREE • BOLT-ON HEADS • KENCLAMP™ • DWLN 95°



Detail

order number	catalog number	D		D min		F		L1		γ_F°	γ_P°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand 6550652	H3240DWLNR06	32	1.260	40	1.575	22,0	.866	32,6	1.285	-14.0	-5.0	WNMA060408
left hand 6550653	H3240DWLNL06	32	1.260	40	1.575	22,0	.866	32,6	1.285	-14.0	-5.0	WNMA060408

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SCLC 95°

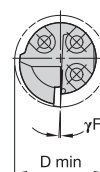
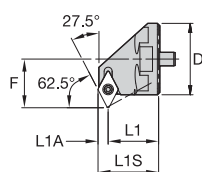


Detail

order number	catalog number	D		D min		F		L1		γ_F°	γ_P°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand 6549070	H2532SCLCR09	25	.980	32	1.260	17,0	.669	18,6	.734	-3.0	0.0	CCMT09T308
6549392	H3240SCLCR09	32	1.260	40	1.575	22,0	.866	22,6	.891	-3.0	0.0	CCMT09T308
6549394	H4050SCLCR12	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-3.0	0.0	CCMT120408
left hand 6549391	H2532SCLCL09	25	.980	32	1.260	17,0	.669	18,6	.734	-3.0	0.0	CCMT09T308
6549393	H3240SCLCL09	32	1.260	40	1.575	22,0	.866	22,6	.891	-3.0	0.0	CCMT09T308
6549395	H4050SCLCL12	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-3.0	0.0	CCMT120408

171	172	122	4	176

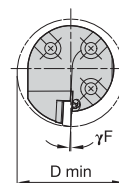
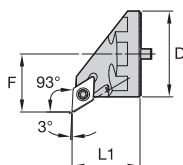
VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SDPC 62.5°



Detail

order number	catalog number	D		D min		F		L1		L1A		L1S		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in			
right hand 6549413	H2532SDPCR07	25	.980	32	1.260	17,0	.669	17,6	.694	3,5	.139	21,2	.833	-3.0	0.0	DCMT070204
left hand 6549412	H2532SDPCL07	25	.980	32	1.260	17,0	.669	17,6	.694	3,5	.139	21,2	.833	-3.0	0.0	DCMT070204

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SDUC 93°

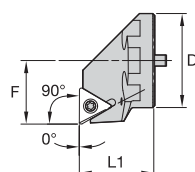


Detail

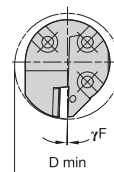
order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand 6549415	H2532SDUCR07	25	.980	32	1.260	17,0	.669	17,6	.694	-3.0	0.0	DCMT070204
6549396	H2532SDUCR11	25	.980	32	1.260	17,0	.669	17,6	.694	-3.0	0.0	DCMT11T308
6549398	H3240SDUCR11	32	1.260	40	1.575	22,0	.866	22,6	.891	-3.0	0.0	DCMT11T308
6549400	H4050SDUCR11	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-3.0	0.0	DCMT11T308
6549448	H5063SDUCR11	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-3.0	0.0	DCMT11T308
left hand 6549414	H2532SDUCL07	25	.980	32	1.260	17,0	.669	17,6	.694	-3.0	0.0	DCMT070204
6549397	H2532SDUCL11	25	.980	32	1.260	17,0	.669	17,6	.694	-3.0	0.0	DCMT11T308
6549399	H3240SDUCL11	32	1.260	40	1.575	22,0	.866	22,6	.891	-3.0	0.0	DCMT11T308
6549401	H4050SDUCL11	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-3.0	0.0	DCMT11T308
6549447	H5063SDUCL11	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-3.0	0.0	DCMT11T308

171	172	122	4	176

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • STFC 90°



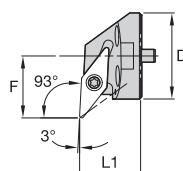
Detail



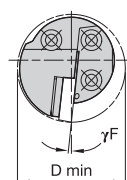
Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6549417	H2532STFCR11	25	.980	32	1.260	17,0	.669	17,6	.694	-2.0	0.0	TCMT110204
6549403	H3240STFCL16	32	1.260	40	1.575	22,0	.866	24,6	.970	-3.0	0.0	TCMT16T308
6549404	H4050STFCR16	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-2.0	0.0	TCMT16T308
left hand												
6549416	H2532STFCL11	25	.980	32	1.260	17,0	.669	17,6	.694	-2.0	0.0	TCMT110204
6549402	H3240STFCR16	32	1.260	40	1.575	22,0	.866	24,6	.970	-3.0	0.0	TCMT16T308
6549405	H4050STFCL16	40	1.570	50	1.969	27,0	1.063	31,6	1.246	-2.0	0.0	TCMT16T308

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SVUB 93°



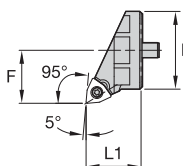
Detail



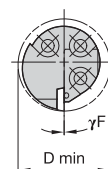
Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6549406	H2532SVUBR11	25	.980	32	1.260	17,0	.669	17,6	.694	-5.0	0.0	VBMT110304
6549452	H3240SVUBR16	32	1.260	40	1.575	23,0	.906	22,6	.891	-6.0	0.0	VBMT160408
6549450	H5063SVUBR16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-3.0	0.0	VBMT160408
left hand												
6549407	H2532SVUBL11	25	.980	32	1.260	17,0	.669	17,6	.694	-5.0	0.0	VBMT110304
6549451	H3240SVUBL16	32	1.260	40	1.575	23,0	.906	22,6	.891	-6.0	0.0	VBMT160408
6549449	H5063SVUBL16	50	1.970	63	2.480	35,0	1.378	35,6	1.403	-3.0	0.0	VBMT160408

VIBRATION-FREE • BOLT-ON HEADS • SCREW-ON • SWLP 95°



Detail



Detail

order number	catalog number	D		D min		F		L1		γF°	γP°	GI
		mm	in	mm	in	mm	in	mm	in			
right hand												
6549419	H2532SWLPR04	25	.980	32	1.260	17,0	.669	17,6	.694	0.0	0.0	WPMT040204
left hand												
6549418	H2532SWLPL04	25	.980	32	1.260	17,0	.669	17,6	.694	0.0	0.0	WPMT040204

171	172	122	4	176

Beyond™ Evolution™

Grooving and Cut-Off

Materials



Applications



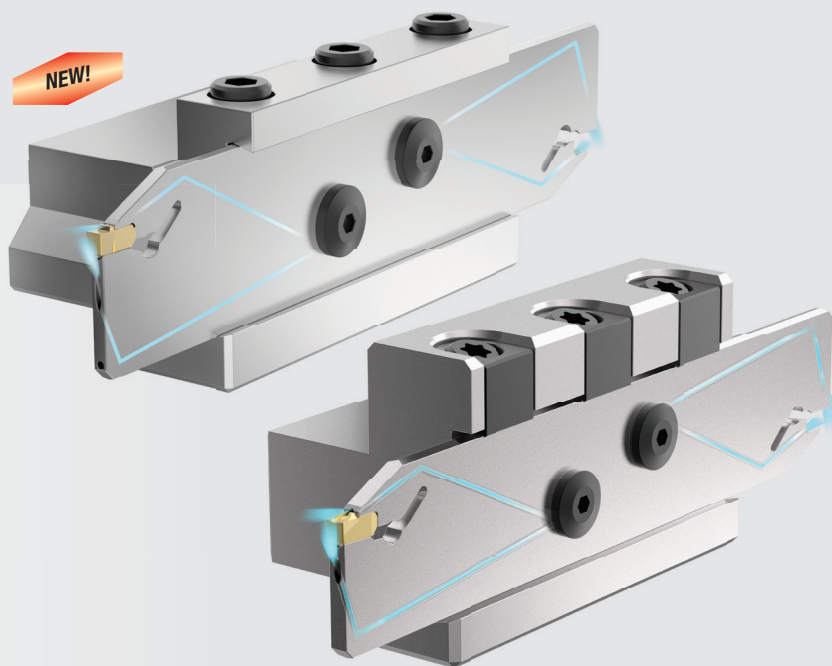
Cut-Off



O.D. Deep Grooving



Grooving

kennametal.com/BeyondEvolution

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

Whether you are using a high- or low-pressure coolant supply, Beyond Evolution, featuring active coolant control, delivers longer tool life and higher Metal Removal Rates (MRR).

Available now:

Cut-off blades and supporting blocks with active coolant control.
For even higher productivity in cut-off and deep-grooving applications.



Modular block with removable top rail, providing accessibility in turret-style machines.

BEYOND™ EVOLUTION™ • CATALOG NUMBERING SYSTEM • BLOCKS

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

■ Metric

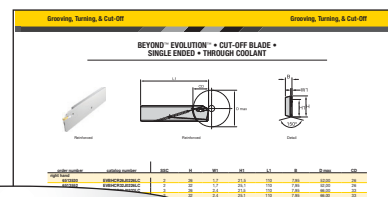
BEYOND™ EVOLUTION™ • CATALOG NUMBERING SYSTEM • BLOCKS							
EVTZN2525G32C							
EV	T	Z	N	2525	G	32	C
Family Name	Tool Block	Clamping Style	Hand of Tool	Shank Size	Tool Length in (mm)	Blade Size	Coolant
Beyond™ Evolution™		E = Integral Clamp M = Modular Z = Removable Clamp	R = Right L = Left N = Neutral	Metric = Height x width in mm letter indicates tool length according to ISO	G = 80 J = 110 X = Other Length	in millimeters	C = Through Coolant Capable

■ Inch

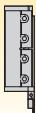
BEYOND™ EVOLUTION™ • CATALOG NUMBERING SYSTEM • BLOCKS							
EVTZN16G32C							
EV	T	Z	N	16	G	32	C
Family Name	Tool Block	Clamping Style	Hand of Tool	Shank Size	Tool Length in (mm)	Blade Size	Coolant
Beyond™ Evolution™		E = Integral Clamp M = Modular Z = Removable Clamp	R = Right L = Left N = Neutral	Inch = Height x width in 1/16" increments	G = 80 J = 110 X = Other Length	in millimeters	C = Through Coolant Capable

BEYOND™ EVOLUTION™ • CATALOG NUMBERING SYSTEM • CUT-OFF BLADES

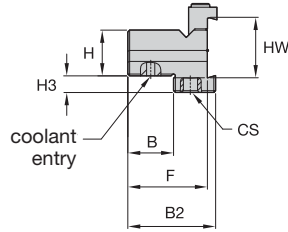
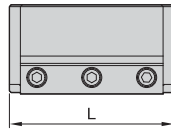
Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



