

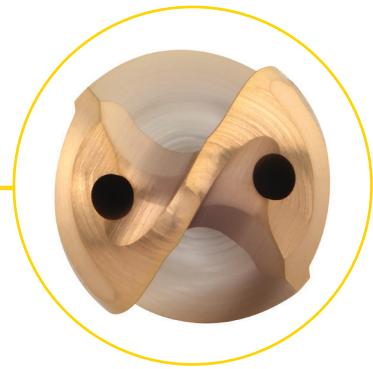
INNOVATIONS
2021 | 02 | METRIC

HPR DRILL

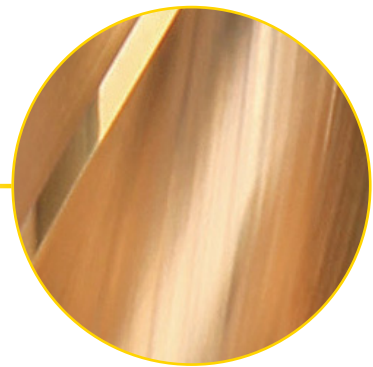
For high-volume cast iron production.



Material-specific low-thrust drill point design for maximum hole straightness. Patented corner radius for long tool life and excellent hole quality.



Wide flute cross section for hassle-free chip evacuation.



Ultra-high polished flutes, providing minimum friction, improving chip evacuation and tool life.

INNOVATIONS

Services & Support	2-5
Contact Information	2-3
Spare Parts & Accessories Information • Online Catalogue.....	4-5
Holemaking	6-18
HPR Drill • Solid Carbide Drills	6-18
Milling	20-39
HARVI I TE • Solid Carbide End Mills	20-39
PCD Tooling	40-54
Drills, End Mills, and Reamers for Aluminium Machining.....	40-54
General Information	56-58
Grades and Grade Descriptions.....	56
Key to Column Headings	57
Material Cross Reference.....	58

CAS — Customer Application Support

Get Fast and Reliable Answers to Your Toughest Problems

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

Easy Access to Proven Metalworking Expertise!

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



Region	Originating Country	Language	CAS Hotline	Email
North America	USA	English	800 835 3668	na.techsupport@kennametal.com
	Mexico	Spanish	1800 253 0758	na.techsupport@kennametal.com
Africa	South Africa	English	0800 981643	na.techsupport@kennametal.com
Europe	Austria	German	0800 202873	eu.techsupport@kennametal.com
	Belgium	English/French	0800 80850	eu.techsupport@kennametal.com
	Denmark	English	808 89298	na.techsupport@kennametal.com
	Finland	English	0800 919412	na.techsupport@kennametal.com
	France	French	080 5540 367	eu.techsupport@kennametal.com
	Germany	German	0800 0006651	eu.techsupport@kennametal.com
	Israel	English	1809 449889	na.techsupport@kennametal.com
	Italy	Italian	800 916561	eu.techsupport@kennametal.com
	Netherlands	English	0800 0201 130	eu.techsupport@kennametal.com
	Norway	English	800 10080	na.techsupport@kennametal.com
	Poland	Polish	0080 04411887	eu.techsupport@kennametal.com
	Russia (landline)	Russian	8800 5556394	eu.techsupport@kennametal.com
	Russia (cell phone)	Russian	+7 800 5556394	eu.techsupport@kennametal.com
Asia Pacific	Australia	English	1800 666 667	ap-kmt.techsupport@kennametal.com
	India	English	1 800 103 5227	in.techsupport@kennametal.com
	Japan	English	03 3820 2855	ap-kmt.techsupport@kennametal.com
	Korea (South)	English	+82 2 2100 6100	ap-kmt.techsupport@kennametal.com
	Malaysia	English	1800 812 990	ap-kmt.techsupport@kennametal.com
	New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
	Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
	Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com	

Numbers shown only serve the originating country listed.



Service & Sales Centres Around the World

Region	Country	Sales Hotline	Email
North America	United States	+1 800 446 7738	FtMill.Service@kennametal.com
	Canada	+1 800 446 7738	toronto.service@kennametal.com
	Mexico	+1 888 402 4963	k-mx.service@kennametal.com
Central/South America	Argentina	+54 11 4719 0700	buenos-aires.ventas@kennametal.com
	Brazil	+55 19 3936 9200	bra.marketing@kennametal.com
	Chile	+56 2 2264 1177	kennametalchile@kennametalchile.cl
Africa	Egypt	+44 1384 408060	na.techsupport@kennametal.com
	South Africa	+27 11 748 9300	na.techsupport@kennametal.com
Europe	Austria	+43 2236 3798980	brunn.sales@kennametal.com
	Belgium	+32 0800 81 372	belgium.sales@kennametal.com
	Czech Republic	+420 800 900 840	k-prha.sales@kennametal.com
	France	+33 1 60 12 81 00	info.fr@kennametal.com
	Germany	+49 6003 8277 0	rosbach.sales@kennametal.com
	Great Britain	+44 1384 408060	kingswinford.service@kennametal.com
	Hungary	+36 96 618 150	gyoer.sales@kennametal.com
	Ireland	+44 1384 408060	na.techsupport@kennametal.com
	Italy	+39 02 895 961	milano.vendite@kennametal.com
	Luxemborg	+32 4 248 48 48	liege.sales@kennametal.com
	Netherlands	+31 0800 44 33 201	netherlands.sales@kennametal.com
	Poland	+48 61 6656501	poland.service@kennametal.com
	Portugal	+351 22 4119 400	porto.service@kennametal.com
	Russia	+7 495 4115386	moscow.information@kennametal.com
Slovakia	+421 0800 044 053	k-eu-zilina.sales@kennametal.com	
Spain	+34 93 586 03 50	barcelona.service@kennametal.com	
Turkey	+90 216 574 4780	tr.information@kennametal.com	
Asia Pacific	Australia	+61 800 666 667	k-au.service@kennametal.com
	China	+86 400 889 2135	k-cn.service@kennametal.com
	India	+91 800 103 5138	k-bngl.information@kennametal.com
	Indonesia	+65 6265 9222	k-sg.sales@kennametal.com
	Japan	+81 3 3820 2855	k-jp.service@kennametal.com
	Korea (South)	+82 2 2109 6100	k-kr-service@kennametal.com
	Malaysia	+60 3 5569 9080	k-sg.sales@kennametal.com
	New Zealand	+64 0800 536626	k-nz.service@kennametal.com
	Singapore*	+65 62659222	k-sg.sales@kennametal.com
	Taiwan	+886 4 2350 1920	taiwan.service@kennametal.com
Thailand	+66 2 642 3455	k-sg.sales@kennametal.com	

*Vietnam and Philippines individuals should contact the Singapore office.

Visit kennametal.com to find local Authorised Kennametal Distributors.



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 kenmetal.com and find what you need in seconds. Enter the catalogue number of the corresponding tool, and it will display.

1 STEP 1 Enter the tool catalogue number here

KENNAMETAL

Search By Keyword, Part #, ANSI/ISO

PRODUCTS SOLUTIONS SERVICES RESOURCES SUPPORT ABOUT US

English / Products / Metalworking Tools / Milling / Indexable Milling / Milling Inch Tools / Face Mills / Mill 16 / Mill 16 • Shell Mills

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	12148044800	KLSS0714C	DTQ50140	BTQSW3L90



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

Visit kenmetal.com/novo and download today.
It's Free!



Online Catalogue

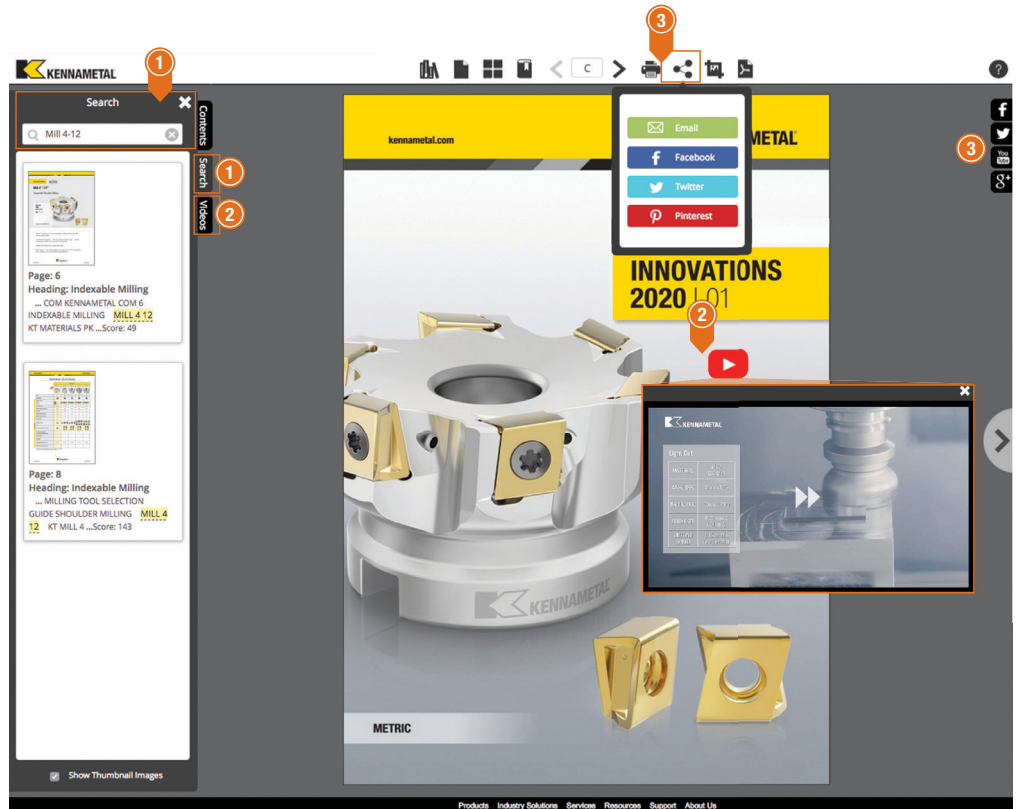
**Can't find your paper copy of our catalogue anymore?
No worries. Go to catalogues.kennametal.com to see what's out there.**

Search for what you need, watch a video, and share pages with others, all from one site! Go to catalogues.kennametal.com, and if you want to check it out on your mobile device, just download the FREE app for iOS or Android™.

1 Search for what you need

2 Watch videos

3 Share with others



Check out our new catalogue app.
Available in the Google Play™ Store or
the App Store®



HPR Drill

Solid Carbide Drill for Cast Iron



Materials



Applications



Drilling



Drilling:
Cross Hole



Drilling:
Inclined Exit



Shank MQL



Drilling:
Stacked Plates

kennametal.com/HPR-Drill

The HPR Drill is the ultimate solution for high-volume cast iron production, providing high-speed, high-feed drilling up to 8 x D with standard through coolant supply.

Compared to universal drills, the HPR Drill allows for up to 2 times higher cutting parameters.

HPR stands for highest metal removal rates (MRR), lowest cost-per-part (CPP), and more capacity on the shop floor.

Material-specific low-thrust drill point design for maximum hole straightness.

Patented corner radius for long tool life and excellent hole quality.



Wide flute cross section for hassle-free chip evacuation.



4 margin lands. Maximum stability for cross-hole drilling and inclined exits.

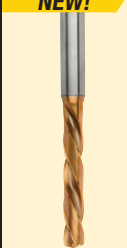





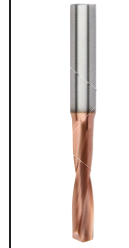
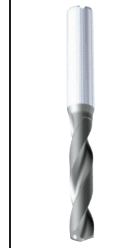
















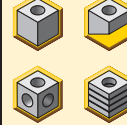
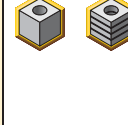
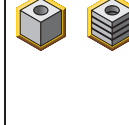
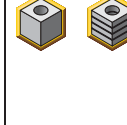
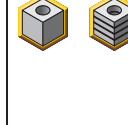
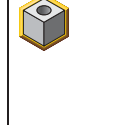
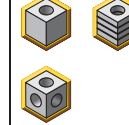
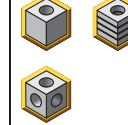





















All shanks are MQL-ready.

Patented AITiN/AITiSiN multilayer coating withstands abrasive and thermal loads to increase tool life.

HPR Drill design features:

- Patented corner radius, enabling long tool life, excellent hole quality, while avoiding workpiece chipping during exits.
- Patented HPR point thinning, providing excellent self-centering capabilities with low thrust, enabling excellent hole straightness.
- 4 margin lands, ideal for cross holes and inclined exits, providing maximum stability.
- Ultra-high polished flutes, providing minimum friction, improving chip evacuation and tool life.
- MQL-ready! All shanks fulfill the DIN 6535 and 69090-03 requirements for minimum quantity lubrication.

TOOL SELECTION GUIDE • MATERIAL SPECIFIC DRILLS





































	HPR Drills	HPX Drills	HPX Drills	SGL Drills	HPS Drills	Y-TECH™ Drills	KMH Drills	KMH Drills
	NEW! 							
								
Series	B254_HPR B255_HPR B256_HPR	B221_HPX B222_HPX	B224_HPX B225_HPX B226_HPX	B210_SGL B211_SGL B212_SGL	B284_HPS B285_HPS B286_HPS	B291_YPL B292_YPL	B941A	B951A
Page	11	11, 14**	16, 18, 21**	G38*	G88*	G94*	G126*	G127*
Workpiece material								
Primary	K	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	IT9-IT10
Standard range								
Cutting diameter [D1]	3,0-20,0mm	3,0-20,0mm	3,0-20,0mm	2,5-20,0mm	3,0-20,0mm	3,0-20,0mm	2,5-14,0mm	3,0-16,0mm
Drill length [L4 max]	14,0-160,0mm	14,0-85,0mm	14,0-160,0mm	12,0-160,0mm	14,0-124,0mm	14,0-77,0mm	14,0-43,0mm	14,0-45,0mm
Drilling depth L/D1	3-8 x D	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	143°	140°	140°	140°	135°	140°	142°	140°
Flute angle	30°	30°	30°	30°	30°	30°	15°	30°
Coolant								
Operations								
Flutes and margin								
Corner chamfer								
Shank								

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

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

- Primary
- Secondary

TOOL SELECTION GUIDE • VERSATILE DRILLS

	GOdrill™	GOdrill	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	1,0-20,0mm	3,0-20,0mm	2,4-20,0mm
Drill length [L4 max]	5,0-77,0mm	5,0-124,0mm	14,0-85,0mm	12,0-124,0mm
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	 	 	 	 

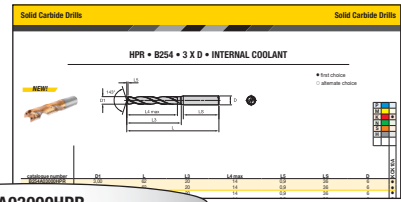
*See page in the Kennametal Master Catalogue 2018 • Volume Two • Rotating Tools, A-16-05217.

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

- Primary
- Secondary

HPR • CATALOGUE NUMBERING SYSTEM

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

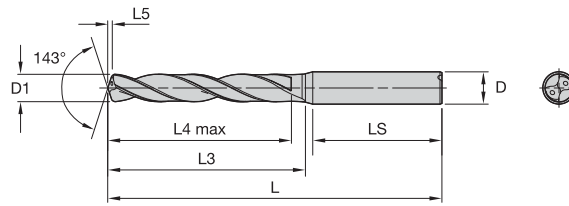


B254A03000HPR

B	25	4	A	03000	HPR
Style	Drill Series	Length/ Coolant	Shank	Diameter	Point Geometry/ Application
<p>B = Metric Shank</p> <p>K = Inch Shank</p>	<p>25* = Cast Iron Drills</p>	<p>4 = ~ 3 x D</p> <p>5 = ~ 5 x D</p> <p>6 = ~ 8 x D</p>	<p>A = Form HA, straight round shank</p> <p>F = Form FE, Whistle Notch 2° (B series DIN 6535–2mm steps)</p>	<p>03000 = 3mm</p> <p>06350 = 1/4" = E = 6,35mm</p>	<p>HPR = Next generation HP point for cast iron</p>

