

INNOVATIONS
2024 | 01 | INCH

Drill Fix PRO™

Indexable Drilling



Wiper Geometry on All Outboard Inserts

Optimized Coolant Delivery System

Robust Toolholder Design

Cost-Effective and Versatile
Indexable Drilling

INNOVATIONS

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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
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	Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
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Numbers shown only serve the originating country listed.

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North America	United States	+1 800 446 7738	FtMill.Service@kennametal.com
	Canada	+1 800 446 7738	toronto.service@kennametal.com
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	Poland	+48 61 6656501	poland.service@kennametal.com
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	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
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*Vietnam and Philippines individuals should contact the Singapore office.

Visit kennametal.com to find local Authorized 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 kennametal.com and find what you need in seconds. Enter the catalog number of the corresponding tool, and it will display.

1 STEP 1 Enter the tool catalog number here

2 STEP 2 Select the spare parts & accessories

Spare Parts for Mill 16™ • Shell Mill • Screw-On Clamping • Fine Pitch • Metr

[D1] Effective Cutting Diameter	[D1MAX] Maximum Cutting Diameter	[D] Adapter / Shank / Bore Diameter	[D4] Bolt Circle 4	[D6] Hub Diameter
63.0000	75.0200	22.0		50.0000

Spare Part ANTI-SEIZE LUBRICANT
WRENCH
INSERT SCR M5-0.8 x 14 IP20
SOCKET HEAD SCREW DIN 912 M10X25



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

Visit kennametal.com/novo and log into the web app. It's free!

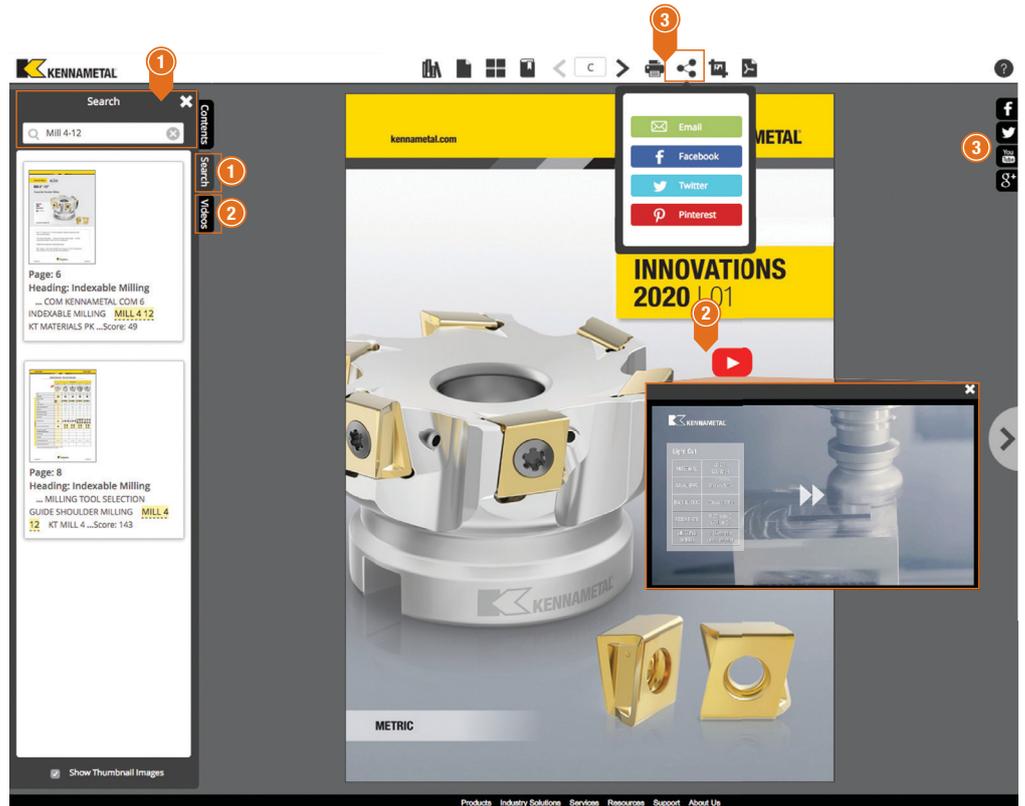


Online Catalog

Can't find your paper copy of our catalog anymore?
No worries. Go to catalogs.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 catalogs.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 catalog app.
Available in the Google Play™ Store or
the App Store®.

Tool Selection Guide • Indexable Drills • Drill Fix PRO™



	PK	MS	LC	PK	MS	LC
	NEW!	NEW!	NEW!	NEW!	NEW!	NEW!
						
Page	14	14	14	15	15	15
Insert position	Inboard			Outboard		
Workpiece material						
Primary	P K	M S	P	P K	M S	P
Secondary		P N	M S		P N	M S
For long chipping material			✓			✓
Main operation						
Hole tolerance	IT 9-11					
Cutting diameter [D1 min]	1"					
Cutting diameter [D1 max]	2.5"					
Drilling depth L/D1	2-5 x D					
Cutting edges per insert	4					
Coolant						
Connection style machine side (CSMS)						

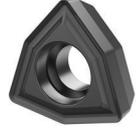
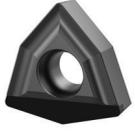
Tool Selection Guide • Indexable Drills • HTS-R



	GD	MD	LD	ST (PCD)
				
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Insert position	Inboard/Outboard			
Workpiece material				
Primary	P K S	P M S	P M K N S	N
Secondary	M N H	K N		
For long chipping material		✓		
Main operation				
Hole tolerance	IT 9–11			
Cutting diameter [D1 min]	1.575"			
Cutting diameter [D1 max]	2.165"			
Drilling depth L/D1	10 x D			
Cutting edges per insert	2			
Coolant				
Connection style machine side (CSMS)	    			

Tool Selection Guide • Indexable Drills • HTS



	GD	HP	MD	DS	DFT-ST (PCD)
					
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Insert position	Inboard/Outboard				
Workpiece material					
Primary	P K	P K	P K	P	N
Secondary	M N S	M N S	M N S	M N S	
For long chipping material				✓	
Main operation					
Hole tolerance	IT 9-11				
Cutting diameter [D1 min]	1.750"				
Cutting diameter [D1 max]	10.629"				
Drilling depth L/D1	10 x D				
Cutting edges per insert	3-4				
Coolant					
Connection style machine side (CSMS)	    				

Tool Selection Guide • Indexable Drills • HTS



	HP	FP	MD	LP
				
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Insert position	Outboard			
Workpiece material				
Primary	P K	P K	P K	P
Secondary	M N S	M N S	M N S	M N S
For long chipping material				✓
Main operation				
Hole tolerance	IT 9–11			
Cutting diameter [D1 min]	1.750"			
Cutting diameter [D1 max]	10.629"			
Drilling depth L/D1	10 x D			
Cutting edges per insert	3–4			
Coolant				
Connection style machine side (CSMS)	    			

Drill Fix PRO™ • Bodies • Catalog Numbering System

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

DFPR	250	R	5	WB	32	M
Series	Cutting Diameter D1	Hand of Tool	Length to Diameter Ratio	Shank Style	Shank Diameter	Unit of Dimensions
DFPR = Drill Fix PRO	Metric = D1 in mm Inch = D1 in decimal inch	R = Right Hand	05 = 5 x D	WB = Weldon® SSF = Flanged Shank with Flats KM = Kennametal Modular	Metric = D1 in mm Inch = D1 in decimal inch	M = Metric Blank = Inch

Drill Fix PRO • Inserts • Catalog Numbering System

DFPR	04	03	04	LC	I
Series	Size	Thickness	Corner Radius	Geometry/ Application	Insert Location
DFPR = Drill Fix PRO	<p>D (mm/inch) Inboard Inserts</p> <p>04 = 4,57 / 0.180 05 = 5,30 / 0.209 06 = 6,50 / 0.256 08 = 8,04 / 0.317 10 = 9,90 / 0.390 12 = 11,90 / 0.469 14 = 14,45 / 0.569 17 = 17,30 / 0.681 20 = 20,50 / 0.807</p> <p>D (mm/inch) Outboard Inserts</p> <p>04 = 4,60 / 0.181 05 = 5,25 / 0.207 06 = 6,20 / 0.244 07 = 7,71 / 0.304 09 = 9,40 / 0.370 11 = 11,30 / 0.445 14 = 13,55 / 0.533 15 = 15,85 / 0.624 18 = 18,70 / 0.736</p>	<p>s (mm/inch)</p> <p>02 = 2,00 / 0.079 02 = 2,40 / 0.094 03 = 2,60 / 0.102 03 = 2,80 / 0.110 03 = 3,00 / 0.118 04 = 3,60 / 0.142 04 = 4,40 / 0.173 05 = 5,20 / 0.205 06 = 6,20 / 0.244</p>	<p>Re (mm/inch) Inboard Inserts</p> <p>03 = 0,30 / 0.012 03 = 0,30 / 0.012 04 = 0,40 / 0.016 04 = 0,40 / 0.016 05 = 0,50 / 0.020 05 = 0,50 / 0.020 06 = 0,60 / 0.024 08 = 0,80 / 0.031 08 = 0,80 / 0.031</p> <p>Re (mm/inch) Outboard Inserts</p> <p>04 = 0,40 / 0.016 04 = 0,40 / 0.016 04 = 0,40 / 0.016 05 = 0,50 / 0.020 05 = 0,50 / 0.020 06 = 0,60 / 0.024 08 = 0,80 / 0.031 08 = 0,80 / 0.031 10 = 1,00 / 0.039</p>	<p>PK = Steels, Cast Iron MS = Stainless Steel, Steels LC = Long Chipping Materials</p>	<p>I = Inboard O = Outboard</p>



KenShape™ MaPACS/MaxPACS

Piloted PCD-Countersinks for CFRP Composite Materials

KenShape MaPACS and MaxPACS Countersinks deliver maximum performance for manual CFRP countersinking applications and are the perfect fit for our aerospace industry customers focusing on rivet hole drilling in composite and stacked materials.

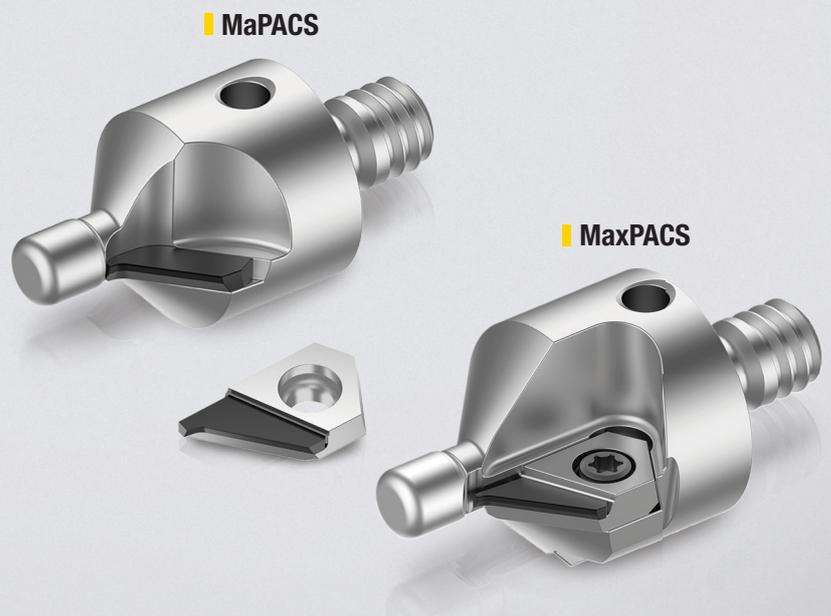
Both, MaPACS and MaxPACS, are designed with one cutting edge to minimize the effort required by the operator. These piloted countersinks deliver excellent hole quality and tool life at a competitive cost per hole. The unique indexable version offers a highly economical solution for customers that don't want to maintain reconditioning infrastructure or prefer a screw-on design.

MaPACS/MaxPACS

- One brazed high-quality PCD cutting edge means lower thrust force and longer tool life.
- Lower your cost per hole with a design allowing up to three regrinds.
- Complementary to tooling platforms in aerospace and CFRP for rivet hole drilling.

MaxPACS

- Easily interchangeable PCD inserts deliver cost effectiveness with no reconditioning.



Drill Fix PRO™

Indexable Drilling



Materials



Applications



Drilling



Drilling:
Inclined Entry



Drilling:
Inclined Exit



Drilling:
Convex



Drilling:
X Offset



Drilling:
Stacked Plate



Drilling:
Blind



Drilling:
Chain Drilling



Drilling:
Cross Hole

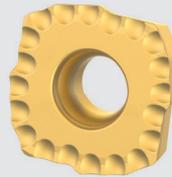


Drilling:
Half Cylinder



Drilling:
Corner Drilling

NEW!



Designed for extended tool life and smooth drilling at high metal removal rates.

Our Drill Fix PRO indexable drill comes with a wiper included in every outboard insert and features larger coolant channels for high-volume coolant flow.

Other platform advancements include the versatility of the four-time indexable cutting edges, which offer customers extended application range and cost effectiveness.



Cost-Effective & Versatile Indexable Drilling: Drill Fix PRO™ offers an economic drilling platform that covers a broad spectrum of materials and applications.

Wiper Geometry on All Outboard Inserts: Creating superior surface finish and hole quality.

Robust Toolholder Design: Extreme rigidity resulting in less deviations, vibrations, and noise.

Optimized Coolant Delivery System: Large twin coolant channels provide enhanced coolant flow, resulting in superior chip evacuation and increased tool life.

Indexable Drilling of Stainless Steel and High-Temp Alloys with Advanced High-PIMS Grades KCMS35 & KCMS40

- Providing high process reliability with the longest tool life on stainless steels and high-temp alloys.
- Smooth coating surface prevents build up on cutting edges for a consistent machining process.
- Combination of optimum layer adhesion and high depth-of-cut notching resistance enhances tool longevity.
- Lower cost per hole: Up to 100% longer insert life when compared to competitor grades.

MS Geometry



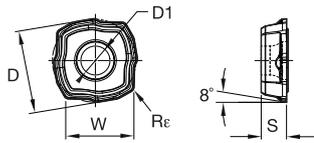
Inboard Insert
in KCMS40



Outboard Insert
in KCMS35

Drill Fix PRO™ • Carbide Insert • Inboard • PK Geometry

NEW!



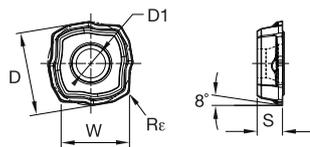
- first choice
- alternate choice

P	●
M	●
K	●
N	○
S	○
H	○

ISO catalog number	ANSI catalog number	D1		D		Re		W		S		KC7140
		mm	in	mm	in	mm	in	mm	in	mm	in	
DFPR040203PKI	DFPR040203PKI	2,13	.084	4,57	.180	0,30	.012	3,81	.150	2,0	.084	●
DFPR050203PKI	DFPR050203PKI	2,43	.096	5,30	.209	0,30	.012	4,42	.174	2,4	.094	●
DFPR060304PKI	DFPR060304PKI	2,54	.100	6,50	.256	0,40	.016	5,37	.212	2,6	.102	●
DFPR080304PKI	DFPR080304PKI	2,84	.112	8,04	.317	0,40	.016	6,58	.259	2,8	.110	●
DFPR100305PKI	DFPR100305PKI	3,45	.136	9,90	.390	0,50	.020	8,09	.318	3,0	.118	●
DFPR120405PKI	DFPR120405PKI	4,85	.191	11,90	.469	0,50	.020	9,83	.387	3,6	.142	●
DFPR140406PKI	DFPR140406PKI	5,55	.219	14,45	.569	0,60	.024	12,00	.473	4,4	.173	●
DFPR170508PKI	DFPR170508PKI	6,05	.238	17,30	.681	0,80	.032	14,35	.565	5,2	.205	●
DFPR200608PKI	DFPR200608PKI	7,55	.297	20,50	.807	0,80	.032	17,08	.672	6,2	.244	●

Drill Fix PRO • Carbide Insert • Inboard • MS Geometry

NEW!



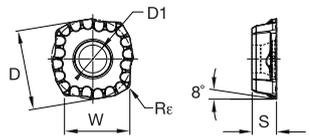
- first choice
- alternate choice

P	○
M	○
K	○
N	○
S	○
H	○

ISO catalog number	ANSI catalog number	D1		D		Re		W		S		KC7140	KCMS40
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DFPR040203MSI	DFPR040203MSI	2,13	.084	4,57	.180	0,30	.012	3,81	.150	2,0	.084	●	●
DFPR050203MSI	DFPR050203MSI	2,43	.096	5,30	.209	0,30	.012	4,42	.174	2,4	.094	●	●
DFPR060304MSI	DFPR060304MSI	2,54	.100	6,50	.256	0,40	.016	5,37	.212	2,6	.102	●	●
DFPR080304MSI	DFPR080304MSI	2,84	.112	8,04	.317	0,40	.016	6,58	.259	2,8	.110	●	●
DFPR100305MSI	DFPR100305MSI	3,45	.136	9,90	.390	0,50	.020	8,09	.318	3,0	.118	●	●
DFPR120405MSI	DFPR120405MSI	4,85	.191	11,90	.469	0,50	.020	9,83	.387	3,6	.142	●	●
DFPR140406MSI	DFPR140406MSI	5,55	.219	14,45	.569	0,60	.024	12,00	.473	4,4	.173	●	●
DFPR170508MSI	DFPR170508MSI	6,05	.238	17,30	.681	0,80	.032	14,35	.565	5,2	.205	●	●
DFPR200608MSI	DFPR200608MSI	7,55	.297	20,50	.807	0,80	.032	17,08	.672	6,2	.244	●	●

Drill Fix PRO • Carbide Insert • Inboard • LC Geometry

NEW!



- first choice
- alternate choice

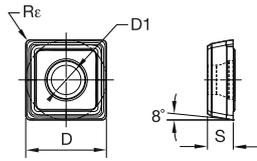
P	○
M	○
K	○
N	○
S	○
H	○

ISO catalog number	ANSI catalog number	D1		D		Re		W		S		KC7140	KCMS40
		mm	in	mm	in	mm	in	mm	in	mm	in		
DFPR040203LCI	DFPR040203LCI	2,13	.084	4,57	.180	0,30	.012	3,81	.150	2,0	.084	●	●
DFPR050203LCI	DFPR050203LCI	2,43	.096	5,30	.209	0,30	.012	4,42	.174	2,4	.094	●	●
DFPR060304LCI	DFPR060304LCI	2,54	.100	6,50	.256	0,40	.016	5,37	.212	2,6	.102	●	●
DFPR080304LCI	DFPR080304LCI	2,84	.112	8,04	.317	0,40	.016	6,58	.259	2,8	.110	●	●
DFPR100305LCI	DFPR100305LCI	3,45	.136	9,90	.390	0,50	.020	8,09	.318	3,0	.118	●	●
DFPR120405LCI	DFPR120405LCI	4,85	.191	11,90	.469	0,50	.020	9,83	.387	3,6	.142	●	●
DFPR140406LCI	DFPR140406LCI	5,55	.219	14,45	.569	0,60	.024	12,00	.473	4,4	.173	●	●
DFPR170508LCI	DFPR170508LCI	6,05	.238	17,30	.681	0,80	.032	14,35	.565	5,2	.205	●	●
DFPR200608LCI	DFPR200608LCI	7,55	.297	20,50	.807	0,80	.032	17,08	.672	6,2	.244	●	●



Drill Fix PRO™ • Carbide Insert • Outboard • PK Geometry

NEW!



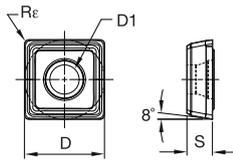
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D1		D		Re		S		KCPK10	KCU25	KCU40	KC7140
		mm	in	mm	in	mm	in	mm	in				
DFPR040204PKO	DFPR040204PKO	2,13	.084	4,60	.181	0,40	.016	2,00	.079	●	●	●	●
DFPR050204PKO	DFPR050204PKO	2,43	.096	5,25	.207	0,40	.016	2,40	.094	●	●	●	●
DFPR060304PKO	DFPR060304PKO	2,54	.100	6,20	.244	0,40	.016	2,60	.102	●	●	●	●
DFPR070305PKO	DFPR070305PKO	2,84	.112	7,71	.304	0,50	.019	2,80	.110	●	●	●	●
DFPR090305PKO	DFPR090305PKO	3,45	.136	9,40	.370	0,50	.019	3,00	.118	●	●	●	●
DFPR110406PKO	DFPR110406PKO	4,85	.191	11,30	.445	0,60	.023	3,60	.142	●	●	●	●
DFPR140408PKO	DFPR140408PKO	5,55	.219	13,55	.533	0,80	.031	4,40	.173	●	●	●	●
DFPR150508PKO	DFPR150508PKO	6,05	.238	15,85	.624	0,80	.031	5,20	.205	●	●	●	●
DFPR180610PKO	DFPR180610PKO	7,55	.297	18,70	.736	1,00	.039	6,20	.244	●	●	●	●

Drill Fix PRO • Carbide Insert • Outboard • MS Geometry

NEW!



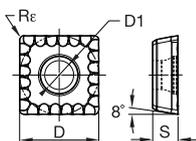
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D1		D		Re		S		KCU40	KCMS35	KC7140	KCMS40
		mm	in	mm	in	mm	in	mm	in				
DFPR040204MSO	DFPR040204MSO	2,13	.084	4,60	.181	0,40	.016	2,00	.079	●	●	●	●
DFPR050204MSO	DFPR050204MSO	2,43	.096	5,25	.207	0,40	.016	2,40	.094	●	●	●	●
DFPR060304MSO	DFPR060304MSO	2,54	.100	6,20	.244	0,40	.016	2,60	.102	●	●	●	●
DFPR070305MSO	DFPR070305MSO	2,84	.112	7,71	.304	0,50	.019	2,80	.110	●	●	●	●
DFPR090305MSO	DFPR090305MSO	3,45	.136	9,40	.370	0,50	.019	3,00	.118	●	●	●	●
DFPR110406MSO	DFPR110406MSO	4,85	.191	11,30	.445	0,60	.023	3,60	.142	●	●	●	●
DFPR140408MSO	DFPR140408MSO	5,55	.219	13,55	.533	0,80	.031	4,40	.173	●	●	●	●
DFPR150508MSO	DFPR150508MSO	6,05	.238	15,85	.624	0,80	.031	5,20	.205	●	●	●	●
DFPR180610MSO	DFPR180610MSO	7,55	.297	18,70	.736	1,00	.039	6,20	.244	●	●	●	●

Drill Fix PRO • Carbide Insert • Outboard • LC Geometry

NEW!



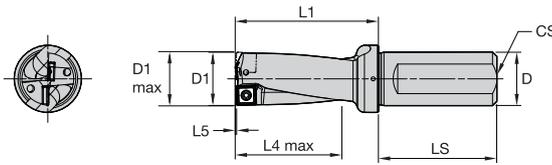
- first choice
- alternate choice

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

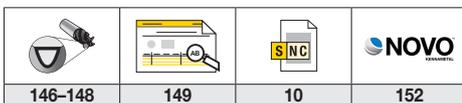
ISO catalog number	ANSI catalog number	D1		D		Re		S		KCU40	KCMS35
		mm	in	mm	in	mm	in	mm	in		
DFPR040204LCO	DFPR040204LCO	2,13	.084	4,60	.181	0,40	.016	2,00	.079	●	●
DFPR050204LCO	DFPR050204LCO	2,43	.096	5,25	.207	0,40	.016	2,40	.094	●	●
DFPR060304LCO	DFPR060304LCO	2,54	.100	6,20	.244	0,40	.016	2,60	.102	●	●
DFPR070305LCO	DFPR070305LCO	2,84	.112	7,71	.304	0,50	.019	2,80	.110	●	●
DFPR090305LCO	DFPR090305LCO	3,45	.136	9,40	.370	0,50	.019	3,00	.118	●	●
DFPR110406LCO	DFPR110406LCO	4,85	.191	11,30	.445	0,60	.023	3,60	.142	●	●
DFPR140408LCO	DFPR140408LCO	5,55	.219	13,55	.533	0,80	.031	4,40	.173	●	●
DFPR150508LCO	DFPR150508LCO	6,05	.238	15,85	.624	0,80	.031	5,20	.205	●	●
DFPR180610LCO	DFPR180610LCO	7,55	.297	18,70	.736	1,00	.039	6,20	.244	●	●



Drill Fix PRO™ • Drill Body • 2 x D • WB Shank • Metric



order number	ISO catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034765	DFPR120R2WB20M	12,00	12,50	0,32	45,00	24,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034766	DFPR125R2WB20M	12,50	13,00	0,36	46,00	25,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034767	DFPR130R2WB20M	13,00	13,50	0,40	47,00	26,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034768	DFPR135R2WB20M	13,50	14,00	0,44	47,00	27,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034769	DFPR140R2WB20M	14,00	14,50	0,36	48,00	28,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034770	DFPR145R2WB20M	14,50	15,00	0,40	49,00	29,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034801	DFPR150R2WB20M	15,00	15,50	0,44	49,00	30,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034802	DFPR155R2WB20M	15,50	16,00	0,48	50,00	31,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034803	DFPR160R2WB20M	16,00	16,50	0,52	51,00	32,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034132	DFPR165R2WB20M	16,50	17,00	0,21	53,00	33,00	50,00	20,00	1/8-27 NPT	DFPR060304_O	DFPR060304_I
7034133	DFPR170R2WB20M	17,00	17,50	0,26	53,00	34,00	50,00	20,00	1/8-27 NPT	DFPR060304_O	DFPR060304_I
7034134	DFPR175R2WB25M	17,50	18,00	0,30	55,00	35,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034135	DFPR180R2WB25M	18,00	18,50	0,35	56,00	36,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034136	DFPR185R2WB25M	18,50	19,00	0,39	57,00	37,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034137	DFPR190R2WB25M	19,00	19,50	0,43	57,00	38,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034138	DFPR195R2WB25M	19,50	20,00	0,48	58,00	39,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7030338	DFPR200R2WB25M	20,00	21,00	0,50	59,00	40,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030339	DFPR210R2WB25M	21,00	22,00	0,58	60,00	42,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030340	DFPR220R2WB25M	22,00	23,00	0,67	62,00	44,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030351	DFPR230R2WB25M	23,00	24,00	0,76	62,24	46,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030352	DFPR240R2WB25M	24,00	25,00	0,84	64,16	48,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7034139	DFPR250R2WB25M	25,00	26,00	0,35	67,00	50,00	56,00	25,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034140	DFPR260R2WB32M	26,00	27,00	0,44	76,00	52,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034141	DFPR270R2WB32M	27,00	28,00	0,52	78,00	54,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034142	DFPR280R2WB32M	28,00	29,00	0,61	79,00	56,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034143	DFPR290R2WB32M	29,00	30,00	0,70	81,00	58,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034144	DFPR300R2WB32M	30,00	31,00	0,79	82,00	60,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7030353	DFPR310R2WB40M	31,00	32,00	0,40	88,00	62,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030354	DFPR320R2WB40M	32,00	33,00	0,48	89,00	64,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030355	DFPR330R2WB40M	33,00	34,00	0,93	91,00	66,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030356	DFPR340R2WB40M	34,00	35,00	1,02	92,00	68,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030357	DFPR350R2WB40M	35,00	36,00	1,11	94,00	70,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030358	DFPR360R2WB40M	36,00	37,00	1,19	95,00	72,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030359	DFPR370R2WB40M	37,00	38,00	1,28	97,00	74,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030569	DFPR380R2WB40M	38,00	39,00	0,91	103,00	76,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030570	DFPR390R2WB40M	39,00	40,00	0,99	104,00	78,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030571	DFPR400R2WB40M	40,00	41,00	1,08	106,00	80,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030573	DFPR410R2WB40M	41,00	42,00	1,16	107,00	82,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030574	DFPR420R2WB40M	42,00	43,00	1,25	110,00	84,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030575	DFPR430R2WB40M	43,00	44,00	1,33	111,00	86,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030576	DFPR440R2WB40M	44,00	45,00	1,42	113,00	88,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030577	DFPR450R2WB50M	45,00	46,00	1,50	122,00	90,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030578	DFPR460R2WB50M	46,00	47,00	1,20	122,00	92,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030579	DFPR470R2WB50M	47,00	48,00	1,28	124,00	94,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030580	DFPR480R2WB50M	48,00	49,00	1,36	125,00	96,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030581	DFPR490R2WB50M	49,00	50,00	1,44	127,00	98,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030582	DFPR500R2WB50M	50,00	51,00	1,52	130,00	100,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030584	DFPR510R2WB50M	51,00	52,00	1,60	131,00	102,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030585	DFPR520R2WB50M	52,00	53,00	1,69	133,00	104,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030586	DFPR530R2WB50M	53,00	54,00	1,77	134,00	106,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030587	DFPR540R2WB50M	54,00	55,00	1,85	136,00	108,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030715	DFPR550R2WB50M	55,00	56,00	1,37	144,00	110,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030716	DFPR560R2WB50M	56,00	57,00	1,45	146,00	112,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030717	DFPR570R2WB50M	57,00	58,00	1,53	147,00	114,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030718	DFPR580R2WB50M	58,00	59,00	1,61	149,00	116,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030719	DFPR590R2WB50M	59,00	60,00	1,70	153,00	118,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030720	DFPR600R2WB50M	60,00	61,00	1,78	155,00	120,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030721	DFPR610R2WB50M	61,00	62,00	1,86	157,00	122,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030722	DFPR620R2WB50M	62,00	63,00	1,94	159,00	124,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030723	DFPR630R2WB50M	63,00	64,00	2,02	161,00	126,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030724	DFPR640R2WB50M	64,00	65,00	2,10	163,00	128,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030725	DFPR650R2WB50M	65,00	66,00	2,19	165,00	130,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I



146-148

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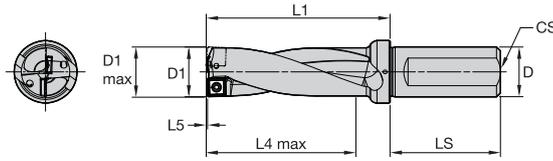
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NEW!



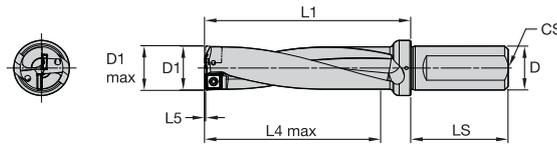
order number	ISO catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034804	DFPR120R3WB20M	12,00	12,50	0,32	57,00	36,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034805	DFPR125R3WB20M	12,50	13,00	0,36	58,50	37,50	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034806	DFPR130R3WB20M	13,00	13,50	0,40	60,00	39,00	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034807	DFPR135R3WB20M	13,50	14,00	0,44	60,50	40,50	50,00	20,00	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034808	DFPR140R3WB20M	14,00	14,50	0,36	62,00	42,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034809	DFPR145R3WB20M	14,50	15,00	0,40	63,50	43,50	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034810	DFPR150R3WB20M	15,00	15,50	0,44	64,00	45,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034811	DFPR155R3WB20M	15,50	16,00	0,48	65,50	46,50	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034812	DFPR160R3WB20M	16,00	16,50	0,52	67,00	48,00	50,00	20,00	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034145	DFPR165R3WB20M	16,50	17,00	0,21	69,50	49,50	50,00	20,00	1/8-27 NPT	DFPR060304_O	DFPR060303_I
7034146	DFPR170R3WB20M	17,00	17,50	0,26	70,00	51,00	50,00	20,00	1/8-27 NPT	DFPR060304_O	DFPR060303_I
7034147	DFPR175R3WB25M	17,50	18,00	0,30	72,50	52,50	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060303_I
7034148	DFPR180R3WB25M	18,00	18,50	0,35	74,00	54,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060303_I
7034149	DFPR185R3WB25M	18,50	19,00	0,39	75,50	55,50	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060303_I
7034150	DFPR190R3WB25M	19,00	19,50	0,43	76,00	57,00	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060303_I
7034151	DFPR195R3WB25M	19,50	20,00	0,48	77,50	58,50	56,00	25,00	1/4-18 NPT	DFPR060304_O	DFPR060303_I
7030360	DFPR200R3WB25M	20,00	21,00	0,50	79,00	60,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030361	DFPR210R3WB25M	21,00	22,00	0,58	81,00	63,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030362	DFPR220R3WB25M	22,00	23,00	0,67	84,00	66,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030363	DFPR230R3WB25M	23,00	24,00	0,75	86,00	69,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030364	DFPR240R3WB25M	24,00	25,00	0,84	89,00	72,00	56,00	25,00	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7034152	DFPR250R3WB25M	25,00	26,00	0,35	92,00	75,00	56,00	25,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034153	DFPR260R3WB32M	26,00	27,00	0,44	102,00	78,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034154	DFPR270R3WB32M	27,00	28,00	0,52	105,00	81,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034155	DFPR280R3WB32M	28,00	29,00	0,61	107,00	84,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034156	DFPR290R3WB32M	29,00	30,00	0,70	110,00	87,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034157	DFPR300R3WB32M	30,00	31,00	0,79	112,00	90,00	60,00	32,00	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7030365	DFPR310R3WB40M	31,00	32,00	0,40	119,00	93,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030366	DFPR320R3WB40M	32,00	33,00	0,48	121,00	96,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030367	DFPR330R3WB40M	33,00	34,00	0,93	124,00	99,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030368	DFPR340R3WB40M	34,00	35,00	1,02	126,00	102,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030369	DFPR350R3WB40M	35,00	36,00	1,11	129,00	105,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030370	DFPR360R3WB40M	36,00	37,00	1,19	131,00	108,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030381	DFPR370R3WB40M	37,00	38,00	1,28	134,00	111,00	70,00	40,00	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030588	DFPR380R3WB40M	38,00	39,00	0,91	141,00	114,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030589	DFPR390R3WB40M	39,00	40,00	0,99	143,00	117,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030590	DFPR400R3WB40M	40,00	41,00	1,08	146,00	120,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030604	DFPR410R3WB40M	41,00	42,00	1,16	148,00	123,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030605	DFPR420R3WB40M	42,00	43,00	1,25	152,00	126,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030606	DFPR430R3WB40M	43,00	44,00	1,33	154,00	129,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030607	DFPR440R3WB40M	44,00	45,00	1,42	157,00	132,00	70,00	40,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030608	DFPR450R3WB50M	45,00	46,00	1,50	167,00	135,00	80,00	50,00	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030609	DFPR460R3WB50M	46,00	47,00	1,20	168,00	138,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030610	DFPR470R3WB50M	47,00	48,00	1,28	171,00	141,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030611	DFPR480R3WB50M	48,00	49,00	1,36	173,00	144,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030612	DFPR490R3WB50M	49,00	50,00	1,40	176,00	147,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030613	DFPR500R3WB50M	50,00	51,00	1,52	180,00	150,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030614	DFPR510R3WB50M	51,00	52,00	1,60	182,00	153,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030615	DFPR520R3WB50M	52,00	53,00	1,69	185,00	156,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030617	DFPR530R3WB50M	53,00	54,00	1,77	187,00	159,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030618	DFPR540R3WB50M	54,00	55,00	1,85	190,00	162,00	80,00	50,00	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030726	DFPR550R3WB50M	55,00	56,00	1,37	199,00	165,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030727	DFPR560R3WB50M	56,00	57,00	1,45	202,00	168,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030729	DFPR570R3WB50M	57,00	58,00	1,53	204,00	171,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030730	DFPR580R3WB50M	58,00	59,00	1,61	207,00	174,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030751	DFPR590R3WB50M	59,00	60,00	1,70	212,00	177,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030752	DFPR600R3WB50M	60,00	61,00	1,78	215,00	180,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030753	DFPR610R3WB50M	61,00	62,00	1,86	218,00	183,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030754	DFPR620R3WB50M	62,00	63,00	1,94	221,00	186,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030755	DFPR630R3WB50M	63,00	64,00	2,02	224,00	189,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030756	DFPR640R3WB50M	64,00	65,00	2,10	227,00	192,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030757	DFPR650R3WB50M	65,00	66,00	2,19	230,00	195,00	80,00	50,00	1/4-18 NPT	DFPR180610_O	DFPR200608_I

146-148	149	10	152



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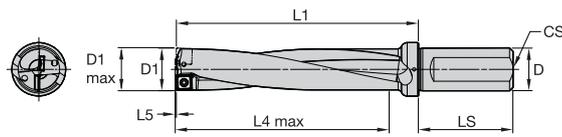
NEW!



order number	ISO catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034813	DFPR120R4WB20M	12,00	12,50	0,32	69,00	48,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034814	DFPR125R4WB20M	12,50	13,00	0,36	71,00	50,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034815	DFPR130R4WB20M	13,00	13,50	0,40	73,00	52,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034816	DFPR135R4WB20M	13,50	14,00	0,44	74,00	54,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034817	DFPR140R4WB20M	14,00	14,50	0,36	76,00	56,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034818	DFPR145R4WB20M	14,50	15,00	0,40	78,00	58,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034819	DFPR150R4WB20M	15,00	15,50	0,44	79,00	60,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034820	DFPR155R4WB20M	15,50	16,00	0,48	81,00	62,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034831	DFPR160R4WB20M	16,00	16,50	0,52	83,00	64,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034158	DFPR165R4WB20M	16,50	17,00	0,21	86,00	66,00	50,00	20,00	1/8-27 NPT	DFPR060304_0	DFPR060303_1
7034159	DFPR170R4WB20M	17,00	17,50	0,26	87,00	68,00	50,00	20,00	1/8-27 NPT	DFPR060304_0	DFPR060303_1
7034160	DFPR175R4WB25M	17,50	18,00	0,30	90,00	70,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060303_1
7034161	DFPR180R4WB25M	18,00	18,50	0,35	92,00	72,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060303_1
7034162	DFPR185R4WB25M	18,50	19,00	0,39	94,00	74,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060303_1
7034163	DFPR190R4WB25M	19,00	19,50	0,43	95,00	76,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060303_1
7034164	DFPR195R4WB25M	19,50	20,00	0,48	97,00	78,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060303_1
7030382	DFPR200R4WB25M	20,00	21,00	0,50	99,00	80,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030383	DFPR210R4WB25M	21,00	22,00	0,58	102,00	84,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030384	DFPR220R4WB25M	22,00	23,00	0,67	106,00	88,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030385	DFPR230R4WB25M	23,00	24,00	0,76	109,00	92,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030386	DFPR240R4WB25M	24,00	25,00	0,84	113,00	96,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7034165	DFPR250R4WB25M	25,00	26,00	0,35	117,00	100,00	56,00	25,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034166	DFPR260R4WB32M	26,00	27,00	0,44	128,00	104,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034167	DFPR270R4WB32M	27,00	28,00	0,52	132,00	108,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034168	DFPR280R4WB32M	28,00	29,00	0,61	135,00	112,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034169	DFPR290R4WB32M	29,00	30,00	0,70	139,00	116,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034170	DFPR300R4WB32M	30,00	31,00	0,79	142,00	120,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7030387	DFPR310R4WB40M	31,00	32,00	0,40	150,00	124,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030388	DFPR320R4WB40M	32,00	33,00	0,48	153,00	128,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030389	DFPR330R4WB40M	33,00	34,00	0,93	157,00	132,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030390	DFPR340R4WB40M	34,00	35,00	1,02	160,00	136,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030411	DFPR350R4WB40M	35,00	36,00	1,11	164,00	140,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030412	DFPR360R4WB40M	36,00	37,00	1,19	167,00	144,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030413	DFPR370R4WB40M	37,00	38,00	1,28	171,00	148,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030619	DFPR380R4WB40M	38,00	39,00	0,91	179,00	152,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030620	DFPR390R4WB40M	39,00	40,00	0,99	182,00	156,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030631	DFPR400R4WB40M	40,00	41,00	1,08	186,00	160,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030632	DFPR410R4WB40M	41,00	42,00	1,16	189,00	164,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030633	DFPR420R4WB40M	42,00	43,00	1,25	194,00	168,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030634	DFPR430R4WB40M	43,00	44,00	1,33	197,00	172,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030635	DFPR440R4WB40M	44,00	45,00	1,42	201,00	176,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030636	DFPR450R4WB50M	45,00	46,00	1,50	212,00	180,00	80,00	50,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030637	DFPR460R4WB50M	46,00	47,00	1,20	214,00	184,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030638	DFPR470R4WB50M	47,00	48,00	1,28	218,00	188,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030639	DFPR480R4WB50M	48,00	49,00	1,36	221,00	192,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030640	DFPR490R4WB50M	49,00	50,00	1,44	225,00	196,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030642	DFPR500R4WB50M	50,00	51,00	1,52	230,00	200,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030643	DFPR510R4WB50M	51,00	52,00	1,60	233,00	204,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030644	DFPR520R4WB50M	52,00	53,00	1,69	237,00	208,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030645	DFPR530R4WB50M	53,00	54,00	1,77	240,00	212,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030646	DFPR540R4WB50M	54,00	55,00	1,85	244,00	216,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030758	DFPR550R4WB50M	55,00	56,00	1,37	254,00	220,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030759	DFPR560R4WB50M	56,00	57,00	1,45	258,00	224,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030760	DFPR570R4WB50M	57,00	58,00	1,53	261,00	228,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030761	DFPR580R4WB50M	58,00	59,00	1,61	265,00	232,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030762	DFPR590R4WB50M	59,00	60,00	1,70	271,00	236,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030763	DFPR600R4WB50M	60,00	61,00	1,78	275,00	240,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030764	DFPR610R4WB50M	61,00	62,00	1,86	279,00	244,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030765	DFPR620R4WB50M	62,00	63,00	1,94	283,00	248,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030766	DFPR630R4WB50M	63,00	64,00	2,02	287,00	252,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030767	DFPR640R4WB50M	64,00	65,00	2,10	291,00	256,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030768	DFPR650R4WB50M	65,00	66,00	2,19	295,00	260,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1

146-148	149	10	152

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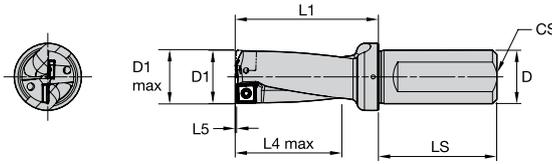
order number	ISO catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034832	DFPR120R5WB20M	12,00	12,50	0,03	81,00	60,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034833	DFPR125R5WB20M	12,50	13,00	0,36	83,50	62,50	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034834	DFPR130R5WB20M	13,00	13,50	0,04	86,00	65,00	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034835	DFPR135R5WB20M	13,50	14,00	0,44	87,50	67,50	50,00	20,00	1/8-27 NPT	DFPR040204_0	DFPR040203_1
7034836	DFPR140R5WB20M	14,00	14,50	0,36	90,00	70,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034837	DFPR145R5WB20M	14,50	15,00	0,40	92,50	72,50	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034838	DFPR150R5WB20M	15,00	15,50	0,44	94,00	75,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034839	DFPR155R5WB20M	15,50	16,00	0,48	96,50	77,50	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034840	DFPR160R5WB20M	16,00	16,50	0,99	99,00	80,00	50,00	20,00	1/8-27 NPT	DFPR050204_0	DFPR050203_1
7034201	DFPR165R5WB20M	16,50	17,00	0,21	102,50	82,50	50,00	20,00	1/8-27 NPT	DFPR060304_0	DFPR060304_1
7034202	DFPR170R5WB20M	17,00	17,50	0,26	104,00	85,00	50,00	20,00	1/8-27 NPT	DFPR060304_0	DFPR060304_1
7034203	DFPR175R5WB25M	17,50	18,00	0,30	107,50	87,50	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060304_1
7034204	DFPR180R5WB25M	18,00	18,50	0,35	110,00	90,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060304_1
7034205	DFPR185R5WB25M	18,50	19,00	0,39	112,50	92,50	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060304_1
7034206	DFPR190R5WB25M	19,00	19,50	0,43	114,00	95,00	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060304_1
7034207	DFPR195R5WB25M	19,50	20,00	0,48	116,50	97,50	56,00	25,00	1/4-18 NPT	DFPR060304_0	DFPR060304_1
7030414	DFPR200R5WB25M	20,00	21,00	0,26	119,00	100,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030415	DFPR210R5WB25M	21,00	22,00	0,58	123,00	105,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030416	DFPR220R5WB25M	22,00	23,00	0,67	128,00	110,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030417	DFPR230R5WB25M	23,00	24,00	0,76	132,00	115,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7030418	DFPR240R5WB25M	24,00	25,00	0,84	137,00	120,00	56,00	25,00	1/4-18 NPT	DFPR070305_0	DFPR080304_1
7034208	DFPR250R5WB25M	25,00	26,00	0,35	142,00	125,00	56,00	25,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034209	DFPR260R5WB32M	26,00	27,00	0,44	154,00	130,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034210	DFPR270R5WB32M	27,00	28,00	0,52	159,00	135,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034211	DFPR280R5WB32M	28,00	29,00	0,61	163,00	140,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034212	DFPR290R5WB32M	29,00	30,00	0,70	168,00	145,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7034213	DFPR300R5WB32M	30,00	31,00	0,79	172,00	150,00	60,00	32,00	1/4-18 NPT	DFPR090305_0	DFPR100305_1
7030419	DFPR310R5WB40M	31,00	32,00	0,40	181,00	155,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030420	DFPR320R5WB40M	32,00	33,00	0,48	185,00	160,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030421	DFPR330R5WB40M	33,00	34,00	0,93	190,00	165,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030422	DFPR340R5WB40M	34,00	35,00	1,02	194,00	170,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030423	DFPR350R5WB40M	35,00	36,00	1,11	199,00	175,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030424	DFPR360R5WB40M	36,00	37,00	1,19	203,00	180,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030425	DFPR370R5WB40M	37,00	38,00	1,28	208,00	185,00	70,00	40,00	1/4-18 NPT	DFPR110406_0	DFPR120405_1
7030647	DFPR380R5WB40M	38,00	39,00	0,91	217,00	190,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030649	DFPR390R5WB40M	39,00	40,00	0,99	221,00	195,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030650	DFPR400R5WB40M	40,00	41,00	1,08	226,00	200,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030652	DFPR410R5WB40M	41,00	42,00	1,16	230,00	205,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030653	DFPR420R5WB40M	42,00	43,00	1,25	236,00	210,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030654	DFPR430R5WB40M	43,00	44,00	1,33	240,00	215,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030655	DFPR440R5WB40M	44,00	45,00	1,42	245,00	220,00	70,00	40,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030656	DFPR450R5WB50M	45,00	46,00	1,50	257,00	225,00	80,00	50,00	1/4-18 NPT	DFPR140408_0	DFPR140406_1
7030657	DFPR460R5WB50M	46,00	47,00	1,20	260,00	230,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030658	DFPR470R5WB50M	47,00	48,00	1,28	265,00	235,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030659	DFPR480R5WB50M	48,00	49,00	1,36	269,00	240,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030660	DFPR490R5WB50M	49,00	50,00	1,44	274,00	245,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030661	DFPR500R5WB50M	50,00	51,00	1,52	280,00	250,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030662	DFPR510R5WB50M	51,00	52,00	1,60	284,00	255,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030663	DFPR520R5WB50M	52,00	53,00	1,69	289,00	260,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030664	DFPR530R5WB50M	53,00	54,00	1,77	293,00	265,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030665	DFPR540R5WB50M	54,00	55,00	1,85	298,00	270,00	80,00	50,00	1/4-18 NPT	DFPR150508_0	DFPR170508_1
7030769	DFPR550R5WB50M	55,00	56,00	1,37	309,00	275,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030781	DFPR560R5WB50M	56,00	57,00	1,45	314,00	280,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030782	DFPR570R5WB50M	57,00	58,00	1,53	318,00	285,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030783	DFPR580R5WB50M	58,00	59,00	1,61	323,00	290,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030784	DFPR590R5WB50M	59,00	60,00	1,70	330,00	295,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030785	DFPR600R5WB50M	60,00	61,00	1,78	335,00	300,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030786	DFPR610R5WB50M	61,00	62,00	1,86	340,00	305,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030787	DFPR620R5WB50M	62,00	63,00	1,94	345,00	310,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030788	DFPR630R5WB50M	63,00	64,00	2,02	350,00	315,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030789	DFPR640R5WB50M	64,00	65,00	2,10	355,00	320,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1
7030790	DFPR650R5WB50M	65,00	66,00	2,19	360,00	325,00	80,00	50,00	1/4-18 NPT	DFPR180610_0	DFPR200608_1