EVBSCL32J0320LC

EV	BS	C	L	32	J	03	20	L	C
Family Name	Tool Style	Support Type	Hand of Pocket	Blade Height	Overall Length	Seat Size (SSC)	Max. Cutting Depth	Hand of Blade	Coolant
Beyond™ Evolution™	BS = Blade Standard 2 Pocket BH = Blade Heavy 1 Pocket	C = Reinforced	N = Neutral L = Left Hand R = Right Hand	in millimeters	According to ISO G = 90mm J = 110mm M = 150mm X = Special	1B 1F 03 04 05 06 08 10	in millimeters	L = Left Hand R = Right Hand	C = Through Coolant Capable
			RH Blade RH Pocket  	RH Blade LH Pocket  	LH Blade RH Pocket  	LH Blade LH Pocket  			

BEYOND™ EVOLUTION™ • MODULAR BLOCK FOR CUT-OFF BLADES WITH THROUGH COOLANT



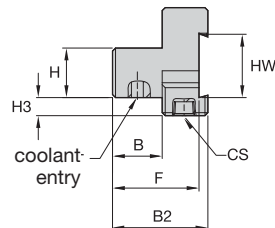
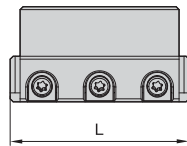
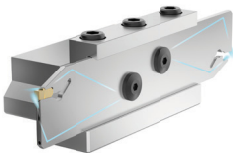
■ Metric

order number	catalog number	B2	B	F	HW	H	H3	L	CS
6760961	EVTMZN2020X26C	43,00	20,00	38,50	26,00	20,00	11,00	86,00	G1/8
6760963	EVTMZN2525X26C	43,00	25,00	43,50	26,00	25,00	6,00	86,00	G1/8
6760962	EVTMZN2020G32C	43,00	20,00	38,50	32,00	20,00	14,10	90,00	G1/8
6760964	EVTMZN2525G32C	48,00	25,00	43,50	32,00	25,00	9,10	90,00	G1/8

■ Inch

order number	catalog number	B2	B	F	HW	H	H3	L	CS
6760965	EVTMZN1226C	1.656	.750	1.478	1.024	.750	.471	3.386	G1/8
6760966	EVTMZN1232C	1.656	.750	1.478	1.260	.750	.593	3.543	G1/8
6760967	EVTMZN1626C	1.906	1.000	1.728	1.024	1.000	.236	3.386	G1/8
6760968	EVTMZN1632C	1.906	1.000	1.728	1.260	1.000	.358	3.543	G1/8

BEYOND™ EVOLUTION™ • BLOCK FOR CUT-OFF BLADES WITH THROUGH COOLANT



■ Metric

order number	catalog number	B2	B	F	HW	H	H3	L	CS
6543722	EVTZN2020X26C	43,00	20,00	38,50	26,00	20,00	11,00	78,00	G1/8
6543723	EVTZN2020X32C	43,00	20,00	38,50	32,00	20,00	14,10	78,00	G1/8
6543724	EVTZN2525G26C	48,00	25,00	43,50	26,00	25,00	6,00	90,00	G1/8
6543725	EVTZN2525G32C	48,00	25,00	43,50	32,00	25,00	9,10	90,00	G1/8

■ Inch

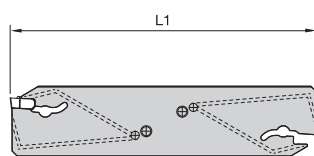
order number	catalog number	B2	B	F	HW	H	H3	L	CS
6543726	EVTZN1226C	1.656	.750	1.478	26,00	.750	.471	3.071	G1/8
6543727	EVTZN1232C	1.656	.750	1.478	32,00	.750	.593	3.071	G1/8
6543728	EVTZN1626C	1.906	1.000	1.728	26,00	1.000	.236	3.543	G1/8
6543729	EVTZN1632C	1.906	1.000	1.728	32,00	1.000	.358	3.543	G1/8

171	172	137	4	176

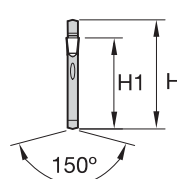
BEYOND™ EVOLUTION™ • CUT-OFF BLADE • DOUBLE ENDED • THROUGH COOLANT



Straight



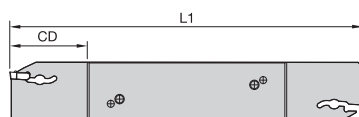
Straight



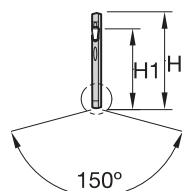
Detail



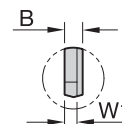
Reinforced



Reinforced



Detail



Detail

order number	catalog number	SSC	H	W1	H1	L1	B	CD
neutral hand								
6513449	EVBSN26M0233C	2	26	1,7	21,5	150	2,40	33
6513450	EVBSN32M0233C	2	32	1,7	25,1	150	2,40	33
6513521	EVBSN26J0340C	3	26	—	21,5	110	2,40	40
6513522	EVBSN26M0340C	3	26	—	21,5	150	2,40	40
6513523	EVBSN32M0350C	3	32	—	25,1	150	2,40	50
6513524	EVBSN26J0440C	4	26	—	21,5	110	3,40	40
6513525	EVBSN26M0440C	4	26	—	21,5	150	3,40	40
6513526	EVBSN32M0450C	4	32	—	25,1	150	3,40	50
6513527	EVBSN32M0560C	5	32	—	25,1	150	4,40	60
6513529	EVBSN32M0660C	6	32	—	25,1	150	5,40	60

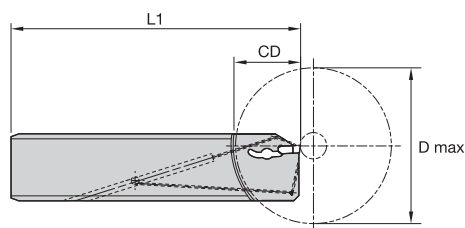
SSC = To correspond with the SSC on the insert.

171	172	137	4	176

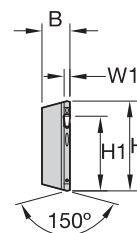
BEYOND™ EVOLUTION™ • CUT-OFF BLADE • SINGLE ENDED • THROUGH COOLANT



Reinforced



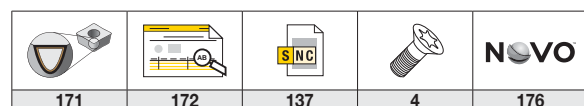
Reinforced



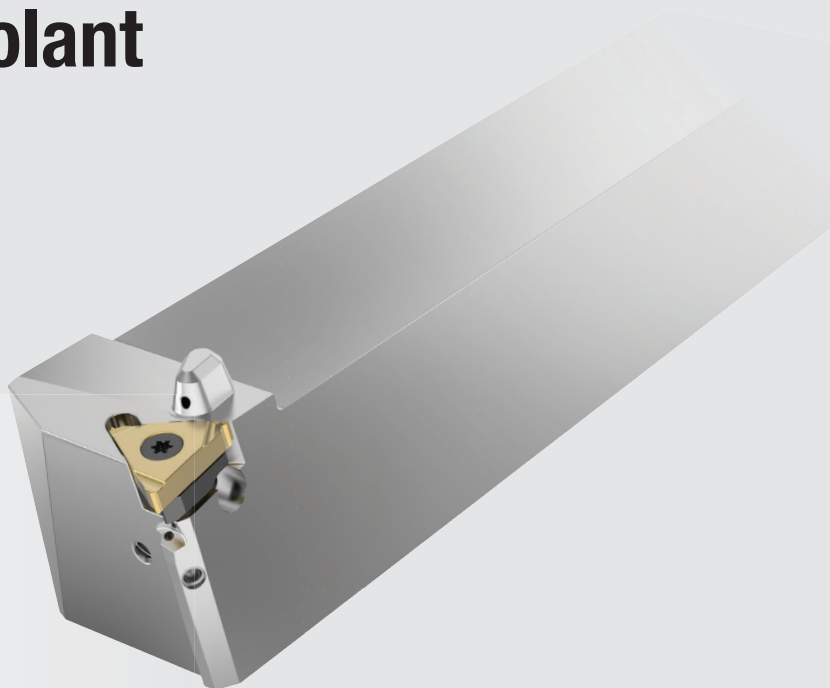
Detail

order number	catalog number	SSC	H	W1	H1	L1	B	D max	CD
right hand									
6513530	EVBHCR26J0226LC	2	26	1,7	21,5	110	7,95	52,00	26
6513552	EVBHCR32J0226LC	2	32	1,7	25,1	110	7,95	52,00	26
6513554	EVBHCR26J0333LC	3	26	2,4	21,5	110	7,95	66,00	33
6513558	EVBHCR32J0333LC	3	32	2,4	25,1	110	7,95	66,00	33
6513556	EVBHCR32K0340LC	3	32	2,4	25,1	125	7,95	80,00	40
6513560	EVBHCR26J0433LC	4	26	3,4	21,5	110	7,95	66,00	33
6513574	EVBHCR32J0433LC	4	32	3,4	25,1	110	7,95	66,00	33
6513572	EVBHCR32K0440LC	4	32	3,4	25,1	125	7,95	80,00	40
left hand									
6513551	EVBHCL26J0226RC	2	26	1,7	21,5	110	7,95	52,00	26
6513553	EVBHCL32J0226RC	2	32	1,7	25,1	110	7,95	52,00	26
6513555	EVBHCL26J0333RC	3	26	2,4	21,5	110	7,95	66,00	33
6513559	EVBHCL32J0333RC	3	32	2,4	25,1	110	7,95	66,00	33
6513557	EVBHCL32K0340RC	3	32	2,4	25,1	125	7,95	80,00	40
6513571	EVBHCL26J0433RC	4	26	3,4	21,5	110	7,95	66,00	33
6513575	EVBHCL32J0433RC	4	32	3,4	25,1	110	7,95	66,00	33
6513573	EVBHCL32K0440RC	4	32	3,4	25,1	125	7,95	80,00	40

SSC = To correspond with the SSC on the insert.



Laydown Threading Toolholders with Through Coolant



Applications



Threading

kennametal.com/LT-Threading



With precise, through the tool coolant delivery.

Ultimate convenience as multiple coolant ports provide ease-of-connection.

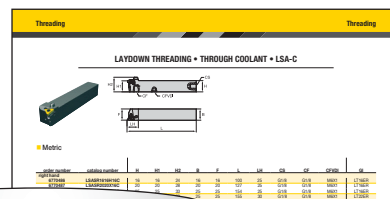
Plug-and-Play through quick-change VDI coolant connection.

Maximum heat reduction, maximum tool life, and maximum performance through precision coolant delivery to both the flank and rake face of the insert.

Increased chip evacuation results in a better surface finish on the finished part.