HPR • B254 • 3 X D • INTERNAL COOLANT

- first choice
- alternate choice



P	■
M	■
K	■
N	■
S	■
H	■

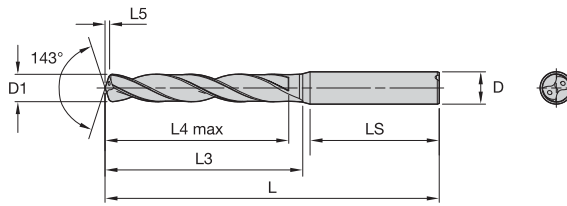
catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B254A03000HPR	3,00	62	20	14	0,9	36	6	●
B254A03100HPR	3,10	62	20	14	0,9	36	6	●
B254A03175HPR	3,18	62	20	14	0,9	36	6	●
B254A03200HPR	3,20	62	20	14	0,9	36	6	●
B254A03264HPR	3,26	62	20	14	1,0	36	6	●
B254A03300HPR	3,30	62	20	14	1,0	36	6	●
B254A03400HPR	3,40	62	20	14	1,0	36	6	●
B254A03455HPR	3,46	62	20	14	1,0	36	6	●
B254A03500HPR	3,50	62	20	14	1,0	36	6	●
B254A03600HPR	3,60	62	20	14	1,1	36	6	●
B254A03658HPR	3,66	62	20	14	1,1	36	6	●
B254A03700HPR	3,70	62	20	14	1,1	36	6	●
B254A03800HPR	3,80	66	24	17	1,1	36	6	●
B254A03900HPR	3,90	66	24	17	1,1	36	6	●
B254A03970HPR	3,97	66	24	17	1,2	36	6	●
B254A04000HPR	4,00	66	24	17	1,2	36	6	●
B254A04100HPR	4,10	66	24	17	1,2	36	6	●
B254A04200HPR	4,20	66	24	17	1,2	36	6	●
B254A04300HPR	4,30	66	24	17	1,3	36	6	●
B254A04400HPR	4,40	66	24	17	1,3	36	6	●
B254A04500HPR	4,50	66	24	17	1,3	36	6	●
B254A04600HPR	4,60	66	24	17	1,4	36	6	●
B254A04700HPR	4,70	66	24	17	1,4	36	6	●
B254A04763HPR	4,76	66	28	20	1,4	36	6	●
B254A04800HPR	4,80	66	28	20	1,4	36	6	●
B254A04852HPR	4,85	66	28	20	1,4	36	6	●
B254A04900HPR	4,90	66	28	20	1,4	36	6	●
B254A05000HPR	5,00	66	28	20	1,5	36	6	●
B254A05055HPR	5,06	66	28	20	1,5	36	6	●
B254A05100HPR	5,10	66	28	20	1,5	36	6	●
B254A05106HPR	5,11	66	28	20	1,5	36	6	●
B254A05200HPR	5,20	66	28	20	1,5	36	6	●
B254A05300HPR	5,30	66	28	20	1,6	36	6	●
B254A05400HPR	5,40	66	28	20	1,6	36	6	●
B254A05500HPR	5,50	66	28	20	1,6	36	6	●
B254A05558HPR	5,56	66	28	20	1,6	36	6	●
B254A05600HPR	5,60	66	28	20	1,6	36	6	●
B254A05700HPR	5,70	66	28	20	1,7	36	6	●
B254A05800HPR	5,80	66	28	20	1,7	36	6	●
B254A06000HPR	6,00	66	28	20	1,8	36	6	●
B254A06100HPR	6,10	79	34	24	1,8	36	8	●
B254A06200HPR	6,20	79	34	24	1,8	36	8	●
B254A06300HPR	6,30	79	34	24	1,9	36	8	●
B254A06350HPR	6,35	79	34	24	1,9	36	8	●
B254A06400HPR	6,40	79	34	24	1,9	36	8	●
B254A06500HPR	6,50	79	34	24	1,9	36	8	●
B254A06600HPR	6,60	79	34	24	1,9	36	8	●
B254A06700HPR	6,70	79	34	24	2,0	36	8	●
B254A06746HPR	6,75	79	34	24	2,0	36	8	●
B254A06800HPR	6,80	79	34	24	2,0	36	8	●
B254A07000HPR	7,00	79	34	24	2,1	36	8	●
B254A07100HPR	7,10	79	41	29	2,1	36	8	●
B254A07145HPR	7,15	79	41	29	2,1	36	8	●
B254A07200HPR	7,20	79	41	29	2,1	36	8	●
B254A07400HPR	7,40	79	41	29	2,2	36	8	●
B254A07500HPR	7,50	79	41	29	2,2	36	8	●
B254A07800HPR	7,80	79	41	29	2,3	36	8	●
B254A07938HPR	7,94	79	41	29	2,3	36	8	●
B254A08000HPR	8,00	79	41	29	2,4	36	8	●
B254A08100HPR	8,10	89	47	35	2,4	40	10	●

56	57	10	4	60

HPR • B254 • 3 X D • INTERNAL COOLANT

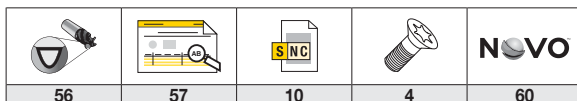
(continued)

- first choice
- alternate choice



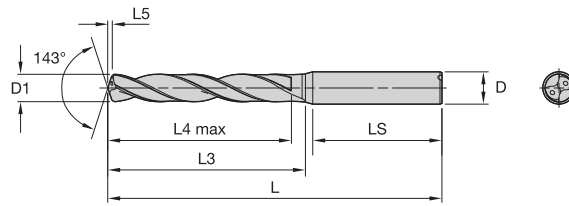
P	■
M	■
K	■
N	■
S	■
H	■

catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B254A08200HPR	8,20	89	47	35	2,4	40	10	●
B254A08500HPR	8,50	89	47	35	2,5	40	10	●
B254A08700HPR	8,70	89	47	35	2,6	40	10	●
B254A08733HPR	8,73	89	47	35	2,6	40	10	●
B254A08800HPR	8,80	89	47	35	2,6	40	10	●
B254A09000HPR	9,00	89	47	35	2,6	40	10	●
B254A09100HPR	9,10	89	47	35	2,7	40	10	●
B254A09200HPR	9,20	89	47	35	2,7	40	10	●
B254A09500HPR	9,50	89	47	35	2,8	40	10	●
B254A09525HPR	9,53	89	47	35	2,8	40	10	●
B254A09800HPR	9,80	89	47	35	2,9	40	10	●
B254A10000HPR	10,00	89	47	35	2,9	40	10	●
B254A10200HPR	10,20	102	55	40	3,0	45	12	●
B254A10300HPR	10,30	102	55	40	3,0	45	12	●
B254A10320HPR	10,32	102	55	40	3,0	45	12	●
B254A10500HPR	10,50	102	55	40	3,1	45	12	●
B254A10800HPR	10,80	102	55	40	3,2	45	12	●
B254A11000HPR	11,00	102	55	40	3,2	45	12	●
B254A11113HPR	11,11	102	55	40	3,3	45	12	●
B254A11500HPR	11,50	102	55	40	3,4	45	12	●
B254A11800HPR	11,80	102	55	40	3,5	45	12	●
B254A12000HPR	12,00	102	55	40	3,5	45	12	●
B254A12500HPR	12,50	107	60	43	3,7	45	14	●
B254A12700HPR	12,70	107	60	43	3,7	45	14	●
B254A13000HPR	13,00	107	60	43	3,8	45	14	●
B254A13500HPR	13,50	107	60	43	4,0	45	14	●
B254A14000HPR	14,00	107	60	43	4,1	45	14	●
B254A14288HPR	14,29	115	65	45	4,2	48	16	●
B254A14500HPR	14,50	115	65	45	4,3	48	16	●
B254A15000HPR	15,00	115	65	45	4,4	48	16	●
B254A15500HPR	15,50	115	65	45	4,6	48	16	●
B254A16000HPR	16,00	115	65	45	4,7	48	16	●
B254A16500HPR	16,50	123	73	51	4,8	48	18	●
B254A17000HPR	17,00	123	73	51	5,0	48	18	●
B254A17500HPR	17,50	123	73	51	5,1	48	18	●
B254A18000HPR	18,00	123	73	51	5,3	48	18	●
B254A18500HPR	18,50	131	79	55	5,4	50	20	●
B254A19000HPR	19,00	131	79	55	5,6	50	20	●
B254A20000HPR	20,00	131	79	55	5,9	50	20	●



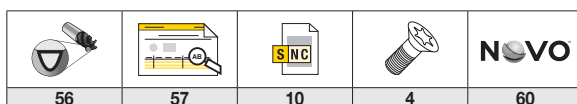
HPR • B255 • 5 X D • INTERNAL COOLANT

- first choice
- alternate choice



P	■
M	■
K	■
N	■
S	■
H	■

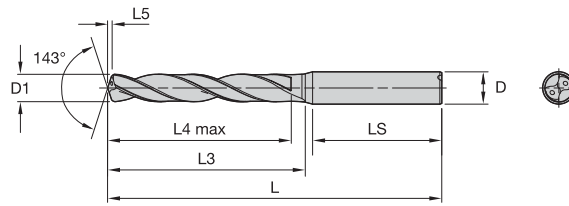
catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B255A03000HPR	3,00	66	28	23	0,9	36	6	●
B255A03048HPR	3,05	66	28	23	0,9	36	6	●
B255A03100HPR	3,10	66	28	23	0,9	36	6	●
B255A03175HPR	3,18	66	28	23	0,9	36	6	●
B255A03200HPR	3,20	66	28	23	0,9	36	6	●
B255A03264HPR	3,26	66	28	23	1,0	36	6	●
B255A03300HPR	3,30	66	28	23	1,0	36	6	●
B255A03400HPR	3,40	66	28	23	1,0	36	6	●
B255A03455HPR	3,46	66	28	23	1,0	36	6	●
B255A03500HPR	3,50	66	28	23	1,0	36	6	●
B255A03571HPR	3,57	66	28	23	1,1	36	6	●
B255A03600HPR	3,60	66	28	23	1,1	36	6	●
B255A03700HPR	3,70	66	28	23	1,1	36	6	●
B255A03800HPR	3,80	74	36	29	1,1	36	6	●
B255A03900HPR	3,90	74	36	29	1,1	36	6	●
B255A03970HPR	3,97	74	36	29	1,2	36	6	●
B255A04000HPR	4,00	74	36	29	1,2	36	6	●
B255A04039HPR	4,04	74	36	29	1,2	36	6	●
B255A04100HPR	4,10	74	36	29	1,2	36	6	●
B255A04200HPR	4,20	74	36	29	1,2	36	6	●
B255A04300HPR	4,30	74	36	29	1,3	36	6	●
B255A04400HPR	4,40	74	36	29	1,3	36	6	●
B255A04500HPR	4,50	74	36	29	1,3	36	6	●
B255A04600HPR	4,60	74	36	29	1,4	36	6	●
B255A04700HPR	4,70	74	36	29	1,4	36	6	●
B255A04763HPR	4,76	82	44	35	1,4	36	6	●
B255A04800HPR	4,80	82	44	35	1,4	36	6	●
B255A04900HPR	4,90	82	44	35	1,4	36	6	●
B255A05000HPR	5,00	82	44	35	1,5	36	6	●
B255A05055HPR	5,06	82	44	35	1,5	36	6	●
B255A05100HPR	5,10	82	44	35	1,5	36	6	●
B255A05106HPR	5,11	82	44	35	1,5	36	6	●
B255A05159HPR	5,16	82	44	35	1,5	36	6	●
B255A05200HPR	5,20	82	44	35	1,5	36	6	●
B255A05300HPR	5,30	82	44	35	1,6	36	6	●
B255A05400HPR	5,40	82	44	35	1,6	36	6	●
B255A05410HPR	5,41	82	44	35	1,6	36	6	●
B255A05500HPR	5,50	82	44	35	1,6	36	6	●
B255A05558HPR	5,56	82	44	35	1,6	36	6	●
B255A05600HPR	5,60	82	44	35	1,6	36	6	●
B255A05700HPR	5,70	82	44	35	1,7	36	6	●
B255A05800HPR	5,80	82	44	35	1,7	36	6	●
B255A05900HPR	5,90	82	44	35	1,7	36	6	●
B255A05954HPR	5,95	82	44	35	1,8	36	6	●
B255A06000HPR	6,00	82	44	35	1,8	36	6	●
B255A06100HPR	6,10	91	53	43	1,8	36	8	●
B255A06200HPR	6,20	91	53	43	1,8	36	8	●
B255A06300HPR	6,30	91	53	43	1,9	36	8	●
B255A06350HPR	6,35	91	53	43	1,9	36	8	●
B255A06400HPR	6,40	91	53	43	1,9	36	8	●
B255A06500HPR	6,50	91	53	43	1,9	36	8	●
B255A06528HPR	6,53	91	53	43	1,9	36	8	●
B255A06600HPR	6,60	91	53	43	1,9	36	8	●
B255A06700HPR	6,70	91	53	43	2,0	36	8	●
B255A06746HPR	6,75	91	53	43	2,0	36	8	●
B255A06800HPR	6,80	91	53	43	2,0	36	8	●
B255A06900HPR	6,90	91	53	43	2,0	36	8	●
B255A07000HPR	7,00	91	53	43	2,1	36	8	●
B255A07100HPR	7,10	91	53	43	2,1	36	8	●
B255A07145HPR	7,15	91	53	43	2,1	36	8	●



HPR • B255 • 5 X D • INTERNAL COOLANT

(continued)

- first choice
- alternate choice



P	■
M	■
K	■
N	■
S	■
H	■
	■

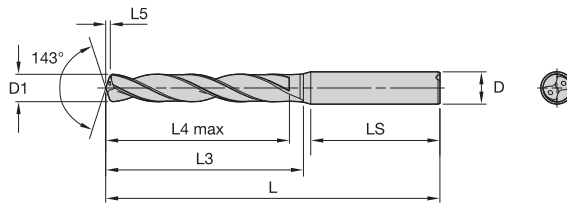
catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B255A07200HPR	7,20	91	53	43	2,1	36	8	●
B255A07300HPR	7,30	91	53	43	2,1	36	8	●
B255A07400HPR	7,40	91	53	43	2,2	36	8	●
B255A07500HPR	7,50	91	53	43	2,2	36	8	●
B255A07541HPR	7,54	91	53	43	2,2	36	8	●
B255A07600HPR	7,60	91	53	43	2,2	36	8	●
B255A07700HPR	7,70	91	53	43	2,3	36	8	●
B255A07800HPR	7,80	91	53	43	2,3	36	8	●
B255A07900HPR	7,90	91	53	43	2,3	36	8	●
B255A07938HPR	7,94	91	53	43	2,3	36	8	●
B255A08000HPR	8,00	91	53	43	2,4	36	8	●
B255A08100HPR	8,10	103	61	49	2,4	40	10	●
B255A08200HPR	8,20	103	61	49	2,4	40	10	●
B255A08300HPR	8,30	103	61	49	2,4	40	10	●
B255A08334HPR	8,33	103	61	49	2,5	40	10	●
B255A08400HPR	8,40	103	61	49	2,5	40	10	●
B255A08500HPR	8,50	103	61	49	2,5	40	10	●
B255A08600HPR	8,60	103	61	49	2,5	40	10	●
B255A08700HPR	8,70	103	61	49	2,6	40	10	●
B255A08733HPR	8,73	103	61	49	2,6	40	10	●
B255A08800HPR	8,80	103	61	49	2,6	40	10	●
B255A08900HPR	8,90	103	61	49	2,6	40	10	●
B255A09000HPR	9,00	103	61	49	2,6	40	10	●
B255A09100HPR	9,10	103	61	49	2,7	40	10	●
B255A09129HPR	9,13	103	61	49	2,7	40	10	●
B255A09200HPR	9,20	103	61	49	2,7	40	10	●
B255A09300HPR	9,30	103	61	49	2,7	40	10	●
B255A09400HPR	9,40	103	61	49	2,8	40	10	●
B255A09500HPR	9,50	103	61	49	2,8	40	10	●
B255A09525HPR	9,53	103	61	49	2,8	40	10	●
B255A09600HPR	9,60	103	61	49	2,8	40	10	●
B255A09700HPR	9,70	103	61	49	2,9	40	10	●
B255A09800HPR	9,80	103	61	49	2,9	40	10	●
B255A09900HPR	9,90	103	61	49	2,9	40	10	●
B255A09921HPR	9,92	103	61	49	2,9	40	10	●
B255A10000HPR	10,00	103	61	49	2,9	40	10	●
B255A10100HPR	10,10	118	71	56	3,0	45	12	●
B255A10200HPR	10,20	118	71	56	3,0	45	12	●
B255A10300HPR	10,30	118	71	56	3,0	45	12	●
B255A10320HPR	10,32	118	71	56	3,0	45	12	●
B255A10400HPR	10,40	118	71	56	3,1	45	12	●
B255A10500HPR	10,50	118	71	56	3,1	45	12	●
B255A10600HPR	10,60	118	71	56	3,1	45	12	●
B255A10700HPR	10,70	118	71	56	3,1	45	12	●
B255A10716HPR	10,72	118	71	56	3,1	45	12	●
B255A10800HPR	10,80	118	71	56	3,2	45	12	●
B255A11000HPR	11,00	118	71	56	3,2	45	12	●
B255A11100HPR	11,10	118	71	56	3,3	45	12	●
B255A11113HPR	11,11	118	71	56	3,3	45	12	●
B255A11200HPR	11,20	118	71	56	3,3	45	12	●
B255A11500HPR	11,50	118	71	56	3,4	45	12	●
B255A11509HPR	11,51	118	71	56	3,4	45	12	●
B255A11600HPR	11,60	118	71	56	3,4	45	12	●
B255A11700HPR	11,70	118	71	56	3,4	45	12	●
B255A11800HPR	11,80	118	71	56	3,5	45	12	●
B255A11900HPR	11,90	118	71	56	3,5	45	12	●
B255A11908HPR	11,91	118	71	56	3,5	45	12	●
B255A12000HPR	12,00	118	71	56	3,5	45	12	●
B255A12100HPR	12,10	124	77	60	3,6	45	14	●
B255A12200HPR	12,20	124	77	60	3,6	45	14	●

56	57	10	4	60

HPR • B255 • 5 X D • INTERNAL COOLANT

(continued)

- first choice
- alternate choice



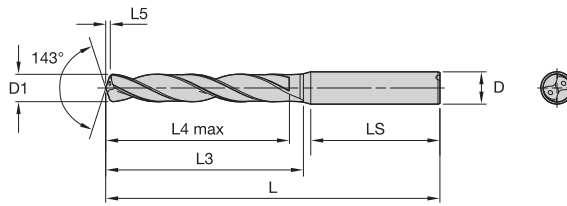
P	■
M	■
K	■
N	■
S	■
H	■

catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B255A12300HPR	12,30	124	77	60	3,6	45	14	●
B255A12304HPR	12,30	124	77	60	3,6	45	14	●
B255A12400HPR	12,40	124	77	60	3,6	45	14	●
B255A12500HPR	12,50	124	77	60	3,7	45	14	●
B255A12600HPR	12,60	124	77	60	3,7	45	14	●
B255A12700HPR	12,70	124	77	60	3,7	45	14	●
B255A12800HPR	12,80	124	77	60	3,8	45	14	●
B255A12900HPR	12,90	124	77	60	3,8	45	14	●
B255A13000HPR	13,00	124	77	60	3,8	45	14	●
B255A13100HPR	13,10	124	77	60	3,8	45	14	●
B255A13500HPR	13,50	124	77	60	4,0	45	14	●
B255A13700HPR	13,70	124	77	60	4,0	45	14	●
B255A13800HPR	13,80	124	77	60	4,1	45	14	●
B255A14000HPR	14,00	124	77	60	4,1	45	14	●
B255A14100HPR	14,10	133	83	63	4,1	48	16	●
B255A14200HPR	14,20	133	83	63	4,2	48	16	●
B255A14288HPR	14,29	133	83	63	4,2	48	16	●
B255A14500HPR	14,50	133	83	63	4,3	48	16	●
B255A14700HPR	14,70	133	83	63	4,3	48	16	●
B255A15000HPR	15,00	133	83	63	4,4	48	16	●
B255A15300HPR	15,30	133	83	63	4,5	48	16	●
B255A15400HPR	15,40	133	83	63	4,5	48	16	●
B255A15500HPR	15,50	133	83	63	4,6	48	16	●
B255A15800HPR	15,80	133	83	63	4,6	48	16	●
B255A15875HPR	15,88	133	83	63	4,7	48	16	●
B255A16000HPR	16,00	133	83	63	4,7	48	16	●
B255A16300HPR	16,30	143	93	71	4,8	48	18	●
B255A16500HPR	16,50	143	93	71	4,8	48	18	●
B255A16670HPR	16,67	143	93	71	4,9	48	18	●
B255A17000HPR	17,00	143	93	71	5,0	48	18	●
B255A17463HPR	17,46	143	93	71	5,1	48	18	●
B255A17500HPR	17,50	143	93	71	5,1	48	18	●
B255A18000HPR	18,00	143	93	71	5,3	48	18	●
B255A18500HPR	18,50	153	101	77	5,4	50	20	●
B255A19000HPR	19,00	153	101	77	5,6	50	20	●
B255A19050HPR	19,05	153	101	77	5,6	50	20	●
B255A19500HPR	19,50	153	101	77	5,7	50	20	●
B255A20000HPR	20,00	153	101	77	5,9	50	20	●