146-148	149	10	152



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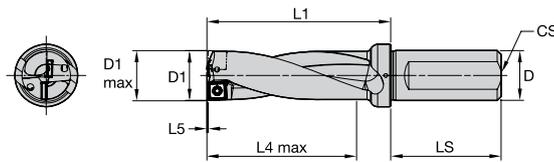


order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034841	DFPR0500R2WB075	.500	.520	.015	1.827	1.000	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
*7031149	DFPR0531R2WB075	.531	.551	.017	1.849	1.062	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034842	DFPR0563R2WB075	.563	.583	.015	1.913	1.126	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031150	DFPR0594R2WB075	.594	.614	.018	1.936	1.188	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034843	DFPR0625R2WB075	.625	.645	.020	1.998	1.250	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031151	DFPR0656R2WB075	.656	.676	.017	2.060	1.312	1.969	.750	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034214	DFPR0688R2WB075	.688	.708	.012	2.124	1.376	1.969	.750	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031152	DFPR0703R2WB100	.703	.723	.021	2.193	1.406	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
*7031153	DFPR0734R2WB100	.734	.754	.023	2.255	1.468	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034215	DFPR0750R2WB100	.750	.770	.017	1.500	1.500	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
*7031154	DFPR0781R2WB100	.781	.801	.027	2.310	1.562	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7030426	DFPR0813R2WB100	.813	.852	.022	2.374	1.626	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031155	DFPR0844R2WB100	.844	.883	.024	2.397	1.688	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030427	DFPR0875R2WB100	.875	.914	.027	2.459	1.750	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031156	DFPR0906R2WB100	.906	.945	.030	2.481	1.812	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030428	DFPR0938R2WB100	.938	.977	.033	2.545	1.876	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031157	DFPR0969R2WB100	.969	1.008	.024	2.608	1.938	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031158	DFPR0984R2WB100	.984	1.023	.026	2.637	1.968	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034216	DFPR1000R2WB100	1.000	1.039	.015	2.669	2.000	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031159	DFPR1031R2WB125	1.031	1.070	.030	3.007	2.062	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034217	DFPR1063R2WB125	1.063	1.102	.021	3.071	2.126	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031160	DFPR1094R2WB125	1.094	1.133	.035	3.094	2.188	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034218	DFPR1125R2WB125	1.125	1.164	.026	3.156	2.250	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031171	DFPR1156R2WB125	1.156	1.195	.041	3.178	2.312	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034219	DFPR1188R2WB125	1.188	1.227	.032	3.242	2.376	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031172	DFPR1219R2WB125	1.219	1.258	.030	3.265	2.438	2.362	1.250	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030429	DFPR1250R2WB150	1.250	1.289	.033	3.484	2.500	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031174	DFPR1281R2WB150	1.281	1.320	.035	3.546	2.562	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030430	DFPR1313R2WB150	1.313	1.352	.038	3.610	2.626	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030431	DFPR1375R2WB150	1.375	1.414	.043	3.695	2.750	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031175	DFPR1406R2WB150	1.406	1.445	.046	3.717	2.812	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030432	DFPR1438R2WB150	1.438	1.477	.049	3.782	2.876	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031176	DFPR1469R2WB150	1.469	1.508	.051	3.804	2.938	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030666	DFPR1500R2WB150	1.500	1.539	.036	4.063	3.000	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
*7031177	DFPR1531R2WB150	1.531	1.570	.039	4.085	3.062	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030667	DFPR1563R2WB150	1.563	1.602	.041	4.150	3.126	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030668	DFPR1625R2WB150	1.625	1.664	.047	4.234	3.250	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
*7031178	DFPR1656R2WB150	1.656	1.695	.049	4.335	3.312	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030669	DFPR1688R2WB150	1.688	1.727	.052	4.360	3.376	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030670	DFPR1750R2WB150	1.750	1.789	.057	4.445	3.500	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030671	DFPR1813R2WB200	1.813	1.852	.047	4.807	3.626	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030672	DFPR1875R2WB200	1.875	1.914	.052	4.892	3.750	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
*7031179	DFPR1938R2WB200	1.938	1.977	.057	4.978	3.876	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030673	DFPR2000R2WB200	2.000	2.039	.063	5.181	4.000	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030674	DFPR2125R2WB200	2.125	2.164	.073	5.352	4.250	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030791	DFPR2250R2WB200	2.250	2.289	.061	5.799	4.500	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030792	DFPR2375R2WB200	2.375	2.414	.071	6.128	4.750	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030793	DFPR2500R2WB200	2.500	2.539	.081	6.378	5.000	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

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order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034844	DFPR0500R3WB075	.500	.520	.015	2.327	1.500	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
*7031180	DFPR0531R3WB075	.531	.551	.017	2.380	1.593	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034845	DFPR0563R3WB075	.563	.583	.015	2.476	1.689	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031181	DFPR0594R3WB075	.594	.614	.018	2.530	1.782	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034846	DFPR0625R3WB075	.625	.645	.020	2.623	1.875	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031182	DFPR0656R3WB075	.656	.676	.017	2.716	1.968	1.969	.750	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034220	DFPR0688R3WB075	.688	.708	.012	2.812	2.064	1.969	.750	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031185	DFPR0703R3WB100	.703	.723	.021	2.896	2.109	2.205	1.000	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031186	DFPR0734R3WB100	.734	.754	.023	2.989	2.202	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034221	DFPR0750R3WB100	.750	.770	.017	2.998	2.250	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
*7031187	DFPR0781R3WB100	.781	.801	.027	3.091	2.343	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7030433	DFPR0813R3WB100	.813	.852	.022	3.187	2.439	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031188	DFPR0844R3WB100	.844	.883	.024	3.241	2.532	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030434	DFPR0875R3WB100	.875	.914	.027	3.307	2.625	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031189	DFPR0906R3WB100	.906	.945	.030	3.387	2.718	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030435	DFPR0938R3WB100	.938	.977	.033	3.484	2.814	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
*7031190	DFPR0969R3WB100	.969	1.008	.024	3.576	2.907	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031191	DFPR0984R3WB100	.984	1.023	.026	3.621	2.952	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034222	DFPR1000R3WB100	1.000	1.039	.015	3.669	3.000	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031193	DFPR1031R3WB125	1.031	1.070	.030	4.038	3.093	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034223	DFPR1063R3WB125	1.063	1.102	.021	4.134	3.189	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031194	DFPR1094R3WB125	1.094	1.133	.035	4.187	3.282	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034224	DFPR1125R3WB125	1.125	1.164	.026	4.281	3.375	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031195	DFPR1156R3WB125	1.156	1.195	.041	4.334	3.468	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034225	DFPR1188R3WB125	1.188	1.227	.032	4.430	3.564	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
*7031196	DFPR1219R3WB125	1.219	1.258	.030	4.484	3.657	2.362	1.250	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030436	DFPR1250R3WB150	1.250	1.289	.033	4.734	3.750	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031197	DFPR1281R3WB150	1.281	1.320	.035	4.827	3.843	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030437	DFPR1313R3WB150	1.313	1.352	.038	4.931	3.939	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030438	DFPR1375R3WB150	1.375	1.414	.043	5.070	4.125	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031198	DFPR1406R3WB150	1.406	1.445	.046	5.124	4.218	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030439	DFPR1438R3WB150	1.438	1.477	.049	5.220	4.314	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
*7031199	DFPR1469R3WB150	1.469	1.508	.051	5.273	4.407	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030675	DFPR1500R3WB150	1.500	1.539	.036	5.563	4.500	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
*7031200	DFPR1531R3WB150	1.531	1.570	.039	5.617	4.593	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030676	DFPR1563R3WB150	1.563	1.602	.041	5.713	4.689	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030677	DFPR1625R3WB150	1.625	1.664	.047	5.859	4.875	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
*7031211	DFPR1656R3WB150	1.656	1.695	.049	5.992	4.968	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030678	DFPR1688R3WB150	1.688	1.727	.052	6.048	5.064	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030679	DFPR1750R3WB150	1.750	1.789	.057	6.195	5.250	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030680	DFPR1813R3WB200	1.813	1.852	.047	6.620	5.439	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030681	DFPR1875R3WB200	1.875	1.914	.052	6.767	5.625	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
*7031212	DFPR1938R3WB200	1.938	1.977	.570	6.917	5.814	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030682	DFPR2000R3WB200	2.000	2.039	.063	7.181	6.000	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030683	DFPR2125R3WB200	2.125	2.164	.073	7.477	6.375	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030794	DFPR2250R3WB200	2.250	2.289	.061	8.049	6.750	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030795	DFPR2375R3WB200	2.375	2.414	.071	8.503	7.125	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030796	DFPR2500R3WB200	2.500	2.539	.081	8.878	7.500	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I

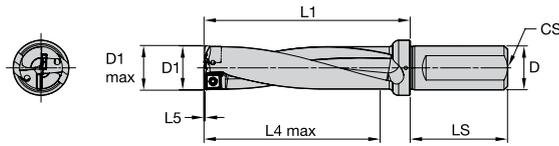
*Made-to-order non-stocked standard item

146-148	149	10	152



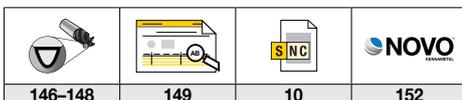
Drill Fix PRO™ • Drill Body • 4 x D • WB Shank • Inch

NEW!



order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034847	DFPR0500R4WB075	.500	.520	.015	2.827	2.000	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
* 7031213	DFPR0531R4WB075	.531	.551	.017	2.911	2.124	1.969	.750	1/4-18 NPT	DFPR040204_O	DFPR040203_I
7034848	DFPR0563R4WB075	.563	.583	.015	3.039	2.252	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031214	DFPR0594R4WB075	.594	.614	.018	3.124	2.376	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034849	DFPR0625R4WB075	.625	.645	.020	3.248	2.500	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031215	DFPR0656R4WB075	.656	.676	.017	3.372	2.624	1.969	.750	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034226	DFPR0688R4WB075	.688	.708	.012	3.500	3.500	1.969	.750	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031216	DFPR0703R4WB100	.703	.723	.021	3.599	2.812	2.205	1.000	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031217	DFPR0734R4WB100	.734	.754	.023	3.723	2.936	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034227	DFPR0750R4WB100	.750	.770	.017	3.748	3.000	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
* 7031218	DFPR0781R4WB100	.781	.801	.027	3.872	3.124	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7030440	DFPR0813R4WB100	.813	.852	.022	4.000	3.252	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031219	DFPR0844R4WB100	.844	.883	.024	4.085	3.376	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030441	DFPR0875R4WB100	.875	.914	.027	4.209	3.500	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031220	DFPR0906R4WB100	.906	.945	.030	4.293	3.624	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030442	DFPR0938R4WB100	.938	.977	.033	4.421	3.752	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031221	DFPR0969R4WB100	.969	1.008	.024	4.545	3.876	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031222	DFPR0984R4WB100	.984	1.023	.026	4.605	3.936	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034228	DFPR1000R4WB100	1.000	1.039	.015	4.669	4.000	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031223	DFPR1031R4WB125	1.031	1.070	.030	5.069	4.124	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034229	DFPR1063R4WB125	1.063	1.102	.021	5.197	4.252	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031224	DFPR1094R4WB125	1.094	1.133	.035	5.282	4.376	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034230	DFPR1125R4WB125	1.125	1.164	.026	5.406	4.500	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031225	DFPR1156R4WB125	1.156	1.195	.041	5.490	4.624	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034231	DFPR1188R4WB125	1.188	1.227	.032	5.618	4.752	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031226	DFPR1219R4WB125	1.219	1.258	.030	5.703	4.876	2.362	1.250	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030443	DFPR1250R4WB150	1.250	1.289	.033	5.984	5.000	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
* 7031227	DFPR1281R4WB150	1.281	1.320	.035	6.108	5.124	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030444	DFPR1313R4WB150	1.313	1.352	.038	6.236	5.252	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030445	DFPR1375R4WB150	1.375	1.414	.043	6.445	5.500	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
* 7031228	DFPR1406R4WB150	1.406	1.445	.046	6.530	5.624	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030446	DFPR1438R4WB150	1.438	1.477	.049	6.658	5.752	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
* 7031229	DFPR1469R4WB150	1.469	1.508	.051	6.742	5.876	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030684	DFPR1500R4WB150	1.500	1.539	.036	7.063	6.000	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
* 7031230	DFPR1531R4WB150	1.531	1.570	.039	7.148	6.124	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030688	DFPR1563R4WB150	1.500	1.602	.041	7.276	6.252	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030689	DFPR1625R4WB150	1.625	1.664	.047	7.484	6.500	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
* 7031231	DFPR1656R4WB150	1.656	1.695	.049	7.648	6.624	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030690	DFPR1688R4WB150	1.688	1.727	.052	7.736	6.752	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030691	DFPR1750R4WB150	1.750	1.789	.057	7.945	7.000	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030692	DFPR1813R4WB200	1.813	1.852	.047	8.433	7.252	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030693	DFPR1875R4WB200	1.875	1.914	.052	8.642	7.500	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
* 7031232	DFPR1938R4WB200	1.938	1.977	.057	8.854	7.752	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030694	DFPR2000R4WB200	2.000	2.039	.063	9.181	8.000	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030695	DFPR2125R4WB200	2.125	2.164	.073	9.602	8.500	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030798	DFPR2250R4WB200	2.250	2.289	.061	10.299	9.000	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030799	DFPR2375R4WB200	2.375	2.414	.071	10.878	9.500	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030800	DFPR2500R4WB200	2.500	2.539	.081	11.378	10.000	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item



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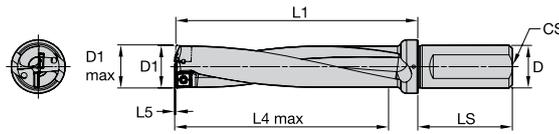
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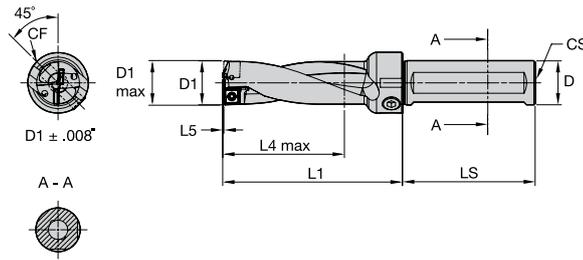


order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	insert 1 outside	insert 2 inside
7034850	DFPR0500R5WB075	.500	.520	.015	3.327	2.500	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
* 7031233	DFPR0531R5WB075	.531	.551	.017	3.443	2.655	1.969	.750	1/8-27 NPT	DFPR040204_O	DFPR040203_I
7034851	DFPR0563R5WB075	.563	.583	.015	3.602	2.815	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031234	DFPR0594R5WB075	.594	.614	.018	3.718	2.970	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7034852	DFPR0625R5WB075	.625	.645	.020	3.873	3.125	1.969	.750	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031235	DFPR0656R5WB075	.656	.676	.017	4.028	3.280	1.969	.750	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034232	DFPR0688R5WB075	.688	.708	.012	4.188	3.440	1.969	.750	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031236	DFPR0703R5WB100	.703	.723	.021	4.302	3.515	2.205	1.000	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031237	DFPR0734R5WB100	.734	.754	.023	4.457	3.670	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7034233	DFPR0750R5WB100	.750	.770	.017	4.498	3.750	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
* 7031238	DFPR0781R5WB100	.781	.801	.027	4.653	3.905	2.205	1.000	1/4-18 NPT	DFPR060304_O	DFPR060304_I
7030447	DFPR0813R5WB100	.813	.852	.022	4.813	4.065	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031239	DFPR0844R5WB100	.844	.883	.024	4.929	4.220	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030448	DFPR0875R5WB100	.875	.914	.027	5.084	4.375	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031240	DFPR0906R5WB100	.906	.945	.030	5.199	4.530	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
7030449	DFPR0938R5WB100	.938	.977	.033	5.359	4.690	2.205	1.000	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031241	DFPR0969R5WB100	.969	1.008	.024	5.514	4.845	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031242	DFPR0984R5WB100	.984	1.023	.026	5.589	4.920	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034234	DFPR1000R5WB100	1.000	1.039	.015	5.669	5.000	2.205	1.000	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031243	DFPR1031R5WB125	1.031	1.070	.030	6.100	5.155	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034235	DFPR1063R5WB125	1.063	1.102	.021	6.260	5.315	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031244	DFPR1094R5WB125	1.094	1.133	.035	6.376	5.470	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034236	DFPR1125R5WB125	1.125	1.164	.026	6.531	5.625	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031245	DFPR1156R5WB125	1.156	1.195	.041	6.646	5.780	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
7034237	DFPR1188R5WB125	1.188	1.227	.032	6.806	5.940	2.362	1.250	1/4-18 NPT	DFPR090305_O	DFPR100305_I
* 7031246	DFPR1219R5WB125	1.219	1.258	.030	6.922	6.095	2.362	1.250	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030450	DFPR1250R5WB150	1.258	1.289	.033	7.234	6.250	2.756	1.500	1/4-18 NPT	DFPR070305_O	DFPR080304_I
* 7031247	DFPR1281R5WB150	1.281	1.320	.035	7.389	6.405	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030451	DFPR1313R5WB150	1.313	1.352	.038	7.549	6.565	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030452	DFPR1375R5WB150	1.375	1.414	.043	7.820	6.875	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
* 7031248	DFPR1406R5WB150	1.406	1.445	.046	7.935	7.030	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030453	DFPR1438R5WB150	1.438	1.477	.049	8.096	7.190	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
* 7031249	DFPR1469R5WB150	1.469	1.508	.051	8.211	7.345	2.756	1.500	1/4-18 NPT	DFPR110406_O	DFPR120405_I
7030696	DFPR1500R5WB150	1.500	1.539	.036	8.563	7.500	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
* 7031250	DFPR1531R5WB150	1.531	1.570	.039	8.679	7.655	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030697	DFPR1563R5WB150	1.563	1.602	.041	8.839	7.815	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030698	DFPR1625R5WB150	1.625	1.664	.047	9.109	8.125	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
* 7031251	DFPR1656R5WB150	1.656	1.695	.049	9.304	8.280	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030699	DFPR1688R5WB150	1.688	1.727	.052	9.424	8.440	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030700	DFPR1750R5WB150	1.750	1.789	.057	9.695	8.750	2.756	1.500	1/4-18 NPT	DFPR140408_O	DFPR140406_I
7030711	DFPR1813R5WB200	1.813	1.852	.047	10.246	9.065	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030712	DFPR1875R5WB200	1.875	1.914	.052	10.517	9.375	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
* 7031252	DFPR1938R5WB200	1.938	1.977	.057	10.793	9.690	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030713	DFPR2000R5WB200	2.000	2.039	.063	11.181	10.000	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030714	DFPR2125R5WB200	2.125	2.164	.073	11.728	10.625	3.150	2.000	1/4-18 NPT	DFPR150508_O	DFPR170508_I
7030801	DFPR2250R5WB200	2.250	2.289	.061	12.549	11.250	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030802	DFPR2375R5WB200	2.375	2.414	.071	13.253	11.875	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I
7030803	DFPR2500R5WB200	2.500	2.539	.081	13.878	12.500	3.150	2.000	1/4-18 NPT	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

Drill Fix PRO™ • Drill Body • 3 x D • SSF Shank • Inch



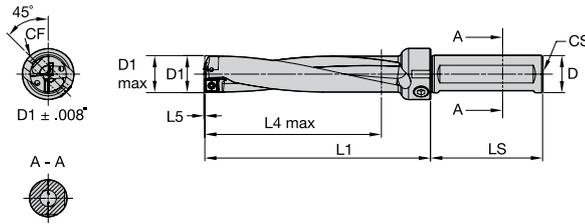
order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	LS	D	CS	CF	insert 1 outside	insert 2 inside
7030550	DFPR0500R3SSF075	.500	.520	.015	2.602	1.500	2.000	.750	1/4-18 NPT	1/8-27 NPT	DFPR040204_O	DFPR040203_I
* 7031254	DFPR0531R3SSF075	.531	.551	.017	2.695	1.593	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR040204_O	DFPR040203_I
* 7031255	DFPR0563R3SSF075	.563	.583	.015	2.752	1.689	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031256	DFPR0594R3SSF075	.594	.614	.018	2.845	1.782	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
7030551	DFPR0625R3SSF075	.625	.645	.020	2.899	1.875	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
* 7031257	DFPR0656R3SSF075	.656	.676	.017	3.031	1.968	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031258	DFPR0688R3SSF075	.688	.708	.019	3.088	2.064	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031259	DFPR0703R3SSF100	.703	.723	.021	3.290	2.109	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031260	DFPR0734R3SSF100	.734	.754	.023	3.344	2.202	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
7030487	DFPR0750R3SSF100	.750	.770	.025	3.392	2.250	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031271	DFPR0781R3SSF100	.781	.801	.027	3.485	2.343	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
* 7031272	DFPR0813R3SSF100	.813	.852	.022	3.541	2.439	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
* 7031273	DFPR0844R3SSF100	.844	.883	.025	3.634	2.532	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
7030488	DFPR0875R3SSF100	.875	.914	.027	3.688	2.625	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
* 7031274	DFPR0906R3SSF100	.906	.945	.030	3.781	2.718	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
* 7031275	DFPR0938R3SSF100	.938	.977	.032	3.877	2.814	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
* 7031276	DFPR0969R3SSF100	.969	1.008	.024	3.970	2.907	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031278	DFPR0984R3SSF100	.984	1.023	.026	4.015	2.952	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
7030489	DFPR1000R3SSF100	1.000	1.039	.027	4.063	3.000	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031279	DFPR1025R3SSF125	1.031	1.070	.030	4.274	3.093	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031280	DFPR1063R3SSF125	1.063	1.102	.033	4.331	3.189	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031281	DFPR1094R3SSF125	1.094	1.133	.035	4.424	3.282	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
7030490	DFPR1125R3SSF125	1.125	1.164	.038	4.517	3.375	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031282	DFPR1156R3SSF125	1.156	1.195	.041	4.571	3.468	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031283	DFPR1188R3SSF125	1.188	1.227	.043	4.667	3.564	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
* 7031284	DFPR1219R3SSF125	1.219	1.258	.030	4.720	3.657	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
7030541	DFPR1250R3SSF150	1.250	1.289	.033	4.898	3.750	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
* 7031285	DFPR1281R3SSF150	1.281	1.320	.035	5.024	3.843	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
* 7031286	DFPR1313R3SSF150	1.313	1.352	.038	5.081	3.939	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
7030542	DFPR1375R3SSF150	1.375	1.414	.043	5.267	4.125	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
* 7031287	DFPR1406R3SSF150	1.406	1.445	.046	5.321	4.218	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
* 7031288	DFPR1438R3SSF150	1.438	1.477	.049	5.417	4.314	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
* 7031289	DFPR1469R3SSF150	1.469	1.508	.051	5.470	4.407	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
7030552	DFPR1500R3SSF150	1.500	1.539	.036	5.681	1.875	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
* 7031290	DFPR1531R3SSF150	1.531	1.570	.039	5.774	4.593	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
* 7031311	DFPR1563R3SSF150	1.563	1.602	.041	5.870	4.689	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
7030553	DFPR1625R3SSF150	1.625	1.664	.047	6.056	4.875	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
* 7031312	DFPR1656R3SSF150	1.656	1.695	.049	6.149	4.968	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
* 7031313	DFPR1688R3SSF150	1.688	1.727	.052	6.206	5.064	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
7030554	DFPR1750R3SSF150	1.750	1.789	.057	6.352	5.250	2.000	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
* 7031314	DFPR1813R3SSF200	1.813	1.852	.047	6.620	5.439	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
7030555	DFPR1875R3SSF200	1.875	1.914	.052	6.767	5.625	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
* 7031315	DFPR1938R3SSF200	1.938	1.977	.057	6.956	5.814	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
7030556	DFPR2000R3SSF200	2.000	2.039	.063	7.221	6.000	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
* 7031316	DFPR2125R3SSF200	2.125	2.164	.073	7.595	6.375	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
7030557	DFPR2250R3SSF200	2.250	2.289	.061	8.207	6.750	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I
* 7031317	DFPR2375R3SSF200	2.375	2.414	.071	8.582	7.125	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I
7030558	DFPR2500R3SSF200	2.500	2.539	.081	8.957	7.500	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

Drill Fix PRO™ • Drill Body • 5 x D • SSF Shank • Inch

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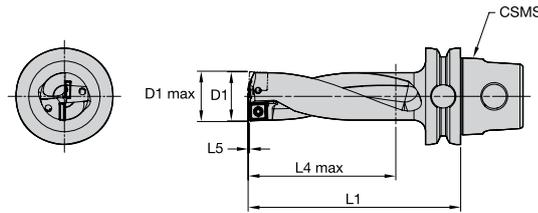


order number	ANSI catalog number	D1	D1 max	L5	L1	L4 max	L	D	CS	CF	insert 1 outside	insert 2 inside
7030559	DFPR0500R5SSF075	.500	.520	.015	3.602	2.500	2.000	.748	1/8-27 NPT	1/8-27 NPT	DFPR040204_O	DFPR040203_I
*7031318	DFPR0531R5SSF075	.531	.551	.017	3.758	2.655	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR040204_O	DFPR040203_I
*7031319	DFPR0563R5SSF075	.563	.583	.015	3.878	2.815	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031320	DFPR0594R5SSF075	.594	.614	.018	4.033	2.970	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7030560	DFPR0625R5SSF075	.625	.645	.020	4.149	3.125	2.000	.764	1/8-27 NPT	1/8-27 NPT	DFPR050204_O	DFPR050203_I
*7031321	DFPR0656R5SSF075	.656	.676	.017	4.343	3.280	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031322	DFPR0688R5SSF075	.688	.708	.019	4.464	3.440	2.000	.750	1/8-27 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031323	DFPR0703R5SSF100	.703	.723	.021	4.696	3.515	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031324	DFPR0734R5SSF100	.734	.754	.023	4.812	3.670	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7030543	DFPR0750R5SSF100	.750	.770	.025	4.892	3.750	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031325	DFPR0781R5SSF100	.781	.801	.027	5.047	3.905	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR060304_O	DFPR060304_I
*7031326	DFPR0813R5SSF100	.813	.852	.022	5.167	4.065	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
*7031327	DFPR0844R5SSF100	.844	.883	.025	5.322	4.220	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
*7030544	DFPR0875R5SSF100	.875	.914	.027	5.438	4.375	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
*7031328	DFPR0906R5SSF100	.906	.945	.030	5.593	4.530	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
*7031329	DFPR0938R5SSF100	.938	.977	.032	5.753	4.690	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR070305_O	DFPR080304_I
*7031330	DFPR0969R5SSF100	.969	1.008	.024	5.908	4.845	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031331	DFPR0984R5SSF100	.984	1.023	.026	5.983	4.920	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7030545	DFPR1000R5SSF100	1.000	1.039	.027	6.063	5.000	3.000	1.000	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031332	DFPR1031R5SSF125	1.031	1.070	.030	6.336	5.155	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031333	DFPR1063R5SSF125	1.063	1.102	.033	6.457	5.315	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031334	DFPR1094R5SSF125	1.094	1.133	.035	6.612	5.470	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7030546	DFPR1125R5SSF125	1.125	1.164	.038	6.767	5.625	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031335	DFPR1156R5SSF125	1.156	1.195	.041	6.882	5.780	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031336	DFPR1188R5SSF125	1.188	1.227	.043	7.043	5.940	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR090305_O	DFPR100305_I
*7031337	DFPR1219R5SSF125	1.219	1.258	.030	7.158	6.095	3.250	1.250	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7030548	DFPR1250R5SSF150	1.250	1.289	.033	7.431	6.250	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7031338	DFPR1281R5SSF150	1.281	1.320	.035	7.586	6.405	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7031339	DFPR1313R5SSF150	1.313	1.352	.038	7.707	6.565	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7030549	DFPR1375R5SSF150	1.375	1.414	.043	8.017	6.875	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7031340	DFPR1406R5SSF150	1.406	1.445	.046	8.132	7.030	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7031351	DFPR1438R5SSF150	1.438	1.477	.049	8.293	7.190	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7031352	DFPR1469R5SSF150	1.469	1.508	.051	8.408	7.345	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR110406_O	DFPR120405_I
*7030561	DFPR1500R5SSF150	1.500	1.539	.036	8.681	7.500	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7031353	DFPR1531R5SSF150	1.531	1.570	.039	8.836	7.655	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7031354	DFPR1563R5SSF150	1.563	1.602	.041	8.996	7.815	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7030562	DFPR1625R5SSF150	1.500	1.664	.047	9.306	8.125	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7031355	DFPR1656R5SSF150	1.656	1.695	.049	9.461	8.280	3.750	1.500	1/8-27 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7031356	DFPR1688R5SSF150	1.688	1.727	.052	9.582	8.440	3.750	1.500	1/8-27 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7030563	DFPR1750R5SSF150	1.750	1.789	.057	9.852	8.750	3.750	1.500	1/4-18 NPT	1/8-27 NPT	DFPR140408_O	DFPR140406_I
*7031357	DFPR1813R5SSF200	1.813	1.852	.047	10.246	9.065	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
*7030564	DFPR1875R5SSF200	1.875	1.914	.052	10.517	9.375	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
*7031358	DFPR1938R5SSF200	1.938	1.977	.057	10.911	9.690	4.000	2.000	1/8-27 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
7030565	DFPR2000R5SSF200	2.000	2.039	.063	11.221	10.000	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
*7031359	DFPR2125R5SSF200	2.125	2.164	.073	11.846	10.625	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR150508_O	DFPR170508_I
*7030566	DFPR2250R5SSF200	2.250	2.289	.061	12.707	11.250	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I
*7031360	DFPR2375R5SSF200	2.375	2.414	.071	13.332	11.875	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I
*7030567	DFPR2500R5SSF200	2.500	2.539	.081	13.957	12.500	4.000	2.000	1/4-18 NPT	1/8-27 NPT	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

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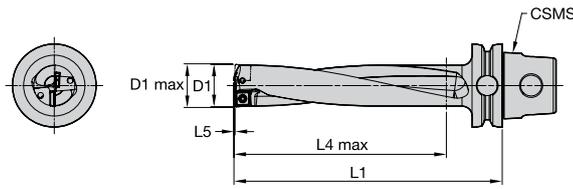
order number	ANSI catalog number	D1	D1 max	L5	L4 max	L1	CSMS	insert 1 outside	insert 2 inside
7031103	DFPR0500R3KM40	.500	.520	.015	1.500	2.366	KM	DFPR040204_O	DFPR040203_I
* 7034240	DFPR0563R3KM40	.563	.583	.015	1.689	2.595	KM	DFPR050204_O	DFPR050203_I
7031104	DFPR0625R3KM40	.625	.645	.020	1.875	2.780	KM	DFPR050204_O	DFPR050203_I
* 7034561	DFPR0688R3KM40	.688	.708	.019	2.064	3.048	KM	DFPR060304_O	DFPR060304_I
7031105	DFPR0750R3KM40	.750	.770	.025	2.250	3.234	KM	DFPR060304_O	DFPR060304_I
* 7034562	DFPR0813R3KM40	.813	.852	.022	2.439	3.463	KM	DFPR070305_O	DFPR080304_I
7031106	DFPR0875R3KM50	.875	.914	.027	2.625	3.885	KM	DFPR070305_O	DFPR080304_I
* 7034563	DFPR0938R3KM50	.938	.977	.033	2.814	4.074	KM	DFPR070305_O	DFPR080304_I
7031107	DFPR1000R3KM50	1.003	1.039	.027	3.000	4.299	KM	DFPR090305_O	DFPR100305_I
* 7034564	DFPR1063R3KM50	1.063	1.102	.033	3.189	4.528	KM	DFPR090305_O	DFPR100305_I
7031108	DFPR1125R3KM50	1.125	1.164	.038	3.375	4.753	KM	DFPR090305_O	DFPR100305_I
* 7034565	DFPR1188R3KM50	1.188	1.227	.043	3.564	4.982	KM	DFPR090305_O	DFPR100305_I
7031109	DFPR1250R3KM50	1.250	1.289	.032	3.750	5.167	KM	DFPR110406_O	DFPR120405_I
* 7034566	DFPR1313R3KM50	1.313	1.352	.038	3.939	5.356	KM	DFPR110406_O	DFPR120405_I
7031110	DFPR1375R3KM50	1.375	1.414	.043	4.125	5.582	KM	DFPR110406_O	DFPR120405_I
* 7034567	DFPR1438R3KM50	1.375	1.477	.043	4.125	5.582	KM	DFPR110406_O	DFPR120405_I
7031141	DFPR1500R3KM50	1.500	1.539	.036	4.500	5.996	KM	DFPR140408_O	DFPR140406_I
* 7034568	DFPR1563R3KM50	1.563	1.602	.041	4.689	6.224	KM	DFPR140408_O	DFPR140406_I
7031142	DFPR1625R3KM50	1.625	1.664	.047	4.875	6.371	KM	DFPR140408_O	DFPR140406_I
* 7034569	DFPR1688R3KM50	1.688	1.727	.052	5.064	6.560	KM	DFPR140408_O	DFPR140406_I
7031143	DFPR1750R3KM50	1.750	1.789	.057	5.250	6.785	KM	DFPR140408_O	DFPR140406_I
* 7034570	DFPR1813R3KM50	1.813	1.852	.047	5.439	6.974	KM	DFPR140408_O	DFPR140406_I
7031144	DFPR1875R3KM50	1.875	1.914	.052	5.625	7.121	KM	DFPR150508_O	DFPR170508_I
7031145	DFPR2000R3KM50	2.000	2.039	.063	6.000	7.614	KM	DFPR150508_O	DFPR170508_I
* 7034571	DFPR2125R3KM50	2.125	2.164	.073	6.375	8.028	KM	DFPR150508_O	DFPR170508_I
7031146	DFPR2250R3KM50	2.250	2.289	.061	6.750	8.522	KM	DFPR180610_O	DFPR200608_I
* 7034572	DFPR2375R3KM50	2.375	2.414	.071	7.125	8.976	KM	DFPR180610_O	DFPR200608_I
7031148	DFPR2500R3KM50	2.500	2.539	.081	7.500	9.390	KM	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

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NEW!



order number	ANSI catalog number	D1	D1 max	L5	L4 max	L1	CSMS	insert 1 outside	insert 2 inside
*7034573	DFPR0875R5KM50	.875	.914	.027	4.375	5.635	KM	DFPR070305_O	DFPR080304_I
*7034574	DFPR1000R5KM50	1.000	1.039	.027	5.000	6.299	KM	DFPR090305_O	DFPR100305_I
*7034575	DFPR1125R5KM50	1.125	1.164	.038	5.625	7.003	KM	DFPR090305_O	DFPR100305_I
*7034576	DFPR1250R5KM50	1.250	1.289	.033	6.250	7.667	KM	DFPR110406_O	DFPR120405_I
*7034577	DFPR1375R5KM50	1.375	1.414	.043	6.875	8.332	KM	DFPR110406_O	DFPR120405_I
*7034578	DFPR1500R5KM50	1.500	1.539	.036	7.500	8.996	KM	DFPR140408_O	DFPR140406_I
*7034579	DFPR1625R5KM50	1.625	1.664	.047	8.125	9.621	KM	DFPR140408_O	DFPR140406_I
*7034580	DFPR1750R5KM50	1.750	1.789	.058	8.750	10.285	KM	DFPR140408_O	DFPR140406_I
*7034581	DFPR1875R5KM50	1.875	1.914	.052	9.375	10.871	KM	DFPR150508_O	DFPR170508_I
*7034582	DFPR2000R5KM50	2.000	2.039	.063	10.000	11.614	KM	DFPR150508_O	DFPR170508_I
*7034583	DFPR2250R5KM50	2.250	2.289	.061	11.250	13.022	KM	DFPR180610_O	DFPR200608_I
*7034584	DFPR2500R5KM50	2.500	2.539	.081	12.500	14.390	KM	DFPR180610_O	DFPR200608_I

*Made-to-order non-stocked standard item

146-148	149	10	152

Drill Fix PRO™ Tool Diameter Tolerance Table

Tolerance • Metric				
L/D	2 L/D	3 L/D	4 L/D	5 L/D
Hole tolerance, mm				
12,00–23,99	+0,00 / +0,15	+0,00 / +0,20	+0,00 / +0,25	+0,00 / +0,30
24,00–39,99	+0,00 / +0,20	+0,00 / +0,25	+0,00 / +0,30	+0,00 / +0,35
40,00–65,00	+0,00 / +0,25	+0,00 / +0,30	+0,00 / +0,35	+0,00 / +0,40

Tolerance • Inch				
L/D	2 L/D	3 L/D	4 L/D	5 L/D
Hole tolerance, inch				
0.5000–0.9445	+0.00 / +0.006	+0.00 / +0.008	+0.00 / +0.010	+0.00 / +0.012
0.446–1.5744	+0.00 / +0.008	+0.00 / +0.010	+0.00 / +0.012	+0.00 / +0.014
1.5745–2.5000	+0.00 / +0.010	+0.00 / +0.012	+0.00 / +0.014	+0.00 / +0.016

Drill Fix PRO • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 12–13,99mm			Ø 14–16,49mm			Ø 16,5–19,99mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
P0																
S	O	LC	KCMS35	310	335	360	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,09	0,13	
S	I	LC	KCMS40	310	335	360	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,09	0,13	
U	O	LC	KCMS35	200	220	240	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,09	
U	I	LC	KCMS40	200	220	240	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,09	
I	O	LC	KCMS35	125	135	145	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
I	I	LC	KCMS40	125	135	145	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
P1																
S	O	PK	KCPK10	310	335	360	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	310	335	360	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU25	200	220	240	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	200	220	240	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KCU40	125	135	145	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	125	135	145	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
P2																
S	O	PK	KCPK10	310	335	360	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	310	335	360	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU25	200	220	240	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	200	220	240	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KCU40	125	135	145	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	125	135	145	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
P3																
S	O	PK	KCPK10	260	290	320	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	260	290	320	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU25	170	190	210	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	170	190	210	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KCU40	105	120	135	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	105	120	135	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
P4																
S	O	PK	KCPK10	220	260	300	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	220	260	300	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU25	145	170	195	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	145	170	195	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KCU40	90	105	120	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	90	105	120	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
P5																
S	O	PK	KCU25	180	200	220	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	180	200	220	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU40	115	130	145	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	115	130	145	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KC7140	70	80	90	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	70	80	90	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
P6																
S	O	PK	KCU25	180	200	220	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
S	I	PK	KC7140	180	200	220	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20	
U	O	PK	KCU40	115	130	145	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
U	I	PK	KC7140	115	130	145	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14	
I	O	PK	KC7140	70	80	90	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	
I	I	PK	KC7140	70	80	90	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12	



Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø 20-24,49mm			Ø 25-30,49mm			Ø 30,5-37,49mm						
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
P0																
	S	O	LC	KCMS35	310	335	360	0,05	0,1	0,14	0,06	0,11	0,16	0,07	0,13	0,18
	S	I	LC	KCMS40	310	335	360	0,05	0,1	0,14	0,06	0,11	0,16	0,07	0,13	0,18
	U	O	LC	KCMS35	200	220	240	0,04	0,07	0,10	0,05	0,08	0,11	0,06	0,10	0,13
	U	I	LC	KCMS40	200	220	240	0,04	0,07	0,10	0,05	0,08	0,11	0,06	0,10	0,13
	I	O	LC	KCMS35	125	135	145	0,04	0,07	0,08	0,05	0,08	0,10	0,06	0,09	0,11
	I	I	LC	KCMS40	125	135	145	0,04	0,07	0,08	0,05	0,08	0,10	0,06	0,09	0,11
P1																
	S	O	PK	KCPK10	310	335	360	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	310	335	360	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU25	200	220	240	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	200	220	240	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KCU40	125	135	145	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	125	135	145	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
P2																
	S	O	PK	KCPK10	310	335	360	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	310	335	360	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU25	200	220	240	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	200	220	240	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KCU40	125	135	145	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	125	135	145	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
P3																
	S	O	PK	KCPK10	260	290	320	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	260	290	320	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU25	170	190	210	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	170	190	210	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KCU40	105	120	135	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	105	120	135	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
P4																
	S	O	PK	KCPK10	220	260	300	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	220	260	300	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU25	145	170	195	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	145	170	195	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KCU40	90	105	120	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	90	105	120	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
P5																
	S	O	PK	KCU25	180	200	220	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	180	200	220	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU40	115	130	145	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	115	130	145	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KC7140	70	80	90	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	70	80	90	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
P6																
	S	O	PK	KCU25	180	200	220	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	PK	KC7140	180	200	220	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	PK	KCU40	115	130	145	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	PK	KC7140	115	130	145	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	PK	KC7140	70	80	90	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	PK	KC7140	70	80	90	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 37,5–45,49mm			Ø 45,5–54,49mm			Ø 54,5–65mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
P0																
	S	O	LC	KCMS35	310	335	360	0,07	0,14	0,20	0,08	0,15	0,21	0,08	0,16	0,23
	S	I	LC	KCMS40	310	335	360	0,07	0,14	0,20	0,08	0,15	0,21	0,08	0,16	0,23
	U	O	LC	KCMS35	200	220	240	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,16
	U	I	LC	KCMS40	200	220	240	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,16
	I	O	LC	KCMS35	125	135	145	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
	I	I	LC	KCMS40	125	135	145	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
P1																
	S	O	PK	KCPK10	310	335	360	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	310	335	360	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU25	200	220	240	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	200	220	240	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KCU40	125	135	145	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	125	135	145	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
P2																
	S	O	PK	KCPK10	310	335	360	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	310	335	360	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU25	200	220	240	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	200	220	240	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KCU40	125	135	145	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	125	135	145	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
P3																
	S	O	PK	KCPK10	260	290	320	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	260	290	320	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU25	170	190	210	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	170	190	210	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KCU40	105	120	135	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	105	120	135	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
P4																
	S	O	PK	KCPK10	220	260	300	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	220	260	300	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU25	145	170	195	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	145	170	195	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KCU40	90	105	120	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	90	105	120	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
P5																
	S	O	PK	KCU25	180	200	220	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	180	200	220	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU40	115	130	145	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	115	130	145	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KC7140	70	80	90	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	70	80	90	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
P6																
	S	O	PK	KCU25	180	200	220	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	PK	KC7140	180	200	220	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	PK	KCU40	115	130	145	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	PK	KC7140	115	130	145	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	PK	KC7140	70	80	90	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	PK	KC7140	70	80	90	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 12–13,99mm			Ø 14–16,49mm			Ø 16,5–19,99mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
M1																
	S	O	MS	KCMS35	150	190	230	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,10	0,14
	S	I	MS	KCMS40	150	190	230	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,10	0,14
	U	O	MS	KCMS40	100	125	150	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,10
	U	I	MS	KCMS40	100	125	150	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,10
	I	O	MS	KCMS40	60	75	90	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,07	0,08
	I	I	MS	KCMS40	60	75	90	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,07	0,08
M2																
	S	O	MS	KCMS35	150	180	210	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,10	0,14
	S	I	MS	KCMS40	150	180	210	0,05	0,08	0,10	0,05	0,09	0,12	0,05	0,10	0,14
	U	O	MS	KCMS40	100	120	140	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,10
	U	I	MS	KCMS40	100	120	140	0,04	0,06	0,07	0,04	0,07	0,08	0,04	0,07	0,10
	I	O	MS	KCMS40	60	75	90	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,07	0,08
	I	I	MS	KCMS40	60	75	90	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,07	0,08
M3																
	S	O	MS	KCMS35	100	130	160	0,04	0,07	0,09	0,04	0,08	0,10	0,04	0,09	0,12
	S	I	MS	KCMS40	100	130	160	0,04	0,07	0,09	0,04	0,08	0,10	0,04	0,09	0,12
	U	O	MS	KCMS40	65	85	105	0,03	0,05	0,06	0,03	0,06	0,07	0,03	0,06	0,08
	U	I	MS	KCMS40	65	85	105	0,03	0,05	0,06	0,03	0,06	0,07	0,03	0,06	0,08
	I	O	MS	KCMS40	40	55	70	0,03	0,05	0,05	0,03	0,05	0,06	0,03	0,06	0,07
	I	I	MS	KCMS40	40	55	70	0,03	0,05	0,05	0,03	0,05	0,06	0,03	0,06	0,07

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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 20–24,49mm			Ø 25–30,49mm			Ø 30,5–37,49mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
M1																
	S	O	MS	KCMS35	150	190	230	0,05	0,10	0,15	0,06	0,11	0,16	0,07	0,13	0,18
	S	I	MS	KCMS40	150	190	230	0,05	0,10	0,15	0,06	0,11	0,16	0,07	0,13	0,18
	U	O	MS	KCMS40	100	125	150	0,04	0,08	0,11	0,05	0,08	0,11	0,06	0,10	0,13
	U	I	MS	KCMS40	100	125	150	0,04	0,08	0,11	0,05	0,08	0,11	0,06	0,10	0,13
	I	O	MS	KCMS40	60	75	90	0,04	0,07	0,09	0,05	0,08	0,10	0,06	0,09	0,11
	I	I	MS	KCMS40	60	75	90	0,04	0,07	0,09	0,05	0,08	0,10	0,06	0,09	0,11
M2																
	S	O	MS	KCMS35	150	180	210	0,05	0,10	0,15	0,06	0,11	0,16	0,07	0,13	0,18
	S	I	MS	KCMS40	150	180	210	0,05	0,10	0,15	0,06	0,11	0,16	0,07	0,13	0,18
	U	O	MS	KCMS40	100	120	140	0,04	0,08	0,11	0,05	0,08	0,11	0,06	0,10	0,13
	U	I	MS	KCMS40	100	120	140	0,04	0,08	0,11	0,05	0,08	0,11	0,06	0,10	0,13
	I	O	MS	KCMS40	60	75	90	0,04	0,07	0,09	0,05	0,08	0,10	0,06	0,09	0,11
	I	I	MS	KCMS40	60	75	90	0,04	0,07	0,09	0,05	0,08	0,10	0,06	0,09	0,11
M3																
	S	O	MS	KCMS35	100	130	160	0,04	0,09	0,13	0,05	0,10	0,14	0,06	0,11	0,15
	S	I	MS	KCMS40	100	130	160	0,04	0,09	0,13	0,05	0,10	0,14	0,06	0,11	0,15
	U	O	MS	KCMS40	65	85	105	0,03	0,07	0,09	0,04	0,07	0,10	0,05	0,08	0,11
	U	I	MS	KCMS40	65	85	105	0,03	0,07	0,09	0,04	0,07	0,10	0,05	0,08	0,11
	I	O	MS	KCMS40	40	55	70	0,03	0,06	0,08	0,04	0,07	0,08	0,05	0,07	0,09
	I	I	MS	KCMS40	40	55	70	0,03	0,06	0,08	0,04	0,07	0,08	0,05	0,07	0,09