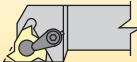
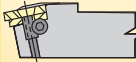
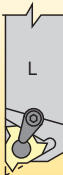
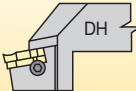
LAYDOWN THREADING • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

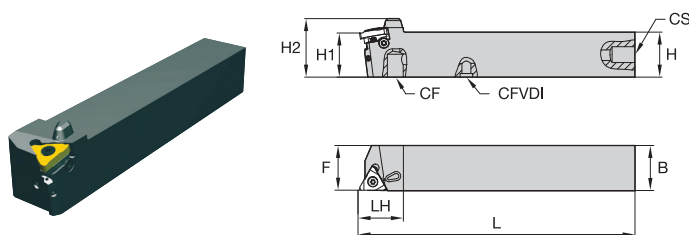


LSASR252516C

LSASR163C

Metric																																										
L	S	AS	R		2525		16	C																																		
Inch																																										
L	S	AS	R		16		3	C																																		
Insert Style	Insert Holding Method	Tool Style	Hand of Tool	Drop Head	Shank Size	Length	Insert Size	Coolant																																		
L – Laydown triangle 	S – Screw-on 	Straight shank  Offset shank 	 		Metric = Height x Width in mm Inch = Height x Width in 1/16 inch increments	G = 90mm J = 110mm M = 150mm X = Special	C = Through the pocket coolant capable																																			
ANSI insert size is equal to the iC in 1/8 increments. Ex.: For a 1/4" iC, the ANSI insert size = 2  <table><thead><tr><th rowspan="2">ISO Insert Size</th><th colspan="2">iC</th><th colspan="2">L1</th></tr><tr><th>Inch</th><th>Metric</th><th>Inch</th><th>Metric</th></tr></thead><tbody><tr><td>06</td><td>5/32</td><td>4,0</td><td>0.273</td><td>6,9</td></tr><tr><td>08</td><td>3/16</td><td>5,0</td><td>0.341</td><td>8,7</td></tr><tr><td>11</td><td>1/4</td><td>6,4</td><td>0.433</td><td>11,0</td></tr><tr><td>16</td><td>3/8</td><td>9,5</td><td>0.650</td><td>16,5</td></tr><tr><td>22</td><td>1/2</td><td>12,7</td><td>0.866</td><td>22,0</td></tr></tbody></table>									ISO Insert Size	iC		L1		Inch	Metric	Inch	Metric	06	5/32	4,0	0.273	6,9	08	3/16	5,0	0.341	8,7	11	1/4	6,4	0.433	11,0	16	3/8	9,5	0.650	16,5	22	1/2	12,7	0.866	22,0
ISO Insert Size	iC		L1																																							
	Inch	Metric	Inch	Metric																																						
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08	3/16	5,0	0.341	8,7																																						
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22	1/2	12,7	0.866	22,0																																						

LAYDOWN THREADING • THROUGH COOLANT • LSA-C

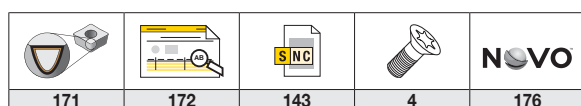


Metric

order number	catalog number	H	H1	H2	B	F	L	LH	CS	CF	CFVDI	GI
right hand												
6770486	LSASR1616H16C	16	16	24	16	16	100	25	G1/8	G1/8	M6X1	LT16ER
6770487	LSASR2020X16C	20	20	28	20	20	127	25	G1/8	G1/8	M6X1	LT16ER
6770488	LSASR2525X16C	25	25	33	25	25	154	25	G1/8	G1/8	M6X1	LT16ER
6770510	LSASR2525X22C	25	25	33	25	25	155	30	G1/8	G1/8	M6X1	LT22ER
6770489	LSASR3232X16C	32	32	40	32	32	175	25	G1/8	G1/8	M6X1	LT16ER
6770511	LSASR3232X22C	32	32	40	32	32	175	30	G1/8	G1/8	M6X1	LT22ER
left hand												
6770490	LSASL1616H16C	16	16	24	16	16	100	25	G1/8	G1/8	M6X1	LT16EL
6770501	LSASL2020X16C	20	20	28	20	20	127	25	G1/8	G1/8	M6X1	LT16EL
6770502	LSASL2525X16C	25	25	33	25	25	155	25	G1/8	G1/8	M6X1	LT16EL
6770512	LSASL2525X22C	25	25	33	20	25	155	30	G1/8	G1/8	M6X1	LT22EL
6770503	LSASL3232X16C	32	32	40	32	32	175	25	G1/8	G1/8	M6X1	LT16ER
6770513	LSASL3232X22C	32	32	40	32	32	175	30	G1/8	G1/8	M6X1	LT22EL

Inch

order number	catalog number	H	H1	H2	B	F	L	LH	CS	CF	CFVDI	GI
right hand												
6770504	LSASR103C	.625	.625	.920	.625	.625	5.000	.990	G1/8	G1/8	M6X1	LT16ER
6770505	LSASR123C	.750	.750	1.050	.750	.750	5.000	.990	G1/8	G1/8	M6X1	LT16ER
6770506	LSASR163C	1.000	1.000	1.300	1.000	1.000	6.000	.990	G1/8	G1/8	M6X1	LT16ER
6770514	LSASR164C	1.000	1.000	1.310	1.000	1.000	6.100	1.200	G1/8	G1/8	M6X1	LT22ER
6770507	LSASR203C	1.250	1.250	1.550	1.250	1.250	7.000	.990	G1/8	G1/8	M6X1	LT16ER
6770515	LSASR204C	1.250	1.250	1.560	1.250	1.250	7.000	1.200	G1/8	G1/8	M6X1	LT22ER
left hand												
6770508	LSASL123C	.750	.750	1.047	.750	.750	5.000	.990	G1/8	G1/8	M6X1	LT16EL
6770509	LSASL163C	1.000	1.000	1.295	1.000	1.000	6.000	.990	G1/8	G1/8	M6X1	LT16EL
6770516	LSASL164C	1.000	1.000	1.310	1.000	1.000	6.000	1.200	G1/8	G1/8	M6X1	LT22EL



Coolant Accessories



kennametal.com/CoolantAccessories

Connecting Kennametal tooling to your machine is easy. Whether requiring heavy duty hoses capable of 350 bar (5,000 psi) or more flexible braided hoses capable of 210 bar (3,000 psi), we have you covered.

Pre-assembled coolant kits

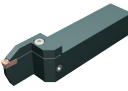
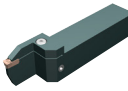
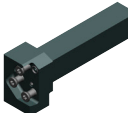
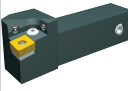
These kits connect Kennametal turning tooling to the industry's most common machines. The Kennametal universal coolant kits are ideal! Each kit contains the most common thread sizes with a variety of fitting styles for maximum flexibility.

Know exactly what you need?

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

KITS • SELECTION GUIDE

1 STEP 1: Look for your application, holder style, and size.

Application	Cut-Off		Grooving			Threading	Turning
Holder Style	Front clamp	Top clamp	Top clamp	Top clamp	Modular holder	Screw down	ISO turning holder
Shank Size — mm	12–20	12–20	12–20	25–40	all	all	all
Shank Size — inch	1/2–3/4	1/2–3/4	1/2–3/4	1–1-1/2			
							

2 STEP 2: Find the matching coolant kits.

Kit Description	Hose Type: 						
Universal 200mm flex hose coolant kit	•	•	•	•	•	•	•
Universal 300mm flex hose coolant kit	•	•	•	•	•	•	•
Maximum Coolant Pressure Bar/psi	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901
Kit Description	Hose Type: 						
M8x1.0 banjo 200mm flex hose coolant kit	•	•	•				
M8x1.0 banjo 300mm flex hose coolant kit	•	•	•				
G 1/8 banjo 200mm flex hose coolant kit				•	•	•	•
G 1/8 banjo 300mm flex hose coolant kit				•	•	•	•
Maximum Coolant Pressure Bar/psi	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901	200 / 2901
Kit Description	Hose Type: 						
Universal 200mm heavy-duty coolant kit				•	•	•	•
Universal 300mm heavy-duty coolant kit				•	•	•	•
Maximum Coolant Pressure Bar/psi	200 / 2901	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076	* 350 / 5,076

* Max pressure for seat size (SSC) 02 holders is 200 bar/2901 psi.

KIT COMPONENTS

			COMPONENT DESCRIPTION														
			1/16 NPTF MALE TO JIC MALE	1/8 NPTF MALE TO JIC MALE	M8 X 1.25 MALE TO JIC MALE	M8 X 1.0 MALE TO JIC MALE	G1/8 MALE TO JIC MALE	M10 MALE TO JIC MALE	MALE JIC TO FEMALE JIC ELBOW	HEAVY DUTY 200MM COOLANT HOSE	HEAVY DUTY 300MM COOLANT HOSE	UNIV 200MM FLEX COOLANT HOSE	UNIV 300MM FLEX COOLANT HOSE	M8X1.0 BANJO 200MM FLEX HOSE	G1/8 BANJO 200MM FLEX HOSE	M8X1.0 BANJO 300MM FLEX HOSE	G1/8 BANJO 300MM FLEX HOSE
																	
Kit Description	Catalog Number	Order Number															
Universal 200mm flex hose coolant kit	COOL-KIT-UNIVERSAL-FLEX-101	6475019		●	●	●	●	●	●			●					
Universal 300mm flex hose coolant kit	COOL-KIT-UNIVERSAL-FLEX-201	6475021	●	●	●	●	●	●	●				●				
M8x1.0 banjo 200mm flex hose coolant kit	COOL-KIT-FLEX-301B	6475023					●	●	●					●			
M8x1.0 banjo 300mm flex hose coolant kit	COOL-KIT-FLEX-401B	6475025					●	●	●							●	
G 1/8 banjo 200mm flex hose coolant kit	COOL-KIT-FLEX-501B	6475027					●	●	●						●		
G 1/8 banjo 300mm flex hose coolant kit	COOL-KIT-FLEX-601B	6475029					●	●	●							●	
Universal 200mm heavy-duty coolant kit	COOL-KIT-101-HD	6145372	●	●			●	●	●	●							
Universal 300mm heavy-duty coolant kit	COOL-KIT-201-HD	6145373	●	●			●	●	●		●						

INDIVIDUAL KIT COMPONENT LIST



order number	catalog number	description
6145374	1-16NPTF-JIC	Straight fitting, 1/16 NPTF male thread to JIC male thread
6145375	1-8NPTF-JIC	Straight fitting, 1/8 NPTF male thread to JIC male thread
6145378	M8X1.25-JIC	Straight fitting, M8 x 1.25 male thread to JIC male thread
6475041	M8X1-JIC	Straight fitting, M8 x 1.0 male thread to JIC male thread
6145376	G18-JIC	Straight fitting, G 1/8 male thread to JIC male thread
6145377	M10X1.5-JIC	Straight fitting, M10 x 1.5 male thread to JIC male thread
6145379	JICM-JICF-ELB	Elbow fitting, male JIC thread to female JIC thread
6145380	COOL-HOSE-200-HD	Heavy Duty 200mm Coolant hose with JIC female fitting both ends
6145381	COOL-HOSE-300-HD	Heavy Duty 300mm Coolant hose with JIC female fitting both ends
6432549	COOL-HOSE-200-FLEX	Flexible braided 200mm Coolant hose with JIC female fitting both ends
6432550	COOL-HOSE-300-FLEX	Flexible braided 300mm Coolant hose with JIC female fitting both ends
6475043	M8X1-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475045	G18-BAN-JIC-HOSE-200	Flexible braided 200mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers
6475047	M8X1-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, M8 x 1.0 male thread to JIC female thread. Contains (1) M8x1.0 banjo bolt and (2) M8 bonded washers
6475049	G18-BAN-JIC-HOSE-300	Flexible braided 300mm Coolant hose, G 1/8 male thread to JIC female thread. Contains (1) G 1/8 banjo bolt and (2) G 1/8 bonded washers