56	57	10	4	60

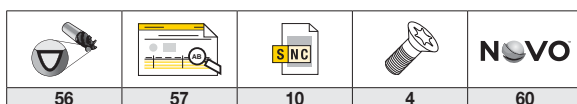
HPR • B256 • 8 X D • INTERNAL COOLANT

- first choice
- alternate choice



P	■
M	■
K	■
N	■
S	■
H	■

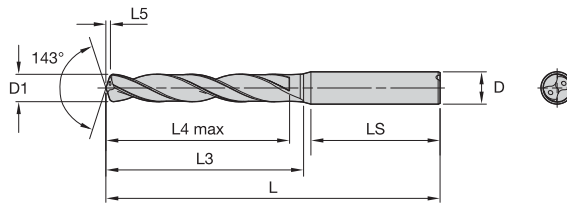
catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B256A03000HPR	3,00	78	40	33	0,9	36	6	●
B256A03100HPR	3,10	78	40	33	0,9	36	6	●
B256A03200HPR	3,20	78	40	33	0,9	36	6	●
B256A03264HPR	3,26	78	40	33	1,0	36	6	●
B256A03300HPR	3,30	78	40	33	1,0	36	6	●
B256A03400HPR	3,40	78	40	33	1,0	36	6	●
B256A03455HPR	3,46	78	40	33	1,0	36	6	●
B256A03500HPR	3,50	78	40	33	1,0	36	6	●
B256A03600HPR	3,60	78	40	33	1,1	36	6	●
B256A03700HPR	3,70	78	40	33	1,1	36	6	●
B256A03800HPR	3,80	87	49	41	1,1	36	6	●
B256A03900HPR	3,90	87	49	41	1,1	36	6	●
B256A04000HPR	4,00	87	49	41	1,2	36	6	●
B256A04100HPR	4,10	87	49	41	1,2	36	6	●
B256A04200HPR	4,20	87	49	41	1,2	36	6	●
B256A04300HPR	4,30	87	49	41	1,3	36	6	●
B256A04500HPR	4,50	87	49	41	1,3	36	6	●
B256A04600HPR	4,60	87	49	41	1,4	36	6	●
B256A04700HPR	4,70	87	49	41	1,4	36	6	●
B256A04763HPR	4,76	94	56	48	1,4	36	6	●
B256A04800HPR	4,80	94	56	48	1,4	36	6	●
B256A04900HPR	4,90	94	56	48	1,4	36	6	●
B256A05000HPR	5,00	94	56	48	1,5	36	6	●
B256A05100HPR	5,10	94	56	48	1,5	36	6	●
B256A05200HPR	5,20	94	56	48	1,5	36	6	●
B256A05300HPR	5,30	94	56	48	1,6	36	6	●
B256A05400HPR	5,40	94	56	48	1,6	36	6	●
B256A05500HPR	5,50	94	56	48	1,6	36	6	●
B256A05558HPR	5,56	94	56	48	1,6	36	6	●
B256A05600HPR	5,60	94	56	48	1,6	36	6	●
B256A05700HPR	5,70	94	56	48	1,7	36	6	●
B256A05800HPR	5,80	94	56	48	1,7	36	6	●
B256A06000HPR	6,00	94	56	48	1,8	36	6	●
B256A06100HPR	6,10	105	67	57	1,8	36	8	●
B256A06200HPR	6,20	105	67	57	1,8	36	8	●
B256A06300HPR	6,30	105	67	57	1,9	36	8	●
B256A06350HPR	6,35	105	67	57	1,9	36	8	●
B256A06400HPR	6,40	105	67	57	1,9	36	8	●
B256A06500HPR	6,50	105	67	57	1,9	36	8	●
B256A06600HPR	6,60	105	67	57	1,9	36	8	●
B256A06700HPR	6,70	105	67	57	2,0	36	8	●
B256A06800HPR	6,80	105	67	57	2,0	36	8	●
B256A07000HPR	7,00	105	67	57	2,1	36	8	●
B256A07400HPR	7,40	113	74	64	2,2	36	8	●
B256A07500HPR	7,50	113	74	64	2,2	36	8	●
B256A07800HPR	7,80	113	74	64	2,3	36	8	●
B256A08000HPR	8,00	113	74	64	2,4	36	8	●
B256A08100HPR	8,10	135	92	80	2,4	40	10	●
B256A08200HPR	8,20	135	92	80	2,4	40	10	●
B256A08500HPR	8,50	135	92	80	2,5	40	10	●
B256A08800HPR	8,80	135	92	80	2,6	40	10	●
B256A09000HPR	9,00	135	92	80	2,6	40	10	●
B256A09100HPR	9,10	135	92	80	2,7	40	10	●
B256A09300HPR	9,30	135	92	80	2,7	40	10	●
B256A09500HPR	9,50	135	92	80	2,8	40	10	●
B256A09700HPR	9,70	135	92	80	2,9	40	10	●
B256A09800HPR	9,80	135	92	80	2,9	40	10	●
B256A10000HPR	10,00	135	92	80	2,9	40	10	●
B256A10200HPR	10,20	158	110	96	3,0	45	12	●
B256A10300HPR	10,30	158	110	96	3,0	45	12	●



HPR • B256 • 8 X D • INTERNAL COOLANT

(continued)

- first choice
- alternate choice

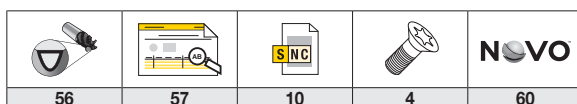


P	■
M	■
K	■
N	■
S	■
H	■



catalogue number	D1	L	L3	L4 max	L5	LS	D	KCK10A
B256A10400HPR	10,40	158	110	96	3,1	45	12	●
B256A10500HPR	10,50	158	110	96	3,1	45	12	●
B256A10700HPR	10,70	158	110	96	3,1	45	12	●
B256A10800HPR	10,80	158	110	96	3,2	45	12	●
B256A11000HPR	11,00	158	110	96	3,2	45	12	●
B256A11500HPR	11,50	158	110	96	3,4	45	12	●
B256A11800HPR	11,80	158	110	96	3,5	45	12	●
B256A12000HPR	12,00	158	110	96	3,5	45	12	●
B256A12200HPR	12,20	176	128	112	3,6	45	14	●
B256A12500HPR	12,50	176	128	112	3,7	45	14	●
B256A12700HPR	12,70	176	128	112	3,7	45	14	●
B256A13000HPR	13,00	176	128	112	3,8	45	14	●
B256A13500HPR	13,50	176	128	112	4,0	45	14	●
B256A14000HPR	14,00	176	128	112	4,1	45	14	●
B256A14500HPR	14,50	197	146	128	4,3	48	16	●
B256A15000HPR	15,00	197	146	128	4,4	48	16	●
B256A15500HPR	15,50	197	146	128	4,6	48	16	●
B256A16000HPR	16,00	197	146	128	4,7	48	16	●
B256A16500HPR	16,50	214	163	144	4,8	48	18	●
B256A17000HPR	17,00	214	163	144	5,0	48	18	●
B256A17500HPR	17,50	214	163	144	5,1	48	18	●
B256A18000HPR	18,00	214	163	144	5,3	48	18	●

TOLERANCE

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

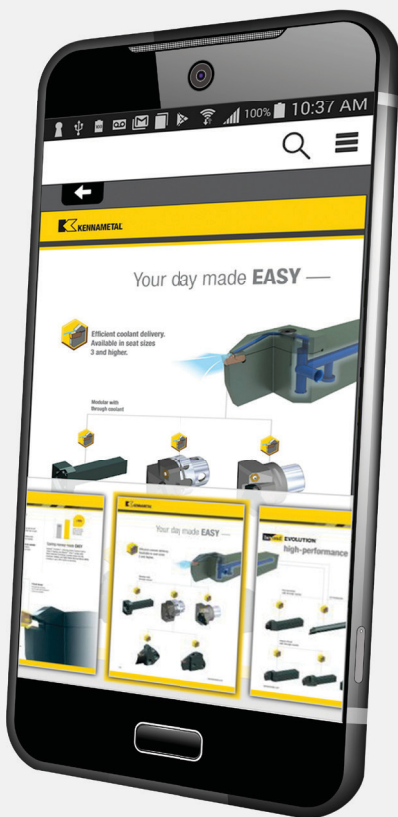


HPR DRILLS - B25_HPR • APPLICATION DATA

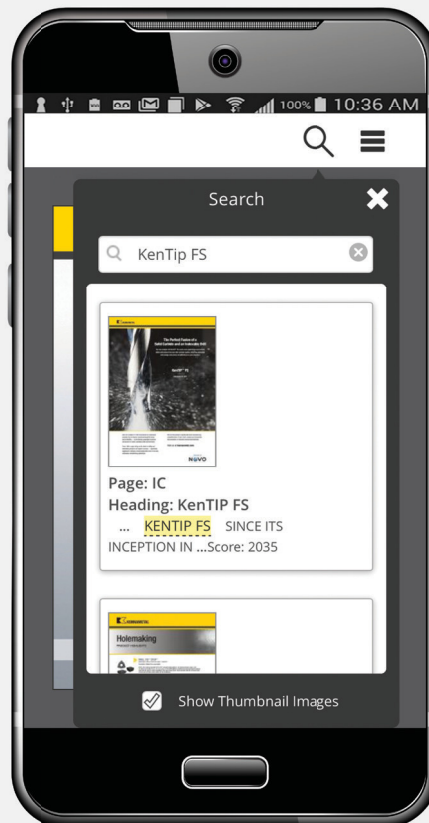
													
		Cutting Speed – vc		Metric									
		Range – m/min		Recommended Feed Rate per Rev									
Material Group		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
	K	1	130	160	210	mm/r	0,12–0,22	0,14–0,25	0,16–0,32	0,22–0,44	0,30–0,46	0,34–0,50	0,38–0,62
	2	90	130	180	mm/r	0,12–0,22	0,14–0,25	0,16–0,32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

Catalogue App

Browse Pages



Search Products



Watch a Video



Check out our new catalogue app.
Available in the Google Play™
Store or the App Store®

OR VISIT CATALOGS.KENNAMETAL.COM TODAY.



HARVI™ I TE

High-Performance Solid End Milling



Materials



Applications



Slotting



3D Profiling



Side Milling/
Shoulder Milling



Ramping



Slotting:
Ball Nose



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.



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






















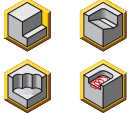
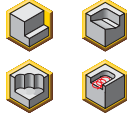





Universal character. Machines steel, stainless steel, cast iron, and high-temperature alloys with exceptional feed rates, reaching unmatched metal removal rates.

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.





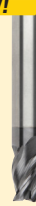











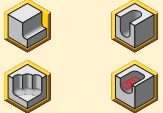



HARVI™ • TOOL SELECTION GUIDE

	HARVI I	HARVI I	HARVI I	HARVI I Chipbreaker	HARVI I Extended Reach	HARVI I TE	HARVI I TE
							
Series	F4AS...DL	UADE	F4AS.. WM-WX-WL/UBDE	F4BS.. WM-WX-WL	UADE	H1TE4CH..R..	H1TE4CH..N..
Page	P16*	P17*	P18*	P19*	P20*	31	32
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○	○	○
Chamfering							
Main operation							
Workpiece material							
Primary	P M K	P M K	P M K S	P M K	P M K	P M K	P M K
Secondary	S H	S H	H	H	H	S H	S H
Corner style							
Corner radius [R _e]	—	—	0,50–6mm	0,50–4mm	—	—	—
Corner chamfer width [BCH]	0,40–0,50mm	0,40–0,50mm	—	—	0,40–0,50mm	0,40–0,50mm	0,15–0,35mm
Cutter diameter [D1]	4–25mm	4–25mm	6–25mm	6–25mm	6–20mm	4–25mm	4–25mm
Length of cut	1,8–3 x D1	3–4 x D	2–2,5 x D1	1,5 x D1	2 x D1	1,8–3 x D1	1,8–3 x D1
Maximum cutting depth [A _{p1} max]	12–45mm	11–45mm	9–37,5mm	9–37,5mm	12–40mm	12–45mm	11–45mm
Flute helix angle	38°	38°	38°	38°	38°	36°/39°	36°/39°
Number of flutes [ZU]	4	4	4	4	4	4	4
Centre cutting	✓	✓	✓	✓	✓	✓	✓
Additional operations							

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

- Primary
- Secondary






















HARVI™ • TOOL SELECTION GUIDE

	HARVI I TE	HARVI I TE Ball Nose	HARVI I TE	HARVI I TE	HARVI I TE
		NEW! 	NEW! 	NEW! 	NEW! 
Series	H1TE4RA..N..	H1TEBN..N-L	H1TE4SE..N..	H1TE4CH..S..	H1TE4SE..S..
Page	31	27	28	29	30
Tool type					
Rougher	●	●	●	●	●
Finisher	○	○	○	○	○
Chamfering					
Main operation					
Workpiece material					
Primary	P M K S	P M K	P M K	P M K	P M K
Secondary	H	S H	S H	S H	S H
Corner style					
Corner radius [Re]	0,50–6mm	—	—	—	—
Corner chamfer width [BCH]	—	—	—	0,1–0,35mm	—
Cutter diameter [D1]	6–25mm	2–20mm	2–25mm	2–25mm	2–25mm
Length of cut	1,5–2 x D1	1–2,5 x D1	1,8–3 x D1	1,2–2 x D1	1,2–2 x D1
Maximum cutting depth [Ap1 max]	9–37,5mm	2–50mm	6–45mm	4–30mm	4–30mm
Flute helix angle	36°/39°	36°/39°	36°/39°	36°/39°	36°/39°
Number of flutes [ZU]	4	4	4	4	4
Centre cutting	✓	✓	✓	✓	✓
Additional operations					

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

- Primary
- Secondary































HARVI™ • TOOL SELECTION GUIDE

	HARVI I Ball Nose	HARVI I Taper Ball Nose	HARVI II	HARVI II
				
Series	F4AW..WL-WX	F4AW..AWL38-AWX38	UCDE	UDDE
Page	P21*	P22*	P30*	P31-P32*
Tool type				
<i>Rougher</i>	●	●	●	●
<i>Finisher</i>	○	○	○	○
<i>Chamfering</i>				
Main operation				
Workpiece material				
<i>Primary</i>	P M K	P M	P M K S	P K S
<i>Secondary</i>	H	P M	H	H
Corner style			 	 
Corner radius [Re]	—	—	0,25–0,75mm	0,20–6mm
Corner chamfer width [BCH]	—	—	—	—
Cutter diameter [D1]	6–16mm	4–10mm	4–25mm	6–25mm
Length of cut	1 x D1	5–7 x D	1,8–2,7 x D1	1,8–2,2 x D1
Maximum cutting depth [Ap1 max]	6–16mm	30,5–61mm	11–45mm	13–45mm
Flute helix angle	38°	38°	38°	38°
Number of flutes [ZU]	4	4	5	5
Centre cutting	✓	✓		
Additional operations	 		 	 

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

- Primary
- Secondary

HARVI™ • TOOL SELECTION GUIDE

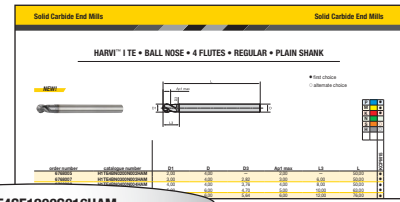
	HARVI III	HARVI III	HARVI III Ball Nose	HARVI III Taper Ball Nose	HARVI II Long	HARVI II Long
						
Series	UJDE	UJDE with neck	UJBE	UJBE	UGDE 3 x D	UGDE 5 x D
Page	P48*	P49*	P54*	P62*	P36*	P37*
Tool type						
<i>Rougher</i>	○	○	○	○		
<i>Finisher</i>	●	●	●	●	●	●
<i>Chamfering</i>						
Main operation						
Workpiece material						
<i>Primary</i>	M S	M S	M S	M S	P M S	P M S
<i>Secondary</i>	P H	P H	P H	P H	K H	K H
Corner style	 	 				
Corner radius [Re]	0,50–0,75mm	0,50–6mm	—	—	0,20–6mm	0,20–6mm
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutter diameter [D1]	10–25mm	10–25mm	10–20mm	4–10mm	6–25mm	6–25mm
Length of cut	2 x D	3 x D	1 x D1	5–7 x D	3 x D	5 x D
Maximum cutting depth [Ap1 max]	22–45mm	22–45mm	10–20mm	26–39mm	18–75mm	30–125mm
Flute helix angle	38°	38°	38°	38°	43°	43°
Number of flutes [ZU]	6	6	6	6	5	5
Centre cutting	✓	✓	✓	✓		
Additional operations	 	 	 	 		

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

- Primary
- Secondary

HARVI™ I TE • CATALOGUE NUMBERING SYSTEM

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



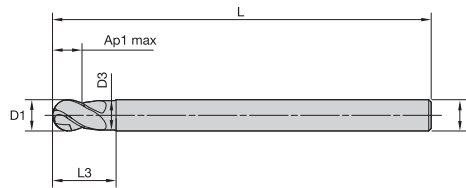
H1TE4SE1200S016HAM

H1TE	4	SE	1200	S	016	HA			M																	
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 Grooves in Shank O = Coolant Grooves in Shank P = Polished Flutes	M = Metric Blank = Inch																	
						<table border="1"> <thead> <tr> <th colspan="2">Radius Metric</th> </tr> </thead> <tbody> <tr><td>R020 = 0,2mm</td></tr> <tr><td>R025 = 0,25mm</td></tr> <tr><td>R030 = 0,3mm</td></tr> <tr><td>R040 = 0,4mm</td></tr> <tr><td>R050 = 0,5mm</td></tr> <tr><td>R075 = 0,75mm</td></tr> <tr><td>R100 = 1,0mm</td></tr> <tr><td>R125 = 1,25mm</td></tr> <tr><td>R150 = 1,5mm</td></tr> <tr><td>R200 = 2,0mm</td></tr> <tr><td>R250 = 2,5mm</td></tr> <tr><td>R300 = 3,0mm</td></tr> <tr><td>R400 = 4,0mm</td></tr> <tr><td>R500 = 5,0mm</td></tr> <tr><td>R600 = 6,0mm</td></tr> </tbody> </table>				Radius Metric		R020 = 0,2mm	R025 = 0,25mm	R030 = 0,3mm	R040 = 0,4mm	R050 = 0,5mm	R075 = 0,75mm	R100 = 1,0mm	R125 = 1,25mm	R150 = 1,5mm	R200 = 2,0mm	R250 = 2,5mm	R300 = 3,0mm	R400 = 4,0mm	R500 = 5,0mm	R600 = 6,0mm
Radius Metric																										
R020 = 0,2mm																										
R025 = 0,25mm																										
R030 = 0,3mm																										
R040 = 0,4mm																										
R050 = 0,5mm																										
R075 = 0,75mm																										
R100 = 1,0mm																										
R125 = 1,25mm																										
R150 = 1,5mm																										
R200 = 2,0mm																										
R250 = 2,5mm																										
R300 = 3,0mm																										
R400 = 4,0mm																										
R500 = 5,0mm																										
R600 = 6,0mm																										

HARVI™ | TE • BALL NOSE • 4 FLUTES • REGULAR • PLAIN SHANK

- first choice
- alternate choice

NEW!



