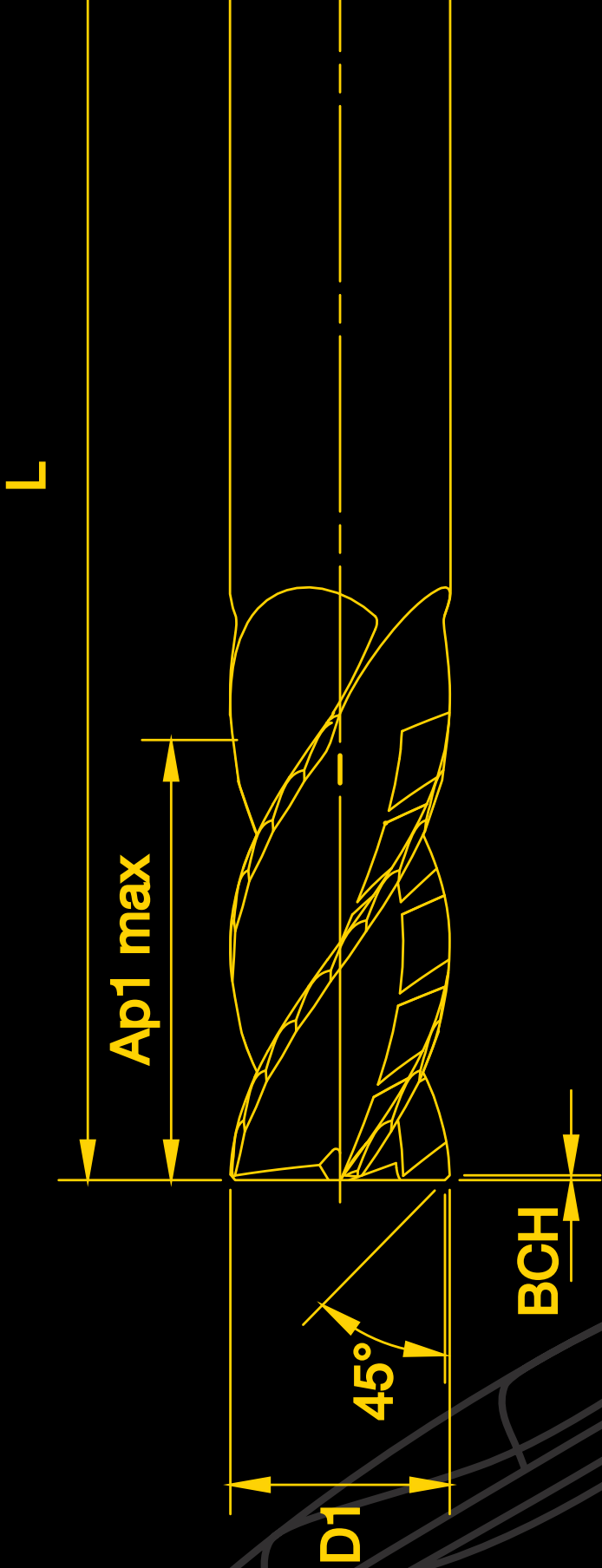


# MILLING MASTERY



**SOLID END MILLING**  
SOLID & MODULAR - METRIC



# We've Been Cutting Metal Since 1938.

## OUR STORY IS ONE OF

It starts in 1938 with our founder, metallurgist Philip M. McKenna, who after years of research created revolutionary tungsten-titanium carbide alloy cutting tools specifically for working with steel. That single development not only led to a new class of machining tools that cut faster, lasted longer and drove productivity in the machining of everything from the automobile to the airplane, but also led to the opening of McKenna Metals Company in Latrobe, Pennsylvania, United States.



Philip M.  
**McKenna**

*Kingston Plant*



*\*from left: Mary Laughner, Regina Atkinson, Richard Noel, Alex G. McKenna, Harry Fowler, Philip M. McKenna, James Harris, Donald Shick, Wilson Gallo*



*McKenna Metals Company original building in Latrobe, Pennsylvania circa late 1930s/early 1940s.*



*McKenna Metals Company Grinding Department in Latrobe, Pennsylvania in 1942.*



*Philip M. McKenna showcasing his tungsten-titanium carbide alloy developments at McKenna Metals Company's first exhibition event in 1940.*

# CONTINUOUS INNOVATION

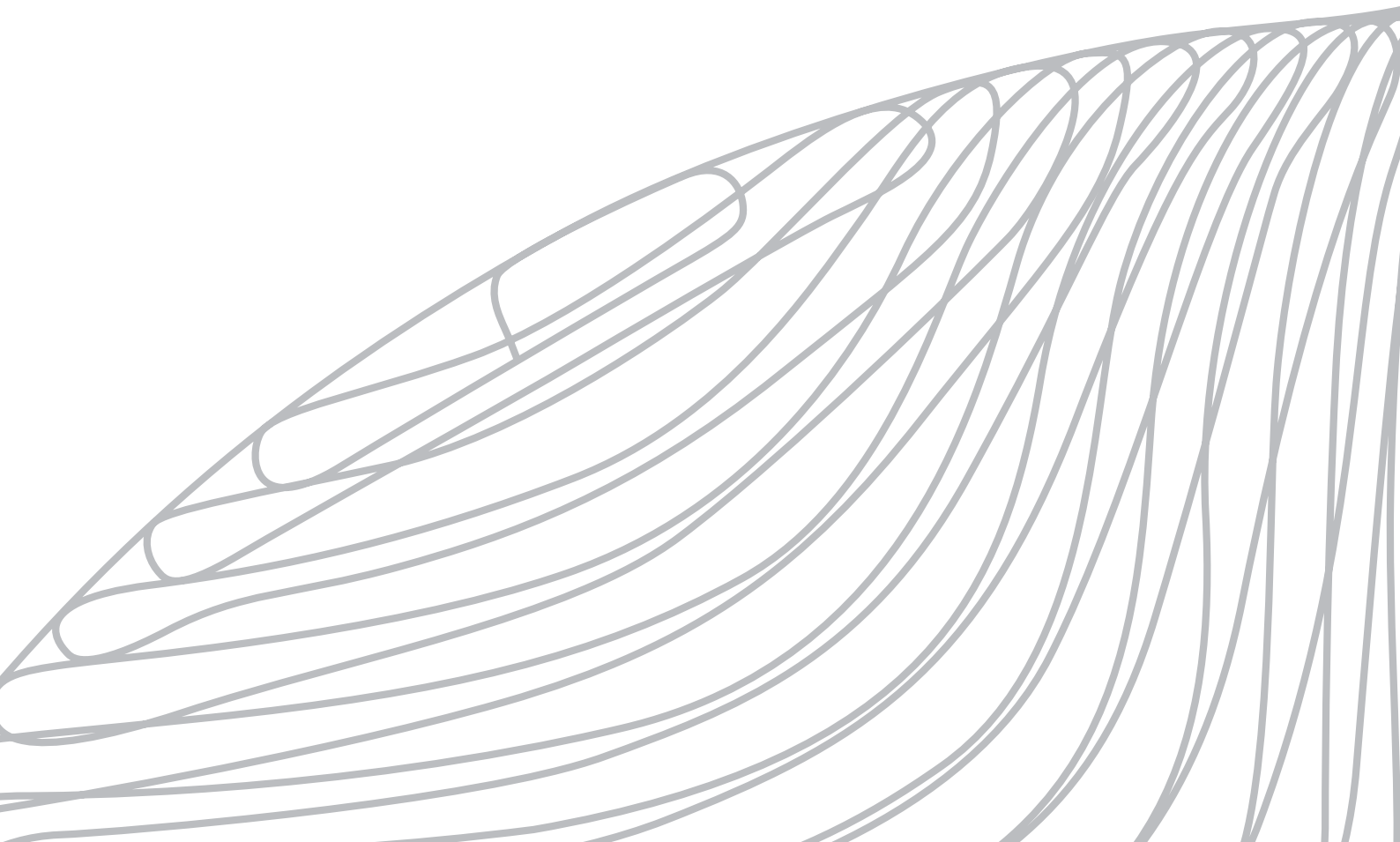
Today, that company is Kennametal Inc.—a recognized leader in metalworking serving customers across continents and industries including transportation, construction, aerospace and defense, machining and cutting, energy and general engineering. We have a reputation for building innovative solutions for our customers' most challenging applications. The name Kennametal is synonymous for high-quality, high-performance tools that can withstand the most strenuous conditions and bring ease to a wide range of machining operations. We help our customers' operations run longer, faster and with greater precision.



**WE DON'T CUT CORNERS.  
WE CUT METAL.**

**YOUR TOUGHEST MATERIALS  
DON'T STAND A CHANCE.**

*Philip M. McKenna's first metalworking shop in Latrobe, Pennsylvania in 1938.*



# END MILLING TABLE OF CONTENTS

## SERVICES & SUPPORT

METAL CUTTING SAFETY  
CUSTOMER APPLICATION SUPPORT  
SERVICE & SALES CENTERS

## HIGH PERFORMANCE SOLID CARBIDE END MILLING

ROUGHERS AND FINISHERS  
DYNAMIC MILLING  
HIGH PERFORMANCE ROUGHING & FINISHING  
HIGH PERFORMANCE MICRO MACHINING  
ALUMINUM MACHINING  
COMPOSITE MATERIALS, HIGH-TEMP ALLOYS,  
AND HARD MATERIALS MACHINING

## ECONOMY & GENERAL PURPOSE APPLICATIONS

ECONOMIC ROUGHING & FINISHING  
NOMENCLATURES

## HIGH PERFORMANCE MODULAR END MILLING

ROUGHING & FINISHING WITH ONE TOOL  
ROUGHERS AND FINISHERS  
ALUMINUM MACHINING  
SPECIFIC APPLICATIONS  
ADAPTERS AND WRENCHES  
NOMENCLATURES

## GENERAL INFORMATION

GRADES AND GRADE DESCRIPTIONS  
KEY TO COLUMN HEADINGS  
MATERIAL CROSS REFERENCE

# INDEX

HARVI™ I TE  
HARVI II TE  
HARVI Series  
HARVI II  
HARVI III  
**HARVI IV**  
HARVI II Long

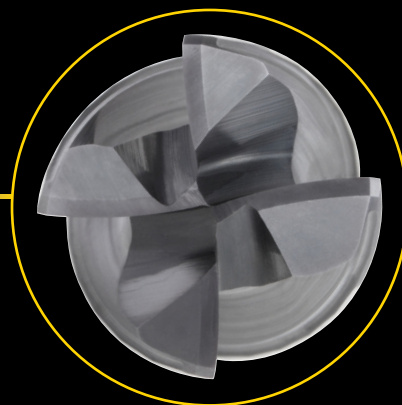
KOR™ Series  
KOR 5<sup>DA</sup>  
KOR 5<sup>DS</sup>  
KOR 6<sup>DT</sup>  
KenCut™ RR  
**KenCut Micro**  
**ROCO™**

MaxiMet™ and KenCut Aluminum  
KenCut HT  
KenFeed™ and KenCut KS  
Gomill™  
Gomill PRO

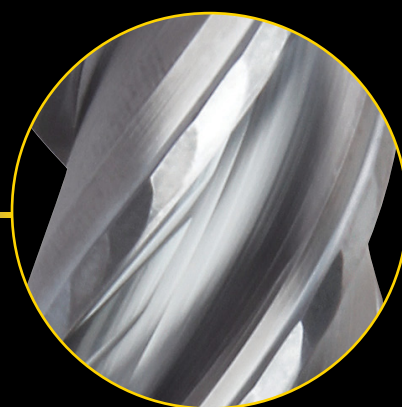
DUO-LOCK™  
DUO-LOCK HARVI I TE  
DUO-LOCK HARVI II  
DUO-LOCK HARVI III  
DUO-LOCK KenCut RR  
DUO-LOCK KenCut FF  
DUO-LOCK RSM™ II  
DUO-LOCK MaxiMet  
DUO-LOCK KenFeed  
DUO-LOCK KenCut CM  
DUO-LOCK Extensions  
DUO-LOCK Adapters  
DUO-LOCK Torque Wrenches

# HARVI I TE

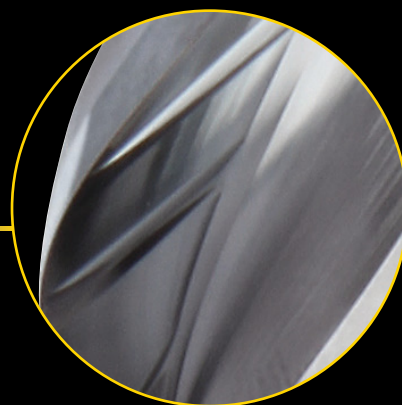
INNOVATIVE PROPRIETARY DESIGN FEATURES  
DRIVING MAXIMUM PRODUCTIVITY



**TWISTED END FACE**



**FACETED ECCENTRIC RELIEF**



**CHIP GASHES WITHIN FLUTES**

# METAL CUTTING SAFETY

## IMPORTANT SAFETY INSTRUCTIONS

Read before using the tools in this catalog!

### PROJECTILE AND FRAGMENTATION HAZARDS:

Modern metal cutting operations involve high spindle and cutter speeds and high temperatures and cutting forces. Hot metal chips may fly off the workpiece during metal cutting. 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.

- Always wear appropriate personal protective equipment, including safety goggles, when operating metal cutting 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.

- 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 Metal Cutting 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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# 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.

Region	Originating Country	Language	CAS Hotline	Email
North America	USA	English	800 835 3668	na.techsupport@kennametal.com
	Mexico	Spanish	1800 253 0758	na.techsupport@kennametal.com
Africa	South Africa	English	+27117489300	na.techsupport@kennametal.com
Europe	Austria	German	0223 63181360	eu.techsupport@kennametal.com
	Belgium	English/French	0279 06 540	eu.techsupport@kennametal.com
	Denmark	English	808 89298	na.techsupport@kennametal.com
	Finland	English	0800 919412	na.techsupport@kennametal.com
	France	French	01 60 12 83 00	eu.techsupport@kennametal.com
	Germany	German	06003 8277110	eu.techsupport@kennametal.com
	Israel	English	—	na.techsupport@kennametal.com
	Italy	Italian	028 95 96 212	eu.techsupport@kennametal.com
	Netherlands	English	076 79 95 220	eu.techsupport@kennametal.com
	Norway	English	800 10080	na.techsupport@kennametal.com
	Poland	Polish	616 656 553	eu.techsupport@kennametal.com
	Russia	English	—	eu.techsupport@kennametal.com
	Sweden	English	0207 99246	na.techsupport@kennametal.com
UK	English	0138 44 08 095	na.techsupport@kennametal.com	
Ukraine	English	—	eu.techsupport@kennametal.com	
Asia Pacific	Australia	English	1800 666 667	ap-kmt.techsupport@kennametal.com
	India	English	1 800 103 5227	in.techsupport@kennametal.com
	Japan	English	03 3820 2855	ap-kmt.techsupport@kennametal.com
	Korea (South)	English	+82 2 2100 6100	ap-kmt.techsupport@kennametal.com
	Malaysia	English	1800 812 990	ap-kmt.techsupport@kennametal.com
	New Zealand	English	0800 450 941	ap-kmt.techsupport@kennametal.com
	Singapore	English	1800 6221031	ap-kmt.techsupport@kennametal.com
	Taiwan	English	0800 666 197	ap-kmt.techsupport@kennametal.com
	Thailand	English	1800 4417820	ap-kmt.techsupport@kennametal.com

Numbers shown only serve the originating country listed.

## 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.

# SERVICE & SALES CENTERS AROUND THE WORLD

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

\*Vietnam and Philippines customers should contact the Singapore office.

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# HIGH PERFORMANCE SOLID CARBIDE END MILLING



# TOOL SELECTOR

HIGH-PERFORMANCE ROUGHING AND FINISHING						
HARVI I TE						
						
Series	H1TE4CH..R	H1TE4CH..N	H1TE4CH..S	H1TE4RA..N	H1TE4RA..E	H1TE4SE..N
Tool type						
Rougher	●	●	●	●	●	●
Finisher	○	○	○	○	○	○
Chamfering						
Main operation						
Workpiece material						
Primary	P M K	P M K	P M K	P M K S	P M K S	P M K
Secondary	S H	S H	S H	H	H	S H
Corner style						
Corner radius [Rε]	—	—	—	0,25–6,0mm	0,25–6,0mm	—
Corner chamfer width [BCH]	0,2–0,5mm	0,15–0,35mm	0,1–0,35mm	—	—	—
Cutter diameter [D1]	2–25mm	2–25mm	2–25mm	4–25mm	4–25mm	2–25mm
Length of cut	1,8–3xD1	1,8–3xD1	1,2–2xD1	1,5xD	1,8–2,75xD1	1,8–3xD1
Maximum cutting depth [Ap1 max]	5–45mm	6–45mm	4–30mm	6–37,5mm	11–45mm	6–45mm
Flute helix angle	36°/39°	36°/39°	36°/39°	36°/39°	36/39	36°/39°
Number of flutes [ZU]	4	4	4	4	4	4
Center cutting	✓	✓	✓	✓	✓	✓
Additional operations						

- Primary
- Secondary

# TOOL SELECTOR

## HIGH-PERFORMANCE ROUGHING/FINISHING

### HARVI I TE



Series	H1TE4SE..S	H1TEBN..N-L
Tool type		
Rougher	●	●
Finisher	○	○
Chamfering		
Main operation		
Workpiece material		
Primary	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>
Secondary	<b>S</b> <b>H</b>	<b>S</b> <b>H</b>
Corner style		
Corner radius [Rε]	—	—
Corner chamfer width [BCH]	—	—
Cutter diameter [D1]	2–25mm	2–20mm
Length of cut	1,2–2xD1	1–2,7xD
Maximum cutting depth [Ap1 max]	4–30mm	2–50mm
Flute helix angle	36°/39°	36°/39°
Number of flutes [ZU]	4	4
Center cutting	✓	✓
Additional operations		



































- Primary
- Secondary

# TOOL SELECTOR

HIGH-PERFORMANCE ROUGHING AND FINISHING						
HARVI II TE						
Series	H2TE5CH..R-L	H2TE5CH..N	H2TE5RA..R-L	H2TE5RA..N-E	H2TE5SE..R-L	H2TE5SE..N-E
Tool type						
Rougher	●	●	●	●	●	●
Finisher	○	○	○	○	○	○
Chamfering						
Main operation						
Workpiece material						
Primary	M S	M S	M S	M S	M S	M S
Secondary	P H	P H	P H	P H	P H	P H
Corner style						
Corner radius [Rε]	—	—	0,25–4mm	0,25–6mm	—	—
Corner chamfer width [BCH]	0,2–0,5mm	0,3–0,5mm	—	—	—	—
Cutter diameter [D1]	4–25mm	10–20mm	4–25mm	6–25mm	4–25mm	6–25mm
Length of cut	1,8–3,8xD1	1,9–2,2xD	1,8–3,8xD	1,8–2,2xD	1,8–3,8xD1	1,8–2,4xD
Maximum cutting depth [Ap1 max]	11–17mm	22–38mm	11–75mm	13–45mm	11–60mm	13–45mm
Flute helix angle	36°/39°	36°/39°	36°/39°	36°/39°	36°/39°	36°/39°
Number of flutes [ZU]	5	5	5	5	5	5
Center cutting						
Additional operations						

















● Primary  
○ Secondary

# TOOL SELECTOR

	HIGH-PERFORMANCE ROUGHING/FINISHING		HIGH-PERFORMANCE FINISHING			
	HARVI II		HARVI III			
						
Series	UCDE	UDDE	HA3R6RA/SE..S-X	HA3R6RA/SE..N	HA3R6BN..N	HA3R6TB..L-X
Tool type						
Rougher	●	●	○	○	○	○
Finisher	○	○	●	●	●	●
Chamfering						
Main operation						
Workpiece material						
Primary	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>S</b>	<b>M</b> <b>S</b>	<b>M</b> <b>S</b>	<b>M</b> <b>S</b>	<b>M</b> <b>S</b>
Secondary	<b>H</b>	<b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>
Corner style	 	 	 	 		
Corner radius [Rε]	0,25–0,75mm	0,20–6mm	0,50–0,75mm	0,50–6mm	—	—
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutter diameter [D1]	4–25mm	6–25mm	10–25mm	10–25mm	10–20mm	4–10mm
Length of cut	1,8–2,7xD1	1,8–2,4xD	1,8–2,2xD	1,8–2,2xD	1xD1	4,7–7xD
Maximum cutting depth [Ap1 max]	11–45mm	13–45mm	22–45mm	22–45mm	10–20mm	26–39mm
Flute helix angle	38°	38°	38°	38°	38°	38°
Number of flutes [ZU]	5	5	6	6	6	6
Center cutting			✓	✓	✓	✓
Additional operations	 	 	 	 	 	 
















































● Primary  
○ Secondary

# TOOL SELECTOR

	HIGH-PERFORMANCE FINISHING		FINISHING AND FINE FINISHING	
	HARVI IV		HARVI II Long	
Series	HA4R8RA/SE..R	HA4R8RA/SE..X..DM	HA2L5RA..L	HA2L5RA..X
Tool type				
Rougher	○	○		
Finisher	●	●	●	●
Chamfering				
Main operation				
Workpiece material				
Primary	M S	M S	P M S	P M S
Secondary	P H	P H	K H	K H
Corner style	 	 		
Corner radius [R <sub>c</sub> ]	0,50–6mm	0,50–6mm	0,20–6mm	0,20–6mm
Corner chamfer width [BCH]	—	—	—	—
Cutter diameter [D1]	10–25mm	10–25mm	6–25mm	6–25mm
Length of cut	1,8–4xD	1,8–4xD	3xD	5xD
Maximum cutting depth [A <sub>p1</sub> max]	22–45mm	40–100mm	18–75mm	30–125mm
Flute helix angle	35°	35°	43°	43°
Number of flutes [ZU]	8	8	5	5
Center cutting				
Additional operations	 	 		

- Primary
- Secondary

# TOOL SELECTOR

	DYNAMIC MILLING						
	KOR5 <sup>DS</sup>		KOR5 <sup>DA</sup>			KOR6 <sup>DT</sup>	
							
Series	KOR5..R	KOR5..L	KOR5..R..I	KOR5..L..I	KOR5..R..C	KOR6..R	KOR6..L
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 [Rε]	0,50—1mm	0,50—1mm	0,20—2,50mm	0,20—2,50mm	0,20—2,50mm	0,05—1mm	0,50—1mm
Corner chamfer width [BCH]	—	—	—	—	—	—	—
Cutter diameter [D1]	8—25mm	8—25mm	10—25mm	10—25mm	10—25mm	8—25mm	8—25mm
Length of cut	3xD	5xD	3xD	5xD	3xD	3xD	5xD
Maximum cutting depth [Ap1 max]	24—75mm	40—125mm	30—60mm	50—125mm	30—60mm	24—75mm	40—125mm
Flute helix angle	40°	40°	35°	35°	35°	38°	38°
Number of flutes [ZU]	5	5	5	5	5	6	6
Coolant							
Additional operations	   		 	 	 	 	 
							

● Primary  
○ Secondary

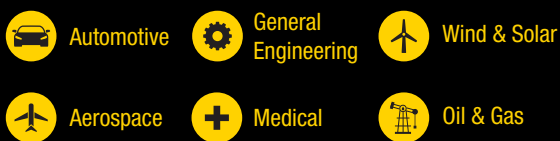
# HARVI I TE

High-Performance Roughing and Finishing  
with Maximum Versatility

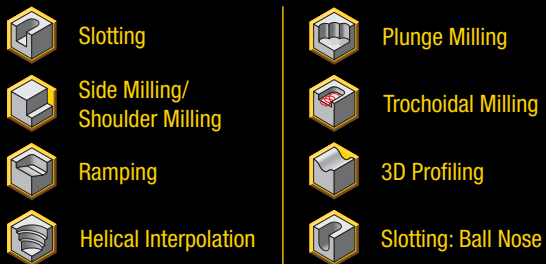
## Materials



## Industries



## Applications



- Four-flute end mill for roughing and finishing covering the broadest range of applications and materials.
- The HARVI I TE Series solid carbide end mills ensure maximum metal removal rates in a variety of operations, including dynamic milling and extreme ramping operations.
- Applicable in steels, stainless steels, cast iron, high-temp alloys and hardened materials.

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

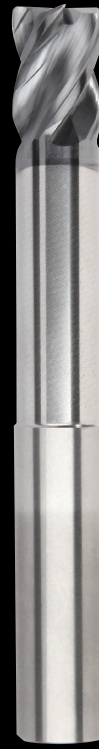
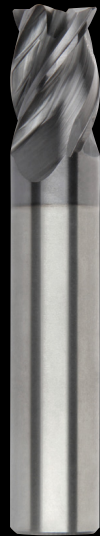
CHAMFERED

CHAMFERED  
SHARP EDGE  
SHORT VERSION

NECKED  
CHAMFERED  
RADIUSED  
SHARP EDGE

EXTENDED NECK  
RADIUSED

BALL NOSE  
SHORT VERSION  
WITH NECK  
LONG VERSION  
WITHOUT NECK



FACETED ECCENTRIC  
RELIEF

CHIP GASHES WITHIN  
THE FLUTES

TWISTED END FACE

ASYMMETRICAL  
DIVIDED FLUTES AND  
VARIABLE HELIX

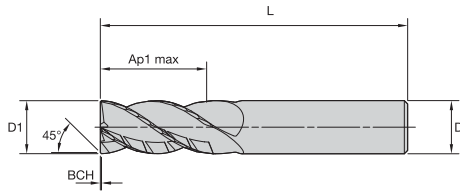
**Proprietary end face design** — Twisted cutting edge increases corner stability, enabling soft cutting action even at highest ramping angles.

**Asymmetrical divided flutes and variable helix** — Enables vibration dampening and unmatched feed rates.

**Proprietary relief** — A precision-faceted eccentric relief reduces vibrations and friction for excellent cutting conditions in multiple materials.