COOLANT ACCESSORIES

The items shown below are not part of any coolant kits shown on previous pages.



order number	catalog number	description
6145382	M6X1-JIC	Straight fitting, M6 x 1.0 male thread to JIC male thread
6145383	JICM-JICM-STR	Straight fitting, JIC male thread to JIC male thread
6145386	G14-G18-RED	Straight fitting, G 1/4 male thread to G 1/8th male thread
6475058	R18-JIC	Straight fitting, 1/8 BSPT male thread to JIC male thread
6475059	R14-JIC	Straight fitting, 1/4 BSPT male thread to JIC male thread

COOLANT SPARE PARTS

Included in kits; part of components.

order number	catalog number	description
6475051	M8X1-BAN-BOLT	Banjo bolt, M8 x 1.0 male thread
6475053	G18-BAN-BOLT	Banjo bolt, G1/8 male thread
6475060	M6-BON-WASHER	M6 bonded washer
6475055	M8-BON-WASHER	M8 bonded washer
6475061	M10-BON-WASHER	M10 bonded washer
6475056	G18-BON-WASHER	G 1/8 bonded washer

KCFM™ 45 Fine Finisher

Face Mill for Cast Iron Fine Finishing

Materials



Applications



Face Milling



kennametal.com/KCFM45

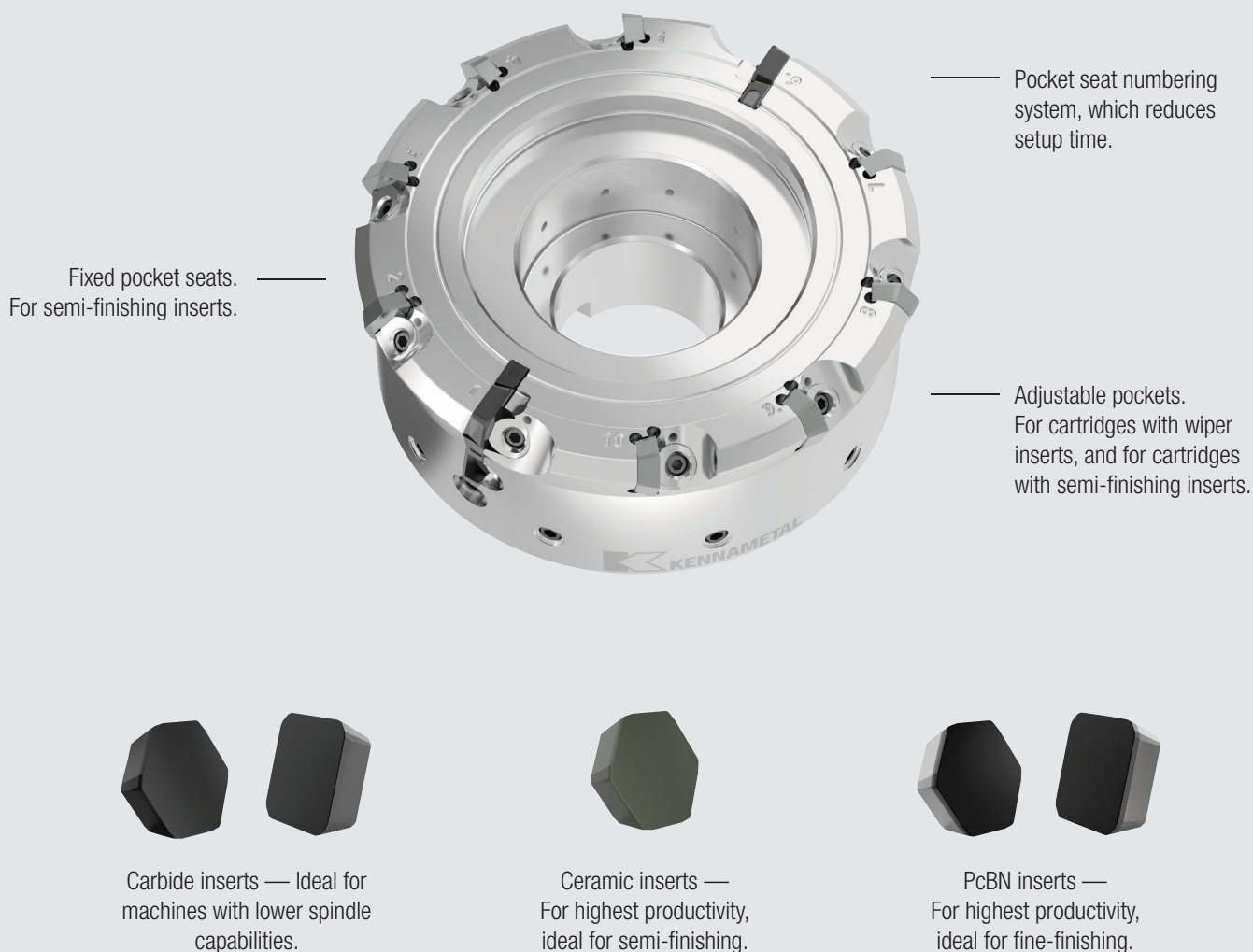
KCFM 45 provides high-precision pocket seats with a runout of two microns, exceeding highest surface requirements.

The super-positive geometries of semi-finishing and wiper inserts provide low cutting forces to manage vibrations, especially on thin-walled cast iron components, covering dry and wet machining conditions.

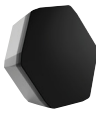
Ceramic and PcBN grades available. Allowing for higher speeds, and thus higher productivity. This leads to a lower cost per part.

Cutter body features fixed and adjustable insert pockets, providing two options:

1. Load all pockets with semi-finishing inserts when surface requirements are lower. For the adjustable pockets, cartridges for semi-finishing inserts are available.
2. For highest surface requirements, load adjustable pockets with wiper inserts by using the wiper insert cartridge.



Configuration of Semi-Finishing and Wiper Inserts:

Semi-Finishing Insert HDHN43	Wiper Insert SDHN43	Dry (D)/Wet (W) Machining
PcBN (KBK50) 	PcBN (KBK50) 	D
Ceramic (KY3500) 	PcBN (KBK50) 	D
Carbide (KC514M) 	Carbide (KC514M) 	D/W

CAST IRON • FACE MILLING • TOOL SELECTION GUIDE

	KCFM™ 45 • Fine Finisher	Fix-Perfect™ • Finisher	Mill 16	Mill 16 • Split Case Design	Fix-Perfect 20° • Cast Iron
	 				
Page	157	S62*	S28*	S28*	S62*
Main operation					
Workpiece materials					
Primary	K	K	K	K	K
Secondary					P
Approach Angle [KRA]	45°	0°	46.5°	46.5°	20°
Cutting diameter [D1]	3.0–10.0"	3.5"	2.0–10.0"	12.0–20.0"	2.0–10.0"
Cutting diameter [D1 max]	3.394–10.394"	4"	2.5–10.5"	12.5–20.5"	—
Maximum cutting depth [Ap1 max]	.040"	.040"	.215–.220"	.215"	.232–.256"
Insert size IC [D]	.500"	.500"	.787"	.787"	.472–.591"
Number of inserts per cutter [Z]	8–24	8	4–34	42–70	4–20
Axial adjustable (Y/N)	Y	N	N	N	Y, N
Cutting edges per insert	4–6	4	16	16	1–8
Corner radius for insert [R _c]	.031"	—	.031–.118"	.031–.118"	—
Corner facet length [BS]	.343"	.031–.167"	0–.059"	0–.059"	.028–.079"
Application	▽▽▽	▽▽▽	▽	▽	▽▽
Internal coolant	✓	✓	—	—	✓
Additional operations					
Fits regular shell mill adapters	✓	✓	✓	—	✓
Carrier flange assembly diameter	—	—	—	12.4–19.7"	—
Insert cartridge	KCFMCA45SD43C KCFMCA45HD23	—	—	—	—

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

Application: ▽ = Roughing
 ▽▽ = Roughing/Semi-Finishing
 ▽▽▽ = Finishing

CAST IRON • FACE MILLING • TOOL SELECTION GUIDE

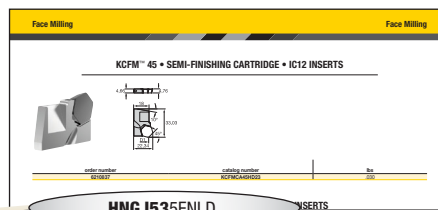
	Fix-Perfect™ 0° • Cast Iron	HexaCut™ 45° • Cast Iron	HexaCut 30° • Cast Iron	KSSR
				
Page	S62*	S74*	S74*	S86*
Main operation				
Workpiece materials				
Primary	K	K	K	K
Secondary	P			
Approach Angle [KRA]	0°	45°	30°	6°
Cutting diameter [D1]	2.0–6.0"	4.0–5.0"	3.2–12.0"	2.5–4.0"
Cutting diameter [D1 max]	—	4.5–5.5"	3.5–12.3"	2.6–4.1"
Maximum cutting depth [Ap1 max]	.236"	.256"	.315"	.200"
Insert size IC [D]	.472–.591"	.625–.638"	.625–.638"	.500"
Number of inserts per cutter [Z]	4–15	7–18	8–40	9–15
Axial adjustable (Y/N)	Y, N	Y, N	Y, N	Y, N
Cutting edges per insert	1–8	12	12	2–8
Corner radius for insert [R _e]	—	.031–.118"	.016–.118"	.047–.063"
Corner facet length [BS]	.028–.079"	.044–.051"	.051"	.039–.374"
Application	▽▽	▽	▽▽	▽▽
Internal coolant	✓	—	—	✓
Additional operations	⊙			
Fits regular shell mill adapters	✓	✓	✓	✓
Carrier flange assembly diameter	—	—	—	—
Insert cartridge	—	—	—	—

* See page in the Kennametal Master Catalog 2018 • Volume Two • Rotating Tools, A-16-05217.

Application: ▽ = Roughing
 ▽▽ = Roughing/Semi-Finishing
 ▽▽▽ = Finishing

CATALOG NUMBERING SYSTEM • INSERTS

Each character in our catalog number signifies a specific trait of that product.
Use the following key columns and corresponding images to easily identify which attributes apply.