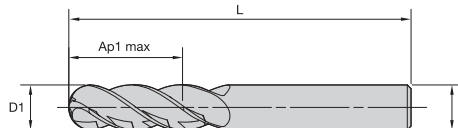
P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	KCPM15
6768005	H1TE4BN0200N002HAM	2,00	4,00	—	2,00	—	50,00	●
6768007	H1TE4BN0300N003HAM	3,00	4,00	2,82	3,00	6,00	50,00	●
6768008	H1TE4BN0400N004HAM	4,00	4,00	3,76	4,00	8,00	50,00	●
6768009	H1TE4BN0500N005HAM	5,00	6,00	4,70	5,00	10,00	63,00	●
6768010	H1TE4BN0600N006HAM	6,00	6,00	5,64	6,00	12,00	76,00	●
6768031	H1TE4BN0800N008HAM	8,00	8,00	7,52	8,00	16,00	100,00	●
6768032	H1TE4BN1000N010HAM	10,00	10,00	9,40	10,00	20,00	121,00	●
6768033	H1TE4BN1200N012HAM	12,00	12,00	11,28	12,00	24,00	125,00	●
6768034	H1TE4BN1600N016HAM	16,00	16,00	15,04	16,00	32,00	150,00	●
6768035	H1TE4BN2000N020HAM	20,00	20,00	18,80	20,00	40,00	166,00	●

HARVI | TE • BALL NOSE • 4 FLUTES • LONG • PLAIN SHANK

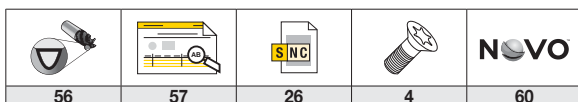
- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	○
H	○

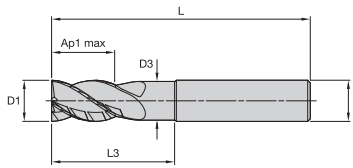
order number	catalogue number	D1	D	Ap1 max	L	KCPM15
6767984	H1TE4BN0200L005HAM	2,00	4,00	5,00	50,00	●
6767985	H1TE4BN0300L008HAM	3,00	4,00	8,00	50,00	●
6767986	H1TE4BN0400L010HAM	4,00	4,00	10,00	50,00	●
6767987	H1TE4BN0500L013HAM	5,00	6,00	13,00	55,00	●
6767988	H1TE4BN0600L015HAM	6,00	6,00	15,00	55,00	●
6767989	H1TE4BN0800L020HAM	8,00	8,00	20,00	63,00	●
6767990	H1TE4BN1000L025HAM	10,00	10,00	25,00	76,00	●
6768001	H1TE4BN1200L030HAM	12,00	12,00	30,00	83,00	●
6768003	H1TE4BN1600L040HAM	16,00	16,00	40,00	110,00	●
6768004	H1TE4BN2000L050HAM	20,00	20,00	50,00	150,00	●



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

- first choice
- alternate choice

NEW!



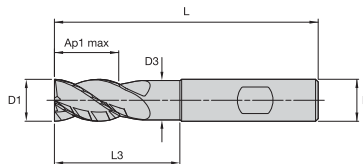
P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	KCPM15
6769543	H1TE4SE0200N006HAM	2,00	6,00	—	6,00	—	57,00	●
6769544	H1TE4SE0250N006HAM	2,50	6,00	—	6,00	—	57,00	●
6769545	H1TE4SE0300N008HAM	3,00	6,00	2,82	8,00	16,00	57,00	●
6769546	H1TE4SE0350N010HAM	3,50	6,00	3,29	10,00	16,00	57,00	●
6769547	H1TE4SE0400N011HAM	4,00	6,00	3,76	11,00	16,00	57,00	●
6769548	H1TE4SE0500N013HAM	5,00	6,00	4,70	13,00	18,00	57,00	●
6769549	H1TE4SE0600N013HAM	6,00	6,00	5,64	13,00	18,00	57,00	●
6769563	H1TE4SE0800N016HAM	8,00	8,00	7,52	16,00	24,00	63,00	●
6769564	H1TE4SE1000N022HAM	10,00	10,00	9,40	22,00	30,00	72,00	●
6769565	H1TE4SE1200N026HAM	12,00	12,00	11,28	26,00	36,00	83,00	●
6769566	H1TE4SE1400N026HAM	14,00	14,00	13,16	26,00	42,00	83,00	●
6769567	H1TE4SE1600N032HAM	16,00	16,00	15,04	32,00	48,00	92,00	●
6769568	H1TE4SE1800N035HAM	18,00	18,00	16,92	35,00	54,00	92,00	●
6769569	H1TE4SE2000N038HAM	20,00	20,00	18,80	38,00	60,00	104,00	●
6769581	H1TE4SE2500N045HAM	25,00	25,00	24,00	45,00	75,00	121,00	●

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

- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	○
H	○

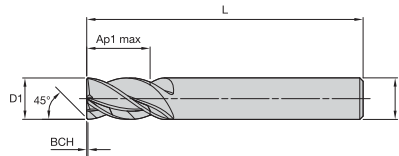
order number	catalogue number	D1	D	D3	Ap1 max	L3	L	KCPM15
6769582	H1TE4SE0200N006HBM	2,00	6,00	—	6,00	—	57,00	●
6769583	H1TE4SE0250N006HBM	2,50	6,00	—	6,00	—	57,00	●
6769584	H1TE4SE0300N008HBM	3,00	6,00	2,82	8,00	16,00	57,00	●
6769585	H1TE4SE0350N010HBM	3,50	6,00	3,29	10,00	16,00	57,00	●
6769586	H1TE4SE0400N011HBM	4,00	6,00	3,76	11,00	16,00	57,00	●
6769587	H1TE4SE0500N013HBM	5,00	6,00	4,70	13,00	18,00	57,00	●
6769588	H1TE4SE0600N013HBM	6,00	6,00	5,64	13,00	18,00	57,00	●
6769589	H1TE4SE0800N016HBM	8,00	8,00	7,52	16,00	24,00	63,00	●
6769590	H1TE4SE1000N022HBM	10,00	10,00	9,40	22,00	30,00	72,00	●
6769591	H1TE4SE1200N026HBM	12,00	12,00	11,28	26,00	36,00	83,00	●
6769592	H1TE4SE1400N026HBM	14,00	14,00	13,16	26,00	42,00	83,00	●
6769593	H1TE4SE1600N032HBM	16,00	16,00	15,04	32,00	48,00	92,00	●
6769594	H1TE4SE1800N035HBM	18,00	18,00	16,92	35,00	54,00	92,00	●
6769595	H1TE4SE2000N038HBM	20,00	20,00	18,80	38,00	60,00	104,00	●
6769596	H1TE4SE2500N045HBM	25,00	25,00	24,00	45,00	75,00	121,00	●

56	57	26	4	60



HARVI™ I TE • CHAMFERED • 4 FLUTES • SHORT • PLAIN SHANK

NEW!



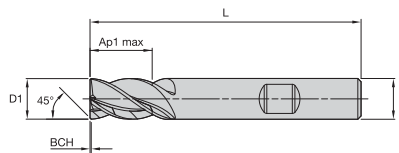
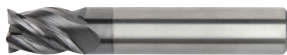
- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	BCH	KCPM15
6769607	H1TE4CH0200S004HAM	2,00	6,00	4,00	54,00	0,10	●
6769608	H1TE4CH0250S005HAM	2,50	6,00	5,00	54,00	0,10	●
6769609	H1TE4CH0300S006HAM	3,00	6,00	6,00	54,00	0,10	●
6769610	H1TE4CH0350S007HAM	3,50	6,00	7,00	54,00	0,10	●
6769611	H1TE4CH0400S008HAM	4,00	6,00	8,00	54,00	0,15	●
6769613	H1TE4CH0500S009HAM	5,00	6,00	9,00	54,00	0,15	●
6769614	H1TE4CH0600S010HAM	6,00	6,00	10,00	54,00	0,15	●
6769615	H1TE4CH0800S012HAM	8,00	8,00	12,00	58,00	0,20	●
6769616	H1TE4CH1000S014HAM	10,00	10,00	14,00	66,00	0,25	●
6769617	H1TE4CH1200S016HAM	12,00	12,00	16,00	73,00	0,25	●
6769619	H1TE4CH1400S018HAM	14,00	14,00	18,00	75,00	0,25	●
6769620	H1TE4CH1600S022HAM	16,00	16,00	22,00	82,00	0,35	●
6769621	H1TE4CH1800S024HAM	18,00	18,00	24,00	92,00	0,35	●
6769622	H1TE4CH2000S026HAM	20,00	20,00	26,00	92,00	0,35	●
6769623	H1TE4CH2500S030HAM	25,00	25,00	30,00	121,00	0,35	●

HARVI I TE • CHAMFERED • 4 FLUTES • SHORT • WELDON® SHANK

NEW!



- first choice
- alternate choice

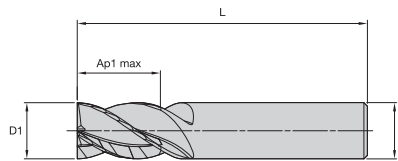
P	●
M	●
K	●
N	○
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	BCH	KCPM15
6769625	H1TE4CH0200S004HBM	2,00	6,00	4,00	54,00	0,10	●
6769626	H1TE4CH0250S005HBM	2,50	6,00	5,00	54,00	0,10	●
6769627	H1TE4CH0300S006HBM	3,00	6,00	6,00	54,00	0,10	●
6769628	H1TE4CH0350S007HBM	3,50	6,00	7,00	54,00	0,10	●
6769629	H1TE4CH0400S008HBM	4,00	6,00	8,00	54,00	0,15	●
6769630	H1TE4CH0500S009HBM	5,00	6,00	9,00	54,00	0,15	●
6769631	H1TE4CH0600S010HBM	6,00	6,00	10,00	54,00	0,15	●
6769632	H1TE4CH0800S012HBM	8,00	8,00	12,00	58,00	0,20	●
6769633	H1TE4CH1000S014HBM	10,00	10,00	14,00	66,00	0,25	●
6769634	H1TE4CH1200S016HBM	12,00	12,00	16,00	73,00	0,25	●
6769635	H1TE4CH1400S018HBM	14,00	14,00	18,00	75,00	0,25	●
6769636	H1TE4CH1600S022HBM	16,00	16,00	22,00	82,00	0,35	●
6769637	H1TE4CH1800S024HBM	18,00	18,00	24,00	92,00	0,35	●
6769638	H1TE4CH2000S026HBM	20,00	20,00	26,00	92,00	0,35	●
6769639	H1TE4CH2500S030HBM	25,00	25,00	30,00	121,00	0,35	●

56	57	26	4	60



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

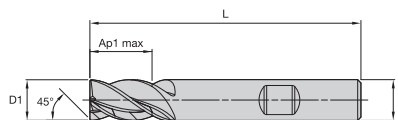


- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	KCPM15
6769558	H1TE4SE0200S004HAM	2,00	6,00	4,00	54,00	●
6769559	H1TE4SE0250S005HAM	2,50	6,00	5,00	54,00	●
6769560	H1TE4SE0300S006HAM	3,00	6,00	6,00	54,00	●
6769681	H1TE4SE0350S007HAM	3,50	6,00	7,00	54,00	●
6769682	H1TE4SE0400S008HAM	4,00	6,00	8,00	54,00	●
6769683	H1TE4SE0500S009HAM	5,00	6,00	9,00	54,00	●
6769684	H1TE4SE0600S010HAM	6,00	6,00	10,00	54,00	●
6769685	H1TE4SE0800S012HAM	8,00	8,00	12,00	58,00	●
6769686	H1TE4SE1000S014HAM	10,00	10,00	14,00	66,00	●
6769687	H1TE4SE1200S016HAM	12,00	12,00	16,00	73,00	●
6769688	H1TE4SE1400S018HAM	14,00	14,00	18,00	75,00	●
6769689	H1TE4SE1600S022HAM	16,00	16,00	22,00	82,00	●
6769690	H1TE4SE1800S024HAM	18,00	18,00	24,00	92,00	●
6769701	H1TE4SE2000S026HAM	20,00	20,00	26,00	92,00	●
6769702	H1TE4SE2500S030HAM	25,00	25,00	30,00	121,00	●

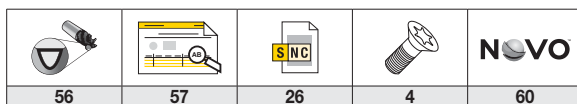
HARVI I TE • SQUARE END • 4 FLUTES • SHORT • WELDON® SHANK



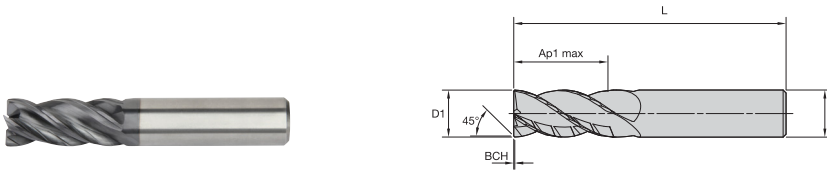
- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	KCPM15
6769705	H1TE4SE0200S004HBM	2,00	6,00	4,00	54,00	●
6769706	H1TE4SE0250S005HBM	2,50	6,00	5,00	54,00	●
6769707	H1TE4SE0300S006HBM	3,00	6,00	6,00	54,00	●
6769708	H1TE4SE0350S007HBM	3,50	6,00	7,00	54,00	●
6769709	H1TE4SE0400S008HBM	4,00	6,00	8,00	54,00	●
6769710	H1TE4SE0500S009HBM	5,00	6,00	9,00	54,00	●
6769711	H1TE4SE0600S010HBM	6,00	6,00	10,00	54,00	●
6769712	H1TE4SE0800S012HBM	8,00	8,00	12,00	58,00	●
6769713	H1TE4SE1000S014HBM	10,00	10,00	14,00	66,00	●
6769714	H1TE4SE1200S016HBM	12,00	12,00	16,00	73,00	●
6769715	H1TE4SE1400S018HBM	14,00	14,00	18,00	75,00	●
6769716	H1TE4SE1600S022HBM	16,00	16,00	22,00	82,00	●
6769717	H1TE4SE1800S024HBM	18,00	18,00	24,00	92,00	●
6769718	H1TE4SE2000S026HBM	20,00	20,00	26,00	92,00	●
6769719	H1TE4SE2500S030HBM	25,00	25,00	30,00	121,00	●



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

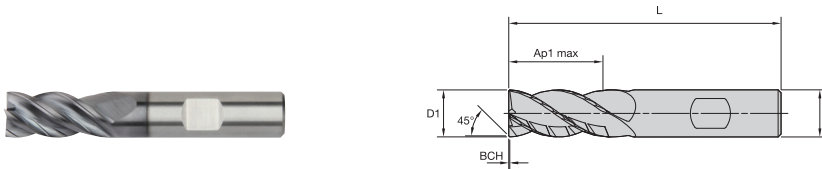


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	BCH	KCPM15
6767929	H1TE4CH0200R005HAM	2,00	6,00	5,00	50,00	0,20	●
6767930	H1TE4CH0250R006HAM	2,50	6,00	6,00	50,00	0,20	●
6767951	H1TE4CH0300R007HAM	3,00	6,00	7,00	54,00	0,30	●
6767952	H1TE4CH0350R008HAM	3,50	6,00	8,00	54,00	0,30	●
6675697	H1TE4CH0400R012HAM	4,00	6,00	12,00	55,00	0,40	●
6675698	H1TE4CH0500R013HAM	5,00	6,00	13,00	57,00	0,40	●
6675699	H1TE4CH0600R013HAM	6,00	6,00	13,00	57,00	0,40	●
6675700	H1TE4CH0800R016HAM	8,00	8,00	16,00	63,00	0,40	●
6675742	H1TE4CH1000R022HAM	10,00	10,00	22,00	72,00	0,50	●
6675743	H1TE4CH1200R026HAM	12,00	12,00	26,00	83,00	0,50	●
6675744	H1TE4CH1400R026HAM	14,00	14,00	26,00	83,00	0,50	●
6675745	H1TE4CH1600R032HAM	16,00	16,00	32,00	92,00	0,50	●
6675746	H1TE4CH1800R032HAM	18,00	18,00	32,00	92,00	0,50	●
6675747	H1TE4CH2000R038HAM	20,00	20,00	38,00	104,00	0,50	●
6675748	H1TE4CH2500R045HAM	25,00	25,00	45,00	121,00	0,50	●

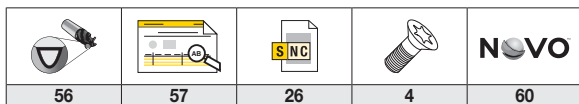
HARVI I TE • CHAMFERED • 4 FLUTES • WELDON® SHANK