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

**Proprietary core design** — Increases tool stability.



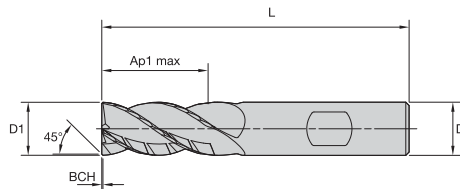
P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

## HARVI I TE

Chamfered • 4 Flutes • Plain Shank

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



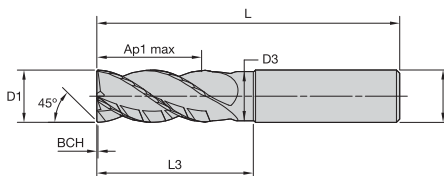
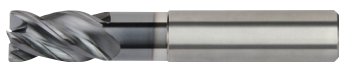
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H	○	○

● Primary  
○ Secondary

## HARVI I TE

Chamfered • 4 Flutes • Weldon® Shank

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



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● Primary  
○ Secondary

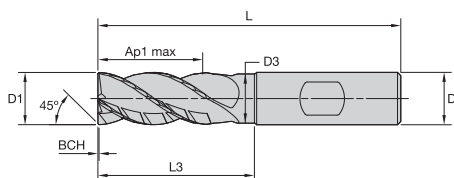
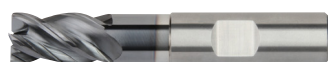
KCPM15

HIGH PERFORMANCE SOLID CARBIDE END MILLING

# HARVI I TE

Chamfered • 4 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3D	Ap1 Max	L3	L	Bch	
6767959	H1TE4CH0200N006HAM	2,00	6,00	—	6,00	—	57,00	0,10	●
6767960	H1TE4CH0250N006HAM	2,50	6,00	—	6,00	—	57,00	0,10	●
6767961	H1TE4CH0300N008HAM	3,00	6,00	2,82	8,00	16,50	57,00	0,10	●
6767962	H1TE4CH0350N010HAM	3,50	6,00	3,29	10,00	16,50	57,00	0,10	●
6676308	H1TE4CH0400N011HAM	4,00	6,00	3,76	11,00	16,00	57,00	0,15	●
6676310	H1TE4CH0500N013HAM	5,00	6,00	4,70	13,00	18,00	57,00	0,15	●
6676332	H1TE4CH0600N013HAM	6,00	6,00	5,64	13,00	18,00	57,00	0,15	●
6676334	H1TE4CH0800N016HAM	8,00	8,00	7,52	16,00	24,00	63,00	0,20	●
6676336	H1TE4CH1000N022HAM	10,00	10,00	9,40	22,00	30,00	72,00	0,20	●
6676338	H1TE4CH1200N026HAM	12,00	12,00	11,28	26,00	36,00	83,00	0,20	●
6676340	H1TE4CH1400N026HAM	14,00	14,00	13,16	26,00	42,00	83,00	0,25	●
6676342	H1TE4CH1600N032HAM	16,00	16,00	15,04	32,00	48,00	92,00	0,35	●
6676344	H1TE4CH2000N038HAM	20,00	20,00	18,80	38,00	60,00	104,00	0,35	●
6676346	H1TE4CH2500N045HAM	25,00	25,00	24,00	45,00	75,00	121,00	0,35	●



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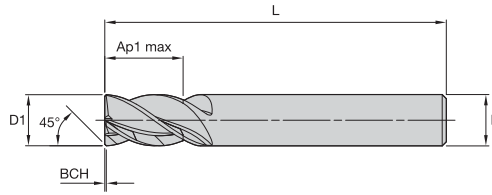
● Primary  
○ Secondary

KCPM15

# HARVI I TE

Chamfered • 4 Flutes • Necked • Weldon® Shank

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



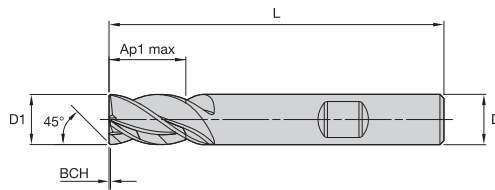
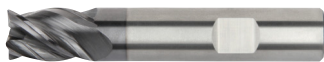
P	●	●
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H	○	○

● Primary  
○ Secondary

## HARVI I TE

Chamfered • 4 Flutes • Short • Plain Shank

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



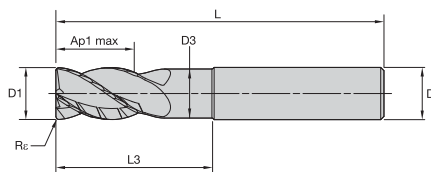
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● Primary  
○ Secondary

## HARVI I TE

Chamfered • 4 Flutes • Short • Weldon® Shank

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



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● Primary  
○ Secondary

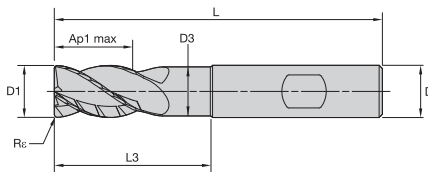
# HARVI I TE

Radiused • 4 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
667968	H1TE4RA0400N006HAR025M	4,00	6,00	3,76	6,00	12,00	57,00	0,25	●
667969	H1TE4RA0400N006HAR050M	4,00	6,00	3,76	6,00	12,00	57,00	0,50	●
6676190	H1TE4RA0600N009HAR050M	6,00	6,00	5,64	9,00	18,00	63,00	0,50	●
6676231	H1TE4RA0600N009HAR100M	6,00	6,00	5,64	9,00	18,00	63,00	1,00	●
6676234	H1TE4RA0800N012HAR050M	8,00	8,00	7,52	12,00	24,00	68,00	0,50	●
6676235	H1TE4RA0800N012HAR100M	8,00	8,00	7,52	12,00	24,00	68,00	1,00	●
6676238	H1TE4RA1000N015HAR050M	10,00	10,00	9,40	15,00	30,00	76,00	0,50	●
6676239	H1TE4RA1000N015HAR100M	10,00	10,00	9,40	15,00	30,00	76,00	1,00	●
6676240	H1TE4RA1000N015HAR200M	10,00	10,00	9,40	15,00	30,00	76,00	2,00	●
6676251	H1TE4RA1000N015HAR300M	10,00	10,00	9,40	15,00	30,00	76,00	3,00	●
6676252	H1TE4RA1000N015HAR400M	10,00	10,00	9,40	15,00	30,00	76,00	4,00	●
6676257	H1TE4RA1200N018HAR050M	12,00	12,00	11,28	18,00	36,00	83,00	0,50	●
6676258	H1TE4RA1200N018HAR100M	12,00	12,00	11,28	18,00	36,00	83,00	1,00	●
6676259	H1TE4RA1200N018HAR200M	12,00	12,00	11,28	18,00	36,00	83,00	2,00	●
6676260	H1TE4RA1200N018HAR300M	12,00	12,00	11,28	18,00	36,00	83,00	3,00	●
6676271	H1TE4RA1200N018HAR400M	12,00	12,00	11,28	18,00	36,00	83,00	4,00	●
6676277	H1TE4RA1600N024HAR050M	16,00	16,00	15,04	24,00	48,00	100,00	0,50	●
6676278	H1TE4RA1600N024HAR100M	16,00	16,00	15,04	24,00	48,00	100,00	1,00	●
6676279	H1TE4RA1600N024HAR200M	16,00	16,00	15,04	24,00	48,00	100,00	2,00	●
6676280	H1TE4RA1600N024HAR300M	16,00	16,00	15,04	24,00	48,00	100,00	3,00	●
6676281	H1TE4RA1600N024HAR400M	16,00	16,00	15,04	24,00	48,00	100,00	4,00	●
6676282	H1TE4RA1600N024HAR600M	16,00	16,00	15,04	24,00	48,00	100,00	6,00	●
6676289	H1TE4RA2000N030HAR050M	20,00	20,00	18,80	30,00	60,00	115,00	0,50	●
6676290	H1TE4RA2000N030HAR100M	20,00	20,00	18,80	30,00	60,00	115,00	1,00	●
6676291	H1TE4RA2000N030HAR200M	20,00	20,00	18,80	30,00	60,00	115,00	2,00	●
6676292	H1TE4RA2000N030HAR300M	20,00	20,00	18,80	30,00	60,00	115,00	3,00	●
6676293	H1TE4RA2000N030HAR400M	20,00	20,00	18,80	30,00	60,00	115,00	4,00	●
6676294	H1TE4RA2000N030HAR600M	20,00	20,00	18,80	30,00	60,00	115,00	6,00	●
6676299	H1TE4RA2500N038HAR050M	25,00	25,00	24,00	37,50	75,00	135,00	0,50	●
6676300	H1TE4RA2500N038HAR100M	25,00	25,00	24,00	37,50	75,00	135,00	1,00	●
6676301	H1TE4RA2500N038HAR200M	25,00	25,00	24,00	37,50	75,00	135,00	2,00	●
6676302	H1TE4RA2500N038HAR300M	25,00	25,00	24,00	37,50	75,00	135,00	3,00	●
6676303	H1TE4RA2500N038HAR400M	25,00	25,00	24,00	37,50	75,00	135,00	4,00	●
6676304	H1TE4RA2500N038HAR600M	25,00	25,00	24,00	37,50	75,00	135,00	6,00	●

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HIGH PERFORMANCE SOLID CARBIDE END MILLING



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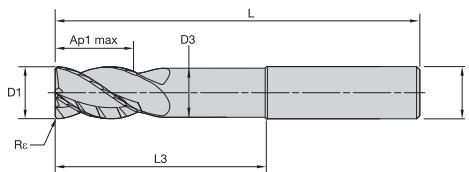
● Primary  
○ Secondary

## HARVI I TE

Radiused • 4 Flutes • Necked • Weldon® Shank

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

KCSM15



P	●
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● Primary  
○ Secondary

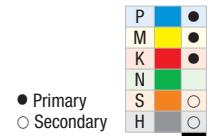
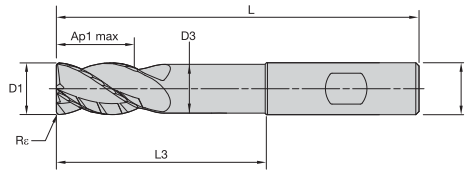
# HARVI TE

Radiused • 4 Flutes • Extended Neck • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
6929435	H1TE4RA0400E011HAR025M	4,00	6,00	3,76	11,00	15,00	57,00	0,25	●
6929436	H1TE4RA0400E011HAR050M	4,00	6,00	3,76	11,00	15,00	57,00	0,50	●
6929439	H1TE4RA0600E013HAR050M	6,00	6,00	5,64	13,00	32,00	70,00	0,50	●
6929440	H1TE4RA0600E013HAR100M	6,00	6,00	5,64	13,00	32,00	70,00	1,00	●
6929443	H1TE4RA0800E019HAR050M	8,00	8,00	7,52	19,00	40,00	76,00	0,50	●
6929444	H1TE4RA0800E019HAR100M	8,00	8,00	7,52	19,00	40,00	76,00	1,00	●
6929447	H1TE4RA1000E022HAR050M	10,00	10,00	9,40	22,00	58,00	100,00	0,50	●
6929448	H1TE4RA1000E022HAR100M	10,00	10,00	9,40	22,00	58,00	100,00	1,00	●
6929449	H1TE4RA1000E022HAR200M	10,00	10,00	9,40	22,00	58,00	100,00	2,00	●
6929450	H1TE4RA1000E022HAR250M	10,00	10,00	9,40	22,00	58,00	100,00	2,50	●
6929451	H1TE4RA1000E022HAR300M	10,00	10,00	9,40	22,00	58,00	100,00	3,00	●
6929452	H1TE4RA1000E022HAR400M	10,00	10,00	9,40	22,00	58,00	100,00	4,00	●
6929459	H1TE4RA1200E026HAR050M	12,00	12,00	11,28	26,00	53,00	100,00	0,50	●
6929460	H1TE4RA1200E026HAR100M	12,00	12,00	11,28	26,00	53,00	100,00	1,00	●
6929461	H1TE4RA1200E026HAR200M	12,00	12,00	11,28	26,00	53,00	100,00	2,00	●
6929462	H1TE4RA1200E026HAR250M	12,00	12,00	11,28	26,00	53,00	100,00	2,50	●
6929463	H1TE4RA1200E026HAR300M	12,00	12,00	11,28	26,00	53,00	100,00	3,00	●
6929464	H1TE4RA1200E026HAR400M	12,00	12,00	11,28	26,00	53,00	100,00	4,00	●
6929471	H1TE4RA1600E032HAR050M	16,00	16,00	15,04	32,00	73,00	125,00	0,50	●
6929472	H1TE4RA1600E032HAR100M	16,00	16,00	15,04	32,00	73,00	125,00	1,00	●
6929473	H1TE4RA1600E032HAR200M	16,00	16,00	15,04	32,00	73,00	125,00	2,00	●
6929474	H1TE4RA1600E032HAR250M	16,00	16,00	15,04	32,00	73,00	125,00	2,50	●
6929475	H1TE4RA1600E032HAR300M	16,00	16,00	15,04	32,00	73,00	125,00	3,00	●
6929476	H1TE4RA1600E032HAR400M	16,00	16,00	15,04	32,00	73,00	125,00	4,00	●
6929477	H1TE4RA1600E032HAR600M	16,00	16,00	15,04	32,00	73,00	125,00	6,00	●
6929485	H1TE4RA2000E038HAR050M	20,00	20,00	18,80	38,00	73,00	125,00	0,50	●
6929486	H1TE4RA2000E038HAR100M	20,00	20,00	18,80	38,00	73,00	125,00	1,00	●
6929487	H1TE4RA2000E038HAR200M	20,00	20,00	18,80	38,00	73,00	125,00	2,00	●
6929488	H1TE4RA2000E038HAR250M	20,00	20,00	18,80	38,00	73,00	125,00	2,50	●
6929489	H1TE4RA2000E038HAR300M	20,00	20,00	18,80	38,00	73,00	125,00	3,00	●
6929490	H1TE4RA2000E038HAR400M	20,00	20,00	18,80	38,00	73,00	125,00	4,00	●
6929491	H1TE4RA2000E038HAR600M	20,00	20,00	18,80	38,00	73,00	125,00	6,00	●
6929499	H1TE4RA2500E045HAR050M	25,00	25,00	24,00	45,00	75,00	135,00	0,50	●
6929500	H1TE4RA2500E045HAR100M	25,00	25,00	24,00	45,00	75,00	135,00	1,00	●
6929501	H1TE4RA2500E045HAR200M	25,00	25,00	24,00	45,00	75,00	135,00	2,00	●
6929502	H1TE4RA2500E045HAR250M	25,00	25,00	24,00	45,00	75,00	135,00	2,50	●
6929503	H1TE4RA2500E045HAR300M	25,00	25,00	24,00	45,00	75,00	135,00	3,00	●
6929504	H1TE4RA2500E045HAR400M	25,00	25,00	24,00	45,00	75,00	135,00	4,00	●
6929505	H1TE4RA2500E045HAR600M	25,00	25,00	24,00	45,00	75,00	135,00	6,00	●

KCSM15

HIGH PERFORMANCE SOLID CARBIDE END MILLING



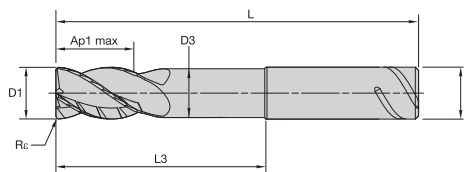
## HARVI I TE

Radiused • 4 Flutes • Extended Neck • Weldon® Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Re	
6929437	H1TE4RA0400E011HBR025M	4,00	6,00	3,76	11,00	15,00	57,00	0,25	•
6929438	H1TE4RA0400E011HBR050M	4,00	6,00	3,76	11,00	15,00	57,00	0,50	•
6929441	H1TE4RA0600E013HBR050M	6,00	6,00	5,64	13,00	32,00	70,00	0,50	•
6929442	H1TE4RA0600E013HBR100M	6,00	6,00	5,64	13,00	32,00	70,00	1,00	•
6929445	H1TE4RA0800E019HBR050M	8,00	8,00	7,52	19,00	40,00	76,00	0,50	•
6929446	H1TE4RA0800E019HBR100M	8,00	8,00	7,52	19,00	40,00	76,00	1,00	•
6929453	H1TE4RA1000E022HBR050M	10,00	10,00	9,40	22,00	58,00	100,00	0,50	•
6929454	H1TE4RA1000E022HBR100M	10,00	10,00	9,40	22,00	58,00	100,00	1,00	•
6929455	H1TE4RA1000E022HBR200M	10,00	10,00	9,40	22,00	58,00	100,00	2,00	•
6929456	H1TE4RA1000E022HBR250M	10,00	10,00	9,40	22,00	58,00	100,00	2,50	•
6929457	H1TE4RA1000E022HBR300M	10,00	10,00	9,40	22,00	58,00	100,00	3,00	•
6929458	H1TE4RA1000E022HBR400M	10,00	10,00	9,40	22,00	58,00	100,00	4,00	•
6929465	H1TE4RA1200E026HBR050M	12,00	12,00	11,28	26,00	53,00	100,00	0,50	•
6929466	H1TE4RA1200E026HBR100M	12,00	12,00	11,28	26,00	53,00	100,00	1,00	•
6929467	H1TE4RA1200E026HBR200M	12,00	12,00	11,28	26,00	53,00	100,00	2,00	•
6929468	H1TE4RA1200E026HBR250M	12,00	12,00	11,28	26,00	53,00	100,00	2,50	•
6929469	H1TE4RA1200E026HBR300M	12,00	12,00	11,28	26,00	53,00	100,00	3,00	•
6929470	H1TE4RA1200E026HBR400M	12,00	12,00	11,28	26,00	53,00	100,00	4,00	•
6929478	H1TE4RA1600E032HBR050M	16,00	16,00	15,04	32,00	73,00	125,00	0,50	•
6929479	H1TE4RA1600E032HBR100M	16,00	16,00	15,04	32,00	73,00	125,00	1,00	•
6929480	H1TE4RA1600E032HBR200M	16,00	16,00	15,04	32,00	73,00	125,00	2,00	•
6929481	H1TE4RA1600E032HBR250M	16,00	16,00	15,04	32,00	73,00	125,00	2,50	•
6929482	H1TE4RA1600E032HBR300M	16,00	16,00	15,04	32,00	73,00	125,00	3,00	•
6929483	H1TE4RA1600E032HBR400M	16,00	16,00	15,04	32,00	73,00	125,00	4,00	•
6929484	H1TE4RA1600E032HBR600M	16,00	16,00	15,04	32,00	73,00	125,00	6,00	•
6929492	H1TE4RA2000E038HBR050M	20,00	20,00	18,80	38,00	73,00	125,00	0,50	•
6929493	H1TE4RA2000E038HBR100M	20,00	20,00	18,80	38,00	73,00	125,00	1,00	•
6929494	H1TE4RA2000E038HBR200M	20,00	20,00	18,80	38,00	73,00	125,00	2,00	•
6929495	H1TE4RA2000E038HBR250M	20,00	20,00	18,80	38,00	73,00	125,00	2,50	•
6929496	H1TE4RA2000E038HBR300M	20,00	20,00	18,80	38,00	73,00	125,00	3,00	•
6929497	H1TE4RA2000E038HBR400M	20,00	20,00	18,80	38,00	73,00	125,00	4,00	•
6929498	H1TE4RA2000E038HBR600M	20,00	20,00	18,80	38,00	73,00	125,00	6,00	•
6929506	H1TE4RA2500E045HBR050M	25,00	25,00	24,00	45,00	75,00	135,00	0,50	•
6929507	H1TE4RA2500E045HBR100M	25,00	25,00	24,00	45,00	75,00	135,00	1,00	•
6929508	H1TE4RA2500E045HBR200M	25,00	25,00	24,00	45,00	75,00	135,00	2,00	•
6929509	H1TE4RA2500E045HBR250M	25,00	25,00	24,00	45,00	75,00	135,00	2,50	•
6929510	H1TE4RA2500E045HBR300M	25,00	25,00	24,00	45,00	75,00	135,00	3,00	•
6929511	H1TE4RA2500E045HBR400M	25,00	25,00	24,00	45,00	75,00	135,00	4,00	•
6929512	H1TE4RA2500E045HBR600M	25,00	25,00	24,00	45,00	75,00	135,00	6,00	•

HIGH PERFORMANCE SOLID CARBIDE END MILLING

KCSM15



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● Primary  
○ Secondary

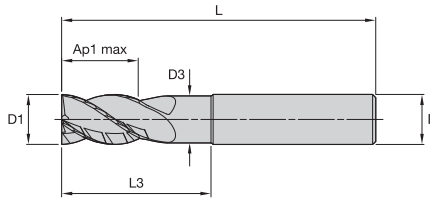
# HARVI I TE

Radiused • 4 Flutes • Extended Neck • SAFE-LOCK™ Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
6929513	H1TE4RA1200E026SLR050M	12,00	12,00	11,28	26,00	53,00	100,00	0,50	●
6929514	H1TE4RA1200E026SLR100M	12,00	12,00	11,28	26,00	53,00	100,00	1,00	●
6929515	H1TE4RA1200E026SLR200M	12,00	12,00	11,28	26,00	53,00	100,00	2,00	●
6929516	H1TE4RA1200E026SLR250M	12,00	12,00	11,28	26,00	53,00	100,00	2,50	●
6929517	H1TE4RA1200E026SLR300M	12,00	12,00	11,28	26,00	53,00	100,00	3,00	●
6929518	H1TE4RA1200E026SLR400M	12,00	12,00	11,28	26,00	53,00	100,00	4,00	●
6929519	H1TE4RA1600E032SLR050M	16,00	16,00	15,04	32,00	73,00	125,00	0,50	●
6929520	H1TE4RA1600E032SLR100M	16,00	16,00	15,04	32,00	73,00	125,00	1,00	●
6929531	H1TE4RA1600E032SLR200M	16,00	16,00	15,04	32,00	73,00	125,00	2,00	●
6929532	H1TE4RA1600E032SLR250M	16,00	16,00	15,04	32,00	73,00	125,00	2,50	●
6929533	H1TE4RA1600E032SLR300M	16,00	16,00	15,04	32,00	73,00	125,00	3,00	●
6929534	H1TE4RA1600E032SLR400M	16,00	16,00	15,04	32,00	73,00	125,00	4,00	●
6929535	H1TE4RA1600E032SLR600M	16,00	16,00	15,04	32,00	73,00	125,00	6,00	●
6929536	H1TE4RA2000E038SLR050M	20,00	20,00	18,80	38,00	73,00	125,00	0,50	●
6929538	H1TE4RA2000E038SLR100M	20,00	20,00	18,80	38,00	73,00	125,00	1,00	●
6929539	H1TE4RA2000E038SLR200M	20,00	20,00	18,80	38,00	73,00	125,00	2,00	●
6929540	H1TE4RA2000E038SLR250M	20,00	20,00	18,80	38,00	73,00	125,00	2,50	●
6929541	H1TE4RA2000E038SLR300M	20,00	20,00	18,80	38,00	73,00	125,00	3,00	●
6929542	H1TE4RA2000E038SLR400M	20,00	20,00	18,80	38,00	73,00	125,00	4,00	●
6929543	H1TE4RA2000E038SLR600M	20,00	20,00	18,80	38,00	73,00	125,00	6,00	●
6929545	H1TE4RA2500E045SLR050M	25,00	25,00	24,00	45,00	75,00	135,00	0,50	●
6929546	H1TE4RA2500E045SLR100M	25,00	25,00	24,00	45,00	75,00	135,00	1,00	●
6929547	H1TE4RA2500E045SLR200M	25,00	25,00	24,00	45,00	75,00	135,00	2,00	●
6929548	H1TE4RA2500E045SLR250M	25,00	25,00	24,00	45,00	75,00	135,00	2,50	●
6929549	H1TE4RA2500E045SLR300M	25,00	25,00	24,00	45,00	75,00	135,00	3,00	●
6929550	H1TE4RA2500E045SLR400M	25,00	25,00	24,00	45,00	75,00	135,00	4,00	●
6929551	H1TE4RA2500E045SLR600M	25,00	25,00	24,00	45,00	75,00	135,00	6,00	●

KCSMT15

HIGH PERFORMANCE SOLID CARBIDE END MILLING



## HARVI I TE

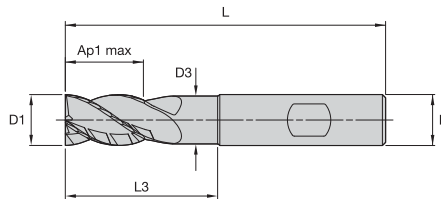
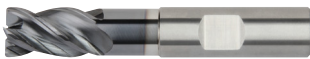
Square End • 4 Flutes • Necked • Plain Shank

P	●	●
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N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

KCPM15

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



## HARVI I TE

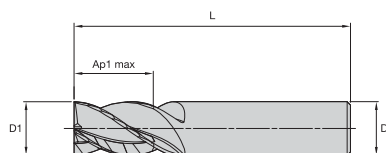
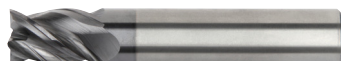
Square End • 4 Flutes • Necked • Weldon® Shank

P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

KCPM15

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



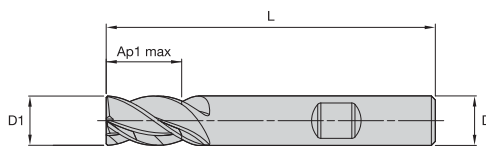
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI I TE

Square End • 4 Flutes • Short • Plain Shank

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



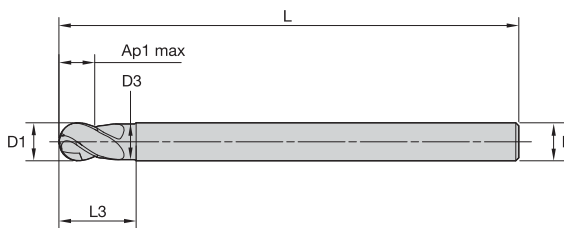
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI I TE

Square End • 4 Flutes • Short • Weldon® Shank

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



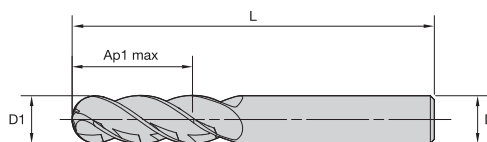
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI I TE

Ball Nose • 4 Flutes • Necked • Plain Shank

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



P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI I TE

Ball Nose • 4 Flutes • Long • Plain Shank

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



# HARVI I TE

## Side Milling/Slotting • Application Data

Material Group					KCPM15–KCSM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.											
	A		B		Cutting Speed — Vc m/min		D1 — Diameter											
	Ap	Ae	Ap		min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	25,0
P	0	1,5 x D1	0,5 x D1	1,25 x D1	150	200	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,111	0,125	0,136
	1	1,5 x D1	0,5 x D1	1,25 x D1	150	200	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,111	0,125	0,136
	2	1,5 x D1	0,5 x D1	1,25 x D1	140	190	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,111	0,125	0,136
	3	1,5 x D1	0,5 x D1	1,25 x D1	120	160	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	4	1,5 x D1	0,5 x D1	1,25 x D1	90	150	fz	0,012	0,018	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107
	5	1,5 x D1	0,5 x D1	1,25 x D1	60	100	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,077	0,089	0,100
M	6	1,5 x D1	0,5 x D1	1,25 x D1	50	75	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078
	1	1,5 x D1	0,5 x D1	1,25 x D1	90	115	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	2	1,5 x D1	0,5 x D1	1,25 x D1	60	80	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,077	0,089	0,100
K	3	1,5 x D1	0,5 x D1	1,0 x D1	60	70	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078
	1	1,5 x D1	0,5 x D1	1,0 x D1	120	150	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,111	0,125	0,136
	2	1,5 x D1	0,5 x D1	1,0 x D1	110	140	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125
S	3	1,5 x D1	0,5 x D1	1,0 x D1	110	130	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,077	0,089	0,100
	1	1,5 x D1	0,5 x D1	0,75 x D1	50	90	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,096	0,111	0,125
	2	1,5 x D1	0,5 x D1	0,75 x D1	50	80	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,077	0,089	0,100
	3	1,5 x D1	0,5 x D1	0,50 x D1	25	40	fz	0,007	0,010	0,014	0,018	0,021	0,029	0,035	0,041	0,051	0,059	0,067
H	4	1,5 x D1	0,5 x D1	1,25 x D1	50	60	fz	0,008	0,013	0,017	0,023	0,028	0,040	0,049	0,057	0,071	0,082	0,092
	1	1,5 x D1	0,5 x D1	1,0 x D1	80	140	fz	0,012	0,018	0,024	0,030	0,036	0,049	0,059	0,069	0,084	0,097	0,107
	2	1,5 x D1	0,5 x D1	1,0 x D1	70	120	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,063	0,071	0,078

# HARVI I TE

## Adjustment Factor Table for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed factor	Kv	2,1–3,6	1,6–3	1,6–2,5	1,6	1,4	1,38	1,3	1,2	1,1	1	0,9
Feed factor	KFz	3,58	2,56	2,3	1,84	1,67	1,54	1,25	1,09	1,02	1	1

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 Kv coefficient table above for adaptation of cutting speed and KFz for feed respectively.