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MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
M1																
	S	O	MS	KCMS35	150	190	230	0,07	0,14	0,20	0,08	0,15	0,22	0,08	0,16	0,24
	S	I	MS	KCMS40	150	190	230	0,07	0,14	0,20	0,08	0,15	0,22	0,08	0,16	0,24
	U	O	MS	KCMS40	100	125	150	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,17
	U	I	MS	KCMS40	100	125	150	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,17
	I	O	MS	KCMS40	60	75	90	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
	I	I	MS	KCMS40	60	75	90	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
M2																
	S	O	MS	KCMS35	150	180	210	0,07	0,14	0,20	0,08	0,15	0,22	0,08	0,16	0,24
	S	I	MS	KCMS40	150	180	210	0,07	0,14	0,20	0,08	0,15	0,22	0,08	0,16	0,24
	U	O	MS	KCMS40	100	120	140	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,17
	U	I	MS	KCMS40	100	120	140	0,06	0,10	0,14	0,06	0,11	0,15	0,06	0,12	0,17
	I	O	MS	KCMS40	60	75	90	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
	I	I	MS	KCMS40	60	75	90	0,06	0,09	0,12	0,06	0,10	0,13	0,06	0,11	0,14
M3																
	S	O	MS	KCMS35	100	130	160	0,06	0,12	0,17	0,07	0,13	0,19	0,07	0,14	0,20
	S	I	MS	KCMS40	100	130	160	0,06	0,12	0,17	0,07	0,13	0,19	0,07	0,14	0,20
	U	O	MS	KCMS40	65	85	105	0,05	0,09	0,12	0,05	0,10	0,13	0,05	0,10	0,14
	U	I	MS	KCMS40	65	85	105	0,05	0,09	0,12	0,05	0,10	0,13	0,05	0,10	0,14
	I	O	MS	KCMS40	40	55	70	0,05	0,08	0,10	0,05	0,09	0,11	0,05	0,09	0,12
	I	I	MS	KCMS40	40	55	70	0,05	0,08	0,10	0,05	0,09	0,11	0,05	0,09	0,12

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MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
K1																
	S	O	PK	KCPK10	200	250	300	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	S	I	PK	KC7140	200	250	300	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	U	O	PK	KCU25	130	165	200	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	U	I	PK	KC7140	130	165	200	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	I	O	PK	KCU40	80	100	120	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	I	PK	KC7140	80	100	120	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13
K2																
	S	O	PK	KCPK10	180	220	260	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	S	I	PK	KC7140	180	220	260	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	U	O	PK	KCU25	120	145	170	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	U	I	PK	KC7140	120	145	170	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	I	O	PK	KCU40	70	90	110	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	I	PK	KC7140	70	90	110	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13
K3																
	S	O	PK	KCPK10	180	220	260	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	S	I	PK	KC7140	180	220	260	0,07	0,13	0,18	0,08	0,14	0,20	0,08	0,15	0,22
	U	O	PK	KCU25	120	145	170	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	U	I	PK	KC7140	120	145	170	0,05	0,09	0,12	0,06	0,11	0,14	0,06	0,11	0,15
	I	O	PK	KCU40	70	90	110	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	I	PK	KC7140	70	90	110	0,05	0,08	0,11	0,06	0,10	0,12	0,06	0,10	0,13



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MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
K1																
	S	O	PK	KCPK10	200	250	300	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	S	I	PK	KC7140	200	250	300	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	U	O	PK	KCU25	130	165	200	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	U	I	PK	KC7140	130	165	200	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	I	O	PK	KCU40	80	100	120	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18
	I	I	PK	KC7140	80	100	120	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18
K2																
	S	O	PK	KCPK10	180	220	260	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	S	I	PK	KC7140	180	220	260	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	U	O	PK	KCU25	120	145	170	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	U	I	PK	KC7140	120	145	170	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	I	O	PK	KCU40	70	90	110	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18
	I	I	PK	KC7140	70	90	110	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18
K3																
	S	O	PK	KCPK10	180	220	260	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	S	I	PK	KC7140	180	220	260	0,09	0,17	0,24	0,09	0,19	0,28	0,10	0,21	0,31
	U	O	PK	KCU25	120	145	170	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	U	I	PK	KC7140	120	145	170	0,07	0,12	0,17	0,07	0,14	0,19	0,08	0,15	0,22
	I	O	PK	KCU40	70	90	110	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18
	I	I	PK	KC7140	70	90	110	0,07	0,11	0,15	0,07	0,12	0,17	0,08	0,14	0,18

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MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
K1																
	S	O	PK	KCPK10	200	250	300	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	S	I	PK	KC7140	200	250	300	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	U	O	PK	KCU25	130	165	200	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	U	I	PK	KC7140	130	165	200	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	I	O	PK	KCU40	80	100	120	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24
	I	I	PK	KC7140	80	100	120	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24
K2																
	S	O	PK	KCPK10	180	220	260	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	S	I	PK	KC7140	180	220	260	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	U	O	PK	KCU25	120	145	170	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	U	I	PK	KC7140	120	145	170	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	I	O	PK	KCU40	70	90	110	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24
	I	I	PK	KC7140	70	90	110	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24
K3																
	S	O	PK	KCPK10	180	220	260	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	S	I	PK	KC7140	180	220	260	0,11	0,23	0,34	0,11	0,24	0,36	0,12	0,26	0,40
	U	O	PK	KCU25	120	145	170	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	U	I	PK	KC7140	120	145	170	0,09	0,17	0,24	0,09	0,18	0,25	0,10	0,19	0,28
	I	O	PK	KCU40	70	90	110	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24
	I	I	PK	KC7140	70	90	110	0,09	0,15	0,20	0,09	0,16	0,22	0,10	0,17	0,24



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MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
N1																
	S	O	MS	KCMS35	350	500	650	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	350	500	650	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	300	425	550	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	300	425	550	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	210	300	390	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	210	300	390	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
N2																
	S	O	MS	KCMS35	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
N3																
	S	O	MS	KCMS35	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
N4																
	S	O	MS	KCMS35	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
N5																
	S	O	MS	KCMS35	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	300	400	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	250	335	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	180	240	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
N6																
	S	O	MS	KCMS35	400	450	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	S	I	MS	KCMS40	400	450	500	0,06	0,11	0,16	0,07	0,13	0,18	0,07	0,14	0,20
	U	O	MS	KCMS35	340	380	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	U	I	MS	KCMS40	340	380	420	0,05	0,08	0,11	0,06	0,10	0,13	0,06	0,10	0,14
	I	O	MS	KCMS40	240	270	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	240	270	300	0,05	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 20–24,49mm			Ø 25–30,49mm			Ø 30,5–37,49mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
N1																
	S	O	MS	KCMS35	350	500	650	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	350	500	650	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	300	425	550	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	300	425	550	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	210	300	390	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	210	300	390	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
N2																
	S	O	MS	KCMS35	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
N3																
	S	O	MS	KCMS35	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
N4																
	S	O	MS	KCMS35	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
N5																
	S	O	MS	KCMS35	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	300	400	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	250	335	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	180	240	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
N6																
	S	O	MS	KCMS35	400	450	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	S	I	MS	KCMS40	400	450	500	0,08	0,15	0,22	0,08	0,17	0,25	0,09	0,19	0,28
	U	O	MS	KCMS35	340	380	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	U	I	MS	KCMS40	340	380	420	0,06	0,11	0,15	0,06	0,12	0,18	0,07	0,14	0,20
	I	O	MS	KCMS40	240	270	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17
	I	I	MS	KCMS40	240	270	300	0,06	0,10	0,13	0,06	0,11	0,15	0,07	0,12	0,17

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 37,5–45,49mm			Ø 45,5–54,49mm			Ø 54,5–65mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
N1																
	S	O	MS	KCMS35	350	500	650	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	350	500	650	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	300	425	550	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	300	425	550	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	210	300	390	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	210	300	390	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
N2																
	S	O	MS	KCMS35	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
N3																
	S	O	MS	KCMS35	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
N4																
	S	O	MS	KCMS35	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
N5																
	S	O	MS	KCMS35	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	300	400	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	250	335	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	180	240	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
N6																
	S	O	MS	KCMS35	400	450	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	S	I	MS	KCMS40	400	450	500	0,10	0,21	0,31	0,10	0,22	0,33	0,11	0,24	0,36
	U	O	MS	KCMS35	340	380	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	U	I	MS	KCMS40	340	380	420	0,08	0,15	0,22	0,08	0,16	0,23	0,09	0,17	0,25
	I	O	MS	KCMS40	240	270	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22
	I	I	MS	KCMS40	240	270	300	0,08	0,14	0,19	0,08	0,14	0,20	0,09	0,16	0,22

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 12-13,99mm			Ø 14-16,49mm			Ø 16,5-19,99mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
S1																
S	O	MS	KCMS35	60	70	80	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	I	MS	KCMS40	60	70	80	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	U	MS	KCMS40	40	45	50	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	I	MS	KCMS40	40	45	50	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	O	MS	KCMS40	25	33	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
	I	MS	KCMS40	25	33	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
S2																
S	O	MS	KCMS35	50	60	70	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	I	MS	KCMS40	50	60	70	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	U	MS	KCMS40	30	40	50	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	I	MS	KCMS40	30	40	50	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	O	MS	KCMS40	25	33	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
	I	MS	KCMS40	25	33	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
S3																
S	O	MS	KCMS35	70	80	90	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	I	MS	KCMS40	70	80	90	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	U	MS	KCMS40	50	60	70	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	I	MS	KCMS40	50	60	70	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	O	MS	KCMS40	30	35	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
	I	MS	KCMS40	30	35	40	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
S4																
S	O	MS	KCMS35	70	80	90	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	I	MS	KCMS40	70	80	90	0,05	0,07	0,08	0,05	0,08	0,10	0,05	0,09	0,11	
	U	MS	KCMS40	45	55	65	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	I	MS	KCMS40	45	55	65	0,04	0,05	0,06	0,04	0,06	0,07	0,04	0,06	0,08	
	O	MS	KCMS40	30	40	50	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	
	I	MS	KCMS40	30	40	50	0,04	0,05	0,05	0,04	0,05	0,06	0,04	0,06	0,07	

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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 20–24,49mm			Ø 25–30,49mm			Ø 30,5–37,49mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
S1																
	S	O	MS	KCMS35	60	70	80	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	S	I	MS	KCMS40	60	70	80	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	U	O	MS	KCMS40	40	45	50	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	U	I	MS	KCMS40	40	45	50	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	I	O	MS	KCMS40	25	33	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
	I	I	MS	KCMS40	25	33	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
S2																
	S	O	MS	KCMS35	50	60	70	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	S	I	MS	KCMS40	50	60	70	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	U	O	MS	KCMS40	30	40	50	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	U	I	MS	KCMS40	30	40	50	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	I	O	MS	KCMS40	25	33	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
	I	I	MS	KCMS40	25	33	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
S3																
	S	O	MS	KCMS35	70	80	90	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	S	I	MS	KCMS40	70	80	90	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	U	O	MS	KCMS40	50	60	70	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	U	I	MS	KCMS40	50	60	70	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	I	O	MS	KCMS40	30	35	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
	I	I	MS	KCMS40	30	35	40	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
S4																
	S	O	MS	KCMS35	70	80	90	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	S	I	MS	KCMS40	70	80	90	0,05	0,09	0,12	0,06	0,10	0,13	0,07	0,11	0,14
	U	O	MS	KCMS40	45	55	65	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	U	I	MS	KCMS40	45	55	65	0,04	0,07	0,08	0,05	0,07	0,09	0,06	0,08	0,10
	I	O	MS	KCMS40	30	40	50	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09
	I	I	MS	KCMS40	30	40	50	0,04	0,06	0,07	0,05	0,07	0,08	0,06	0,08	0,09

Drill Fix PRO™ • Application Data • Speed Vc in m/min and Feed fz in mm/rev

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 37,5–45,49mm			Ø 45,5–54,49mm			Ø 54,5–65mm					
MG	CC	IP	GEO	Grade	Min	Vc m/min Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max	Min	fz mm/rev Start	Max
S1																
	S	O	MS	KCMS35	60	70	80	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	S	I	MS	KCMS40	60	70	80	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	U	O	MS	KCMS40	40	45	50	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	U	I	MS	KCMS40	40	45	50	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	O	MS	KCMS40	25	33	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	25	33	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
S2																
	S	O	MS	KCMS35	50	60	70	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	S	I	MS	KCMS40	50	60	70	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	U	O	MS	KCMS40	30	40	50	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	U	I	MS	KCMS40	30	40	50	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	O	MS	KCMS40	25	33	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	25	33	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
S3																
	S	O	MS	KCMS35	70	80	90	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	S	I	MS	KCMS40	70	80	90	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	U	O	MS	KCMS40	50	60	70	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	U	I	MS	KCMS40	50	60	70	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	O	MS	KCMS40	30	35	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	30	35	40	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
S4																
	S	O	MS	KCMS35	70	80	90	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	S	I	MS	KCMS40	70	80	90	0,07	0,12	0,16	0,08	0,13	0,18	0,08	0,14	0,19
	U	O	MS	KCMS40	45	55	65	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	U	I	MS	KCMS40	45	55	65	0,06	0,09	0,11	0,06	0,10	0,12	0,06	0,10	0,13
	I	O	MS	KCMS40	30	40	50	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12
	I	I	MS	KCMS40	30	40	50	0,06	0,08	0,10	0,06	0,09	0,11	0,06	0,09	0,12

Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry							Ø .472--.550"			Ø .551--.648"			Ø .649--.786"			
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
P0																
	S	O	LC	KCMS35	1017	1099	1181	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.005
	S	I	LC	KCMS40	1017	1099	1181	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.005
	U	O	LC	KCMS35	656	722	787	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	U	I	LC	KCMS40	656	722	787	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	I	O	LC	KCMS35	410	443	476	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	LC	KCMS40	410	443	476	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
P1																
	S	O	PK	KCPK10	1017	1099	1181	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	1017	1099	1181	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU25	656	722	787	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	656	722	787	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KCU40	410	443	476	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	410	443	476	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
P2																
	S	O	PK	KCPK10	1017	1099	1181	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	1017	1099	1181	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU25	656	722	787	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	656	722	787	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KCU40	410	443	476	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	410	443	476	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
P3																
	S	O	PK	KCPK10	853	951	1050	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	853	951	1050	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU25	558	623	689	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	558	623	689	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KCU40	344	394	443	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	344	394	443	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
P4																
	S	O	PK	KCPK10	722	853	984	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	722	853	984	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU25	476	558	640	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	476	558	640	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KCU40	295	344	394	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	295	344	394	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
P5																
	S	O	PK	KCU25	591	656	722	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	591	656	722	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU40	377	427	476	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	377	427	476	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KC7140	230	262	295	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	230	262	295	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
P6																
	S	O	PK	KCU25	591	656	722	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	PK	KC7140	591	656	722	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	PK	KCU40	377	427	476	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	PK	KC7140	377	427	476	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	PK	KC7140	230	262	295	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	PK	KC7140	230	262	295	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005



Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø .787-.963"				Ø .964-1.199"				Ø 1.200-1.475"				
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
P0																
S	O	LC	KCMS35	1017	1099	1181	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007	
S	I	LC	KCMS40	1017	1099	1181	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007	
U	O	LC	KCMS35	656	722	787	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005	
U	I	LC	KCMS40	656	722	787	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005	
I	O	LC	KCMS35	410	443	476	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004	
I	I	LC	KCMS40	410	443	476	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004	
P1																
S	O	PK	KCPK10	1017	1099	1181	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	1017	1099	1181	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU25	656	722	787	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	656	722	787	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KCU40	410	443	476	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	410	443	476	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
P2																
S	O	PK	KCPK10	1017	1099	1181	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	1017	1099	1181	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU25	656	722	787	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	656	722	787	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KCU40	410	443	476	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	410	443	476	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
P3																
S	O	PK	KCPK10	853	951	1050	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	853	951	1050	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU25	558	623	689	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	558	623	689	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KCU40	344	394	443	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	344	394	443	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
P4																
S	O	PK	KCPK10	722	853	984	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	722	853	984	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU25	476	558	640	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	476	558	640	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KCU40	295	344	394	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	295	344	394	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
P5																
S	O	PK	KCU25	591	656	722	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	591	656	722	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU40	377	427	476	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	377	427	476	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KC7140	230	262	295	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	230	262	295	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
P6																
S	O	PK	KCU25	591	656	722	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
S	I	PK	KC7140	591	656	722	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011	
U	O	PK	KCU40	377	427	476	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
U	I	PK	KC7140	377	427	476	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008	
I	O	PK	KC7140	230	262	295	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	
I	I	PK	KC7140	230	262	295	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007	



Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø 1.476–1.790"			Ø 1.791–2.144"			Ø 2.145–2.559"						
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
P0																
	S	O	LC	KCMS35	1017	1099	1181	0.003	0.006	0.008	0.003	0.006	0.008	0.003	0.007	0.009
	S	I	LC	KCMS40	1017	1099	1181	0.003	0.006	0.008	0.003	0.006	0.008	0.003	0.007	0.009
	U	O	LC	KCMS35	656	722	787	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.006
	U	I	LC	KCMS40	656	722	787	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.006
	I	O	LC	KCMS35	410	443	476	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.004	0.005
	I	I	LC	KCMS40	410	443	476	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.004	0.005
P1																
	S	O	PK	KCPK10	1017	1099	1181	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	1017	1099	1181	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU25	656	722	787	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	656	722	787	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KCU40	410	443	476	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	410	443	476	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
P2																
	S	O	PK	KCPK10	1017	1099	1181	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	1017	1099	1181	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU25	656	722	787	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	656	722	787	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KCU40	410	443	476	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	410	443	476	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
P3																
	S	O	PK	KCPK10	853	951	1050	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	853	951	1050	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU25	558	623	689	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	558	623	689	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KCU40	344	394	443	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	344	394	443	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
P4																
	S	O	PK	KCPK10	722	853	984	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	722	853	984	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU25	476	558	640	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	476	558	640	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KCU40	295	344	394	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	295	344	394	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
P5																
	S	O	PK	KCU25	591	656	722	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	591	656	722	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU40	377	427	476	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	377	427	476	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KC7140	230	262	295	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	230	262	295	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
P6																
	S	O	PK	KCU25	591	656	722	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	PK	KC7140	591	656	722	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	PK	KCU40	377	427	476	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	PK	KC7140	377	427	476	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	PK	KC7140	230	262	295	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	PK	KC7140	230	262	295	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009



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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø .472-.550"			Ø .551-.648"			Ø .649-.786"					
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
M1																
	S	O	MS	KCMS35	492	623	755	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	S	I	MS	KCMS40	492	623	755	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	O	MS	KCMS40	328	410	492	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	U	I	MS	KCMS40	328	410	492	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	I	O	MS	KCMS40	197	246	295	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	197	246	295	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
M2																
	S	O	MS	KCMS35	492	591	689	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	S	I	MS	KCMS40	492	591	689	0.002	0.003	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	O	MS	KCMS40	328	394	459	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	U	I	MS	KCMS40	328	394	459	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	I	O	MS	KCMS40	197	246	295	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	197	246	295	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
M3																
	S	O	MS	KCMS35	328	427	525	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.005
	S	I	MS	KCMS40	328	427	525	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.005
	U	O	MS	KCMS40	213	279	344	0.001	0.002	0.002	0.001	0.003	0.003	0.001	0.003	0.003
	U	I	MS	KCMS40	213	279	344	0.001	0.002	0.002	0.001	0.003	0.003	0.001	0.003	0.003
	I	O	MS	KCMS40	131	180	230	0.001	0.002	0.002	0.001	0.002	0.002	0.001	0.003	0.003
	I	I	MS	KCMS40	131	180	230	0.001	0.002	0.002	0.001	0.002	0.002	0.001	0.003	0.003

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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø .787-.963"			Ø .964-1.199"			Ø 1.200-1.475"					
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
M1																
	S	O	MS	KCMS35	492	623	755	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007
	S	I	MS	KCMS40	492	623	755	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007
	U	O	MS	KCMS40	328	410	492	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	U	I	MS	KCMS40	328	410	492	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	O	MS	KCMS40	197	246	295	0.002	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
	I	I	MS	KCMS40	197	246	295	0.002	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
M2																
	S	O	MS	KCMS35	492	591	689	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007
	S	I	MS	KCMS40	492	591	689	0.002	0.004	0.006	0.002	0.005	0.006	0.003	0.005	0.007
	U	O	MS	KCMS40	328	394	459	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	U	I	MS	KCMS40	328	394	459	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	O	MS	KCMS40	197	246	295	0.002	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
	I	I	MS	KCMS40	197	246	295	0.002	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
M3																
	S	O	MS	KCMS35	328	427	525	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	S	I	MS	KCMS40	328	427	525	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	U	O	MS	KCMS40	213	279	344	0.001	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
	U	I	MS	KCMS40	213	279	344	0.001	0.003	0.004	0.002	0.003	0.004	0.002	0.004	0.004
	I	O	MS	KCMS40	131	180	230	0.001	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004
	I	I	MS	KCMS40	131	180	230	0.001	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.004



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MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
M1																
	S	O	MS	KCMS35	492	623	755	0.003	0.006	0.008	0.003	0.006	0.009	0.003	0.007	0.009
	S	I	MS	KCMS40	492	623	755	0.003	0.006	0.008	0.003	0.006	0.009	0.003	0.007	0.009
	U	O	MS	KCMS40	328	410	492	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.007
	U	I	MS	KCMS40	328	410	492	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.007
	I	O	MS	KCMS40	197	246	295	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.005	0.006
	I	I	MS	KCMS40	197	246	295	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.005	0.006
M2																
	S	O	MS	KCMS35	492	591	689	0.003	0.006	0.008	0.003	0.006	0.009	0.003	0.007	0.009
	S	I	MS	KCMS40	492	591	689	0.003	0.006	0.008	0.003	0.006	0.009	0.003	0.007	0.009
	U	O	MS	KCMS40	328	394	459	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.007
	U	I	MS	KCMS40	328	394	459	0.002	0.004	0.006	0.003	0.005	0.006	0.003	0.005	0.007
	I	O	MS	KCMS40	197	246	295	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.005	0.006
	I	I	MS	KCMS40	197	246	295	0.002	0.004	0.005	0.003	0.004	0.005	0.003	0.005	0.006
M3																
	S	O	MS	KCMS35	328	427	525	0.002	0.005	0.007	0.003	0.006	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	328	427	525	0.002	0.005	0.007	0.003	0.006	0.007	0.003	0.006	0.008
	U	O	MS	KCMS40	213	279	344	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	213	279	344	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	131	180	230	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	131	180	230	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005

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MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
K1																
	S	O	PK	KCPK10	656	820	984	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	S	I	PK	KC7140	656	820	984	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	U	O	PK	KCU25	427	541	656	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	U	I	PK	KC7140	427	541	656	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	I	O	PK	KCU40	262	328	394	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005
	I	I	PK	KC7140	262	328	394	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005
K2																
	S	O	PK	KCPK10	591	722	853	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	S	I	PK	KC7140	591	722	853	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	U	O	PK	KCU25	394	476	558	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	U	I	PK	KC7140	394	476	558	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	I	O	PK	KCU40	230	295	361	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005
	I	I	PK	KC7140	230	295	361	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005
K3																
	S	O	PK	KCPK10	591	722	853	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	S	I	PK	KC7140	591	722	853	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	U	O	PK	KCU25	394	476	558	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	U	I	PK	KC7140	394	476	558	0.002	0.004	0.005	0.002	0.004	0.005	0.002	0.005	0.006
	I	O	PK	KCU40	230	295	361	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005
	I	I	PK	KC7140	230	295	361	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.005



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MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
K1																
	S	O	PK	KCPK10	656	820	984	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	S	I	PK	KC7140	656	820	984	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	U	O	PK	KCU25	427	541	656	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	U	I	PK	KC7140	427	541	656	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	I	O	PK	KCU40	262	328	394	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007
	I	I	PK	KC7140	262	328	394	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007
K2																
	S	O	PK	KCPK10	591	722	853	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	S	I	PK	KC7140	591	722	853	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	U	O	PK	KCU25	394	476	558	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	U	I	PK	KC7140	394	476	558	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	I	O	PK	KCU40	230	295	361	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007
	I	I	PK	KC7140	230	295	361	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007
K3																
	S	O	PK	KCPK10	591	722	853	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	S	I	PK	KC7140	591	722	853	0.003	0.007	0.010	0.003	0.008	0.011	0.004	0.009	0.012
	U	O	PK	KCU25	394	476	558	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	U	I	PK	KC7140	394	476	558	0.003	0.005	0.007	0.003	0.006	0.008	0.003	0.006	0.008
	I	O	PK	KCU40	230	295	361	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007
	I	I	PK	KC7140	230	295	361	0.003	0.005	0.006	0.003	0.005	0.006	0.003	0.006	0.007

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MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
K1																
	S	O	PK	KCPK10	656	820	984	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	S	I	PK	KC7140	656	820	984	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	U	O	PK	KCU25	427	541	656	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	I	PK	KC7140	427	541	656	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	I	O	PK	KCU40	262	328	394	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009
	I	I	PK	KC7140	262	328	394	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009
K2																
	S	O	PK	KCPK10	591	722	853	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	S	I	PK	KC7140	591	722	853	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	U	O	PK	KCU25	394	476	558	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	I	PK	KC7140	394	476	558	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	I	O	PK	KCU40	230	295	361	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009
	I	I	PK	KC7140	230	295	361	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009
K3																
	S	O	PK	KCPK10	591	722	853	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	S	I	PK	KC7140	591	722	853	0.004	0.009	0.013	0.004	0.010	0.014	0.005	0.011	0.016
	U	O	PK	KCU25	394	476	558	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	I	PK	KC7140	394	476	558	0.003	0.007	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	I	O	PK	KCU40	230	295	361	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009
	I	I	PK	KC7140	230	295	361	0.003	0.006	0.008	0.003	0.007	0.009	0.004	0.007	0.009



Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø .472-.550"			Ø .551-.648"			Ø .649-.786"						
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
N1																
	S	O	MS	KCMS35	1148	1640	2133	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	1148	1640	2133	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	984	1394	1804	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	984	1394	1804	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	689	984	1280	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	689	984	1280	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
N2																
	S	O	MS	KCMS35	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
N3																
	S	O	MS	KCMS35	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
N4																
	S	O	MS	KCMS35	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
N5																
	S	O	MS	KCMS35	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	984	1312	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	820	1099	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	591	787	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
N6																
	S	O	MS	KCMS35	1312	1476	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	1312	1476	1640	0.002	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	O	MS	KCMS35	1115	1247	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	U	I	MS	KCMS40	1115	1247	1378	0.002	0.004	0.004	0.002	0.004	0.005	0.002	0.004	0.006
	I	O	MS	KCMS40	787	886	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005
	I	I	MS	KCMS40	787	886	984	0.002	0.003	0.004	0.002	0.004	0.004	0.002	0.004	0.005



Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø .787–.963"			Ø .964–1.199"			Ø 1.200–1.475"						
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
N1																
	S	O	MS	KCMS35	1148	1640	2133	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	1148	1640	2133	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	984	1394	1804	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	984	1394	1804	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	689	984	1280	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	689	984	1280	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
N2																
	S	O	MS	KCMS35	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
N3																
	S	O	MS	KCMS35	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
N4																
	S	O	MS	KCMS35	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
N5																
	S	O	MS	KCMS35	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	984	1312	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	820	1099	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	591	787	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
N6																
	S	O	MS	KCMS35	1312	1476	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	S	I	MS	KCMS40	1312	1476	1640	0.003	0.006	0.009	0.003	0.007	0.010	0.004	0.008	0.011
	U	O	MS	KCMS35	1115	1247	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	U	I	MS	KCMS40	1115	1247	1378	0.003	0.005	0.006	0.003	0.005	0.007	0.003	0.006	0.008
	I	O	MS	KCMS40	787	886	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007
	I	I	MS	KCMS40	787	886	984	0.003	0.004	0.005	0.003	0.005	0.006	0.003	0.005	0.007



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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø 1.476–1.790"			Ø 1.791–2.144"			Ø 2.145–2.559"						
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
N1																
	S	O	MS	KCMS35	1148	1640	2133	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	1148	1640	2133	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	984	1394	1804	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	984	1394	1804	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	689	984	1280	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	689	984	1280	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
N2																
	S	O	MS	KCMS35	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
N3																
	S	O	MS	KCMS35	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
N4																
	S	O	MS	KCMS35	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
N5																
	S	O	MS	KCMS35	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	984	1312	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	820	1099	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	591	787	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
N6																
	S	O	MS	KCMS35	1312	1476	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	S	I	MS	KCMS40	1312	1476	1640	0.004	0.009	0.012	0.004	0.009	0.013	0.004	0.010	0.014
	U	O	MS	KCMS35	1115	1247	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	U	I	MS	KCMS40	1115	1247	1378	0.003	0.006	0.009	0.003	0.007	0.009	0.003	0.007	0.010
	I	O	MS	KCMS40	787	886	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009
	I	I	MS	KCMS40	787	886	984	0.003	0.006	0.007	0.003	0.006	0.008	0.003	0.006	0.009



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MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø .472-.550"			Ø .551-.648"			Ø .649-.786"					
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
S1																
	S	O	MS	KCMS35	197	230	262	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	S	I	MS	KCMS40	197	230	262	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	O	MS	KCMS40	131	148	164	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	U	I	MS	KCMS40	131	148	164	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	O	MS	KCMS40	82	107	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
	I	I	MS	KCMS40	82	107	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
S2																
	S	O	MS	KCMS35	164	197	230	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	S	I	MS	KCMS40	164	197	230	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	O	MS	KCMS40	98	131	164	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	U	I	MS	KCMS40	98	131	164	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	O	MS	KCMS40	82	107	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
	I	I	MS	KCMS40	82	107	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
S3																
	S	O	MS	KCMS35	230	262	295	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	S	I	MS	KCMS40	230	262	295	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	O	MS	KCMS40	164	197	230	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	U	I	MS	KCMS40	164	197	230	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	O	MS	KCMS40	98	115	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
	I	I	MS	KCMS40	98	115	131	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
S4																
	S	O	MS	KCMS35	230	262	295	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	S	I	MS	KCMS40	230	262	295	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	O	MS	KCMS40	148	180	213	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	U	I	MS	KCMS40	148	180	213	0.002	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.003
	I	O	MS	KCMS40	98	131	164	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
	I	I	MS	KCMS40	98	131	164	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003



Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry				Ø .787–.963"			Ø .964–1.199"			Ø 1.200–1.475"						
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
S1																
	S	O	MS	KCMS35	197	230	262	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	S	I	MS	KCMS40	197	230	262	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	U	O	MS	KCMS40	131	148	164	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	I	MS	KCMS40	131	148	164	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	I	O	MS	KCMS40	82	107	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	82	107	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
S2																
	S	O	MS	KCMS35	164	197	230	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	S	I	MS	KCMS40	164	197	230	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	U	O	MS	KCMS40	98	131	164	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	I	MS	KCMS40	98	131	164	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	I	O	MS	KCMS40	82	107	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	82	107	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
S3																
	S	O	MS	KCMS35	230	262	295	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	S	I	MS	KCMS40	230	262	295	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	U	O	MS	KCMS40	164	197	230	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	I	MS	KCMS40	164	197	230	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	I	O	MS	KCMS40	98	115	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	98	115	131	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
S4																
	S	O	MS	KCMS35	230	262	295	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	S	I	MS	KCMS40	230	262	295	0.002	0.004	0.005	0.002	0.004	0.005	0.003	0.005	0.006
	U	O	MS	KCMS40	148	180	213	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	U	I	MS	KCMS40	148	180	213	0.002	0.003	0.003	0.002	0.003	0.004	0.002	0.004	0.004
	I	O	MS	KCMS40	98	131	164	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003
	I	I	MS	KCMS40	98	131	164	0.002	0.003	0.003	0.002	0.003	0.003	0.002	0.003	0.003

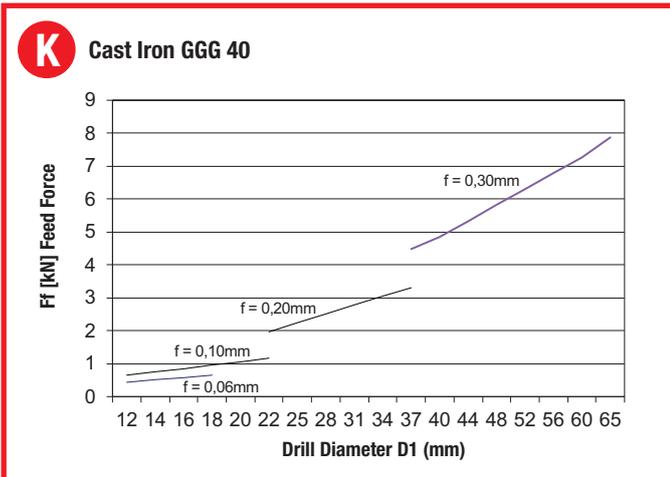
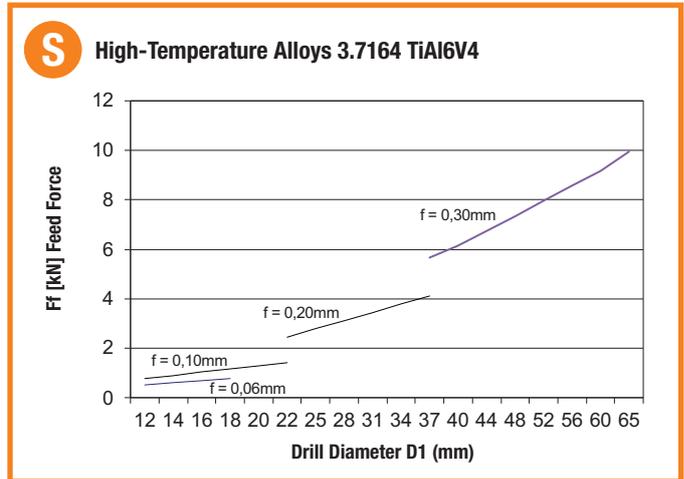
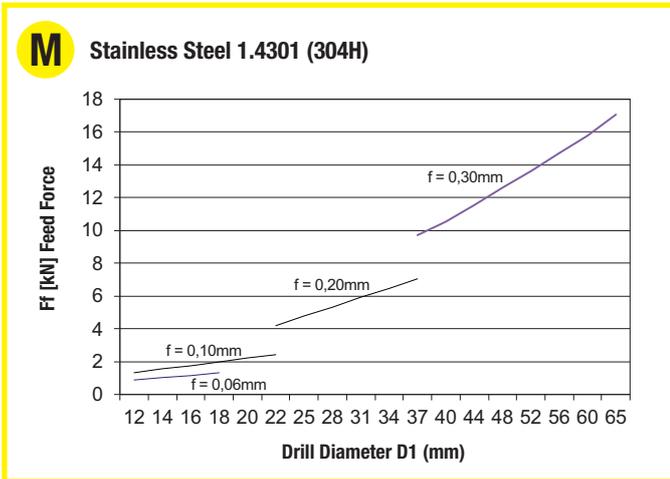
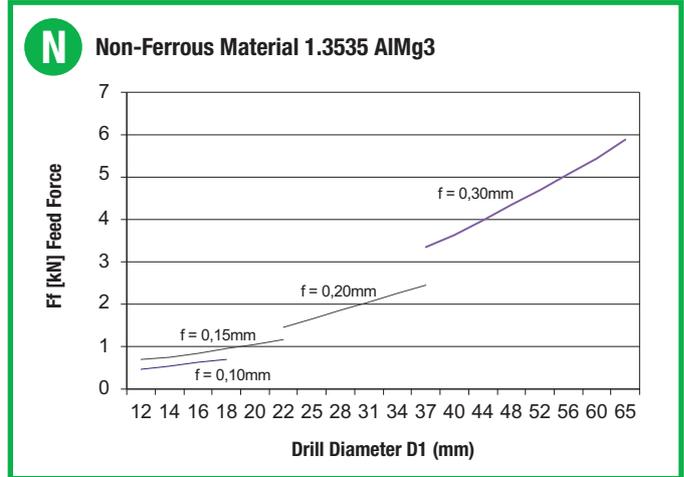
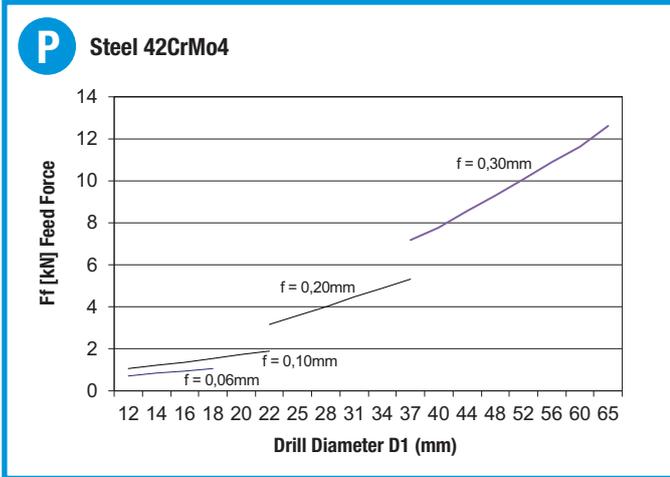


Drill Fix PRO™ • Application Data • Speed Vc in SFM and Feed fz in IPR

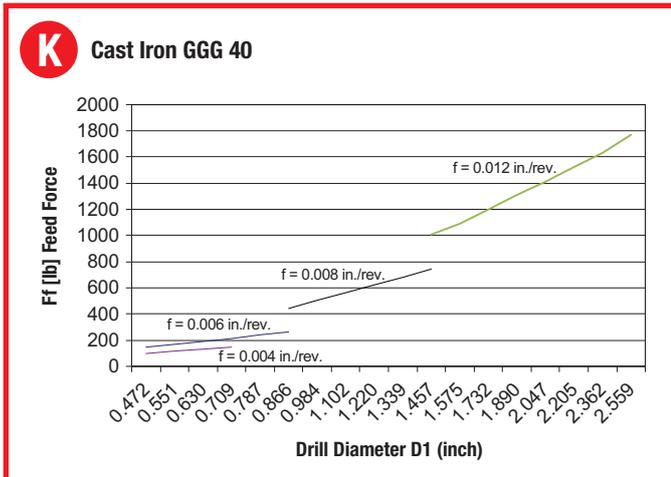
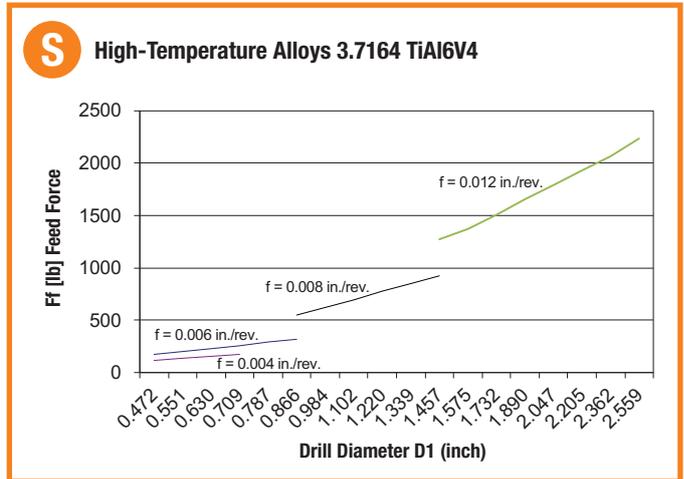
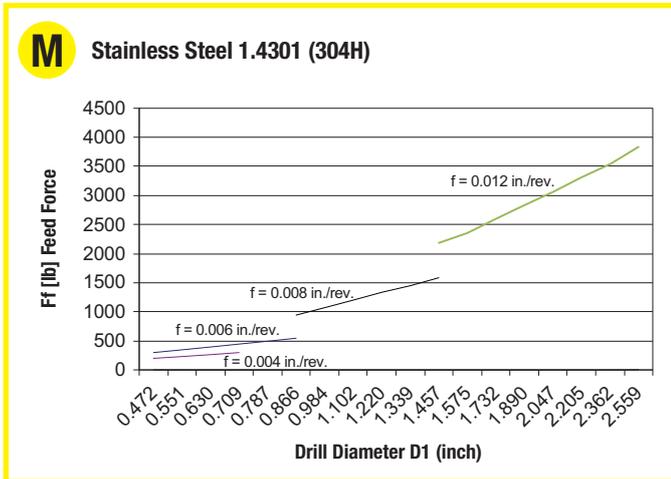
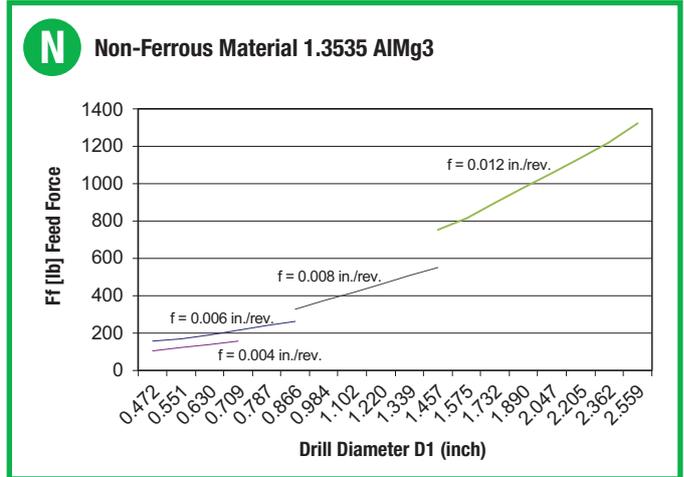
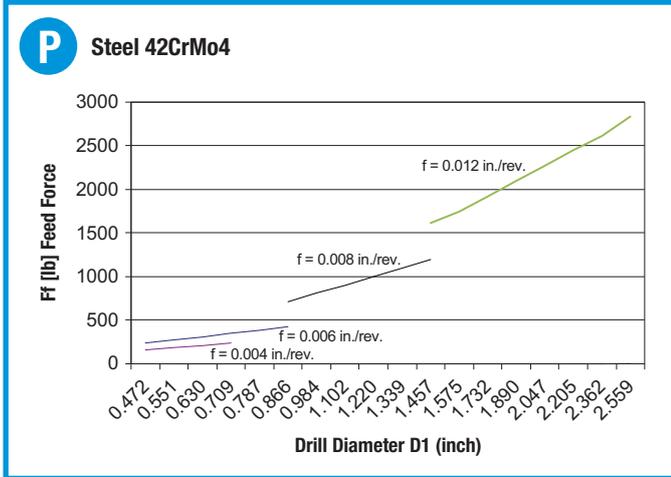
MG = Material Group CC = Cutting Condition S = Stable U = Unstable I = Interrupted IP = Insert Position O = Outboard I = Inboard GEO = Insert Geometry					Ø 1.476–1.790"			Ø 1.791–2.144"			Ø 2.145–2.559"					
MG	CC	IP	GEO	Grade	Min	Vc SFM Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max	Min	fz IPR Start	Max
S1																
	S	O	MS	KCMS35	197	230	262	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	197	230	262	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	U	O	MS	KCMS40	131	148	164	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	U	I	MS	KCMS40	131	148	164	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	I	O	MS	KCMS40	82	107	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
	I	I	MS	KCMS40	82	107	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
S2																
	S	O	MS	KCMS35	164	197	230	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	164	197	230	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	U	O	MS	KCMS40	98	131	164	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	U	I	MS	KCMS40	98	131	164	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	I	O	MS	KCMS40	82	107	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
	I	I	MS	KCMS40	82	107	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
S3																
	S	O	MS	KCMS35	230	262	295	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	230	262	295	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	U	O	MS	KCMS40	164	197	230	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	U	I	MS	KCMS40	164	197	230	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	I	O	MS	KCMS40	98	115	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
	I	I	MS	KCMS40	98	115	131	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
S4																
	S	O	MS	KCMS35	230	262	295	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	S	I	MS	KCMS40	230	262	295	0.003	0.005	0.006	0.003	0.006	0.007	0.003	0.006	0.008
	U	O	MS	KCMS40	148	180	213	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	U	I	MS	KCMS40	148	180	213	0.002	0.004	0.004	0.003	0.004	0.005	0.003	0.004	0.005
	I	O	MS	KCMS40	98	131	164	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005
	I	I	MS	KCMS40	98	131	164	0.002	0.003	0.004	0.003	0.004	0.004	0.003	0.004	0.005