H

Insert Shape

A Parallelogram 85°

C Rhomboid 80°

E 75°

H Hexagon 120°

L Rectangular 90°

O Octagon 135°

R Round

S Square 90°

T Triangular 60°

X Kennametal Standard Form

N

Insert Clearance Angle

A 3°

B 5°

C 7°

D 15°

E 20°

F 25°

G 30°

N 0°

P 11°

G

Tolerance Class

Indexable inserts with facets/wipers

Indexable inserts with corner radii

Insert thickness

J

Geometry and Clamping Type

5

Size

A	symbol
1.000	8
.750	6
.625	5
.500	4
.375	3
.250	2

inscribed circle "A"

For shapes A, L, and X, see position #1; use length of leading cutting edge in increments of 1/4".

3

Thickness

insert thickness

T	in 1/16"
.0938	1.5
.125	2
.1562	2.5
.1875	3
.2188	3.5
.2500	4
.3125	5

tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"	tolerance class	tolerance on "A"	tolerance on "M"	tolerance on "T"
A	.001	.0002	.001	J	.002-.005*	.0002	.001
B	.001	.0002	.005	K	.002-.005*	.0005	.001
C	.001	.0005	.001	L	.002-.005*	.001	.001
D	.001	.0005	.005	M	.002-.005*	.003-.008*	.005
E	.001	.001	.001	N	.002-.005*	.003-.008*	.001
F	.0005	.0002	.001	P**	.0015	.0015	.0015
G	.001	.001	.005	U	.003-.010*	.005-.015*	.005
H	.0005	.0005	.001				

*See table below for tolerances according to insert size and class.

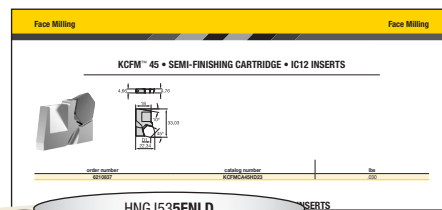
**Kennametal standard only.

A	tolerances on "A"		tolerances on "M"	
	classes J, K, L, M, N	class U	classes M & N	class U
.1875-.3937	.002	.003	.003	.005
.4375-.5625	.003	.005	.005	.008
.5906-.8125	.004	.007	.006	.011
.8661-1.188	.005	.010	.007	.015
1.250-1.378	.006	.010	.008	.015

symbol	hole	shape of hole	chipbreaker	shape of insert's section
N	without		without	
R			single sided	
F			double sided	
A	with	cylindrical hole	without	
M			single sided	
G			double sided	
W		partly cylindrical hole, 40-60° countersink	without	
T			single sided	
Q		partly cylindrical hole, 40-60° double countersink	without	
U			double sided	
B		partly cylindrical hole, 70-90° countersink	without	
H			single sided	
C		partly cylindrical hole, 70-90° double countersink	without	
J			double sided	
X			special design	

CATALOG NUMBERING SYSTEM • INSERTS

(continued)

**5**Corner
Configuration**E**Cutting Edge
Form**F**

Sharp

E

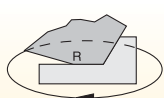
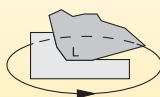
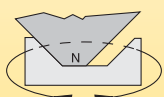
Honed

T

T-land

S

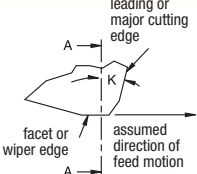
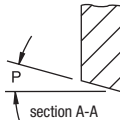
Honed T-land

NInsert
Handdirection of
cutter rotationdirection of
cutter rotationdirection of
cutter rotation**-**Facet
Width**L**Edge
Prep
Size**D**Rake
Face
AngleAdded
Info

J = Polished
rake face
P = Partial
T-land
W = Wiper/radiused
facet
H = Helical

.0312	2
.0469	3
.0625	4
.0938	6

Facet width is number of 1/64"
increments (1/32" for old styles).

				
radius				
0	.004	If letter is replaced by number(s), refer to table for radius "r".		wiper edge clearance P
0.5	.008			A 3°
1	1/64			B 5°
2	1/32	lead angle K		C 7°
3	3/64	A	45°	D 15°
4	1/16	D	handed 30°	E 20°
5	5/64	K	neutral 30°	F 25°
6	3/32	E	handed 15°	G 30°
7	7/64	L	neutral 15°	N 0°
8	1/8	P	0°	P 11°

L = Light — sharp or lightly
honed and/or T-land
G = General — medium hone
and/or T-land
H = Heavy — large hone
and/or T-land

N	A	B	C	P	D	E	F	G
0° or less	3°	5°	7°	11°	15°	20°	25°	30°

Nominal or average angle of rake on insert face at leading cutting edge before edge
prep and before installation.

KCFM™ • CATALOG NUMBERING SYSTEM • CUTTERS

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.

Face Milling

KCFM™ 45 • IC12 • SHELL MILL



Tool Number	Material	Length	Width	Height	Radius	Flute Count	Flute Angle	Flute Width	Flute Depth	Flute Spacing	Flute Width	Flute Depth	Flute Spacing	Flute Width	Flute Depth	Flute Spacing	Flute Width	Flute Depth	Flute Spacing
45	45	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
IC12	IC12	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
SHELL MILL	SHELL MILL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

KCFM1000R24HD07W6AS

KCFM	1000	R	24	HD07	W6	AS
KCFM™	Cutter Diameter	Hand of Tool	Number of Teeth	Insert Style and iC	Number of Wiper Inserts	Assembly
Kennametal Cast Iron Finishing Milling		R = Right Hand		H = Shape D = Clearance angle 07 = Size	W = Wiper Inserts	AS = Assembly, Cartridges Included



KENNAMETAL

Bookshelf Filters

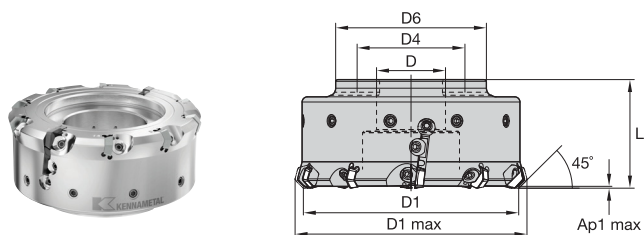
Use the following filters to narrow the catalogs displayed and/or searched:

FILTER BY PUBLICATION

- Catalogs
- Assembly Instructions
- Success Stories

Check out our interactive bookshelf for KCFM assembly instructions at catalogs.kennametal.com

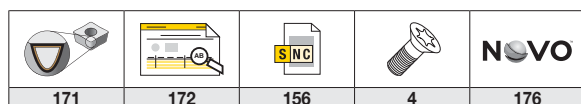
KCFM™ 45 • IC12 • SHELL MILL



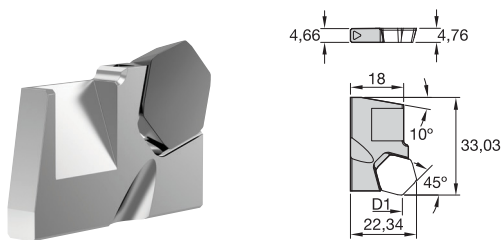
order number	catalog number	D1	D1 max	D	D4	D6	L	Ap1 max	Z	Z ADJ	lbs	max RPM
6764351	KCFM300R08HD07W2AS	3.000	3.375	1.000	—	3.055	1.968	.043	8	2	3.50	9600
6764352	KCFM400R08HD07W2AS	4.000	4.375	1.250	—	4.055	1.968	.043	8	2	5.64	8400
6764353	KCFM500R10HD07W2AS	5.000	5.375	1.500	—	3.150	2.480	.043	10	2	9.22	7400
6764354	KCFM600R12HD07W4AS	6.000	6.375	2.000	—	3.937	2.480	.043	12	4	11.85	6500
6764355	KCFM800R16HD07W4AS	8.000	8.375	2.500	4.000	5.118	2.480	.043	16	4	20.24	5700
6764356	KCFM1000R24HD07W6AS	10.000	10.375	2.500	4.000	5.512	2.480	.043	24	6	24.41	5100

*Ap1 max = 0.043" with wiper finishing cartridge for SDHN43 inserts

*Ap1 max = 0.118" with semi-finishing cartridge for HDHN43 inserts.

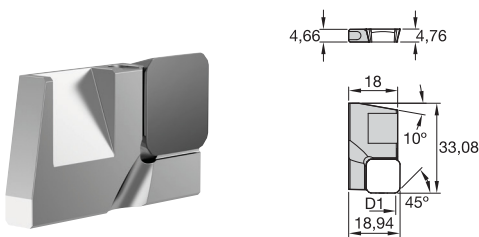


KCFM™ 45 • SEMI-FINISHING CARTRIDGE • IC12 INSERTS



order number	catalog number	lbs
6210837	KCFMCA45HD23	.030

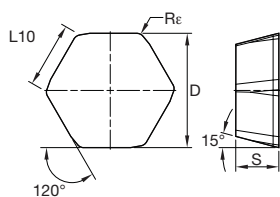
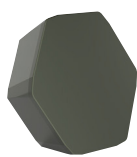
KCFM 45 • FINISHING CARTRIDGE • IC12 INSERTS



order number	catalog number	lbs
6210836	KCFMCA45SD43C	.030

171	172	156	4	176

KCFM™ 45 • SEMI-FINISHING INSERTS • IC12 ER

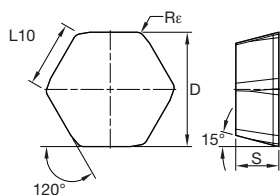
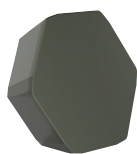


- first choice
○ alternate choice

P				
M				
K		●	●	●
N				
S				
H				

ISO catalog number	ANSI catalog number	D		S		L10		Re		hm		CE	KC514M	KBK50	KY3500
		mm	in	mm	in	mm	in	mm	in	mm	in				
HDHN070408ER	HDHN432ER	12,70	.500	4,76	.187	5,20	.205	0,8	.032	0,08	.003	6	●	-	-

KCFM 45 • SEMI-FINISHING INSERTS • IC12 SR



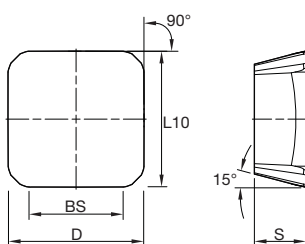
- first choice
○ alternate choice

P				
M				
K		●	●	●
N				
S				
H				

ISO catalog number	ANSI catalog number	D		S		L10		Re		hm		CE	KC514M	KBK50	KY3500
		mm	in	mm	in	mm	in	mm	in	mm	in				
HDHN070408SR	HDHN432SR	12,70	.500	4,76	.187	5,20	.205	0,8	.032	0,09	.004	6	-	●	●