Vc new = Vc \* Kv  
Fz new = Fz \* KFz

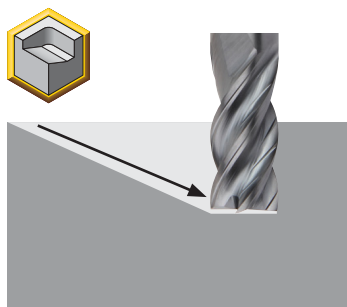
Calculation example:  
Application: D = 20mm;  
M2 material group;  
Ae = 2mm  
Cutting data recommendation: Vc = 80 m/min;  
Fz = 0,089 mm/th  
Adjustment coefficients: Ae = 2mm equals 10,0%;  
Kv = 1,4; KFz = 1,67

Final cutting data recommendation:  
Vc new = 80 \* 1,4 = 112 m/min  
Fz new = 0,089 \* 1,67 = 0,15 mm/min

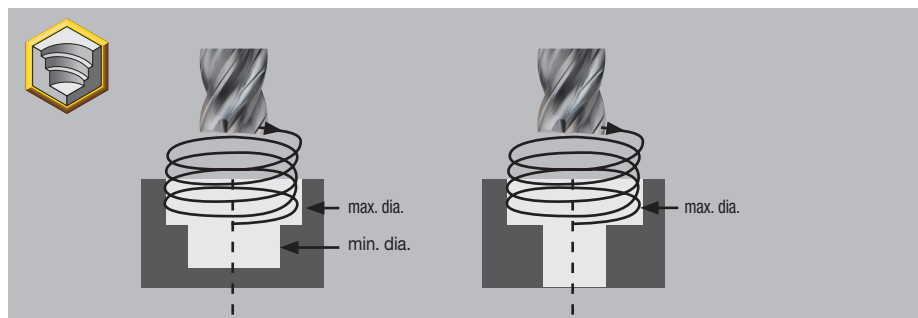
## HARVI I TE

### Application Information • Ramping

#### Linear Ramping



#### Helical Ramping



#### ATTENTION!

For helical ramping operations, the min. and max. hole diameter can be calculated with the following formula:

Min. hole  $\emptyset$  = End mill -  $\emptyset$  x 1,1 + 2x corner configuration (Re/CHF) size. Hole - $\emptyset$ /End mill - $\emptyset$  min 1:1,15

Max. hole  $\emptyset$  = 2x End mill -  $\emptyset$  2x corner configuration (Re/CHF) size. Hole - $\emptyset$ /End mill - $\emptyset$  max 1:1,9



## HARVI I TE

### Ramping 0°-15° • Application Data

Material Group	Max Depth	KCPM15-KCSM15		Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping — zeff = 2														
		Cutting Speed — Vc m/min		Diameter – D1 [Ømin-Ømax] for helical interpolation														
		min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
P	0	1,25 x D1	150	200	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	1	1,25 x D1	150	200	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	2	1,25 x D1	140	190	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	3	1,25 x D1	120	160	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	4	1,25 x D1	90	150	fz	0,012	0,018	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107
	5	1,25 x D1	60	100	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
M	6	1,25 x D1	50	75	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078
	1	1,25 x D1	90	115	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	2	1,25 x D1	60	80	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
K	3	1,0 x D1	60	70	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078
	1	1,0 x D1	120	150	fz	0,015	0,023	0,031	0,040	0,048	0,066	0,079	0,091	0,102	0,111	0,119	0,125	0,136
	2	1,0 x D1	110	140	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
S	3	1,0 x D1	110	130	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
	1	0,75 x D1	50	90	fz	0,012	0,019	0,026	0,033	0,040	0,055	0,067	0,077	0,087	0,096	0,104	0,111	0,125
	2	0,75 x D1	50	80	fz	0,010	0,016	0,021	0,027	0,032	0,044	0,053	0,062	0,070	0,077	0,083	0,089	0,100
H	3	0,5 x D1	25	40	fz	0,007	0,010	0,014	0,018	0,021	0,029	0,035	0,041	0,046	0,051	0,055	0,059	0,067
	4	1,25 x D1	50	60	fz	0,008	0,013	0,017	0,023	0,028	0,040	0,049	0,057	0,064	0,071	0,076	0,082	0,092
H	1	1,0 x D1	80	140	fz	0,012	0,018	0,024	0,030	0,036	0,049	0,059	0,069	0,077	0,084	0,091	0,097	0,107
	2	1,0 x D1	70	120	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,044	0,051	0,057	0,063	0,067	0,071	0,078

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



# HARVI I TE

## Ramping 15°-30° • Application Data

Material Group	Max Depth	KCPM15-KCSM15		Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping — z <sub>eff</sub> = 2														
		Cutting Speed — Vc m/min		Diameter – D1 [Ømin-Ømax] for helical interpolation														
		min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
		P	0	1,25 x D1	150	175	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,059	0,068	0,076	0,083	0,089
	1	1,25 x D1	150	175	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,059	0,068	0,076	0,083	0,089	0,094	0,102
	2	1,25 x D1	140	165	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,059	0,068	0,076	0,083	0,089	0,094	0,102
	3	1,25 x D1	120	140	fz	0,009	0,014	0,019	0,025	0,030	0,041	0,050	0,058	0,065	0,072	0,078	0,083	0,094
	4	1,25 x D1	90	120	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,045	0,051	0,058	0,063	0,068	0,073	0,080
	5	1,25 x D1	60	80	fz	0,008	0,012	0,016	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	6	1,25 x D1	50	65	fz	0,007	0,010	0,013	0,017	0,020	0,028	0,033	0,038	0,043	0,047	0,050	0,053	0,059
M	1	1,25 x D1	90	100	fz	0,009	0,014	0,019	0,025	0,030	0,041	0,050	0,058	0,065	0,072	0,078	0,083	0,094
	2	1,25 x D1	60	70	fz	0,008	0,012	0,016	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	3	1,0 x D1	60	65	fz	0,007	0,010	0,013	0,017	0,020	0,028	0,033	0,038	0,043	0,047	0,050	0,053	0,059
K	1	1,0 x D1	120	135	fz	0,011	0,017	0,023	0,030	0,036	0,050	0,059	0,068	0,076	0,083	0,089	0,094	0,102
	2	1,0 x D1	110	125	fz	0,009	0,014	0,019	0,025	0,030	0,041	0,050	0,058	0,065	0,072	0,078	0,083	0,094
	3	1,0 x D1	110	120	fz	0,008	0,012	0,016	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
S	1	0,75 x D1	50	70	fz	0,009	0,014	0,019	0,025	0,030	0,041	0,050	0,058	0,065	0,072	0,078	0,083	0,094
	2	0,75 x D1	50	65	fz	0,008	0,012	0,016	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	3	0,5 x D1	25	30	fz	0,005	0,008	0,010	0,013	0,016	0,022	0,026	0,031	0,035	0,038	0,042	0,045	0,051
	4	1,25 x D1	50	55	fz	0,006	0,009	0,013	0,017	0,021	0,030	0,037	0,043	0,048	0,053	0,057	0,061	0,069
H	1	1,0 x D1	80	110	fz	0,009	0,013	0,018	0,022	0,027	0,037	0,045	0,051	0,058	0,063	0,068	0,073	0,080
	2	1,0 x D1	70	90	fz	0,007	0,010	0,013	0,017	0,020	0,028	0,033	0,038	0,043	0,047	0,050	0,053	0,059

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



# HARVI I TE

## Ramping 30°-45° • Application Data

Material Group	Max Depth	KCPM15-KCSM15		Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping — z <sub>eff</sub> = 2														
		Cutting Speed — Vc m/min		Diameter – D1 [Ømin-Ømax] for helical interpolation														
		min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
		P	0	1,25 x D1	140	165	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,055	0,061	0,067	0,071
	1	1,25 x D1	140	165	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,055	0,061	0,067	0,071	0,075	0,082
	2	1,25 x D1	140	165	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,055	0,061	0,067	0,071	0,075	0,082
	3	1,25 x D1	105	120	fz	0,007	0,011	0,015	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	4	1,25 x D1	90	110	fz	0,007	0,011	0,014	0,018	0,022	0,030	0,036	0,041	0,046	0,051	0,055	0,058	0,064
	5	1,25 x D1	70	80	fz	0,006	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,053	0,060
	6	1,25 x D1	55	65	fz	0,005	0,008	0,011	0,013	0,016	0,022	0,027	0,031	0,034	0,038	0,040	0,043	0,047
M	1	1,25 x D1	75	90	fz	0,007	0,011	0,015	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	2	1,25 x D1	50	60	fz	0,006	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,053	0,060
	3	1,0 x D1	45	55	fz	0,005	0,008	0,011	0,013	0,016	0,022	0,027	0,031	0,034	0,038	0,040	0,043	0,047
K	1	1,0 x D1	110	130	fz	0,009	0,014	0,019	0,024	0,029	0,040	0,048	0,055	0,061	0,067	0,071	0,075	0,082
	2	1,0 x D1	100	120	fz	0,007	0,011	0,015	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	3	1,0 x D1	90	110	fz	0,006	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,053	0,060
S	1	0,75 x D1	80	90	fz	0,007	0,011	0,015	0,020	0,024	0,033	0,040	0,046	0,052	0,058	0,062	0,067	0,075
	2	0,75 x D1	55	65	fz	0,006	0,009	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,053	0,060
	3	0,5 x D1	20	28	fz	0,004	0,006	0,008	0,011	0,013	0,017	0,021	0,025	0,028	0,031	0,033	0,036	0,040
	4	1,25 x D1	35	45	fz	0,005	0,008	0,010	0,014	0,017	0,024	0,029	0,034	0,038	0,042	0,046	0,049	0,055
H	1	1,0 x D1	75	85	fz	0,007	0,011	0,014	0,018	0,022	0,030	0,036	0,041	0,046	0,051	0,055	0,058	0,064
	2	1,0 x D1	65	75	fz	0,005	0,008	0,011	0,013	0,016	0,022	0,027	0,031	0,034	0,038	0,040	0,043	0,047

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



## HARVI I TE

Plunging/Drilling • Application Data

Material Group			KCPM15–KCSM15		Recommended feed per revolution (fn =mm/rev) for plunging and drilling															
	Max Depth	Applicable	Coolant	Cutting Speed — Vc m/min		D1 — Diameter														
				min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
P	0	1,5 x D	●	Preferred	140	165	fn	0,028	0,033	0,040	0,045	0,055	0,065	0,080	0,095	0,110	0,120	0,140	0,160	0,180
	1	1,5 x D	●	Required	140	165	fn	0,028	0,033	0,040	0,045	0,055	0,065	0,080	0,095	0,110	0,120	0,140	0,160	0,180
	2	1,5 x D	●	Required	140	165	fn	0,028	0,033	0,040	0,045	0,055	0,065	0,080	0,095	0,110	0,120	0,140	0,160	0,180
	3	1 x D	●	Required	105	120	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	4	1 x D	●	Required	90	110	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	5	0,5 x D	●	Required	70	80	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
M	6	0,5 x D	●	Required	55	65	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
	1	0,75 x D	●	Required	75	90	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	2	0,5 x D	●	Required	50	60	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
K	3	0,5 x D	●	Required	45	55	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
	1	1,5 x D	●	Preferred	110	130	fn	0,028	0,033	0,040	0,045	0,055	0,065	0,080	0,095	0,110	0,120	0,140	0,160	0,180
	2	1 x D	●	Required	100	120	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
S	3	1 x D	●	Required	90	110	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	1	0,3 x D	○	Required	80	90	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	2	0,1 x D	○	Required	55	65	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
	3	0,1 x D	○	Required	20	28	fn	0,008	0,010	0,012	0,015	0,018	0,022	0,028	0,033	0,040	0,045	0,050	0,060	0,070
H	4	0,2 x D	○	Required	35	45	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100
	1	0,3 x D	○	Required	75	85	fn	0,015	0,020	0,028	0,033	0,040	0,050	0,060	0,070	0,085	0,100	0,110	0,125	0,150
	2	0,2 x D	○	Required	65	75	fn	0,010	0,014	0,018	0,020	0,025	0,035	0,040	0,050	0,055	0,065	0,075	0,085	0,100

# APPLICATION RECOMMENDATION

for Surface Profiling with HARVI I TE



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



Not all four cutting edges reach the center of the HARVI I TE 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 I TE), and also that the rotational velocity is zero in the center. Kennametal recommends tilting the end mill to engage more cutting edges and avoid the zero-speed condition.

As the HARVI I TE 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.

## HARVI I TE

Ball Nose



0°

In the case of the HARVI I TE ball nose end mill, it is possible to take much larger depths of cut than other standard ball nose end mills.

Therefore, a large depth of cut can result in partial engagement of all four edges at small or zero-tilt angles.



24°

For tilt angles less than 24° and shallow profiling depths, only two cutting edges will be typically engaged.

As the end mill is tilted above this, then all four edges will at least be partially engaged.



52° – 55°

For maximum profiling performance, a tilt angle of 52°—55° will result in full engagement of all edges with a wide range of cutting depths.

# HARVI II TE

A Revolutionary 5-Flute End Mill Design  
for Ultimate Performance

## Materials



## Industries



## Applications



- Open 5-flute design combined with a stronger core for increased MRR, tool life and chip evacuation capabilities
- Novel centerless end face designed for aggressive ramping, plunging and deep slotting
- Chip gashes for better chip evacuation and improved tool cooling with increased coolant flow from the flute to cutting zone
- Proprietary W-flute shape for better chip evacuation and stronger core
- Eccentric relief increases the edge strength for longer tool life and wide material application range

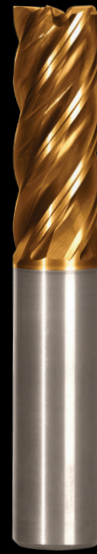
CHAMFERED

RADIUSED

RADIUSED  
WITH NECK

SQUARE END

SQUARE END  
WITH NECK



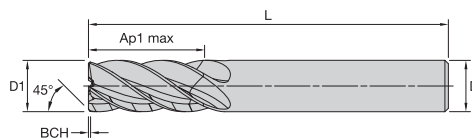
ECCENTRIC RELIEF  
DESIGN

NOVEL CENTERLESS  
END FACE

NEW RE-DESIGNED  
PARABOLIC CORE

CHIP GASHES

With the powerful combination of an extremely broad application range and ultimate productivity and tool life, HARVI II TE can make your general engineering, aerospace and defense and medical projects a cut above the rest. You can count on maximum machining flexibility across materials and efficiency in traditional and dynamic milling applications.



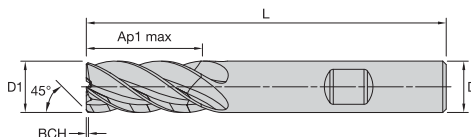
P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

## HARVI II TE

Chamfered • 5 Flutes • Plain Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7156120	H2TE5CH0400R011HAM	4.00	6.00	11.00	57.00	0.20	●
7156121	H2TE5CH0500R013HAM	5.00	6.00	13.00	57.00	0.20	●
7156122	H2TE5CH0600R016HAM	6.00	6.00	16.00	57.00	0.20	●
7157115	H2TE5CH0700R016HAM	7.00	8.00	16.00	63.00	0.20	●
7156125	H2TE5CH0800R019HAM	8.00	8.00	19.00	63.00	0.30	●
7157117	H2TE5CH0900R019HAM	9.00	10.00	19.00	72.00	0.30	●
7157118	H2TE5CH1000R022HAM	10.00	10.00	22.00	72.00	0.30	●
7156127	H2TE5CH1200R026HAM	12.00	12.00	26.00	83.00	0.40	●
7157120	H2TE5CH1600R032HAM	16.00	16.00	32.00	92.00	0.50	●
7157141	H2TE5CH1600L060HAM	16.00	16.00	60.00	125.00	0.50	●
7157142	H2TE5CH1800R032HAM	18.00	18.00	32.00	92.00	0.50	●
7157143	H2TE5CH2000R038HAM	20.00	20.00	38.00	104.00	0.50	●
7157144	H2TE5CH2000L060HAM	20.00	20.00	60.00	125.00	0.50	●
7157145	H2TE5CH2500R045HAM	25.00	25.00	45.00	121.00	0.50	●
7157146	H2TE5CH2500R075HAM	25.00	25.00	75.00	150.00	0.50	●



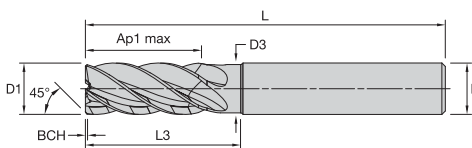
P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

## HARVI II TE

Chamfered • 5 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7156123	H2TE5CH0500R013HBM	5.00	6.00	13.00	57.00	0.20	●
7156124	H2TE5CH0600R016HBM	6.00	6.00	16.00	57.00	0.20	●
7157116	H2TE5CH0700R016HBM	7.00	8.00	16.00	63.00	0.20	●
7156126	H2TE5CH0800R019HBM	8.00	8.00	19.00	63.00	0.30	●
7157119	H2TE5CH1000R022HBM	10.00	10.00	22.00	72.00	0.30	●
7156128	H2TE5CH1200R026HBM	12.00	12.00	26.00	83.00	0.40	●
7157149	H2TE5CH1600L060HBM	16.00	16.00	60.00	125.00	0.50	●
7157148	H2TE5CH1600R032HBM	16.00	16.00	32.00	92.00	0.50	●
7157150	H2TE5CH1800R032HBM	18.00	18.00	32.00	92.00	0.50	●
7157151	H2TE5CH2000R038HBM	20.00	20.00	38.00	104.00	0.50	●
7157152	H2TE5CH2000L060HBM	20.00	20.00	60.00	125.00	0.50	●



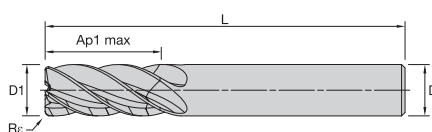
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI II TE

Chamfered • 5 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	BCH	
7157191	H2TE5CH1000N022HAM	10.0	10.0	9.40	22.0	30.0	72.0	0.30	●
7156181	H2TE5CH1200N026HAM	12.0	12.0	11.28	26.0	36.0	83.0	0.40	●
7157192	H2TE5CH1600N032HAM	16.0	16.0	15.04	32.0	42.0	92.0	0.50	●
7157193	H2TE5CH2000N038HAM	20.0	20.0	18.80	38.0	52.0	104.0	0.50	●



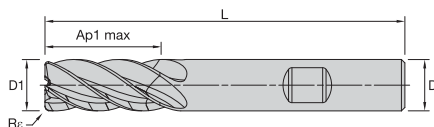
P	●
M	●
K	○
N	○
S	●
H	○

● Primary  
○ Secondary

## HARVI II TE

Radiused • 5 Flutes • Plain Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	Re	
7156129	H2TE5RA0400R011HAR025M	4.00	6.00	11.00	57.00	0.25	●
7156130	H2TE5RA0500R013HAR025M	5.00	6.00	13.00	57.00	0.25	●
7156168	H2TE5RA0600R016HAR100M	6.00	6.00	16.00	57.00	1.00	●
7156142	H2TE5RA0600R016HAR050M	6.00	6.00	16.00	57.00	0.50	●
7156143	H2TE5RA0700R016HAR050M	7.00	8.00	16.00	63.00	0.50	●
7157159	H2TE5RA0800R019HAR100M	8.00	8.00	19.00	63.00	1.00	●
7156144	H2TE5RA0800R019HAR050M	8.00	8.00	19.00	63.00	0.50	●
7157154	H2TE5RA0900R019HAR050M	9.00	10.00	19.00	72.00	0.50	●
7157160	H2TE5RA1000R022HAR100M	10.00	10.00	22.00	72.00	1.00	●
7156145	H2TE5RA1000R022HAR050M	10.00	10.00	22.00	72.00	0.50	●
7157165	H2TE5RA1200R026HAR250M	12.00	12.00	26.00	83.00	2.50	●
7156169	H2TE5RA1200R026HAR100M	12.00	12.00	26.00	83.00	1.00	●
7156146	H2TE5RA1200R026HAR050M	12.00	12.00	26.00	83.00	0.50	●
7157166	H2TE5RA1600R032HAR250M	16.00	16.00	32.00	92.00	2.50	●
7157167	H2TE5RA1600L060HAR250M	16.00	16.00	60.00	125.00	2.50	●
7156171	H2TE5RA1600L060HAR100M	16.00	16.00	60.00	125.00	1.00	●
7156170	H2TE5RA1600R032HAR100M	16.00	16.00	32.00	92.00	1.00	●
7156147	H2TE5RA1600R032HAR050M	16.00	16.00	32.00	92.00	0.50	●
7156148	H2TE5RA1600L060HAR050M	16.00	16.00	60.00	125.00	0.50	●
7157161	H2TE5RA1800R032HAR100M	18.00	18.00	32.00	92.00	1.00	●
7157168	H2TE5RA2000R038HAR250M	20.00	20.00	38.00	104.00	2.50	●
7156172	H2TE5RA2000R038HAR100M	20.00	20.00	38.00	104.00	1.00	●
7156173	H2TE5RA2000L060HAR100M	20.00	20.00	60.00	125.00	1.00	●
7156149	H2TE5RA2000R038HAR050M	20.00	20.00	38.00	104.00	0.50	●
7157172	H2TE5RA2500R075HAR400M	25.00	25.00	75.00	150.00	4.00	●
7156150	H2TE5RA2500R045HAR050M	25.00	25.00	45.00	121.00	0.50	●



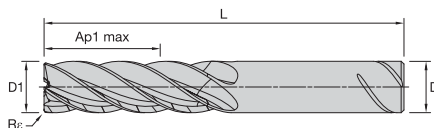
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI II TE

Radiused • 5 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	Rε	
7156141	H2TE5RA0500R013HBR025M	5.00	6.00	13.00	57.00	0.25	●
7156161	H2TE5RA0600R016HBR050M	6.00	6.00	16.00	57.00	0.50	●
7156162	H2TE5RA0800R019HBR050M	8.00	8.00	19.00	63.00	0.50	●
7156163	H2TE5RA1000R022HBR050M	10.00	10.00	22.00	72.00	0.50	●
7157162	H2TE5RA1200R026HBR100M	12.00	12.00	26.00	83.00	1.00	●
7157169	H2TE5RA1200R026HBR250M	12.00	12.00	26.00	83.00	2.50	●
7156164	H2TE5RA1200R026HBR050M	12.00	12.00	26.00	83.00	0.50	●
7157170	H2TE5RA1600R032HBR250M	16.00	16.00	32.00	92.00	2.50	●
7156165	H2TE5RA1600R032HBR050M	16.00	16.00	32.00	92.00	0.50	●
7156174	H2TE5RA1600R032HBR100M	16.00	16.00	32.00	92.00	1.00	●
7156175	H2TE5RA1600L060HBR100M	16.00	16.00	60.00	125.00	1.00	●
7156166	H2TE5RA1600L060HBR050M	16.00	16.00	60.00	125.00	0.50	●
7157155	H2TE5RA1800R032HBR050M	18.00	18.00	32.00	92.00	0.50	●
7157171	H2TE5RA2000R038HBR250M	20.00	20.00	38.00	104.00	2.50	●
7156167	H2TE5RA2000R038HBR050M	20.00	20.00	38.00	104.00	0.50	●
7156176	H2TE5RA2000R038HBR100M	20.00	20.00	38.00	104.00	1.00	●
7156177	H2TE5RA2000L060HBR100M	20.00	20.00	60.00	125.00	1.00	●
7157156	H2TE5RA2500R045HBR050M	25.00	25.00	45.00	121.00	0.50	●
7157173	H2TE5RA2500R075HBR400M	25.00	25.00	75.00	150.00	4.00	●



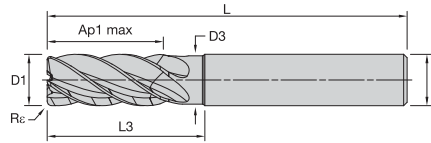
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI II TE

Radiused • 5 Flutes • SAFE-LOCK Shank™

Order Number	Catalog Number	D1	D	AP1 Max	L	Rε	
7157163	H2TE5RA1600R032SLR100M	16.00	16.00	32.00	92.00	1.00	●
7157157	H2TE5RA2000R038SLR050M	20.00	20.00	38.00	104.00	0.50	●
7157164	H2TE5RA2000R038SLR100M	20.00	20.00	38.00	104.00	1.00	●
7157158	H2TE5RA2500R045SLR050M	25.00	25.00	45.00	121.00	0.50	●



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

● Primary  
○ Secondary

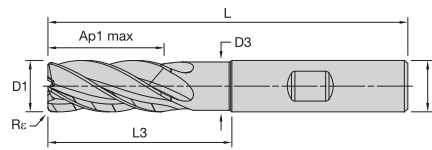
# HARVI II TE

Radiused • 5 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Re	
7156199	H2TE5RA0600N013HAR100M	6.00	6.00	5.64	13.00	19.00	57.00	1.00	•
7156182	H2TE5RA0600N013HAR025M	6.00	6.00	5.64	13.00	19.00	57.00	0.25	•
7156186	H2TE5RA0600N013HAR050M	6.00	6.00	5.64	13.00	19.00	57.00	0.50	•
7156200	H2TE5RA0800N019HAR100M	8.00	8.00	7.52	19.00	25.00	63.00	1.00	•
7156183	H2TE5RA0800N019HAR025M	8.00	8.00	7.52	19.00	25.00	63.00	0.25	•
7156187	H2TE5RA0800N019HAR050M	8.00	8.00	7.52	19.00	25.00	63.00	0.50	•
7157194	H2TE5RA1000N022HAR025M	10.00	10.00	9.40	22.00	30.00	72.00	0.25	•
7157209	H2TE5RA1000N022HAR150M	10.00	10.00	9.40	22.00	30.00	72.00	1.50	•
7156211	H2TE5RA1000N022HAR200M	10.00	10.00	9.40	22.00	30.00	72.00	2.00	•
7156216	H2TE5RA1000N022HAR250M	10.00	10.00	9.40	22.00	30.00	72.00	2.50	•
7156201	H2TE5RA1000N022HAR100M	10.00	10.00	9.40	22.00	30.00	72.00	1.00	•
7156188	H2TE5RA1000N022HAR050M	10.00	10.00	9.40	22.00	30.00	72.00	0.5	•
7156212	H2TE5RA1200N026HAR200M	12.00	12.00	11.28	26.00	36.00	83.00	2.00	•
7156217	H2TE5RA1200N026HAR250M	12.00	12.00	11.28	26.00	36.00	83.00	2.50	•
7156218	H2TE5RA1200N026HAR300M	12.00	12.00	11.28	26.00	36.00	83.00	3.00	•
7156202	H2TE5RA1200N026HAR100M	12.00	12.00	11.28	26.00	36.00	83.00	1.00	•
7156189	H2TE5RA1200N026HAR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	•
7157210	H2TE5RA1400N026HAR200M	14.00	14.00	13.16	26.00	42.00	83.00	2.00	•
7157219	H2TE5RA1400N026HAR300M	14.00	14.00	13.16	26.00	42.00	83.00	3.00	•
7156190	H2TE5RA1400N026HAR050M	14.00	14.00	13.16	26.00	42.00	83.00	0.50	•
7157214	H2TE5RA1600N032HAR250M	16.00	16.00	15.04	32.00	42.00	92.00	2.50	•
7157215	H2TE5RA1600N032HAR250M	16.00	16.00	15.04	32.00	48.00	100.00	2.50	•
7156213	H2TE5RA1600N032HAR200M	16.00	16.00	15.04	32.00	42.00	92.00	2.00	•
7156214	H2TE5RA1600E032HAR200M	16.00	16.00	15.04	32.00	48.00	100.00	2.00	•
7156219	H2TE5RA1600N032HAR300M	16.00	16.00	15.04	32.00	42.00	92.00	3.00	•
7156220	H2TE5RA1600E032HAR300M	16.00	16.00	15.04	32.00	48.00	100.00	3.00	•
7156237	H2TE5RA1600E032HAR600M	16.00	16.00	15.04	32.00	48.00	100.00	6.00	•
7156234	H2TE5RA1600E032HAR400M	16.00	16.00	15.04	32.00	48.00	100.00	4.00	•
7156204	H2TE5RA1600E032HAR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	•
7156203	H2TE5RA1600N032HAR100M	16.00	16.00	15.04	32.00	42.00	92.00	1.00	•
7156192	H2TE5RA1600E032HAR050M	16.00	16.00	15.04	32.00	48.00	100.00	0.50	•
7156191	H2TE5RA1600N032HAR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	•
7157195	H2TE5RA2000E038HAR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	•
7157202	H2TE5RA2000E038HAR100M	20.00	20.00	18.80	38.00	65.00	115.00	1.00	•
7157201	H2TE5RA2000N038HAR100M	20.00	20.00	18.80	38.00	52.00	104.00	1.00	•
7157211	H2TE5RA2000N038HAR200M	20.00	20.00	18.80	38.00	52.00	104.00	2.00	•
7157212	H2TE5RA2000E038HAR200M	20.00	20.00	18.80	38.00	65.00	115.00	2.00	•
7157216	H2TE5RA2000E038HAR250M	20.00	20.00	18.80	38.00	65.00	115.00	2.50	•
7157220	H2TE5RA2000N038HAR300M	20.00	20.00	18.80	38.00	52.00	104.00	3.00	•
7157221	H2TE5RA2000E038HAR300M	20.00	20.00	18.80	38.00	65.00	115.00	3.00	•
7156236	H2TE5RA2000E038HAR400M	20.00	20.00	18.80	38.00	65.00	115.00	4.00	•
7156235	H2TE5RA2000N038HAR400M	20.00	20.00	18.80	38.00	52.00	104.00	4.00	•
7156193	H2TE5RA2000N038HAR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	•
7157227	H2TE5RA2500N045HAR400M	25.00	25.00	23.50	45.00	63.00	121.00	4.00	•
7157203	H2TE5RA2500E045HAR100M	25.00	25.00	23.50	45.00	75.00	135.00	1.00	•
7157224	H2TE5RA2500E045HAR300M	25.00	25.00	23.50	45.00	75.00	135.00	3.00	•
7157222	H2TE5RA2500N045HAR300M	25.00	25.00	23.50	45.00	63.00	121.00	3.00	•
7156205	H2TE5RA2500N045HAR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	•

KGSM15A

HIGH PERFORMANCE SOLID CARBIDE END MILLING



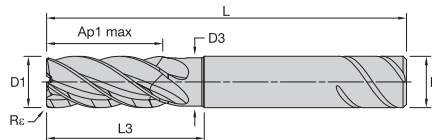
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI II TE

Radiused • 5 Flutes • Necked • Weldon Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Re	
7156206	H2TE5RA0600N013HBR100M	6.00	6.00	5.64	13.00	19.00	57.00	1.00	●
7156184	H2TE5RA0600N013HBR025M	6.00	6.00	5.64	13.00	19.00	57.00	0.25	●
7156207	H2TE5RA0800N019HBR100M	8.00	8.00	7.52	19.00	25.00	63.00	1.00	●
7156185	H2TE5RA0800N019HBR025M	8.00	8.00	7.52	19.00	25.00	63.00	0.25	●
7157196	H2TE5RA1000N022HBR050M	10.00	10.00	9.40	22.00	30.00	72.00	0.50	●
7157217	H2TE5RA1000N022HBR250M	10.00	10.00	9.40	22.00	30.00	72.00	2.50	●
7156231	H2TE5RA1200N026HBR300M	12.00	12.00	11.28	26.00	36.00	83.00	3.00	●
7156194	H2TE5RA1200N026HBR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	●
7156208	H2TE5RA1400N026HBR100M	14.00	14.00	13.16	26.00	42.00	83.00	1.00	●
7156210	H2TE5RA1600E032HBR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	●
7156233	H2TE5RA1600E032HBR300M	16.00	16.00	15.04	32.00	48.00	100.00	3.00	●
7156232	H2TE5RA1600N032HBR300M	16.00	16.00	15.04	32.00	42.00	92.00	3.00	●
7156209	H2TE5RA1600N032HBR100M	16.00	16.00	15.04	32.00	42.00	92.00	1.00	●
7156195	H2TE5RA1600N032HBR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	●
7156196	H2TE5RA1600E032HBR050M	16.00	16.00	15.04	32.00	48.00	100.00	0.50	●
7157226	H2TE5RA2000E038HBR300M	20.00	20.00	18.80	38.00	65.00	115.00	3.00	●
7157228	H2TE5RA2000E038HBR400M	20.00	20.00	18.80	38.00	65.00	115.00	4.00	●
7157204	H2TE5RA2000E038HBR100M	20.00	20.00	18.80	38.00	65.00	115.00	1.00	●
7157213	H2TE5RA2000E038HBR200M	20.00	20.00	18.80	38.00	65.00	115.00	2.00	●
7157218	H2TE5RA2000E038HBR250M	20.00	20.00	18.80	38.00	65.00	115.00	2.50	●
7157225	H2TE5RA2000N038HBR300M	20.00	20.00	18.80	38.00	52.00	104.00	3.00	●
7156215	H2TE5RA2000N038HBR200M	20.00	20.00	18.80	38.00	52.00	104.00	2.00	●
7156197	H2TE5RA2000N038HBR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	●
7156198	H2TE5RA2000E038HBR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	●
7157205	H2TE5RA2500N045HBR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	●
7157206	H2TE5RA2500E045HBR100M	25.00	25.00	23.50	45.00	75.00	135.00	1.00	●