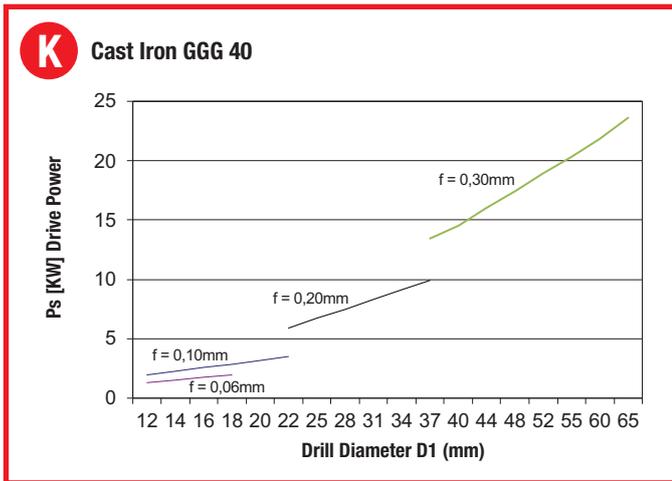
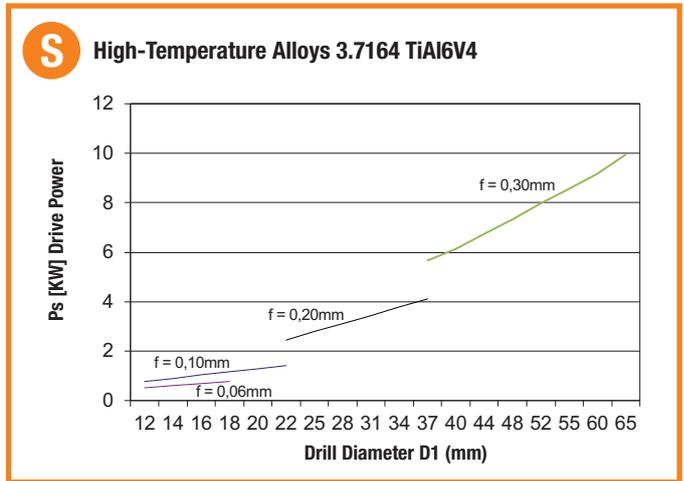
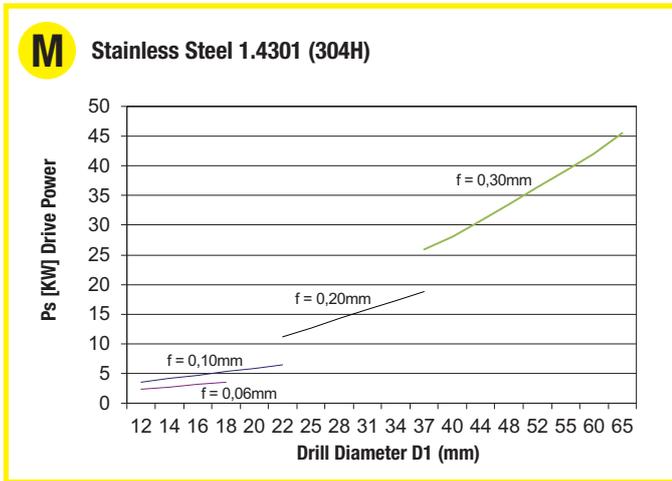
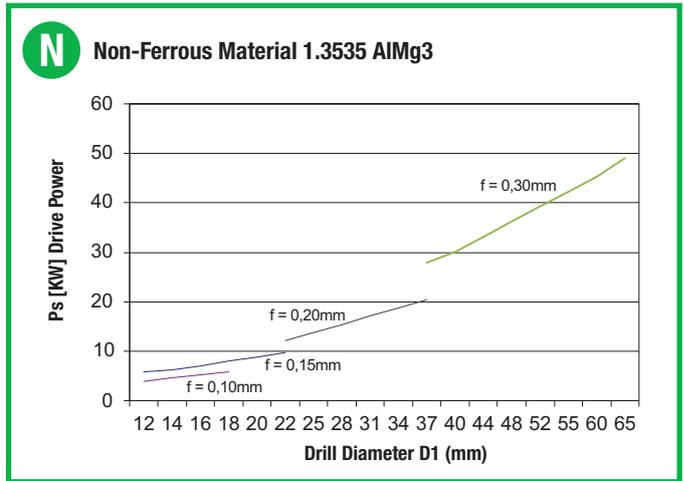
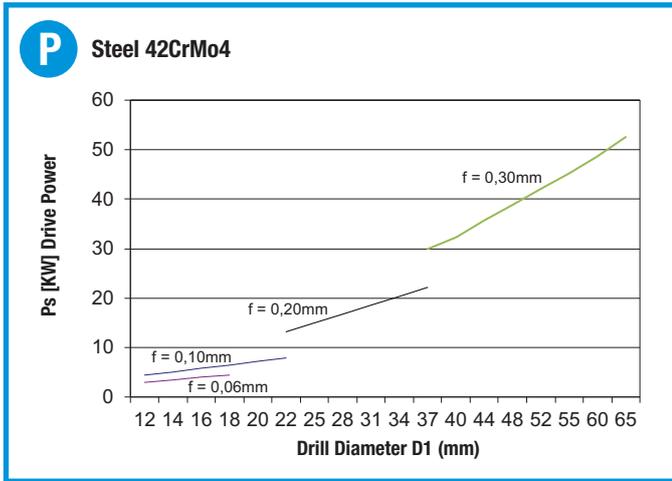
Feed Force Requirement • Metric



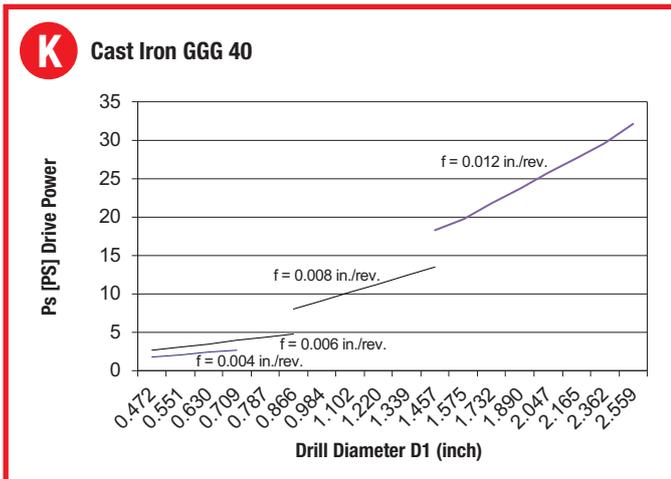
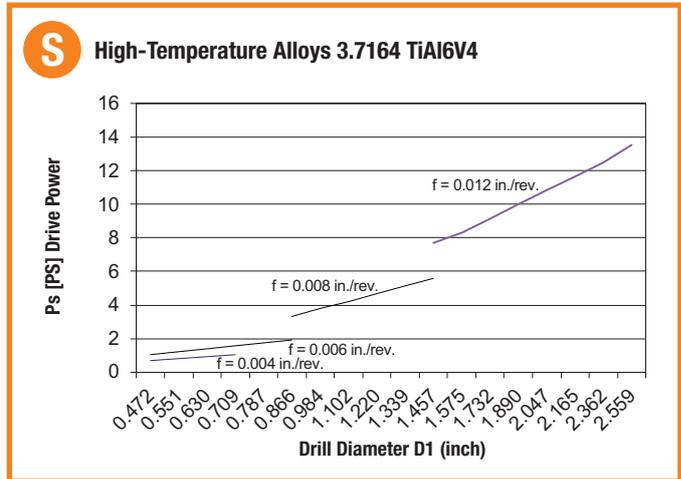
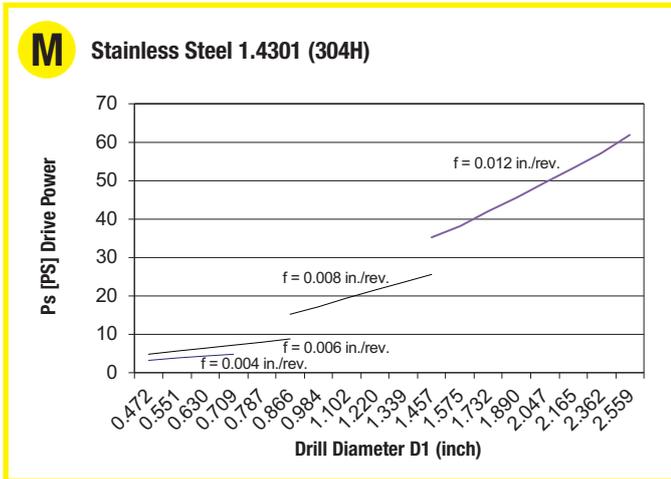
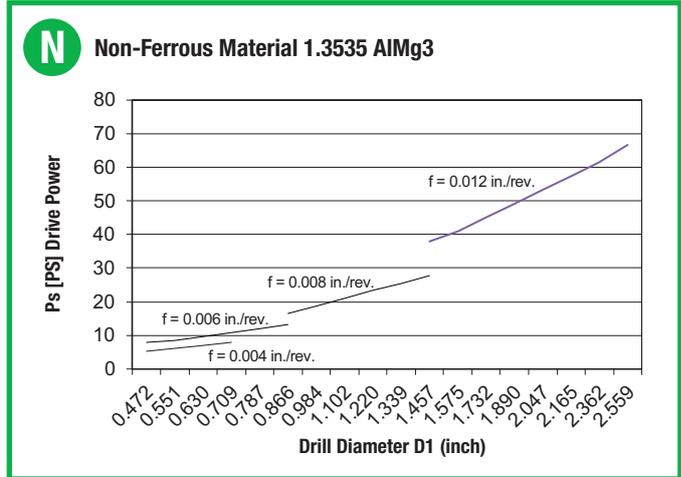
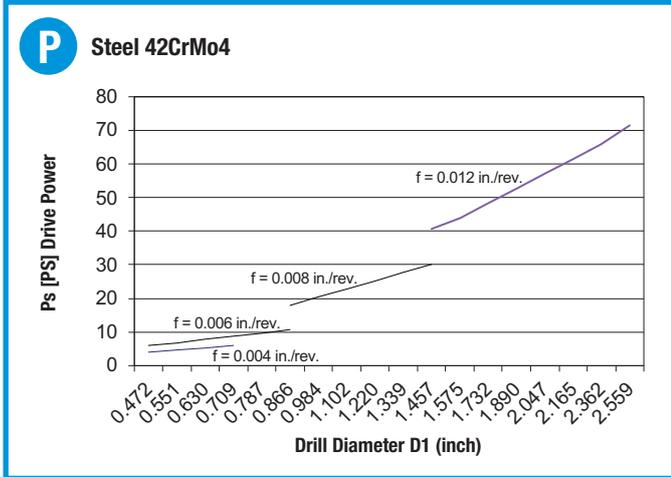
Feed Force Requirement • Inch



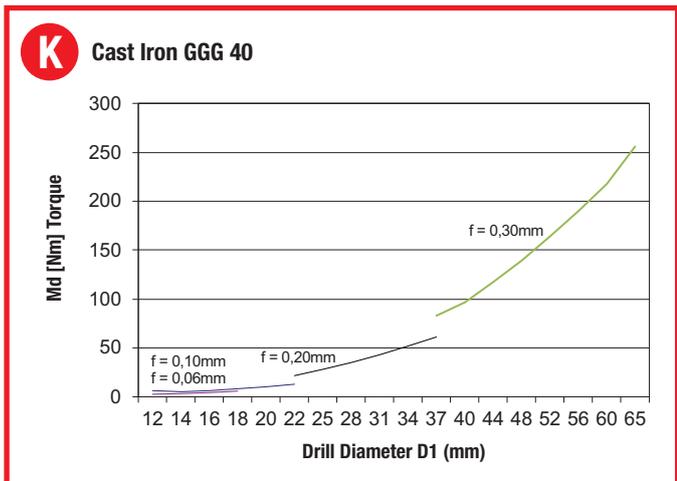
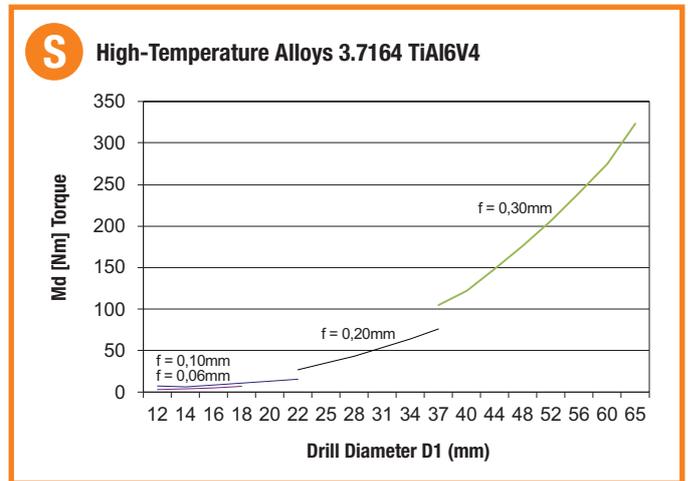
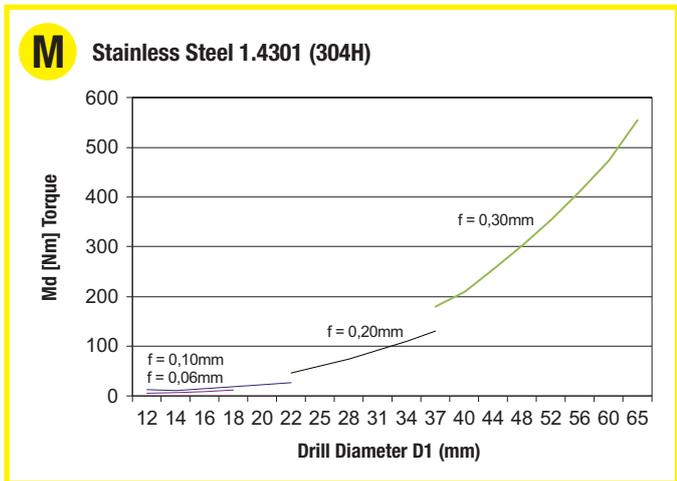
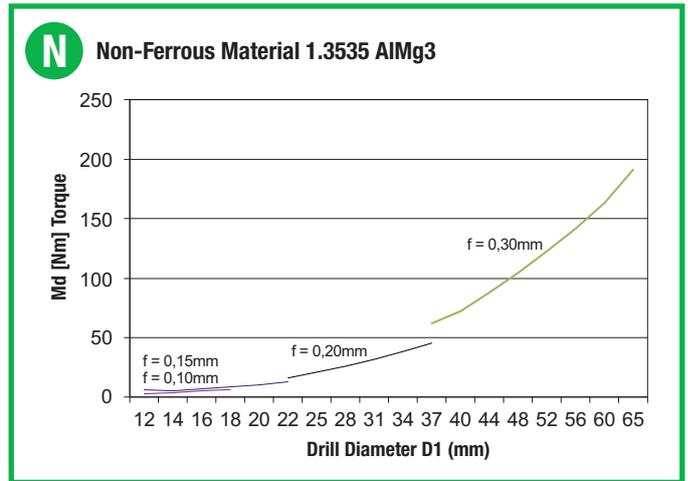
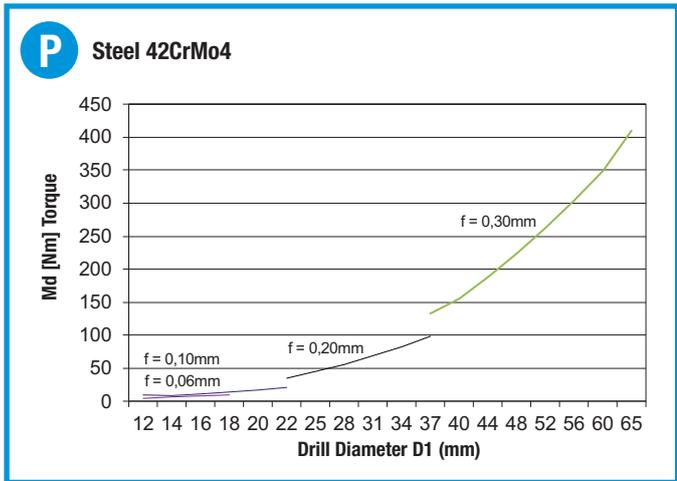
Power Recommendation • Metric



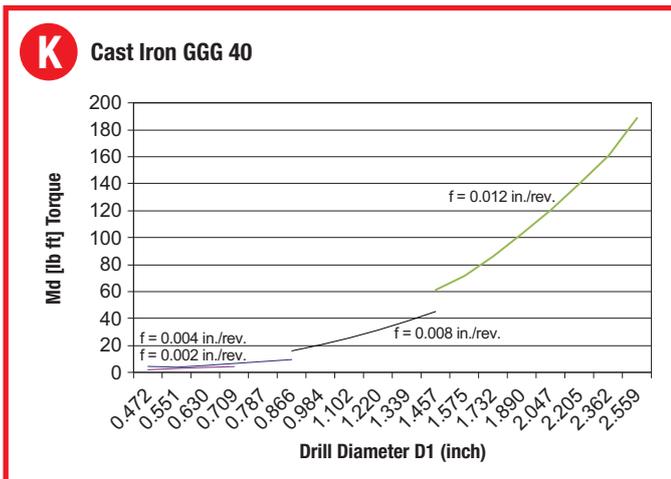
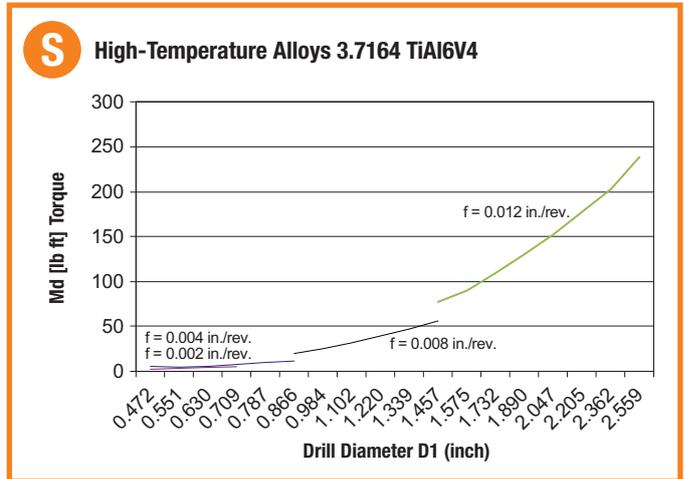
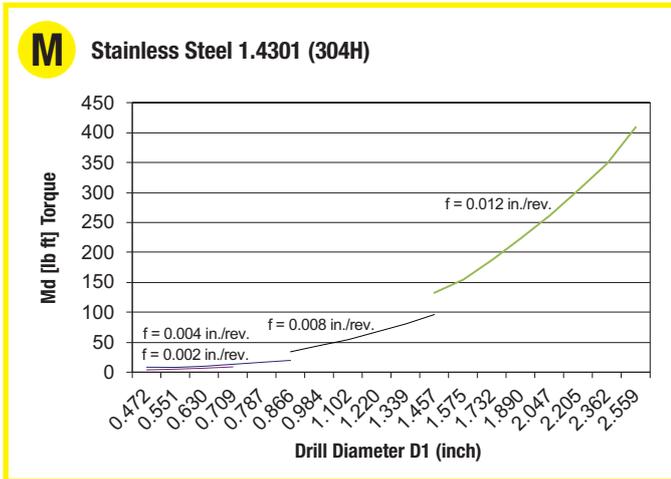
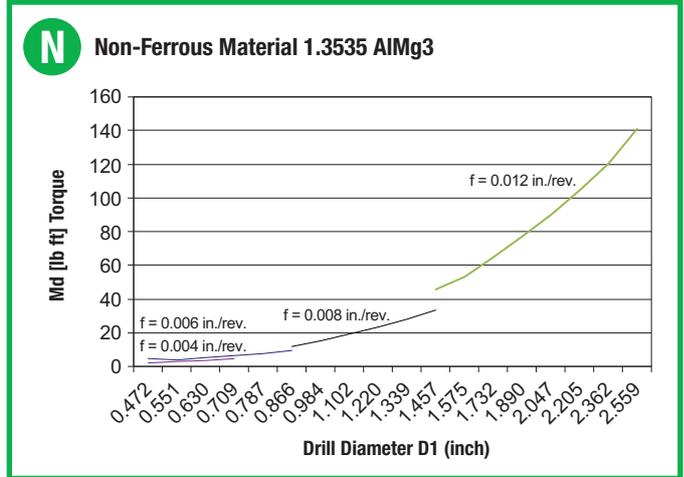
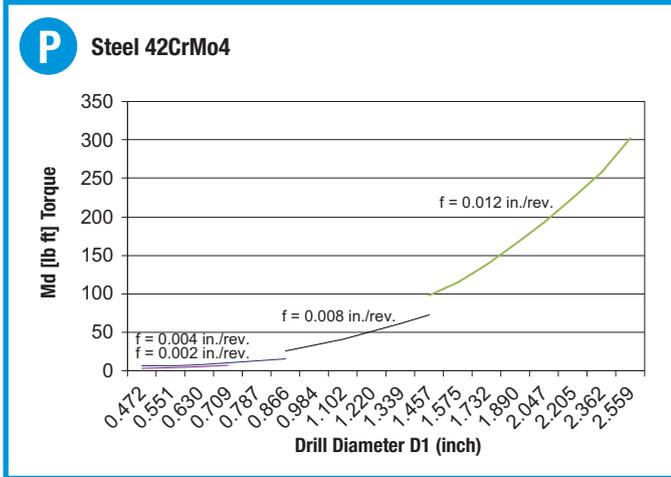
Power Recommendation • Inch



Torque Recommendation • Metric



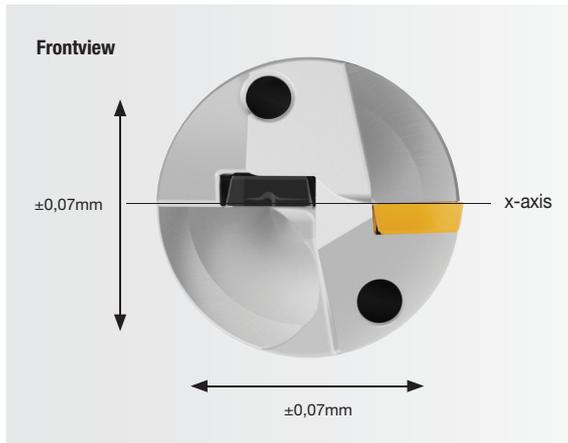
Torque Recommendation • Inch



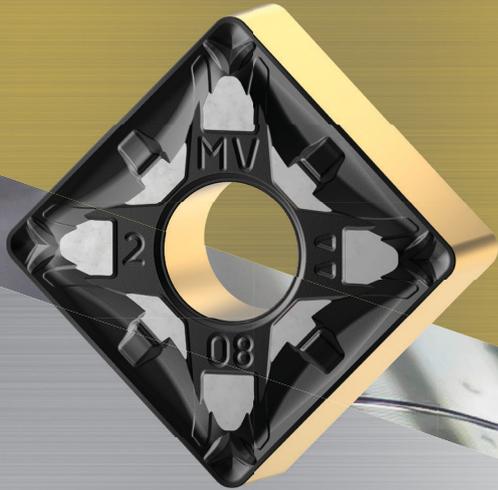
Stationary Applications

Drill Fix PRO™ drills were also designed for use on lathes or any machine where the tool remains stationary and the workpiece rotates. An “x” is marked on the SSF-shank drills to aid insert orientation on the machine tool.

It is important to align the X-axis of the drill with the X-axis on the machine tool. Accurate alignment is absolutely essential for good performance. The drill must be on center, within the tolerance shown here. Angularity must not exceed 0,07mm within the designated drill depth.

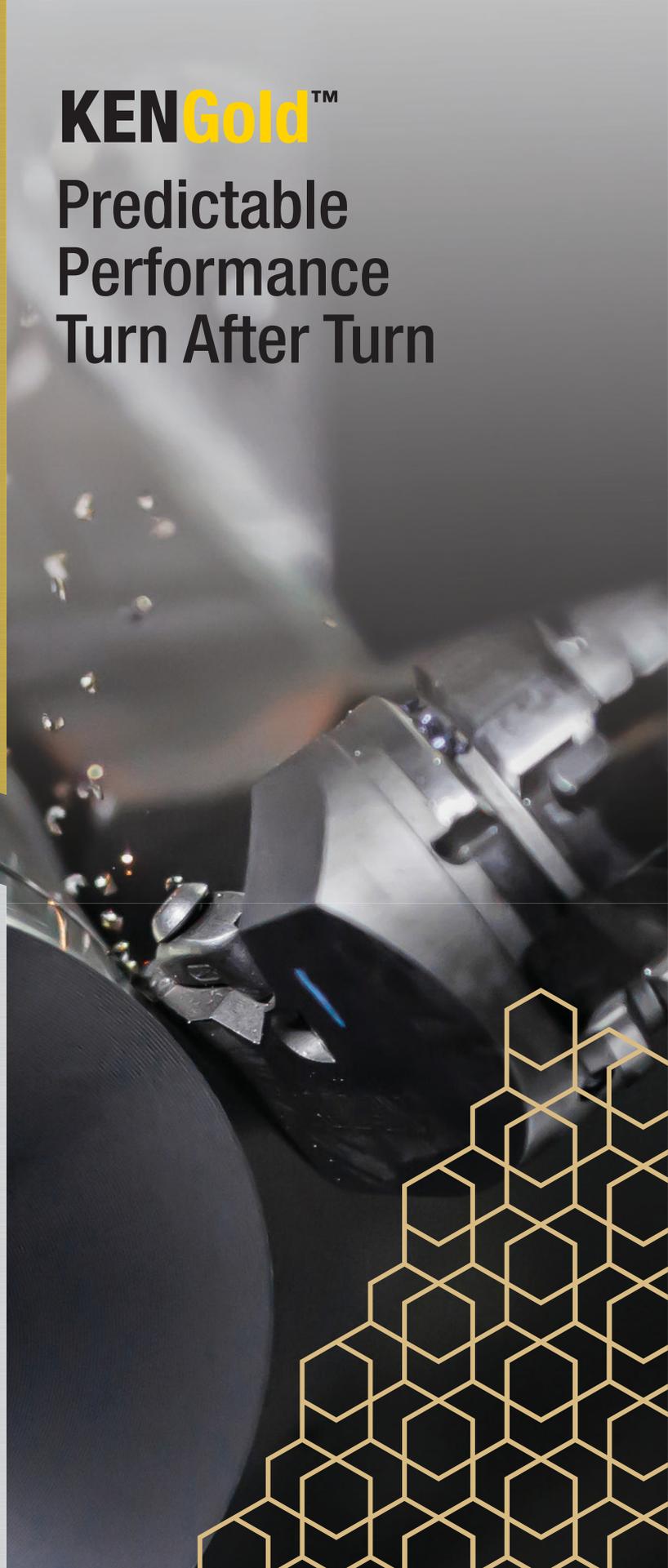


New KCP25C Steel Turning Grade with **KenGold™** CVD Coating Technology



The new KCP25C grade featuring our new KENGold™ CVD coating sets a new standard in steel turning. With our proprietary coating technology, you can machine longer and with greater productivity and efficiency. KENGold delivers the higher metal removal rates and improved wear resistance you need.

KENGold™ Predictable Performance Turn After Turn



Tool Selection Guide • Material-Specific Drills

	KenDrill™ Micro	KenDrill Deep SGL	KenDrill Deep HPR	KenDrill Deep HPS
	NEW! 		NEW! 	
Series	B068 B070 B071 B072 B073 B074 B075 B076	B271*SGL B272*SGL B273*SGL B274*SGL B275*SGL	B271*HPR B272*HPR B273*HPR B274*HPR B275*HPR	B271*HPS B272*HPS B273*HPS B274*HPS B275*HPS
Page	76-79	kennametal.com	68-72	kennametal.com
Workpiece material				
Primary	P M S	M S	P K	N
Secondary	K N	P		
Hole tolerance	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10
Standard range				
Cutting diameter [D1]	1,0-2,9mm (.0938-.1142")	2,4-16,0mm (.0938-.6299")	2,4-16,0mm (.0938-.6299")	2,4-16,0mm (.0938-.6299")
Drill length [L4 max]	2,0-126,0mm (.0078-4.9606")	44,0-450,0mm (1.7323-17.7165")	44,0-450,0mm (1.7323-17.7165")	44,0-450,0mm (1.7323-17.7165")
Drilling depth L/D1	2-50 x D	15-30 x D	15-30 x D	15-30 x D
Point angle	141°/139°	135°	135°	135°
Flute angle	28°	30°	30°	30°
Coolant		 	 	 
Operations	 	   	   	   
Flutes and margin				
Corner chamfer				
Shank				

Tool Selection Guide • Material-Specific Drills

	SGL Drills	HPX Drills	HPX Drills	HPR Drills	HPS Drills	Y-TECH™ Drills	KMH Drills	KMH Drills
								
Series	B210_SGL B211_SGL B212_SGL	B221_HPX B222_HPX	B224_HPX B225_HPX B226_HPX	B254_HPR B255_HPR B256_HPR	B284_HPS B285_HPS B286_HPS	B291_YPL B292_YPL	B941A	B951A
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Workpiece material								
Primary	M S	P	P	K	N	M S	H	H
Secondary	P	K				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]	2,5-20,0mm (0.0984-0.7874")	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	3,0-20,0mm (0.1181-0.7874")	2,5-14,0mm (0.0984-0.5512")	3,0-16,0mm (0.1181-0.6299")
Drill length [L4 max]	12,0-160,0mm (0.47-6.30")	14,0-85,0mm (0.55-3.03")	14,0-160,0mm (0.55-6.30")	14,0-160,0mm (0.55-6.30")	14,0-124,0mm (0.55-4.88")	14,0-77,0mm (0.55-3.03")	14,0-43,0mm (0.55-1.69")	14,0-45,0mm (0.55-1.77")
Drilling depth L/D1	3-8 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	140°	140°	140°	143°	135°	140°	142°	140°
Flute angle	30°	30°	30°	30°	30°	30°	15°	30°
Coolant		 	 	 	 	 	 	 
Operations	 	 	 	   	 		  	  
Flutes and margin								
Corner chamfer								
Shank								

Tool Selection Guide • Versatile Drills

	GOdrill™	GOdrill	Kenna Universal™ Drills	Kenna Universal Drills	Kenna Universal Step Drills
					
Series	B041A_CPG B042A_CPG	B051A_CPG B052A_CPG B053A_CPG	B966A B967A	B976A B977A B978A B979A	B731A B732A
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Workpiece material					
Primary	P M K N S	P M K N S	P K	P K	P K
Secondary	H	H	M N S	M N S	M N S
Hole tolerance	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10	IT9-IT10
Standard range					
Cutting diameter [D1]	1,0-20,0mm (0.0394-0.7874")	1,0-20,0mm (0.0394-0.7874")	3,0-20,0mm (0.1181-0.7874")	2,4-20,0mm (0.0938-0.7874")	3,0-20,0mm (0.1181-0.7874")
Drill length [L4 max]	5,0-77,0mm (0.55-0.20")	5,0-124,0mm (0.55-4.88")	14,0-85,0mm (0.55-3.03")	12,0-124,0mm (0.47-4.88")	—
Drilling depth L/D1	3-5 x D	3-8 x D	3-5 x D	3-12 x D	—
Point angle	140°	140°	140°	140°/132°	140°
Flute angle	30°	30°	30°	30°	30°
Coolant			 	 	 
Operations			   	   	    
Flutes and margin					
Corner chamfer					
Shank	 	 	 	 	

KCSM15A

Solid End Milling Grade

Our KCSM15A grade features an advanced PVD coating technology and delivers the best wear resistance in the history of Kennametal solid carbide end milling. This new grade provides increased output, higher metal removal rates and overall reliability when machining stainless steel, titanium and other high-temp alloys.

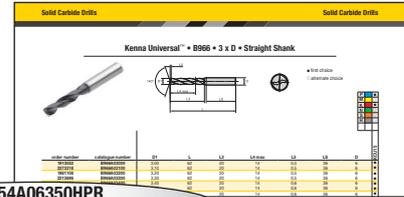
KCSM15A launches with the **HARVI™ III**, **HARVI III Aero**, **HARVI II Long**, and **RSM II** platforms that are proven high performance solid carbide end mills for the aerospace, energy, transportation, and general engineering industries.

- Copper color provides improved tool life observation and reconditioning management
- Protection against abrasive wear and minimized edge build-up
- Increased tool life at high temperatures with minimized chipping
- Improved process stability



Solid Carbide Drills • Catalog Numbering System

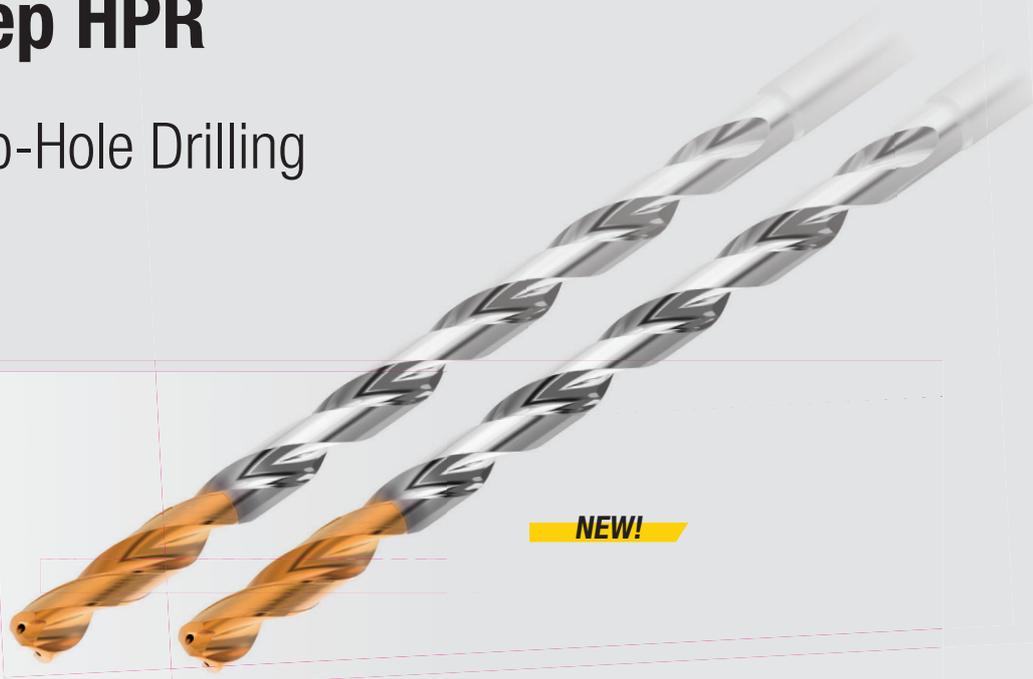
Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



B	25	4	A
K	25	4	A
Tool Type	Series	Length to Diameter Ratio	Shank Style
<p>B = Metric (metric shank with 2mm steps)</p> <p>K = Inch (inch shank)</p>	<p>04 = GOdrill™</p> <p>05 = GOdrill Internal Coolant</p> <hr/> <p>06 = Microdrills Internal Coolant</p> <hr/> <p>10 = TF Drill</p> <hr/> <p>21 = HP Drill Internal Coolant for stainless steel</p> <hr/> <p>22 = HP Drill for steel</p> <hr/> <p>25 = HP Drill Internal Coolant for cast iron</p> <hr/> <p>26 = HP Drill Internal Coolant</p> <hr/> <p>07 = Micro Deep-Hole Drills Internal Coolant</p> <hr/> <p>27 = Deep-Hole Drill Internal Coolant</p> <hr/> <p>28 = HP Drill Internal Coolant for non-ferrous materials</p> <hr/> <p>29 = Y-TECH™ Drill Internal Coolant for difficult-to-machine materials</p> <hr/> <p>34 = BF Drill Internal Coolant</p> <hr/> <p>41 = TX Drill Internal Coolant</p> <hr/> <p>42 = TX Light Drill Internal Coolant</p> <hr/> <p>50 = Non-Coolant Spotdrill</p> <hr/> <p>51 = SPF PCD Drill Internal Coolant</p> <hr/> <p>53 = SPF Drill</p> <hr/> <p>55 = DAL Drill</p> <hr/> <p>56 = DAL PCD Drill Internal Coolant</p> <hr/> <p>70 = Flat Bottom Drill Internal Coolant</p> <hr/> <p>72 = Step Drill</p> <hr/> <p>73 = Step Drill Internal Coolant</p> <hr/> <p>94 = Hard Drill</p> <hr/> <p>95 = Hard Drill Internal Coolant</p> <hr/> <p>96 = Kenna Universal™ Drill</p> <hr/> <p>97 = Kenna Universal Drill Internal Coolant</p>	<p>1 = 3 x D</p> <p>2 = 5 x D</p> <p>3 = 8 x D</p> <hr/> <p>8 = 2 x D</p> <hr/> <p>5 = 5 x D</p> <hr/> <p>0 = 3 x D</p> <p>1 = 5 x D</p> <p>2 = 8 x D</p> <hr/> <p>1 = 3 x D</p> <p>2 = 5 x D</p> <p>4 = 3 x D Internal Coolant</p> <p>5 = 5 x D Internal Coolant</p> <p>6 = 8 x D Internal Coolant</p> <hr/> <p>4 = 3 x D</p> <p>5 = 5 x D</p> <p>6 = 8 x D</p> <hr/> <p>9 = 12 x D</p> <hr/> <p>0 = 7 x D</p> <hr/> <p>1 = 15 x D</p> <p>2 = 20 x D</p> <p>3 = 25 x D</p> <p>4 = 30 x D</p> <p>5 = 40 x D</p> <p>6 = 50 x D</p> <hr/> <p>4 = 3 x D</p> <p>5 = 5 x D</p> <p>6 = 8 x D</p> <hr/> <p>1 = 3 x D</p> <p>2 = 5 x D</p> <hr/> <p>3 = Medium Length</p> <hr/> <p>1 = 5 x D</p> <hr/> <p>1 = 120°</p> <p>5 = 90°</p> <hr/> <p>1 = 3 x D</p> <p>2 = 5 x D</p> <p>6 = 3 x D Internal Coolant</p> <p>7 = 5 x D Internal Coolant</p> <hr/> <p>7 = 3 x D</p> <hr/> <p>1 = Short</p> <p>2 = Long</p> <hr/> <p>1 = 3 x D</p> <p>2 = 5 x D</p> <hr/> <p>6 = 3 x D</p> <p>7 = 5 x D</p> <p>8 = 8 x D</p> <p>9 = 12 x D</p>	<p>A = Straight Shank</p> <p>F = Whistle Notch™ Shank</p> <hr/> <p>Z = Straight Shank (1mm steps)</p> <hr/> <p>S = Straight Shank (1mm steps)</p> <p>H = Extended Shank for HIPACS</p>

KenDrill™ Deep HPR

Solid Carbide Deep-Hole Drilling



Materials



Applications



Drilling



Drilling:
Inclined Entry



Drilling:
Stacked Plate



Drilling:
Cross Hole

The new KenDrill Deep HPR improves on our existing range of solid carbide deep-hole drilling tools with its steel and iron capabilities.

A material-specific deep-hole drill, KenDrill Deep HPR is in stock and available in an extensive range of lengths and diameters.

Proven performance with our HPR drills geometry, featuring our heat- and wear-resistant KCK10A grade.

High productivity with speeds up to four times faster than conventional drills.

Longer tool life in steel and iron compared to competitors.

Bottom-line savings from increased metal removal rate.



15 x D



20 x D



25 x D



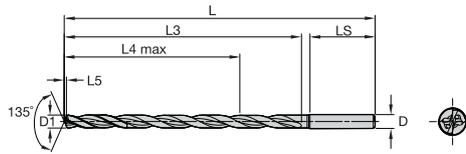
30 x D



40 x D

KenDrill™ Deep HPR • 15 x D • Internal Coolant™ • Straight Shank • Metric

NEW!



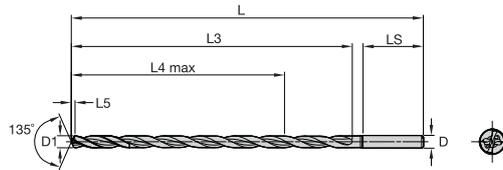
- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCK10A
7081612	B271Z02383KMR	2,38	.0938	—	—	86	51	44	0,4	30	3	●
7081613	B271Z02500KMR	2,50	.0984	—	—	86	51	44	0,5	30	3	●
7081614	B271Z02642KMR	2,64	.1040	—	—	86	51	44	0,5	30	3	●
7081615	B271Z02705KMR	2,71	.1065	—	36	86	52	45	0,5	30	3	●
7081616	B271Z02779KMR	2,78	.1094	1/9	—	86	52	45	0,5	30	3	●
7081617	B271Z02820KMR	2,82	.1110	—	—	86	52	45	0,5	30	3	●
7081618	B271Z03000KMR	3,00	.1181	—	—	86	52	45	0,6	30	3	●
7081619	B271Z03175KMR	3,18	.1250	1/8	—	105	67	58	0,6	32	4	●
7081620	B271Z03200KMR	3,20	.1260	—	—	105	67	58	0,6	32	4	●
7081631	B271Z03500KMR	3,50	.1378	—	—	105	68	59	0,7	32	4	●
7081632	B271Z03600KMR	3,60	.1417	—	—	105	68	59	0,7	32	4	●
7081633	B271Z03700KMR	3,70	.1457	—	—	105	69	60	0,7	32	4	●
7081634	B271Z03970KMR	3,97	.1563	1/6	—	105	70	60	0,8	32	4	●
7081635	B271Z04000KMR	4,00	.1575	—	—	105	70	60	0,8	32	4	●
7081636	B271Z04500HPR	4,50	.1772	—	—	124	85	74	1,5	34	5	●
7081637	B271Z04623HPR	4,62	.1820	—	14	124	86	75	1,5	34	5	●
7081638	B271Z04763HPR	4,76	.1875	1/5	—	124	86	75	1,6	34	5	●
7081639	B271Z04800HPR	4,80	.1890	—	—	124	86	75	1,6	34	5	●
7081640	B271Z05000HPR	5,00	.1969	—	—	124	87	75	1,7	34	5	●
7081641	B271Z05060HPR	5,06	.1992	—	—	143	101	88	1,7	36	6	●
7081642	B271Z05260HPR	5,26	.2071	—	—	143	102	89	1,8	36	6	●
7081643	B271Z05410HPR	5,41	.2130	—	3	143	102	89	1,8	36	6	●
7081644	B271Z05500HPR	5,50	.2165	—	—	143	102	89	1,8	36	6	●
7081645	B271Z05558HPR	5,56	.2188	—	—	143	102	89	1,9	36	6	●
7081646	B271Z05800HPR	5,80	.2283	—	—	143	103	89	1,9	36	6	●
7081647	B271Z05900HPR	5,90	.2323	—	—	143	103	89	2,0	36	6	●
7081648	B271Z06000HPR	6,00	.2362	—	—	143	104	90	2,0	36	6	●
7081649	B271Z06200HPR	6,20	.2441	—	—	162	118	103	2,1	38	7	●
7081650	B271Z06350HPR	6,35	.2500	1/4	E	162	119	104	2,1	38	7	●
7081651	B271Z06500HPR	6,50	.2559	—	—	162	119	104	2,2	38	7	●
7081652	B271Z06528HPR	6,53	.2570	—	F	162	119	104	2,2	38	7	●
7081653	B271Z06746HPR	6,75	.2656	1/4	—	162	120	104	2,3	38	7	●
7081654	B271Z06909HPR	6,91	.2720	—	I	162	121	105	2,3	38	7	●
7081655	B271Z07000HPR	7,00	.2756	—	—	162	121	105	2,3	38	7	●
7081656	B271Z07145HPR	7,15	.2813	2/7	—	181	135	118	2,4	40	8	●
7081657	B271Z07500HPR	7,50	.2953	—	—	181	136	119	2,5	40	8	●
7081658	B271Z07541HPR	7,54	.2969	—	—	181	136	119	2,5	40	8	●
7081659	B271Z07938HPR	7,94	.3125	1/3	—	181	138	120	2,7	40	8	●
7081660	B271Z08000HPR	8,00	.3150	—	—	181	138	120	2,7	40	8	●
7081661	B271Z08200HPR	8,20	.3228	—	—	200	152	133	2,7	42	9	●
7081662	B271Z08334HPR	8,33	.3281	—	—	200	153	134	2,8	42	9	●
7081663	B271Z08500HPR	8,50	.3346	—	—	200	153	134	2,8	42	9	●
7081664	B271Z08733HPR	8,73	.3438	—	—	200	154	134	2,9	42	9	●
7081667	B271Z09000HPR	9,00	.3543	—	—	200	155	135	3,0	42	9	●
7081668	B271Z09100HPR	9,10	.3583	—	—	219	169	148	3,0	44	10	●
7081669	B271Z09200HPR	9,20	.3622	—	—	219	169	148	3,1	44	10	●
7081670	B271Z09500HPR	9,50	.3740	—	—	219	170	149	3,2	44	10	●
7081671	B271Z09525HPR	9,53	.3750	3/8	—	219	170	149	3,2	44	10	●
7081672	B271Z09750HPR	9,75	.3839	—	—	219	171	149	3,3	44	10	●
7081673	B271Z10000HPR	10,00	.3937	—	—	219	172	150	3,3	44	10	●
7081674	B271Z10200HPR	10,20	.4016	—	—	238	186	163	3,4	46	11	●
7081675	B271Z10500HPR	10,50	.4134	—	—	238	187	164	3,5	46	11	●
7081676	B271Z10716HPR	10,72	.4219	—	—	238	188	165	3,6	46	11	●
7081677	B271Z10800HPR	10,80	.4252	—	—	238	188	164	3,6	46	11	●
7081678	B271Z11000HPR	11,00	.4331	—	—	238	189	165	3,7	46	11	●
7081680	B271Z11500HPR	11,50	.4528	—	—	257	204	179	3,8	48	12	●
7081691	B271Z12000HPR	12,00	.4724	—	—	257	206	180	4,0	48	12	●
7081692	B271Z12500HPR	12,50	.4921	—	—	276	221	194	4,2	50	13	●
7081694	B271Z12700HPR	12,70	.5000	1/2	—	276	222	195	4,2	50	13	●
7081695	B271Z13000HPR	13,00	.5118	—	—	276	223	195	4,3	50	13	●
7081696	B271Z13500HPR	13,50	.5315	—	—	295	238	209	4,5	52	14	●
7081697	B271Z14000HPR	14,00	.5512	—	—	295	240	210	4,7	52	14	●
7081698	B271Z14288HPR	14,29	.5625	4/7	—	314	255	224	4,8	54	15	●
7081699	B271Z14500HPR	14,50	.5709	—	—	314	255	224	4,8	54	15	●
7081700	B271Z15000HPR	15,00	.5906	—	—	314	257	225	5,0	54	15	●
7081711	B271Z15300HPR	15,30	.6024	—	—	333	272	239	5,1	56	16	●
7081712	B271Z15875HPR	15,88	.6250	5/8	—	333	273	240	5,3	56	16	●
7081713	B271Z16000HPR	16,00	.6299	—	—	333	274	240	5,4	56	16	●

KenDrill™ Deep HPR • 20 x D • Internal Coolant • Straight Shank • Metric

NEW!