171	172	156	4	176

KCFM™ 45 • FINISHING INSERTS • IC12 EN



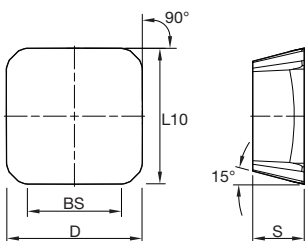
● first choice

○ alternate choice

P				
M				
K	●	●	●	
N				
S				
H				

ISO catalog number	ANSI catalog number	D		S		L10		BS		hm		CE	KC514M	KBK50	KY3500
		mm	in	mm	in	mm	in	mm	in	mm	in				
SDHN1204ZZEN4W	SDHN43ZZEN4W	12,70	.500	4,76	.187	12,60	.496	8,70	.343	0,08	.003	4	●	-	-

KCFM 45 • FINISHING INSERTS • IC12 SN



● first choice

○ alternate choice

P				
M				
K	●	●	●	
N				
S				
H				

ISO catalog number	ANSI catalog number	D		S		L10		BS		hm		CE	KC514M	KBK50	KY3500
		mm	in	mm	in	mm	in	mm	in	mm	in				
SDHN1204ZZSN4W	SDHN43ZZSN4W	12,70	.500	4,76	.187	12,58	.495	8,70	.343	0,08	.003	4	-	●	-

171	172	156	4	176

INSERT SELECTION GUIDE

Material Group	Fine Finishing		Semi-Finishing	
	Option 1: CBN	Option 2: Coated Carbide	Option 1: Advanced Material	Option 2: Coated Carbide
K1-K2	.S..R KBK50	.E..R KC514M	.S..R KY3500/KBK50	.E..R KC514M
K3	-	.E..R KC514M	-	.E..R KC514M

RECOMMENDED STARTING FEEDS [IPT]

														Fine Finishing	Semi-Finishing	Roughing
Insert Geometry	Recommended Starting Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)															Insert Geometry
	5%			10%			20%			30%			40-100%			
-SR	—	—	—	—	—	—	—	—	—	—	—	—	.002	.004	—	-SR
-ER	—	—	—	—	—	—	—	—	—	—	—	—	.003	.007	—	-ER

NOTE: Starting feed rate in **bold** type.

KCFM™ 45° • RECOMMENDED STARTING SPEEDS [SFM] • DRY MACHINING

Material Group		KC514M			KBK50			KY3500		
K	1	950	625	445	3935	2625	1970	3165	2870	2560
	2	740	525	375	3935	2625	1970	2495	2245	2085
	3	625	445	360	3935	2625	1970	2100	1870	1705

NOTE: Starting speeds are in **bold** type.

As the average chip thickness increases, the speed should be decreased.

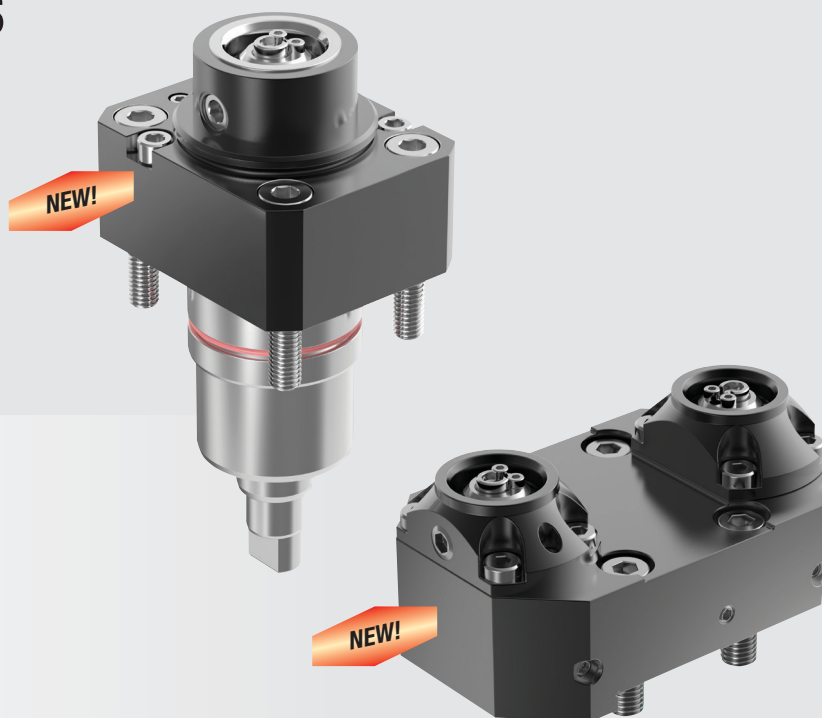
KCFM 45 • RECOMMENDED STARTING SPEEDS [SFM] • WET MACHINING

Material Group		KC514M			KBK50			KY3500		
K	1	760	500	355	-	-	-	-	-	-
	2	590	420	300	-	-	-	-	-	-
	3	500	355	290	-	-	-	-	-	-

NOTE: Starting speeds are in **bold** type.

As the average chip thickness increases, the speed should be decreased.

Turret Adapted Clamping Units



kennametal.com/TACU

Driven and Static • KM™ for
NAKAMURA™ Machines

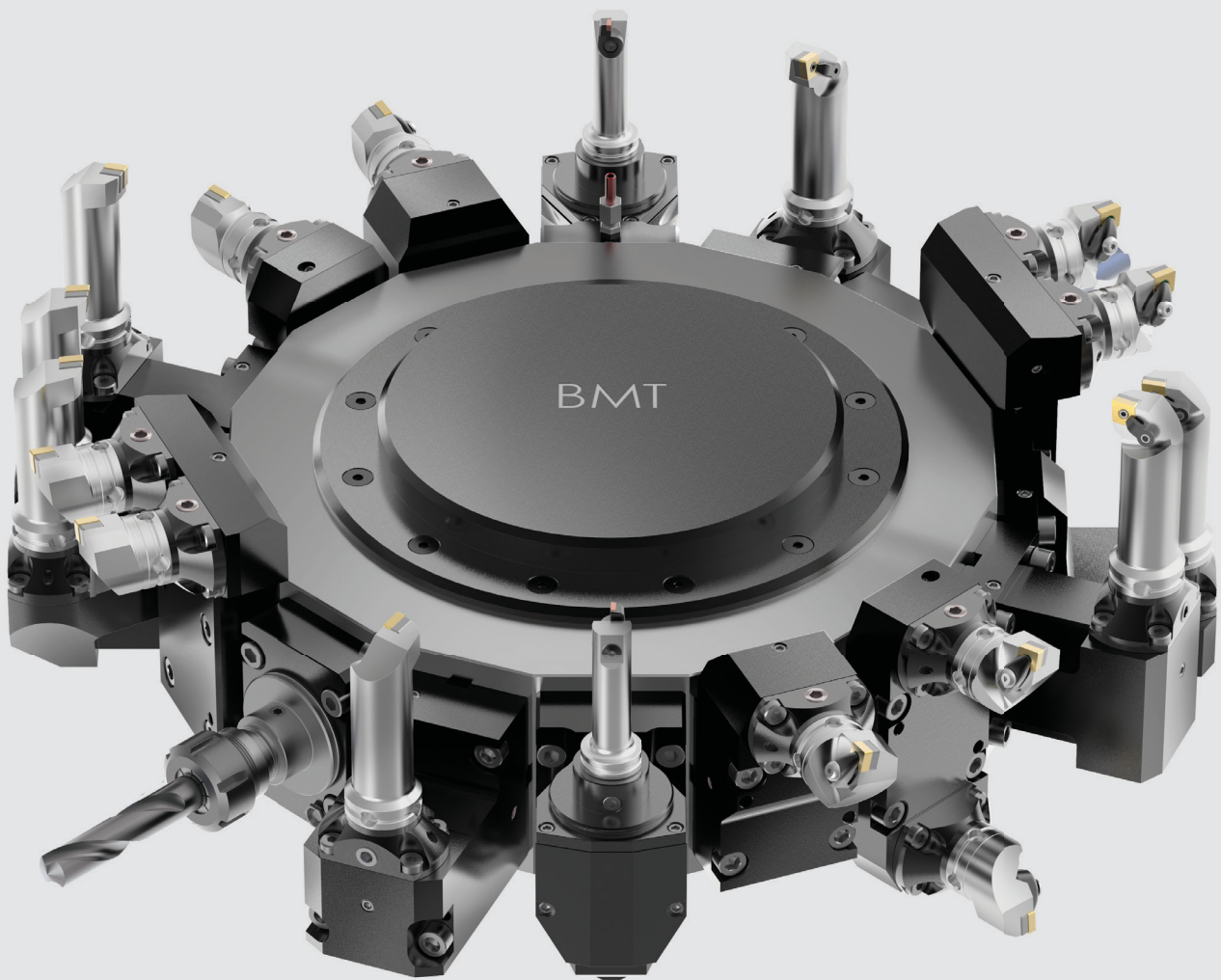
Turret adapted clamping units provide unmatched performance and guaranteed productivity improvement.

Ensure optimized machine utilization by increasing repeatability and reducing setup times.

Turret adapted clamping units are designed to fit specific machine-tool turret interfaces.

The offering covers various machine models from leading machine-tool builders such as DOOSAN™, HAAS™, HWACHEON™, HYUNDIA WIA, Mazak™, DMG Mori, and OKUMA™.

NEW! Driven and static tools for NAKAMURA™ machines up to 6,000 RPM. Gear ratio 1:1.



- Standard portfolio features static blocks and driven tools for KM™ sizes 32, 40, 50, and 63.
- Driven tools for ER sizes 25, 32, and 40.
- Driven tools up to 12,000 RPM. Gear ratio 1:1.
- Designed to fit machine-tool specific turret interfaces.
- VDI mounted units for easy handling.
- Bolt mounted units (BMT) for high rigidity.
- Available with internal and external coolant supply.