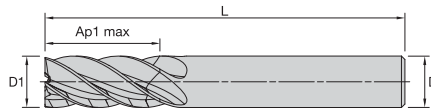
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI II TE

Radiused • 5 Flutes • Necked • SAFE-LOCK Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	Re	
7157197	H2TE5RA1200N026SLR050M	12.00	12.00	11.28	26.00	36.00	83.00	0.50	●
7157198	H2TE5RA1600N032SLR050M	16.00	16.00	15.04	32.00	42.00	92.00	0.50	●
7157207	H2TE5RA1600E032SLR100M	16.00	16.00	15.04	32.00	48.00	100.00	1.00	●
7157199	H2TE5RA2000N038SLR050M	20.00	20.00	18.80	38.00	52.00	104.00	0.50	●
7157200	H2TE5RA2000E038SLR050M	20.00	20.00	18.80	38.00	65.00	115.00	0.50	●
7157208	H2TE5RA2500N045SLR100M	25.00	25.00	23.50	45.00	63.00	121.00	1.00	●



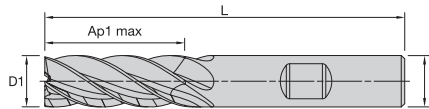
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI II TE

Square End • 5 Flutes • Plain Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	
7156097	H2TE5SE0400R011HAM	4.00	6.00	11.00	57.00	●
7156098	H2TE5SE0500R013HAM	5.00	6.00	13.00	57.00	●
7156099	H2TE5SE0600R016HAM	6.00	6.00	16.00	57.00	●
7156100	H2TE5SE0700R016HAM	7.00	8.00	16.00	63.00	●
7156111	H2TE5SE0800R019HAM	8.00	8.00	19.00	63.00	●
7156930	H2TE5SE0900R019HAM	9.00	10.00	19.00	72.00	●
7156112	H2TE5SE1000R022HAM	10.00	10.00	22.00	72.00	●
7156113	H2TE5SE1200R026HAM	12.00	12.00	26.00	83.00	●
7156115	H2TE5SE1600L060HAM	16.00	16.00	60.00	125.00	●
7156114	H2TE5SE1600R032HAM	16.00	16.00	32.00	92.00	●
7157111	H2TE5SE1800R032HAM	18.00	18.00	32.00	92.00	●
7156117	H2TE5SE2000R038HAM	20.00	20.00	38.00	104.00	●
7156118	H2TE5SE2000L060HAM	20.00	20.00	60.00	125.00	●
7157112	H2TE5SE2500R045HAM	25.00	25.00	45.00	121.00	●



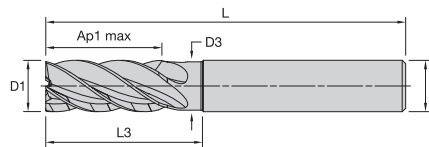
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI II TE

Square End • 5 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	
7156119	H2TE5SE1600L060HBM	16.00	16.00	60.00	125.00	●
7157113	H2TE5SE2000R038HBM	20.00	20.00	38.00	104.00	●
7157114	H2TE5SE2000L060HBM	20.00	20.00	60.00	125.00	●



P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary



## HARVI II TE

Square End • 5 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L3	L	
7156180	H2TE5SE0600N013HAM	6.00	6.00	5.64	13.00	19.00	57.00	●
7156178	H2TE5SE0800N019HAM	8.00	8.00	7.52	19.00	25.00	63.00	●
7156179	H2TE5SE1000N022HAM	10.00	10.00	9.40	22.00	30.00	72.00	●
7157174	H2TE5SE1200N026HAM	12.00	12.00	11.28	26.00	36.00	83.00	●
7157175	H2TE5SE1400N026HAM	14.00	14.00	13.16	26.00	42.00	83.00	●
7157176	H2TE5SE1600E032HAM	16.00	16.00	15.04	32.00	48.00	100.00	●
7157177	H2TE5SE2000N038HAM	20.00	20.00	18.80	38.00	52.00	104.00	●
7157178	H2TE5SE2000E038HAM	20.00	20.00	18.80	38.00	65.00	115.00	●
7157179	H2TE5SE2500N045HAM	25.00	25.00	23.50	45.00	63.00	121.00	●
7157180	H2TE5SE2500E045HAM	25.00	25.00	23.50	45.00	75.00	135.00	●

## HARVI II TE

### Application Data

Material Group					Recommended Feed per Tooth (Fz=mm/th) is for Side Milling. For Slotting Reduce Fz by 20%																		
	Side Milling		Slotting		Cutting Speed Vc m/min		D1 - Diameter																
	Ap	Ae	Ap	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0				
P	P0	1.5xD	0.5xD	1.25xD	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136			
	P1	1.5xD	0.5xD	1.25xD	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136			
	P2	1.5xD	0.5xD	1.25xD	140	190	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136			
	P3	1.5xD	0.5xD	1.25xD	120	160	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125			
	P4	1.5xD	0.5xD	1.25xD	90	150	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107			
	P5	1.5xD	0.5xD	1.25xD	60	100	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100			
M	P6	1.5xD	0.5xD	1.25xD	50	75	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078			
	M1	1.5xD	0.5xD	1.25xD	90	115	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125			
	M2	1.5xD	0.5xD	1.25xD	60	80	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100			
K	M3	1.5xD	0.5xD	1.0xD	60	70	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078			
	K1	1.5xD	0.5xD	1.0xD	120	150	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136			
	K2	1.5xD	0.5xD	1.0xD	110	140	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125			
S	K3	1.5xD	0.5xD	1.0xD	110	130	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100			
	S1	1.5xD	0.3xD	0.75xD	50	90	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125			
	S2	1.5xD	0.3xD	0.75xD	25	50	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067			
	S3	1.5xD	0.5xD	0.75xD	25	40	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067			
H	S4	1.5xD	0.5xD	1.25xD	50	60	Fz	0.017	0.023	0.028	0.034	0.040	0.045	0.049	0.057	0.064	0.071	0.076	0.082	0.092			
	H1	1.5xD	0.5xD	1.0xD	80	140	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107			
	H2	1.5xD	0.2xD	1.0xD	70	120	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078			

**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 diameters greater than 12mm.  
 For tools with reach >4.5xD, reduce fz by 30% and use low range of cutting speed as starting condition.  
 Higher slotting DOC possible with proper pull-out protection, tool holder, machine setup & coolant flow.

## HARVI II TE

### Adjustment Factor Table for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed Factor	Kv	2.1 - 3.6	1.6 - 3	1.6 - 2.5	1.6	1.4	1.38	1.3	1.2	1.1	1	1
Feed Factor	KFz	3.58	2.56	2.3	1.84	1.67	1.54	1.25	1.09	1.02	1	0.9
phi [°]		16.26	23.07	25.84	32.86	36.87	40.54	53.13	66.42	78.46	90.00	180.00

**NOTE:** 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.  
 For an Ae/D ratio of 5% or less there is 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 machinability of the material, from difficult to free cutting.

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

Vc new = Vc \* Kv  
 Fz new = Fz \* KFz

Calculation example:  
 Application: D1 = 12.0mm;  
 P5 material group;  
 Ae = 20% of D  
 Cutting data recommendation: Vc = 80 m/min;  
 Fz = 0.062 mm/th  
 Adjustment coefficients: ;Kv = 1.30; KFz = 1.25

Final cutting data recommendation:  
 Vc new = 80 \* 1.30 = 104 m/min  
 Fz new = 0.062 \* 1.25 = 0.0775 mm/th



# HARVI II TE

## Application Data

Material Group	Helical Interpolation / Ramping 0° - 15°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpolation	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2													
		Cutting Speed Vc			D1 - Diameter													
		m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
		Max Depth	Min		Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0
P	P0	1,25 x D1	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P1	1,25 x D1	150	200	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P2	1,25 x D1	140	190	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	P3	1,25 x D1	120	160	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	P4	1,25 x D1	90	150	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	P5	1,25 x D1	60	100	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
M	P6	1,25 x D1	50	75	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
	M1	1,25 x D1	90	115	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	M2	1,25 x D1	60	80	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
K	M3	1,0 x D1	60	70	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078
	K1	1,0 x D1	120	150	Fz	0.031	0.040	0.048	0.057	0.066	0.073	0.079	0.091	0.102	0.111	0.119	0.125	0.136
	K2	1,0 x D1	110	140	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
S	K3	1,0 x D1	110	130	Fz	0.021	0.027	0.032	0.038	0.044	0.049	0.053	0.062	0.070	0.077	0.083	0.089	0.100
	S1	0,75 x D1	50	90	Fz	0.026	0.033	0.040	0.047	0.055	0.061	0.067	0.077	0.087	0.096	0.104	0.111	0.125
	S2	0,75 x D1	25	50	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
	S3	0,5 x D1	25	40	Fz	0.014	0.018	0.021	0.025	0.029	0.032	0.035	0.041	0.046	0.051	0.055	0.059	0.067
H	S4	1,25 x D1	50	60	Fz	0.017	0.023	0.028	0.034	0.040	0.045	0.049	0.057	0.064	0.071	0.076	0.082	0.092
	H1	1,0 x D1	80	140	Fz	0.024	0.030	0.036	0.043	0.049	0.054	0.059	0.069	0.077	0.084	0.091	0.097	0.107
	H2	1,0 x D1	70	120	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.044	0.051	0.057	0.063	0.067	0.071	0.078

# HARVI II TE


## Application Data

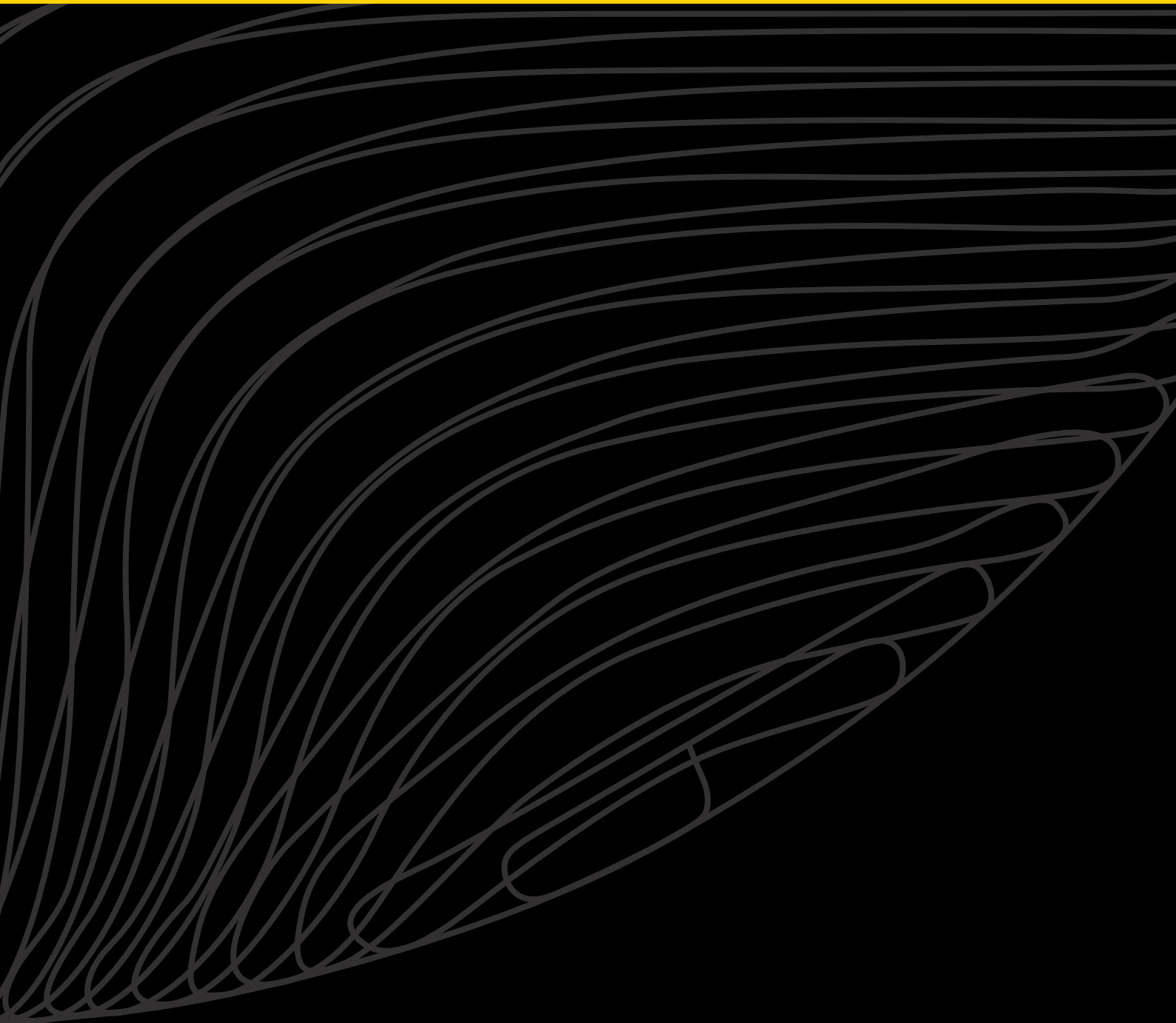
Material Group	Helical Interpolation / Ramping 15° - 30°	KCPM15A - KCSM15A		Min - Max Diameter for Helical Interpolation	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2													
		Cutting Speed Vc			D1 - Diameter													
		m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
		Max Depth	Min		Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0
P	P0	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P1	1,25 x D1	150	200	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P2	1,25 x D1	140	190	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	P3	1,25 x D1	120	160	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	P4	1,25 x D1	90	150	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	P5	1,25 x D1	60	100	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
K	P6	1,25 x D1	50	75	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059
	K1	1,0 x D1	120	150	Fz	0.023	0.030	0.036	0.043	0.050	0.055	0.059	0.068	0.076	0.083	0.089	0.094	0.102
	K2	1,0 x D1	110	140	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
S	K3	1,0 x D1	110	130	Fz	0.016	0.020	0.024	0.029	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	S1	0,75 x D1	50	90	Fz	0.019	0.025	0.030	0.036	0.041	0.046	0.050	0.058	0.065	0.072	0.078	0.083	0.094
	S2	0,75 x D1	25	50	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
	S3	0,5 x D1	25	40	Fz	0.010	0.013	0.016	0.019	0.022	0.024	0.026	0.031	0.035	0.038	0.042	0.045	0.051
H	S4	1,25 x D1	50	60	Fz	0.013	0.017	0.021	0.026	0.030	0.034	0.037	0.043	0.048	0.053	0.057	0.061	0.069
	H1	1,0 x D1	80	140	Fz	0.018	0.022	0.027	0.032	0.037	0.041	0.045	0.051	0.058	0.063	0.068	0.073	0.080
	H2	1,0 x D1	70	120	Fz	0.013	0.017	0.020	0.024	0.028	0.031	0.033	0.038	0.043	0.047	0.050	0.053	0.059

## HARVI II TE

### Application Data

HIGH PERFORMANCE SOLID CARBIDE END MILLING

Material Group	Helical Interpolation / Ramping 30° - 45°			Min - Max Diameter for Helical Interpolation	Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping - Zef=2													
		KCPM15A - KCSM15A			D1 - Diameter													
		Cutting Speed Vc																
		m/min			4,6-7,6	5,8-9,5	6,9-11,4	8,1-13,3	9,2-15,2	9,2-15,2	11,5-19,0	13,8-22,8	16,1-26,6	18,4-30,4	20,7-34,2	23,0-38,0	28,8-47,5	
Max Depth	Min	Max	mm	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0		
P	P0	1,25 x D1	150	200	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P1	1,25 x D1	150	200	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P2	1,25 x D1	140	190	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	P3	1,25 x D1	120	160	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	P4	1,25 x D1	90	150	Fz	0.014	0.018	0.022	0.026	0.030	0.033	0.036	0.041	0.046	0.051	0.055	0.058	0.064
	P5	1,25 x D1	60	100	Fz	0.013	0.016	0.019	0.023	0.026	0.029	0.032	0.037	0.042	0.046	0.050	0.053	0.060
K	P6	1,25 x D1	50	75	Fz	0.011	0.013	0.016	0.019	0.022	0.024	0.027	0.031	0.034	0.038	0.040	0.043	0.047
	K1	1,0 x D1	120	150	Fz	0.019	0.024	0.029	0.034	0.040	0.044	0.048	0.055	0.061	0.067	0.071	0.075	0.082
	K2	1,0 x D1	110	140	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
S	K3	1,0 x D1	110	130	Fz	0.013	0.016	0.019	0.023	0.026	0.029	0.032	0.037	0.042	0.046	0.050	0.053	0.060
	S1	0,75 x D1	50	90	Fz	0.015	0.020	0.024	0.028	0.033	0.037	0.040	0.046	0.052	0.058	0.062	0.067	0.075
	S2	0,75 x D1	25	50	Fz	0.008	0.011	0.013	0.015	0.017	0.019	0.021	0.025	0.028	0.031	0.033	0.036	0.040
	S3	0,5 x D1	25	40	Fz	0.008	0.011	0.013	0.015	0.017	0.019	0.021	0.025	0.028	0.031	0.033	0.036	0.040
H	S4	1,25 x D1	50	60	Fz	0.010	0.014	0.017	0.021	0.024	0.027	0.029	0.034	0.038	0.042	0.046	0.049	0.055
	H1	1,0 x D1	80	140	Fz	0.014	0.018	0.022	0.026	0.030	0.033	0.036	0.041	0.046	0.051	0.055	0.058	0.064
	H2	1,0 x D1	70	120	Fz	0.011	0.013	0.016	0.019	0.022	0.024	0.027	0.031	0.034	0.038	0.040	0.043	0.047



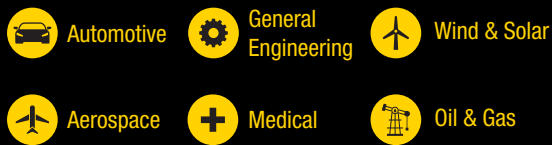
# HARVI SERIES

High-Performance  
Roughing and Finishing

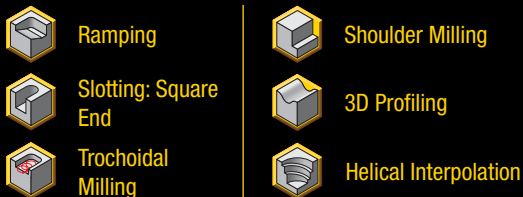
## Materials



## Industries



## Applications



KCSM15A grade for  
high-temp 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



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 axial and radial rake angles result in lower cutting forces and lower pressure on cutting edge, providing smooth cutting action and best surface finishes. Center cutting design enables radial and axial finishing pass after roughing operation.

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

## HARVI IV



HARVI IV: Unique 8 flute design delivers higher MRR and feed rates than 7 flutes and more versatility than traditional 9 flutes. Reliable roughing and finishing capabilities in high-temp alloys, stainless steels, steels and hardened materials.

### 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 III

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

### HARVI III Taper Ball Nose

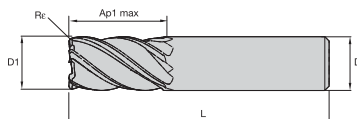
Six-flute end mill for 5-axis machining of steel, stainless steel, nickel-based alloys and titanium to significantly increase output and decrease machining time.

### HARVI III Ball Nose

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

### HARVI IV

Eight-flute end mill for roughing and finishing in high-temp alloys, stainless steels, steels and hardened materials while achieving powerful chip evacuation from internal coolant channels.



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

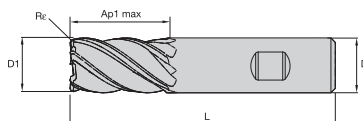
● Primary  
○ Secondary

## HARVI II

Radiused • 5 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rr		KCPM15	KC643M
3524411	UCDE0400A5ARA	4,00	6,00	11,00	55,00	0,25	-	●	
4046284	UCDE0400A5ARA	4,00	6,00	11,00	55,00	0,25	●	-	
3524433	UCDE0500A5ARA	5,00	6,00	13,00	57,00	0,25	-	●	
4046288	UCDE0500A5ARA	5,00	6,00	13,00	57,00	0,25	●	-	
3524435	UCDE0600A5ARA	6,00	6,00	13,00	57,00	0,40	-	●	
4046291	UCDE0600A5ARA	6,00	6,00	13,00	57,00	0,40	●	-	
3524437	UCDE0700A5ARA	7,00	8,00	16,00	63,00	0,40	-	●	
4046374	UCDE0700A5ARA	7,00	8,00	16,00	63,00	0,40	●	-	
3524439	UCDE0800A5ARA	8,00	8,00	19,00	63,00	0,50	-	●	
4046377	UCDE0800A5ARA	8,00	8,00	19,00	63,00	0,50	●	-	
3524441	UCDE0900A5ARA	9,00	10,00	19,00	72,00	0,50	-	●	
4046380	UCDE0900A5ARA	9,00	10,00	19,00	72,00	0,50	●	-	
3524443	UCDE1000A5ARA	10,00	10,00	22,00	72,00	0,50	-	●	
4046383	UCDE1000A5ARA	10,00	10,00	22,00	72,00	0,50	●	-	
3524445	UCDE1200A5ARA	12,00	12,00	26,00	83,00	0,75	-	●	
4046386	UCDE1200A5ARA	12,00	12,00	26,00	83,00	0,75	●	-	
3524447	UCDE1400A5ARA	14,00	14,00	26,00	83,00	0,75	-	●	
4046389	UCDE1400A5ARA	14,00	14,00	26,00	83,00	0,75	●	-	
3524449	UCDE1600A5ARA	16,00	16,00	32,00	92,00	0,75	-	●	
4046392	UCDE1600A5ARA	16,00	16,00	32,00	92,00	0,75	●	-	
3524451	UCDE1800A5ARA	18,00	18,00	32,00	92,00	0,75	-	●	
4046395	UCDE1800A5ARA	18,00	18,00	32,00	92,00	0,75	●	-	
3524453	UCDE2000A5ARA	20,00	20,00	38,00	104,00	0,75	-	●	
4046398	UCDE2000A5ARA	20,00	20,00	38,00	104,00	0,75	●	-	
3524455	UCDE2500A5ARA	25,00	25,00	45,00	121,00	0,75	-	●	
4046401	UCDE2500A5ARA	25,00	25,00	45,00	121,00	0,75	●	-	

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

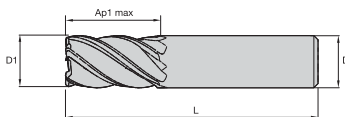
● Primary  
○ Secondary

# HARVI II

Radiused • 5 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	KCPM15	KC643M
3524462	UCDE0400B5ARA	4,00	6,00	11,00	55,00	0,25	—	●
4046286	UCDE0400B5ARA	4,00	6,00	11,00	55,00	0,25	●	—
3524473	UCDE0500B5ARA	5,00	6,00	13,00	57,00	0,25	—	●
4046290	UCDE0500B5ARA	5,00	6,00	13,00	57,00	0,25	●	—
3524474	UCDE0600B5ARA	6,00	6,00	13,00	57,00	0,40	—	●
4046373	UCDE0600B5ARA	6,00	6,00	13,00	57,00	0,40	●	—
3524475	UCDE0700B5ARA	7,00	8,00	16,00	63,00	0,40	—	●
4046376	UCDE0700B5ARA	7,00	8,00	16,00	63,00	0,40	●	—
3524476	UCDE0800B5ARA	8,00	8,00	19,00	63,00	0,50	—	●
4046379	UCDE0800B5ARA	8,00	8,00	19,00	63,00	0,50	●	—
4046382	UCDE0900B5ARA	9,00	10,00	19,00	72,00	0,50	●	—
3524478	UCDE1000B5ARA	10,00	10,00	22,00	72,00	0,50	—	●
4046385	UCDE1000B5ARA	10,00	10,00	22,00	72,00	0,50	●	—
3524479	UCDE1200B5ARA	12,00	12,00	26,00	83,00	0,75	—	●
4046388	UCDE1200B5ARA	12,00	12,00	26,00	83,00	0,75	●	—
3524480	UCDE1400B5ARA	14,00	14,00	26,00	83,00	0,75	—	●
4046391	UCDE1400B5ARA	14,00	14,00	26,00	83,00	0,75	●	—
3524481	UCDE1600B5ARA	16,00	16,00	32,00	92,00	0,75	—	●
4046394	UCDE1600B5ARA	16,00	16,00	32,00	92,00	0,75	●	—
3524482	UCDE1800B5ARA	18,00	18,00	32,00	92,00	0,75	—	●
4046397	UCDE1800B5ARA	18,00	18,00	32,00	92,00	0,75	●	—
3524483	UCDE2000B5ARA	20,00	20,00	38,00	104,00	0,75	—	●
4046400	UCDE2000B5ARA	20,00	20,00	38,00	104,00	0,75	●	—
3524484	UCDE2500B5ARA	25,00	25,00	45,00	121,00	0,75	—	●
4046403	UCDE2500B5ARA	25,00	25,00	45,00	121,00	0,75	●	—

HIGH PERFORMANCE SOLID CARBIDE END MILLING



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

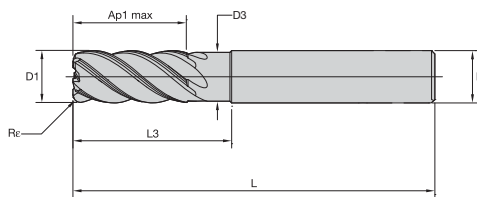
● Primary  
○ Secondary

## HARVI II

Square End • 5 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	KCPM15	KC643M
3524456	UCDE0400A5ASA	4,00	6,00	11,00	55,00	-	●
4046285	UCDE0400A5ASA	4,00	6,00	11,00	55,00	●	-
3524412	UCDE0500A5ASA	5,00	6,00	13,00	57,00	-	●
4046289	UCDE0500A5ASA	5,00	6,00	13,00	57,00	●	-
3524434	UCDE0600A5ASA	6,00	6,00	13,00	57,00	-	●
4046292	UCDE0600A5ASA	6,00	6,00	13,00	57,00	●	-
3524436	UCDE0700A5ASA	7,00	8,00	16,00	63,00	-	●
4046375	UCDE0700A5ASA	7,00	8,00	16,00	63,00	●	-
3524438	UCDE0800A5ASA	8,00	8,00	19,00	63,00	-	●
4046378	UCDE0800A5ASA	8,00	8,00	19,00	63,00	●	-
3524440	UCDE0900A5ASA	9,00	10,00	19,00	72,00	-	●
4046381	UCDE0900A5ASA	9,00	10,00	19,00	72,00	●	-
3524442	UCDE1000A5ASA	10,00	10,00	22,00	72,00	-	●
4046384	UCDE1000A5ASA	10,00	10,00	22,00	72,00	●	-
3524444	UCDE1200A5ASA	12,00	12,00	26,00	83,00	-	●
4046387	UCDE1200A5ASA	12,00	12,00	26,00	83,00	●	-
3524446	UCDE1400A5ASA	14,00	14,00	26,00	83,00	-	●
4046390	UCDE1400A5ASA	14,00	14,00	26,00	83,00	●	-
3524448	UCDE1600A5ASA	16,00	16,00	32,00	92,00	-	●
4046393	UCDE1600A5ASA	16,00	16,00	32,00	92,00	●	-
3524450	UCDE1800A5ASA	18,00	18,00	32,00	92,00	-	●
4046396	UCDE1800A5ASA	18,00	18,00	32,00	92,00	●	-
3524452	UCDE2000A5ASA	20,00	20,00	38,00	104,00	-	●
4046399	UCDE2000A5ASA	20,00	20,00	38,00	104,00	●	-
3524454	UCDE2500A5ASA	25,00	25,00	45,00	121,00	-	●
4046402	UCDE2500A5ASA	25,00	25,00	45,00	121,00	●	-

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	●
M	●
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N	●
S	○
H	○