- first choice
- alternate choice

P	●
M	●
K	●
N	●
S	●
H	●

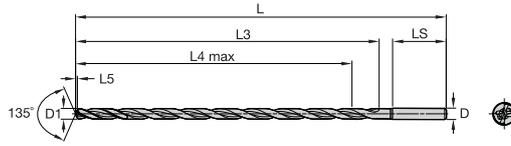
		D1										KCK10A
order number	catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	
7081716	B272Z02383KMR	2,38	.0938	—	—	101	63	56	0,4	30	3	●
7081717	B272Z02400KMR	2,40	.0945	—	—	101	63	56	0,4	30	3	●
7081718	B272Z02489KMR	2,49	.0980	—	40	101	63	56	0,5	30	3	●
7081719	B272Z02500KMR	2,50	.0984	—	—	101	63	56	0,5	30	3	●
7081720	B272Z02779KMR	2,78	.1094	1/9	—	101	66	59	0,5	30	3	●
7081731	B272Z03000KMR	3,00	.1181	—	—	101	67	60	0,6	30	3	●
7081732	B272Z03150KMR	3,15	.1240	—	—	125	83	74	0,6	32	4	●
7081733	B272Z03175KMR	3,18	.1250	1/8	—	125	83	74	0,6	32	4	●
7081734	B272Z03300KMR	3,30	.1299	—	—	125	84	75	0,6	32	4	●
7081735	B272Z03500KMR	3,50	.1378	—	—	125	86	77	0,7	32	4	●
7081736	B272Z03850KMR	3,85	.1516	—	—	125	88	79	0,7	32	4	●
7081737	B272Z03970KMR	3,97	.1563	1/6	—	125	89	79	0,8	32	4	●
7081738	B272Z04000KMR	4,00	.1575	—	—	125	90	80	0,8	32	4	●
7081739	B272Z04500HPR	4,50	.1772	—	—	149	108	97	1,5	34	5	●
7081740	B272Z04623HPR	4,62	.1820	—	14	149	109	98	1,5	34	5	●
7081741	B272Z04763HPR	4,76	.1875	1/5	—	149	110	99	1,6	34	5	●
7081742	B272Z05000HPR	5,00	.1969	—	—	149	112	100	1,7	34	5	●
7081744	B272Z05200HPR	5,20	.2047	—	—	173	127	114	1,7	36	6	●
7081745	B272Z05260HPR	5,26	.2071	—	—	173	128	115	1,8	36	6	●
7081746	B272Z05410HPR	5,41	.2130	—	3	173	129	116	1,8	36	6	●
7081747	B272Z05500HPR	5,50	.2165	—	—	173	130	117	1,8	36	6	●
7081748	B272Z05558HPR	5,56	.2188	—	—	173	130	117	1,9	36	6	●
7081749	B272Z05800HPR	5,80	.2283	—	—	173	132	118	1,9	36	6	●
7081750	B272Z06000HPR	6,00	.2362	—	—	173	134	120	2,0	36	6	●
7081771	B272Z06200HPR	6,20	.2441	—	—	197	149	134	2,1	38	7	●
7081772	B272Z06350HPR	6,35	.2500	1/4	E	197	151	136	2,1	38	7	●
7081774	B272Z06500HPR	6,50	.2559	—	—	197	152	137	2,2	38	7	●
7081775	B272Z06528HPR	6,53	.2570	—	F	197	152	137	2,2	38	7	●
7081776	B272Z06746HPR	6,75	.2656	1/4	—	197	154	138	2,3	38	7	●
7081777	B272Z06800HPR	6,80	.2677	—	—	197	154	138	2,3	38	7	●
7081778	B272Z06909HPR	6,91	.2720	—	I	197	155	139	2,3	38	7	●
7081779	B272Z07000HPR	7,00	.2756	—	—	197	156	140	2,3	38	7	●
7081780	B272Z07145HPR	7,15	.2813	2/7	—	221	171	154	2,4	40	8	●
7081781	B272Z07200HPR	7,20	.2835	—	—	221	171	154	2,4	40	8	●
7081782	B272Z07500HPR	7,50	.2953	—	—	221	174	157	2,5	40	8	●
7081783	B272Z07541HPR	7,54	.2969	—	—	221	174	157	2,5	40	8	●
7081784	B272Z07938HPR	7,94	.3125	1/3	—	221	177	159	2,7	40	8	●
7081785	B272Z08000HPR	8,00	.3150	—	—	221	178	160	2,7	40	8	●
7081786	B272Z08334HPR	8,33	.3281	—	—	245	194	175	2,8	42	9	●
7081787	B272Z08433HPR	8,43	.3320	—	Q	245	195	176	2,8	42	9	●
7081788	B272Z08500HPR	8,50	.3346	—	—	245	196	177	2,8	42	9	●
7081789	B272Z08733HPR	8,73	.3438	—	—	245	198	178	2,9	42	9	●
7081790	B272Z09000HPR	9,00	.3543	—	—	245	200	180	3,0	42	9	●
7081791	B272Z09100HPR	9,10	.3583	—	—	269	215	194	3,0	44	10	●
7081792	B272Z09500HPR	9,50	.3740	—	—	269	218	197	3,2	44	10	●
7081793	B272Z09525HPR	9,53	.3750	3/8	—	269	218	197	3,2	44	10	●
7081794	B272Z09750HPR	9,75	.3839	—	—	269	220	198	3,3	44	10	●
7081795	B272Z10000HPR	10,00	.3937	—	—	269	222	200	3,3	44	10	●
7081796	B272Z10200HPR	10,20	.4016	—	—	293	237	214	3,4	46	11	●
7081797	B272Z10500HPR	10,50	.4134	—	—	293	240	217	3,5	46	11	●
7081798	B272Z10716HPR	10,72	.4219	—	—	293	242	219	3,6	46	11	●
7081799	B272Z11000HPR	11,00	.4331	—	—	293	244	220	3,7	46	11	●
7081800	B272Z11500HPR	11,50	.4528	—	—	317	262	237	3,8	48	12	●
7081801	B272Z11800HPR	11,80	.4646	—	—	317	264	238	3,9	48	12	●
7081802	B272Z12000HPR	12,00	.4724	—	—	317	266	240	4,0	48	12	●
7081803	B272Z12500HPR	12,50	.4921	—	—	341	284	257	4,2	50	13	●
7081804	B272Z12700HPR	12,70	.5000	1/2	—	341	285	258	4,2	50	13	●
7081805	B272Z13000HPR	13,00	.5118	—	—	341	288	260	4,3	50	13	●
7081806	B272Z13100HPR	13,10	.5157	—	—	365	302	273	4,4	52	14	●
7081807	B272Z13500HPR	13,50	.5315	—	—	365	306	277	4,5	52	14	●
7081808	B272Z14000HPR	14,00	.5512	—	—	365	310	280	4,7	52	14	●
7081809	B272Z14500HPR	14,50	.5709	—	—	389	328	297	4,8	54	15	●
7081810	B272Z15000HPR	15,00	.5906	—	—	389	332	300	5,0	54	15	●
7081811	B272Z15500HPR	15,50	.6102	—	—	413	350	317	5,2	56	16	●
7081812	B272Z16000HPR	16,00	.6299	—	—	413	354	320	5,4	56	16	●

			
146-148	149	64-65	152

KenDrill™ Deep HPR • 25 x D • Internal Coolant • Straight Shank • Metric

NEW!

- first choice
- alternate choice



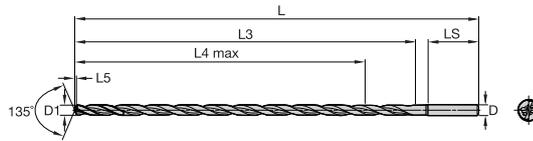
P	●
M	●
K	●
N	●
S	●
H	●

order number	catalog number	D1				L	L3	L4 max	L5	LS	D	KCK10A
		mm	in	fraction	wire size							
7081813	B273Z02383KMR	2,38	.0938	—	—	116	74	67	0,4	30	3	●
7081814	B273Z02500KMR	2,50	.0984	—	—	116	76	69	0,5	30	3	●
7081816	B273Z02600KMR	2,60	.1024	—	—	116	77	70	0,5	30	3	●
7081817	B273Z03000KMR	3,00	.1181	—	—	116	82	75	0,6	30	3	●
7081818	B273Z03175KMR	3,18	.1250	1/8	—	145	99	90	0,6	32	4	●
7081819	B273Z03500KMR	3,50	.1378	—	—	145	103	94	0,7	32	4	●
7081820	B273Z04000KMR	4,00	.1575	—	—	145	110	100	0,8	32	4	●
7081821	B273Z05000HPR	5,00	.1969	—	—	174	137	125	1,7	34	5	●
7081822	B273Z05100HPR	5,10	.2008	—	—	203	152	139	1,7	36	6	●
7081823	B273Z05500HPR	5,50	.2165	—	—	203	157	144	1,8	36	6	●
7081824	B273Z05800HPR	5,80	.2283	—	—	203	161	147	1,9	36	6	●
7081825	B273Z06000HPR	6,00	.2362	—	—	203	164	150	2,0	36	6	●
7081826	B273Z06350HPR	6,35	.2500	1/4	E	232	182	167	2,1	38	7	●
7081827	B273Z06500HPR	6,50	.2559	—	—	232	184	169	2,2	38	7	●
7081828	B273Z06746HPR	6,75	.2656	1/4	—	232	187	171	2,3	38	7	●
7081829	B273Z07000HPR	7,00	.2756	—	—	232	191	175	2,3	38	7	●
7081830	B273Z07500HPR	7,50	.2953	—	—	261	211	194	2,5	40	8	●
7081831	B273Z08000HPR	8,00	.3150	—	—	261	218	200	2,7	40	8	●
7081832	B273Z08500HPR	8,50	.3346	—	—	290	238	219	2,8	42	9	●
7081833	B273Z08733HPR	8,73	.3438	—	—	290	241	221	2,9	42	9	●
7081834	B273Z09000HPR	9,00	.3543	—	—	290	245	225	3,0	42	9	●
7081835	B273Z10000HPR	10,00	.3937	—	—	319	272	250	3,3	44	10	●
7081836	B273Z10200HPR	10,20	.4016	—	—	348	288	265	3,4	46	11	●
7081837	B273Z10500HPR	10,50	.4134	—	—	348	292	269	3,5	46	11	●
7081838	B273Z11000HPR	11,00	.4331	—	—	348	299	275	3,7	46	11	●
7081839	B273Z11500HPR	11,50	.4528	—	—	377	319	294	3,8	48	12	●
7081840	B273Z12000HPR	12,00	.4724	—	—	377	326	300	4,0	48	12	●
7081841	B273Z12500HPR	12,50	.4921	—	—	406	346	319	4,2	50	13	●
7081842	B273Z12700HPR	12,70	.5000	1/2	—	406	349	322	4,2	50	13	●
7081843	B273Z13000HPR	13,00	.5118	—	—	406	353	325	4,3	50	13	●
7081844	B273Z13500HPR	13,50	.5315	—	—	435	373	344	4,5	52	14	●
7081845	B273Z14000HPR	14,00	.5512	—	—	435	380	350	4,7	52	14	●
7081846	B273Z14288HPR	14,29	.5625	4/7	—	464	397	366	4,8	54	15	●
7081847	B273Z14500HPR	14,50	.5709	—	—	464	400	369	4,8	54	15	●
7081848	B273Z15000HPR	15,00	.5906	—	—	464	407	375	5,0	54	15	●
7081849	B273Z16000HPR	16,00	.6299	—	—	493	434	400	5,4	56	16	●

146-148	149	64-65	152

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order number	catalog number	D1		fraction	wire size	L	L3	L4 max	L5	LS	D	KCK10A
		mm	in									
7080419	B274Z02383KMR	2,38	.0938	—	—	131	86	79	0,4	30	3	●
7080420	B274Z02500KMR	2,50	.0984	—	—	131	88	81	0,5	30	3	●
7080421	B274Z02600KMR	2,60	.1024	—	—	131	90	83	0,5	30	3	●
7080422	B274Z02800KMR	2,80	.1102	—	—	131	94	87	0,5	30	3	●
7080423	B274Z03000KMR	3,00	.1181	—	—	131	97	90	0,6	30	3	●
7080424	B274Z03175KMR	3,18	.1250	1/8	—	165	115	106	0,6	32	4	●
7080425	B274Z03500KMR	3,50	.1378	—	—	165	121	112	0,7	32	4	●
7080426	B274Z03970KMR	3,97	.1563	1/6	—	165	129	119	0,8	32	4	●
7080427	B274Z04000KMR	4,00	.1575	—	—	165	130	120	0,8	32	4	●
7080428	B274Z04300HPR	4,30	.1693	—	—	199	149	138	1,4	34	5	●
7080429	B274Z04500HPR	4,50	.1772	—	—	199	153	142	1,5	34	5	●
7080430	B274Z04763HPR	4,76	.1875	1/5	—	199	157	146	1,6	34	5	●
7080431	B274Z05000HPR	5,00	.1969	—	—	199	162	150	1,7	34	5	●
7080432	B274Z05500HPR	5,50	.2165	—	—	233	185	172	1,8	36	6	●
7080433	B274Z05700HPR	5,70	.2244	—	—	233	188	175	1,9	36	6	●
7080434	B274Z06000HPR	6,00	.2362	—	—	233	194	180	2,0	36	6	●
7080435	B274Z06350HPR	6,35	.2500	1/4	E	267	214	199	2,1	38	7	●
7080436	B274Z06500HPR	6,50	.2559	—	—	267	217	202	2,2	38	7	●
7080437	B274Z06800HPR	6,80	.2677	—	—	267	222	206	2,3	38	7	●
7080438	B274Z07000HPR	7,00	.2756	—	—	267	226	210	2,3	38	7	●
7080439	B274Z07700HPR	7,70	.3031	—	—	301	252	235	2,6	40	8	●
7080440	B274Z07938HPR	7,94	.3125	1/3	—	301	257	239	2,7	40	8	●
7080441	B274Z08000HPR	8,00	.3150	—	—	301	258	240	2,7	40	8	●
7080442	B274Z08334HPR	8,33	.3281	—	—	335	278	259	2,8	42	9	●
7080443	B274Z08500HPR	8,50	.3346	—	—	335	281	262	2,8	42	9	●
7080444	B274Z08700HPR	8,70	.3425	—	—	335	284	264	2,9	42	9	●
7080445	B274Z09000HPR	9,00	.3543	—	—	335	290	270	3,0	42	9	●
7080446	B274Z09525HPR	9,53	.3750	3/8	—	369	313	292	3,2	44	10	●
7080447	B274Z10000HPR	10,00	.3937	—	—	369	322	300	3,3	44	10	●
7080448	B274Z10200HPR	10,20	.4016	—	—	403	339	316	3,4	46	11	●
7080449	B274Z10500HPR	10,50	.4134	—	—	403	345	322	3,5	46	11	●
7080450	B274Z10716HPR	10,72	.4219	—	—	403	349	326	3,6	46	11	●
7080451	B274Z11000HPR	11,00	.4331	—	—	403	354	330	3,7	46	11	●
7080452	B274Z11500HPR	11,50	.4528	—	—	437	377	352	3,8	48	12	●
7080453	B274Z11800HPR	11,80	.4646	—	—	437	382	356	3,9	48	12	●
7080454	B274Z12000HPR	12,00	.4724	—	—	437	386	360	4,0	48	12	●
7080455	B274Z12500HPR	12,50	.4921	—	—	471	409	382	4,2	50	13	●
7080456	B274Z12700HPR	12,70	.5000	1/2	—	471	412	385	4,2	50	13	●
7080457	B274Z13000HPR	13,00	.5118	—	—	471	418	390	4,3	50	13	●
7080458	B274Z13500HPR	13,50	.5315	—	—	505	441	412	4,5	52	14	●
7080459	B274Z14000HPR	14,00	.5512	—	—	505	450	420	4,7	52	14	●
7080460	B274Z15000HPR	15,00	.5906	—	—	539	482	450	5,0	54	15	●

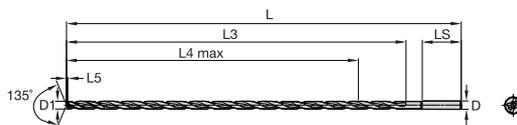
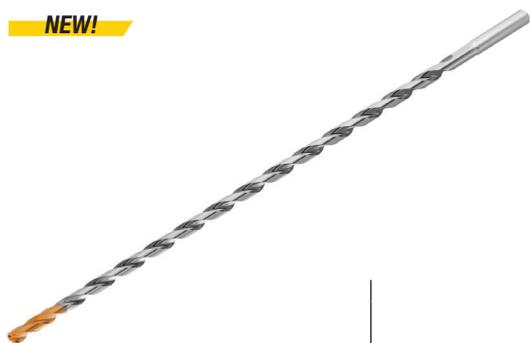
146-148	149	64-65	152

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order number	catalog number	mm	in	fraction	wire size	L	L3	L4 max	L5	LS	D	KCK10A
7080289	B275Z02500KMR	2,50	.0984	—	—	161	113	106	0,5	30	3	●
7080290	B275Z03000KMR	3,00	.1181	—	—	161	127	120	0,6	30	3	●
7080391	B275Z03175KMR	3,18	.1250	1/8	—	205	146	137	0,6	32	4	●
7080392	B275Z03500KMR	3,50	.1378	—	—	205	156	147	0,7	32	4	●
7080393	B275Z03571KMR	3,57	.1406	1/7	—	205	158	149	0,7	32	4	●
7080394	B275Z03970KMR	3,97	.1563	1/6	—	205	169	159	0,8	32	4	●
7080395	B275Z04000KMR	4,00	.1575	—	—	205	170	160	0,8	32	4	●
7080396	B275Z04200HPR	4,20	.1654	—	—	249	189	178	1,4	34	5	●
7080397	B275Z04500HPR	4,50	.1772	—	—	249	198	187	1,5	34	5	●
7080398	B275Z04763HPR	4,76	.1875	1/5	—	249	205	194	1,6	34	5	●
7080399	B275Z05000HPR	5,00	.1969	—	—	249	212	200	1,7	34	5	●
7080400	B275Z05500HPR	5,50	.2165	—	—	293	240	227	1,8	36	6	●
7080401	B275Z05558HPR	5,56	.2188	—	—	293	241	228	1,9	36	6	●
7080402	B275Z06000HPR	6,00	.2362	—	—	293	254	240	2,0	36	6	●
7080403	B275Z06350HPR	6,35	.2500	1/4	E	337	278	263	2,1	38	7	●
7080404	B275Z06500HPR	6,50	.2559	—	—	337	282	267	2,2	38	7	●
7080405	B275Z06800HPR	6,80	.2677	—	—	337	290	274	2,3	38	7	●
7080406	B275Z07000HPR	7,00	.2756	—	—	337	296	280	2,3	38	7	●
7080407	B275Z07145HPR	7,15	.2813	2/7	—	381	314	297	2,4	40	8	●
7080408	B275Z07500HPR	7,50	.2953	—	—	381	324	307	2,5	40	8	●
7080409	B275Z07938HPR	7,94	.3125	1/3	—	381	336	318	2,7	40	8	●
7080410	B275Z08000HPR	8,00	.3150	—	—	381	338	320	2,7	40	8	●
7080411	B275Z08500HPR	8,50	.3346	—	—	425	366	347	2,8	42	9	●
7080412	B275Z08733HPR	8,73	.3438	—	—	425	372	352	2,9	42	9	●
7080413	B275Z09000HPR	9,00	.3543	—	—	425	380	360	3,0	42	9	●
7080414	B275Z09525HPR	9,53	.3750	3/8	—	469	408	387	3,2	44	10	●
7080415	B275Z10000HPR	10,00	.3937	—	—	469	422	400	3,3	44	10	●
7080416	B275Z10200HPR	10,20	.4016	—	—	513	441	418	3,4	46	11	●
7080417	B275Z10320HPR	10,32	.4063	2/5	—	513	445	422	3,5	46	11	●
7080418	B275Z11000HPR	11,00	.4331	—	—	513	464	440	3,7	46	11	●

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KenDrill™ Deep HPR • Application Data • Metric

Material Group	Cutting Speed – vc m/min			Feed rate (f) = mm/r by diameter							
	Min	Starting Value	Max	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0
P											
0	100	100	125	0,13–0,15	0,14–0,16	0,15–0,21	0,19–0,26	0,21–0,31	0,26–0,36	0,30–0,41	0,34–0,46
1	90	100	110	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
2	90	100	110	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
3	80	95	110	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
4	80	90	110	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
5	60	80	90	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,12–0,22	0,14–0,24
6	60	70	80	0,03–0,11	0,04–0,11	0,05–0,11	0,05–0,14	0,08–0,18	0,11–0,21	0,12–0,22	0,14–0,24
K											
1	80	100	120	0,15–0,19	0,17–0,20	0,19–0,26	0,24–0,32	0,27–0,40	0,32–0,45	0,38–0,52	0,45–0,59
2	80	90	100	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54
3	60	90	120	0,15–0,18	0,16–0,19	0,18–0,25	0,22–0,30	0,25–0,37	0,30–0,42	0,35–0,48	0,40–0,54

KenDrill Deep HPR • Application Data • Inch

Material Group	Cutting Speed – vc SFM			Feed rate (f) = IPR by diameter							
	Min	Starting Value	Max	1/8	3/16	1/4	5/16	3/8	1/2	9/16	5/8
				.125	.188	.250	.313	.375	.500	.551	.625
P											
0	330	330	410	.005–.006	.006–.006	.006–.008	.008–.010	.008–.012	.010–.014	.012–.016	.013–.018
1	300	330	360	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
2	300	330	360	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
3	260	310	360	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
4	260	300	360	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
5	200	260	300	.001–.004	.002–.004	.002–.004	.002–.006	.003–.007	.004–.008	.005–.009	.006–.009
6	200	230	260	.001–.004	.002–.004	.002–.004	.002–.006	.003–.007	.004–.008	.005–.009	.006–.009
K											
1	260	330	390	.006–.008	.007–.008	.008–.010	.009–.013	.011–.016	.013–.018	.015–.021	.018–.023
2	260	300	330	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021
3	200	300	390	.006–.007	.006–.008	.007–.010	.009–.012	.010–.015	.012–.017	.014–.019	.016–.021



KenDrill™ Micro

Solid Carbide Deep-Hole Drilling

Materials



Applications



Drilling



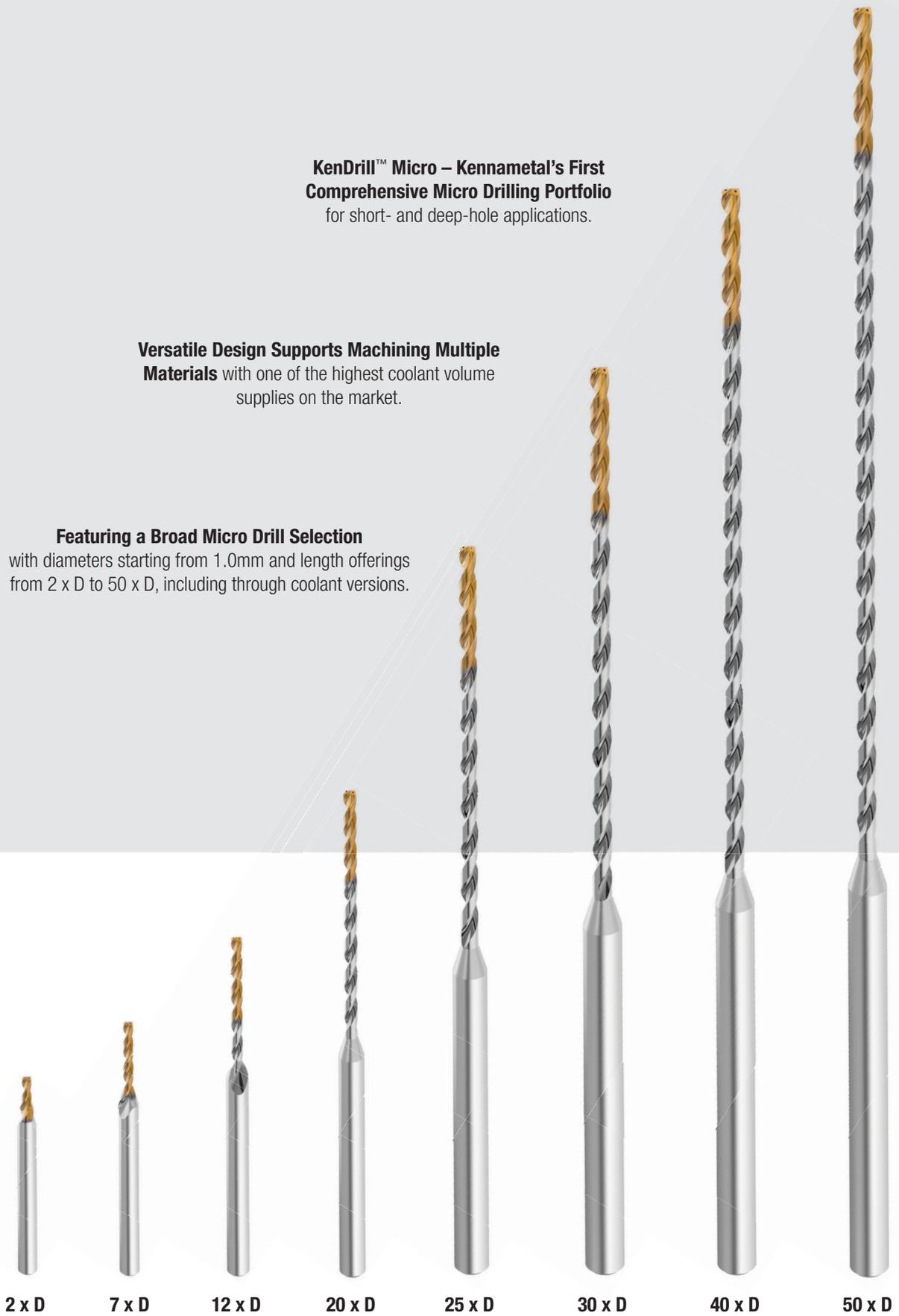
KenDrill Micro delivers powerful coolant supply to improve chip evacuation and avoid frustrating tool breakages. With a reliable drill design that reduces cutting forces and optimizes chip flow, you can expect process consistency.

KenDrill Micro supports machining many materials, providing versatility on the shop floor. This small diameter solid carbide drill will bring a new level of accuracy and longevity to small-part machining.

KenDrill™ Micro – Kennametal's First Comprehensive Micro Drilling Portfolio
for short- and deep-hole applications.

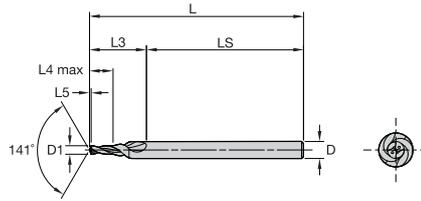
Versatile Design Supports Machining Multiple Materials with one of the highest coolant volume supplies on the market.

Featuring a Broad Micro Drill Selection
with diameters starting from 1.0mm and length offerings from 2 x D to 50 x D, including through coolant versions.



KenDrill™ Micro • 2 x D • Internal Coolant • Straight Shank • Metric

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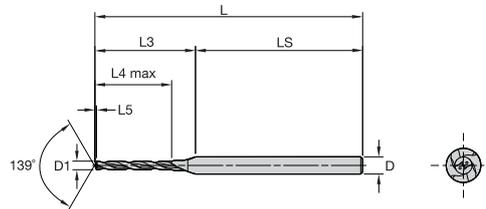
- first choice
- alternate choice

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		D1								D	KCUI10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7070756	B068A01000	1,00	.0394	50	9	2	0,2	41	4	●	
7070757	B068A01100	1,10	.0433	50	9	2	0,2	41	4	●	
7070758	B068A01200	1,20	.0472	50	10	3	0,2	41	4	●	
7070759	B068A01300	1,30	.0512	50	10	3	0,2	40	4	●	
7070760	B068A01400	1,40	.0551	50	10	3	0,2	40	4	●	
7070761	B068A01500	1,50	.0591	50	11	3	0,3	39	4	●	
7070762	B068A01600	1,60	.0630	50	11	4	0,3	39	4	●	
7070763	B068A01700	1,70	.0669	50	12	4	0,3	38	4	●	
7070764	B068A01800	1,80	.0709	50	12	4	0,3	38	4	●	
7070765	B068A01900	1,90	.0748	50	12	4	0,3	38	4	●	
7070766	B068A02000	2,00	.0787	50	13	4	0,4	37	4	●	
7070767	B068A02100	2,10	.0827	50	13	5	0,4	37	4	●	
7070768	B068A02200	2,20	.0866	50	14	5	0,4	36	4	●	
7070769	B068A02300	2,30	.0906	55	14	5	0,4	41	4	●	
7070770	B068A02400	2,40	.0945	55	15	5	0,4	40	4	●	
7070771	B068A02500	2,50	.0984	55	15	5	0,4	40	4	●	
7070772	B068A02600	2,60	.1024	55	16	6	0,5	40	4	●	
7070773	B068A02700	2,70	.1063	55	16	6	0,5	39	4	●	
7070774	B068A02800	2,80	.1102	55	16	6	0,5	39	4	●	
7070775	B068A02900	2,90	.1142	55	17	6	0,5	38	4	●	

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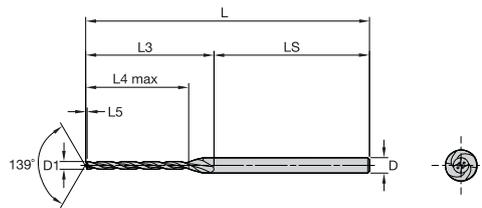
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K	○
N	○
S	●
H	○

		D1								D	KCUI10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7070643	B070A01000	1,00	.0394	55	14	7	0,2	41	4	●	
7070644	B070A01100	1,10	.0433	55	15	8	0,2	40	4	●	
7070645	B070A01200	1,20	.0472	55	16	9	0,2	40	4	●	
7070646	B070A01300	1,30	.0512	55	16	9	0,2	39	4	●	
7070647	B070A01400	1,40	.0551	55	17	10	0,3	38	4	●	
7070648	B070A01500	1,50	.0591	55	18	11	0,3	37	4	●	
7070649	B070A01600	1,60	.0630	57	19	12	0,3	38	4	●	
7070650	B070A01700	1,70	.0669	57	20	12	0,3	37	4	●	
7070661	B070A01800	1,80	.0709	59	21	13	0,3	38	4	●	
7070662	B070A01900	1,90	.0748	59	22	14	0,4	37	4	●	
7070663	B070A02000	2,00	.0787	62	23	14	0,4	39	4	●	
7070664	B070A02100	2,10	.0827	62	24	15	0,4	38	4	●	
7070665	B070A02200	2,20	.0866	62	25	16	0,4	37	4	●	
7070666	B070A02300	2,30	.0906	65	26	17	0,4	39	4	●	
7070667	B070A02400	2,40	.0945	65	27	17	0,4	38	4	●	
7070668	B070A02500	2,50	.0984	65	28	18	0,5	37	4	●	
7070669	B070A02600	2,60	.1024	65	29	19	0,5	37	4	●	
7070670	B070A02700	2,70	.1063	68	29	19	0,5	39	4	●	
7070681	B070A02800	2,80	.1102	68	30	20	0,5	38	4	●	
7070682	B070A02900	2,90	.1142	68	31	21	0,5	37	4	●	

146-148	149	64-65	152

KenDrill™ Micro • 12 x D • Internal Coolant • Straight Shank • Metric

NEW!



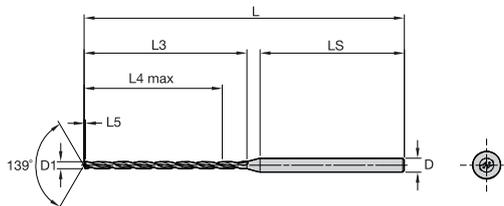
- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

order number	catalog number	mm	in	L	L3	L4 max	L5	LS	D	KCU10
7070685	B071A01000	1,00	.0394	58	19	12	0,2	39	4	●
7070686	B071A01100	1,10	.0433	58	20	13	0,2	38	4	●
7070687	B071A01200	1,20	.0472	60	22	15	0,2	39	4	●
7070688	B071A01300	1,30	.0512	60	23	16	0,2	37	4	●
7070689	B071A01400	1,40	.0551	63	24	17	0,3	39	4	●
7070690	B071A01500	1,50	.0591	63	26	18	0,3	37	4	●
7070701	B071A01600	1,60	.0630	66	27	20	0,3	39	4	●
7070702	B071A01700	1,70	.0669	66	29	21	0,3	37	4	●
7070703	B071A01800	1,80	.0709	69	30	22	0,3	39	4	●
7070704	B071A01900	1,90	.0748	69	32	23	0,4	38	4	●
7070705	B071A02000	2,00	.0787	73	33	24	0,4	40	4	●
7070706	B071A02100	2,10	.0827	73	34	26	0,4	39	4	●
7070707	B071A02200	2,20	.0866	73	36	27	0,4	37	4	●
7070708	B071A02300	2,30	.0906	78	37	28	0,4	41	4	●
7070709	B071A02400	2,40	.0945	78	39	29	0,4	39	4	●
7070710	B071A02500	2,50	.0984	78	40	31	0,5	38	4	●
7070711	B071A02600	2,60	.1024	78	42	32	0,5	37	4	●
7070712	B071A02700	2,70	.1063	83	43	33	0,5	40	4	●
7070713	B071A02800	2,80	.1102	83	44	34	0,5	39	4	●
7070714	B071A02900	2,90	.1142	83	46	35	0,5	37	4	●

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NEW!



- first choice
- alternate choice

P	●
M	●
K	○
N	○
S	●
H	○

order number	catalog number	mm	in	L	L3	L4 max	L5	LS	D	KCU10
7070776	B072A01000	1,00	.0394	67	23	20	0,2	38	4	●
7070777	B072A01100	1,10	.0433	67	26	22	0,2	36	4	●
7070778	B072A01200	1,20	.0472	71	28	24	0,2	38	4	●
7070779	B072A01300	1,30	.0512	71	30	26	0,2	36	4	●
7070780	B072A01400	1,40	.0551	75	33	28	0,3	38	4	●
7070801	B072A01500	1,50	.0591	75	35	30	0,3	36	4	●
7070802	B072A01600	1,60	.0630	79	37	32	0,3	37	4	●
7070803	B072A01700	1,70	.0669	79	39	34	0,3	35	4	●
7070804	B072A01800	1,80	.0709	84	42	36	0,3	38	4	●
7070805	B072A01900	1,90	.0748	84	44	38	0,4	36	4	●
7070806	B072A02000	2,00	.0787	91	46	40	0,4	41	4	●
7070807	B072A02100	2,10	.0827	91	49	42	0,4	39	4	●
7070808	B072A02200	2,20	.0866	91	51	44	0,4	37	4	●
7070809	B072A02300	2,30	.0906	98	53	46	0,4	42	4	●
7070810	B072A02400	2,40	.0945	98	56	48	0,4	39	4	●
7070811	B072A02500	2,50	.0984	98	58	51	0,5	37	4	●
7070812	B072A02600	2,60	.1024	98	60	53	0,5	35	4	●
7070813	B072A02700	2,70	.1063	107	63	55	0,5	42	4	●
7070814	B072A02800	2,80	.1102	107	65	57	0,5	40	4	●
7070815	B072A02900	2,90	.1142	107	67	59	0,5	38	4	●

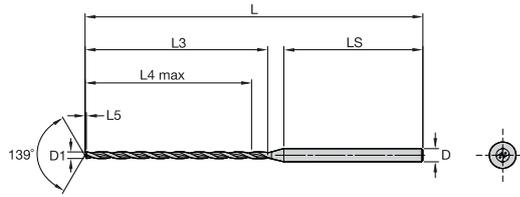
146-148	149	64-65	152



KenDrill™ Micro • 25 x D • Internal Coolant • Straight Shank • Metric

- first choice
- alternate choice

NEW!



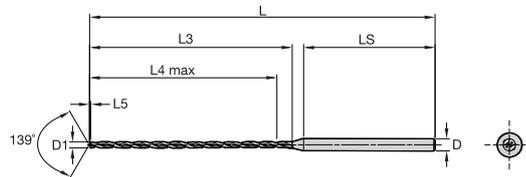
P	●
M	●
K	○
N	○
S	●
H	●

		D1								D	KCUI10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7071037	B073A01000	1,00	.0394	73	28	25	0,2	39	4	●	
7071038	B073A01100	1,10	.0433	73	31	28	0,2	37	4	●	
7071039	B073A01200	1,20	.0472	77	34	30	0,2	38	4	●	
7071040	B073A01300	1,30	.0512	77	37	33	0,2	35	4	●	
7071041	B073A01400	1,40	.0551	82	40	35	0,3	38	4	●	
7071042	B073A01500	1,50	.0591	82	42	38	0,3	35	4	●	
7071043	B073A01600	1,60	.0630	88	45	40	0,3	38	4	●	
7071044	B073A01700	1,70	.0669	88	48	43	0,3	36	4	●	
7071045	B073A01800	1,80	.0709	94	51	45	0,3	39	4	●	
7071046	B073A01900	1,90	.0748	94	54	48	0,4	37	4	●	
7071047	B073A02000	2,00	.0787	102	56	50	0,4	42	4	●	
7071048	B073A02100	2,10	.0827	102	59	53	0,4	39	4	●	
7071049	B073A02200	2,20	.0866	102	62	55	0,4	37	4	●	
7071050	B073A02300	2,30	.0906	111	65	58	0,4	43	4	●	
7071051	B073A02400	2,40	.0945	111	68	60	0,4	40	4	●	
7071052	B073A02500	2,50	.0984	111	71	63	0,5	38	4	●	
7071053	B073A02600	2,60	.1024	111	73	66	0,5	35	4	●	
7071054	B073A02700	2,70	.1063	122	76	68	0,5	44	4	●	
7071055	B073A02800	2,80	.1102	122	79	71	0,5	41	4	●	
7071056	B073A02900	2,90	.1142	122	82	73	0,5	38	4	●	

KenDrill Micro • 30 x D • Internal Coolant • Straight Shank • Metric

- first choice
- alternate choice

NEW!



P	●
M	●
K	○
N	○
S	●
H	●

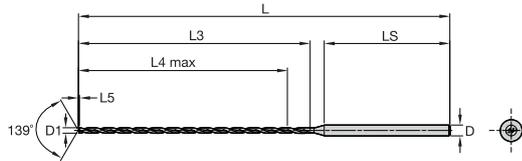
		D1								D	KCUI10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7070857	B074A01000	1,00	.0394	79	33	30	0,2	40	4	●	
7070858	B074A01100	1,10	.0433	79	37	33	0,2	37	4	●	
7070859	B074A01200	1,20	.0472	84	40	36	0,2	39	4	●	
7070860	B074A01300	1,30	.0512	84	43	39	0,2	36	4	●	
7071021	B074A01400	1,40	.0551	90	47	42	0,3	39	4	●	
7071022	B074A01500	1,50	.0591	90	50	45	0,3	36	4	●	
7071023	B074A01600	1,60	.0630	99	53	48	0,3	41	4	●	
7071024	B074A01700	1,70	.0669	99	56	51	0,3	38	4	●	
7071025	B074A01800	1,80	.0709	104	60	54	0,3	40	4	●	
7071026	B074A01900	1,90	.0748	104	63	57	0,4	37	4	●	
7071027	B074A02000	2,00	.0787	113	66	60	0,4	43	4	●	
7071028	B074A02100	2,10	.0827	113	70	63	0,4	40	4	●	
7071029	B074A02200	2,20	.0866	113	73	66	0,4	37	4	●	
7071030	B074A02300	2,30	.0906	124	76	69	0,4	45	4	●	
7071031	B074A02400	2,40	.0945	124	80	72	0,4	41	4	●	
7071032	B074A02500	2,50	.0984	124	83	76	0,5	38	4	●	
7071033	B074A02600	2,60	.1024	124	86	79	0,5	35	4	●	
7071034	B074A02700	2,70	.1063	137	90	82	0,5	45	4	●	
7071035	B074A02800	2,80	.1102	137	93	85	0,5	42	4	●	
7071036	B074A02900	2,90	.1142	137	96	88	0,5	39	4	●	

146-148	149	64-65	152

KenDrill™ Micro • 40 x D • Internal Coolant • Straight Shank • Metric

NEW!

- first choice
- alternate choice



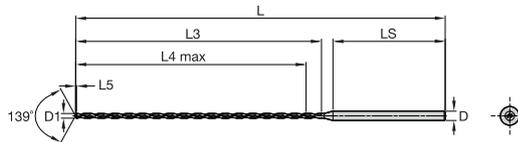
P	●
M	●
K	○
N	○
S	●
H	●

		D1								D	KCUT10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7071017	B075A01000	1,00	.0394	90	43	40	0,2	41	4	●	
7071018	B075A01100	1,10	.0433	90	48	44	0,2	37	4	●	
7071019	B075A01200	1,20	.0472	97	52	48	0,2	40	4	●	
7071020	B075A01300	1,30	.0512	97	56	52	0,2	36	4	●	
7071061	B075A01400	1,40	.0551	105	61	56	0,3	40	4	●	
7071062	B075A01500	1,50	.0591	105	65	60	0,3	36	4	●	
7071063	B075A01600	1,60	.0630	113	69	64	0,3	39	4	●	
7071064	B075A01700	1,70	.0669	113	73	68	0,3	35	4	●	
7071065	B075A01800	1,80	.0709	123	78	72	0,3	41	4	●	
7071066	B075A01900	1,90	.0748	123	82	76	0,4	37	4	●	
7071067	B075A02000	2,00	.0787	136	86	80	0,4	46	4	●	
7071068	B075A02100	2,10	.0827	136	91	84	0,4	42	4	●	
7071069	B075A02200	2,20	.0866	136	95	88	0,4	38	4	●	
7071070	B075A02300	2,30	.0906	150	99	92	0,4	48	4	●	
7071071	B075A02400	2,40	.0945	150	104	96	0,4	43	4	●	
7071072	B075A02500	2,50	.0984	150	108	101	0,5	39	4	●	
7071073	B075A02600	2,60	.1024	150	112	105	0,5	35	4	●	
7071074	B075A02700	2,70	.1063	167	117	109	0,5	48	4	●	
7071075	B075A02800	2,80	.1102	167	121	113	0,5	44	4	●	
7071076	B075A02900	2,90	.1142	167	125	117	0,5	40	4	●	

KenDrill Micro • 50 x D • Internal Coolant • Straight Shank • Metric

NEW!

- first choice
- alternate choice



P	●
M	●
K	○
N	○
S	●
H	●

		D1								D	KCUT10
order number	catalog number	mm	in	L	L3	L4 max	L5	LS			
7071077	B076A01000	1,00	.0394	102	53	50	0,2	43	4	●	
7071078	B076A01500	1,50	.0591	120	80	75	0,3	36	4	●	
7071079	B076A02000	2,00	.0787	158	106	100	0,4	48	4	●	
7071080	B076A02500	2,50	.0984	176	133	126	0,5	40	4	●	

146-148	149	64-65	152

KenDrill™ Micro • Application Data • Metric

Material Group	Cutting Speed – vc m/min			Feed rate (f) = mm/r by diameter				
	Min	Starting Value	Max	1,0	1,5	2,0	2,5	2,9
P								
0	30	65	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
1	30	65	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
2	30	65	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
3	30	65	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
4	30	65	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
5	20	60	100	0,015–0,030	0,020–0,045	0,025–0,060	0,030–0,075	0,034–0,087
6	20	60	100	0,015–0,030	0,020–0,045	0,025–0,060	0,030–0,075	0,034–0,087
M								
1	20	60	100	0,010–0,030	0,015–0,045	0,020–0,060	0,025–0,075	0,029–0,087
2	20	60	100	0,010–0,030	0,015–0,045	0,020–0,060	0,025–0,075	0,029–0,087
3	20	60	100	0,010–0,030	0,015–0,045	0,020–0,060	0,025–0,075	0,029–0,087
K								
1	40	70	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
2	40	70	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
3	40	70	100	0,020–0,040	0,030–0,050	0,040–0,080	0,050–0,100	0,058–0,116
N								
1	100	140	180	0,020–0,060	0,030–0,075	0,040–0,100	0,050–0,130	0,058–0,145
2	100	140	180	0,020–0,060	0,030–0,075	0,040–0,100	0,050–0,130	0,058–0,145
3	100	140	180	0,020–0,060	0,030–0,075	0,040–0,100	0,050–0,130	0,058–0,145
4	100	140	180	0,020–0,060	0,030–0,075	0,040–0,100	0,050–0,130	0,058–0,145
S								
1	10	30	50	0,010–0,020	0,015–0,030	0,020–0,040	0,025–0,050	0,029–0,058
2	10	30	50	0,010–0,020	0,015–0,030	0,020–0,040	0,025–0,050	0,029–0,058
3	10	30	50	0,010–0,020	0,015–0,030	0,020–0,040	0,025–0,050	0,029–0,058
4	10	30	50	0,010–0,030	0,015–0,045	0,020–0,060	0,025–0,075	0,029–0,087

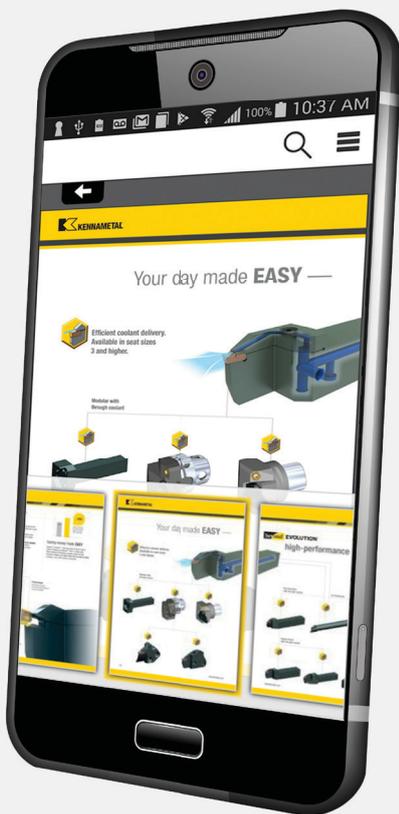
KenDrill Micro • Application Data • Inch

Material Group	Cutting Speed – vc SFM			Feed rate (f) = IPR by diameter				
	Min	Starting Value	Max	.039	.059	.079	.098	.114
P								
0	100	210	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
1	100	210	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
2	100	210	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
3	100	210	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
4	100	210	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
5	70	200	330	.0006–.0012	.0008–.0018	.0010–.0024	.0012–.0030	.0013–.0034
6	70	200	330	.0006–.0012	.0008–.0018	.0010–.0024	.0012–.0030	.0013–.0034
M								
1	70	200	330	.0004–.0012	.0006–.0018	.0008–.0024	.0010–.0030	.0011–.0034
2	70	200	330	.0004–.0012	.0006–.0018	.0008–.0024	.0010–.0030	.0011–.0034
3	70	200	330	.0004–.0012	.0006–.0018	.0008–.0024	.0010–.0030	.0011–.0034
K								
1	130	230	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
2	130	230	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
3	130	230	330	.0008–.0016	.0012–.0020	.0016–.0031	.0020–.0039	.0023–.0046
N								
1	330	460	590	.0008–.0024	.0012–.0030	.0016–.0039	.0020–.0051	.0023–.0057
2	330	460	590	.0008–.0024	.0012–.0030	.0016–.0039	.0020–.0051	.0023–.0057
3	330	460	590	.0008–.0024	.0012–.0030	.0016–.0039	.0020–.0051	.0023–.0057
4	330	460	590	.0008–.0024	.0012–.0030	.0016–.0039	.0020–.0051	.0023–.0057
S								
1	30	100	160	.0004–.0008	.0006–.0012	.0008–.0016	.0010–.002	.0011–.0023
2	30	100	160	.0004–.0008	.0006–.0012	.0008–.0016	.0010–.002	.0011–.0023
3	30	100	160	.0004–.0008	.0006–.0012	.0008–.0016	.0010–.002	.0011–.0023
4	30	100	160	.0004–.0012	.0006–.0018	.0008–.0024	.0010–.003	.0011–.0034

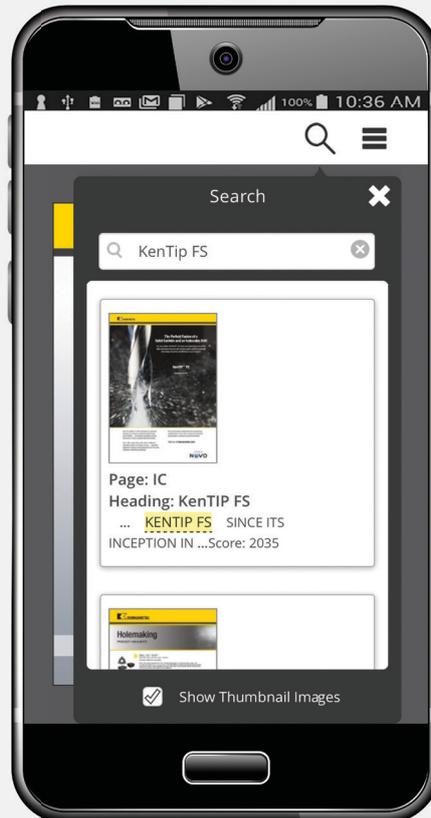


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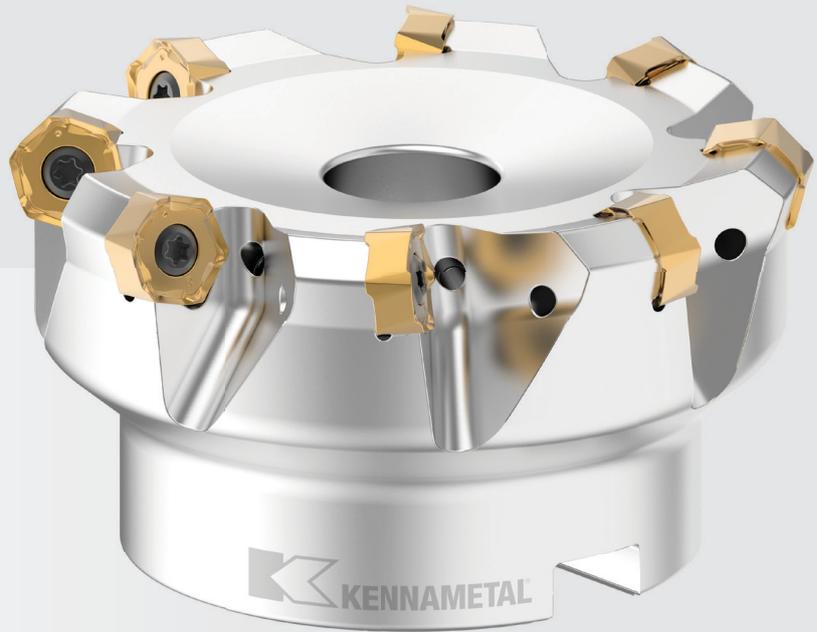
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Dodeka™ Series

Face Milling



Materials



Applications



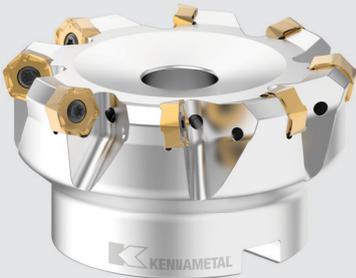
Face Milling

Dodeka Mini, Dodeka, and Dodeka MAX™ face milling platforms are the most comprehensive face milling boosters on the market today. Twelve true cutting edges per insert mean low cost-per-edge and high productivity.