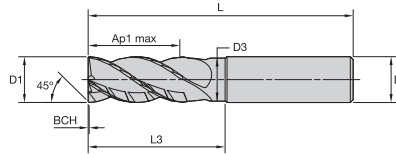
- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	Ap1 max	L	BCH	KCPM15
6767953	H1TE4CH0200R005HBM	2,00	6,00	5,00	50,00	0,20	●
6767954	H1TE4CH0250R006HBM	2,50	6,00	6,00	50,00	0,20	●
6767955	H1TE4CH0300R007HBM	3,00	6,00	7,00	54,00	0,30	●
6767956	H1TE4CH0350R008HBM	3,50	6,00	8,00	54,00	0,30	●
6675749	H1TE4CH0400R012HBM	4,00	6,00	12,00	55,00	0,40	●
6675750	H1TE4CH0500R013HBM	5,00	6,00	13,00	57,00	0,40	●
6675751	H1TE4CH0600R013HBM	6,00	6,00	13,00	57,00	0,40	●
6675752	H1TE4CH0800R016HBM	8,00	8,00	16,00	63,00	0,40	●
6675753	H1TE4CH1000R022HBM	10,00	10,00	22,00	72,00	0,50	●
6675754	H1TE4CH1200R026HBM	12,00	12,00	26,00	83,00	0,50	●
6675755	H1TE4CH1400R026HBM	14,00	14,00	26,00	83,00	0,50	●
6675756	H1TE4CH1600R032HBM	16,00	16,00	32,00	92,00	0,50	●
6675757	H1TE4CH1800R032HBM	18,00	18,00	32,00	92,00	0,50	●
6675758	H1TE4CH2000R038HBM	20,00	20,00	38,00	104,00	0,50	●
6687137	H1TE4CH2500R045HBM	25,00	25,00	45,00	121,00	0,50	●



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

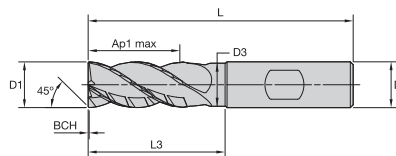


- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	BCH	KCPM15
6767959	H1TE4CH0200N006HAM	2,00	6,00	—	6,00	—	57,00	0,10	●
6767960	H1TE4CH0250N006HAM	2,50	6,00	—	6,00	—	57,00	0,10	●
6767961	H1TE4CH0300N008HAM	3,00	6,00	2,82	8,00	16,50	57,00	0,10	●
6767962	H1TE4CH0350N010HAM	3,50	6,00	3,29	10,00	16,50	57,00	0,10	●
6676308	H1TE4CH0400N011HAM	4,00	6,00	3,76	11,00	16,00	57,00	0,15	●
6676310	H1TE4CH0500N013HAM	5,00	6,00	4,70	13,00	18,00	57,00	0,15	●
6676332	H1TE4CH0600N013HAM	6,00	6,00	5,64	13,00	18,00	57,00	0,15	●
6676334	H1TE4CH0800N016HAM	8,00	8,00	7,52	16,00	24,00	63,00	0,20	●
6676336	H1TE4CH1000N022HAM	10,00	10,00	9,40	22,00	30,00	72,00	0,20	●
6676338	H1TE4CH1200N026HAM	12,00	12,00	11,28	26,00	36,00	83,00	0,20	●
6676340	H1TE4CH1400N026HAM	14,00	14,00	13,16	26,00	42,00	83,00	0,25	●
6676342	H1TE4CH1600N032HAM	16,00	16,00	15,04	32,00	48,00	92,00	0,35	●
6676344	H1TE4CH2000N038HAM	20,00	20,00	18,80	38,00	60,00	104,00	0,35	●
6676346	H1TE4CH2500N045HAM	25,00	25,00	24,00	45,00	75,00	121,00	0,35	●

HARVI I TE • CHAMFERED • 4 FLUTES • NECKED • WELDON® SHANK



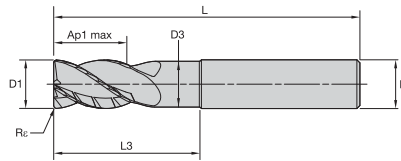
- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	○
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	BCH	KCPM15
6767963	H1TE4CH0200N006HBM	2,00	6,00	—	6,00	—	57,00	0,10	●
6767964	H1TE4CH0250N006HBM	2,50	6,00	—	6,00	—	57,00	0,10	●
6767965	H1TE4CH0300N008HBM	3,00	6,00	2,82	8,00	16,50	57,00	0,10	●
6767966	H1TE4CH0350N010HBM	3,50	6,00	3,29	10,00	16,50	57,00	0,10	●
6676309	H1TE4CH0400N011HBM	4,00	6,00	3,76	11,00	16,00	57,00	0,15	●
6676331	H1TE4CH0500N013HBM	5,00	6,00	4,70	13,00	18,00	57,00	0,15	●
6676333	H1TE4CH0600N013HBM	6,00	6,00	5,64	13,00	18,00	57,00	0,15	●
6676335	H1TE4CH0800N016HBM	8,00	8,00	7,52	16,00	24,00	63,00	0,20	●
6676337	H1TE4CH1000N022HBM	10,00	10,00	9,40	22,00	30,00	72,00	0,20	●
6676339	H1TE4CH1200N026HBM	12,00	12,00	11,28	26,00	36,00	83,00	0,20	●
6676341	H1TE4CH1400N026HBM	14,00	14,00	13,16	26,00	42,00	83,00	0,25	●
6676343	H1TE4CH1600N032HBM	16,00	16,00	15,04	32,00	48,00	92,00	0,35	●
6676345	H1TE4CH2000N038HBM	20,00	20,00	18,80	38,00	60,00	104,00	0,35	●
6676347	H1TE4CH2500N045HBM	25,00	25,00	24,00	45,00	75,00	121,00	0,35	●

56	57	26	4	60

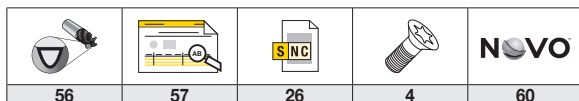
HARVI™ | TE • RADIUS • 4 FLUTES • NECKED • PLAIN SHANK



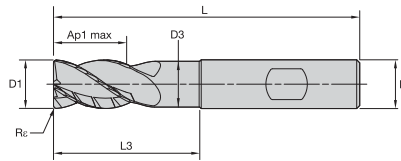
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	Rε	KCSM15
6767968	H1TE4RA0400N006HAR025M	4,00	6,00	3,76	6,00	—	57,00	0,25	●
6767969	H1TE4RA0400N006HAR050M	4,00	6,00	3,76	6,00	—	57,00	0,50	●
6676190	H1TE4RA0600N009HAR050M	6,00	6,00	5,64	9,00	18,00	63,00	0,50	●
6676231	H1TE4RA0600N009HAR100M	6,00	6,00	5,64	9,00	18,00	63,00	1,00	●
6676234	H1TE4RA0800N012HAR050M	8,00	8,00	7,52	12,00	24,00	68,00	0,50	●
6676235	H1TE4RA0800N012HAR100M	8,00	8,00	7,52	12,00	24,00	68,00	1,00	●
6676238	H1TE4RA1000N015HAR050M	10,00	10,00	9,40	15,00	30,00	76,00	0,50	●
6676239	H1TE4RA1000N015HAR100M	10,00	10,00	9,40	15,00	30,00	76,00	1,00	●
6676240	H1TE4RA1000N015HAR200M	10,00	10,00	9,40	15,00	30,00	76,00	2,00	●
6676251	H1TE4RA1000N015HAR300M	10,00	10,00	9,40	15,00	30,00	76,00	3,00	●
6676252	H1TE4RA1000N015HAR400M	10,00	10,00	9,40	15,00	30,00	76,00	4,00	●
6676257	H1TE4RA1200N018HAR050M	12,00	12,00	11,28	18,00	36,00	83,00	0,50	●
6676258	H1TE4RA1200N018HAR100M	12,00	12,00	11,28	18,00	36,00	83,00	1,00	●
6676259	H1TE4RA1200N018HAR200M	12,00	12,00	11,28	18,00	36,00	83,00	2,00	●
6676260	H1TE4RA1200N018HAR300M	12,00	12,00	11,28	18,00	36,00	83,00	3,00	●
6676271	H1TE4RA1200N018HAR400M	12,00	12,00	11,28	18,00	36,00	83,00	4,00	●
6676277	H1TE4RA1600N024HAR050M	16,00	16,00	15,04	24,00	48,00	100,00	0,50	●
6676278	H1TE4RA1600N024HAR100M	16,00	16,00	15,04	24,00	48,00	100,00	1,00	●
6676279	H1TE4RA1600N024HAR200M	16,00	16,00	15,04	24,00	48,00	100,00	2,00	●
6676280	H1TE4RA1600N024HAR300M	16,00	16,00	15,04	24,00	48,00	100,00	3,00	●
6676281	H1TE4RA1600N024HAR400M	16,00	16,00	15,04	24,00	48,00	100,00	4,00	●
6676282	H1TE4RA1600N024HAR600M	16,00	16,00	15,04	24,00	48,00	100,00	6,00	●
6676289	H1TE4RA2000N030HAR050M	20,00	20,00	18,80	30,00	60,00	115,00	0,50	●
6676290	H1TE4RA2000N030HAR100M	20,00	20,00	18,80	30,00	60,00	115,00	1,00	●
6676291	H1TE4RA2000N030HAR200M	20,00	20,00	18,80	30,00	60,00	115,00	2,00	●
6676292	H1TE4RA2000N030HAR300M	20,00	20,00	18,80	30,00	60,00	115,00	3,00	●
6676293	H1TE4RA2000N030HAR400M	20,00	20,00	18,80	30,00	60,00	115,00	4,00	●
6676294	H1TE4RA2000N030HAR600M	20,00	20,00	18,80	30,00	60,00	115,00	6,00	●
6676299	H1TE4RA2500N038HAR050M	25,00	25,00	24,00	37,50	75,00	135,00	0,50	●
6676300	H1TE4RA2500N038HAR100M	25,00	25,00	24,00	37,50	75,00	135,00	1,00	●
6676301	H1TE4RA2500N038HAR200M	25,00	25,00	24,00	37,50	75,00	135,00	2,00	●
6676302	H1TE4RA2500N038HAR300M	25,00	25,00	24,00	37,50	75,00	135,00	3,00	●
6676303	H1TE4RA2500N038HAR400M	25,00	25,00	24,00	37,50	75,00	135,00	4,00	●
6676304	H1TE4RA2500N038HAR600M	25,00	25,00	24,00	37,50	75,00	135,00	6,00	●



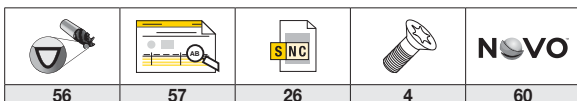
HARVI™ | TE • RADIUS • 4 FLUTES • NECKED • WELDON® SHANK



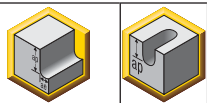

- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

order number	catalogue number	D1	D	D3	Ap1 max	L3	L	Rε	KCSM15
6767970	H1TE4RA0400N006HBR025M	4,00	6,00	3,76	6,00	—	57,00	0,25	●
6767981	H1TE4RA0400N006HBR050M	4,00	6,00	3,76	6,00	—	57,00	0,50	●
6676232	H1TE4RA0600N009HBR050M	6,00	6,00	5,64	9,00	18,00	63,00	0,50	●
6676233	H1TE4RA0600N009HBR100M	6,00	6,00	5,64	9,00	18,00	63,00	1,00	●
6676236	H1TE4RA0800N012HBR050M	8,00	8,00	7,52	12,00	24,00	68,00	0,50	●
6676237	H1TE4RA0800N012HBR100M	8,00	8,00	7,52	12,00	24,00	68,00	1,00	●
6676253	H1TE4RA1000N015HBR050M	10,00	10,00	9,40	15,00	30,00	76,00	0,50	●
6676254	H1TE4RA1000N015HBR100M	10,00	10,00	9,40	15,00	30,00	76,00	1,00	●
6676255	H1TE4RA1000N015HBR200M	10,00	10,00	9,40	15,00	30,00	76,00	2,00	●
6676256	H1TE4RA1000N015HBR300M	10,00	10,00	9,40	15,00	30,00	76,00	3,00	●
6687139	H1TE4RA1000N015HBR400M	10,00	10,00	9,40	15,00	30,00	76,00	4,00	●
6676272	H1TE4RA1200N018HBR050M	12,00	12,00	11,28	18,00	36,00	83,00	0,50	●
6676273	H1TE4RA1200N018HBR100M	12,00	12,00	11,28	18,00	36,00	83,00	1,00	●
6676274	H1TE4RA1200N018HBR200M	12,00	12,00	11,28	18,00	36,00	83,00	2,00	●
6676275	H1TE4RA1200N018HBR300M	12,00	12,00	11,28	18,00	36,00	83,00	3,00	●
6676276	H1TE4RA1200N018HBR400M	12,00	12,00	11,28	18,00	36,00	83,00	4,00	●
6676283	H1TE4RA1600N024HBR050M	16,00	16,00	15,04	24,00	48,00	100,00	0,50	●
6676284	H1TE4RA1600N024HBR100M	16,00	16,00	15,04	24,00	48,00	100,00	1,00	●
6676285	H1TE4RA1600N024HBR200M	16,00	16,00	15,04	24,00	48,00	100,00	2,00	●
6676286	H1TE4RA1600N024HBR300M	16,00	16,00	15,04	24,00	48,00	100,00	3,00	●
6676287	H1TE4RA1600N024HBR400M	16,00	16,00	15,04	24,00	48,00	100,00	4,00	●
6676288	H1TE4RA1600N024HBR600M	16,00	16,00	15,04	24,00	48,00	100,00	6,00	●
6676295	H1TE4RA2000N030HBR050M	20,00	20,00	18,80	30,00	60,00	115,00	0,50	●
6676296	H1TE4RA2000N030HBR100M	20,00	20,00	18,80	30,00	60,00	115,00	1,00	●
6676297	H1TE4RA2000N030HBR200M	20,00	20,00	18,80	30,00	60,00	115,00	2,00	●
6676298	H1TE4RA2000N030HBR300M	20,00	20,00	18,80	30,00	60,00	115,00	3,00	●
6687140	H1TE4RA2000N030HBR400M	20,00	20,00	18,80	30,00	60,00	115,00	4,00	●
6687151	H1TE4RA2000N030HBR600M	20,00	20,00	18,80	30,00	60,00	115,00	6,00	●
6676305	H1TE4RA2500N038HBR050M	25,00	25,00	24,00	37,50	75,00	135,00	0,50	●
6687152	H1TE4RA2500N038HBR100M	25,00	25,00	24,00	37,50	75,00	135,00	1,00	●
6687153	H1TE4RA2500N038HBR200M	25,00	25,00	24,00	37,50	75,00	135,00	2,00	●
6687154	H1TE4RA2500N038HBR300M	25,00	25,00	24,00	37,50	75,00	135,00	3,00	●
6676306	H1TE4RA2500N038HBR400M	25,00	25,00	24,00	37,50	75,00	135,00	4,00	●
6676307	H1TE4RA2500N038HBR600M	25,00	25,00	24,00	37,50	75,00	135,00	6,00	●



HARVI™ I TE • 4 FLUTES • APPLICATION DATA

Material Group																							
	Side Milling (A) and Slotting (B)			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.																			
	A	B	KCPM15	D1 – Diameter																			
				Cutting Speed – vc m/min			mm	2,0	2,5	3,0	3,5	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
ap	ae	ap	min	max	fz																		
P	0	1,5 x D1	0,5 x D1	1,25 x D1	150	–	200	fz	0,011	0,013	0,016	0,027	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	1	1,5 x D1	0,5 x D1	1,25 x D1	150	–	200	fz	0,011	0,013	0,016	0,027	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	2	1,5 x D1	0,5 x D1	1,25 x D1	140	–	190	fz	0,011	0,013	0,016	0,027	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	3	1,5 x D1	0,5 x D1	1,25 x D1	120	–	160	fz	0,009	0,011	0,013	0,022	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	4	1,5 x D1	0,5 x D1	1,25 x D1	90	–	150	fz	0,008	0,010	0,012	0,021	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107
	5	1,5 x D1	0,5 x D1	1,25 x D1	60	–	100	fz	0,007	0,009	0,011	0,018	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
M	6	1,5 x D1	0,5 x D1	1,25 x D1	50	–	75	fz	0,006	0,008	0,009	0,016	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078
	1	1,5 x D1	0,5 x D1	1,25 x D1	90	–	115	fz	0,009	0,011	0,013	0,022	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	2	1,5 x D1	0,5 x D1	1,25 x D1	60	–	80	fz	0,007	0,009	0,011	0,018	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
K	3	1,5 x D1	0,5 x D1	1,00 x D1	60	–	70	fz	0,006	0,008	0,009	0,016	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078
	1	1,5 x D1	0,5 x D1	1,00 x D1	120	–	150	fz	0,011	0,013	0,016	0,027	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	2	1,5 x D1	0,5 x D1	1,00 x D1	110	–	140	fz	0,009	0,011	0,013	0,022	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
S	3	1,5 x D1	0,5 x D1	1,00 x D1	110	–	130	fz	0,007	0,009	0,011	0,018	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
	1	1,5 x D1	0,3 x D1	0,75 x D1	50	–	90	fz	0,009	0,011	0,013	0,022	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	2	1,5 x D1	0,3 x D1	0,75 x D1	50	–	80	fz	0,007	0,009	0,011	0,018	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
	3	1,5 x D1	0,5 x D1	0,50 x D1	25	–	40	fz	0,005	0,006	0,007	0,012	0,014	0,018	0,021	0,029	0,035	0,041	0,046	0,051	0,055	0,059	0,067
H	4	1,5 x D1	0,5 x D1	1,25 x D1	50	–	60	fz	0,006	0,007	0,009	0,015	0,017	0,023	0,028	0,040	0,049	0,057	0,064	0,071	0,076	0,082	0,092
	1	1,5 x D1	0,5 x D1	1,00 x D1	80	–	140	fz	0,008	0,010	0,012	0,021	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107
	2	1,5 x D1	0,2 x D1	1,00 x D1	70	–	120	fz	0,006	0,008	0,009	0,016	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078

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 centres, please adjust parameters accordingly on >12mm diameter.
 For tools with reach >5 x D, 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 = Fz * KFz

	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




Calculation example:

Application: D = 20mm;
 M2 material group;
 Ae = 2mm
 Cutting data recommendation: Vc = 80m/min;
 fz = 0,089mm/th
 Adjustment coefficients: Ae = 2mm equals 10,0%;
 Kv = 1,35; KFz = 1,7

Final cutting data recommendation:

Vc new = 80 * 1,35 = 108m/min
 Fz new = 0,089 * 1,7 = 0,15mm/min

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	35	See application data and reduce fz by 20%	35
		1.15-1.35*	See min. Vc of application data	35	See application data and reduce fz by 20%	35
		>1.35-1.6*	See application data	35	See application data and reduce fz by 10%	35
		>1.6-1.9*	See application data	35	See application data	35
>15°-30°		—	See min Vc of application data	35	See application data and reduce fz by 30%	35
		1.15-1.35*	See min. Vc of application data	35	See application data and reduce fz by 30%	35
		>1.35-1.6*	See medium range Vc of application data	35	See application data and reduce fz by 25%	35
		>1.6-1.9*	See application data	35	See application data and reduce fz by 20%	35
30°-45°		—	See Vc from plunging data	37	See application data and reduce fz by 40%	35
		1.15-1.35*	See Vc from plunging data	37	See application data and reduce fz by 40%	35
		>1.35-1.6*	See min. Vc of application data	35	See application data and reduce fz by 35%	35
		>1.6-1.9*	See medium range Vc of application data	35	See application data and reduce fz by 30%	35
>45°		—	See Vc from plunging data	37	See fz from plunging data	37
		1.15-1.35*	See Vc from plunging data	37	See fz from plunging data	37
		>1.35-1.6*	See Vc from plunging data	37	See fz from plunging data	37
		>1.6-1.9*	See min. speed of application data	35	See fz from plunging data	37

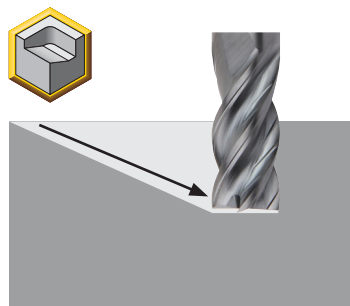
NOTE: Z effective = 2 — for all calculations.