● Primary  
○ Secondary

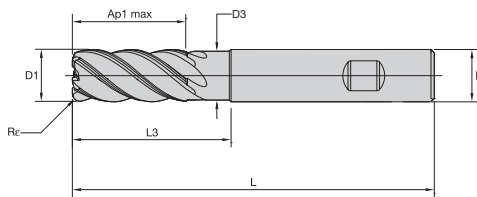
# HARVI II

Radiused • 5 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
3524486	UDDE0600A5ARA	6,00	6,00	5,64	13,00	18,00	63,00	0,50	●
3524487	UDDE0600A5ARB	6,00	6,00	5,64	13,00	18,00	63,00	1,00	●
3524488	UDDE0600A5ARC	6,00	6,00	5,64	13,00	18,00	63,00	1,50	●
3524490	UDDE0800A5ARA	8,00	8,00	7,52	19,00	24,00	76,00	0,50	●
3524491	UDDE0800A5ARB	8,00	8,00	7,52	19,00	24,00	76,00	1,00	●
3524492	UDDE0800A5ARC	8,00	8,00	7,52	19,00	24,00	76,00	2,00	●
3524514	UDDE1000A5ARA	10,00	10,00	9,40	22,00	30,00	76,00	0,50	●
3524515	UDDE1000A5ARB	10,00	10,00	9,40	22,00	30,00	76,00	1,00	●
3524516	UDDE1000A5ARC	10,00	10,00	9,40	22,00	30,00	76,00	2,00	●
3524517	UDDE1000A5ARD	10,00	10,00	9,40	22,00	30,00	76,00	2,50	●
3524520	UDDE1200A5ARB	12,00	12,00	11,28	26,00	36,00	83,00	1,00	●
3524521	UDDE1200A5ARC	12,00	12,00	11,28	26,00	36,00	83,00	2,00	●
3524522	UDDE1200A5ARD	12,00	12,00	11,28	26,00	36,00	83,00	3,00	●
3524519	UDDE1200A5ARA	12,00	12,00	11,28	26,00	36,00	84,00	0,50	●
3873932	UDDE1400A5ARA	14,00	14,00	13,15	26,00	42,00	84,00	0,50	●
3874034	UDDE1400A5ARC	14,00	14,00	13,15	26,00	42,00	84,00	2,00	●
3874035	UDDE1400A5ARD	14,00	14,00	13,15	26,00	42,00	84,00	3,00	●
3524524	UDDE1600A5ARA	16,00	16,00	15,04	32,00	48,00	100,00	0,50	●
3524525	UDDE1600A5ARB	16,00	16,00	15,04	32,00	48,00	100,00	1,00	●
3524526	UDDE1600A5ARC	16,00	16,00	15,04	32,00	48,00	100,00	2,00	●
3524527	UDDE1600A5ARD	16,00	16,00	15,04	32,00	48,00	100,00	3,00	●
3524528	UDDE1600A5ARE	16,00	16,00	15,04	32,00	48,00	100,00	4,00	●
6063443	UDDE1600A5ARP	16,00	16,00	15,04	32,00	48,00	100,00	6,00	●
3524530	UDDE2000A5ARA	20,00	20,00	18,80	38,00	60,00	115,00	0,50	●
3524531	UDDE2000A5ARB	20,00	20,00	18,80	38,00	60,00	115,00	1,00	●
3524532	UDDE2000A5ARC	20,00	20,00	18,80	38,00	60,00	115,00	2,00	●
3524533	UDDE2000A5ARD	20,00	20,00	18,80	38,00	60,00	115,00	3,00	●
3524534	UDDE2000A5ARE	20,00	20,00	18,80	38,00	60,00	115,00	4,00	●
6063444	UDDE2000A5ARP	20,00	20,00	18,80	38,00	60,00	115,00	6,00	●
3524536	UDDE2500A5ARA	25,00	25,00	23,50	45,00	75,00	135,00	0,50	●
3524537	UDDE2500A5ARB	25,00	25,00	23,50	45,00	75,00	135,00	1,00	●
3524538	UDDE2500A5ARC	25,00	25,00	23,50	45,00	75,00	135,00	2,00	●
3524539	UDDE2500A5ARD	25,00	25,00	23,50	45,00	75,00	135,00	3,00	●
3524540	UDDE2500A5ARE	25,00	25,00	23,50	45,00	75,00	135,00	4,00	●

KC643M

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	●
M	●
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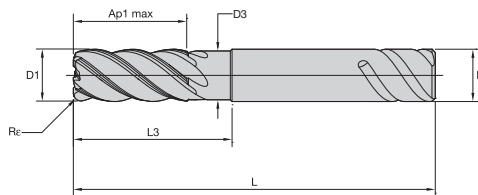
● Primary  
○ Secondary

## HARVI II

Radiused • 5 Flutes • Necked • Weldon® Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
3524542	UDDE0600B5ARA	6,00	6,00	5,64	13,00	18,00	63,00	0,20	●
3524543	UDDE0600B5ARB	6,00	6,00	5,64	13,00	18,00	63,00	0,50	●
3524544	UDDE0600B5ARC	6,00	6,00	5,64	13,00	18,00	63,00	1,00	●
3524545	UDDE0600B5ARD	6,00	6,00	5,64	13,00	18,00	63,00	1,50	●
3524546	UDDE0800B5ARA	8,00	8,00	7,52	19,00	24,00	76,00	0,20	●
3524547	UDDE0800B5ARB	8,00	8,00	7,52	19,00	24,00	76,00	0,50	●
3524548	UDDE0800B5ARC	8,00	8,00	7,52	19,00	24,00	76,00	1,00	●
3524549	UDDE0800B5ARD	8,00	8,00	7,52	19,00	24,00	76,00	2,00	●
3524550	UDDE1000B5ARA	10,00	10,00	9,40	22,00	30,00	76,00	0,50	●
3524551	UDDE1000B5ARB	10,00	10,00	9,40	22,00	30,00	76,00	1,00	●
3524553	UDDE1000B5ARD	10,00	10,00	9,40	22,00	30,00	76,00	2,50	●
3524554	UDDE1200B5ARA	12,00	12,00	11,28	26,00	36,00	83,00	0,50	●
3524555	UDDE1200B5ARB	12,00	12,00	11,28	26,00	36,00	83,00	1,00	●
3524556	UDDE1200B5ARC	12,00	12,00	11,28	26,00	36,00	83,00	2,00	●
3524557	UDDE1200B5ARD	12,00	12,00	11,28	26,00	36,00	83,00	3,00	●
3874037	UDDE1400B5ARB	14,00	14,00	13,15	26,00	42,00	84,00	1,00	●
3524558	UDDE1600B5ARA	16,00	16,00	15,04	32,00	48,00	100,00	0,50	●
3524559	UDDE1600B5ARB	16,00	16,00	15,04	32,00	48,00	100,00	1,00	●
3524560	UDDE1600B5ARC	16,00	16,00	15,04	32,00	48,00	100,00	2,00	●
3524561	UDDE1600B5ARD	16,00	16,00	15,04	32,00	48,00	100,00	3,00	●
3524562	UDDE1600B5ARE	16,00	16,00	15,04	32,00	48,00	100,00	4,00	●
6064694	UDDE1600B5ARP	16,00	16,00	15,04	32,00	48,00	100,00	6,00	●
3524563	UDDE2000B5ARA	20,00	20,00	18,80	38,00	60,00	115,00	0,50	●
3524564	UDDE2000B5ARB	20,00	20,00	18,80	38,00	60,00	115,00	1,00	●
3524565	UDDE2000B5ARC	20,00	20,00	18,80	38,00	60,00	115,00	2,00	●
3524566	UDDE2000B5ARD	20,00	20,00	18,80	38,00	60,00	115,00	3,00	●
3524567	UDDE2000B5ARE	20,00	20,00	18,80	38,00	60,00	115,00	4,00	●
6064695	UDDE2000B5ARP	20,00	20,00	18,80	38,00	60,00	115,00	6,00	●
3524568	UDDE2500B5ARA	25,00	25,00	23,50	45,00	75,00	135,00	0,50	●
3524569	UDDE2500B5ARB	25,00	25,00	23,50	45,00	75,00	135,00	1,00	●
3524570	UDDE2500B5ARC	25,00	25,00	23,50	45,00	75,00	135,00	2,00	●
3524571	UDDE2500B5ARD	25,00	25,00	23,50	45,00	75,00	135,00	3,00	●
3524572	UDDE2500B5ARE	25,00	25,00	23,50	45,00	75,00	135,00	4,00	●
6064696	UDDE2500B5ARP	25,00	25,00	23,50	45,00	75,00	135,00	6,00	●

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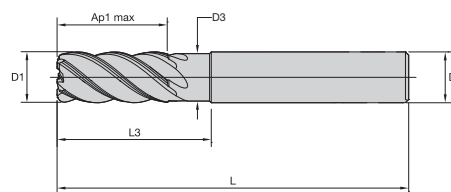
● Primary  
○ Secondary

## HARVI II

Radiused • 5 Flutes • Necked • SAFE-LOCK Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
5358354	UDDE1200E5AQE	12,00	12,00	11,28	26,00	36,00	83,00	0,50	●
5358358	UDDE1600E5AQE	16,00	16,00	15,04	32,00	48,00	100,00	0,50	●
5358359	UDDE1600E5AQG	16,00	16,00	15,04	32,00	48,00	100,00	1,00	●
5358390	UDDE1600E5AQK	16,00	16,00	15,04	32,00	48,00	100,00	2,00	●
5358394	UDDE2000E5AQE	20,00	20,00	18,80	38,00	60,00	115,00	0,50	●
5358399	UDDE2500E5AQE	25,00	25,00	23,50	45,00	75,00	135,00	0,50	●

KC63M15



P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

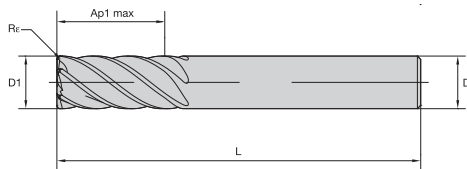
## HARVI II

Square End • 5 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	
3524485	UDDE0600A5ASA	6,00	6,00	5,64	13,00	18,00	63,00	●
3524489	UDDE0800A5ASA	8,00	8,00	7,52	19,00	24,00	76,00	●
3524513	UDDE1000A5ASA	10,00	10,00	9,40	22,00	30,00	76,00	●
3524518	UDDE1200A5ASA	12,00	12,00	11,28	26,00	36,00	83,00	●
3873931	UDDE1400A5ASA	14,00	14,00	13,15	26,00	42,00	84,00	●
3524523	UDDE1600A5ASA	16,00	16,00	15,04	32,00	48,00	100,00	●
3524529	UDDE2000A5ASA	20,00	20,00	18,80	38,00	60,00	115,00	●

KC643M

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	○
M	●
K	●
N	●
S	●
H	○

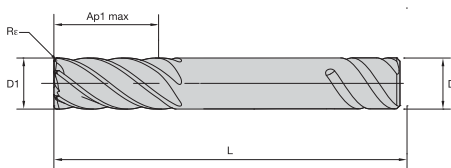
● Primary  
○ Secondary

## HARVI III

Radiused • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
7077115	HA3R6RA1000R022HAR050M	10,00	10,00	22,00	72,00	0,50	●
7077117	HA3R6RA1200R026HAR075M	12,00	12,00	26,00	83,00	0,75	●
7077119	HA3R6RA1400R026HAR075M	14,00	14,00	26,00	83,00	0,75	●
7077261	HA3R6RA1600R032HAR075M	16,00	16,00	32,00	92,00	0,75	●
7077263	HA3R6RA2000R038HAR075M	20,00	20,00	38,00	104,00	0,75	●
7077265	HA3R6RA2500R045HAR075M	25,00	25,00	45,00	121,00	0,75	●

KCSM15A



P	○
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N	●
S	●
H	○

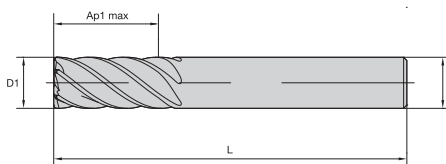
● Primary  
○ Secondary

## HARVI III

Radiused • 6 Flutes • Safe-Lock Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
7077267	HA3R6RA1200R026SLR075M	12,00	12,00	26,00	83,00	0,75	●
7077268	HA3R6RA1600R032SLR075M	16,00	16,00	32,00	92,00	0,75	●
7077269	HA3R6RA2000R038SLR075M	20,00	20,00	38,00	104,00	0,75	●
7077270	HA3R6RA2500R045SLR075M	25,00	25,00	45,00	121,00	0,75	●

KCSM15A



P	○
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

## HARVI III

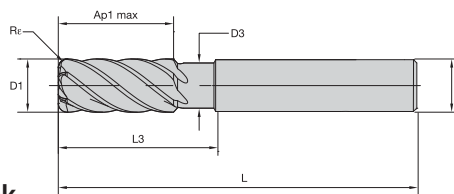
Square End • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
7077116	HA3R6SE1000R022HAM	10,00	10,00	22,00	72,00	●
7077118	HA3R6SE1200R026HAM	12,00	12,00	26,00	83,00	●
7077120	HA3R6SE1400R026HAM	14,00	14,00	26,00	83,00	●
7077262	HA3R6SE1600R032HAM	16,00	16,00	32,00	92,00	●
7077264	HA3R6SE2000R038HAM	20,00	20,00	38,00	104,00	●
7077266	HA3R6SE2500R045HAM	25,00	25,00	45,00	121,00	●

KCSM15A



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



- Primary
- Secondary

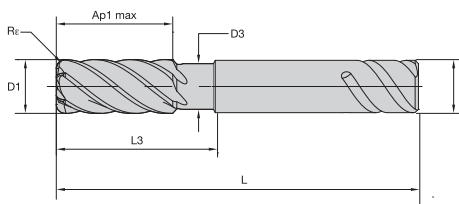
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

KCSM15A

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
7077281	HA3R6RA1000N022HAR050M	10,00	10,00	9,40	22,00	30,00	76,00	0,50	●
7077282	HA3R6RA1000N022HAR100M	10,00	10,00	9,40	22,00	30,00	76,00	1,00	●
7077283	HA3R6RA1000N022HAR200M	10,00	10,00	9,40	22,00	30,00	76,00	2,00	●
7077285	HA3R6RA1200N026HAR050M	12,00	12,00	11,28	26,00	36,00	83,00	0,50	●
7077286	HA3R6RA1200N026HAR100M	12,00	12,00	11,28	26,00	36,00	83,00	1,00	●
7077287	HA3R6RA1200N026HAR200M	12,00	12,00	11,28	26,00	36,00	83,00	2,00	●
7077288	HA3R6RA1200N026HAR300M	12,00	12,00	11,28	26,00	36,00	83,00	3,00	●
7077291	HA3R6RA1600N032HAR050M	16,00	16,00	15,04	32,00	48,00	100,00	0,50	●
7077292	HA3R6RA1600N032HAR100M	16,00	16,00	15,04	32,00	48,00	100,00	1,00	●
7077293	HA3R6RA1600N032HAR200M	16,00	16,00	15,04	32,00	48,00	100,00	2,00	●
7077294	HA3R6RA1600N032HAR300M	16,00	16,00	15,04	32,00	48,00	100,00	3,00	●
7077295	HA3R6RA1600N032HAR400M	16,00	16,00	15,04	32,00	48,00	100,00	4,00	●
7077296	HA3R6RA1600N032HAR600M	16,00	16,00	15,04	32,00	48,00	100,00	6,00	●
7077298	HA3R6RA2000N038HAR050M	20,00	20,00	18,80	38,00	60,00	115,00	0,50	●
7077299	HA3R6RA2000N038HAR100M	20,00	20,00	18,80	38,00	60,00	115,00	1,00	●
7077300	HA3R6RA2000N038HAR200M	20,00	20,00	18,80	38,00	60,00	115,00	2,00	●
7077301	HA3R6RA2000N038HAR300M	20,00	20,00	18,80	38,00	60,00	115,00	3,00	●
7077302	HA3R6RA2000N038HAR400M	20,00	20,00	18,80	38,00	60,00	115,00	4,00	●
7077303	HA3R6RA2000N038HAR600M	20,00	20,00	18,80	38,00	60,00	115,00	6,00	●
7077305	HA3R6RA2500N045HAR100M	25,00	25,00	23,50	45,00	75,00	135,00	1,00	●
7077306	HA3R6RA2500N045HAR400M	25,00	25,00	23,50	45,00	75,00	135,00	4,00	●



**HARVI III**  
Radiused • 6 Flutes • Necked • Safe-Lock Shank

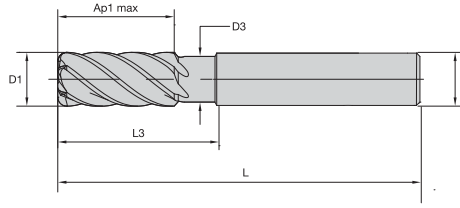


- Primary
- Secondary

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

KCSM15A

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
7077307	HA3R6RA1200N026SLR050M	12,00	12,00	11,28	26,00	36,00	83,00	0,50	●
7077308	HA3R6RA1200N026SLR100M	12,00	12,00	11,28	26,00	36,00	83,00	1,00	●
7077309	HA3R6RA1600N032SLR050M	16,00	16,00	15,04	32,00	48,00	100,00	0,50	●
7077310	HA3R6RA1600N032SLR100M	16,00	16,00	15,04	32,00	48,00	100,00	1,00	●
7077311	HA3R6RA1600N032SLR200M	16,00	16,00	15,04	32,00	48,00	100,00	2,00	●
7077312	HA3R6RA1600N032SLR400M	16,00	16,00	15,04	32,00	48,00	100,00	4,00	●
7077313	HA3R6RA2000N038SLR050M	20,00	20,00	18,80	38,00	60,00	115,00	0,50	●
7077314	HA3R6RA2000N038SLR100M	20,00	20,00	18,80	38,00	60,00	115,00	1,00	●
7077316	HA3R6RA2000N038SLR200M	20,00	20,00	18,80	38,00	60,00	115,00	2,00	●
7077317	HA3R6RA2000N038SLR400M	20,00	20,00	18,80	38,00	60,00	115,00	4,00	●
7077318	HA3R6RA2500N045SLR050M	25,00	25,00	23,50	45,00	75,00	135,00	0,50	●



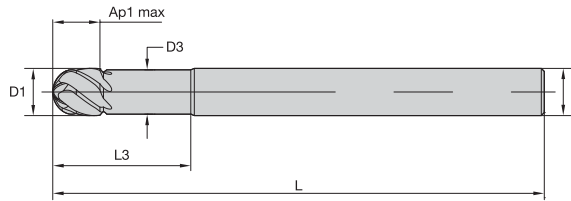
P	Blue	○
M	Black	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI III

Square End • 6 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	
7077284	HA3R6SE1000N022HAM	10,00	10,00	9,40	22,00	30,00	76,00	●
7077290	HA3R6SE1200N026HAM	12,00	12,00	11,28	26,00	36,00	83,00	●
7077297	HA3R6SE1600N032HAM	16,00	16,00	15,04	32,00	48,00	100,00	●
7077304	HA3R6SE2000N038HAM	20,00	20,00	18,80	38,00	60,00	115,00	●



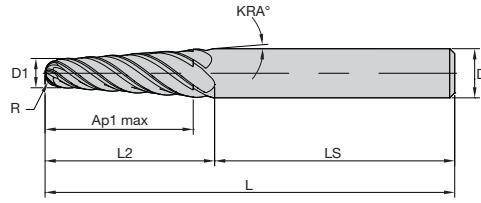
P	Blue	○
M	Black	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

## HARVI III

Ball Nose • 6 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	
7077319	HA3R6BN1000N010HAM	10,00	10,00	9,40	10,00	30,00	72,00	●
7077320	HA3R6BN1000N010HAEM	10,00	10,00	9,40	10,00	30,00	121,00	●
7077321	HA3R6BN1200N012HAM	12,00	12,00	11,28	12,00	36,00	83,00	●
7077322	HA3R6BN1200N012HAEM	12,00	12,00	11,28	12,00	36,00	125,00	●
7077323	HA3R6BN1600N016HAM	16,00	16,00	15,04	16,00	48,00	100,00	●
7077324	HA3R6BN1600N016HAEM	16,00	16,00	15,04	16,00	48,00	150,00	●
7077325	HA3R6BN2000N020HAM	20,00	20,00	18,80	20,00	60,00	115,00	●
7077326	HA3R6BN2000N020HAEM	20,00	20,00	18,80	20,00	60,00	150,00	●



● Primary  
○ Secondary

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

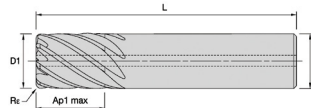
# HARVI III

Taper Ball Nose • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L2	Ls	L	R	Kra	
7078273	HA3R6TB0400X026HAM	4,00	8,00	26,00	30,53	45,47	76,00	2,00	4,00	●
7078272	HA3R6TB0400L025HAM	4,00	10,00	25,00	30,44	58,56	89,00	2,00	6,00	●
7078275	HA3R6TB0500X033HAM	5,00	10,00	33,00	38,16	50,84	89,00	2,50	4,00	●
7078274	HA3R6TB0500L029HAM	5,00	12,00	29,00	35,67	64,33	100,00	2,50	6,00	●
7078277	HA3R6TB0600L039HAM	6,00	12,00	39,00	45,80	54,20	100,00	3,00	4,00	●
7078278	HA3R6TB0600X042HAM	6,00	16,00	42,00	50,42	59,59	110,00	3,00	6,00	●
7078301	HA3R6TB0800X039HAM	8,00	14,00	39,00	46,76	53,24	100,00	4,00	4,00	●
7078280	HA3R6TB0800L033HAM	8,00	16,00	33,00	41,85	68,15	110,00	4,00	6,00	●
7078303	HA3R6TB1000X039HAM	10,00	16,00	39,00	47,73	62,27	110,00	5,00	4,00	●
7078302	HA3R6TB1000L025HAM	10,00	16,00	25,00	33,28	76,72	110,00	5,00	6,00	●

KGSMT15A

HIGH PERFORMANCE SOLID CARBIDE END MILLING

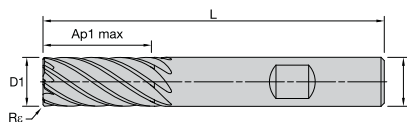


● Primary  
○ Secondary

## HARVI IV

Radiused • 8 Flutes • Internal Coolant • Plain Shank

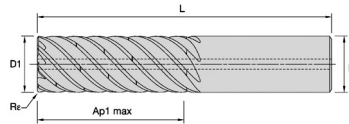
Order Number	Catalog Number	D1	D	Ap1 Max	L	Rε	
7104182	HA4R8RA1000R022HAR050IM	10,00	10,00	22,00	72,00	0.5	●
7104183	HA4R8RA1000R022HAR100IM	10,00	10,00	22,00	72,00	1.0	●
7104184	HA4R8RA1000R022HAR200IM	10,00	10,00	22,00	72,00	2.0	●
7104185	HA4R8RA1000R022HAR250IM	10,00	10,00	22,00	72,00	2.5	●
7104186	HA4R8RA1000R022HAR300IM	10,00	10,00	22,00	72,00	3.0	●
7104188	HA4R8RA1200R026HAR050IM	12,00	12,00	26,00	83,00	0.5	●
7104189	HA4R8RA1200R026HAR100IM	12,00	12,00	26,00	83,00	1.0	●
7104190	HA4R8RA1200R026HAR200IM	12,00	12,00	26,00	83,00	2.0	●
7104191	HA4R8RA1200R026HAR250IM	12,00	12,00	26,00	83,00	2.5	●
7104192	HA4R8RA1200R026HAR300IM	12,00	12,00	26,00	83,00	3.0	●
7104194	HA4R8RA1600R032HAR050IM	16,00	16,00	32,00	92,00	0.5	●
7104195	HA4R8RA1600R032HAR100IM	16,00	16,00	32,00	92,00	1.0	●
7104196	HA4R8RA1600R032HAR200IM	16,00	16,00	32,00	92,00	2.0	●
7104197	HA4R8RA1600R032HAR250IM	16,00	16,00	32,00	92,00	2.5	●
7104198	HA4R8RA1600R032HAR300IM	16,00	16,00	32,00	92,00	3.0	●
7104199	HA4R8RA1600R032HAR400IM	16,00	16,00	32,00	92,00	4.0	●
7104201	HA4R8RA2000R038HAR050IM	20,00	20,00	38,00	104,00	0.5	●
7104202	HA4R8RA2000R038HAR100IM	20,00	20,00	38,00	104,00	1.0	●
7104203	HA4R8RA2000R038HAR200IM	20,00	20,00	38,00	104,00	2.0	●
7104204	HA4R8RA2000R038HAR250IM	20,00	20,00	38,00	104,00	2.5	●
7104205	HA4R8RA2000R038HAR300IM	20,00	20,00	38,00	104,00	3.0	●
7104206	HA4R8RA2000R038HAR400IM	20,00	20,00	38,00	104,00	4.0	●
7104207	HA4R8RA2000R038HAR600IM	20,00	20,00	38,00	104,00	6.0	●
7104209	HA4R8RA2500R045HAR050IM	25,00	25,00	45,00	121,00	0.5	●
7104210	HA4R8RA2500R045HAR100IM	25,00	25,00	45,00	121,00	1.0	●
7104211	HA4R8RA2500R045HAR200IM	25,00	25,00	45,00	121,00	2.0	●
7104212	HA4R8RA2500R045HAR250IM	25,00	25,00	45,00	121,00	2.5	●
7104213	HA4R8RA2500R045HAR300IM	25,00	25,00	45,00	121,00	3.0	●
7104214	HA4R8RA2500R045HAR400IM	25,00	25,00	45,00	121,00	4.0	●



● Primary  
○ Secondary

## HARVI IV • Radiused • 8 Flutes • Internal Coolant • Weldon Shank

Catalog Number	D1	D	Ap1 Max	L	Rε	KCSM15A
HA4R8RA1000R022HBR050IM	10,00	10,00	22,00	72,00	0,50	7321395
HA4R8RA1000R022HBR100IM	10,00	10,00	22,00	72,00	1,00	7321396
HA4R8RA1000R022HBR200IM	10,00	10,00	22,00	72,00	2,00	7321399
HA4R8RA1000R022HBR300IM	10,00	10,00	22,00	72,00	3,00	7321449
HA4R8RA1200R026HBR050IM	12,00	12,00	26,00	83,00	0,50	7321454
HA4R8RA1200R026HBR100IM	12,00	12,00	26,00	83,00	1,00	7321455
HA4R8RA1200R026HBR200IM	12,00	12,00	26,00	83,00	2,00	7321456
HA4R8RA1200R026HBR300IM	12,00	12,00	26,00	83,00	3,00	7321457
HA4R8RA1600R032HBR050IM	16,00	16,00	32,00	92,00	0,50	7321458
HA4R8RA1600R032HBR100IM	16,00	16,00	32,00	92,00	1,00	7321459
HA4R8RA1600R032HBR200IM	16,00	16,00	32,00	92,00	2,00	7321460
HA4R8RA1600R032HBR300IM	16,00	16,00	32,00	92,00	3,00	7321461
HA4R8RA2000R038HBR050IM	20,00	20,00	38,00	104,00	0,50	7321462
HA4R8RA2000R038HBR100IM	20,00	20,00	38,00	104,00	1,00	7321463
HA4R8RA2000R038HBR200IM	20,00	20,00	38,00	104,00	2,00	7321464
HA4R8RA2000R038HBR300IM	20,00	20,00	38,00	104,00	3,00	7321465
HA4R8RA2500R045HBR050IM	25,00	25,00	45,00	121,00	0,50	7321466
HA4R8RA2500R045HBR100IM	25,00	25,00	45,00	121,00	1,00	7321467
HA4R8RA2500R045HBR200IM	25,00	25,00	45,00	121,00	2,00	7321468
HA4R8RA2500R045HBR300IM	25,00	25,00	45,00	121,00	3,00	7321469



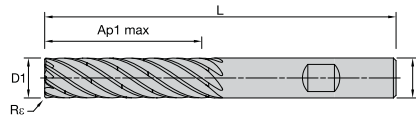
P	Blue	○
M	Yellow	●
K	Red	●
N	Green	●
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

# HARVI IV

Radiused • 8 Flutes • Chip Splitters • Internal Coolant • Plain Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	Rε	
7104255	HA4R8RA1000X040HAR050DM	10,00	10,00	40,00	90,00	0.5	●
7104256	HA4R8RA1000X040HAR100DM	10,00	10,00	40,00	90,00	1.0	●
7104257	HA4R8RA1000X040HAR200DM	10,00	10,00	40,00	90,00	2.0	●
7104258	HA4R8RA1000X040HAR250DM	10,00	10,00	40,00	90,00	2.5	●
7104259	HA4R8RA1000X040HAR300DM	10,00	10,00	40,00	90,00	3.0	●
7104271	HA4R8RA1200X048HAR050DM	12,00	12,00	48,00	105,00	0.5	●
7104272	HA4R8RA1200X048HAR100DM	12,00	12,00	48,00	105,00	1.0	●
7104273	HA4R8RA1200X048HAR200DM	12,00	12,00	48,00	105,00	2.0	●
7104274	HA4R8RA1200X048HAR250DM	12,00	12,00	48,00	105,00	2.5	●
7104275	HA4R8RA1200X048HAR300DM	12,00	12,00	48,00	105,00	3.0	●
7104277	HA4R8RA1600X064HAR050DM	16,00	16,00	64,00	125,00	0.5	●
7104278	HA4R8RA1600X064HAR100DM	16,00	16,00	64,00	125,00	1.0	●
7104279	HA4R8RA1600X064HAR200DM	16,00	16,00	64,00	125,00	2.0	●
7104280	HA4R8RA1600X064HAR250DM	16,00	16,00	64,00	125,00	2.5	●
7104281	HA4R8RA1600X064HAR300DM	16,00	16,00	64,00	125,00	3.0	●
7104282	HA4R8RA1600X064HAR400DM	16,00	16,00	64,00	125,00	4.0	●
7104284	HA4R8RA2000X080HAR050DM	20,00	20,00	80,00	145,00	0.5	●
7104285	HA4R8RA2000X080HAR100DM	20,00	20,00	80,00	145,00	1.0	●
7104286	HA4R8RA2000X080HAR200DM	20,00	20,00	80,00	145,00	2.0	●
7104287	HA4R8RA2000X080HAR250DM	20,00	20,00	80,00	145,00	2.5	●
7104288	HA4R8RA2000X080HAR300DM	20,00	20,00	80,00	145,00	3.0	●
7104289	HA4R8RA2000X080HAR400DM	20,00	20,00	80,00	145,00	4.0	●
7104290	HA4R8RA2000X080HAR600DM	20,00	20,00	80,00	145,00	6.0	●
7104292	HA4R8RA2500X100HAR050DM	25,00	25,00	100,00	175,00	0.5	●
7104293	HA4R8RA2500X100HAR100DM	25,00	25,00	100,00	175,00	1.0	●
7104294	HA4R8RA2500X100HAR200DM	25,00	25,00	100,00	175,00	2.0	●
7104295	HA4R8RA2500X100HAR250DM	25,00	25,00	100,00	175,00	2.5	●
7104296	HA4R8RA2500X100HAR300DM	25,00	25,00	100,00	175,00	3.0	●
7104297	HA4R8RA2500X100HAR400DM	25,00	25,00	100,00	175,00	4.0	●