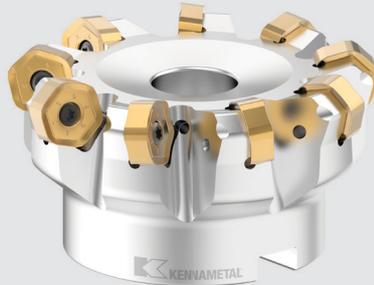
With Beyond™ premium milling grades, achieve up to 30% higher metal removal rates (MRR), 25% lower cutting forces due to soft cutting action, and up to 35% better tool life in light to heavy machining.

Twelve true cutting edges per insert.

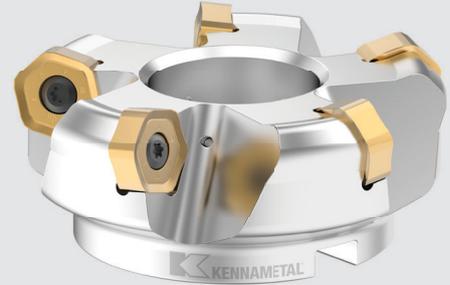
Dodeka™ Mini



Dodeka



Dodeka MAX™



Excellent floor finish.

Low cutting forces, soft cutting action.

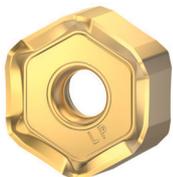
Best-in-class insert geometry/grade combinations to machine steel, stainless steel, and high-temp alloys.

Elevated machining capabilities.

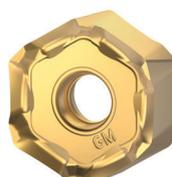
Enhanced chip formation and evacuation.

NEW!

High positive geometries.



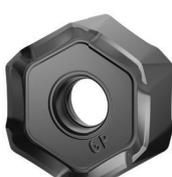
LP Geometry:
Light Machining of Steels



GM Geometry:
Medium Machining of Stainless Steels



LM Geometry:
Light Machining of Stainless Steels



GP Geometry:
Medium Machining of Steels

Face Milling • Tool Selection Guide

	Dodeka™ Mini HighFeed 75°	Dodeka Mini 45°	Dodeka Mini 30°	Dodeka HighFeed 75°	Dodeka 45°
					
Page	94	98-99	105	109	113
Main operation					
Workpiece materials					
Primary	P M K N S	P M K N S			
Secondary					
Approach angle [KRA]	75°	45°	30°	75°	45°
Cutting diameter [D1]	1.0-3.0"	1.0-5.0"	1.5-5.0"	2.0-6.0"	2.0-12.0"
Cutting diameter [D1 max]	1.518-3.517"	1.322-5.320"	1.750-5.429"	2.746-6.748"	2.434-12.433"
Maximum cutting depth [Ap1 max]	.064"	.127"	.171"	.087"	.177"
Cutting edges per insert	12	3*/12	12	12	3*/12
Insert size IC	.472"	.472"	.472"	.625"	.625"
Insert corner nose radius	.039-.126"	.039-.126"	.039-.126"	.047-.171"	.047-.171"
Axial adjustable pocket seats (Y/N)	N	N	N	N	N
Internal coolant	Y	Y	Y	Y	Y
Connection style machine side (CSMS)					
Fits regular shell mill adapters	Y	Y	Y	Y	Y

*True Wiper Insert

Face Milling • Tool Selection Guide

	Dodeka MAX™ 45°	KSOM Mini	KSOM	KSSM8+ IC10	KSSM8+ IC12
					
Page	119	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Main operation					
Workpiece materials					
Primary	P M K S	P M K N S	P M K N S	P M K S	P M K S
Secondary					
Approach angle [KRA]	45°	47°	47°	2°	3°
Cutting diameter [D1]	3.0–10.0"	1.250–5.0"	2.0–6.0"	2.0–4.0"	2.0–6.0"
Cutting diameter [D1 max]	3.682–10.682"	1.610–5.340"	2.945–6.431"	2.025–4.025"	2.045–6.045"
Maximum cutting depth [Ap1 max]	.315"	.138"	.197"/.460"	.361"	.467"
Cutting edges per insert	12	8	8	8	8
Insert size IC	.875"	.579"	.736"	.394"	.500"
Insert corner nose radius	.047–.138"	.031"	.047"	.031–.047"	.031–.063"
Axial adjustable pocket seats (Y/N)	N	N	N	N	N
Internal coolant	Y	Y	Y	Y	Y
Connection style machine side (CSMS)					
Fits regular shell mill adapters	Y	Y	Y	Y	Y

*True Wiper Insert

Face Milling • Tool Selection Guide

	Fix-Perfect™ 20° IC12	Fix-Perfect 0° IC12	Mill 16 Screw Clamping	Mill 16 Wedge Clamping	Mill 16 Split Case Design
					
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Main operation					
Workpiece materials					
Primary	K	K	K	K	K
Secondary					
Approach angle [KRA]	20°	0°	46.5°	46.5°	46.5°
Cutting diameter [D1]	2.0–10.0"	2.0–6.0"	2.0–10.0"	2.0–10.0"	12.0–20.0"
Cutting diameter [D1 max]	—	—	2.5–10.5"	2.5–10.5"	12.5–20.5"
Maximum cutting depth [Ap1 max]	.232–.256"	.236"	.220"	.215"	.215"
Cutting edges per insert	1 ³ / ₈	1 ³ / ₈	16	16	16
Insert size IC	.449"	.449"	.787"	.787"	.787"
Insert corner nose radius	—	—	.031–.118"	.031–.118"	.031–.118"
Axial adjustable pocket seats (Y/N)	Y, N	Y, N	N	N	N
Internal coolant	Y	Y	Y	Y	N
Connection style machine side (CSMS)					KMT Split Case Design
Fits regular shell mill adapters	Y	Y	Y	Y	KMT Split Case Design

*True Wiper Insert

Face Milling • Tool Selection Guide

	KSSR6	KCFM™ 45 Fine Finisher
		
Page	kennametal.com	kennametal.com
Main operation		
Workpiece materials		
Primary	K	K
Secondary		
Approach angle [KRA]	6°	45°
Cutting diameter [D1]	2.5–4.0"	3.0–10.0"
Cutting diameter [D1 max]	2.6–4.1"	3.394–10.394"
Maximum cutting depth [Ap1 max]	.200"	.040"
Cutting edges per insert	1*/8	4*/6
Insert size IC	.500"	.500"
Insert corner nose radius	.047–.063"	.031"
Axial adjustable pocket seats (Y/N)	N	Y
Internal coolant	N	Y
Connection style machine side (CSMS)		
Fits regular shell mill adapters	Y	Y

*True Wiper Insert

Face Milling • Tool Selection Guide

	KBDM	FixPerfect™ AL M Line	FixPerfect AL PM Line	FixPerfect AL HPM Line
				
Page	kennametal.com	kennametal.com	kennametal.com	kennametal.com
Main operation				
Workpiece materials				
Primary	N	N	N	N
Secondary				
Approach angle [KRA]	0°	0°	0°	0°
Cutting diameter [D1]	2.5–8.0"	2.0–6.0"	1.5–6.0"	2.5–3.0"
Cutting diameter [D1 max]	—	—	—	—
Maximum cutting depth [Ap1 max]	.100–.500"	.374"	.374"	.374"
Cutting edges per insert	1	1	1	1
Insert size IC	.625"	.591"	.591"	.591"
Insert corner nose radius	.031–.093"	.016–.059"	.016–.059"	.016–.059"
Axial adjustable pocket seats (Y/N)	Y	N	Y	Y
Internal coolant	Y	Y	Y	Y
Connection style machine side (CSMS)				
Fits regular milling adapters	Y	Y	Y	Y

*True Wiper Insert

Face Milling • Tool Selection Guide

	MEGA45
	
Page	kennametal.com
Main operation	
Workpiece materials	
Primary	P M K S
Secondary	
Approach angle [KRA]	45°
Cutting diameter [D1]	5.0–12.0"
Cutting diameter [D1 max]	6.391–13.392"
Maximum cutting depth [Ap1 max]	.675"
Cutting edges per insert	4
Insert size IC	1.142"
Insert corner nose radius	.047"
Axial adjustable pocket seats (Y/N)	N
Internal coolant	N
Connection style machine side (CSMS)	
Fits regular milling adapters	Y

*True Wiper Insert

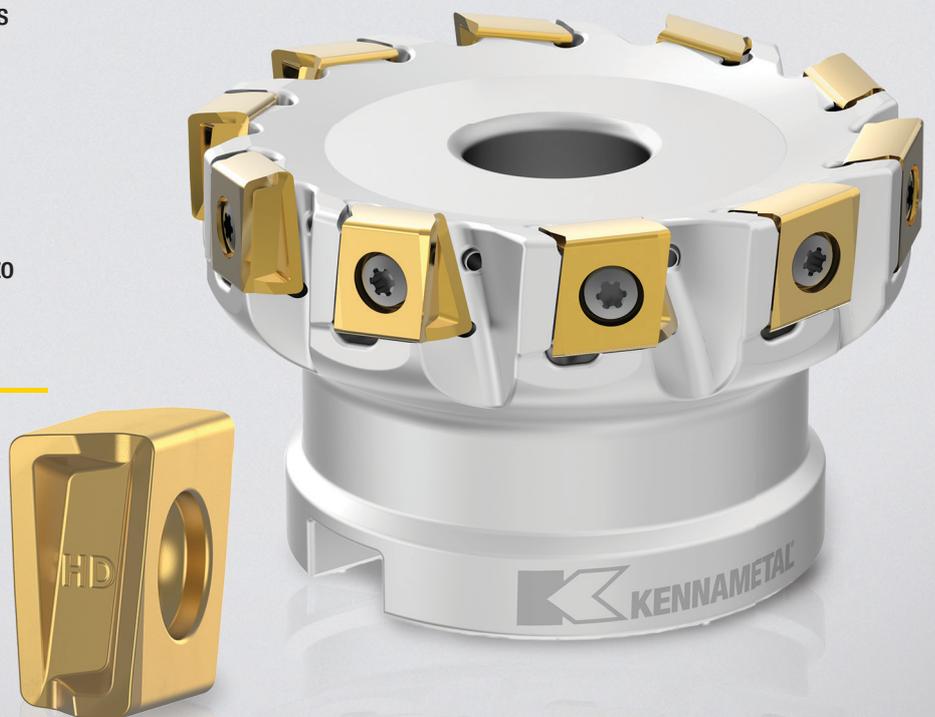
Mill 4™ -12KT

Tangential Shoulder Milling

Kennametal's Mill 4-12KT requires up to 15% less horsepower, enabling increased feed rates even on 40 taper machines. Its proprietary insert design features a triangular shaped margin that provides unprecedented stability in steel and cast-iron applications and its minimal axial runout delivers excellent floor finish. With seven grades, seven corner radii and a depth-of-cut range up to .472" (12mm), the Mill 4-12KT can bring new versatility to your shoulder milling applications.

Machinists can expect:

- A proprietary insert design that delivers unprecedented stability in steel and cast-iron applications
- A comprehensive portfolio that offers a wide range of standard inch and metric sizes
- **NEW!** HD geometry and fine pitch cutters to further enhance performance



Milling Tool Bodies • Catalog Numbering System

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

End Mills

KSHR	HF	100	D	02	C	075	HN43	L480
Series	Series Features	Cutting Diameter D1	Tool Type	Number of Inserts	Connection Style Machine Side (CSMS)	Shank Diameter	Insert Style and IC	Tool Length
KSHR = Dodeka™	HF = High Feed Cutter Blank: 45° Lead Angle	D1 in decimal inch	D = End Mill		C = Cylindrical Shank W = Weldon® Shank M = Metric Thread	D in decimal inch		

Shell Mills

KSHR	HF	200	HN43	45	M	3
Series	Series Features	Cutting Diameter D1	Insert Style and IC	Lead Angle	Cutter Density	Pilot Hole Size
KSHR = Dodeka	HF = High Feed Cutter, 75° Lead Angle HD = 30° Lead Angle	D1 in decimal inch			XC = Extra Coarse Pitch C = Coarse Pitch M = Medium Pitch F = Fine Pitch	2 = 1/2" 3 = 3/4" 4 = 4/4"

Milling Inserts • Catalog Numbering System

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

HNGJ535ENLD

H	N	G	J	5	3																														
Insert Shape	Insert Clearance Angle	Tolerance Class	Geometry and Clamping Type	Size	Thickness																														
<p>A Parallelogram 85°</p>	<p>A 3°</p>	<p>Indexable inserts with facets/wipers</p>		<table border="1"> <thead> <tr> <th>A</th> <th>symbol</th> </tr> </thead> <tbody> <tr><td>1.000</td><td>8</td></tr> <tr><td>.750</td><td>6</td></tr> <tr><td>.625</td><td>5</td></tr> <tr><td>.500</td><td>4</td></tr> <tr><td>.375</td><td>3</td></tr> <tr><td>.250</td><td>2</td></tr> </tbody> </table> <p>inscribed circle "A"</p> <p>For shapes A, L, and X, see position #1; use length of leading cutting edge in increments of 1/4".</p>	A	symbol	1.000	8	.750	6	.625	5	.500	4	.375	3	.250	2	<p>insert thickness</p> <table border="1"> <thead> <tr> <th>T</th> <th>in 1/16"</th> </tr> </thead> <tbody> <tr><td>.0938</td><td>1.5</td></tr> <tr><td>.125</td><td>2</td></tr> <tr><td>.1562</td><td>2.5</td></tr> <tr><td>.1875</td><td>3</td></tr> <tr><td>.2188</td><td>3.5</td></tr> <tr><td>.2500</td><td>4</td></tr> <tr><td>.3125</td><td>5</td></tr> </tbody> </table>	T	in 1/16"	.0938	1.5	.125	2	.1562	2.5	.1875	3	.2188	3.5	.2500	4	.3125	5
A	symbol																																		
1.000	8																																		
.750	6																																		
.625	5																																		
.500	4																																		
.375	3																																		
.250	2																																		
T	in 1/16"																																		
.0938	1.5																																		
.125	2																																		
.1562	2.5																																		
.1875	3																																		
.2188	3.5																																		
.2500	4																																		
.3125	5																																		
<p>C Rhomboid 80°</p>	<p>B 5°</p>	<p>Indexable inserts with corner radii</p>																																	
<p>E 75°</p>	<p>C 7°</p>																																		
<p>H Hexagon 120°</p>	<p>D 15°</p>																																		
<p>L Rectangular 90°</p>	<p>E 20°</p>																																		
<p>O Octagon 135°</p>	<p>F 25°</p>																																		
<p>R Round</p>	<p>G 30°</p>																																		
<p>S Square 90°</p>	<p>N 0°</p>																																		
<p>T Triangular 60°</p>	<p>P 11°</p>																																		
<p>X Kennametal Standard Form</p>																																			

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

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

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

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

Milling Inserts • Catalog Numbering System

(continued)

HNGJ535ENLD

5

Corner Configuration

E

Cutting Edge Form

F

Sharp

E

Honed

T

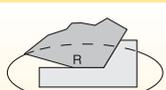
T-land

S

Honed T-land

N

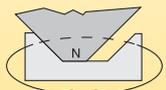
Insert Hand



direction of cutter rotation



direction of cutter rotation



direction of cutter rotation

-

Facet Width

L

Edge Prep Size

D

Rake Face Angle

Added Info

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

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

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

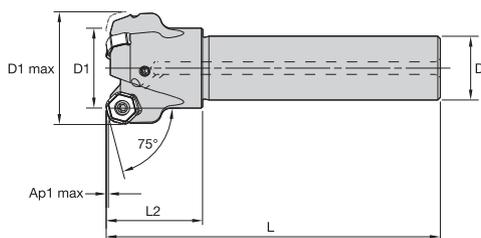
radius			
0	.004	If letter is replaced by number(s), refer to table for radius "r".	wiper edge clearance P
0.5	.008		A 3°
1	1/64		B 5°
2	1/32	lead angle K	C 7°
3	3/64	A 45°	D 15°
4	1/16	D handed 30°	E 20°
5	5/64	K neutral 30°	F 25°
6	3/32	E handed 15°	G 30°
7	7/64	L neutral 15°	N 0°
8	1/8	P 0°	P 11°

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

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

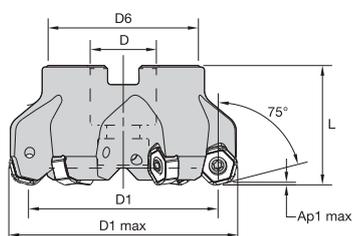
Nominal or average angle of rake on insert face at leading cutting edge before edge prep and before installation.

Dodeka™ Mini High-Feed 75° • End Mill • Cylindrical Shank • Inch



order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4136407	KSHRHF100D02C075HN43L480	1.000	1.518	.750	4.800	1.250	.064	2	.73	19800
4136408	KSHRHF100D03C075HN43L480	1.000	1.518	.750	4.800	1.250	.064	3	.69	19800
4136410	KSHRHF125D04C100HN43L520	1.250	1.768	1.000	5.200	1.500	.065	4	1.28	17600

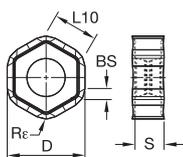
Dodeka Mini High-Feed 75° • Shell Mill • Inch



order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136411	KSHRHF150HN43F3	1.500	2.018	.750	1.750	1.575	.065	5	.75	16700
4136412	KSHRHF200HN43M3	2.000	2.517	.750	1.750	1.575	.065	5	1.10	12500
4136413	KSHRHF250HN43M3	2.500	3.017	.750	1.750	1.575	.065	6	1.49	10000
4136414	KSHRHF300HN43M4	3.000	3.517	1.000	2.189	1.750	.065	8	2.21	8300

			
146-148	149	91-93	152

Dodeka™ Mini • Carbide Insert • HNGJ-LDJ • Light Machining of Aluminum

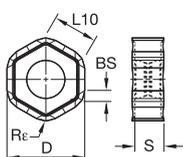


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in												
HNGJ0604ANFNLDJ	HNGJ43ANFNLDJ	12	.472	1,54	.061	6,44	.254	1,0	.039	4,48	.177	0,02	.001	12	●	●	-	-	-	-	-	-	-	-	-

Dodeka Mini • Carbide Insert • HNGJ-LD • Light Machining

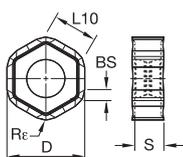


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in												
HNGJ0604ANENLD	HNGJ43ANENLD	12	.472	1,52	.060	6,44	.254	1,0	.039	4,48	.176	0,04	.002	12	-	-	●	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	HNGJ438ANENLD	12	.472	-	-	6,43	.253	3,2	.126	4,48	.177	0,05	.002	12	-	-	-	-	-	-	-	-	-	-	-

Dodeka Mini • Carbide Insert • HNPJ-GD • Medium Machining



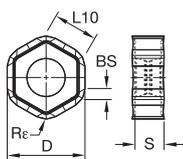
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNGD	HNPJ43ANSNGD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,45	.175	0,08	.003	12	-	-	-	●	●	●	●	●	●	●

146-148	149	91-93	152

Dodeka™ Mini • Carbide Insert • HNGJ-HD • Heavy Machining

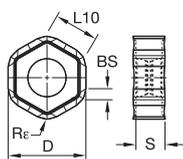


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0604ANSNHD	HNGJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	-	●	●	●	●	○	●

Dodeka Mini • Carbide Insert • HNPJ-HD • Heavy Machining



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNHD	HNPJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	-	●	●	●	●	○	●
HNPJ060432ANSNHD	HNPJ438ANSNHD	12	.472	-	-	6,43	.253	3,2	.126	4,41	.174	0,10	.004	12	-	-	-	-	●	●	●	●	○	●

146-148	149	91-93	152

Dodeka™ Mini High Feed 75° • Insert Selection Guide

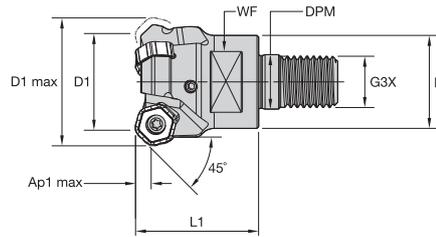
Material Group	Light Machining		Medium Machining		Heavy Machining	
P1-P2	.E..LD	KC522M	.S..GD	KC522M	.S..HD	KC725M
P3-P4	.E..LD	KCPM40	.S..GD	KCPK30	.S..HD	KCPK30
P5-P6	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
M1-M2	.E..LD	KC522M	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1-K2	.E..LD	KCK20B	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KCKP10	.S..GD	KCK20B	.S..HD	KCPK30
N1-N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
S1-S2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KCKP10	-	-	-	-

Dodeka Mini High-Feed 75° • Feed Rates [IPT]

Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)						
Insert Geometry	30%			40-100%		
	L	M	H	L	M	H
.F..LDJ	0.008	0.024	0.041	0.008	0.022	0.037
.E..LD	0.010	0.030	0.051	0.009	0.028	0.046
.S..GD	0.017	0.039	0.059	0.015	0.036	0.054
.S..HD	0.017	0.042	0.068	0.015	0.039	0.062

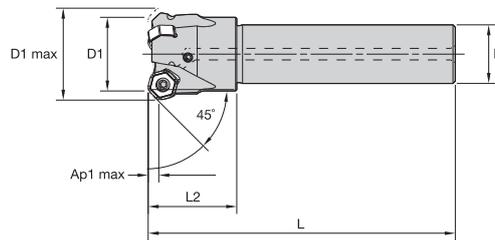
L = Light Machining; M = Medium Machining; H = Heavy Machining.

Dodeka™ Mini 45° • End Mill • Screw-On • Inch



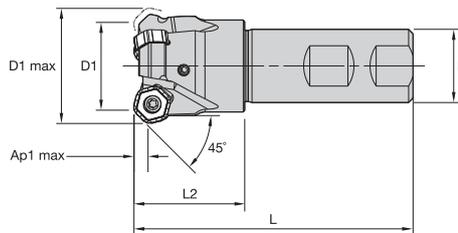
order number	catalog number	D1	D1 max	D	DPM	G3X	L1	WF	Ap1 max	Z	lbs	max RPM
4130384	KSHR125D03M16HN06	1.250	1.572	1.142	.669	M16	1.500	.866	.127	3	.43	17600
4130385	KSHR125D04M16HN06	1.250	1.572	1.142	.669	M16	1.500	.866	.127	4	.42	17600

Dodeka Mini 45° • End Mill • Cylindrical Shank • Inch



order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130518	KSHR100D02C075HN06L480	1.000	1.322	.750	4.800	1.250	.127	2	.64	19800
4130519	KSHR100D03C075HN06L480	1.000	1.322	.750	4.800	1.250	.127	3	.62	19800
4130533	KSHR100D03C100HN06L800	1.000	1.322	1.000	8.000	1.250	.127	3	1.64	19800
4130520	KSHR125D03C100HN06L520	1.250	1.572	1.000	5.200	1.500	.127	3	1.19	17600
4130521	KSHR125D04C100HN06L520	1.250	1.572	1.000	5.200	1.500	.127	4	1.20	17600

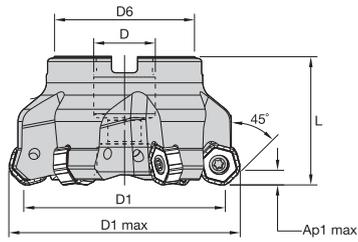
Dodeka Mini 45° • End Mill • Weldon® Shank • Inch



order number	catalog number	D1	D1 max	D	L	L2	Ap1 max	Z	lbs	max RPM
4130514	KSHR100D02W075HN06	1.000	1.322	.750	3.280	1.250	.127	2	.46	19800
4130515	KSHR100D03W075HN06	1.000	1.322	.750	3.280	1.250	.127	3	.44	19800
4130516	KSHR125D03W100HN06	1.250	1.572	1.000	3.780	1.500	.127	3	.88	17600
4130517	KSHR125D04W100HN06	1.250	1.572	1.000	3.780	1.500	.127	4	.89	17600

146-148	149	91-93	152

Dodeka™ Mini 45° • Shell Mill • Inch

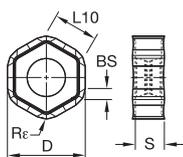


order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4130426	KSHR150HN4345M3	1.500	1.822	.500	1.440	1.575	.127	4	.57	16700
4130427	KSHR150HN4345F2	1.500	1.822	.500	1.440	1.575	.127	5	.56	16700
4130428	KSHR200HN4345C3	2.000	2.321	.750	1.750	1.575	.127	4	.93	12500
4130429	KSHR200HN4345M3	2.000	2.321	.750	1.750	1.575	.127	5	.93	12500
4130430	KSHR200HN4345F3	2.000	2.321	.750	1.750	1.575	.127	6	.97	12500
4130431	KSHR250HN4345C3	2.500	2.821	.750	1.750	1.575	.127	4	1.20	10000
4130432	KSHR250HN4345M3	2.500	2.821	.750	1.750	1.575	.127	6	1.27	10000
4130493	KSHR250HN4345F3	2.500	2.821	.750	1.750	1.575	.127	8	1.29	10000
4130494	KSHR300HN4345C4	3.000	3.321	1.000	2.189	1.750	.127	5	1.90	8300
4130495	KSHR300HN4345M4	3.000	3.321	1.000	2.189	1.750	.127	8	2.09	8300
4130496	KSHR300HN4345F4	3.000	3.321	1.000	2.189	1.750	.127	10	2.07	8300
4130497	KSHR400HN4345C6	4.000	4.321	1.500	3.661	1.750	.127	6	3.48	6300
4130498	KSHR400HN4345M6	4.000	4.321	1.500	3.661	1.750	.127	9	3.66	6300
4130499	KSHR400HN4345F6	4.000	4.321	1.500	3.661	1.750	.127	12	3.62	6300
4130500	KSHR500HN4345C6	5.000	5.320	1.500	3.652	2.380	.127	8	6.38	5000
4130501	KSHR500HN4345M6	5.000	5.320	1.500	3.652	2.380	.127	12	6.59	5000
4130502	KSHR500HN4345F6	5.000	5.320	1.500	3.652	2.380	.127	16	6.70	5000

146-148	149	91-93	152



Dodeka™ Mini • Carbide Insert • HNGJ-LDJ • Light Machining of Aluminum

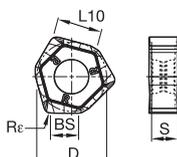


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in												
HNGJ0604ANFNLDJ	HNGJ43ANFNLDJ	12	.472	1,54	.061	6,44	.254	1,0	.039	4,48	.177	0,02	.001	12	●	●	-	-	-	-	-	-	-	-	-

Dodeka Mini 45° • Wiper Carbide Insert • XNGJ-LDJ3W • Fine Finishing of Aluminum

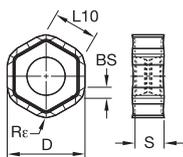


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
XNGJ0604ANFNLDJ3W	XNGJ43ANFNLDJ3W	12	.472	4,80	.189	7,20	.283	1,6	.063	4,51	.178	0,02	.001	6	-	●	-	-	-	-	-	-	-	-

Dodeka Mini • Carbide Insert • HNGJ-LD • Light Machining



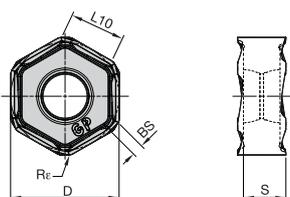
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0604ANENLD	HNGJ43ANENLD	12	.472	1,52	.060	6,44	.254	1,0	.039	4,48	.176	0,04	.002	12	-	-	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	HNGJ438ANENLD	12	.472	-	-	6,43	.253	3,2	.126	4,48	.177	0,05	.002	12	-	-	-	-	-	-	-	-	-	-

146-148	149	91-93	152

Dodeka™ Mini 45° • Carbide Insert • HNGJ-GP • Medium Machining of Steels

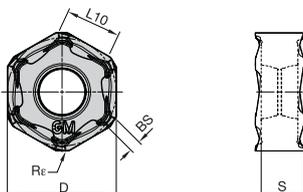


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		L10		BS		Re		hm		CE	KC522M	KCPM40	KTPK20
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in				
HNGJ0604ANERGP	HNGJ43ANERGP	12,00	.472	4,70	.185	4,10	.161	1,10	.044	1,0	.039	0,06	.002	12	●	●	●

Dodeka Mini 45° • Carbide Insert • HNGJ-GM • Medium Machining of Stainless Steels

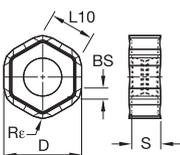


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		S		L10		BS		Re		hm		CE	KC522M	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in			
HNGJ0604ANERGM	HNGJ43ANERGM	12,00	.472	4,70	.185	4,10	.161	1,10	.044	1,0	.039	0,06	.002	12	●	●

Dodeka Mini • Carbide Insert • HNPJ-GD • Medium Machining



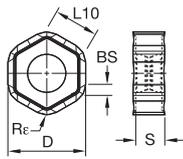
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNGD	HNPJ43ANSNGD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,45	.175	0,08	.003	12	-	-	-	●	●	●	●	●	●	●

146-148	149	91-93	152

Dodeka™ Mini • Carbide Insert • HNGJ-HD • Heavy Machining

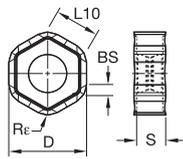


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in												
HNGJ0604ANSNHD	HNGJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	●	●	●	●	●	●	●	○

Dodeka Mini • Carbide Insert • HNPJ-HD • Heavy Machining



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNHD	HNPJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	●	●	●	●	●	●	○
HNPJ060432ANSNHD	HNPJ438ANSNHD	12	.472	-	-	6,43	.253	3,2	.126	4,41	.174	0,10	.004	12	-	-	-	●	●	●	●	●	●	○

146-148	149	91-93	152

Dodeka™ Mini 45° • Insert Selection Guide

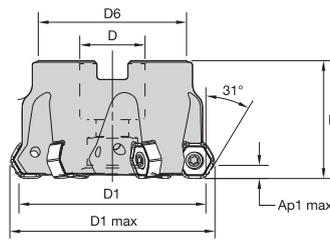
Material Group	Light Machining				Medium Machining				Heavy Machining	
P1-P2	.E..LD	KC522M	.E..LP	KC522M	.E..GP	KC522M	.S..GD	KC522M	.S..HD	KC725M
P3-P4	.E..LD	KCPM40	.E..LP	KCPM40	.E..GP	KCPM40	.S..GD	KCPK30	.S..HD	KCPK30
P5-P6	.E..LD	KCPM40	.E..LP	KCPM40	.E..GP	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
M1-M2	.E..LD	KC522M	.E..LM	KC522M	.E..GM	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.E..LM	KCSM40	.E..GM	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1-K2	.E..LD	KCK20B	.E..LP	KCK20B	.E..LP	KCK20B	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KCKP10	.E..LP	KCPK30	.E..LP	KCPK30	.S..GD	KCK20B	.S..HD	KCPK30
N1-N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
S1-S2	.E..LD	KC725M	.E..LM	KCSM40	.E..GM	KCSM40	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.E..LM	KCSM40	.E..GM	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.E..LM	KCSM40	.E..GM	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KCKP10	-	-	.E..GP	KC522M	-	-	-	-

Dodeka Mini 45° • Feed Rates [IPT]

Insert Geometry	Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)					
	30%			40-100%		
	L	M	H	L	M	H
.F..LDJ	0.003	0.009	0.015	0.003	0.008	0.014
.E..LD	0.003	0.011	0.019	0.003	0.010	0.017
.E..LM	0.003	0.009	0.015	0.003	0.009	0.014
.E..LP	0.003	0.011	0.017	0.003	0.010	0.016
.E..GM	0.003	0.009	0.015	0.003	0.009	0.014
.E..GP	0.003	0.011	0.017	0.003	0.010	0.016
.S..GD	0.006	0.014	0.022	0.006	0.013	0.020
.S..HD	0.006	0.015	0.025	0.006	0.014	0.023

L = Light Machining; M = Medium Machining; H = Heavy Machining.

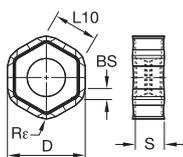
Dodeka™ Mini 30° • Shell Mill • Heavy Machining • Inch



order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4136389	KSHRHD150HN43M2	1.500	1.750	.500	1.440	1.575	.171	4	.48	16700
4136390	KSHRHD150HN43F2	1.500	1.750	.500	1.440	1.575	.171	5	.48	16700
4136391	KSHRHD200HN43C3	2.000	2.250	.750	1.750	1.575	.171	4	.85	12500
4136392	KSHRHD200HN43M3	2.000	2.250	.750	1.750	1.575	.171	5	.87	12500
4136394	KSHRHD250HN43M3	2.500	2.750	.750	1.750	1.575	.171	6	1.21	10000
4136395	KSHRHD300HN43C4	3.000	3.250	1.000	2.189	1.750	.171	5	1.86	8300
4136396	KSHRHD300HN43M4	3.000	3.250	1.000	2.189	1.750	.171	8	1.96	8300
4136397	KSHRHD400HN43C6	4.000	4.249	1.500	3.661	1.750	.171	6	3.36	6300
4136399	KSHRHD500HN43C6	5.000	5.249	1.500	3.652	2.380	.171	8	6.31	5000
4136400	KSHRHD500HN43M6	5.000	5.249	1.500	3.652	2.380	.171	12	6.53	5000

146-148	149	91-93	152

Dodeka™ Mini • Carbide Insert • HNGJ-LDJ • Light Machining of Aluminum

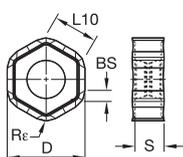


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in												
HNGJ0604ANFNLDJ	HNGJ43ANFNLDJ	12	.472	1,54	.061	6,44	.254	1,0	.039	4,48	.177	0,02	.001	12	●	●	-	-	-	-	-	-	-	-	-

Dodeka Mini • Carbide Insert • HNGJ-LD • Light Machining

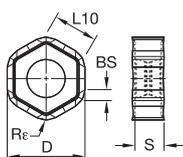


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0604ANENLD	HNGJ43ANENLD	12	.472	1,52	.060	6,44	.254	1,0	.039	4,48	.176	0,04	.002	12	-	-	●	●	●	●	●	●	●	●
HNGJ060432ANENLD	HNGJ438ANENLD	12	.472	-	-	6,43	.253	3,2	.126	4,48	.177	0,05	.002	12	-	-	●	●	●	●	●	●	●	●

Dodeka Mini • Carbide Insert • HNPJ-GD • Medium Machining



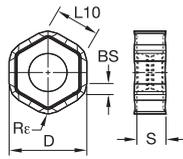
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNGD	HNPJ43ANSNGD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,45	.175	0,08	.003	12	-	-	●	●	●	●	●	●	●	●

146-148	149	91-93	152

Dodeka™ Mini • Carbide Insert • HNGJ-HD • Heavy Machining

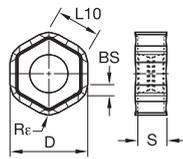


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0604ANSNHD	HNGJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	-	●	●	●	●	○	●

Dodeka Mini • Carbide Insert • HNPJ-HD • Heavy Machining



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	K313	KC410M	KC510M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0604ANSNHD	HNPJ43ANSNHD	12	.472	1,45	.057	6,44	.254	1,0	.039	4,40	.173	0,14	.006	12	-	-	-	-	●	●	●	●	○	●
HNPJ060432ANSNHD	HNPJ438ANSNHD	12	.472	-	-	6,43	.253	3,2	.126	4,41	.174	0,10	.004	12	-	-	-	-	●	●	●	●	○	●

146-148	149	91-93	152

Dodeka™ Mini 30° • Insert Selection Guide

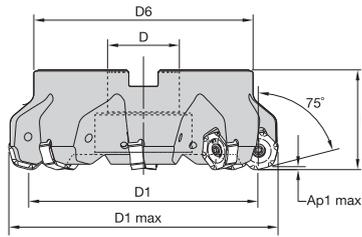
Material Group	Light Machining		Medium Machining		Heavy Machining	
P1-P2	.E..LD	KC522M	.S..GD	KC522M	.S..HD	KC725M
P3-P4	.E..LD	KCPM40	.S..GD	KCPK30	.S..HD	KCPK30
P5-P6	.E..LD	KCPM40	.S..GD	KCPM40	.S..HD	KCPM40
M1-M2	.E..LD	KC522M	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1-K2	.E..LD	KCK20B	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KCKP10	.S..GD	KCK20B	.S..HD	KCPK30
N1-N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.E..LD	KCKP10
S1-S2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
H1	.E..LD	KCKP10	-	-	-	-

Dodeka Mini 30° • Feed Rates [IPT]

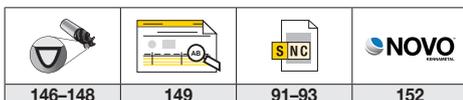
Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)						
Insert Geometry	30%			40-100%		
	L	M	H	L	M	H
.F..LDJ	0.003	0.007	0.012	0.002	0.006	0.011
.E..LD	0.003	0.009	0.015	0.003	0.008	0.014
.S..GD	0.005	0.012	0.018	0.005	0.011	0.016
.S..HD	0.005	0.013	0.020	0.005	0.012	0.018

L = Light Machining; M = Medium Machining; H = Heavy Machining.

Dodeka™ High-Feed 75° • Shell Mill • Inch



order number	catalog number	D1	D1 max	D	D6	L	Ap1 max	Z	lbs	max RPM
4047419	KSHRHF200HN5315C3	2.000	2.746	.750	1.750	1.595	.087	4	1.13	11300
4047420	KSHRHF250HN5315C3	2.500	3.245	.750	2.144	1.595	.087	5	1.60	8900
4047421	KSHRHF300HN5315C4	3.000	3.745	1.000	2.346	1.770	.087	6	2.23	7400
4047422	KSHRHF400HN5315C5	4.000	4.744	1.250	3.819	1.770	.087	8	3.91	5800
4047583	KSHRHF500HN5315C6	5.000	5.416	1.500	3.810	2.400	.087	9	6.87	4700
4047584	KSHRHF600HN5315C8	6.000	6.748	2.000	4.880	2.400	.087	12	10.51	4000



146-148

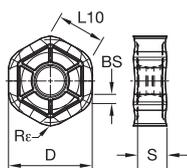
149

91-93

152



Dodeka™ • Carbide Insert • HNGJ-LDJ • Light Machining of Aluminum

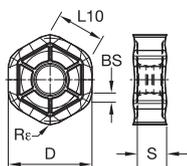


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANFNLDJ	HNGJ535ANFNLDJ	16	.625	1,81	.071	8,58	.338	1,2	.047	5,56	.219	0,02	.001	12	●	-	-	-	-	-	-	-	-	-

Dodeka • Carbide Insert • HNGJ-LD • Light Machining

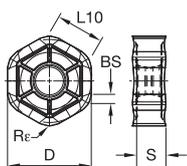


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANENLD	HNGJ535ANENLD	16	.625	1,76	.069	8,58	.338	1,2	.047	5,56	.219	0,05	.002	12	-	●	●	●	●	●	-	-	-	-

Dodeka • Carbide Insert • HNGJ-GD • Medium Machining



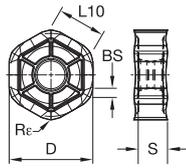
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANSNGD	HNGJ535ANSNGD	16	.625	1,71	.068	8,59	.338	1,2	.047	5,56	.219	0,10	.004	12	-	-	-	●	●	●	●	●	-	-

146-148	149	91-93	152

Dodeka™ • Carbide Insert • HNPJ-GD • Medium Machining

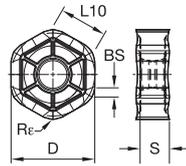


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0905ANSNGD	HNPJ535ANSNGD	16	.625	1,80	.071	8,58	.338	1,2	.047	5,56	.219	0,10	.004	12	-	●	●	●	●	●	●	●	-	-

Dodeka • Carbide Insert • HNGJ-HD • Heavy Machining

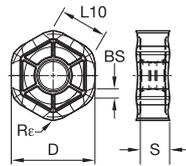


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANSNHD	HNGJ535ANSNHD	16	.625	1,65	.065	8,59	.338	1,2	.047	5,46	.215	0,17	.007	12	-	●	-	●	●	●	●	●	-	-
HNGJ090543ANSNHD	HNGJ53511ANSNHD	16	.625	-	-	8,50	.335	4,4	.171	5,44	.214	0,20	.008	12	-	●	-	●	●	●	●	●	-	-

Dodeka • Carbide Insert • HNPJ-HD • Heavy Machining



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0905ANSNHD	HNPJ535ANSNHD	16	.625	1,65	.065	8,59	.338	1,2	.047	5,46	.215	0,18	.007	12	-	●	●	●	●	●	●	●	-	-
HNPJ090543ANSNHD	HNPJ53511ANSNHD	16	.625	-	-	8,50	.334	4,4	.171	5,44	.214	0,13	.005	12	-	●	●	●	●	●	●	●	-	-

146-148	149	91-93	152

Dodeka™ 75° High-Feed • Insert Selection Guide

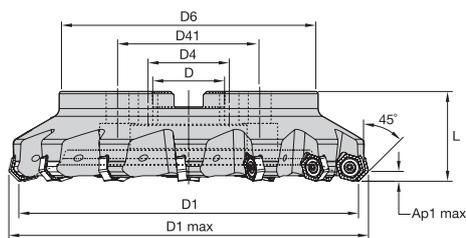
Material Group	Light Machining		Medium Machining		Heavy Machining	
	Insert	Tool	Insert	Tool	Insert	Tool
P1-P2	.E..LD	KC522M	.S..GD	KC522M	.S..HD	KC725M
P3-P4	.E..LD	KCPK30	.S..GD	KCPK30	.S..HD	KCPK30
P5-P6	.E..LD	KC725M	.S..GD	KCPM40	.S..HD	KCPM40
M1-M2	.E..LD	KC522M	.S..GD	KCSM40	.S..HD	KCSM40
M3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCPM40
K1-K2	.E..LD	KCK20B	.S..GD	KCK15	.S..HD	KCK15
K3	.E..LD	KCK20B	.S..GD	KCK20B	.S..HD	KCPK30
N1-N2	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M
N3	.F..LDJ	KC410M	.F..LDJ	KC410M	.F..LDJ	KC410M
S1-S2	.E..LD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40
S4	.E..LD	KCSM40	.S..GD	KCSM40	.S..HD	KCSM40

Dodeka 75° High-Feed • Feed Rates [IPT]

Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)						
Insert Geometry	30%			40-100%		
	L	M	H	L	M	H
	.F..LDJ	0.008	0.024	0.041	0.008	0.022
.E..LD	0.012	0.034	0.051	0.011	0.031	0.046
.S..GD	0.017	0.036	0.058	0.015	0.033	0.053
.S..HD	0.017	0.042	0.068	0.015	0.039	0.062

L = Light Machining; M = Medium Machining; H = Heavy Machining.