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

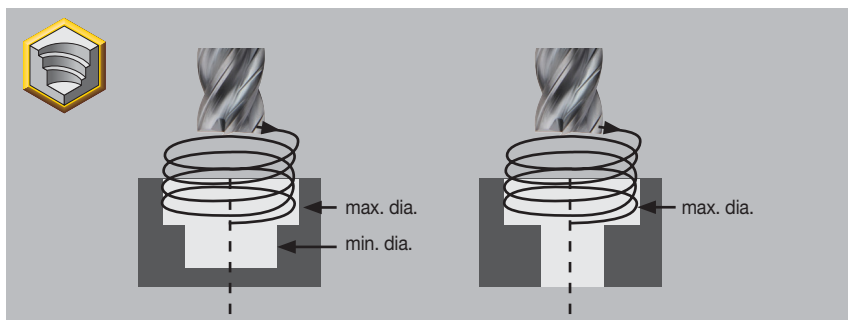
For ISO P and K materials, coolant supply into cutting zone is preferred.

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

Linear Ramping

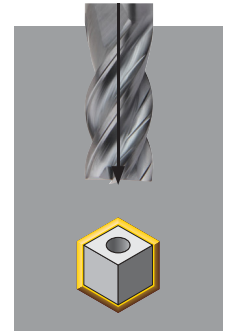
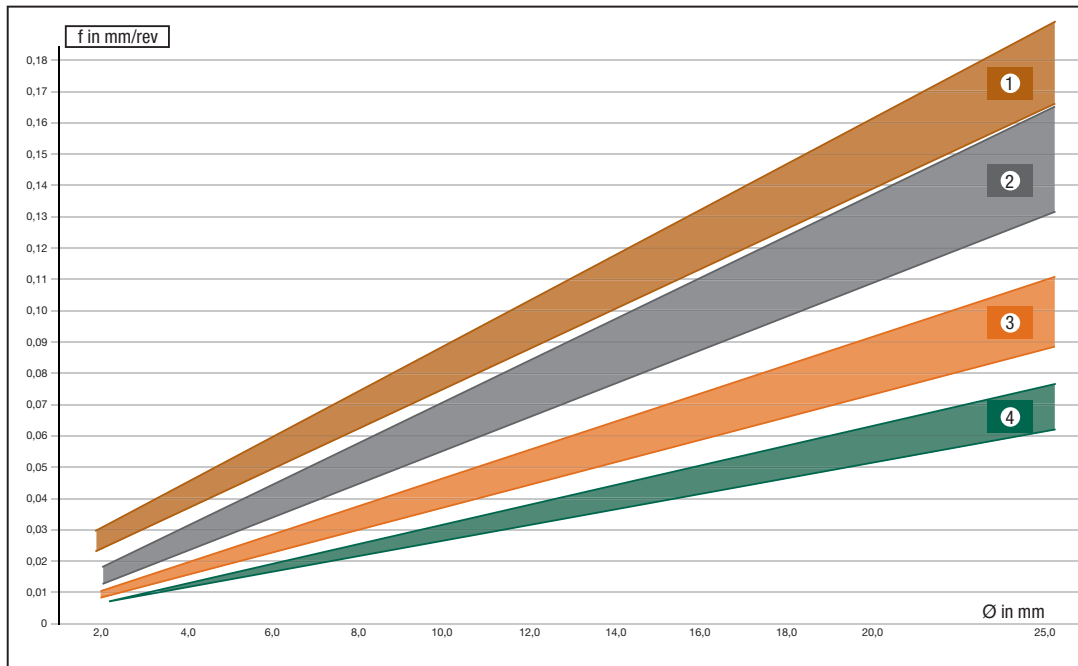


Helical Ramping



Min. hole Ø = End mill -Ø x 1.1 + 2x corner configuration (Re/CHF) size. Hole -Ø/End mill -Ø min 1:1.15
 Max. 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	Note
P	●	1	150	1,5 x Ø	Preferred
	●	1	150	1,5 x Ø	Recommended
	●	1	150	1,5 x Ø	Recommended
	●	2	115	1 x Ø	Recommended
	●	2	100	1 x Ø	Recommended
	●	3	75	0,5 x Ø	Required
	●	3	50	0,5 x Ø	Required
M	●	2	85	0,75 x Ø	Required
	●	3	55	0,5 x Ø	Required
	●	3	50	0,5 x Ø	Required
K	●	1	120	1,5 x Ø	Recommended
	●	2	110	1 x Ø	Required
	●	2	100	1 x Ø	Required
S	○	2	85	0,3 x Ø	Required
	○	3	60	0,1 x Ø	Required
	○	4	25	0,1 x Ø	Required
	○	3	40	0,2 x Ø	Required
H	○	2	80	0,3 x Ø	Required
	○	3	70	0,2 x Ø	Required

● highly recommended

○ recommended

HARVI™ I TE • APPLICATION INFORMATION

Materials to Cut	<ul style="list-style-type: none"> • Steels (P0-P5). • Stainless steels (M1-M3). • Cast iron (K1-K3). • High-temp alloys (S1-S4). • Hardened materials (H1-H2).
Cutting Speed	<ul style="list-style-type: none"> • Refer to application data recommendation.
Feed Rate	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Refer to application data recommendation.
Coolant	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Hydraulic chuck with or without sleeve preferred. • Weldon® adaptor 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 adaptor applicable.
Roughing Application	<ul style="list-style-type: none"> • Yes.
Finishing Application	<ul style="list-style-type: none"> • Yes.
Milling Strategy	<ul style="list-style-type: none"> • Traditional milling (full slotting, high Ae side and shoulder milling). • High velocity milling (dynamic milling, trochoidal milling).
Application Range	<ul style="list-style-type: none"> • Full slotting. • Shoulder milling. • Peel milling and HPC techniques. • Centre cutting. • Linear ramping at unlimited angle and 90° plunging. • Ramping into stainless and high-temperature alloys limited by coolant configuration. • Helical interpolation.
Engineered Solutions	<ul style="list-style-type: none"> • Available upon request.
Reconditioning Service	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Tool pullout. 	<ul style="list-style-type: none"> • High axial forces. • Wrong adaptor. • Unadapted application data. 	<ul style="list-style-type: none"> • Use Weldon® chuck if applicable or adaptor with higher clamping force. • Reduce feed per tooth.
<ul style="list-style-type: none"> • Unevenly colored chips when slotting deep (>1.25 x D). 	<ul style="list-style-type: none"> • Not enough coolant in cutting zone. 	<ul style="list-style-type: none"> • Adjust coolant method to improve coolant in cutting zone.
<ul style="list-style-type: none"> • Sudden breakage when milling dry in Shrink Fit or hydraulic adaptor. 	<ul style="list-style-type: none"> • Tool is too hot and loses fit in adaptor. 	<ul style="list-style-type: none"> • Check temperature on adaptor/spindle. • Improve coolant provision or reduce cutting speed; eventually change to HPMC or Weldon, if applicable.
<ul style="list-style-type: none"> • Material build-up on cutting edge. 	<ul style="list-style-type: none"> • Cold welding of material at cutting edge. 	<ul style="list-style-type: none"> • Increase coolant in cutting zone. • Decrease cutting speed.
<ul style="list-style-type: none"> • High flank wear. 	<ul style="list-style-type: none"> • Unadapted application data. • High tool runout. 	<ul style="list-style-type: none"> • Decrease feed rate. • Check tool runout.
<ul style="list-style-type: none"> • Chipping on tool. 	<ul style="list-style-type: none"> • Unadapted application data. • Insufficient coolant. • High tool runout. • Unstable adaptor. • Clamping on coating area. 	<ul style="list-style-type: none"> • Adjust to recommended speeds and feeds. • Adjust coolant method to improve coolant in cutting zone. • Check runout; eventually change to more stable adaptor. • Adjust clamping to clamp on uncoated area only. • Minimise overhang length.



PCD Tools

For Aluminium Machining



Materials

N

Applications



Shoulder Milling



Chamfer Milling



Profile Milling



Shoulder/Slot Milling



Pocketing



Drilling



Drilling:
Blind



Reaming:
Through Hole



Reaming:
Blind Hole

kennametal.com/PCD

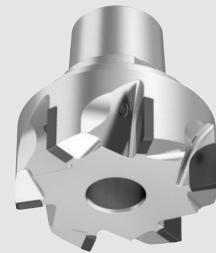
PCD tools for high-speed aluminium machining, reducing machining time drastically.

The extensive tool life of PCD tools provides up to 10 times higher productivity compared to carbide solutions.

Various-style PCD end mills, PCD drills, and PCD reamer covering multiple applications, and aluminium machining strategies to drastically shorten cycle times and increase productivity.

Ideal for roughing and finishing operations, all tools are minimum quantity lubrication (MQL) ready.

The sharp cutting edges and low-friction rake surfaces guarantee high-quality surface finishes.



Sharp cutting edges.

Low-friction rake surface, reducing build-up edges.

Ultra-wear resistant, long tool life.

Short lead time, through standard PCD tool offering.

MQL ready.

TOOLING TYPES











Drills/Reamer




End Mills




TOOL SELECTION GUIDE • REAMER

	B467	R215	R225	R420
				
Page	46	47	47	48
Workpiece material				
Primary	N	N	N	N
Secondary				
Range	6–20mm (.236–.787")	6–18mm (.236–.709")	6–20mm (.236–.787")	20–42mm (.787–1.654")
Accuracy	IT7		IT6	
Cylindricity 	10 µm (.0004")		5 µm (.0002")	
Position 	10 µm (.0004")		7 µm (.0003")	
Surface roughness (Ra)	0,6–1,2 µm (20–47 µ-in)		0,1–0,8 µm (4–32 µ-in)	
Cost / Part	extremely low			
Cycle time	extremely low			
Main Operations				
















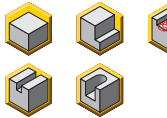
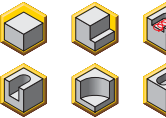
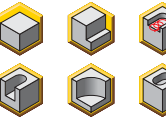
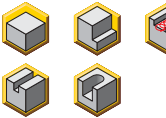
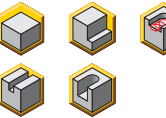
- Primary
- Secondary

 Cylindricity
 NOTE: Process and application-dependent.
 Highly depending on the premachine hole accuracy.
 Use of high-performance drilling/premachining tools mandatory to reach values.

 Position
 NOTE: Process and application-dependent.
 Highly depending on the premachine hole accuracy.
 Use of high-performance drilling/premachining tools mandatory to reach values.

Ra Surface roughness
 NOTE: Surface roughness values are guidelines and dependent on application,
 coolant situation, machine, and cutting data applied.

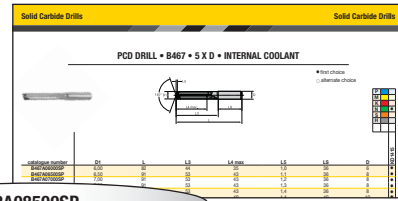
TOOL SELECTION GUIDE • ENDMILLS

	ALCB	ALCC	ALCR	ALSB	ALSR
					
Page	51	51	51	52	52
Tool type					
Rougher	●	●	●	●	●
Finisher	●	●	●	●	●
Main operation					
Workpiece material					
Primary	N	N	N	N	N
Secondary					
Corner style					
Corner radius [Re]	0,2-0,3mm	0,2-0,3mm	0,3mm	0,4mm	0,4mm
Corner chamfer width [BCH]	–	–	–	–	–
Cutting diameter [D1]	12-20mm	6-20mm	12-20mm	25-50mm	25-40mm
Maximum cutting depth [Ap1 max]	6-20mm	10-28mm	24-40mm	15mm	32-50mm
Axial Rake Angle	3°	3°	9°-12°	6°	6°
Effective cutting edges [ZU]	2	2	2	4	2
Centre cutting		✓	✓		
Additional Operations					

- Primary
- Secondary

PCD DRILLS • CATALOGUE NUMBERING SYSTEM

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

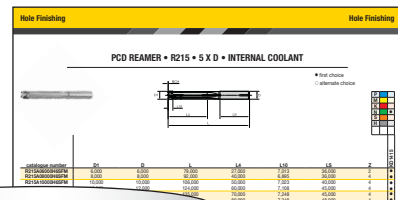


B468A08500SP

B	46	8	A	08500	SP
Style	Drill Series	Length/ Coolant	Shank	Diameter	Point Geometry/ Application
B = Metric K = Inch	46* = PCD Drills	7 = 3 x D 8 = 5 x D 9 = 8 x D	A = Form HA, straight round shank	08500 = 8.5mm 06350 = 1/4" = E = 6.35mm	SP = Sharp Point

PCD REAMERS • CATALOGUE NUMBERING SYSTEM

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



R225A08500H7HFM

R	2	2	5	A	08500	H7	HF	M
Style	Reamer Series	Coolant	Length	Shank	Diameter	Hole Tolerance	Flute	Metric/ Inch
R = Reamer	1 = Solid Carbide 2 = Tipped 3 = Modular 4 = Tipped Expandable 5 = Modular Expandable	0 = Without coolant 1 = With central coolant 2 = With radial coolant	4 = 3 x D 5 = 5 x D 6 = 8 x D	A = Form HA, straight round shank	08500 = 8.5mm 06350 = 1/4" = E = 6.35mm	H7 = Hole Tolerance	HF = Helical Fluted SF = Straight Fluted	M = Metric

PCD ENDMILLS • CATALOGUE NUMBERING SYSTEM

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

PCD END MILL • ALCB • 2 FLUTES • 1 X D • INTERNAL COOLANT

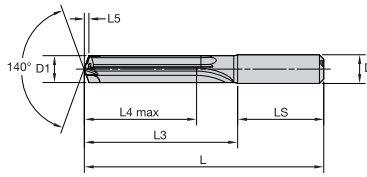
Order number	Catalogue number	D1	D2	Ap1 max	L	L2	R	T
100001	ALCB2RA0600N006HAR020IM	6,00	6,00	0,06	20,00	30,00	0,20	2,00
100002	ALCB2RA0600N006HAR020IM	8,00	8,00	0,06	20,00	30,00	0,20	2,00
100003	ALCB2RA0600N006HAR020IM	10,00	10,00	0,06	20,00	30,00	0,20	2,00
100004	ALCB2RA0600N006HAR020IM	12,00	12,00	0,06	20,00	30,00	0,20	2,00
100005	ALCB2RA0600N006HAR020IM	16,00	16,00	0,06	20,00	30,00	0,20	2,00
100006	ALCB2RA0600N006HAR020IM	20,00	20,00	0,06	20,00	30,00	0,20	2,00

ALCB2RA0600N006HAR020IM

ALCB	2	RA	0600	N	006	HA	R020	I	M
Series	Number of Flutes	Front End Style	Cutting Diameter D1	Flute Section Style	Length of Cut Ap1 max	Shank Style	Radius	Specific Features	Standard
<p>ALCB = Basic PCD end mill with carbide body</p> <p>ALCC = Complex PCD end mill carbide body</p> <p>ALCR = Roughing PCD end mill with carbide body</p> <p>ALSB = Basic PCD end mill with steel body</p> <p>ALSR = Basic PCD end mill with steel body</p>	<p>1 = 1-Flute</p> <p>2 = 2-Flute</p> <p>3 = 3-Flute</p> <p>4 = 4-Flute</p> <p>5 = 5-Flute</p> <p>6 = 6-Flute</p> <p>7 = 7-Flute</p> <p>8 = 8-Flute</p> <p>9 = 9-Flute</p> <p>M = Multi-flute</p>	<p>SE = Sharp Edge</p> <p>CH = Chamfer</p> <p>RA = Radius</p> <p>BN = Ball Nose</p> <p>TB = Taper Ball Nose</p> <p>TO = Toroidal</p>	<p>Metric = D1 in mm</p> <p>Inch = D1 in decimal inch</p>	<p>N = Neck</p> <p>E = Extended Neck</p> <p>S = Short Without Neck</p> <p>R = Regular Without Neck</p> <p>L = Long Without Neck</p> <p>X = Extra Long Without Neck</p>	<p>Metric = Ap1 Max in mm</p> <p>Inch = Ap1 Max in decimal inch</p>	<p>HA = Plain</p> <p>HB = Weldon®</p> <p>SL = Safe-Lock™</p> <p>DL = Duo-Lock™</p>	<p>R020 = 0,2mm</p> <p>R025 = 0,25mm</p> <p>R030 = 0,3mm</p> <p>R040 = 0,4mm</p> <p>R050 = 0,5mm</p> <p>R075 = 0,75mm</p> <p>R100 = 1,0mm</p> <p>R125 = 1,25mm</p> <p>R150 = 1,5mm</p> <p>R200 = 2,0mm</p> <p>R250 = 2,5mm</p> <p>R300 = 3,0mm</p> <p>R400 = 4,0mm</p> <p>R500 = 5,0mm</p> <p>R600 = 6,0mm</p>	<p>C = Chip Splitter</p> <p>I = Internal Coolant</p> <p>O = Coolant Grooves in Shank</p> <p>P = Polished Flutes</p>	<p>M = Metric</p> <p>Blank = Inch</p>