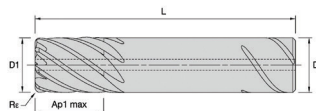


P	Blue	○
M	Yellow	●
K	Red	●
N	Green	●
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

HARVI IV • Radiused • 8 Flutes • Internal Coolant • Chipbreaker • Weldon Shank

Catalog Number	D1	D	Ap1 Max	L	Rε	KCSM15A
HA4R8RA1000X040HBR050DM	10,00	10,00	40,00	90,00	0,50	7321140
HA4R8RA1000X040HBR100DM	10,00	10,00	40,00	90,00	1,00	7321481
HA4R8RA1000X040HBR200DM	10,00	10,00	40,00	90,00	2,00	7321482
HA4R8RA1000X040HBR300DM	10,00	10,00	40,00	90,00	3,00	7321483
HA4R8RA1200X048HBR050DM	12,00	12,00	48,00	105,00	0,50	7321484
HA4R8RA1200X048HBR100DM	12,00	12,00	48,00	105,00	1,00	7321485
HA4R8RA1200X048HBR200DM	12,00	12,00	48,00	105,00	2,00	7321486
HA4R8RA1200X048HBR300DM	12,00	12,00	48,00	105,00	3,00	7321487
HA4R8RA1600X064HBR050DM	16,00	16,00	64,00	125,00	0,50	7321488
HA4R8RA1600X064HBR100DM	16,00	16,00	64,00	125,00	1,00	7321489
HA4R8RA1600X064HBR200DM	16,00	16,00	64,00	125,00	2,00	7321490
HA4R8RA1600X064HBR300DM	16,00	16,00	64,00	125,00	3,00	7321501
HA4R8RA2000X080HBR050DM	20,00	20,00	80,00	145,00	0,50	7321502
HA4R8RA2000X080HBR100DM	20,00	20,00	80,00	145,00	1,00	7321503
HA4R8RA2000X080HBR200DM	20,00	20,00	80,00	145,00	2,00	7321504
HA4R8RA2000X080HBR300DM	20,00	20,00	80,00	145,00	3,00	7321505
HA4R8RA2500X100HBR050DM	25,00	25,00	100,00	175,00	0,50	7321506
HA4R8RA2500X100HBR100DM	25,00	25,00	100,00	175,00	1,00	7321507
HA4R8RA2500X100HBR200DM	25,00	25,00	100,00	175,00	2,00	7321508
HA4R8RA2500X100HBR300DM	25,00	25,00	100,00	175,00	3,00	7321509



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

● Primary  
○ Secondary

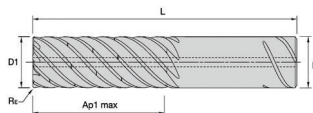
## HARVI IV

Radiused • 8 Flutes • Internal Coolant • SAFE-LOCK Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	Rε	
7104216	HA4R8RA1200R026SLR050IM	12,00	12,00	26,00	83,00	0.5	●
7104217	HA4R8RA1200R026SLR100IM	12,00	12,00	26,00	83,00	1.0	●
7104218	HA4R8RA1200R026SLR200IM	12,00	12,00	26,00	83,00	2.0	●
7104219	HA4R8RA1200R026SLR250IM	12,00	12,00	26,00	83,00	2.5	●
7104220	HA4R8RA1200R026SLR300IM	12,00	12,00	26,00	83,00	3.0	●
7104222	HA4R8RA1600R032SLR050IM	16,00	16,00	32,00	92,00	0.5	●
7104223	HA4R8RA1600R032SLR100IM	16,00	16,00	32,00	92,00	1.0	●
7104224	HA4R8RA1600R032SLR200IM	16,00	16,00	32,00	92,00	2.0	●
7104225	HA4R8RA1600R032SLR250IM	16,00	16,00	32,00	92,00	2.5	●
7104226	HA4R8RA1600R032SLR300IM	16,00	16,00	32,00	92,00	3.0	●
7104227	HA4R8RA1600R032SLR400IM	16,00	16,00	32,00	92,00	4.0	●
7104229	HA4R8RA2000R038SLR050IM	20,00	20,00	38,00	104,00	0.5	●
7104230	HA4R8RA2000R038SLR100IM	20,00	20,00	38,00	104,00	1.0	●
7104231	HA4R8RA2000R038SLR200IM	20,00	20,00	38,00	104,00	2.0	●
7104232	HA4R8RA2000R038SLR250IM	20,00	20,00	38,00	104,00	2.5	●
7104233	HA4R8RA2000R038SLR300IM	20,00	20,00	38,00	104,00	3.0	●
7104234	HA4R8RA2000R038SLR400IM	20,00	20,00	38,00	104,00	4.0	●
7104235	HA4R8RA2000R038SLR600IM	20,00	20,00	38,00	104,00	6.0	●
7104237	HA4R8RA2500R045SLR050IM	25,00	25,00	45,00	121,00	0.5	●
7104238	HA4R8RA2500R045SLR100IM	25,00	25,00	45,00	121,00	1.0	●
7104239	HA4R8RA2500R045SLR200IM	25,00	25,00	45,00	121,00	2.0	●
7104240	HA4R8RA2500R045SLR250IM	25,00	25,00	45,00	121,00	2.5	●
7104251	HA4R8RA2500R045SLR300IM	25,00	25,00	45,00	121,00	3.0	●
7104252	HA4R8RA2500R045SLR400IM	25,00	25,00	45,00	121,00	4.0	●

HIGH PERFORMANCE SOLID CARBIDE END MILLING

KCSM15A



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

● Primary  
○ Secondary

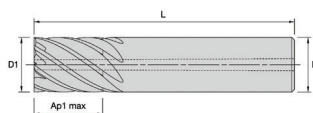
KCSM15A

HIGH PERFORMANCE SOLID CARBIDE END MILLING

# HARVI IV

Radiused • 8 Flutes • Chip Splitters • Internal Coolant • SAFE-LOCK Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	Rε	
7104299	HA4R8RA1200X048SLR050DM	12,00	12,00	48,00	105,00	0.5	●
7104300	HA4R8RA1200X048SLR100DM	12,00	12,00	48,00	105,00	1.0	●
7104301	HA4R8RA1200X048SLR200DM	12,00	12,00	48,00	105,00	2.0	●
7104302	HA4R8RA1200X048SLR250DM	12,00	12,00	48,00	105,00	2.5	●
7104303	HA4R8RA1200X048SLR300DM	12,00	12,00	48,00	105,00	3.0	●
7104305	HA4R8RA1600X064SLR050DM	16,00	16,00	64,00	125,00	0.5	●
7104306	HA4R8RA1600X064SLR100DM	16,00	16,00	64,00	125,00	1.0	●
7104307	HA4R8RA1600X064SLR200DM	16,00	16,00	64,00	125,00	2.0	●
7104308	HA4R8RA1600X064SLR250DM	16,00	16,00	64,00	125,00	2.5	●
7104309	HA4R8RA1600X064SLR300DM	16,00	16,00	64,00	125,00	3.0	●
7104313	HA4R8RA1600X064SLR400DM	16,00	16,00	64,00	125,00	4.0	●
7104315	HA4R8RA2000X080SLR050DM	20,00	20,00	80,00	145,00	0.5	●
7104316	HA4R8RA2000X080SLR100DM	20,00	20,00	80,00	145,00	1.0	●
7104317	HA4R8RA2000X080SLR200DM	20,00	20,00	80,00	145,00	2.0	●
7104318	HA4R8RA2000X080SLR250DM	20,00	20,00	80,00	145,00	2.5	●
7104319	HA4R8RA2000X080SLR300DM	20,00	20,00	80,00	145,00	3.0	●
7104320	HA4R8RA2000X080SLR400DM	20,00	20,00	80,00	145,00	4.0	●
7104321	HA4R8RA2000X080SLR600DM	20,00	20,00	80,00	145,00	6.0	●
7104323	HA4R8RA2500X100SLR050DM	25,00	25,00	100,00	175,00	0.5	●
7104324	HA4R8RA2500X100SLR100DM	25,00	25,00	100,00	175,00	1.0	●
7104325	HA4R8RA2500X100SLR200DM	25,00	25,00	100,00	175,00	2.0	●
7104326	HA4R8RA2500X100SLR250DM	25,00	25,00	100,00	175,00	2.5	●
7104327	HA4R8RA2500X100SLR300DM	25,00	25,00	100,00	175,00	3.0	●
7104328	HA4R8RA2500X100SLR400DM	25,00	25,00	100,00	175,00	4.0	●



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

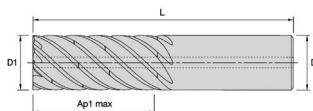
● Primary  
○ Secondary

KCSM15A

# HARVI IV

Square End • 8 Flutes • Internal Coolant • Plain Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	
7104187	HA4R8SE1000R022HAIM	10,00	10,00	22,00	72,00	●
7104193	HA4R8SE1200R026HAIM	12,00	12,00	26,00	83,00	●
7104200	HA4R8SE1600R032HAIM	16,00	16,00	32,00	92,00	●
7104208	HA4R8SE2000R038HAIM	20,00	20,00	38,00	104,00	●
7104215	HA4R8SE2500R045HAIM	25,00	25,00	45,00	121,00	●



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

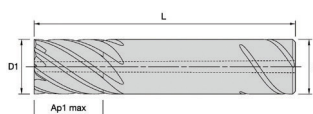
● Primary  
○ Secondary

## HARVI IV

Square End • 8 Flutes • Chip Splitters • Internal Coolant • Plain Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	
7104260	HA4R8SE1000X040HADM	10,00	10,00	40,00	90,00	●
7104276	HA4R8SE1200X048HADM	12,00	12,00	48,00	105,00	●
7104283	HA4R8SE1600X064HADM	16,00	16,00	64,00	125,00	●
7104291	HA4R8SE2000X080HADM	20,00	20,00	80,00	145,00	●
7104298	HA4R8SE2500X100HADM	25,00	25,00	100,00	175,00	●

KCSM15A



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

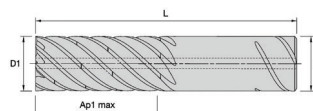
● Primary  
○ Secondary

## HARVI IV

Square End • 8 Flutes • Internal Coolant • SAFE-LOCK Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	
7104221	HA4R8SE1200R026SLIM	12,00	12,00	26,00	83,00	●
7104228	HA4R8SE1600R032SLIM	16,00	16,00	32,00	92,00	●
7104236	HA4R8SE2000R038SLIM	20,00	20,00	38,00	104,00	●
7104254	HA4R8SE2500R045SLIM	25,00	25,00	45,00	121,00	●

KCSM15A



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

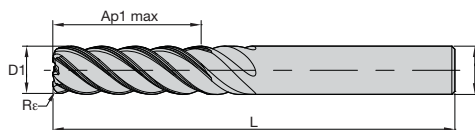
● Primary  
○ Secondary

## HARVI IV

Square End • 8 Flutes • Chip Splitters • Internal Coolant • SAFE-LOCK Shank

Order Number	Catalog Number	D1	D	Ap1 Max	L	
7104304	HA4R8SE1200X048SLDM	12,00	12,00	48,00	105,00	●
7104314	HA4R8SE1600X064SLDM	16,00	16,00	64,00	125,00	●
7104322	HA4R8SE2000X080SLDM	20,00	20,00	80,00	145,00	●
7104329	HA4R8SE2500X100SLDM	25,00	25,00	100,00	175,00	●

KCSM15A



P	●
M	●
K	○
N	○
S	○
H	○

● Primary  
○ Secondary

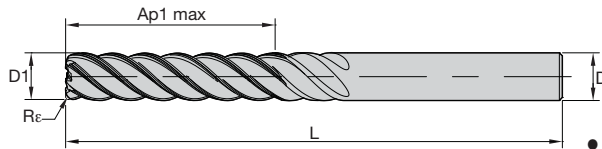
# HARVI II Long

Radiused • 5 Flutes • 3xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
7077633	HA2L5RA0600L018HAR020M	6,00	6,00	18,00	63,00	0,20	●
7077634	HA2L5RA0600L018HAR050M	6,00	6,00	18,00	63,00	0,50	●
7077635	HA2L5RA0600L018HAR100M	6,00	6,00	18,00	63,00	1,00	●
7077636	HA2L5RA0800L024HAR020M	8,00	8,00	24,00	67,00	0,20	●
7077637	HA2L5RA0800L024HAR050M	8,00	8,00	24,00	67,00	0,50	●
7077638	HA2L5RA0800L024HAR100M	8,00	8,00	24,00	67,00	1,00	●
7077639	HA2L5RA1000L030HAR050M	10,00	10,00	30,00	76,00	0,50	●
7077640	HA2L5RA1000L030HAR100M	10,00	10,00	30,00	76,00	1,00	●
7077871	HA2L5RA1000L030HAR200M	10,00	10,00	30,00	76,00	2,00	●
7077872	HA2L5RA1000L030HAR250M	10,00	10,00	30,00	76,00	2,50	●
7077873	HA2L5RA1200L036HAR050M	12,00	12,00	36,00	100,00	0,50	●
7077874	HA2L5RA1200L036HAR100M	12,00	12,00	36,00	100,00	1,00	●
7077875	HA2L5RA1200L036HAR200M	12,00	12,00	36,00	100,00	2,00	●
7077876	HA2L5RA1200L036HAR250M	12,00	12,00	36,00	100,00	2,50	●
7077877	HA2L5RA1400L042HAR300M	14,00	14,00	42,00	100,00	3,00	●
7077878	HA2L5RA1600L048HAR100M	16,00	16,00	48,00	110,00	1,00	●
7077879	HA2L5RA1600L048HAR200M	16,00	16,00	48,00	110,00	2,00	●
7077880	HA2L5RA1600L048HAR250M	16,00	16,00	48,00	110,00	2,50	●
7077881	HA2L5RA1600L048HAR300M	16,00	16,00	48,00	110,00	3,00	●
7077882	HA2L5RA1600L048HAR400M	16,00	16,00	48,00	110,00	4,00	●
7077884	HA2L5RA1600L048HAR600M	16,00	16,00	48,00	110,00	6,00	●
7077886	HA2L5RA2000L060HAR100M	20,00	20,00	60,00	125,00	1,00	●
7077888	HA2L5RA2000L060HAR200M	20,00	20,00	60,00	125,00	2,00	●
7077890	HA2L5RA2000L060HAR250M	20,00	20,00	60,00	125,00	2,50	●
7077892	HA2L5RA2000L060HAR300M	20,00	20,00	60,00	125,00	3,00	●
7077894	HA2L5RA2000L060HAR400M	20,00	20,00	60,00	125,00	4,00	●
7077896	HA2L5RA2000L060HAR600M	20,00	20,00	60,00	125,00	6,00	●
7077898	HA2L5RA2500L075HAR100M	25,00	25,00	75,00	150,00	1,00	●
7077900	HA2L5RA2500L075HAR200M	25,00	25,00	75,00	150,00	2,00	●
7077912	HA2L5RA2500L075HAR250M	25,00	25,00	75,00	150,00	2,50	●
7077914	HA2L5RA2500L075HAR300M	25,00	25,00	75,00	150,00	3,00	●
7077916	HA2L5RA2500L075HAR400M	25,00	25,00	75,00	150,00	4,00	●
7077918	HA2L5RA2500L075HAR600M	25,00	25,00	75,00	150,00	6,00	●

KGSM15A

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	●
M	●
K	○
N	●
S	○
H	○

● Primary  
○ Secondary

## HARVI II Long

Radiused • 5 Flutes • 5xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
7077920	HA2L5RA0600X030HAR020M	6,00	6,00	30,00	76,00	0,20	●
7077932	HA2L5RA0600X030HAR050M	6,00	6,00	30,00	76,00	0,50	●
7077933	HA2L5RA0600X030HAR100M	6,00	6,00	30,00	76,00	1,00	●
7077934	HA2L5RA0800X040HAR020M	8,00	8,00	40,00	87,00	0,20	●
7077935	HA2L5RA0800X040HAR050M	8,00	8,00	40,00	87,00	0,50	●
7077936	HA2L5RA0800X040HAR100M	8,00	8,00	40,00	87,00	1,00	●
7077937	HA2L5RA1000X050HAR050M	10,00	10,00	50,00	100,00	0,50	●
7077938	HA2L5RA1000X050HAR100M	10,00	10,00	50,00	100,00	1,00	●
7077939	HA2L5RA1000X050HAR200M	10,00	10,00	50,00	100,00	2,00	●
7077940	HA2L5RA1000X050HAR250M	10,00	10,00	50,00	100,00	2,50	●
7077941	HA2L5RA1200X060HAR050M	12,00	12,00	60,00	125,00	0,50	●
7077942	HA2L5RA1200X060HAR100M	12,00	12,00	60,00	125,00	1,00	●
7077943	HA2L5RA1200X060HAR200M	12,00	12,00	60,00	125,00	2,00	●
7077944	HA2L5RA1200X060HAR250M	12,00	12,00	60,00	125,00	2,50	●
7077945	HA2L5RA1400X070HAR300M	14,00	14,00	70,00	120,00	3,00	●
7077946	HA2L5RA1600X080HAR100M	16,00	16,00	80,00	141,00	1,00	●
7077947	HA2L5RA1600X080HAR200M	16,00	16,00	80,00	141,00	2,00	●
7077883	HA2L5RA1600X080HAR250M	16,00	16,00	80,00	141,00	2,50	●
7077885	HA2L5RA1600X080HAR300M	16,00	16,00	80,00	141,00	3,00	●
7077887	HA2L5RA1600X080HAR400M	16,00	16,00	80,00	141,00	4,00	●
7077889	HA2L5RA1600X080HAR600M	16,00	16,00	80,00	141,00	6,00	●
7077891	HA2L5RA2000X100HAR100M	20,00	20,00	100,00	166,00	1,00	●
7077893	HA2L5RA2000X100HAR200M	20,00	20,00	100,00	166,00	2,00	●
7077895	HA2L5RA2000X100HAR250M	20,00	20,00	100,00	166,00	2,50	●
7077897	HA2L5RA2000X100HAR300M	20,00	20,00	100,00	166,00	3,00	●
7077899	HA2L5RA2000X100HAR400M	20,00	20,00	100,00	166,00	4,00	●
7077911	HA2L5RA2000X100HAR600M	20,00	20,00	100,00	166,00	6,00	●
7077913	HA2L5RA2500X125HAR100M	25,00	25,00	125,00	190,00	1,00	●
7077915	HA2L5RA2500X125HAR200M	25,00	25,00	125,00	190,00	2,00	●
7077917	HA2L5RA2500X125HAR300M	25,00	25,00	125,00	190,00	3,00	●
7077919	HA2L5RA2500X125HAR400M	25,00	25,00	125,00	190,00	4,00	●
7077931	HA2L5RA2500X125HAR600M	25,00	25,00	125,00	190,00	6,00	●

KCSM15A



# HARVI II

## UCDE • Application Data

Material Group					KC643M		KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.										
	A		B	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	D1 — Diameter										
	ap	ae	ap	min	max	min	max		5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
P	0	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	1,5 x D	0,5 x D	1 x D	150	200	150	200	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	140	190	140	190	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	1,5 x D	0,5 x D	1 x D	120	160	120	160	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	1,5 x D	0,5 x D	0,75 x D	90	150	90	150	fz	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	1,5 x D	0,5 x D	1 x D	60	100	60	100	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
M	1	1,5 x D	0,5 x D	1 x D	90	115	90	115	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,5 x D	1 x D	60	80	60	80	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	1,5 x D	0,5 x D	1 x D	60	70	60	70	fz	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D	120	150	120	150	fz	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D	110	140	110	140	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D	110	130	110	130	fz	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	—	—	fz	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D	25	40	—	—	fz	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D	25	40	—	—	fz	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
H	4	1,5 x D	0,5 x D	1 x D	50	60	—	—	fz	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
	1	1,5 x D	0,5 x D	0,75 x D	80	140	80	140	fz	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

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 >12mm diameter.



## HARVI II

### UDDE • Application Data

Material Group						KCSM15/ KC643M		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.									
		A		B		Cutting Speed — Vc m/min		D1 — Diameter									
		ap	ae	ap		min	max	mm	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	5	1,5 x D	0,5 x D	1 x D		60	100	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	6	1,5 x D	0,5 x D	0,75 x D		50	75	fz	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
K	1	1,5 x D	0,5 x D	1 x D		120	150	fz	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	1,5 x D	0,5 x D	1 x D		110	140	fz	0,036	0,050	0,061	0,07	0,079	0,087	0,095	0,101	0,114
	3	1,5 x D	0,5 x D	1 x D		110	130	fz	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	1	1,5 x D	0,3 x D	0,3 x D		50	90	fz	0,036	0,050	0,061	0,07	0,079	0,087	0,095	0,101	0,114
	2	1,5 x D	0,3 x D	0,3 x D		25	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	1,5 x D	0,3 x D	0,3 x D		25	40	fz	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	4	1,5 x D	0,5 x D	1 x D		50	60	fz	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
H	1	1,5 x D	0,5 x D	0,75 x D		80	140	fz	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

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

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

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on > 12mm diameter.

Side milling applications — for longest reach (L3) tools, reduce Ae by 30%.

Slot milling applications — for longest reach (L3) tools, reduce Ae by 30%.

## HARVI II UCDE & UDDE

### Adjustment Factor for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed factor	Kv	2,1–3,6	1,6–3	1,6–2,5	1,6	1,4	1,38	1,3	1,2	1,1	1	0,9
Feed factor	KFz	3,58	2,56	2,3	1,84	1,67	1,54	1,25	1,09	1,02	1	1

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 Kv coefficient table above for adaptation of cutting speed and KFz for feed respectively.

$$Vc_{new} = Vc * Kv$$

$$Fz_{new} = Fz * KFz$$

Calculation example:

Application: D = 20mm, HARVI II UCDE;

M2 material group;

Ae = 2mm

Cutting data recommendation: Vc = 80 m/min;

Fz = 0,089 mm/th

Adjustment coefficients: Ae = 2mm equals 10,0%;

Kv = 1,4; KFz = 1,67

Final cutting data recommendation:

Vc new = 80 \* 1,4 = 112 m/min

Fz new = 0,089 \* 1,67 = 0,15 mm/min



With Neck



Without Neck

## HARVI III

### Application Data

Material Group			KCSM15A		Recommended feed per tooth (fz = mm/th) for side milling.								
			Cutting Speed — Vc m/min		mm	D1 — Diameter							
	ap	ae	Min	Max		10,0	12,0	14,0	16,0	18,0	20,0	25,0	
P	4	ap max	0,4 x D	90	150	Fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	ap max	0,4 x D	60	100	Fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
M	1	ap max	0,4 x D	90	115	Fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	ap max	0,4 x D	60	80	Fz	0,048	0,056	0,063	0,070	0,076	0,081	0,091
S	3	ap max	0,4 x D	60	70	Fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071
	1	ap max	0,4 x D	50	90	Fz	0,061	0,070	0,079	0,087	0,095	0,101	0,114
H	2	ap max	0,4 x D	25	50	Fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	ap max	0,4 x D	25	40	Fz	0,032	0,037	0,042	0,046	0,050	0,054	0,061
H	4	ap max	0,4 x D	50	60	Fz	0,045	0,052	0,058	0,064	0,069	0,074	0,084
	1	ap max	0,4 x D	80	140	Fz	0,054	0,062	0,070	0,077	0,083	0,088	0,098
H	2	ap max	0,4 x D	70	120	Fz	0,040	0,047	0,052	0,057	0,061	0,065	0,071

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.

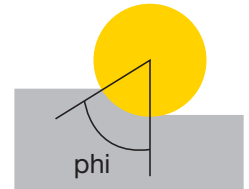
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

## HARVI III

### Adjustment Factor for Feed and Speed Calculation

	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.

$$Vc \text{ new} = Vc * Kv$$

$$Fz \text{ new} = Fz * KFz$$

Calculation example:

Application: D1 = 16,0mm;  
S4 material group;  
Ae 1,6mm (Ae = 10% of D)  
Cutting data recommendation: Vc = 60m/min;  
Fz = 0,064mm/th  
Adjustment coefficients: Kv = 1,17mm;  
KFz = 1,53

Final cutting data recommendation:

$$Vc \text{ new} = 60 * 1,17 = 70\text{m/min}$$

$$Fz \text{ new} = 0,064128 * 1,53 = 0,098\text{mm/th}$$




Ball Nose With Neck



Taper Ball Nose

## HARVI III

### Ball Nose & Taper Ball Nose • Application Data • Roughing

Material Group			KCSM15A		Recommended feed per tooth (fz = mm/th) for side milling.												
			Cutting Speed — Vc m/min		mm	D1 — Diameter											
			ap	ae		Min	Max	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
P	0	Ap max	0,4 x D	150	200	Fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	1	Ap max	0,4 x D	150	200	Fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	2	Ap max	0,4 x D	140	190	Fz	0,028	0,036	0,044	0,060	0,072	0,083	0,092	0,101	0,108	0,114	0,124
	3	Ap max	0,4 x D	120	160	Fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	4	Ap max	0,4 x D	90	150	Fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098
	5	Ap max	0,4 x D	60	100	Fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
M	1	Ap max	0,4 x D	90	115	Fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	60	80	Fz	0,019	0,024	0,029	0,040	0,048	0,056	0,063	0,070	0,076	0,081	0,091
	3	Ap max	0,4 x D	60	70	Fz	0,016	0,020	0,025	0,034	0,040	0,047	0,052	0,057	0,061	0,065	0,071
S	1	Ap max	0,4 x D	50	90	Fz	0,023	0,030	0,036	0,050	0,061	0,070	0,079	0,087	0,095	0,101	0,114
	2	Ap max	0,4 x D	25	50	Fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
	3	Ap max	0,4 x D	25	40	Fz	0,013	0,016	0,019	0,026	0,032	0,037	0,042	0,046	0,050	0,054	0,061
H	4	Ap max	0,4 x D	50	60	Fz	0,016	0,021	0,026	0,037	0,045	0,052	0,058	0,064	0,069	0,074	0,084
	1	Ap max	0,4 x D	80	140	Fz	0,021	0,027	0,033	0,045	0,054	0,062	0,070	0,077	0,083	0,088	0,098

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 >12mm diameter.




Ball Nose With Neck



Taper Ball Nose

## HARVI III

### Ball Nose & Taper Ball Nose • Application Data • Finishing

Material Group			KCSM15A		Recommended feed per tooth (fz = mm/th) for side milling.											
			Cutting Speed — Vc m/min		mm	D1 — Diameter										
			ap	ae		Min	Max	4,0	5,0	6,0	8,0	10,0	12,0	16,0	18,0	20,0
P	0	Ap max	0,06 x D	285	380	Fz	0,034	0,043	0,053	0,072	0,086	0,099	0,121	0,130	0,137	0,149
	1	Ap max	0,06 x D	285	380	Fz	0,034	0,043	0,053	0,072	0,086	0,099	0,121	0,130	0,137	0,149
	2	Ap max	0,06 x D	266	361	Fz	0,034	0,043	0,053	0,072	0,086	0,099	0,121	0,130	0,137	0,149
	3	Ap max	0,06 x D	228	304	Fz	0,028	0,036	0,044	0,060	0,073	0,084	0,105	0,113	0,121	0,137
	4	Ap max	0,06 x D	171	285	Fz	0,026	0,033	0,039	0,054	0,065	0,075	0,092	0,099	0,106	0,117
	5	Ap max	0,06 x D	114	190	Fz	0,023	0,029	0,035	0,048	0,058	0,067	0,084	0,091	0,097	0,109
M	1	Ap max	0,06 x D	95	142,5	Fz	0,019	0,024	0,030	0,040	0,048	0,056	0,068	0,073	0,078	0,085
	2	Ap max	0,06 x D	171	218,5	Fz	0,028	0,036	0,044	0,060	0,073	0,084	0,105	0,113	0,121	0,137
	3	Ap max	0,06 x D	114	152	Fz	0,023	0,029	0,035	0,048	0,058	0,067	0,084	0,091	0,097	0,109
S	1	Ap max	0,06 x D	114	133	Fz	0,019	0,024	0,030	0,040	0,048	0,056	0,068	0,073	0,078	0,085
	2	Ap max	0,06 x D	95	171	Fz	0,028	0,036	0,044	0,060	0,073	0,084	0,105	0,113	0,121	0,137
	3	Ap max	0,06 x D	47,5	95	Fz	0,015	0,019	0,023	0,032	0,038	0,045	0,056	0,060	0,065	0,074
H	4	Ap max	0,06 x D	47,5	76	Fz	0,015	0,019	0,023	0,032	0,038	0,045	0,056	0,060	0,065	0,074
	1	Ap max	0,06 x D	95	114	Fz	0,019	0,025	0,031	0,044	0,053	0,062	0,077	0,083	0,089	0,100
H	1	Ap max	0,06 x D	152	266	Fz	0,026	0,033	0,039	0,054	0,065	0,075	0,092	0,099	0,106	0,117

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 >12mm diameter.