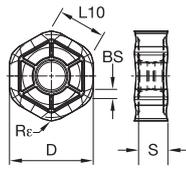
Dodeka™ 45° • Shell Mill • Inch



order number	catalog number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
3326850	KSHR200HN5345C3	2.000	2.434	.750	—	—	1.593	1.570	.178	4	.81	12500
3326851	KSHR200HN5345M3	2.000	2.434	.750	—	—	1.593	1.570	.178	5	.82	12500
3747124	KSHR250HN5345XC3	2.500	2.933	.750	—	—	1.986	1.570	.177	5	1.25	10000
3326852	KSHR250HN5345C3	2.500	2.933	.750	—	—	1.986	1.570	.178	6	1.32	10000
3326923	KSHR250HN5345M3	2.500	2.933	.750	—	—	1.986	1.570	.178	7	1.34	10000
3747125	KSHR300HN5345XC4	3.000	3.433	1.000	—	—	2.189	1.750	.177	5	1.86	8300
3326924	KSHR300HN5345C4	3.000	3.433	1.000	—	—	2.189	1.750	.178	6	1.79	8300
3326925	KSHR300HN5345M4	3.000	3.433	1.000	—	—	2.032	1.750	.178	9	1.97	8300
3747126	KSHR400HN5345XC5	4.000	4.232	1.250	—	—	2.722	1.750	.177	6	3.17	6300
3326926	KSHR400HN5345C5	4.000	4.432	1.250	—	—	2.722	1.750	.178	8	2.93	6300
3326927	KSHR400HN5345M5	4.000	4.432	1.250	—	—	2.722	1.750	.178	11	3.14	6300
3747127	KSHR500HN5345XC6	5.000	5.431	1.500	—	—	3.652	2.380	.177	8	6.20	5000
3326928	KSHR500HN5345C6	5.000	5.431	1.500	—	—	3.652	2.380	.178	10	5.94	5000
3326929	KSHR500HN5345M6	5.000	5.431	1.500	—	—	3.652	2.380	.178	14	6.21	5000
3747128	KSHR600HN5345XC8	6.000	6.432	2.000	—	—	4.722	2.380	.177	10	9.01	4100
3326930	KSHR600HN5345C8	6.000	6.432	2.000	—	—	4.722	2.380	.178	12	9.10	4100
3326931	KSHR600HN5345M8	6.000	6.432	2.000	—	—	4.722	2.380	.178	16	9.36	4100
3494648	KSHR800HN5345C10	8.000	8.432	2.500	4.000	—	5.118	2.380	.177	16	13.14	3130
3494649	KSHR1000HN5345C10	10.000	10.433	2.500	4.000	—	7.120	2.380	.177	20	24.52	2510
3494650	KSHR1200HN5345C10	12.000	12.433	2.500	4.000	7.000	9.016	3.150	.177	24	42.66	2090

146-148	149	91-93	152

Dodeka™ • Carbide Insert • HNGJ-LDJ • Light Machining of Aluminum

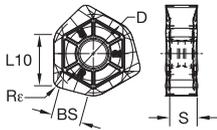


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANFNLDJ	HNGJ535ANFNLDJ	16	.625	1,81	.071	8,58	.338	1,2	.047	5,56	.219	0,02	.001	12	●	-	-	-	-	-	-	-	-	-

Dodeka 45° • Wiper Carbide Insert • XNGJ-LDJ3W • Fine Finishing of Aluminum

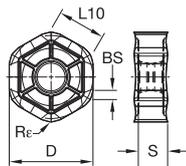


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
XNGJ0905ANFNLDJ3W	XNGJ535ANFNLDJ3W	16	.625	6,00	.230	9,56	.377	1,6	.063	5,51	.217	0,02	.001	6	●	-	-	-	-	-	-	-	-	-

Dodeka • Carbide Insert • HNGJ-LD • Light Machining



- first choice
- alternate choice

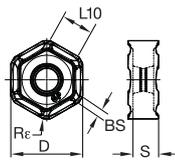
P	■	■	○	■	●	●	○
M	■	■	●	●	●	○	●
K	■	■	○	●	○	■	●
N	●	■	■	■	■	■	■
S	■	■	■	■	■	■	■
H	■	■	■	■	■	■	■

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANENLD	HNGJ535ANENLD	16	.625	1,76	.069	8,58	.338	1,2	.047	5,56	.219	0,05	.002	12	-	●	●	●	●	●	-	●	-	-

146-148	149	91-93	152

Dodeka™ 45° • Carbide Insert • HNGJ-GP • Medium Machining of Steels

NEW!



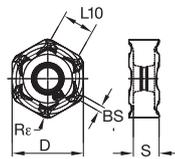
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	L10		BS		D		S		Re		hm		CE	KC522M	KCPM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in			
HNGJ0905ANERGP	HNGJ535ANERGP	6,19	.244	2,13	.084	15,88	.625	5,8	.226	1,2	.047	0,06	.002	12	●	●

Dodeka 45° • Carbide Insert • HNGJ-GM • Medium Machining of Stainless Steels

NEW!

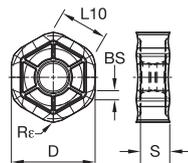


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	L10		BS		D		S		Re		hm		CE	KC522M	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in			
HNGJ0905ANERGM	HNGJ535ANERGM	6,19	.244	2,13	.084	15,88	.625	5,8	.226	1,2	.047	0,06	.002	12	●	●

Dodeka • Carbide Insert • HNGJ-GD • Medium Machining



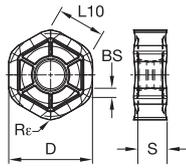
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Re		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in										
HNGJ0905ANSNGD	HNGJ535ANSNGD	16	.625	1,71	.068	8,59	.338	1,2	.047	5,56	.219	0,10	.004	12	-	-	-	●	●	●	●	●	-

146-148	149	91-93	152

Dodeka™ • Carbide Insert • HNPJ-GD • Medium Machining

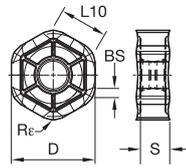


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0905ANSNGD	HNPJ535ANSNGD	16	.625	1,80	.071	8,58	.338	1,2	.047	5,56	.219	0,10	.004	12	-	●	●	●	●	●	●	●	-	-

Dodeka • Carbide Insert • HNGJ-HD • Heavy Machining

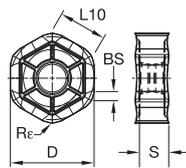


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNGJ0905ANSNHD	HNGJ535ANSNHD	16	.625	1,65	.065	8,59	.338	1,2	.047	5,46	.215	0,17	.007	12	-	●	-	●	●	●	●	●	-	-
HNGJ090543ANSNHD	HNGJ53511ANSNHD	16	.625	-	-	8,50	.335	4,4	.171	5,44	.214	0,20	.008	12	-	●	-	●	●	●	●	●	-	-

Dodeka • Carbide Insert • HNPJ-HD • Heavy Machining



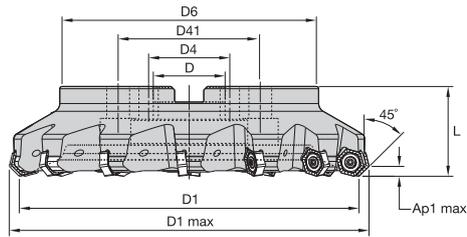
- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC410M	KC520M	KC522M	KC725M	KCK15	KCPK30	KCPM40	KCSM40	KY3500	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in											
HNPJ0905ANSNHD	HNPJ535ANSNHD	16	.625	1,65	.065	8,59	.338	1,2	.047	5,46	.215	0,18	.007	12	-	●	-	●	●	●	●	●	-	-
HNPJ090543ANSNHD	HNPJ53511ANSNHD	16	.625	-	-	8,50	.334	4,4	.171	5,44	.214	0,13	.005	12	-	●	-	●	●	●	●	●	-	-

146-148	149	91-93	152

Dodeka MAX™ 45° • Shell Mill • Inch

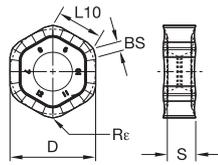


order number	catalog number	D1	D1 max	D	D4	D41	D6	L	Ap1 max	Z	lbs	max RPM
4057578	KSHR300HN7545M4	3.000	3.682	1.000	—	—	2.188	1.750	.315	4	2.14	8300
4057579	KSHR400HN7545M5	4.000	4.682	1.250	—	—	2.875	1.750	.315	5	3.18	6300
4057580	KSHR500HN7545M6	5.000	5.682	1.500	—	—	3.812	2.375	.315	6	6.40	5000
4057581	KSHR600HN7545M8	6.000	6.682	2.000	—	—	5.000	2.375	.315	9	9.87	4100
4057582	KSHR800HN7545M10	8.000	8.682	2.500	4.000	—	5.000	2.375	.315	12	13.55	3130
4057576	KSHR1000HN7545C10	10.000	10.682	2.500	4.000	—	6.963	2.375	.315	12	25.80	2510
4057583	KSHR1000HN7545M10	10.000	10.682	2.500	4.000	—	6.963	2.375	.315	14	13.55	2510
4057584	KSHR1200HN7545M10	12.000	12.681	2.500	4.000	7.000	9.016	3.150	.315	18	42.03	2090

			
146-148	149	91-93	152



Dodeka MAX™ 45° • Carbide Insert • HNGJ-GD • Medium Machining

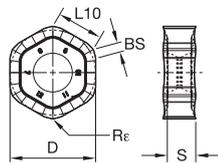


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in							
HNGJ1307ANENGD	HNGJ75ANENGD	22	.875	1,88	.074	12,11	.477	1,2	.047	7,41	.292	0,05	.002	12	-	-	-	●	●	-

Dodeka MAX 45° • Carbide Insert • HNPJ-GD • Medium Machining

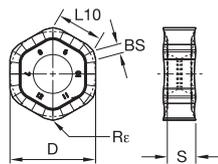


- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in							
HNPJ130720ANSNGD	HNPJ755ANSNGD	22	.875	-	-	12,83	.505	2,0	.079	7,53	.297	0,13	.005	12	-	●	●	●	-	-

Dodeka MAX 45° • Carbide Insert • HNPJ-HD • Heavy Machining



- first choice
- alternate choice

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

ISO catalog number	ANSI catalog number	D		BS		L10		Rε		S		hm		CE	KC520M	KC725M	KCK15	KCPK30	KCPM40	KCSM40
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in							
HNPJ1307ANSNHD	HNPJ75ANSNHD	22	.875	1,88	.074	12,83	.505	1,2	.047	7,34	.289	0,25	.010	12	-	-	-	●	●	-
HNPJ130720ANSNHD	HNPJ755ANSNHD	22	.875	-	-	12,83	.505	2,0	.079	7,42	.292	0,23	.009	12	-	●	●	●	-	-
HNPJ130735ANSNHD	HNPJ759ANSNHD	22	.875	-	-	12,29	.484	3,5	.138	7,33	.289	0,23	.009	12	-	-	-	●	●	-

146-148	149	91-93	152

Dodeka MAX™ 45° • Insert Selection Guide

Material Group	Light Machining		Medium Machining		Heavy Machining	
P1-P2	.E..GD	KCPM40	.S..GD	KCPK30	.S..HD	KC725M
P3-P4	.E..GD	KCPK30	.S..GD	KCPK30	.S..HD	KCPK30
P5-P6	.E..GD	KC725M	.S..GD	KC725M	.S..HD	KCPM40
M1-M2	.E..GD	KC725M	.S..GD	KC725M	.S..HD	KCSM40
M3	.E..GD	KCPM40	.S..GD	KC725M	.S..HD	KCPM40
K1-K2	.S..GD	KCK15	.S..GD	KCK15	.S..HD	KCK15
K3	.S..GD	KCK15	.S..GD	KCK15	.S..HD	KCPK30
S1-S2	.E..GD	KC725M	.S..GD	KC725M	.S..HD	KC725M
S3	.E..GD	KCPM40	.S..GD	KC725M	.S..HD	KCSM40
S4	.E..GD	KC725M	.S..GD	KC725M	.S..HD	KCSM40

Dodeka MAX 45° • Feed Rates [IPT]

Feed per Tooth (Fz) in Relation to % of Radial Engagement (ae)						
Insert Geometry	30%			40-100%		
	L	M	H	L	M	H
.E..GD	0.004	0.012	0.022	0.004	0.011	0.020
.S..GD	0.006	0.014	0.023	0.006	0.013	0.021
.S..HD	0.006	0.015	0.025	0.006	0.014	0.023

L = Light Machining; M = Medium Machining; H = Heavy Machining.

Speed Information Dodeka™ Series • Inch

Chip Thickness h_{ex} Inch	K313		KC410M			KC522M			KC725M			KCK15			KCPK30			KCKP10			
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max			
Cutting Speed (ft/min)	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min			
P																					
1	-	-	-	-	-	-	1295	1115	1065	1015	900	855	-	-	-	1790	1560	1460	1215	1115	1015
2	-	-	-	-	-	-	1085	950	785	870	755	625	-	-	-	1100	1000	900	1150	1035	920
3	-	-	-	-	-	-	1000	855	690	785	675	560	-	-	-	1000	900	805	1085	920	805
4	-	-	-	-	-	-	885	720	590	705	590	475	-	-	-	885	720	625	920	805	625
5	-	-	-	-	-	-	720	675	590	590	525	475	-	-	-	740	655	590	820	625	490
6	-	-	-	-	-	-	655	490	395	510	395	310	-	-	-	625	525	425	625	490	425
M																					
1	-	-	-	-	-	-	805	705	655	675	590	525	-	-	-	805	720	605	-	-	-
2	-	-	-	-	-	-	720	625	590	605	510	425	-	-	-	720	625	560	-	-	-
3	-	-	-	-	-	-	590	525	475	460	395	310	-	-	-	575	510	460	-	-	-
K																					
1	625	540	460	-	-	-	900	805	720	-	-	-	1655	1510	1345	1165	1050	950	1610	1280	920
2	-	-	-	-	-	-	705	625	590	-	-	-	1310	1165	1085	920	820	755	1100	950	740
3	-	-	-	-	-	-	590	525	475	-	-	-	1100	985	900	700	690	625	920	755	625
N																					
1	2870	2510	2165	4380	3890	3575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	3890	3575	3115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	3890	3575	3115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S																					
1	-	-	-	-	-	-	130	115	80	115	100	80	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	130	115	80	115	100	80	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	165	130	80	150	115	80	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	165	150	115	165	150	115	-	-	-	195	165	130	-	-	-
H																					
1	-	-	-	-	-	-	475	360	280	-	-	-	-	-	-	-	-	-	525	395	310

Recommended starting speeds are in bold type. As the average chip thickness increases, speed should be decreased.
 Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.
 Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.

Chip Thickness h_{ex} Inch	KCK20B			KCPM40			KCSM30			KCSM40			KTPK20			KY3500		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Cutting Speed (ft/min)	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min	Max	Start	Min
P																		
1	-	-	-	1165	1015	970	1445	1245	1150	1380	1230	1130	1410	1180	985	-	-	-
2	-	-	-	985	855	705	1200	1050	855	1180	1050	835	1035	855	785	-	-	-
3	-	-	-	900	770	625	1115	935	770	1100	900	755	950	785	705	-	-	-
4	-	-	-	805	675	525	985	805	640	935	785	625	820	705	625	-	-	-
5	-	-	-	675	605	525	805	720	625	785	690	590	720	655	590	-	-	-
6	-	-	-	590	460	360	705	540	425	690	510	395	625	510	395	-	-	-
M																		
1	-	-	-	770	675	605	835	690	625	950	755	655	855	690	590	-	-	-
2	-	-	-	690	590	490	755	625	490	855	675	560	770	655	540	-	-	-
3	-	-	-	510	460	360	560	475	375	625	525	410	575	475	395	-	-	-
K																		
1	1410	1115	920	-	-	-	-	-	-	-	-	-	900	770	625	3165	2870	2560
2	1085	885	720	-	-	-	-	-	-	-	-	-	720	590	510	2495	2245	2085
3	820	690	540	-	-	-	-	-	-	-	-	-	590	510	410	-	-	-
N																		
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S																		
1	-	-	-	150	130	115	165	150	115	195	150	100	-	-	-	-	-	-
2	-	-	-	150	130	115	165	150	115	215	150	100	-	-	-	-	-	-
3	-	-	-	195	150	115	215	165	115	245	165	115	-	-	-	-	-	-
4	-	-	-	215	195	130	230	215	150	295	230	150	-	-	-	-	-	-
H																		
1	-	-	-	-	-	-	525	395	295	-	-	-	-	-	-	-	-	-

Recommended starting speeds are in bold type. As the average chip thickness increases, speed should be decreased.
 Material groups P, M, K, and H show recommended starting speeds for dry machining. For wet machining, reduce speed by 20%.
 Material groups N and S show recommended starting speeds for wet machining. Not recommended for dry machining.



KCSM15A

Solid End Milling Grade

Our KCSM15A grade features an advanced PVD coating technology and delivers the best wear resistance in the history of Kennametal solid carbide end milling. This new grade provides increased output, higher metal removal rates and overall reliability when machining stainless steel, titanium and other high-temp alloys.

KCSM15A launches with the **HARVI™ III**, **HARVI III Aero**, **HARVI II Long**, and **RSM II** platforms that are proven high performance solid carbide end mills for the aerospace, energy, transportation, and general engineering industries.

- Copper color provides improved tool life observation and reconditioning management
- Protection against abrasive wear and minimized edge build-up
- Increased tool life at high temperatures with minimized chipping
- Improved process stability



Tool Selector

HIGH-PERFORMANCE ROUGHING AND FINISHING					
HARVI™ I TE					
					
Series	H1TE4CH..S-X..	H1TE4RA..S-X..	H1TE4RA..N-E..	H1TE4SE..S-X..	H1TE4BN..R-L..
Page	10–11*	12–15*	16–17*	18–19*	20–21*
Tool type					
<i>Rougher</i>	●	●	●	●	●
<i>Finisher</i>	○	○	○	○	○
<i>Chamfering</i>					
Main operation					
Workpiece material					
<i>Primary</i>	P M K	P M K S	P M K S	P M K	P M K
<i>Secondary</i>	S H	H	H	S H	S H
Corner style					
Corner radius [R_c]	–	.010–.250"	.015–.250"	–	–
Corner chamfer width [BCH]	.015–.020"	–	–	–	–
Cutter diameter [D1]	1/8–1-1/4"	1/8–1-1/4"	1/4–1"	1/16–1-1/4"	1/16–1"
Length of cut	1.2–4 x D	1.2–4 x D	1.1–1.5 x D	1.2–4 x D	1.5–4 x D
Maximum cutting depth [A_{p1} max]	1/4–4"	1/4–4"	3/8–1-1/8"	1/8–4"	1/8–3-1/4"
Flute helix angle	36°/39°	36°/39°	36°/39°	36°/39°	36°/39°
Number of flutes [ZU]	4	4	4	4	4
Center cutting	✓	✓	✓	✓	✓
Additional operations					

*See page in the Kennametal SCEM Master Catalog 2024 • 153257-23

- Primary
- Secondary

Tool Selector

HIGH-PERFORMANCE ROUGHING AND FINISHING						
HARVI™ II			HARVI III			
				NEW! 	NEW! 	NEW! 
Series	UCDE	UCDE with Neck	UDDE	HA3R6RA/SE..S-X..	HA3R6RA..N..	HA3R6BN..S-X..
Page	30–32*	33*	34–35*	130–132	132–133	133
Tool type						
Rougher	●	●	●	●	●	○
Finisher	○	○	○	○	○	●
Chamfering						
Main operation						
Workpiece material						
Primary	P M K	P M S K	P S	M S	M S	M S
Secondary	S H	H		P H	P H	P H
Corner style	 		 	 		
Corner radius [R _c]	.015–.120"	.015–.030"	.015–.120"	.015–.250"	.015–.120"	–
Corner chamfer width [BCH]	–	–	–	–	–	–
Cutter diameter [D1]	3/16–1"	1/4–1"	1/2–1"	3/8–1-1/4"	3/8–1"	3/8–1"
Length of cut	1.75–3.3 x D	1.75–2.5 x D	1.75–2.5 x D	1.3–4 x D	1.5–2.5 x D	2–2.5 x D
Maximum cutting depth [A _{p1} max]	5/8–1-3/4"	1/2–1-3/4"	1-1/4–1-3/4"	1–2-1/4"	7/8–1-3/4"	7/8–1-1/2"
Flute helix angle	38°	38°	38°	38°	38°	38°
Number of flutes [ZU]	5	5	5	6	6	6
Center cutting				✓	✓	✓
Additional operations	  	  	  	 	 	 

*See page in the Kennametal SCEM Master Catalog 2024 • 153257-23

- Primary
- Secondary

Tool Selector

HIGH-PERFORMANCE ROUGHING AND FINISHING						
	HARVI™ III		HARVI III Aero		HARVI II Long	
	NEW!	NEW!	NEW!	NEW!	NEW!	NEW!
						
Series	HA3R6BN..N..	HA3R6TB..L-X..	HA3A6RA..S-X..	HA3A6BN..S-X..	HA2L5RA/SE..L..	HA2L5RA/SE..X..
Page	133	138	134-136	137	139	140
Tool type						
Rougher	○	○	●	○		
Finisher	●	●	○	●	●	●
Chamfering						
Main operation						
Workpiece material						
Primary	M S	M S	M S	M S	P M S	P M S
Secondary	P H	P H	P H	P H	K H	K H
Corner style					 	 
Corner radius [R _c]	—	—	.030–.500"	—	.015–.120"	.015–.120"
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutter diameter [D1]	3/8–3/4"	1/8–7/16"	1/2–1-1/2"	1/2–1-1/4"	1/4–1"	1/4–1"
Length of cut	1.25 x D	1.7–9.5 x D	1.0–5.3 x D	1.3–5.3 x D	3 x D	5 x D
Maximum cutting depth [A _{p1} max]	1/2–1"	3/4–2 x D	1–6-1/2"	1–6-1/2"	3/4–3"	1–1/4–5"
Flute helix angle	38°	38°	38°	38°	43°	43°
Number of flutes [ZU]	6	6	6	6	5	5
Center cutting	✓	✓	✓	✓		
Additional operations	 		 	 		

- Primary
- Secondary

Tool Selector

DYNAMIC MILLING							
	KOR5™ DS		KOR5™ DA			KOR6™ DT	
Series	KOR5..R..	KOR5..L..	KOR5..R..I	KOR5..L..I..	KOR5..R..C	KOR6..R..	KOR6..L..
Page	56*	57*	58–59*	62–63*	60–61*	64*	65*
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○		
Chamfering							
Main operation							
Workpiece material							
Primary	P M	P M	N	N	N	S	S
Secondary	K S H	K S H				P M K H	P M K H
Corner style							
Corner radius [R _e]	0.030–0.060"	0.030–0.060"	0.015–0.120"	0.015–0.120"	0.015–0.120"	0.030–0.060"	0.030–0.060"
Corner chamfer width [BCH]	–	–	–	–	–	–	–
Cutter diameter [D1]	1/4–1"	1/4–1"	3/8–1"	0.015–0.120"	3/8–1"	3/8–1"	3/8–1"
Length of cut	3 x D	5 x D	3 x D	5 x D	3 x D	3 x D	5 x D
Maximum cutting depth [A _{p1} max]	3/4–3"	1 1/4–5"	1 1/8–3"	1 7/8–5"	1 1/8–3"	1 1/8–3"	1 7/8–5"
Flute helix angle	40°	40°	35°	35°	35°	38°	38°
Number of flutes [ZU]	5	5	5	5	5	6	6
Coolant							
Additional operations							

*See page in the Kennametal SCEM Master Catalog 2024 • 153257-23

- Primary
- Secondary

HARVI™ Series

High-Performance Roughing and Finishing



Materials



Applications



Ramping



Slotting: Square End



Trochoidal Milling



Shoulder Milling



Profiling

NEW!

KCSM15A Grade for high-temperature alloys.

Roughing and finishing in multiple materials.

Unequally spaced flutes to minimize vibrations and provide high tool life and superior surface quality. Safe-Lock™ shanks with pullout protection deliver increased process safety. Proprietary tapered-core design improves tool stability in roughing and finishing applications.

HARVI II

Five-flute end mill for high-feed roughing and finishing with one tool in multiple materials.

HARVI II Long

Five-flute end mill for semi-finishing and finishing of thin walls and deep pockets in titanium, steels, and stainless steels with excellent surface finishes.

HARVI™ II



HARVI II: Non-center cutting.

HARVI II Long: High feed rate capability for corner machining operations delivers additional productivity.

HARVI III



HARVI III & HARVI III Ball Nose: Tailored design for low cutting forces providing highest productivity, smooth cutting action, and best surface finishes.

Center cutting design enables radial and axial finishing pass after roughing operation.

HARVI III Aero: Specific radial and axial rake angles for aerospace high-velocity structural parts machining techniques.

Primarily developed for titanium component machining with highest metal removal rates.

HARVI III Taper Ball Nose: Six flutes in ball nose and taper section for highest metal removal rates. Taper angles of 4° and 6° for a broad range of applications.

HARVI III

Six-flute end mill for high-feed roughing and finishing with maximum metal removal rates in titanium and stainless steel with excellent surfaces.

HARVI III Ball Nose

Six-flute end mill for 3D profiling with highest productivity in titanium and stainless steel.

HARVI III Aero

Six-flute end mill with aerospace-specific length-of-cut, diameters, and radii tailored for high-velocity 3D profiling, semi-finishing, and finishing.

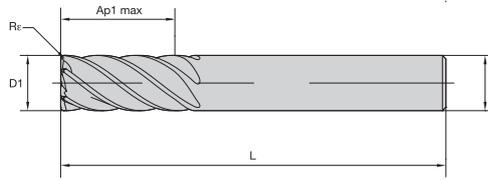
HARVI III Taper Ball Nose

Six-flute end mill for 5-axis machining of steel, stainless steel, nickel-based alloys, and titanium to significantly increase output and decrease machining time.

HARVI™ III • Radiused • 6 Flutes • Plain Shank • Inch

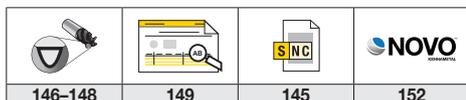
- first choice
- alternate choice

NEW!



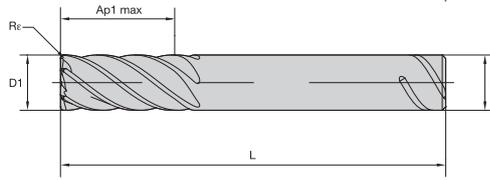
P	●
M	●
K	●
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077614	HA3R6RA0375R100HAR015	3/8	3/8	1	3	.015	●
7077615	HA3R6RA0375R100HAR030	3/8	3/8	1	3	.030	●
7077616	HA3R6RA0375R100HAR060	3/8	3/8	1	3	.060	●
7077618	HA3R6RA0500S100HAR030	1/2	1/2	1	3	.030	●
7077619	HA3R6RA0500S100HAR060	1/2	1/2	1	3	.060	●
7077620	HA3R6RA0500R125HAR015	1/2	1/2	1 1/4	3	.015	●
7077701	HA3R6RA0500R125HAR030	1/2	1/2	1 1/4	3	.030	●
7077702	HA3R6RA0500R125HAR060	1/2	1/2	1 1/4	3	.060	●
7077703	HA3R6RA0500R125HAR120	1/2	1/2	1 1/4	3	.120	●
7077705	HA3R6RA0500L200HAR030	1/2	1/2	2	4	.030	●
7077706	HA3R6RA0500L200HAR120	1/2	1/2	2	4	.120	●
7077707	HA3R6RA0625S100HAR015	5/8	5/8	1	3 1/2	.015	●
7077708	HA3R6RA0625R125HAR030	5/8	5/8	1 1/4	3 1/2	.030	●
7077709	HA3R6RA0625R125HAR060	5/8	5/8	1 1/4	3 1/2	.060	●
7077711	HA3R6RA0625L163HAR030	5/8	5/8	1 5/8	3 1/2	.030	●
7077712	HA3R6RA0625L163HAR060	5/8	5/8	1 5/8	3 1/2	.060	●
7077713	HA3R6RA0625L163HAR090	5/8	5/8	1 5/8	3 1/2	.090	●
7077714	HA3R6RA0625L163HAR120	5/8	5/8	1 5/8	3 1/2	.120	●
7077715	HA3R6RA0750S100HAR030	3/4	3/4	1	3	.030	●
7077716	HA3R6RA0750R150HAR030	3/4	3/4	1 1/2	4	.030	●
7077717	HA3R6RA0750R150HAR060	3/4	3/4	1 1/2	4	.060	●
7077718	HA3R6RA0750R150HAR090	3/4	3/4	1 1/2	4	.090	●
7077719	HA3R6RA0750R150HAR120	3/4	3/4	1 1/2	4	.120	●
7077720	HA3R6RA0750R150HAR190	3/4	3/4	1 1/2	4	.190	●
7077722	HA3R6RA0750L163HAR030	3/4	3/4	1 5/8	4	.030	●
7077723	HA3R6RA0750L163HAR060	3/4	3/4	1 5/8	4	.060	●
7077724	HA3R6RA0750L163HAR090	3/4	3/4	1 5/8	4	.090	●
7077725	HA3R6RA0750L163HAR120	3/4	3/4	1 5/8	4	.120	●
7077727	HA3R6RA1000S150HAR030	1	1	1 1/2	4	.030	●
7077728	HA3R6RA1000S150HAR060	1	1	1 1/2	4	.060	●
7077730	HA3R6RA1000R175HAR060	1	1	1 3/4	4 1/2	.060	●
7077731	HA3R6RA1000R175HAR120	1	1	1 3/4	4 1/2	.120	●
7077732	HA3R6RA1000R175HAR250	1	1	1 3/4	4 1/2	.250	●
7077734	HA3R6RA1000L200HAR030	1	1	2	4 1/2	.030	●
7077735	HA3R6RA1000L200HAR060	1	1	2	4 1/2	.060	●
7077736	HA3R6RA1000L200HAR090	1	1	2	4 1/2	.090	●
7077737	HA3R6RA1000L200HAR120	1	1	2	4 1/2	.120	●
7077738	HA3R6RA1000L200HAR190	1	1	2	4 1/2	.190	●
7077739	HA3R6RA1000L200HAR250	1	1	2	4 1/2	.250	●
7077751	HA3R6RA1000X200HAR030	1	1	2	5	.030	●
7077753	HA3R6RA1250R225HAR030	1 1/4	1 1/4	2 1/4	5	.030	●



HARVI™ III • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

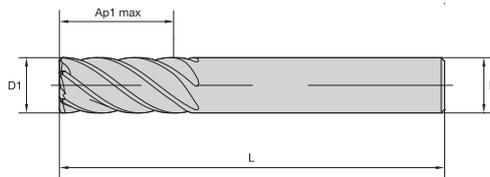


P	●
M	●
K	●
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077475	HA3R6RA0500R125SLR015	1/2	1/2	1 1/4	3	.015	●
7077476	HA3R6RA0500R125SLR030	1/2	1/2	1 1/4	3	.030	●
7077477	HA3R6RA0500R125SLR060	1/2	1/2	1 1/4	3	.060	●
7077478	HA3R6RA0500R125SLR120	1/2	1/2	1 1/4	3	.120	●
7077480	HA3R6RA0625R125SLR030	5/8	5/8	1 1/4	3 1/2	.030	●
7077532	HA3R6RA0750R150SLR030	3/4	3/4	1 1/2	4	.030	●
7077533	HA3R6RA0750R150SLR060	3/4	3/4	1 1/2	4	.060	●
7077534	HA3R6RA0750R150SLR120	3/4	3/4	1 1/2	4	.120	●
7077535	HA3R6RA0750L163SLR030	3/4	3/4	1 5/8	4	.030	●
7077536	HA3R6RA0750L163SLR060	3/4	3/4	1 5/8	4	.060	●
7077537	HA3R6RA0750L163SLR120	3/4	3/4	1 5/8	4	.120	●
7077539	HA3R6RA1000R175SLR030	1	1	1 3/4	4 1/2	.030	●
7077540	HA3R6RA1000R175SLR060	1	1	1 3/4	4 1/2	.060	●
7077541	HA3R6RA1000R175SLR120	1	1	1 3/4	4 1/2	.120	●
7077542	HA3R6RA1250R225SLR030	1 1/4	1 1/4	2 1/4	5	.030	●

HARVI III • Square End • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice



P	○
M	●
K	●
N	●
S	●
H	○

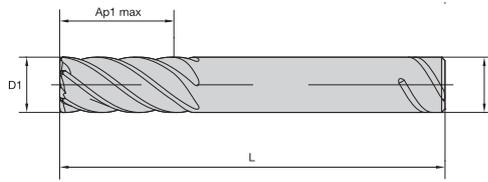
order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077617	HA3R6SE0375R100HA	3/8	3/8	1	3	●
7077704	HA3R6SE0500R125HA	1/2	1/2	1 1/4	3	●
7077710	HA3R6SE0625R125HA	5/8	5/8	1 1/4	3 1/2	●
7077721	HA3R6SE0750R150HA	3/4	3/4	1 1/2	4	●
7077726	HA3R6SE0750L163HA	3/4	3/4	1 5/8	4	●
7077729	HA3R6SE1000S150HA	1	1	1 1/2	4	●
7077733	HA3R6SE1000R175HA	1	1	1 3/4	4 1/2	●
7077740	HA3R6SE1000L200HA	1	1	2	4 1/2	●
7077752	HA3R6SE1000X225HA	1	1	2 1/4	5	●

146-148	149	145	152

HARVI™ III • Square End • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

NEW!



P	<input type="checkbox"/>
M	<input checked="" type="checkbox"/>
K	<input type="checkbox"/>
N	<input type="checkbox"/>
S	<input checked="" type="checkbox"/>
H	<input type="checkbox"/>

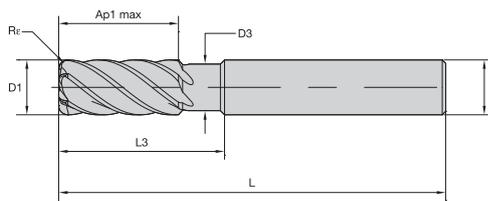
KCSM15A

order number	catalog number	D1	D	Ap1 max	L	
7077479	HA3R6SE0500R125SL	1/2	1/2	1 1/4	3	●
7077531	HA3R6SE0625R125SL	5/8	5/8	1 1/4	3 1/2	●
7077538	HA3R6SE0750L163SL	3/4	3/4	1 5/8	4	●
7077543	HA3R6SE1250R225SL	1 1/4	1 1/4	2 1/4	5	●

HARVI III • Radiused • 6 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice

NEW!



P	<input type="checkbox"/>
M	<input checked="" type="checkbox"/>
K	<input type="checkbox"/>
N	<input type="checkbox"/>
S	<input checked="" type="checkbox"/>
H	<input type="checkbox"/>

KCSM15A

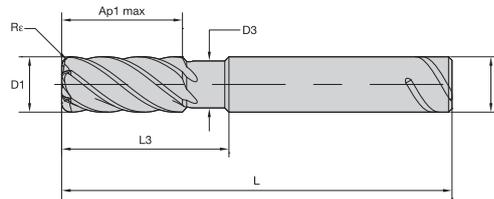
order number	catalog number	D1	D	D3	Ap1 max	L3	L	Re
7077544	HA3R6RA0375N088HAR120	3/8	3/8	.3525	7/8	1 1/4	3	.120
7077545	HA3R6RA0375N088HAR015	3/8	3/8	.3525	7/8	1 7/8	4	.015
7077546	HA3R6RA0500N075HAR030	1/2	1/2	.4700	3/4	2 1/4	6	.030
7077547	HA3R6RA0625N125HAR030	5/8	5/8	.5875	1 1/4	2 1/4	6	.030

146-148	149	145	152

HARVI™ III • Radiused • 6 Flutes • Necked • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

NEW!



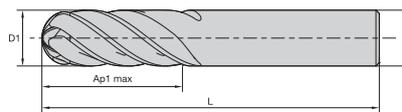
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

order number	catalog number	D1	D	D3	Ap1 max	L3	L	Re	KCSM15A
7077548	HA3R6RA0500N125SLR030	1/2	1/2	.4700	1 1/4	2 1/4	4	.030	●
7077549	HA3R6RA0625N125SLR030	5/8	5/8	.5875	1 1/4	2 1/4	4	.030	●
7077550	HA3R6RA0750N150SLR030	3/4	3/4	.7050	1 1/2	3 1/4	5 1/2	.030	●
7077551	HA3R6RA1000N175SLR030	1	1	.9400	1 3/4	3 1/4	5 1/2	.030	●

HARVI III • Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice

NEW!



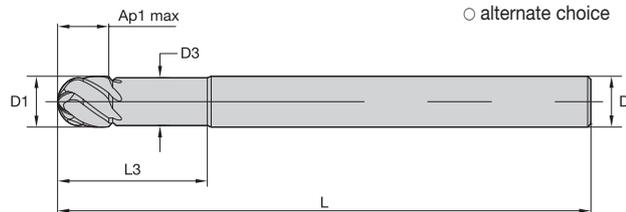
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077552	HA3R6BN0375R088HA	3/8	3/8	7/8	2 1/2	●
7077553	HA3R6BN0500R100HA	1/2	1/2	1	3	●
7077554	HA3R6BN0500L125HA	1/2	1/2	1 1/4	3	●
7077555	HA3R6BN0625R125HA	5/8	5/8	1 1/4	3 1/2	●
7077556	HA3R6BN0750R150HA	3/4	3/4	1 1/2	4	●
7077557	HA3R6BN1000R150HA	1	1	1 1/2	4	●

HARVI III • Ball Nose • 6 Flutes • Necked • Plain Shank • Inch

- first choice
- alternate choice

NEW!



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

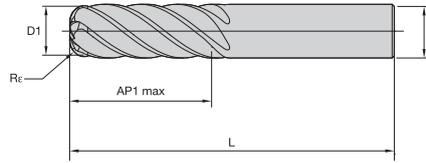
order number	catalog number	D1	D	D3	Ap1 max	L3	L	KCSM15A
7077558	HA3R6BN0375N050HA	3/8	3/8	.353	1/2	2.000	6	●
7077559	HA3R6BN0500N063HA	1/2	1/2	.470	5/8	2.250	6	●
7077560	HA3R6BN0625N075HA	5/8	5/8	.588	3/4	2.250	6	●
7077561	HA3R6BN0750N100HA	3/4	3/4	.705	1	2.250	6	●



HARVI™ III Aero • Radiused • 6 Flutes • Plain Shank • Inch

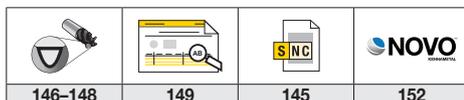
- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	●
H	○

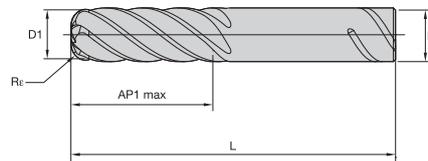
order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077003	HA3A6RA0500S100HAR030	1/2	1/2	1	3	.030	●
7077004	HA3A6RA0500S100HAR060	1/2	1/2	1	3	.060	●
7077005	HA3A6RA0500S100HAR090	1/2	1/2	1	3	.090	●
7077006	HA3A6RA0500S100HAR120	1/2	1/2	1	3	.120	●
7077007	HA3A6RA0500S100HAR190	1/2	1/2	1	3	.190	●
7077008	HA3A6RA0500R150HAR030	1/2	1/2	1 1/2	3 1/2	.030	●
7077009	HA3A6RA0500R150HAR060	1/2	1/2	1 1/2	3 1/2	.060	●
7077010	HA3A6RA0500R150HAR090	1/2	1/2	1 1/2	3 1/2	.090	●
7077021	HA3A6RA0500R150HAR120	1/2	1/2	1 1/2	3 1/2	.120	●
7077022	HA3A6RA0500R150HAR190	1/2	1/2	1 1/2	3 1/2	.190	●
7077023	HA3A6RA0500L200HAR030	1/2	1/2	2	4	.030	●
7077024	HA3A6RA0500L200HAR060	1/2	1/2	2	4	.060	●
7077026	HA3A6RA0500L200HAR090	1/2	1/2	2	4	.090	●
7077027	HA3A6RA0500L200HAR120	1/2	1/2	2	4	.120	●
7077028	HA3A6RA0500L200HAR190	1/2	1/2	2	4	.190	●
7077029	HA3A6RA0500X250HAR030	1/2	1/2	2 1/2	4 1/2	.030	●
7077030	HA3A6RA0500X250HAR060	1/2	1/2	2 1/2	4 1/2	.060	●
7077031	HA3A6RA0500X250HAR090	1/2	1/2	2 1/2	4 1/2	.090	●
7077032	HA3A6RA0500X250HAR120	1/2	1/2	2 1/2	4 1/2	.120	●
7077033	HA3A6RA0500X250HAR190	1/2	1/2	2 1/2	4 1/2	.190	●
7077034	HA3A6RA0750S100HAR030	3/4	3/4	1	3 1/2	.030	●
7077035	HA3A6RA0750S100HAR060	3/4	3/4	1	3 1/2	.060	●
7077036	HA3A6RA0750S100HAR120	3/4	3/4	1	3 1/2	.120	●
7077037	HA3A6RA0750S100HAR190	3/4	3/4	1	3 1/2	.190	●
7077038	HA3A6RA0750S100HAR250	3/4	3/4	1	3 1/2	.250	●
7077039	HA3A6RA0750R200HAR030	3/4	3/4	2	4 1/2	.030	●
7077040	HA3A6RA0750R200HAR060	3/4	3/4	2	4 1/2	.060	●
7077041	HA3A6RA0750R200HAR090	3/4	3/4	2	4 1/2	.090	●
7077042	HA3A6RA0750R200HAR120	3/4	3/4	2	4 1/2	.120	●
7077043	HA3A6RA0750R200HAR190	3/4	3/4	2	4 1/2	.190	●
7077044	HA3A6RA0750R200HAR250	3/4	3/4	2	4 1/2	.250	●
7077045	HA3A6RA0750L300HAR030	3/4	3/4	3	5 1/2	.030	●
7077046	HA3A6RA0750L300HAR060	3/4	3/4	3	5 1/2	.060	●
7077047	HA3A6RA0750L300HAR120	3/4	3/4	3	5 1/2	.120	●
7077048	HA3A6RA0750L300HAR190	3/4	3/4	3	5 1/2	.190	●
7077049	HA3A6RA0750L300HAR250	3/4	3/4	3	5 1/2	.250	●
7077050	HA3A6RA0750X400HAR030	3/4	3/4	4	6 1/2	.030	●
7077051	HA3A6RA0750X400HAR060	3/4	3/4	4	6 1/2	.060	●
7077052	HA3A6RA0750X400HAR120	3/4	3/4	4	6 1/2	.120	●
7077053	HA3A6RA0750X400HAR190	3/4	3/4	4	6 1/2	.190	●
7077054	HA3A6RA0750X400HAR250	3/4	3/4	4	6 1/2	.250	●



HARVI™ III Aero • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

NEW!



P	●
M	●
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order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077055	HA3A6RA1000S100SLR030	1	1	1	4	.030	●
7077056	HA3A6RA1000S100SLR060	1	1	1	4	.060	●
7077057	HA3A6RA1000S100SLR120	1	1	1	4	.120	●
7077058	HA3A6RA1000S100SLR250	1	1	1	4	.250	●
7077059	HA3A6RA1000S100SLR375	1	1	1	4	.375	●
7077060	HA3A6RA1000S150SLR060	1	1	1 1/2	4 1/2	.060	●
7077012	HA3A6RA1000S200SLR030	1	1	2	5	.030	●
7077013	HA3A6RA1000S200SLR060	1	1	2	5	.060	●
7077014	HA3A6RA1000S200SLR090	1	1	2	5	.090	●
7077015	HA3A6RA1000S200SLR120	1	1	2	5	.120	●
7077016	HA3A6RA1000S200SLR190	1	1	2	5	.190	●
7077017	HA3A6RA1000S200SLR250	1	1	2	5	.250	●
7077020	HA3A6RA1000R250SLR090	1	1	2 1/2	5 1/2	.090	●
7077061	HA3A6RA1000R250SLR120	1	1	2 1/2	5 1/2	.120	●
7077062	HA3A6RA1000R250SLR190	1	1	2 1/2	5 1/2	.190	●
7077063	HA3A6RA1000R250SLR250	1	1	2 1/2	5 1/2	.250	●
7077064	HA3A6RA1000R250SLR375	1	1	2 1/2	5 1/2	.375	●
7077018	HA3A6RA1000R250SLR030	1	1	2 1/2	5 1/2	.030	●
7077019	HA3A6RA1000R250SLR060	1	1	2 1/2	5 1/2	.060	●
7077067	HA3A6RA1000R300SLR090	1	1	3	6	.090	●
7077068	HA3A6RA1000R300SLR120	1	1	3	6	.120	●
7077069	HA3A6RA1000R300SLR250	1	1	3	6	.250	●
7077065	HA3A6RA1000R300SLR030	1	1	3	6	.030	●
7077066	HA3A6RA1000R300SLR060	1	1	3	6	.060	●
7077072	HA3A6RA1000L350SLR120	1	1	3 1/2	6 1/2	.120	●
7077073	HA3A6RA1000L350SLR250	1	1	3 1/2	6 1/2	.250	●
7077070	HA3A6RA1000L350SLR030	1	1	3 1/2	6 1/2	.030	●
7077071	HA3A6RA1000L350SLR060	1	1	3 1/2	6 1/2	.060	●
7077076	HA3A6RA1000L400SLR090	1	1	4	7	.090	●
7077077	HA3A6RA1000L400SLR120	1	1	4	7	.120	●
7077078	HA3A6RA1000L400SLR190	1	1	4	7	.190	●
7077079	HA3A6RA1000L400SLR250	1	1	4	7	.250	●
7077074	HA3A6RA1000L400SLR030	1	1	4	7	.030	●
7077075	HA3A6RA1000L400SLR060	1	1	4	7	.060	●
7077080	HA3A6RA1000X450SLR030	1	1	4 1/2	7 1/2	.030	●
7077081	HA3A6RA1000X450SLR060	1	1	4 1/2	7 1/2	.060	●
7077082	HA3A6RA1000X450SLR250	1	1	4 1/2	7 1/2	.250	●
7077083	HA3A6RA1000X500SLR030	1	1	5	8	.030	●
7077084	HA3A6RA1000X500SLR060	1	1	5	8	.060	●
7077085	HA3A6RA1000X500SLR120	1	1	5	8	.120	●
7077086	HA3A6RA1000X500SLR250	1	1	5	8	.250	●
7077087	HA3A6RA1000X500SLR375	1	1	5	8	.375	●
7077088	HA3A6RA1250S200SLR120	1 1/4	1 1/4	2	5	.120	●
7077089	HA3A6RA1250S300SLR060	1 1/4	1 1/4	3	6	.060	●
7077090	HA3A6RA1250S300SLR500	1 1/4	1 1/4	3	6	.500	●
7077111	HA3A6RA1250R350SLR060	1 1/4	1 1/4	3 1/2	6 1/2	.060	●
7077112	HA3A6RA1250R350SLR120	1 1/4	1 1/4	3 1/2	6 1/2	.120	●
7077113	HA3A6RA1250R350SLR250	1 1/4	1 1/4	3 1/2	6 1/2	.250	●
7077114	HA3A6RA1250R400SLR030	1 1/4	1 1/4	4	7	.030	●
7077101	HA3A6RA1250R400SLR120	1 1/4	1 1/4	4	7	.120	●
7077102	HA3A6RA1250R400SLR250	1 1/4	1 1/4	4	7	.250	●
7077103	HA3A6RA1250R400SLR375	1 1/4	1 1/4	4	7	.375	●
7077107	HA3A6RA1250L450SLR375	1 1/4	1 1/4	4 1/2	7 1/2	.375	●
7077104	HA3A6RA1250L450SLR030	1 1/4	1 1/4	4 1/2	7 1/2	.030	●
7077105	HA3A6RA1250L450SLR120	1 1/4	1 1/4	4 1/2	7 1/2	.120	●
7077106	HA3A6RA1250L450SLR250	1 1/4	1 1/4	4 1/2	7 1/2	.250	●

146-148	149	145	152

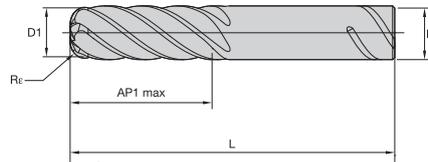


HARVI™ III Aero • Radiused • 6 Flutes • Safe-Lock™ Shank • Inch

(continued)

- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	●
H	○

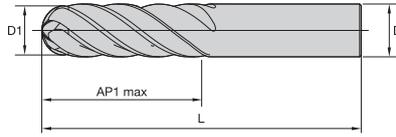
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7077108	HA3A6RA1250L500SLR030	1 1/4	1 1/4	5	8	.030	●
7077110	HA3A6RA1250L500SLR250	1 1/4	1 1/4	5	8	.250	●
7077109	HA3A6RA1250L500SLR060	1 1/4	1 1/4	5	8	.060	●
7077121	HA3A6RA1250L550SLR030	1 1/4	1 1/4	5 1/2	8 1/2	.030	●
7077122	HA3A6RA1250X600SLR030	1 1/4	1 1/4	6	9	.030	●
7077123	HA3A6RA1250X600SLR060	1 1/4	1 1/4	6	9	.060	●
7077124	HA3A6RA1250X600SLR090	1 1/4	1 1/4	6	9	.090	●
7077125	HA3A6RA1250X600SLR120	1 1/4	1 1/4	6	9	.120	●
7077126	HA3A6RA1250X600SLR190	1 1/4	1 1/4	6	9	.190	●
7077127	HA3A6RA1250X600SLR250	1 1/4	1 1/4	6	9	.250	●
7077128	HA3A6RA1250X600SLR375	1 1/4	1 1/4	6	9	.375	●
7077129	HA3A6RA1250X650SLR030	1 1/4	1 1/4	6 1/2	9 1/2	.030	●
7077130	HA3A6RA1250X650SLR060	1 1/4	1 1/4	6 1/2	9 1/2	.060	●
7077131	HA3A6RA1250X650SLR120	1 1/4	1 1/4	6 1/2	9 1/2	.120	●
7077132	HA3A6RA1250X650SLR250	1 1/4	1 1/4	6 1/2	9 1/2	.250	●
7077133	HA3A6RA1250X650SLR375	1 1/4	1 1/4	6 1/2	9 1/2	.375	●
7077134	HA3A6RA1250X650SLR500	1 1/4	1 1/4	6 1/2	9 1/2	.500	●
7077135	HA3A6RA1500R550SLR120	1 1/2	1 1/2	5 1/2	9 1/2	.120	●
7077136	HA3A6RA1500L600SLR250	1 1/2	1 1/2	6	10	.250	●

146-148	149	145	152

HARVI™ III Aero • Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice

NEW!