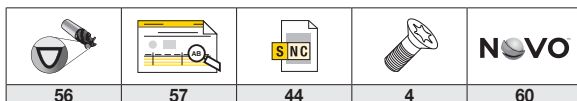
PCD DRILL • B467 • 5 X D • INTERNAL COOLANT

- first choice
- alternate choice

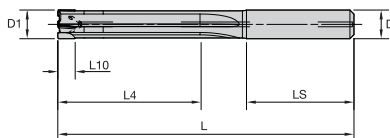


P	■	
M	■	
K	■	
N	■	●
S	■	
H	■	

catalogue number	D1	L	L3	L4 max	L5	LS	D	KD1415
B467A06000SP	6,00	82	44	35	1,0	36	6	●
B467A06500SP	6,50	91	53	43	1,1	36	8	●
B467A07000SP	7,00	91	53	43	1,2	36	8	●
B467A07500SP	7,50	91	53	43	1,3	36	8	●
B467A08000SP	8,00	91	53	43	1,4	36	8	●
B467A08500SP	8,50	103	61	49	1,4	40	10	●
B467A09000SP	9,00	103	61	49	1,5	40	10	●
B467A09500SP	9,50	103	61	49	1,6	40	10	●
B467A10000SP	10,00	103	61	49	1,7	40	10	●
B467A10500SP	10,50	118	71	56	1,8	45	12	●
B467A11000SP	11,00	118	41	56	1,9	45	12	●
B467A11500SP	11,50	118	41	56	2,0	45	12	●
B467A12000SP	12,00	118	41	56	2,1	45	12	●
B467A12500SP	12,50	124	77	60	2,1	45	14	●
B467A13000SP	13,00	124	77	60	2,2	45	14	●
B467A13500SP	13,50	124	77	60	2,3	45	14	●
B467A14000SP	14,00	124	44	60	2,4	45	14	●
B467A14500SP	14,50	133	83	63	2,5	48	16	●
B467A15000SP	15,00	133	83	63	2,6	48	16	●
B467A15500SP	15,50	133	83	63	2,6	48	16	●
B467A16000SP	16,00	133	83	63	2,7	48	16	●
B467A16500SP	16,50	143	93	71	2,8	48	18	●
B467A17000SP	17,00	143	93	71	2,9	48	20	●
B467A17500SP	17,50	143	93	71	3,0	48	20	●
B467A18000SP	18,00	143	93	71	3,0	48	20	●
B467A18500SP	18,50	153	101	77	3,1	50	20	●
B467A19000SP	19,00	153	101	77	3,2	50	20	●
B467A19500SP	19,50	153	101	77	3,3	50	20	●
B467A20000SP	20,00	153	101	77	3,4	50	20	●



PCD REAMER • R215 • 5 X D • INTERNAL COOLANT

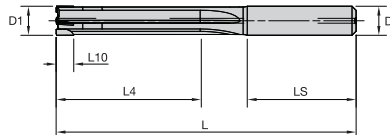


- first choice
- alternate choice

P	■	
M	■	
K	■	
N	■	●
S	■	
H	■	

catalogue number	D1	D	L	L4	L10	LS	Z	KD1415
R215A06000H6SFM	6,000	6,000	79,000	27,000	7,013	36,000	2	●
R215A08000H6SFM	8,000	8,000	92,000	40,000	6,895	36,000	4	●
R215A10000H6SFM	10,000	10,000	106,000	50,000	7,023	40,000	4	●
R215A12000H6SFM	12,000	12,000	124,000	60,000	7,108	45,000	4	●
R215A14000H6SFM	14,000	14,000	135,000	70,000	7,248	45,000	4	●
R215A16000H6SFM	16,000	16,000	150,000	80,000	7,248	48,000	4	●
R215A18000H6SFM	18,000	18,000	160,000	90,000	7,249	48,000	4	●

PCD REAMER • R225 • 5 X D • INTERNAL COOLANT



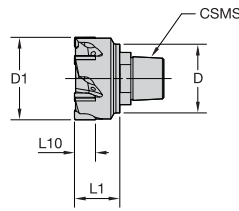
- first choice
- alternate choice

P	■	
M	■	
K	■	
N	■	●
S	■	
H	■	

catalogue number	D1	D	L	L4	L10	LS	Z	KD1415
R225A06000H6SFM	6,000	6,000	79,000	27,000	6,888	36,000	2	●
R225A08000H6SFM	8,000	8,000	92,000	40,000	3,553	36,000	4	●
R225A10000H6SFM	10,000	10,000	106,000	50,000	7,023	40,000	4	●
R225A12000H6SFM	12,000	12,000	124,000	60,000	7,108	45,000	4	●
R225A14000H6SFM	14,000	14,000	135,000	70,000	7,248	45,000	4	●
R225A16000H6SFM	16,000	16,000	105,000	80,000	7,248	48,000	4	●
R225A18000H6SFM	18,000	18,000	160,000	90,000	7,249	48,000	4	●
R225A20000H6SFM	20,000	20,000	163,000	90,000	7,249	50,000	4	●

56	57	44	4	60

PCD MODULAR REAMER • R420 • INTERNAL COOLANT

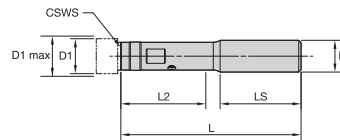


● first choice
○ alternate choice

P	■
M	■
K	■
N	●
S	■
H	■

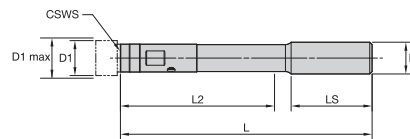
catalogue number	D1	D	L1	L10	CSMS system size	Z		KD1415
R420M2000H6SFM	20,000	17,500	15,500	7,463	KST175	4	●	
R420M2200H6SFM	22,000	20,000	15,500	7,500	KST200	4	●	
R420M2500H6SFM	25,000	20,000	16,500	7,463	KST200	4	●	
R420M2800H6SFM	28,000	20,000	16,500	7,463	KST200	6	●	
R420M3000H6SFM	30,000	20,000	16,500	7,463	KST200	6	●	
R420M3200H6SFM	32,000	20,000	16,500	7,500	KST200	6	●	
R420M3600H6SFM	36,000	20,000	18,000	7,500	KST200	6	●	
R420M4000H6SFM	40,000	20,000	18,000	7,463	KST200	6	●	
R420M4200H6SFM	42,000	20,000	18,000	7,500	KST200	6	●	

STRAIGHT SHANK BODIES 3 X D • AXIAL CLAMPING



order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS
4056174	SS16KST115AR3M	KST115	14,00	15,999	16,00	91,00	35,00	48,00
4056175	SS20KST135AR3M	KST135	16,00	17,999	20,00	99,00	39,00	51,00
4056176	SS20KST155AR3M	KST155	18,00	19,999	20,00	106,00	45,00	51,00
3861185	SS20KST175AR3M	KST175	20,00	22,499	20,00	113,50	51,50	51,00
3861186	SS20KST200AR3M	KST200	22,50	27,499	20,00	130,50	65,50	51,00
3861187	SS25KST250AR3M	KST250	27,50	32,499	25,00	152,50	80,50	56,00
3861188	SS32KST300AR3M	KST300	32,50	37,499	32,00	174,00	94,00	61,00
3861189	SS32KST350AR3M	KST350	37,50	42,000	32,00	190,00	108,00	61,00

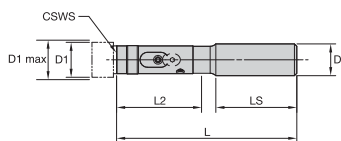
STRAIGHT SHANK BODIES 5 X D • AXIAL CLAMPING



order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS
4056177	SS16KST115AR5M	KST115	14,00	15,999	16,00	123,00	67,00	48,00
4056178	SS20KST135AR5M	KST135	16,00	17,999	20,00	135,00	75,00	51,00
4056179	SS20KST155AR5M	KST155	18,00	19,999	20,00	146,00	85,00	51,00
3861190	SS20KST175AR5M	KST175	20,00	22,499	20,00	158,50	96,50	51,00
3861191	SS20KST200AR5M	KST200	22,50	27,499	20,00	185,50	120,50	51,00
3861192	SS25KST250AR5M	KST250	27,50	32,499	25,00	217,50	145,50	56,00
3861193	SS32KST300AR5M	KST300	32,50	37,499	32,00	249,00	169,00	61,00
3861194	SS32KST350AR5M	KST350	37,50	42,000	32,00	274,00	192,00	61,00

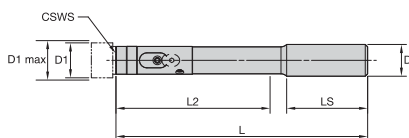
56	57	44	4	60

STRAIGHT SHANK BODIES 3 X D • RADIAL CLAMPING

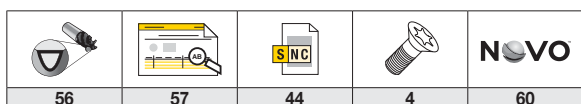


order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS
3861195	SS20KST175RR3M	KST175	20,00	22,499	20,00	113,50	51,50	51,00
3861196	SS20KST200RR3M	KST200	22,50	27,499	20,00	130,50	65,50	51,00
3861197	SS25KST250RR3M	KST250	27,50	32,499	25,00	152,50	80,50	56,00
3861198	SS32KST300RR3M	KST300	32,50	37,499	32,00	174,00	94,00	61,00
3861199	SS32KST350RR3M	KST350	37,50	42,000	32,00	190,00	108,00	61,00



STRAIGHT SHANK BODIES 5 X D • RADIAL CLAMPING





order number	catalogue number	CSWS system size	D1	D1 max	D	L	L2	LS
3861200	SS20KST175RR5M	KST175	20,00	22,499	20,00	158,50	96,50	51,00
3861201	SS20KST200RR5M	KST200	22,50	27,499	20,00	185,50	120,50	51,00
3861202	SS25KST250RR5M	KST250	27,50	32,499	25,00	217,50	145,50	56,00
3861203	SS32KST300RR5M	KST300	32,50	37,499	32,00	249,00	169,00	61,00
3861204	SS32KST350RR5M	KST350	37,50	42,000	32,00	274,00	192,00	61,00



PCD DRILL • APPLICATION DATA

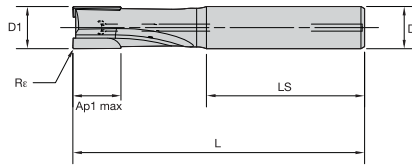
											
		Cutting Speed – vc			Metric						
		Range – m/min			Recommended Feed Rate (f) by Diameter						
Material Group		min	Starting Value	max		6,0	8,0	10,0	12,0	16,0	20,0
	N	1	150	300	600	mm/r	0,10–0,18	0,12–0,20	0,14–0,22	0,16–0,24	0,18–0,26
	2	150	250	500	mm/r	0,12–0,20	0,14–0,22	0,16–0,24	0,18–0,26	0,20–0,28	0,22–0,30
	3	150	150	400	mm/r	0,10–0,18	0,12–0,20	0,14–0,22	0,16–0,24	0,18–0,26	0,20–0,28
	4	100	170	250	mm/r	0,10–0,18	0,12–0,20	0,14–0,22	0,16–0,24	0,18–0,26	0,20–0,28

PCD REAMER • APPLICATION DATA

													
		Cutting Speed – vc			Metric								
		Range – m/min			Recommended feed per tooth (fz = mm/th)								
Material Group		min	Starting Value	max		> = 5,0	> = 10,0	> = 16,0	> = 25,0	> = 32,0	> = 50,0	> = 70,0	max. 100,0
	N	1	150	350	650	mm/r	0,06–0,16	0,08–0,20	0,10–0,25	0,12–0,28	0,12–0,30	0,12–0,30	0,12–0,30
	2	150	450	600	mm/r	0,06–0,16	0,06–0,20	0,08–0,25	0,08–0,28	0,08–0,30	0,10–0,30	0,10–0,30	0,10–0,30
	3	150	400	550	mm/r	0,05–0,16	0,05–0,20	0,05–0,25	0,06–0,28	0,06–0,30	0,08–0,30	0,08–0,30	0,08–0,30
	4	100	250	350	mm/r	0,05–0,16	0,05–0,20	0,05–0,25	0,06–0,28	0,06–0,30	0,08–0,30	0,08–0,30	0,08–0,30

PCD END MILL • ALCB • 2 FLUTES • 1 X D • INTERNAL COOLANT

- first choice
- alternate choice



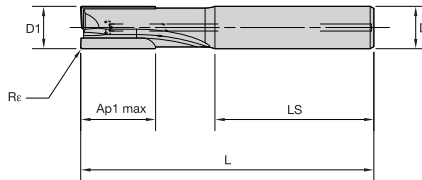
P	■
M	■
K	■
N	●
S	■
H	■

KD1410

order number	catalogue number	D1	D	Ap1 max	L	LS	Re	Z U	
6752771	ALCB2RA0600N006HAR020IM	6,00	6,00	6,00	57,00	36,00	0,20	2	●
6752772	ALCB2RA0800N008HAR020IM	8,00	8,00	8,00	63,00	36,00	0,20	2	●
6752773	ALCB2RA1000N010HAR020IM	10,00	10,00	10,00	76,00	40,00	0,20	2	●
6752774	ALCB2RA1200N012HAR030IM	12,00	12,00	12,00	83,00	45,00	0,30	2	●
6752775	ALCB2RA1600N016HAR030IM	16,00	16,00	16,00	95,00	48,00	0,30	2	●
6752776	ALCB2RA20600N020HAR030IM	20,00	20,00	20,00	108,00	50,00	0,30	2	●

PCD END MILL • ALCC • 2 FLUTES • 1,5 X D • INTERNAL COOLANT

- first choice
- alternate choice



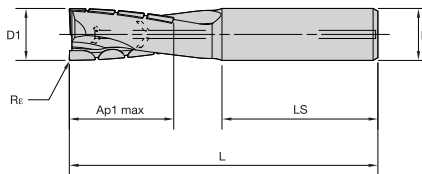
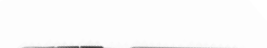
P	■
M	■
K	■
N	●
S	■
H	■

KD1410

order number	catalogue number	D1	D	Ap1 max	L	LS	Re	Z U	
6752777	ALCC2RA0600N010HAR020IM	6,00	6,00	10,00	57,00	36,00	0,20	2	●
6752778	ALCC2RA0800N015HAR020IM	8,00	8,00	15,00	63,00	36,00	0,20	2	●
6752779	ALCC2RA1000N015HAR020IM	10,00	10,00	15,00	76,00	40,00	0,20	2	●
6752780	ALCC2RA1200N020HAR030IM	12,00	12,00	20,00	83,00	45,00	0,30	2	●
6752791	ALCC2RA1600N025HAR030IM	16,00	16,00	25,00	95,00	48,00	0,30	2	●
6752792	ALCC2RA20600N028HAR030IM	20,00	20,00	28,00	108,00	50,00	0,30	2	●

PCD HELICAL END MILL • ALCR • 2 FLUTES • 2 X D • INTERNAL COOLANT

- first choice
- alternate choice



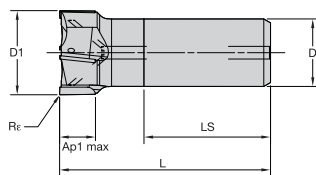
P	■
M	■
K	■
N	●
S	■
H	■

KD1410

order number	catalogue number	D1	D	Ap1 max	L	LS	Re	Z U	
6752793	ALCR2RA1200N024HAR030IM	12,00	12,00	24,00	83,00	45,00	0,30	2	●
6752794	ALCR2RA1600N032HAR030IM	16,00	16,00	32,00	95,00	48,00	0,30	2	●
6752795	ALCR2RA2000N040HAR030IM	20,00	20,00	40,00	108,00	50,00	0,30	2	●

56	57	45	4	60

PCD END MILL • ALSB • 4-5 FLUTES • 1,25 X D • INTERNAL COOLANT

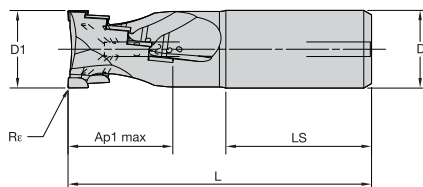


- first choice
- alternate choice

P	■	
M	■	
K	■	
N	■	●
S	■	
H	■	

order number	catalogue number	D1	D	Ap1 max	L	LS	Re	Z U	KD1410
6752796	ALSB4RA2500N015HAR040IM	25,00	25,00	15,00	100,00	56,00	0,40	4	●
6752797	ALSB4RA3200N015HAR040IM	32,00	32,00	15,00	100,00	60,00	0,40	4	●
6752798	ALSB4RA4000N015HAR040IM	40,00	32,00	15,00	100,00	60,00	0,40	4	●
6752799	ALSB5RA5000N015HAR040IM	50,00	32,00	15,00	100,00	60,00	0,40	5	●

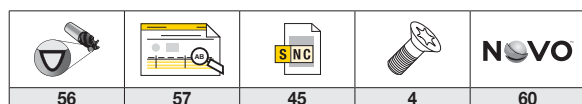
PCD HELICAL END MILL • ALSR • 2-3 FLUTES • 1,25 X D • INTERNAL COOLANT




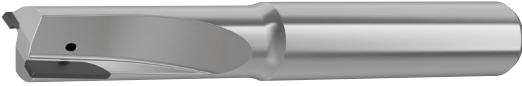
- first choice
- alternate choice

P	■	
M	■	
K	■	
N	■	●
S	■	
H	■	



order number	catalogue number	D1	D	Ap1 max	L	LS	Re	Z U	KD1410
6752800	ALSR2RA2500N032HAR040IM	25,00	25,00	32,00	115,00	56,00	0,40	2	●
6752811	ALSR2RA3200N040HAR040IM	32,00	32,00	40,00	125,00	60,00	0,40	2	●
6752812	ALSR2RA4000N050HAR040IM	40,00	32,00	40,00	125,00	60,00	0,40	3	●