TACU • TOOL SELECTION GUIDE

1 STEP 1: Find machine tool manufacturer.

2 STEP 2: Choose machine tool model.

3 STEP 3: Find machine mount code (MMC).

1

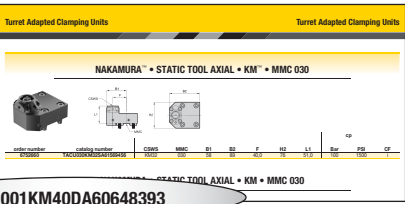
MACHINE TOOL MANUFACTURER			
NEW! NAKAMURA™			
Machine Tool Model	- WY-100 II - NTY3-100	- WY-150 - AS-200/200L (TW10)	
Machine Mount Code (MMC)	MMC 030 Pages: 166–167	MMC031 Pages: 168–169	
	DMG MORI	OKUMA™	HAAS™
Machine Tool Model	- DuraTurn 2050, 2550 MC - NL/NLX 1500–2500 (20 Station Turret) - NT 3100, 3150, 3200 - NT/NTX 1000, 2000 - NZ/NZX 1500–2000 (16 Station Turret) - DIM 1500	- Genos L300 MW/MYW - LB/LU 2000–3000 EX M/MY/MW/MYW - MULTUS U3000, 4000 2S	ST-20/30, SL-20/30 (BOT Turret)
Machine Mount Code (MMC)	MMC 001 Pages: 47–50*	MMC 009 Pages: 54–56*	MMC 013 Page: 26*
Machine Tool Model	- NL/NLX 1500–4000 MC/Y/SMC/SY - NLX 4000 (High Torque Milling) - NZX 2500 (12 Station Turret)	- ES L10 - Genos L400 - LB/LU 2500–3000 EX - LB300, LU300	- ST-20 (BMT65) - ST-20Y (BMT65) - ST-25 (BMT65) - ST-25Y (BMT65) - ST-30 (BMT65) - ST-30Y (BMT65) - ST-35 (BMT65) - ST-35Y (BMT65) - DS-30 (BMT65) - DS-30Y (BMT65)
Machine Mount Code (MMC)	MMC 002 Pages: 50–53*	MMC 013 Page: 56*	MMC 036 Pages: 26–28*
MAZAK™			
Machine Tool Model	- Quick Turn Nexus 200, 250 M, MY (12 Station Turret) - Quick Turn Nexus 200, 250 MS, MSY (12 Station Turret) - Super Quadrex 200, 250 M (12 Station Turret) - Super Quick Turn 200, 250, M, MY (12 Station Turret) - Super Quick Turn 200, 250, MS, MSY (12 Station Turret)	- Hyper Quadrex 200, 250 MSY (12 Station Turret) - Multiplex 6200, 6200Y, 6250 (12 Station Turret)	- Hyper Quadrex 450 M - Megaturn Nexus 900 M - Quick Turn Nexus 300–450 M, MY - Slant Turn Nexus 500, 550 M
Machine Mount Code (MMC)	MMC 016 Pages: 37–39*	MMC 017 Pages: 39–41*	MMC 018 Pages: 42–43*
Machine Tool Model	- MP430, 630 (12 Station Turret) - MP6300, 6300 Y (12 Station Turret)	- Quick Turn Smart 100, 150 M S - Quick Turn Smart 200, 250 M	
Machine Mount Code (MMC)	MMC 019 Pages: 43–45*	MMC 020 Pages: 45–46*	
	DOOSAN™ (DAEWOO™)	HYUNDAI WIA	HWACHEON™
Machine Tool Model	- Lynx 300M - Puma 1500, 2000, 2500 M/Y (12 Station, BMT55) - Puma 1500-2500 MS/SY (12 Station, BMT55) - Puma 2100 M/MS/Y/SY (24 Station, BMT55) - Puma 2100 M/Y (12 Station, BMT55) - Puma 230, 240, 280 M/MS/LM - Puma MX1600, 2100 ST (BMT55) - Puma TL2000, 2500 M - Puma TT1500, 1800 MS/SY	- L230LMSA - LM1600, 1800TTSY - SKT160, 180TTMS/TTSY (BMT55)	Cutex 160 MC/SMC (BMT 55)
Machine Mount Code (MMC)	MMC 035 Pages: 22–23*	MMC 035 Pages: 33–34*	MMC 035 Pages: 29–30*
Machine Tool Model	- Puma 2100, 2600 M/MS/Y/SY (24 Station, BMT65) - Puma 2100, 2600 M/MS/Y/SY (12 Station, BMT65) - Puma 3100 M/Y/MY (12 Station, BMT65) - Puma MX2000, 2500, 2600 T/ST/SY - Puma VT450 M, VT450 M-2SP - Puma Invertum 3000 M - Puma 300 M/MS - Puma TT2000, 2500 MS/SY - Puma V400M	- SKT200, 250TTM/MS/SY - SKT250, 300M/MS - L2100SY - LM2000, 2500TTM/TTMS/TTSY - L300M/MS	- Cutex 240 MC/SMC - Hi-Tech 200–450 MC/SMC/YMC/YSMC (BMT 65) - T2 MC/SMC/YMC/YSMC - VT450 MC (BMT65)
Machine Mount Code (MMC)	MMC 036 Pages: 23–25*	MMC 036 Pages: 34–36*	MMC 036 Pages: 30–32*

* See page in the Kennametal Innovations Catalog 2020 | 01 • A-19-05951.



TACU • CATALOG NUMBERING SYSTEM

Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



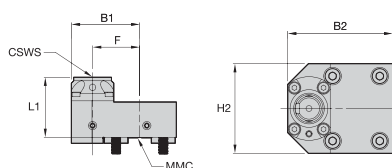
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TACU	001	KM	40	D	A	60648393
Turret Adapted Clamping Unit	Machine Mount Code (MMC)	System Style	System Size (CSWS)	Tool Type	Tool Orientation	8 Digit Drawing Number
		KM = KM ER = ER	25, 32, 40, 50, 63	S = Static Tool D = Driven Tool	A = Axial R = Radial	

For additional information, see Kennametal Innovations Catalog 2020 | 01 • A-19-05951, or visit kennametal.com/TACU.

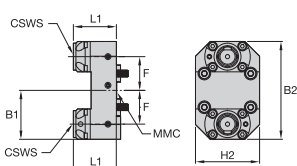


NAKAMURA™ • STATIC TOOL AXIAL • KM™ • MMC 030



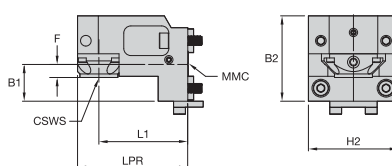
									cp		
order number	catalog number	CSWS	MMC	B1	B2	F	H2	L1	Bar	PSI	CF
6752660	TACU030KM32SA61569456	KM32	030	58	89	40,0	76	51,0	100	1500	i

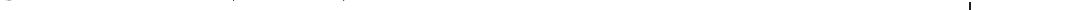
NAKAMURA • STATIC TOOL AXIAL • KM • MMC 030



									cp		
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6752722	TACU030KM32SA61569459 *	KM32	030	58	116	40,0	76	31,0	100	1500	i

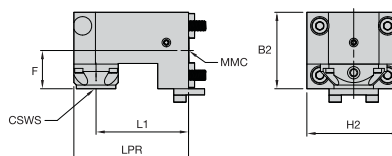
NAKAMURA • STATIC TOOL RADIAL • KM • MMC 030





order number	catalog number	CSWS	MMC	B1	B2	F	H2	L1	LPR	Bar	PSI	CF
6752721	TACU030KM32SR61569457	KM32	030	31	72	11.0	76	75.0	93	100	1500	i

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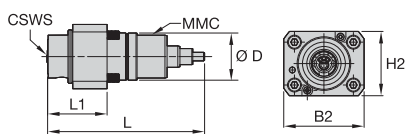


									cp		
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6752723	TACU030KM32SR61569460	KM32	030	62	31,0	76	75,0	93	100	1500	i

171	165	4	176

NOTE: * = Only usable on machines equipped with sub-spindle.

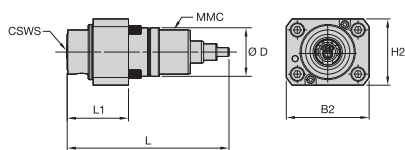
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cp

order number	catalog number	CSWS	MMC	B2	D	H2	L	L1	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741420	TACU030KM32DA61569437	KM32	030	75	44	60	147	55,5	25	70	1000	e	M10X1	6000

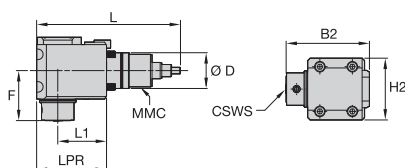
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order number	catalog number	CSWS	MMC	B2	D	H2	L	L1	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741592	TACU030KM32DA61569454	KM32	030	75	44	60	147	55,5	25	70	1000	i/e	M10X1	6000

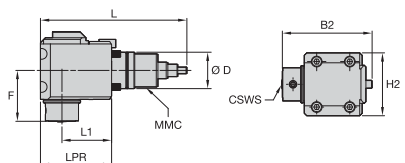
NAKAMURA • DRIVEN TOOL RADIAL • KM • MMC 030



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order number	catalog number	CSWS	MMC	B2	D	F	H2	L	L1	LPR	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741591	TACU030KM32DR61569438	KM32	030	103	44	61,5	76	177	60,0	86	25	70	1000	e	M10X1	6000

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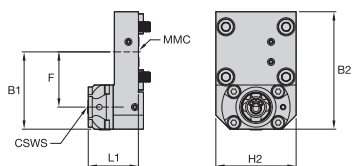


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order number	catalog number	CSWS	MMC	B2	D	F	H2	L	L1	LPR	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741593	TACU030KM32DR61569455	KM32	030	109	44	61,5	76	177	60,0	86	25	70	1000	i/e	M10X1	6000

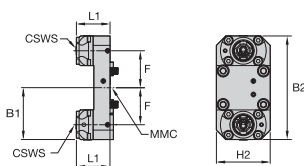
171	165	4	176

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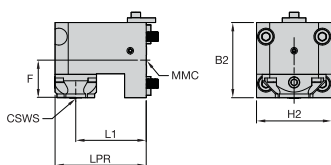
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6752724	TACU031KM40SA61569465	KM40	031	77	117	55,0	80	50,0	Bar	PSI	CF
									100	1500	i

NAKAMURA • STATIC TOOL AXIAL • KM • MMC 031



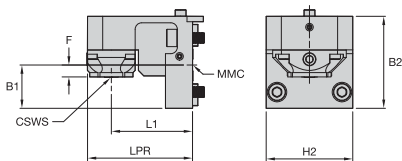
order number	catalog number	CSWS	MMC	B1	B2	F	H2	L1	cp		
6752726	TACU031KM40SA61569467	KM40	031	77	154	55,0	80	50,0	Bar	PSI	CF
									100	1500	i

NAKAMURA • STATIC TOOL RADIAL • KM • MMC 031



order number	catalog number	CSWS	MMC	B2	F	H2	L1	LPR	cp		
6752725	TACU031KM40SR61569466	KM40	031	80	40,0	80	75,0	97	Bar	PSI	CF
									100	1500	i/e

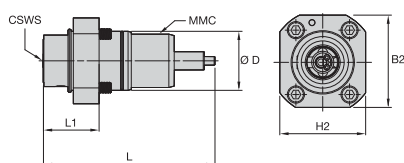
NAKAMURA • STATIC TOOL RADIAL • KM • MMC 031



order number	catalog number	CSWS	MMC	B1	B2	F	H2	L1	LPR	cp		
6752727	TACU031KM40SR61569468	KM40	031	40	85	11,0	80	75,0	97	Bar	PSI	CF
										100	1500	i

171	165	4	176

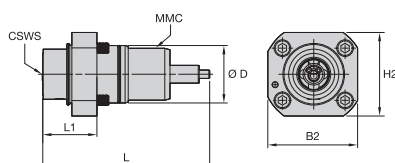
NAKAMURA™ • DRIVEN TOOL AXIAL • KM™ • MMC 031