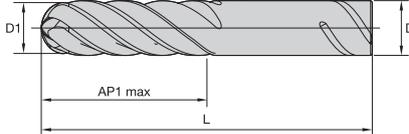
P	●
M	●
K	●
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077137	HA3A6BN0500S100HA	1/2	1/2	1	3	●
7077138	HA3A6BN0500R150HA	1/2	1/2	1 1/2	3 1/2	●
7077139	HA3A6BN0500L200HA	1/2	1/2	2	4	●
7077140	HA3A6BN0500X250HA	1/2	1/2	2 1/2	4 1/2	●
7077141	HA3A6BN0750S100HA	3/4	3/4	1	3 1/2	●
7077142	HA3A6BN0750R200HA	3/4	3/4	2	4 1/2	●
7077143	HA3A6BN0750L300HA	3/4	3/4	3	5 1/2	●
7077144	HA3A6BN0750X400HA	3/4	3/4	4	6 1/2	●

HARVI III Aero • Ball Nose • 6 Flutes • Safe-Lock™ Shank • Inch

- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	●
H	○

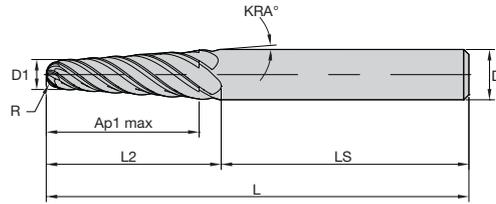
order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077145	HA3A6BN1000S150SL	1	1	1 1/2	4 1/2	●
7077146	HA3A6BN1000S200SL	1	1	2	5	●
7077147	HA3A6BN1000R250SL	1	1	2 1/2	5 1/2	●
7077148	HA3A6BN1000R300SL	1	1	3	6	●
7077149	HA3A6BN1000L350SL	1	1	3 1/2	6 1/2	●
7077150	HA3A6BN1000L400SL	1	1	4	7	●
7077151	HA3A6BN1000X450SL	1	1	4 1/2	7 1/2	●
7077152	HA3A6BN1000X500SL	1	1	5	8	●
7077153	HA3A6BN1250R300SL	1 1/4	1 1/4	3	6	●

146-148	149	145	152

HARVI™ III • Taper Ball Nose • 6 Flutes • Plain Shank • Inch

- first choice
- alternate choice

NEW!



P	●
M	●
K	●
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	L2	LS	R	KRA	KCSM15A
7078261	HA3R6TB0125X119HA	1/8	5/16	1 3/16	3	1.401	1.599	.063	4	●
7078260	HA3R6TB0125L100HA	1/8	3/8	1	3 1/2	1.249	2.252	.063	6	●
7078262	HA3R6TB0188L119HA	3/16	3/8	1 3/16	3 1/2	1.428	2.072	.094	4	●
7078263	HA3R6TB0188X125HA	3/16	1/2	1 1/4	4	1.573	2.427	.094	6	●
7078265	HA3R6TB0250X156HA	1/4	1/2	1 9/16	4	1.908	2.092	.125	4	●
7078264	HA3R6TB0250L150HA	1/4	5/8	1 1/2	5	1.902	3.098	.125	6	●
7078267	HA3R6TB0313X200HA	5/16	5/8	3/38	5	2.389	2.611	.156	4	●
7078266	HA3R6TB0313L125HA	5/16	5/8	1 1/4	5	1.637	3.363	.156	6	●
7078268	HA3R6TB0375L100HA	3/8	5/8	1	5	1.367	3.633	.188	6	●
7078269	HA3R6TB0375X156HA	3/8	5/8	1 9/16	5	1.969	3.032	.188	4	●
7078270	HA3R6TB0438L075HA	7/16	5/8	3/4	5	1.097	3.903	.219	6	●
7078271	HA3R6TB0438X119HA	7/16	5/8	1 3/16	5	1.549	3.452	.219	4	●

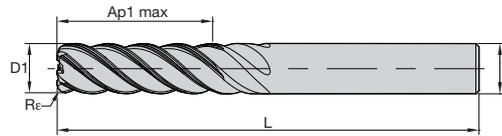
146-148	149	145	152



HARVI™ II Long • Radiused • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice

NEW!



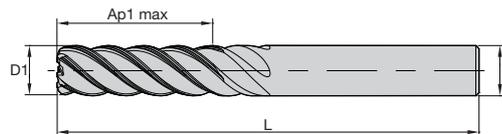
P	●
M	●
K	○
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077782	HA2L5RA0250L075HAR015	1/4	1/4	3/4	2 1/2	.015	●
7077783	HA2L5RA0250L075HAR030	1/4	1/4	3/4	2 1/2	.030	●
7077786	HA2L5RA0313L094HAR015	5/16	5/16	15/16	3	.015	●
7077788	HA2L5RA0375L113HAR015	3/8	3/8	1 1/8	4	.015	●
7077789	HA2L5RA0375L113HAR030	3/8	3/8	1 1/8	4	.030	●
7077790	HA2L5RA0375L113HAR060	3/8	3/8	1 1/8	4	.060	●
7077802	HA2L5RA0500L150HAR015	1/2	1/2	1 1/2	4	.015	●
7077803	HA2L5RA0500L150HAR030	1/2	1/2	1 1/2	4	.030	●
7077804	HA2L5RA0500L150HAR060	1/2	1/2	1 1/2	4	.060	●
7077806	HA2L5RA0625L188HAR015	5/8	5/8	1 7/8	5	.015	●
7077807	HA2L5RA0625L188HAR030	5/8	5/8	1 7/8	5	.030	●
7077808	HA2L5RA0625L188HAR060	5/8	5/8	1 7/8	5	.060	●
7077809	HA2L5RA0625L188HAR120	5/8	5/8	1 7/8	5	.120	●
7077821	HA2L5RA0750L225HAR015	3/4	3/4	2 1/4	5	.015	●
7077822	HA2L5RA0750L225HAR030	3/4	3/4	2 1/4	5	.030	●
7077823	HA2L5RA0750L225HAR060	3/4	3/4	2 1/4	5	.060	●
7077824	HA2L5RA0750L225HAR120	3/4	3/4	2 1/4	5	.120	●
7077827	HA2L5RA1000L300HAR015	1	1	3	6	.015	●
7077828	HA2L5RA1000L300HAR030	1	1	3	6	.030	●
7077829	HA2L5RA1000L300HAR060	1	1	3	6	.060	●
7077830	HA2L5RA1000L300HAR120	1	1	3	6	.120	●

HARVI II Long • Square End • 5 Flutes • 3 x D • Plain Shank • Inch

- first choice
- alternate choice

NEW!



P	●
M	●
K	○
N	●
S	●
H	○

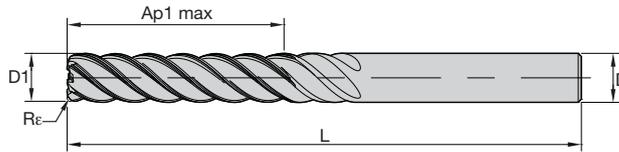
order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077784	HA2L5SE0250L075HA	1/4	1/4	3/4	2 1/2	●
7077785	HA2L5RA0313L094HAR030	5/16	5/16	15/16	3	●
7077787	HA2L5SE0313L094HA	5/16	5/16	15/16	3	●
7077801	HA2L5SE0375L113HA	3/8	3/8	1 1/8	4	●
7077805	HA2L5SE0500L150HA	1/2	1/2	1 1/2	4	●
7077810	HA2L5SE0625L188HA	5/8	5/8	1 7/8	5	●
7077825	HA2L5SE0750L225HA	3/4	3/4	2 1/4	5	●
7077831	HA2L5SE1000L300HA	1	1	3	6	●

146-148	149	145	152

HARVI™ II Long • Radiused • 5 Flutes • 5 x D • Plain Shank • Inch

● first choice
○ alternate choice

NEW!



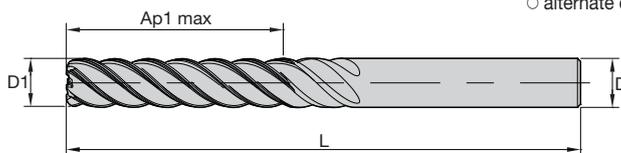
P	●
M	●
K	○
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	Re	KCSM15A
7077832	HA2L5RA0250X125HAR015	1/4	1/4	1 1/4	3	.015	●
7077833	HA2L5RA0250X125HAR030	1/4	1/4	1 1/4	3	.030	●
7077835	HA2L5RA0313X156HAR015	5/16	5/16	1 9/16	3 1/2	.015	●
7077836	HA2L5RA0313X156HAR030	5/16	5/16	1 9/16	3 1/2	.030	●
7077838	HA2L5RA0375X188HAR015	3/8	3/8	1 7/8	4	.015	●
7077839	HA2L5RA0375X188HAR030	3/8	3/8	1 7/8	4	.030	●
7077840	HA2L5RA0375X188HAR060	3/8	3/8	1 7/8	4	.060	●
7077842	HA2L5RA0500X250HAR015	1/2	1/2	2 1/2	5	.015	●
7077843	HA2L5RA0500X250HAR030	1/2	1/2	2 1/2	5	.030	●
7077844	HA2L5RA0500X250HAR060	1/2	1/2	2 1/2	5	.060	●
7077846	HA2L5RA0625X313HAR015	5/8	5/8	3 1/8	6	.015	●
7077847	HA2L5RA0625X313HAR030	5/8	5/8	3 1/8	6	.030	●
7077856	HA2L5RA0625X313HAR060	5/8	5/8	3 1/8	6	.060	●
7077857	HA2L5RA0625X313HAR120	5/8	5/8	3 1/8	6	.120	●
7077859	HA2L5RA0750X375HAR015	3/4	3/4	3 3/4	7	.015	●
7077860	HA2L5RA0750X375HAR030	3/4	3/4	3 3/4	7	.030	●
7077922	HA2L5RA0750X375HAR060	3/4	3/4	3 3/4	7	.060	●
7077923	HA2L5RA0750X375HAR120	3/4	3/4	3 3/4	7	.120	●
7077925	HA2L5RA1000X500HAR015	1	1	5	7 1/2	.015	●
7077926	HA2L5RA1000X500HAR030	1	1	5	7 1/2	.030	●
7077927	HA2L5RA1000X500HAR060	1	1	5	7 1/2	.060	●
7077928	HA2L5RA1000X500HAR120	1	1	5	7 1/2	.120	●

HARVI II Long • Square End • 5 Flutes • 5 x D • Plain Shank • Inch

● first choice
○ alternate choice

NEW!



P	●
M	●
K	○
N	●
S	●
H	○

order number	catalog number	D1	D	Ap1 max	L	KCSM15A
7077834	HA2L5SE0250X125HA	1/4	1/4	1 1/4	3	●
7077837	HA2L5SE0313X156HA	5/16	5/16	1 9/16	3 1/2	●
7077841	HA2L5SE0375X188HA	3/8	3/8	1 7/8	4	●
7077845	HA2L5SE0500X250HA	1/2	1/2	2 1/2	5	●
7077858	HA2L5SE0625X313HA	5/8	5/8	3 1/8	6	●
7077924	HA2L5SE0750X375HA	3/4	3/4	3 3/4	7	●
7077929	HA2L5SE1000X500HA	1	1	5	7 1/2	●

146-148	149	145	152

HARVI™ III • HARVI III Aero • Application Data • Inch



With Neck



Without Neck

Material Group			KCSM15A		Recommended feed per tooth (IPT = inch/th) for side milling.								
			Cutting Speed — vc SFM		frac.	D1 — Diameter							
			min	max		3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	
P	4	Ap max	0.4 x D	300	490	IPT	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040	0.0040
	5	Ap max	0.4 x D	200	330	IPT	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039	0.0039
M	1	Ap max	0.4 x D	300	380	IPT	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048	0.0048
	2	Ap max	0.4 x D	200	260	IPT	0.0018	0.0023	0.0027	0.0031	0.0036	0.0039	0.0039
	3	Ap max	0.4 x D	200	230	IPT	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029	0.0029
S	1	Ap max	0.4 x D	160	300	IPT	0.0023	0.0029	0.0034	0.0039	0.0045	0.0048	0.0048
	2	Ap max	0.4 x D	80	160	IPT	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026	0.0026
	3	Ap max	0.4 x D	80	130	IPT	0.0012	0.0015	0.0018	0.0021	0.0024	0.0026	0.0026
	4	Ap max	0.4 x D	160	200	IPT	0.0017	0.0021	0.0025	0.0028	0.0033	0.0036	0.0036
H	1	Ap max	0.4 x D	260	460	IPT	0.0020	0.0026	0.0030	0.0034	0.0039	0.0040	0.0040
	2	Ap max	0.4 x D	230	390	IPT	0.0015	0.0019	0.0022	0.0025	0.0028	0.0029	0.0029

NOTE: These guidelines may require variations to achieve optimum results.

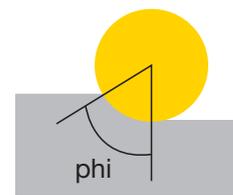
Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

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

HARVI III • HARVI III Aero • Adjustment Factor for Feed and Speed Calculation • Inch

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%
Speed factor	Kv	1.75–3.0	1.33–2.52	1.33–2.1	1.33	1.17	1.15	1.08	1.00
Feed factor	KFz	3.28	2.35	2.11	1.69	1.53	1.41	1.15	1.00
phi [°]		16.26	23.07	25.84	32.86	36.87	40.54	53.13	66.42



NOTE: For an Ae/D ratio of 5% or less there is a range given for speed factor Kv, which allows the user to either be more conservative at the lower value or more aggressive with the higher value.

This can also be considered based on the machinability of the material, from difficult to free cutting.

These calculations are for roughing/semi-finishing cuts when used with the recommended base Fz.

For light finishing cuts requiring improved surface quality it is recommended to reduce the base Fz approximately 50% and then apply these factors.

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

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

Calculation example:

Application: D1 = 0.75"; S4 material group;
Ae 0.1" (Ae = 10% of D)
Cutting data recommendation: Vc = 200 SFM;
Fz = 0.0028 IPT
Adjustment coefficients: Kv = 1.17;
KFz = 1.53

Final cutting data recommendation:

Vc new = 200 * 1.17 = 233 SFM
Fz new = 0.002837 * 1.53 = 0.0043 IPT

HARVI™ III Ball Nose • HARVI III Taper Ball Nose • HARVI III Aero Ball Nose • Application Data • Roughing • Inch



Ball Nose



Aero



Taper Ball Nose

Material Group			KCSM15A		Recommended feed per tooth (IPT = inch/th) for side milling.																
					Cutting Speed – vc SFM			D1 – Diameter													
								frac. dec.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1 1/4		
ap	ae	min	max	dec.	.1250	.1875	.2500	.3125	.3750	.4375	.5000	.6250	.7500	1.0000	1.2500						
P	0	Ap max	0.4 x D	490	–	660	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0034	0.0039	0.0044	0.0049	0.0049			
	1	Ap max	0.4 x D	490	–	660	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0034	0.0039	0.0044	0.0049	0.0049			
	2	Ap max	0.4 x D	460	–	620	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0034	0.0039	0.0044	0.0049	0.0049			
	3	Ap max	0.4 x D	390	–	520	IPT	0.0007	0.0011	0.0015	0.0020	0.0023	0.0026	0.0029	0.0034	0.0039	0.0045	0.0048			
	4	Ap max	0.4 x D	300	–	490	IPT	0.0007	0.0010	0.0014	0.0017	0.0020	0.0023	0.0026	0.0030	0.0034	0.0039	0.0040			
	5	Ap max	0.4 x D	200	–	330	IPT	0.0006	0.0009	0.0012	0.0016	0.0018	0.0021	0.0023	0.0027	0.0031	0.0036	0.0039			
M	6	Ap max	0.4 x D	160	–	250	IPT	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0022	0.0025	0.0028	0.0029			
	1	Ap max	0.4 x D	300	–	380	IPT	0.0007	0.0011	0.0015	0.0020	0.0023	0.0026	0.0029	0.0034	0.0039	0.0045	0.0048			
	2	Ap max	0.4 x D	200	–	260	IPT	0.0006	0.0009	0.0012	0.0016	0.0018	0.0021	0.0023	0.0027	0.0031	0.0036	0.0039			
S	3	Ap max	0.4 x D	200	–	230	IPT	0.0005	0.0008	0.0010	0.0013	0.0015	0.0017	0.0019	0.0022	0.0025	0.0028	0.0029			
	1	Ap max	0.4 x D	160	–	300	IPT	0.0007	0.0011	0.0015	0.0020	0.0023	0.0026	0.0029	0.0034	0.0039	0.0045	0.0048			
	2	Ap max	0.4 x D	80	–	160	IPT	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015	0.0018	0.0021	0.0024	0.0026			
	3	Ap max	0.4 x D	80	–	130	IPT	0.0004	0.0006	0.0008	0.0010	0.0012	0.0014	0.0015	0.0018	0.0021	0.0024	0.0026			
H	4	Ap max	0.4 x D	160	–	200	IPT	0.0005	0.0008	0.0011	0.0014	0.0017	0.0019	0.0021	0.0025	0.0028	0.0033	0.0036			
	1	Ap max	0.4 x D	260	–	460	IPT	0.0007	0.0010	0.0014	0.0017	0.0020	0.0023	0.0026	0.0030	0.0034	0.0039	0.0040			

NOTE: Those guidelines may require variations to achieve optimum results.

Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

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

HARVI III Ball Nose • HARVI III Taper Ball Nose • HARVI III Aero Ball Nose • Application Data • Finishing • Inch



Ball Nose



Aero



Taper Ball Nose

Material Group			KCSM15A		Recommended feed per tooth (IPT = inch/th) for side milling.																
					Cutting Speed – vc SFM			D1 – Diameter													
								frac. dec.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1	1 1/4		
ap	ae	min	max	dec.	.1250	.1875	.2500	.3125	.3750	.4375	.5000	.6250	.7500	1.0000	1.2500						
P	0	Ap max	0.06 x D	940	–	1250	IPT	0.0011	0.0016	0.0022	0.0028	0.0033	0.0037	0.0041	0.0047	0.0053	0.0059	0.0059			
	1	Ap max	0.06 x D	940	–	1250	IPT	0.0011	0.0016	0.0022	0.0028	0.0033	0.0037	0.0041	0.0047	0.0053	0.0059	0.0059			
	2	Ap max	0.06 x D	870	–	1180	IPT	0.0011	0.0016	0.0022	0.0028	0.0033	0.0037	0.0041	0.0047	0.0053	0.0059	0.0059			
	3	Ap max	0.06 x D	750	–	1000	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0035	0.0041	0.0046	0.0054	0.0058			
	4	Ap max	0.06 x D	560	–	940	IPT	0.0008	0.0012	0.0017	0.0021	0.0025	0.0028	0.0031	0.0036	0.0040	0.0046	0.0048			
	5	Ap max	0.06 x D	370	–	620	IPT	0.0007	0.0011	0.0015	0.0019	0.0022	0.0025	0.0028	0.0033	0.0037	0.0043	0.0047			
M	6	Ap max	0.06 x D	310	–	470	IPT	0.0006	0.0009	0.0012	0.0016	0.0018	0.0021	0.0023	0.0027	0.0030	0.0034	0.0035			
	1	Ap max	0.06 x D	560	–	720	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0035	0.0041	0.0046	0.0054	0.0058			
	2	Ap max	0.06 x D	370	–	500	IPT	0.0007	0.0011	0.0015	0.0019	0.0022	0.0025	0.0028	0.0033	0.0037	0.0043	0.0047			
S	3	Ap max	0.06 x D	370	–	440	IPT	0.0006	0.0009	0.0012	0.0016	0.0018	0.0021	0.0023	0.0027	0.0030	0.0034	0.0035			
	1	Ap max	0.06 x D	310	–	560	IPT	0.0009	0.0013	0.0018	0.0023	0.0027	0.0031	0.0035	0.0041	0.0046	0.0054	0.0058			
	2	Ap max	0.06 x D	160	–	310	IPT	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0018	0.0022	0.0025	0.0029	0.0032			
	3	Ap max	0.06 x D	160	–	250	IPT	0.0005	0.0007	0.0010	0.0012	0.0015	0.0017	0.0018	0.0022	0.0025	0.0029	0.0032			
H	4	Ap max	0.06 x D	310	–	370	IPT	0.0006	0.0009	0.0013	0.0017	0.0020	0.0023	0.0026	0.0030	0.0034	0.0040	0.0043			
	1	Ap max	0.06 x D	500	–	870	IPT	0.0008	0.0012	0.0017	0.0021	0.0025	0.0028	0.0031	0.0036	0.0040	0.0046	0.0048			

NOTE: Those guidelines may require variations to achieve optimum results.

Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

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

HARVI™ II Long • 3 x D & 5 x D • Application Data • Inch



3 x D Lengths of Cut



5 x D Lengths of Cut

Material Group			KCSM15A		Recommended feed per tooth (IPT = inch/th) for side milling.								
			Cutting Speed – vc SFM		frac. dec.	D1 – Diameter							
			ap	ae		min	max	1/4	5/16	3/8	1/2	5/8	3/4
P	0	A _{pmax}	0.05 x D	980	1310	IPT	.2500	.3125	.3750	.5000	.6250	.7500	1.0000
	1	A _{pmax}	0.05 x D	980	1310	IPT	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049
	2	A _{pmax}	0.05 x D	920	1250	IPT	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049
	3	A _{pmax}	0.05 x D	790	1050	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045
	4	A _{pmax}	0.05 x D	590	980	IPT	0.0014	0.0017	0.0020	0.0026	0.0030	0.0034	0.0039
	5	A _{pmax}	0.05 x D	390	660	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036
M	6	A _{pmax}	0.05 x D	330	490	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028
	1	A _{pmax}	0.05 x D	590	750	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045
K	2	A _{pmax}	0.05 x D	390	520	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036
	3	A _{pmax}	0.05 x D	390	460	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028
S	1	A _{pmax}	0.05 x D	790	980	IPT	0.0018	0.0023	0.0027	0.0034	0.0039	0.0044	0.0049
	2	A _{pmax}	0.05 x D	720	920	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045
	3	A _{pmax}	0.05 x D	720	850	IPT	0.0012	0.0016	0.0018	0.0023	0.0027	0.0031	0.0036
	4	A _{pmax}	0.05 x D	330	590	IPT	0.0015	0.0020	0.0023	0.0029	0.0034	0.0039	0.0045
H	2	A _{pmax}	0.05 x D	160	330	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024
	3	A _{pmax}	0.05 x D	160	260	IPT	0.0008	0.0010	0.0012	0.0015	0.0018	0.0021	0.0024
H	4	A _{pmax}	0.05 x D	330	390	IPT	0.0011	0.0014	0.0017	0.0021	0.0025	0.0028	0.0033
	1	A _{pmax}	0.05 x D	520	920	IPT	0.0014	0.0017	0.0020	0.0026	0.0030	0.0034	0.0039
H	2	A _{pmax}	0.05 x D	460	790	IPT	0.0010	0.0013	0.0015	0.0019	0.0022	0.0025	0.0028

NOTE: Those guidelines may require variations to achieve optimum results.

Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.

Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

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

Application Recommendation for Surface Profiling with HARVI™ III Ball Nose Series

Not all six cutting edges reach the center of the HARVI III series ball nose end mill. Due to this, certain tilt angles will engage different numbers of cutting edges and can alter the required cutting parameters. This will also be altered by the depths of cut, which will change the contact area and resulting number of edges engaged.

When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible. This is due to the fact that at the tip of the tool only the center cutting edges exist (two in the case of HARVI III series), and also the fact that the rotational velocity is zero in the center. Therefore, Kennametal recommends tilting the end mill to engage more cutting edges and avoid the zero-speed condition.

As the HARVI III series ball nose end mills do have two center cutting edges, it is possible to machine without tilting if the application requires this. Just factor in the reduced number of cutting edges into the cutting parameter calculations.



At the tip of the tool, only the center cutting edges exist.
The rotational velocity is zero in the center.



When surface profiling with any ball nose end mill, optimum performance will be achieved by tilting away from the center of the tool if possible.

HARVI III Ball Nose & HARVI III Taper Ball Nose



For tilt angles less than 15° and shallow profiling depths, only two cutting edges will be typically engaged. As the end mill is tilted above this, the next two edges will engage.



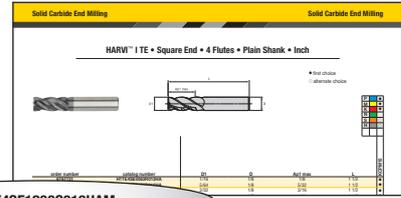
After reaching a tilt angle of at least 22°, then all six edges will at least be partially engaged.



For maximum profiling performance, a tilt angle of 40°-45° will result in full engagement of all edges with a wide range of cutting depths.

HARVI™ • KOR™ • PCD • Catalog Numbering System

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



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																																																																	
<p>H1TE = HARVI I TE HA2L = HARVI II Long HA3R = HARVI III HA3A = HARVI III Aero RSMF = RSM II</p> <p>KOR = KOR</p> <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 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</p>	<p>SE = Sharp Edge CH = Chamfer RA = Radius BN = Ball Nose TB = Taper Ball Nose TO = Torroid</p>	<p>Metric = D1 in mm Inch = D1 in decimal inch</p>	<p>N = Neck E = Extended Neck S = Short Without Neck R = Regular Without Neck L = Long Without Neck X = Extra Long Without Neck</p>	<p>Metric = Ap1 Max in mm Inch = Ap1 Max in decimal inch</p>	<p>HA = Plain HB = Weldon® SL = Safe-Lock™ DL = DUO-LOCK™</p>		<p>C = Chip Splitter I = Internal Coolant O = Coolant Grooves in Shank P = Polished Flutes</p>	<p>M = Metric Blank = Inch</p>																																																																	
						<table border="1"> <thead> <tr> <th colspan="2">Radius Metric</th> <th colspan="2">Radius Inch</th> </tr> </thead> <tbody> <tr><td>R020</td><td>= 0,2mm</td><td>R010</td><td>= .010"</td></tr> <tr><td>R025</td><td>= 0,25mm</td><td>R015</td><td>= .015"</td></tr> <tr><td>R030</td><td>= 0,3mm</td><td>R030</td><td>= .030"</td></tr> <tr><td>R040</td><td>= 0,4mm</td><td>R060</td><td>= .060"</td></tr> <tr><td>R050</td><td>= 0,5mm</td><td>R090</td><td>= .090"</td></tr> <tr><td>R075</td><td>= 0,75mm</td><td>R120</td><td>= .120"</td></tr> <tr><td>R100</td><td>= 1,0mm</td><td>R160</td><td>= .160"</td></tr> <tr><td>R125</td><td>= 1,25mm</td><td>R250</td><td>= .250"</td></tr> <tr><td>R150</td><td>= 1,5mm</td><td>R190</td><td>= .190"</td></tr> <tr><td>R200</td><td>= 2,0mm</td><td>R375</td><td>= .375"</td></tr> <tr><td>R250</td><td>= 2,5mm</td><td>R045</td><td>= .045"</td></tr> <tr><td>R300</td><td>= 3,0mm</td><td></td><td></td></tr> <tr><td>R400</td><td>= 4,0mm</td><td></td><td></td></tr> <tr><td>R500</td><td>= 5,0mm</td><td></td><td></td></tr> <tr><td>R600</td><td>= 6,0mm</td><td></td><td></td></tr> </tbody> </table>	Radius Metric		Radius Inch		R020	= 0,2mm	R010	= .010"	R025	= 0,25mm	R015	= .015"	R030	= 0,3mm	R030	= .030"	R040	= 0,4mm	R060	= .060"	R050	= 0,5mm	R090	= .090"	R075	= 0,75mm	R120	= .120"	R100	= 1,0mm	R160	= .160"	R125	= 1,25mm	R250	= .250"	R150	= 1,5mm	R190	= .190"	R200	= 2,0mm	R375	= .375"	R250	= 2,5mm	R045	= .045"	R300	= 3,0mm			R400	= 4,0mm			R500	= 5,0mm			R600	= 6,0mm						
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Holemaking

				wear resistance ← → toughness										
Coating		Grade Description			05	10	15	20	25	30	35	40	45	
Grades	 <p>KCPK10</p> <p>Composition: Advanced CVD TiCN-Al₂O₃ coating combined with a cobalt-enriched carbide substrate. Application: The KCPK10 grade offers a balanced combination of deformation resistance and edge toughness leading to outstanding abrasion and crater wear resistance for high-speed machining of steel and cast iron. Use for very high cutting speeds with low to medium feed rates.</p>	P												
		M												
		K												
		N												
		S												
 <p>KCU25™</p> <p>Composition: Advanced CVD TiCN-Al₂O₃ coating combined with a tough carbide substrate. Application: First choice for steel and cast iron. This grade offers adequate deformation resistance, excellent edge strength and superior wear resistance over a wide range of machining conditions for high productivity with very good reliability.</p>	P													
	M													
	K													
	N													
	S													
 <p>KCU40</p> <p>Composition: Multilayered PVD TiN-TiAlN coated submicron grain carbide. Application: First choice for high reliability in most materials. This grade should be used at medium speeds and high feeds due to sharper cutting edges. As universal grade it withstands interruptions and provides high wear resistance for long tool life. It covers steel, stainless steel, and cast iron.</p>	P													
	M													
	K													
	N													
	S													
 <p>KCMS35</p> <p>Composition: PVD AlTiN coated submicron grain carbide. Application: First choice for stainless steel, high-temp alloys, and long chipping steel. This grade combines superior edge toughness with good wear resistance for long tool life in long chipping materials.</p>	P													
	M													
	K													
	N													
	S													
 <p>KC7140</p> <p>Composition: PVD TiCN/TiN coated medium grain carbide with high toughness. Application: Best suited for machining of steel and stainless steel. This exceptionally tough grade is a perfect choice for demanding machining conditions offering excellent tool life.</p>	P													
	M													
	K													
	N													
	S													
 <p>KCMS40</p> <p>Composition: PVD AlTiN coated medium grain carbide with high toughness. Application: Best suited for machining of stainless steel, high-temp alloys, and long chipping steel. The tough substrate combined with its smooth built-up edge reducing coating make it the perfect choice for long chipping materials and challenging applications.</p>	P													
	M													
	K													
	N													
	S													
 <p>KCU10™</p> <p>Composition: Multilayered PVD AlCrN-based coated submicron grain carbide with superior surface finish. Application: This grade is used for micro tooling. This grade can be applied in all material groups utilizing a versatile PVD coating. The coating surface is enhanced to improve chipflow and to prevent tool breakage.</p>	P													
	M													
	K													
	N													
	S													
 <p>KCK10A</p> <p>Composition: Multilayered PVD AlTiN-based coated submicron grain carbide with superior surface finish. Application: 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>	P													
	M													
	K													
	N													
	S													

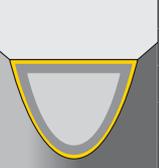
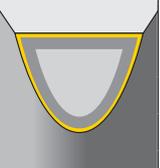
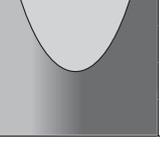
Indexable Milling

wear resistance ← → toughness

Grades

Coating	Grade Description		05	10	15	20	25	30	35	40	45
K313	Uncoated carbide grade. K313 is suitable for machining cast iron, high-temperature alloys, and non-ferrous materials. This grade can be used both wet and dry and is designed for light and general machining.										
		K									
		N									
		S									
KC410M	PVD, TiB ₂ coating on grade KC410M is extremely hard and provides very good wear characteristics at higher cutting speeds. KC410M resists built-up edge, reduces burrs, and generates excellent surface finishes. The grade is best suited for aluminum with <10% silicon and other non-ferrous materials.										
		N									
KC522M	Coated carbide grade with a AlTiN (PVD) coating. KC522M is engineered to provide better performance in general machining of steel, stainless steel, cast iron, and high-temperature alloys. KC522M resists breakage and offers improved wear resistance and increased strength.	P									
		M									
		K									
		S									
KC725M	Coated carbide grade with an advanced PVD TiAlN coating. KC725M is a high-performance grade for milling steel, stainless steel, and high-temperature alloys. The good thermal shock resistance of the substrate makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.	P									
		M									
		S									
KCK15	Coated carbide grade with CVD multilayer coating (TiN/MT TiCN/Al ₂ O ₃) and advanced Beyond™ post-coat treatment. KCK15 is a wear-resistant grade with balanced toughness for general milling of cast irons at higher speeds. Best results in dry, but can also be used wet.										
		K									
KCPK30	Coated carbide grade with CVD multilayer (TiN/TiCN/Al ₂ O ₃) and advanced Beyond post-coat treatment. Substrate is very tough. KCPK30 has a wide application area in general and roughing milling of steels and cast irons. Performs best dry, but can also be used wet.	P									
		K									
KCKP10	Submicron substrate with latest TiAlN/TiN coating technology (PVD). KCKP10 is highly wear-resistant grade. First choice for finishing and semi roughing of all cast iron materials, suitable for finishing of steel as well. This grade can be used dry or wet.										
		P									
		K									
KCK20B	Coated carbide grade with an advanced PVD TiAlN/TiN coating. Fine grained substrate combines high toughness and wear resistance for cast iron roughing and semi-roughing applications. High thermal shock resistance of the substrate and coating makes this grade ideal for wet and dry machining. First choice for roughing and challenging cutting conditions.										
		K									

Indexable Milling

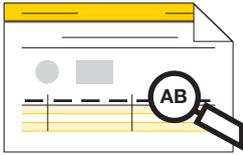
		wear resistance ← → toughness									
Coating	Grade Description	05	10	15	20	25	30	35	40	45	
Grades KCPM40	 <p>Coated carbide grade with an advanced PVD TiAlN/AlCrN coating. Tough substrate with excellent capability at higher temperatures. KCPM40™ is the first choice for milling steel and stainless steel. Good thermal shock resistance makes this grade ideal for both wet and dry machining. Primarily for use in general and heavy machining.</p>	P									
		M									
Grades KCSM30	 <p>Submicron substrate coated with high-performance TiAlN-PVD coating is an excellent choice for titanium, but also high-temperature alloys and stainless with higher speeds for light to medium cuts. First choice for application with thin to medium chip thickness, dry and wet.</p>	P									
		M									
		S									
Grades KCSM40	 <p>Coated carbide grade with an advanced PVD TiAlN/TiN coating. Premium substrate with newly developed binder composition. KCSM40 is a high-performance grade for titanium, super alloys, and stainless steel. High thermal shock resistance of the substrate makes this grade ideal for wet machining. First choice for roughing and unsuitable cutting conditions.</p>	M									
		S									
Grades KY3500	 <p>A ceramic cutting material based on micro-grain Si₃N₄ primarily for use in light to general machining of gray cast iron and ferritic ductile cast iron. Dry machining is recommended.</p>	K									

Solid Carbide End Milling

		wear resistance ← → toughness									
Coating	Grade Description	05	10	15	20	25	30	35	40	45	
Grade KCSM15A	 <p>Composition: PVD AlCrN/TiSiN coated submicron grain carbide. Application: First choice for high-temperature alloys and stainless steel. The proprietary coating technology combines a high-hardness top layer with a stress-optimized base layer taking the wear resistance and performance reliability to the next level.</p>	M									
		S									



Key to Product Table Column Headings



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

Short-Name Code	Full Text Description
Ap1 max	Maximum Cutting Depth
BS	Corner Facet Length
CS	Coolant Supply Size
D	Adapter/Shank Diameter
D	Insert: Insert IC Size
D1	Insert: Insert Hole Size
D1	Holemaking: Drill Diameter
D1	Milling: Cutter Diameter
D1 max	Maximum Drill Diameter
D1 max	Maximum Cutting Diameter
D3	Neck Diameter
D4	Bolt Circle Diameter
D41	Bolt Circle 2 Diameter
D6	Hub Diameter
DPM	Pilot Diameter Machine Side
G3X	Connection Thread Size External
hm	Average Chip Thickness
KRA	Lead Angle
L	Overall Length
L1	Holemaking: Tool Length
L1	Milling: Gage Length
L10	Insert Cutting Edge Length
L2	Milling: Head Length
L3	Drill Flute Length
L3	Milling: Maximum Depth
L4 max	Maximum Drill Depth
L5	Drill Point Length
lbs	Weight Pounds
LS	Shank Length
max RPM	Maximum Revolutions Per Minute
R _c	Corner Radius
R	Profile or Ball Nose Radii
S	Insert Thickness
W	Cutting Edge Width or Slot Width
WF	Milling: Width of Flat
Z	Number of Inserts

P	Steel
M	Stainless Steel
K	Cast Iron

N	Non-Ferrous
S	High-Temp Alloys

H	Hardened Materials
C	CFRP Materials

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

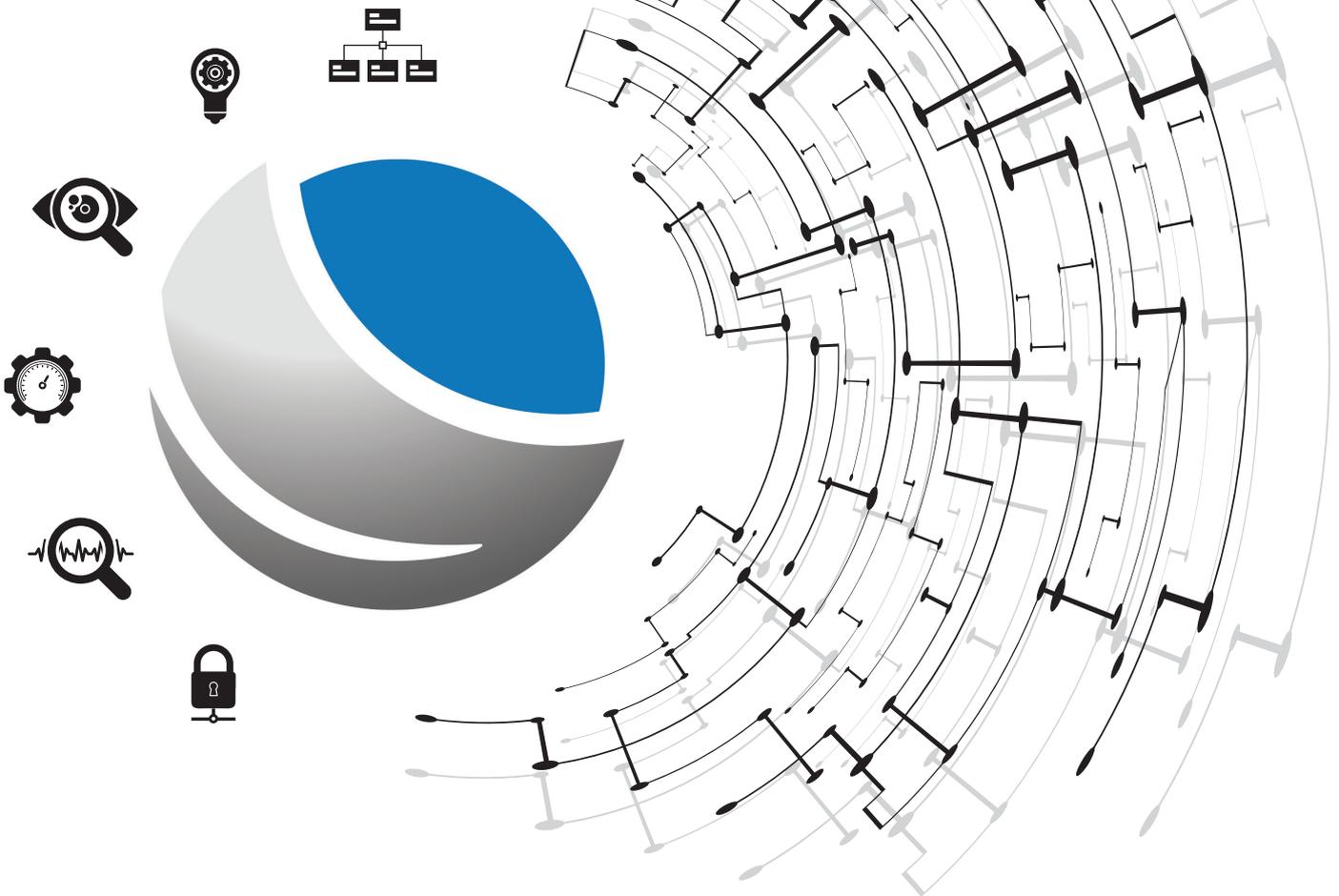
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material group	description	content	tensile strength RM (MPa)*	hardness (HB)	hardness (HRC)	material number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Gray Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought Aluminum	–	–	–	–	AlMg1, Al99.5, AlCuMg1, AlCuBiPb, AlMgSi1, AlMgSiPb
N2	Low-Silicon Aluminum Alloys and Magnesium Alloys	Si <12,2%	–	–	–	GAISIcu4, GDAISI10Mg
N3	High-Silicon Aluminum Alloys and Magnesium Alloys	Si >12,2%	–	–	–	G-ALSi12, G-AISI17Cu4, G-AISI21CuNiMg
N4	Copper-, Brass-, Zinc-Based on Machinability Index Range of 70–100	–	–	–	–	CuZn40, Ms60, G-CuSn5ZnPb, CuZn37, CuSi3Mn
N5	Nylon, Plastics, Rubbers, Phenolics, Resins, Fiberglass	–	–	–	–	LEXAN®, HOSTALEN™, POLYSTYROL®, MAKROLON®
N6	Carbon, Graphite Composites, CFRP	–	–	–	–	CFK, GFK
N7	Metal Matrix Composites (MMC)	–	–	–	–	–
S1	Iron-Based, Heat-Resistant Alloys	–	500–1200	160–260	25–48	X1NiCrMoCu32 28 7, X12NiCrSi36 16, X5NiCrAlTi31 20, X40CoCrNi20 20
S2	Cobalt-Based, Heat-Resistant Alloys	–	1000–1450	250–450	25–48	Haynes® 188, Stellite™ 6,21,31
S3	Nickel-Based, Heat-Resistant Alloys	–	600–1700	160–450	<48	INCONEL® 690, INCONEL 625, Hastelloy®, NIMONIC® 75
S4	Titanium and Titanium Alloys	–	900–1600	300–400	33–48	Ti1, TiAl5Sn2, TiAl6V4, TiAl4Mo4Sn2
H1	Hardened Materials	–	–	–	44–48	GX260NiCr42, GX330NiCr42, GX300CrNiSi952, GX300CrMo153, Hardox® 400
H2	Hardened Materials	–	–	–	48–55	–
H3	Hardened Materials	–	–	–	56–60	–
H4	Hardened Materials	–	–	–	>60	–
C1	CFRP, CFRP/CFRP	–	–	–	–	–
C2	CFRP/Non-Ferrous	–	–	–	–	–
C3	CFRP/High-Temp	–	–	–	–	–
C4	CFRP/Stainless Steel	–	–	–	–	–
C5	CFRP/Non-Ferrous/High-Temp	–	–	–	–	–

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METALCUTTING SAFETY

IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalog!

Projectile and Fragmentation Hazards:

Modern metalcutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metalcutting. Although cutting tools are designed and manufactured to withstand high cutting forces and temperatures, they can sometimes fragment, particularly if they are subjected to over-stress, severe impact, or other abuse.

To avoid injury:

- Always wear appropriate personal protective equipment, including safety goggles, when operating metalcutting machines or working nearby.
- Always make sure all machine guards are in place.

Breathing and Skin Contact Hazards:

Grinding carbide or other advanced cutting tool materials produces dust or mist containing metallic particles. Breathing this dust or mist — especially over an extended period — can cause temporary or permanent lung disease or make existing medical conditions worse. Contact with this dust or mist can irritate eyes, skin, and mucous membranes and may make existing skin conditions worse.

To avoid injury:

- Always wear breathing protection and safety goggles when grinding.
- Provide ventilation control and collect and properly dispose of dust, mist, or sludge from grinding.
- Avoid skin contact with dust or mist.

For more information, read the applicable Material Safety Data Sheet provided by Kennametal and consult General Industry Safety and Health Regulations, Part 1910, Title 29 of the Code of Federal Regulations.

These safety instructions are general guidelines. Many variables affect machining operations. It is impossible to cover every specific situation. The technical information included in this catalog and recommendations on machining practices may not apply to your particular operation. For more information, consult the Kennametal Metalcutting Safety booklet, available free from Kennametal at 724 539 5747 or fax 724 539 5439. For specific product safety and environmental questions, contact our Corporate Environmental Health and Safety Office at 724 539 5066 or fax 724 539 5372.

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