## HARVI IV

### Application Data

Material Group	Max Ae Factor (KAp)	KCSM15A Base Cutting Speed Vc m/min	Feed per Tooth (fz=mm/th)					
			D1 - Diameter (mm)					
			10	12	16	20	25	
P	3	1	130	0,049	0,044	0,067	0,080	0,095
	4	1	100	0,044	0,049	0,059	0,069	0,081
	5	0,8	65	0,038	0,043	0,053	0,063	0,076
	6	0,7	50	0,032	0,036	0,043	0,050	0,060
M	1	1	80	0,049	0,055	0,067	0,080	0,095
	2	0,8	60	0,038	0,043	0,053	0,063	0,076
	3	0,8	60	0,032	0,036	0,043	0,050	0,060
S	1	0,5	50	0,049	0,055	0,067	0,080	0,095
	2	0,5	30	0,038	0,043	0,053	0,063	0,076
	3	0,5	25	0,026	0,030	0,036	0,043	0,051
	4	0,7	45	0,041	0,051	0,061	0,069	0,081
H	1	0,8	80	0,044	0,049	0,059	0,069	0,081
	2	0,5	70	0,037	0,041	0,050	0,059	0,070

NOTE: These guidelines may require variations to achieve optimum results. Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12 mm diameter. Maximum ramp angle is 2°. Tools with chip splitters can be used as finishers.

## HARVI IV

### Maximum Cutting Width and Adjustment Factors for Speed & Feed Calculation

Maximum cutting width (Ae) for given cutting depth (Ap)

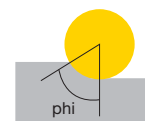
Ap	≤0,125 x D1	>0,125xD1 ≤ 0,5xD1	>0,5xD1 ≤ 1xD1	>1xD1 ≤ 2xD1	>2xD1 ≤ 3xD1	>3xD1 ≤ 4xD1	>4 x D1
Max Ae	100% x D1	50% x D1 x KAp	40% x D1 x KAp	30% x D1 x KAp	20% x D1 x KAp	15% x D1 x KAp	10% x D1 x KAp

Adjustment factors for speed (Vc) and feed (Fz)

Ae/D1	≤2%	>2% ≤ 5%	>5 ≤ 7,5%	>7,5% ≤ 10%	>10% ≤ 15%	>15% ≤ 20%	>20% ≤ 30%	>30% ≤ 40%	>40% ≤ 50%	>50% ≤ 100%
Kv	3	2,5	1,9	1,4	1,35	1,3	1,2	1,1	1	0,9
KFz	3,28	2,3	1,95	1,7	1,5	1,25	1,09	1,02	1	1

Angle of engagement (phi°) relative to cutting width (Ae)

Ae	2%	5%	7,50%	10%	15%	20%	30%	40%	50%	100%
Angle of Engagement - (phi°)	16,26	25,84	31,79	36,87	45,57	53,13	66,42	78,46	90	180



To calculate application specific cutting data, please use KAp, Kv, and Kfz from tables above for adaption of cutting speeds and feeds respectively:

$Maximum Ae = KAp * D1 * Ap1Max/D1$   
 $Vc_{new} = Vc * Kv$   
 $Fz_{new} = Fz * Kfz$

#### Sample Calculation

Material: S4  
D1: 25 mm  
Ap: 2xD1

Max Ae: 30% x KAp x D1	30% x 0,7 x D1 = 21%xD1
M/Min: Base x Kv	45 x 1,2 = 54
Fz: Base x Kfz	0,081 x 1,09 = 0,088

#### Final cutting data recommendation:

$Max Ae = 30% * 0,7 * 25 = 5,25 mm$   
 $Vc_{new} = 45 * 1,2 = 54 m/min$   
 $Fz_{new} = 0,081 * 1,09 = 0,088 mm/th$

## HARVI IV

### Application Data

#### Minimum Helical Interpolation Diameter

Tool. Dia. Mm	Interpolation Dia. Mm
10	14,25
12	16,25
16	21,31
20	26,38
25	32,44

Maximum ramp angle is 2° on centerline.




3xD Lengths of Cut



5xD Lengths of Cut

## HARVI II Long

### 3xD and 5xD • Application Data

Material Group			KCSM15A		Recommended feed per tooth (fz = mm/th) for side milling.									
			Cutting Speed — Vc m/min		mm	D1 — Diameter								
			ap	ae		Min	Max	6,0	8,0	10,0	12,0	14,0	16,0	20,0
P	0	ap max	0,05 x D	300	400	Fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	1	ap max	0,05 x D	300	400	Fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	ap max	0,05 x D	280	380	Fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	3	ap max	0,05 x D	240	320	Fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	4	ap max	0,05 x D	180	300	Fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098
	5	ap max	0,05 x D	120	200	Fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
M	6	ap max	0,05 x D	100	150	Fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
	1	ap max	0,05 x D	180	230	Fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	ap max	0,05 x D	120	160	Fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
K	3	ap max	0,05 x D	120	140	Fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071
	1	ap max	0,05 x D	240	300	Fz	0,044	0,060	0,072	0,083	0,092	0,101	0,114	0,124
	2	ap max	0,05 x D	220	280	Fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
S	3	ap max	0,05 x D	220	260	Fz	0,029	0,040	0,048	0,056	0,063	0,070	0,081	0,091
	1	ap max	0,05 x D	100	180	Fz	0,036	0,050	0,061	0,070	0,079	0,087	0,101	0,114
	2	ap max	0,05 x D	50	100	Fz	0,019	0,026	0,032	0,037	0,042	0,046	0,054	0,061
	3	ap max	0,05 x D	50	80	Fz	0,019	0,026	0,032	0,037	0,042	0,046	0,054	0,061
H	4	ap max	0,05 x D	100	120	Fz	0,026	0,037	0,045	0,052	0,058	0,064	0,074	0,084
	1	ap max	0,05 x D	160	280	Fz	0,033	0,045	0,054	0,062	0,070	0,077	0,088	0,098
	2	ap max	0,05 x D	140	240	Fz	0,025	0,034	0,040	0,047	0,052	0,057	0,065	0,071

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 >12mm diameter.

# APPLICATION RECOMMENDATION

for Surface Profiling with HARVI III Ball Nose & Taper Ball Nose



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



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 that the rotational velocity is zero in the center. 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.

## HARVI III

Ball Nose & 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.

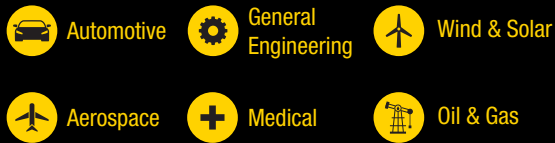
# KOR SERIES

High-Performance Dynamic Milling

## Materials



## Industries



## Applications



## KOR Series

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

**KOR 5<sup>DA</sup>**



Proprietary flute forms reduce vibrations and improve tool life.

**KOR 5<sup>DS</sup>**



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

**KOR 6<sup>DT</sup>**



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

## **KOR 5<sup>DA</sup> — Dynamic Rougher for Aluminum**

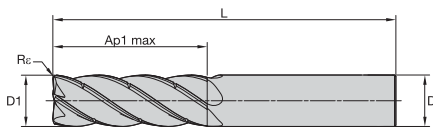
5 flutes with chip splitters for near-perfect chip management.  
SAFE-LOCK shanks available for pullout protection.  
3xD length of cut with and without internal coolant.  
5xD length of cut with internal coolant for a broader application range.

## **KOR 5<sup>DS</sup> — Dynamic Rougher for Steel and Stainless Steel**

5 flutes with chip deformers for near-perfect chip management at high surface quality.  
3xD and 5xD with plain and Weldon shanks.

## **KOR 6<sup>DT</sup> — Dynamic Rougher for Titanium**

6 flutes with chip splitters for optimized chip management.  
3xD and 5xD with plain, weldon and SAFE-LOCK shanks.



## KOR5<sup>DA</sup>

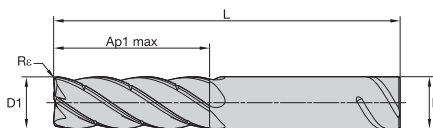
Radiused • 5 Flutes • 3xD • Internal Coolant • Plain Shank

● Primary  
○ Secondary



KG00

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6754973	KOR5RA1000R030HAR020IM	10,00	10,00	30,00	75,00	0,20	●
6754974	KOR5RA1000R030HAR050IM	10,00	10,00	30,00	75,00	0,50	●
6754975	KOR5RA1000R030HAR100IM	10,00	10,00	30,00	75,00	1,00	●



## KOR5<sup>DA</sup>

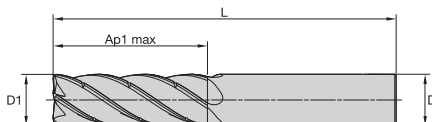
Radiused • 5 Flutes • 3xD • Internal Coolant • SAFE-LOCK Shank

● Primary  
○ Secondary



KG00

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6754977	KOR5RA1200R036SLR020IM	12,00	12,00	36,00	87,00	0,20	●
6754978	KOR5RA1200R036SLR050IM	12,00	12,00	36,00	87,00	0,50	●
6754979	KOR5RA1200R036SLR150IM	12,00	12,00	36,00	87,00	1,50	●
6754980	KOR5RA1200R036SLR250IM	12,00	12,00	36,00	87,00	2,50	●
6755002	KOR5RA1600R048SLR050IM	16,00	16,00	48,00	104,00	0,50	●
6755003	KOR5RA1600R048SLR200IM	16,00	16,00	48,00	104,00	2,00	●
6755004	KOR5RA1600R048SLR250IM	16,00	16,00	48,00	104,00	2,50	●
6755006	KOR5RA2000R060SLR050IM	20,00	20,00	60,00	120,00	0,50	●
6755007	KOR5RA2000R060SLR250IM	20,00	20,00	60,00	120,00	2,50	●
6755009	KOR5RA2500R075SLR050IM	25,00	25,00	75,00	144,00	0,50	●
6755010	KOR5RA2500R075SLR250IM	25,00	25,00	75,00	144,00	2,50	●



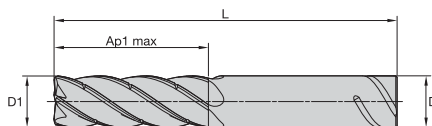
P	■
M	■
K	■
N	■
S	■
H	■

● Primary  
○ Secondary

KG00

**KOR 5<sup>DA</sup>**  
 Square End • 5 Flutes • 3xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6754972	KOR5SE1000R030HAIM	10,00	10,00	30,00	75,00	●



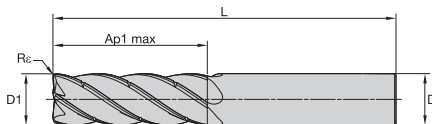
P	■
M	■
K	■
N	■
S	■
H	■

● Primary  
○ Secondary

KG00

**KOR 5<sup>DA</sup>**  
 Square End • 5 Flutes • 3xD • Internal Coolant • SAFE-LOCK Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6754976	KOR5SE1200R036SLIM	12,00	12,00	36,00	87,00	●
6755001	KOR5SE1600R048SLIM	16,00	16,00	48,00	104,00	●
6755005	KOR5SE2000R060SLIM	20,00	20,00	60,00	120,00	●
6755008	KOR5SE2500R075SLIM	25,00	25,00	75,00	144,00	●



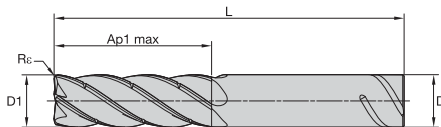
P	■
M	■
K	■
N	■
S	■
H	■

● Primary  
○ Secondary

KG00

**KOR 5<sup>DA</sup>**  
 Radiused • 5 Flutes • 3xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6755013	KOR5RA1000R030HAR020CM	10,00	10,00	30,00	75,00	0,20	●
6755014	KOR5RA1000R030HAR050CM	10,00	10,00	30,00	75,00	0,50	●
6755015	KOR5RA1000R030HAR100CM	10,00	10,00	30,00	75,00	1,00	●



## KOR 5<sup>DA</sup>

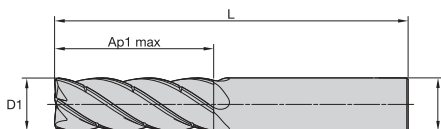
Radiused • 5 Flutes • 3xD • SAFE-LOCK Shank

● Primary  
○ Secondary



11600

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6755017	KOR5RA1200R036SLR020CM	12,00	12,00	36,00	87,00	0,20	•
6755018	KOR5RA1200R036SLR050CM	12,00	12,00	36,00	87,00	0,50	•
6755019	KOR5RA1200R036SLR150CM	12,00	12,00	36,00	87,00	1,50	•
6755020	KOR5RA1200R036SLR250CM	12,00	12,00	36,00	87,00	2,50	•
6755032	KOR5RA1600R048SLR050CM	16,00	16,00	48,00	104,00	0,50	•
6755033	KOR5RA1600R048SLR200CM	16,00	16,00	48,00	104,00	2,00	•
6755034	KOR5RA1600R048SLR250CM	16,00	16,00	48,00	104,00	2,50	•
6755036	KOR5RA2000R060SLR050CM	20,00	20,00	60,00	120,00	0,50	•
6755037	KOR5RA2000R060SLR250CM	20,00	20,00	60,00	120,00	2,50	•
6755039	KOR5RA2500R075SLR050CM	25,00	25,00	75,00	144,00	0,50	•
6755040	KOR5RA2500R075SLR250CM	25,00	25,00	75,00	144,00	2,50	•



## KOR 5<sup>DA</sup>

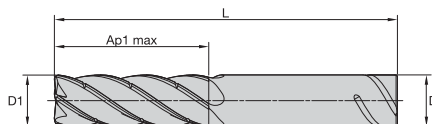
Square End • 5 Flutes • 3xD • Plain Shank

● Primary  
○ Secondary



11600

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6755012	KOR5SE1000R030HACM	10,00	10,00	30,00	75,00	•



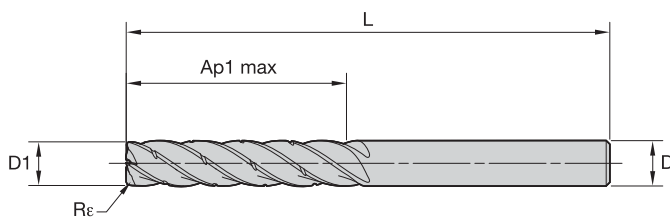
P	Blue
M	Yellow
K	Red
N	Green
S	Orange
H	Grey

● Primary  
○ Secondary

### KOR 5<sup>DA</sup>

Square End • 5 Flutes • 3xD • SAFE-LOCK Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6755016	KOR5SE1200R036SLCM	12,00	12,00	36,00	87,00	•
6755031	KOR5SE1600R048SLCM	16,00	16,00	48,00	104,00	•
6755035	KOR5SE2000R060SLCM	20,00	20,00	60,00	120,00	•
6755038	KOR5SE2500R075SLCM	25,00	25,00	75,00	144,00	•



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

● Primary  
○ Secondary

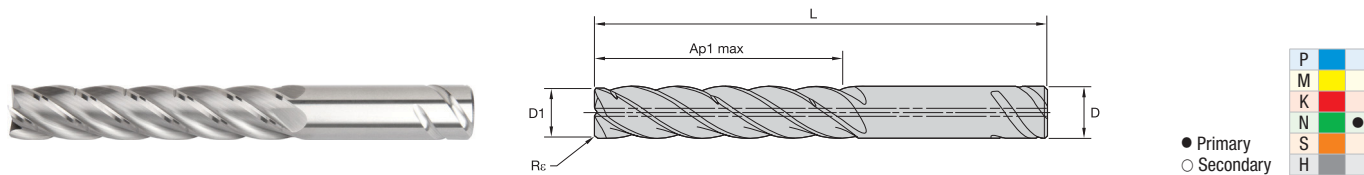
### KOR 5<sup>DA</sup>

Radiused • 5 Flutes • 5xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6974931	KOR5RA1000L050HAR020IM	10,00	10,00	50,00	100,00	0,20	•
6974932	KOR5RA1000L050HAR050IM	10,00	10,00	50,00	100,00	0,50	•
6974933	KOR5RA1000L050HAR100IM	10,00	10,00	50,00	100,00	1,00	•

KG00

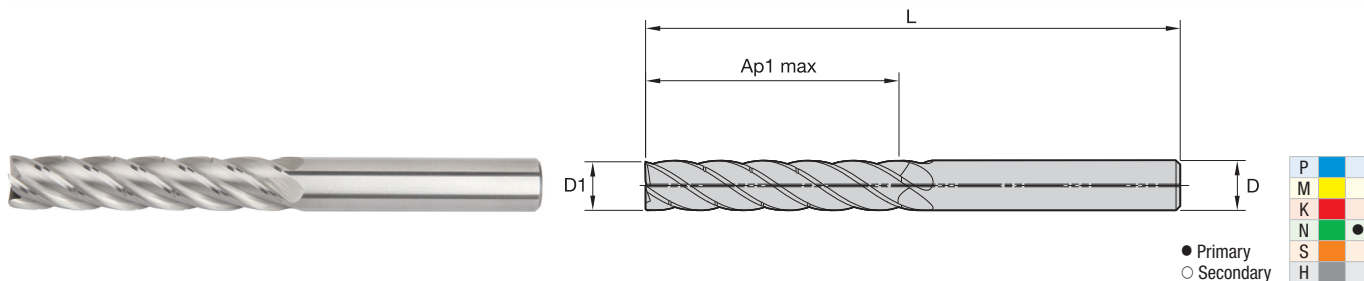
KG00



## KOR5<sup>DA</sup>

Radiused • 5 Flutes • 5xD • Internal Coolant • SAFE-LOCK Shank

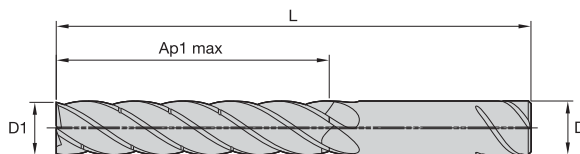
Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6974935	KOR5RA1200L060SLR020IM	12,00	12,00	60,00	115,00	0,20	•
6974936	KOR5RA1200L060SLR050IM	12,00	12,00	60,00	115,00	0,50	•
6974937	KOR5RA1200L060SLR150IM	12,00	12,00	60,00	115,00	1,50	•
6974938	KOR5RA1200L060SLR250IM	12,00	12,00	60,00	115,00	2,50	•
6974940	KOR5RA1600L080SLR050IM	16,00	16,00	80,00	141,00	0,50	•
6974941	KOR5RA1600L080SLR200IM	16,00	16,00	80,00	141,00	2,00	•
6974942	KOR5RA1600L080SLR250IM	16,00	16,00	80,00	141,00	2,50	•
6974944	KOR5RA2000L100SLR050IM	20,00	20,00	100,00	166,00	0,50	•
6974945	KOR5RA2000L100SLR250IM	20,00	20,00	100,00	166,00	2,50	•
6974947	KOR5RA2500L125SLR050IM	25,00	25,00	125,00	200,00	0,50	•
6974948	KOR5RA2500L125SLR250IM	25,00	25,00	125,00	200,00	2,50	•



## KOR5<sup>DA</sup>

Square End • 5 Flutes • 5xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6974934	KOR5SE1000L050HAIM	10,00	10,00	50,00	100,00	•



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

● Primary  
○ Secondary

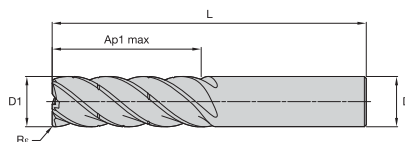
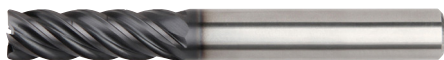
# KOR 5<sup>DA</sup>

Square End • 5 Flutes • 5xD • Internal Coolant • SAFE-LOCK Shank

MG00

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
6974939	KOR5SE1200L060SLIM	12,00	12,00	60,00	115,00	•
6974943	KOR5SE1600L080SLIM	16,00	16,00	80,00	141,00	•
6974946	KOR5SE2000L100SLIM	20,00	20,00	100,00	166,00	•
6974949	KOR5SE2500L125SLIM	25,00	25,00	125,00	200,00	•

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	○	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

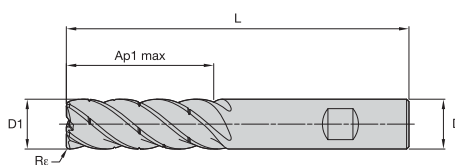
● Primary  
○ Secondary

## KOR 5<sup>DS</sup>

Radiused • 5 Flutes • 3xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Re	
6763959	KOR5RA0800R024HAR050CM	8,00	8,00	24,00	67,00	0,50	•
6763960	KOR5RA1000R030HAR050CM	10,00	10,00	30,00	80,00	0,50	•
6763981	KOR5RA1200R036HAR075CM	12,00	12,00	36,00	100,00	0,75	•
6763982	KOR5RA1600R048HAR100CM	16,00	16,00	48,00	110,00	1,00	•
6763984	KOR5RA2000R060HAR100CM	20,00	20,00	60,00	125,00	1,00	•
6763985	KOR5RA2500R075HAR100CM	25,00	25,00	75,00	150,00	1,00	•

KC643M



P	○	○
M	●	○
K	○	○
N	○	○
S	○	○
H	○	○

● Primary  
○ Secondary

## KOR 5<sup>DS</sup>

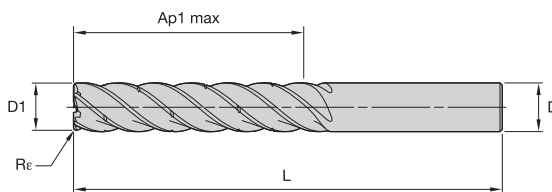
Radiused • 5 Flutes • 3xD • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Re	
6763986	KOR5RA0800R024HBR050CM	8,00	8,00	24,00	67,00	0,50	•
6763987	KOR5RA1000R030HBR050CM	10,00	10,00	30,00	80,00	0,50	•
6763988	KOR5RA1200R036HBR075CM	12,00	12,00	36,00	100,00	0,75	•
6763989	KOR5RA1600R048HBR100CM	16,00	16,00	48,00	110,00	1,00	•
6763992	KOR5RA2000R060HBR100CM	20,00	20,00	60,00	125,00	1,00	•
6763993	KOR5RA2500R075HBR100CM	25,00	25,00	75,00	150,00	1,00	•

KC643M



**KOR 5<sup>DS</sup>**  
 Radiused • 5 Flutes • 5xD • Plain Shank



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

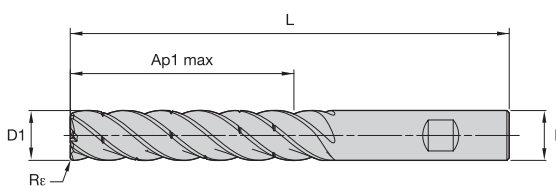
● Primary  
○ Secondary

KC643M

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6768036	KOR5RA0800L040HAR050CM	8,00	8,00	40,00	87,00	0,50	●
6768037	KOR5RA1000L050HAR050CM	10,00	10,00	50,00	100,00	0,50	●
6768038	KOR5RA1200L060HAR075CM	12,00	12,00	60,00	125,00	0,75	●
6768039	KOR5RA1600L080HAR100CM	16,00	16,00	80,00	141,00	1,00	●
6768040	KOR5RA2000L100HAR100CM	20,00	20,00	100,00	170,00	1,00	●
6768042	KOR5RA2500L125HAR100CM	25,00	25,00	125,00	200,00	1,00	●



**KOR 5<sup>DS</sup>**  
 Radiused • 5 Flutes • 5xD • Weldon® Shank



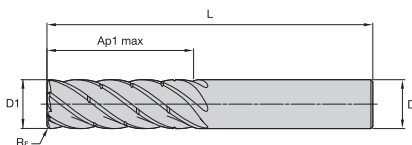
P	Blue	○
M	Yellow	●
K	Red	○
N	Green	○
S	Orange	●
H	Grey	○

● Primary  
○ Secondary

KC643M

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6768043	KOR5RA0800L040HBR050CM	8,00	8,00	40,00	87,00	0,50	●
6768044	KOR5RA1000L050HBR050CM	10,00	10,00	50,00	100,00	0,50	●
6768045	KOR5RA1200L060HBR075CM	12,00	12,00	60,00	125,00	0,75	●
6768046	KOR5RA1600L080HBR100CM	16,00	16,00	80,00	141,00	1,00	●
6768047	KOR5RA2000L100HBR100CM	20,00	20,00	100,00	170,00	1,00	●
6768048	KOR5RA2500L125HBR100CM	25,00	25,00	125,00	200,00	1,00	●

HIGH PERFORMANCE SOLID CARBIDE END MILLING



## KOR 6<sup>DT</sup>

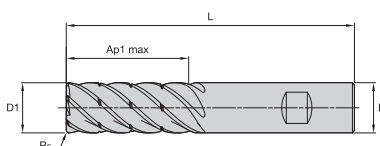
Radiused • 6 Flutes • 3xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6767693	KOR6RA0800R024HAR050M	8,00	8,00	24,00	67,00	0,50	•
6767694	KOR6RA1000R030HAR050M	10,00	10,00	30,00	80,00	0,50	•

● Primary  
○ Secondary



KCSM15



## KOR 6<sup>DT</sup>

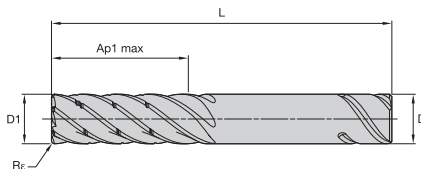
Radiused • 6 Flutes • 3xD • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6767699	KOR6RA0800R024HBR050M	8,00	8,00	24,00	67,00	0,50	•
6767700	KOR6RA1000R030HBR050M	10,00	10,00	30,00	80,00	0,50	•
6767701	KOR6RA1200R036HBR075M	12,00	12,00	36,00	100,00	0,75	•
6767702	KOR6RA1600R048HBR100M	16,00	16,00	48,00	110,00	1,00	•
6767703	KOR6RA2000R060HBR100M	20,00	20,00	60,00	125,00	1,00	•
6767705	KOR6RA2500R075HBR100M	25,00	25,00	75,00	150,00	1,00	•

● Primary  
○ Secondary



KCSM15



## KOR 6<sup>DT</sup>

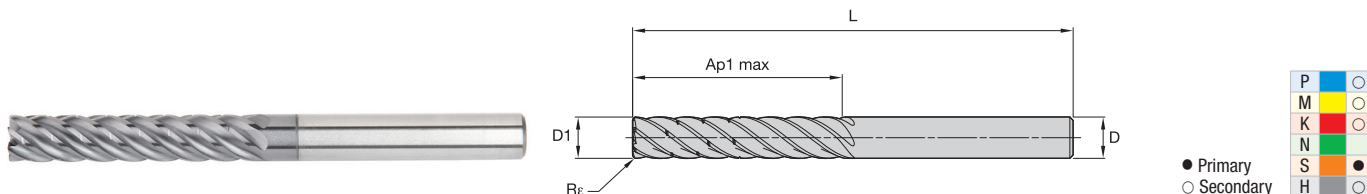
Radiused • 6 Flutes • 3xD • SAFE-LOCK Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
6767695	KOR6RA1200R036SLR075M	12,00	12,00	36,00	100,00	0,75	•
6767696	KOR6RA1600R048SLR100M	16,00	16,00	48,00	110,00	1,00	•
6767697	KOR6RA2000R060SLR100M	20,00	20,00	60,00	125,00	1,00	•
6767698	KOR6RA2500R075SLR100M	25,00	25,00	75,00	150,00	1,00	•

● Primary  
○ Secondary

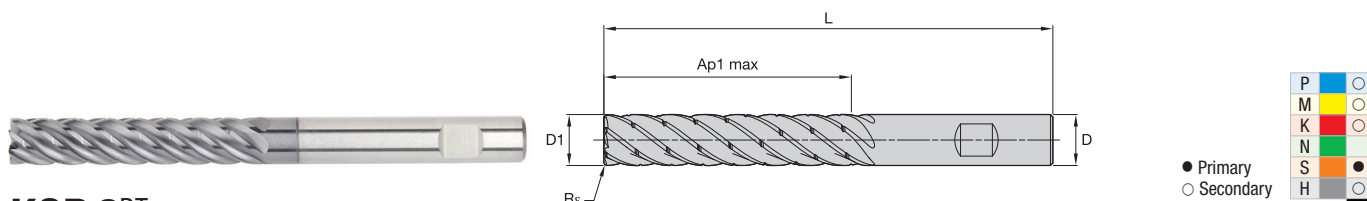


KCSM15



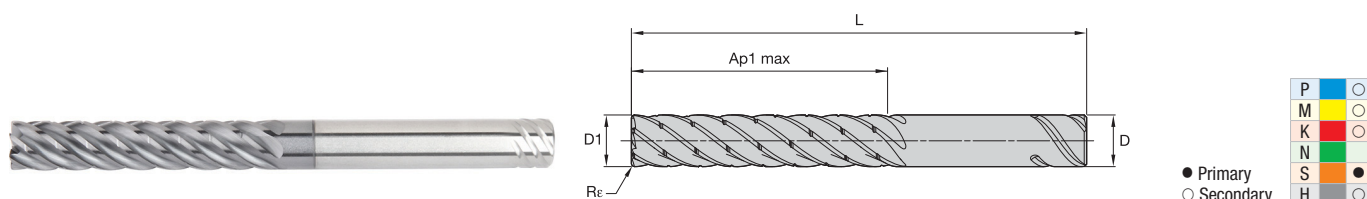
**KOR 6<sup>DT</sup>**  
Radiused • 6 Flutes • 5xD • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Re	
6767641	KOR6RA0800L040HAR050CM	8,00	8,00	40,00	87,00	0,50	•
6767642	KOR6RA1000L050HAR050CM	10,00	10,00	50,00	100,00	0,50	•



**KOR 6<sup>DT</sup>**  
Radiused • 6 Flutes • 5xD • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Re	
6767647	KOR6RA0800L040HBR050CM	8,00	8,00	40,00	87,00	0,50	•
6767648	KOR6RA1000L050HBR050CM	10,00	10,00	50,00	100,00	0,50	•
6767649	KOR6RA1200L060HBR075CM	12,00	12,00	60,00	125,00	0,75	•
6767650	KOR6RA1600L080HBR100CM	16,00	16,00	80,00	141,00	1,00	•
6767651	KOR6RA2000L100HBR100CM	20,00	20,00	100,00	166,00	1,00	•
6767652	KOR6RA2500L125HBR100CM	25,00	25,00	125,00	190,00	1,00	•



**KOR 6<sup>DT</sup>**  
Radiused • 6 Flutes • 5xD • SAFE-LOCK Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Re	
6767643	KOR6RA1200L060SLR075CM	12,00	12,00	60,00	125,00	0,75	•
6767644	KOR6RA1600L080SLR100CM	16,00	16,00	80,00	141,00	1,00	•
6767645	KOR6RA2000L100SLR100CM	20,00	20,00	100,00	166,00	1,00	•
6767646	KOR6RA2500L125SLR100CM	25,00	25,00	125,00	190,00	1,00	•



KOR 5<sup>DA</sup> 3xD



KOR 5<sup>DA</sup> 5xD

## KOR 5<sup>DA</sup>

### 3 & 5xD • Application Data

Material Group	A		B		K600			Recommended feed per tooth (fz = mm/th)				
	Cutting Speed — vc m/min		Cutting Speed — vc m/min		Cutting Speed — vc m/min			D1 — Diameter				
	ap	ae	ap	min	max	mm	10,0	12,0	16,0	20,0	25,0	
N	1	0,5 x D1	0,5 x D1	200	—	2000	fz	0,080	0,120	0,160	0,200	0,225
	2	0,5 x D1	0,5 x D1	200	—	1500	fz	0,070	0,110	0,140	0,180	0,213

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

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

Ap for milling machine with ceramic bearings spindle, multiply by 0,5.