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order number	catalog number	CSWS	MMC	B2	D	H2	L	L1	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741594	TACU031KM40DA61569461	KM40	031	86	55	80	160	52,0	25	70	1000	e	M10X1	6000

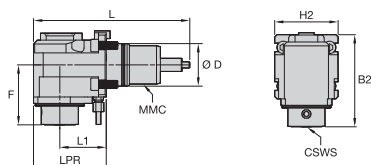
NAKAMURA • DRIVEN TOOL AXIAL • KM • MMC 031



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order number	catalog number	CSWS	MMC	B2	D	H2	L	L1	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741596	TACU031KM40DA61569463	KM40	031	86	55	80	160	52,0	25	70	1000	i/e	M10X1	6000

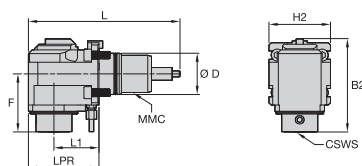
NAKAMURA • DRIVEN TOOL RADIAL • KM • MMC 031



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order number	catalog number	CSWS	MMC	B2	D	F	H2	L	L1	LPR	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741595	TACU031KM40DR61569462	KM40	031	119	55	77,5	82	202	60,0	94	25	70	1000	e	G 1/8	6000

NAKAMURA • DRIVEN TOOL RADIAL • KM • MMC 031



cp

order number	catalog number	CSWS	MMC	B2	D	F	H2	L	L1	LPR	mST (Nm)	Bar	PSI	CF	CS1	max RPM
6741597	TACU031KM40DR61569464	KM40	031	125	55	77,5	82	202	60,0	94	25	70	1000	i/e	G 1/8	6000

171	165	4	176

HOLEMAKING

			wear resistance ← → toughness											
Coating		Grade Description		05	10	15	20	25	30	35	40	45		
KCP15A		Composition: Monolayer PVD AlTiN coated submicron grain carbide. Application: First choice for steel and second choice for cast iron. This grade consists of an updated AlTiN coating, offering improved high temperature properties on top of the proven fine grain carbide substrate offering required toughness for modular drilling applications.	P											
			K											
KCP15B		Composition: Multilayered PVD AlTiN-based coated submicron grain carbide with superior surface finish. Application: First choice for steel. A proprietary coating combined with a state-of-the-art surface condition results in best-in-class tool life, as well as performance consistency in all steel workpieces at elevated cutting conditions.	P											

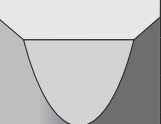
SOLID END MILLING

Coating		Grade Description	wear resistance ← → toughness									
				05	10	15	20	25	30	35	40	45
KCPM15		Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	P									
			M									
			K									
KCSM15		Coated carbide grade with thick PVD coating and optimized chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.	M									
			K									
			S									
			H									
K600		Carbide grade made from high-quality, micrograin materials for cutting all types of workpiece materials. Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp cutting edges.	N									
			K									
KC643M		Coated fine-grain grade with PVD multilayer (AlTiN). KC643M™ is a very thin and hard PVD coating particularly suited for cutting steel, cast iron, stainless steel (wet), and titanium (wet). This grade can be used for materials with hardness up to 52 HRC.	P									
			M									
			K									
			S									

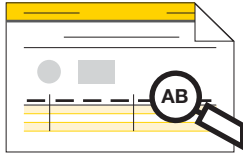
TURNING

		wear resistance ← toughness									
Coating	Grade Description		05	10	15	20	25	30	35	40	45
KCS10B	 Composition: PVD-AlTiN coating with a very smooth coating surface and extremely hard, wear-resistant ultra fine-grain carbide substrate. Application: The KCS10B™ grade is ideal for medium machining and finishing operations of Nickel-Based, Cobalt-Based, and Iron-Based High-Temperature Alloys. The extremely hard, wear-resistant carbide substrate allows for longer tool life while the ultra fine-grain carbide substrate and smoother coating reduces friction.										
		S									

INDEXABLE MILLING

		wear resistance ← toughness									
Coating	Grade Description		05	10	15	20	25	30	35	40	45
KC514M	 Coated carbide grade with a thicker PVD TiAlN coating. KC514M combines high wear resistance with good toughness. Primarily for light to medium machining of cast irons. This grade can be used both wet and dry.										
		K									
KBK50	 A high CBN content, PcBN tip brazed onto a carbide insert. Designed to machine at highest speeds and tool life on semi-finishing and finishing cast iron materials.										
		K									
KY3500	 A ceramic cutting material based on micro-grain Si₃N₄, primarily for use in light to general machining of gray cast iron and ferritic ductile cast iron. Dry machining is preferred while using this grade.										
		K									

KEY TO PRODUCT TABLE COLUMN HEADINGS



You may notice a slight change in the appearance of our product tables and specification charts. In this catalog, Kennametal introduces a set of short-name codes to improve the readability of tables and drawings. These codes replace full-text descriptions. The full list of codes and their definitions can be found below.

Short-Name Code	Full Text Description
Ap1 max	Maximum Cutting Depth
B	Shank Width
B1	Front Clearance
B2	Overall Width
Bar	Coolant Pressure Bar
BCH	Corner Chamfer Width
BDX	Maximum Body Diameter
BR1	Boring Range
BS	Corner Facet Length
CD	Cutting Depth
CE	Cutting Edges
CF	Coolant Feature: i = internal e = external i/e = internal and external
CF	Coolant Supply Size Radial
CFVDI	Coolant Supply Size - VDI
cp	Coolant Pressure
CS	Coolant Supply Size
CS1	External Coolant, Coolant Supply Exit Size
CSMS	Connection Style Machine Side
CST	Collet Series
CSWS	Connection Style Workpiece Side
D	Insert: Insert IC Size
D	Milling: Mounting Diameter
D	Toolholder: Shank/Bore Diameter
D max	Maximum Bore Diameter
D min	Minimum Bore Diameter
D1	Milling: Cutter Diameter
D1	Holemaking: Drill Diameter
D1	Toolholder: Clamping Diameter
D1 max	Maximum Cutting Diameter
D2	Body Diameter 1 Workpiece Side
D3	Neck Diameter
D4	Bolt Circle Diameter
D5	Body Diameter Machine Side
D6	Hub Diameter
DCLC	Boss Diameter
DCLC2	Boss Diameter 2
F	F Dimension
G	Connector Thread Size Machine Side
G3	Connection Thread Size Workpiece Side
GI	Gage Insert
H	Shank Height
H1	Cutting Height
H2	Overall Height
H2	Toolholder: Head Height
H3	Head Bottom Offset
hm	Average Chip Thickness
HW	Shank Height
kg	Weight Kilograms
L	Overall Length
L1	Gage Length
L1	Toolholder: Tool Length
L1A	L1 A Dimension
L1 assy	L1 Assembly Length
L1S	Secondary Tool Length
L10	Insert Cutting Edge Length
L2	Usable Length
L2 assy	L2 Assembly Length
L3	Maximum Depth
L3	Drill Flute Length
L4	Maximum Boring Depth
L4 max	Maximum Drill Depth
L5	Drill Point Length
lbs	Weight Pounds
LCLC	Boss Length
LCLC2	Boss Length 2
LH	Head Length
LPR	Protruding Length
LS	Shank Length
M	Insert Gage Dimension
max RPM	Maximum Revolutions Per Minute
MMC	Machine Mount Code
mST (Nm)	Max Spindle Torque (Nm)
Nm	Torque Newton Meters
PSI	Coolant Pressure PSI
R _s	Corner Radius
S	Insert Thickness
SSC	Seat Size Code
W	Overall Width
W1	Blade Width
γF°	Radial Rake Angle
γP°	Axial Rake Angle
Z	Number of Inserts
Z ADJ	Number of Adjustable Inserts

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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	A36, 1008, 1010, 1018 through 1029; 1108, 1117
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	10L18, 1200 Series, 1213, 12L14
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	1035, 1045, 10L45, 1050, 10L50, 1080, 1137, 1144, 11L44, 1525, 1545, 1572
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	1300, 2000, 3000, 4000, 5000, 8000, P20, SAE: A, D, H, O, S, M, T
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	15–5 PH, 13–8 PH, 17–4 PH, 400 and 500 Series
M1	Austenitic Stainless Steel	–	<600	130–200	–	200 Series, 301, 302, 304, 304L, 309
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	310, 316, 316L, 321, 347, 384 ASTM Cast XM-1, XM-5, XM-7, XM-21
M3	Duplex Stainless Steel	–	<800	135–275	<30	323, 329, F55, 2205, S329000
K1	Gray Cast Iron	–	125–500	120–290	<32	class 20, 25, 30, 35, 40, 45, 50, 55, 60, G1800, G3000, G3500, G4000
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	60-40-18, 65-45-12, 80-55-06; SAE J434: D4018, D4512, D5506; ASTM A47: Grade 32510, 35018; SAE J158: Grade M3210, M4504, M5003, M5503, M7002; ASTM A842: Grade 250, 300, 350, 400, 450
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	ASTM A536:100-70-03, 120-90-02, SAE J434: D7003, SAE J158: Grade M8501AST A897: 125-80-10, 150-100-7, 175-125-4, 200-150-1, 230-185
N1	Wrought Aluminum	–	–	–	–	2025, 5050, 7050, 1000, 2017
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	2024, 6061, 7075
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	–
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	C81500
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	–
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	Graphite, CFK, CFRP
N7	Metal Matrix Composites (MMC)	–	–	–	–	C63000
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	A-286, INCOLOY® 800 Series, A608, A567, Discaloy™, INVAR®, N-155, 16-25-6, 19-9 DL; Cast: ASTM A-297, A-351, A-567, A-608
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 25 (L605), Haynes 188, J-1570, Stellite™, AiResist 213; Cast: AiResist 13, Haynes 21, MAR-M302, MAR-M509, NASA Co-W-Re, WI-52
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	Astroloy™, Hastelloy® B/C/ C-276 /X, INCONEL® 600 and 700 Series, IN102, INCOLOY 900 Series, Rene 41, Waspalloy, Monel®, K-500, MAR-M20, NIMONIC®, UDIMET™
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Pure: Ti 98.8, Ti 98.9, Ti 99.9; Alloyed: Ti 5Al-2.5Sn, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo, Ti-3Al-8V-6Cr-4Mo-4Zr, Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al
H1	Hardened Materials	–	–	–	44–48	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H2	Hardened Materials	–	–	–	48–55	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H3	Hardened Materials	–	–	–	56–60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
H4	Hardened Materials	–	–	–	>60	Tool Steel H10, H11, H13, D2, D3, 4340, P20
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High-Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

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

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Gray Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAISiCu4, GDAISI10Mg
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-ALSi17Cu4, G-ALSi21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	Lexan®, Hostalen®, Polystyrol, Makrolon
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite® 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

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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 the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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