PCD END MILL • ALCB • APPLICATION DATA

Material Group														
	Side Milling (A) and Slotting (B)			KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.							
	A		B	Cutting Speed – vc m/min			D1 – Diameter							
	ap	ae	ap	min	max		mm	6	8	10	12	16	20	
N	1	1 x D	0,25 x D	0,5 x D	200	–	3000	Fz	0,070	0,080	0,090	0,140	0,160	0,160
	2	1 x D	0,25 x D	0,5 x D	200	–	3000	Fz	0,070	0,080	0,090	0,140	0,160	0,160
	3	1 x D	0,25 x D	0,5 x D	180	–	1400	Fz	0,060	0,070	0,080	0,120	0,140	0,140
	4	1 x D	0,25 x D	0,5 x D	200	–	800	Fz	0,060	0,070	0,080	0,100	0,120	0,120
	5	1 x D	0,25 x D	0,5 x D	200	–	1000	Fz	0,050	0,060	0,070	0,090	0,100	0,100
	6	1 x D	0,25 x D	0,5 x D	150	–	800	Fz	0,040	0,050	0,060	0,060	0,080	0,080
	7	1 x D	0,25 x D	0,5 x D	250	–	500	Fz	0,040	0,050	0,060	0,060	0,080	0,080



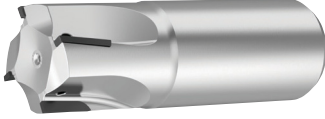
PCD END MILL • ALCC • APPLICATION DATA

Material Group													
	Side Milling (A) and Slotting (B)			KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
	A		B	Cutting Speed – vc m/min			D1 – Diameter						
	ap	ae	ap	min	max		mm	6	8	10	12	16	
N	1	1,5 x D	0,15 x D	0,5 x D	200	–	3000	Fz	0,070	0,080	0,090	0,140	0,160
	2	1,5 x D	0,15 x D	0,5 x D	200	–	3000	Fz	0,070	0,080	0,090	0,140	0,160
	3	1,5 x D	0,15 x D	0,5 x D	180	–	1400	Fz	0,060	0,070	0,080	0,120	0,140
	4	1,5 x D	0,15 x D	0,5 x D	200	–	800	Fz	0,060	0,070	0,080	0,100	0,120
	5	1,5 x D	0,15 x D	0,5 x D	200	–	1000	Fz	0,050	0,060	0,070	0,090	0,100
	6	1,5 x D	0,15 x D	0,5 x D	150	–	800	Fz	0,040	0,050	0,060	0,060	0,080
	7	1,5 x D	0,15 x D	0,5 x D	250	–	500	Fz	0,040	0,050	0,060	0,060	0,080




PCD HELICAL END MILL • ALCR • APPLICATION DATA

Material Group												
	Side Milling (A) and Slotting (B)			KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
	A		B	Cutting Speed – vc m/min			D1 – Diameter					
	ap	ae	ap	min	max		mm	12	16	20		
N	1	2 x D	0,2 x D	0,5 x D	200	–	3000	Fz	0,140	0,160	0,160	
	2	2 x D	0,2 x D	0,5 x D	200	–	3000	Fz	0,140	0,160	0,160	
	3	2 x D	0,2 x D	0,5 x D	180	–	1400	Fz	0,120	0,140	0,140	
	4	2 x D	0,2 x D	0,5 x D	200	–	800	Fz	0,100	0,120	0,120	
	5	2 x D	0,2 x D	0,5 x D	200	–	1000	Fz	0,090	0,100	0,100	
	6	2 x D	0,2 x D	0,5 x D	150	–	800	Fz	0,060	0,080	0,080	
	7	2 x D	0,2 x D	0,5 x D	250	–	500	Fz	0,060	0,080	0,080	

PCD END MILL • ALSB • APPLICATION DATA

Material Group												
	Side Milling (A) and Slotting (B)				KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
	A		B		Cutting Speed – vc m/min			D1 – Diameter				
	ap	ae	ap	min	–	max	mm	25	32	32	50	
N	1	L10	0,25 x D	0,5*L10	200	–	3000	Fz	0,180	0,200	0,200	0,220
	2	L10	0,25 x D	0,5*L10	200	–	3000	Fz	0,180	0,200	0,200	0,220
	3	L10	0,25 x D	0,5*L10	180	–	1400	Fz	0,160	0,180	0,180	0,200
	4	L10	0,25 x D	0,5*L10	200	–	800	Fz	0,140	0,160	0,160	0,180
	5	L10	0,25 x D	0,5*L10	200	–	1000	Fz	0,120	0,120	0,120	0,140
	6	L10	0,25 x D	0,5*L10	150	–	800	Fz	0,100	0,100	0,100	0,120
	7	L10	0,25 x D	0,5*L10	250	–	500	Fz	0,100	0,100	0,100	0,120

PCD HELICAL END MILL • ALSR • APPLICATION DATA

Material Group											
	Side Milling (A) and Slotting (B)				KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.			
	A		B		Cutting Speed – vc m/min			D1 – Diameter			
	ap	ae	ap	min	–	max	mm	25	32	32	
N	1	1,25 x D	0,2 x D	0,25 x D	200	–	3000	Fz	0,180	0,200	0,200
	2	1,25 x D	0,2 x D	0,25 x D	200	–	3000	Fz	0,180	0,200	0,200
	3	1,25 x D	0,2 x D	0,25 x D	180	–	1400	Fz	0,160	0,180	0,180
	4	1,25 x D	0,2 x D	0,25 x D	200	–	800	Fz	0,140	0,160	0,160
	5	1,25 x D	0,2 x D	0,25 x D	200	–	1000	Fz	0,120	0,120	0,120
	6	1,25 x D	0,2 x D	0,25 x D	150	–	800	Fz	0,100	0,100	0,100
	7	1,25 x D	0,2 x D	0,25 x D	250	–	500	Fz	0,100	0,100	0,100

Online Catalogue

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

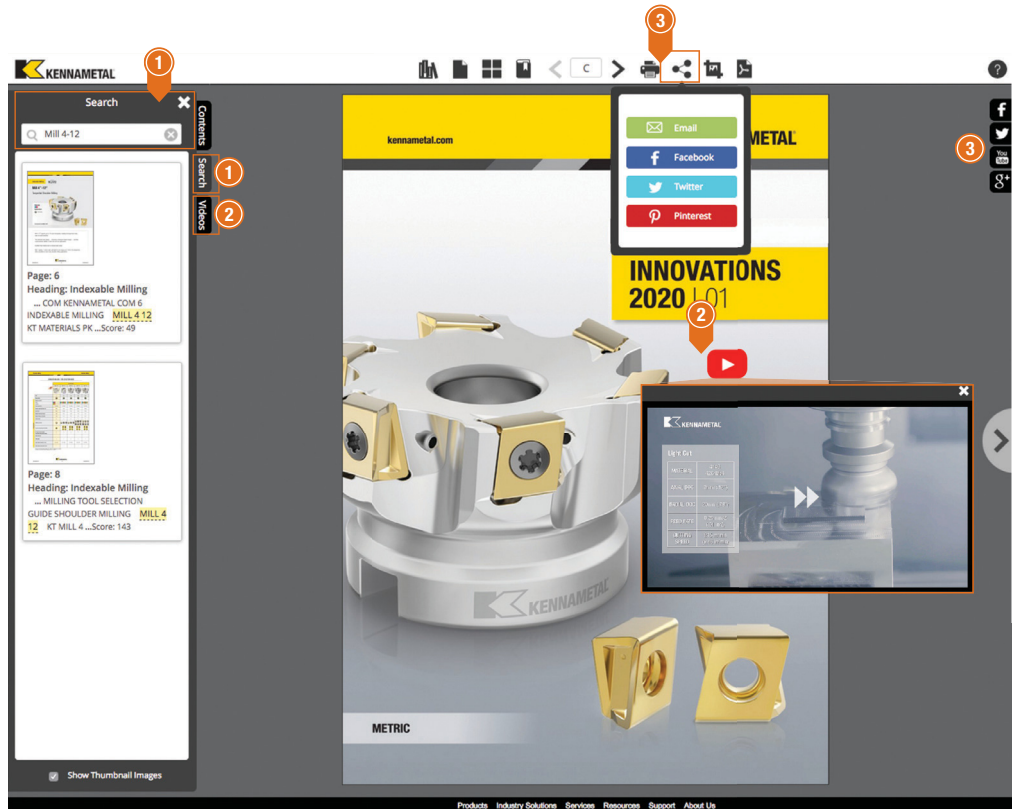
No worries. Go to catalogues.kennametal.com to see what's out there.

Search for what you need, watch a video, and share pages with others, all from one site! Go to catalogues.kennametal.com, and if you want to check it out on your mobile device, just download the FREE app for iOS or Android™.

1 Search for what you need

2 Watch videos

3 Share with others



Check out our new catalogue app. Available in the Google Play™ Store or the App Store®

HOLEMAKING

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45		
KCK10A		<p>Multilayered PVD AlTiN-based coated submicron grain carbide with superior surface finish.</p> <p>First choice for cast iron. This grade utilizes a newly developed coating combined with a state-of-the-art surface condition to offer extraordinary wear resistance in abrasive materials at elevated cutting conditions with improved performance consistency.</p>												
			K											

SOLID END MILLING

wear resistance ← → toughness

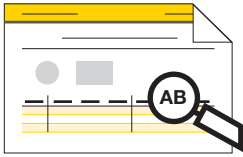
Coating		Grade Description		05	10	15	20	25	30	35	40	45		
KCPM15		<p>Coated carbide grade with thick PVD coating and optimised chemistry and process for increased wear resistance. Outstanding protection in milling stainless steel to mitigate crater, DOCN (depth-of-cut notching), and flank wear. Excellent performance up to 52 HRC.</p>	P											
			M											
			K											
KCSM15		<p>Coated carbide grade with thick PVD coating and optimised 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											
			S											
			H											

PCD TOOLING

wear resistance ← → toughness

Coating		Grade Description		05	10	15	20	25	30	35	40	45		
KD1410		<p>A PCD-tip brazed to carbide for machining aluminium with a very high silicon content, abrasive non-ferrous materials, and fibre-reinforced plastics. KD1410 can be used at very high cutting speeds, even where good surface finishes are required. This grade can be used both wet or dry but is suggested to use coolant where good surface finishes are required.</p>												
			N											

KEY TO PRODUCT TABLE COLUMN HEADINGS



You may notice a slight change in the appearance of our product tables and specification charts. In this catalogue, 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
BCH	Corner Chamfer Width
BS	Corner Facet Length
CE	Cutting Edges
CSMS	Connection Style Machine Side
CSWS	Connection Style Workpiece Side
D	Insert: Insert IC Size
D	Toolholder: Shank/Bore Diameter
D1	Holemaking: Drill Diameter
D1	Holemaking: Reamer Diameter
D1	Insert: Insert Hole Size
D1	Milling: Cutter Diameter
D1	Toolholder: Clamping Diameter
D1 max	Toolholder: Maximum Shank/Bore Diameter
D1 max	Maximum Drill Diameter
D2	Body Diameter 1 Workpiece Side
D3	Neck Diameter
hm	Average Chip Thickness
kg	Weight Kilograms
L	Overall Length
L1	Holemaking: Reamer Gage Length
L1	Holemaking: Tool Length
L1	Toolholder: Gage Length
L10	Insert Cutting Edge Length
L10	Holemaking: Reamer Cut Edge Length
L2	Usable Length
L3	Drill Flute Length
L3	Milling: Maximum Depth
L4	Holemaking: Reamer Maximum Depth
L4 max	Maximum Drill Depth
L5	Drill Point Length
lbs	Weight Pounds
Ll	Insert Length
LS	Shank Length
R	Profile or Ball Nose Radii
Re	Corner Radius
Torque (ft. lbs.)	Torque Foot Pounds
Nm	Torque Newton Meters
Z	Number of Flutes
Z U	Number of Flutes

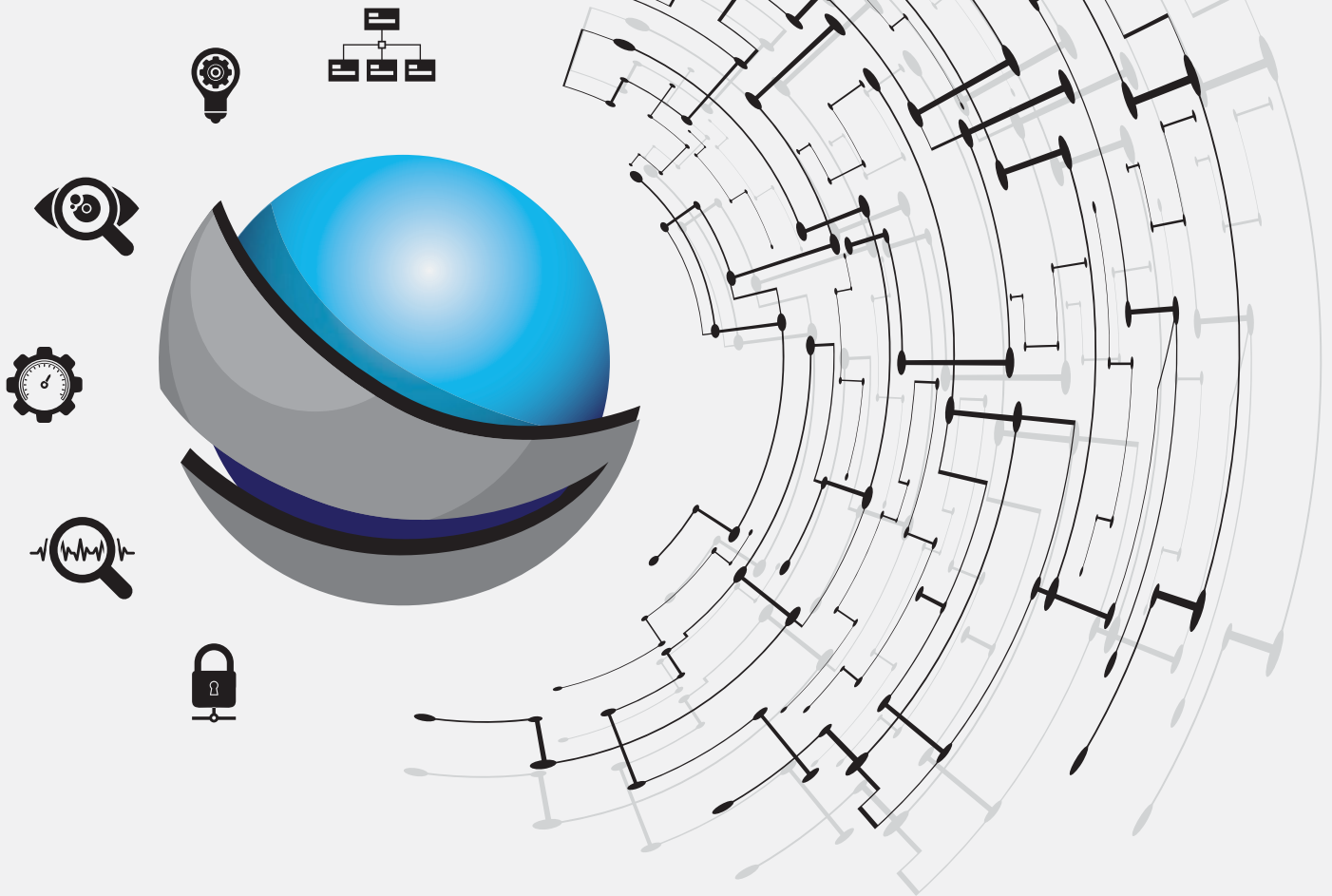
P	Steel
M	Stainless Steel
K	Cast Iron

N	Non-Ferrous
S	High-Temp Alloys

H	Hardened Materials
C	CFRP Materials

material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	-	-
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	Grey 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 Aluminium	-	-	-	-	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
N2	Low-Silicon Aluminium Alloys and Magnesium Alloys	Si <12,2%	-	-	-	GAISiCu4, GDAISI10Mg
N3	High-Silicon Aluminium 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, Fibreglass	-	-	-	-	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	-	-	-	-	-

NOVO™



**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.

METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalogue!

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 catalogue 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.

Kennametal, the stylised K, GODrill, HARVI, Kenna Universal, NOVO, Stellite, and Y-Tech are trademarks of Kennametal, Inc. and are used as such herein. The absence of a product, service name, or logo from this list does not constitute a waiver of the Kennametal trademark or other intellectual property rights concerning that name or logo.

Android™ is a trademark of Google Inc.

App Store® is a registered trademark of Apple Inc., registered in the U.S. and other countries.

DUO-LOCK® is a registered trademark and Duo-Lock™ is a trademark of Haimer GmbH.

Google Play™ is a trademark of Google Inc.

Hardox® is a registered trademark of SSAB Technology AB.

Hastelloy® and Haynes® are registered trademarks of Haynes International, Inc.

Hostalen™ is a trademark of Hoechst GmbH.

INCONEL® and NIMONIC® are registered trademarks of Huntington Alloys Corporation.

INVAR® is a registered trademark of Aperam Alloys Imphy.

LEXAN® is a registered trademark of Sabic Global Technologies B.V.

MAKROLON® is a registered trademark of Covestro Deutschland AG.

Polystyrol® is a registered trademark of BASF SE.

SAFE-LOCK® is a registered trademark and Safe-Lock™ is a trademark of Haimer GmbH.

Weldon® is a registered trademark of Dauphin Precision Tool, LLC.

©2020 Kennametal Inc. All rights reserved.



INNOVATIONS

WORLD HEADQUARTERS

Kennametal Inc.

525 William Penn Place | Suite 3300
Pittsburgh, PA 15219 USA
Tel: 1 800 446 7738
ftmill.service@kennametal.com

EUROPEAN HEADQUARTERS

Kennametal Europe GmbH

Rheingoldstrasse 50
CH 8212 Neuhausen am Rheinfall
Switzerland
Tel: +41 52 6750 100
neuhausen.info@kennametal.com

ASIA-PACIFIC HEADQUARTERS

Kennametal Singapore Pte. Ltd.

3A International Business Park
Unit #01-02/03/05, ICON@IBP
Singapore 609935
Tel: +65 6265 9222
k-sg.sales@kennametal.com

INDIA HEADQUARTERS

Kennametal India Limited

CIN: L27109KA1964PLC001546
8/9th Mile, Tumkur Road
Bangalore - 560 073
Tel: +91 080 22198444 or +91 080 43281444
bangalore.information@kennametal.com



kennametal.com