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

## KOR 5<sup>DA</sup>

### Adjustment Factor Table for Feed Calculation

Ae/D1	2%	5%	10%	20%	30%	40%	50%	100%
Max Ap	Ap1 Max	Ap1 Max	Ap1 Max	Ap1 Max	2 x D1	1 x D1	0,5 x D1	0,25 x D1
Feed Multiplier (KFz)	3,60	2,30	1,70	1,25	1,09	1,02	1,00	0,90

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

$$Fz_{new} = IPT * KFz$$

Calculation example:  
 Application: D1 = 25mm;  
 N2 material group;  
 Ae 2,5mm (Ae = 10% of D1)  
 Cutting data recommendation: 1500m/min;  
 Fz = 0,213 mm/z  
 Adjustment coefficients: Ae = 2,5mm equals  
 10%; KFz = 1,70

Final cutting data recommendation:  
 $Fz_{new} = 0,213 * 1,70 = 0,362 \text{ mm/z}$




KOR 5<sup>DS</sup> 3xD



KOR 6<sup>DT</sup> 3xD

## KOR 5<sup>DS</sup> & KOR 6<sup>DT</sup>

### 3xD Application Data

Material Group		KC643M				Recommended feed per tooth (fz = mm/th) for side milling (A).						
		A		Cutting Speed — Vc m/min		mm	D1 — Diameter					
		ap	ae	min	max		8,0	10,0	12,0	16,0	20,0	25,0
P	0	3 x D	0,1 x D	150	440	fz	0,072	0,086	0,099	0,121	0,137	0,149
	1	3 x D	0,1 x D	150	440	fz	0,072	0,086	0,099	0,121	0,137	0,149
	2	3 x D	0,1 x D	140	418	fz	0,072	0,086	0,099	0,121	0,137	0,149
	3	3 x D	0,1 x D	120	352	fz	0,060	0,073	0,084	0,105	0,121	0,137
	4	3 x D	0,1 x D	90	330	fz	0,054	0,065	0,075	0,092	0,106	0,117
	5	3 x D	0,1 x D	60	220	fz	0,048	0,058	0,067	0,084	0,097	0,109
M	6	3 x D	0,1 x D	50	165	fz	0,040	0,048	0,056	0,068	0,078	0,085
	1	3 x D	0,1 x D	90	253	fz	0,060	0,073	0,084	0,105	0,121	0,137
	2	3 x D	0,1 x D	60	176	fz	0,048	0,058	0,067	0,084	0,097	0,109
K	3	3 x D	0,1 x D	60	154	fz	0,040	0,048	0,056	0,068	0,078	0,085
	1	3 x D	0,1 x D	120	330	fz	0,072	0,086	0,099	0,121	0,137	0,149
	2	3 x D	0,1 x D	110	308	fz	0,060	0,073	0,084	0,105	0,121	0,137
S	3	3 x D	0,1 x D	110	286	fz	0,048	0,058	0,067	0,084	0,097	0,109
	1	3 x D	0,1 x D	50	198	fz	0,060	0,073	0,084	0,105	0,121	0,137
	2	3 x D	0,1 x D	25	88	fz	0,032	0,038	0,045	0,056	0,065	0,074
	3	3 x D	0,1 x D	25	88	fz	0,032	0,038	0,045	0,056	0,065	0,074
H	4	3 x D	0,1 x D	50	132	fz	0,044	0,053	0,062	0,077	0,089	0,100
	1	3 x D	0,1 x D	80	308	fz	0,054	0,065	0,075	0,092	0,106	0,117
	2	3 x D	0,1 x D	70	264	fz	0,040	0,048	0,056	0,068	0,078	0,085

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




KOR 5<sup>DS</sup> 5xD



KOR 6<sup>DT</sup> 5xD

## KOR 5<sup>DS</sup> & KOR 6<sup>DT</sup>

### 5xD Application Data

Material Group	 A		KC643M		Recommended feed per tooth (fz = mm/teeth) for side milling (A).							
			Cutting Speed — Vc m/min		mm	D1 — Diameter						
	ap	ae	min	max		8,0	10,0	12,0	16,0	20,0	25,0	
P	0	5 x D	0,05 x D	150	540	fz	0,097	0,117	0,134	0,163	0,185	0,200
	1	5 x D	0,05 x D	150	540	fz	0,097	0,117	0,134	0,163	0,185	0,200
	2	5 x D	0,05 x D	140	513	fz	0,097	0,117	0,134	0,163	0,185	0,200
	3	5 x D	0,05 x D	120	432	fz	0,081	0,098	0,114	0,141	0,164	0,184
	4	5 x D	0,05 x D	90	405	fz	0,073	0,087	0,101	0,124	0,143	0,158
	5	5 x D	0,05 x D	60	270	fz	0,065	0,078	0,091	0,113	0,131	0,147
M	6	5 x D	0,05 x D	50	202,5	fz	0,054	0,065	0,075	0,092	0,105	0,115
	1	5 x D	0,05 x D	90	310,5	fz	0,081	0,098	0,114	0,141	0,164	0,184
	2	5 x D	0,05 x D	60	216	fz	0,065	0,078	0,091	0,113	0,131	0,147
K	3	5 x D	0,05 x D	60	189	fz	0,054	0,065	0,075	0,092	0,105	0,115
	1	5 x D	0,05 x D	120	405	fz	0,097	0,117	0,134	0,163	0,185	0,200
	2	5 x D	0,05 x D	110	378	fz	0,081	0,098	0,114	0,141	0,164	0,184
S	3	5 x D	0,05 x D	110	351	fz	0,065	0,078	0,091	0,113	0,131	0,147
	1	5 x D	0,05 x D	50	243	fz	0,081	0,098	0,114	0,141	0,164	0,184
	2	5 x D	0,05 x D	25	108	fz	0,043	0,052	0,060	0,075	0,087	0,099
H	3	5 x D	0,05 x D	25	108	fz	0,043	0,052	0,060	0,075	0,087	0,099
	4	5 x D	0,05 x D	50	162	fz	0,060	0,072	0,084	0,104	0,120	0,135
	1	5 x D	0,05 x D	80	378	fz	0,073	0,087	0,101	0,124	0,143	0,158
H	2	5 x D	0,05 x D	70	324	fz	0,054	0,065	0,075	0,092	0,105	0,115

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

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

Side milling applications — for longest reach (L3) tools, reduce Ae by 30%.

For better surface finish, reduce feed per tooth.

## KOR 5<sup>DS</sup> & KOR 6<sup>DT</sup>

### Adjustment Factor for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed factor	Kv	2,1—3,6	1,6—3	1,6—2,5	1,6	1,4	1,38	1,3	1,2	1,1	1	0,9
Feed factor	KFz	3,58	2,56	2,3	1,84	1,67	1,54	1,25	1,09	1,02	1	1

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 KV coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

$$Vc_{new} = Vc * Kv$$

$$Fz_{new} = IPT * KFz$$

Calculation example:

Application: D1 = 25mm, KOR5DS / KOR6DT 3 x D;

P5 material group;

Ae 2,5mm (Ae = 10% of D1)

Cutting data recommendation: 220m/min;

Fz = 0,109 mm/z

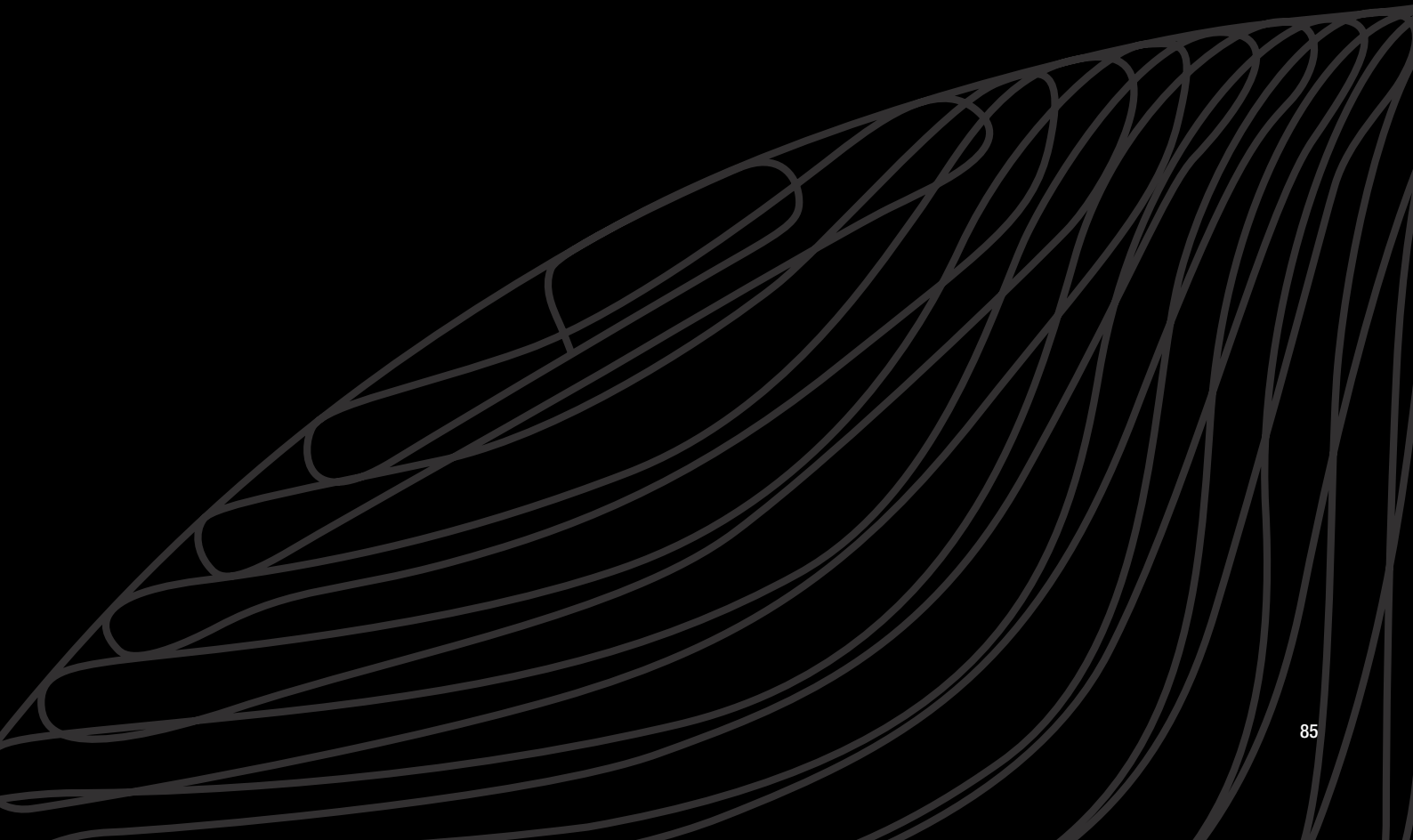
Adjustment coefficients: Ae = 2,5mm equals 10%; Kv = 1,4;

KFz = 1,67

Final cutting data recommendation:

Vc new = 220 \* 1,4 = 308mm/min

Fz new = 0,109 \* 1,67 = 0,182mm/z



# TOOL SELECTOR


HIGH PERFORMANCE SOLID CARBIDE END MILLING

HIGH PERFORMANCE ROUGHERS							
KenCut RR							
Series	F3BH-F4BJ-F5BJ-WSMLX	F3BH-F4BJ-WSMLX	RUDC	F3BH-DL	F3BS-DK-DL	F4BJ-DL	F4BJ-F6BJ-DL
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher						○	○
Chamfering							
Main operations							
Workpiece material							
Primary	P M K	P M K	P M K S	P M K	P M K	P M	P M K
Secondary	H	H	H		H	K S H	S H
Corner style							
Corner radius [Rε]	—	—	—	0,45mm	—	—	—
Corner chamfer width [BCH]	0,30–0,50mm	0,30–0,50mm	0,30–0,50mm	0,10–0,40mm	—	0,10–0,40mm	0,10–0,40mm
Cutting diameter [D1]	4–25mm	8–20mm	4–25mm	4–16mm	6–20mm	6–20mm	6–25mm
Length of cut	1,1–2,8xD	1,2–2,2xD	1,8–2,6xD	1,6–2xD	1,6–2xD	1,9–2,4xD	1,8–2,4xD
Maximum cutting depth [Ap1 max]	8–45mm	11–38mm	8–45mm	8–26mm	10–38mm	13–38mm	13–45mm
Flute helix angle	20°	20°	30°	30°	35°	30°	45°
Number of flutes [ZU]	3–5	3–4	3–5	3	3	4	4–6
Center cutting	✓	✓	✓	✓	✓	✓	
Additional operations	 	 	 	  	  	  	 

● Primary  
○ Secondary



# TOOL SELECTOR

HIGH PERFORMANCE FINISHERS				
KenCut FF				
				
Series	F3AS-DK	F6AJ-F8AJ-DL	F8AJ-F10AJ-DK	RSM II
Tool type				
Rougher				
Finisher	●	●	●	●
Chamfering				
Main operations				
Workpiece material				
Primary	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>	<b>M</b> <b>S</b>
Secondary	<b>H</b>	<b>H</b>	<b>H</b>	<b>P</b> <b>H</b>
Corner style				
Corner radius [Rε]	0,25–0,45mm	—	1,00mm	0,50–6,00mm
Corner chamfer width [BCH]	—	0,10–0,40mm	—	—
Cutting diameter [D1]	3–16mm	6–25mm	8–20mm	10–20mm
Length of cut	1–1,3xD	2–3xD	1xD	2xD
Maximum cutting depth [Ap1 max]	4–16mm	13–75mm	8–20mm	20–40mm
Flute helix angle	35°	45°	45°	36°
Number of flutes [ZU]	3	6-8	8–10	9–15
Center cutting	✓		✓	
Additional operations	  			

● Primary Available  
○ Secondary Online Only

# KenCut RR

High-Performance Roughing

## Materials



## Industries



Automotive



Wind & Solar



General Engineering



Oil & Gas

## Applications



Ramping



Shoulder Milling



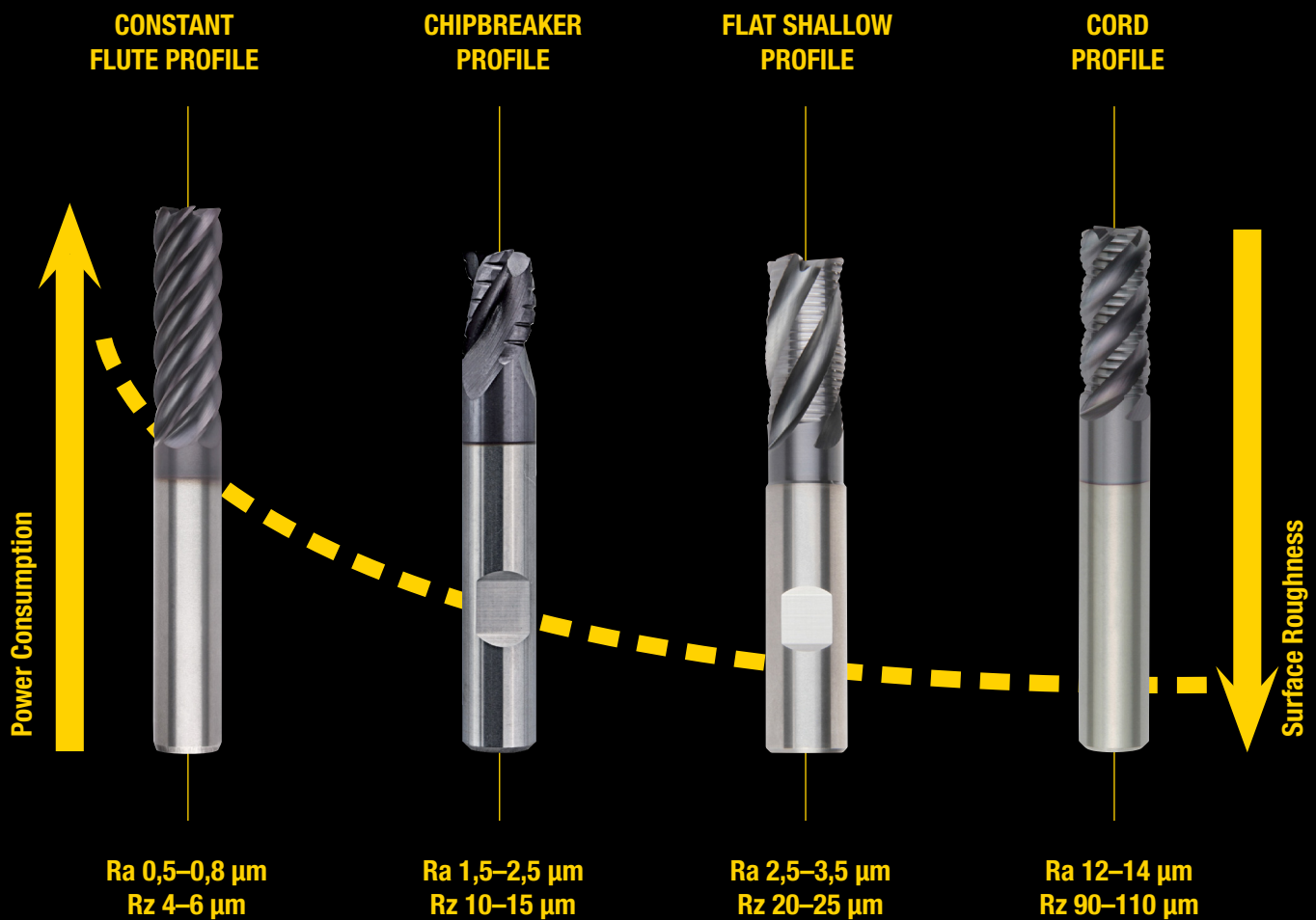
Slotting: Square End



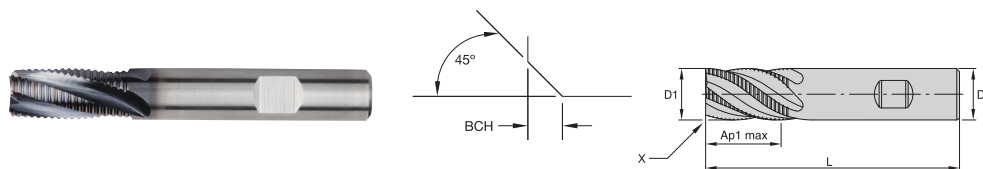
Plunge Milling



- Solid carbide end mill with roughing geometries for low cutting forces and low spindle power consumption even in unstable conditions.
- The KenCut RR solid carbide end mill series is designed for high MRR in a wide range of workpiece materials such as steels, stainless steels, cast irons, high-temp alloys and in certain cases hardened materials.



Tailored geometries for low cutting forces and low spindle power consumption.  
 Center cutting for plunging, ramping, profiling, high-feed slotting and side milling.  
 Roughing and semi-finishing for fewer tool changes and less downtime.  
 Internal coolant for improved chip evacuation and extended tool life.



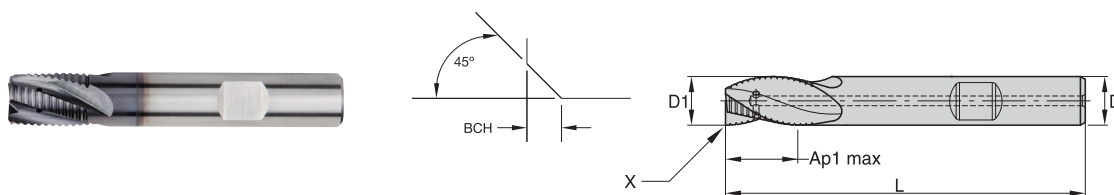
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

● Primary  
○ Secondary

## KenCut RR

F3BH-F4BJ-F5BJ-WSMLX • Chamfered • 3–5 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	BCH	Z U	
4047065	F3BH0400BWS20L110	4,00	6,00	11,00	55,00	0,30	3	●
4047066	F3BH0500BWS20L130	5,00	6,00	13,00	57,00	0,30	3	●
4047067	F3BH0600BWS20L080	6,00	6,00	8,00	54,00	0,30	3	●
4047068	F3BH0600BWS20L130	6,00	6,00	13,00	57,00	0,30	3	●
4047070	F3BH0800BWS20L110	8,00	8,00	11,00	58,00	0,30	3	●
4047069	F3BH0800BWM20L160	8,00	8,00	16,00	63,00	0,30	3	●
4047071	F4BJ1000BWM20L130	10,00	10,00	13,00	66,00	0,50	4	●
4047072	F4BJ1000BWM20L220	10,00	10,00	22,00	72,00	0,50	4	●
4047074	F4BJ1200BWM20L160	12,00	12,00	16,00	73,00	0,50	4	●
4047073	F4BJ1200BWL20L260	12,00	12,00	26,00	83,00	0,50	4	●
4047075	F4BJ1400BWL20L260	14,00	14,00	26,00	83,00	0,50	4	●
4047076	F4BJ1600BWL20L190	16,00	16,00	19,00	82,00	0,50	4	●
4047077	F4BJ1600BWL20L320	16,00	16,00	32,00	92,00	0,50	4	●
4047078	F4BJ2000BWL20L220	20,00	20,00	22,00	92,00	0,50	4	●
4047079	F4BJ2000BWX20L380	20,00	20,00	38,00	104,00	0,50	4	●
4047080	F5BJ2500BWX20L450	25,00	25,00	45,00	121,00	0,50	5	●



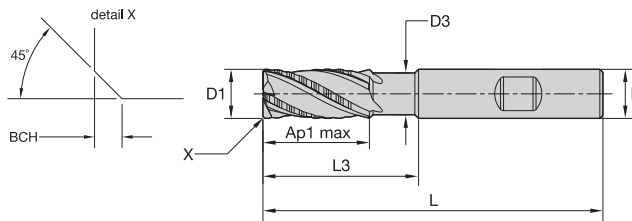
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

● Primary  
○ Secondary

## KenCut RR

F3BH-F4BJ-WSMLX • Chamfered • 3–4 Flutes • Internal Coolant • Weldon Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	BCH	Z U	
4046468	F3BH0800BWS20C110	8,00	8,00	11,00	58,00	0,30	3	●
4046467	F3BH0800BWM20C160	8,00	8,00	16,00	63,00	0,30	3	●
4046469	F4BJ1000BWM20C130	10,00	10,00	13,00	66,00	0,50	4	●
4046470	F4BJ1000BWM20C220	10,00	10,00	22,00	72,00	0,50	4	●
4046472	F4BJ1200BWM20C160	12,00	12,00	16,00	73,00	0,50	4	●
4046471	F4BJ1200BWL20C260	12,00	12,00	26,00	83,00	0,50	4	●
4046484	F4BJ1600BWL20C320	16,00	16,00	32,00	92,00	0,50	4	●
4046486	F4BJ2000BWX20C380	20,00	20,00	38,00	104,00	0,50	4	●



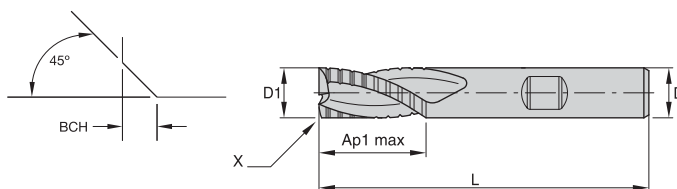
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## KenCut RR

RUDC • Chamfered • 3 Flutes • With Neck • Weldon® Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	BCH	
5357041	RUDC0400B3BN	4,00	6,00	3,60	8,00	21,00	57,00	0,30	●
5357042	RUDC0500B3BN	5,00	6,00	4,60	13,00	21,00	57,00	0,30	●
5357043	RUDC0600B3BN	6,00	6,00	5,50	13,00	21,00	57,00	0,30	●
5357044	RUDC0800B3BN	8,00	8,00	7,50	16,00	27,00	63,00	0,30	●
5357045	RUDC1000B4BN	10,00	10,00	9,50	22,00	32,00	72,00	0,50	●
5357046	RUDC1200B4BN	12,00	12,00	11,00	26,00	38,00	83,00	0,50	●
5357047	RUDC1400B4BN	14,00	14,00	13,00	26,00	38,00	83,00	0,50	●
5357048	RUDC1600B4BN	16,00	16,00	15,00	32,00	44,00	92,00	0,50	●
5357049	RUDC1800B4BN	18,00	18,00	17,00	32,00	44,00	92,00	0,50	●
5357090	RUDC2000B4BN	20,00	20,00	19,00	38,00	54,00	104,00	0,50	●
5357091	RUDC2500B5BN	25,00	25,00	24,00	45,00	65,00	121,00	0,50	●



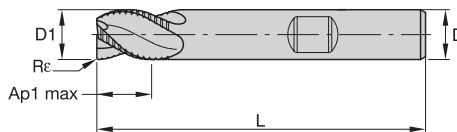
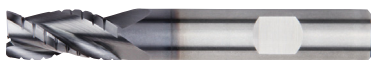
P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

## KenCut RR

RR F3BH-DL • Chamfered • 3 Flutes • Long • Weldon Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	BCH	
4046458	F3BH0400BDL30	4,00	6,00	8,00	57,00	0,10	●
4046459	F3BH0500BDL30	5,00	6,00	13,00	57,00	0,10	●
4046460	F3BH0600BDL30	6,00	6,00	10,00	57,00	0,10	●
4046461	F3BH0800BDL30	8,00	8,00	16,00	63,00	0,20	●
4046462	F3BH1000BDL30	10,00	10,00	19,00	72,00	0,30	●
4046463	F3BH1200BDL30	12,00	12,00	22,00	83,00	0,30	●
4046464	F3BH1600BDL30	16,00	16,00	26,00	92,00	0,40	●



P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

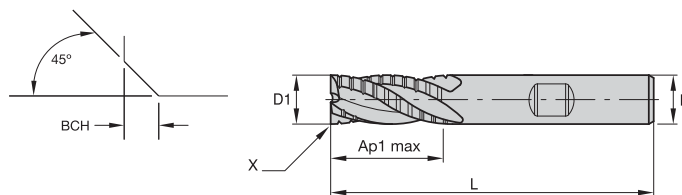
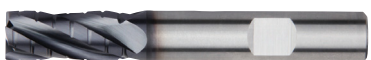
● Primary  
○ Secondary

## KenCut RR

F3BS-DL • Radiused • 3 Flutes • Short • Long • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
4046479	F3BS0600BDL35	6,00	6,00	10,00	57,00	0,45	●
4046481	F3BS0800BDL35	8,00	8,00	16,00	63,00	0,45	●
4046493	F3BS1000BDL35	10,00	10,00	19,00	72,00	0,45	●
4046495	F3BS1200BDL35	12,00	12,00	22,00	83,00	0,45	●

KCPM15



P	●	●
M	●	●
K	○	○
N	○	○
S	○	○
H	○	○

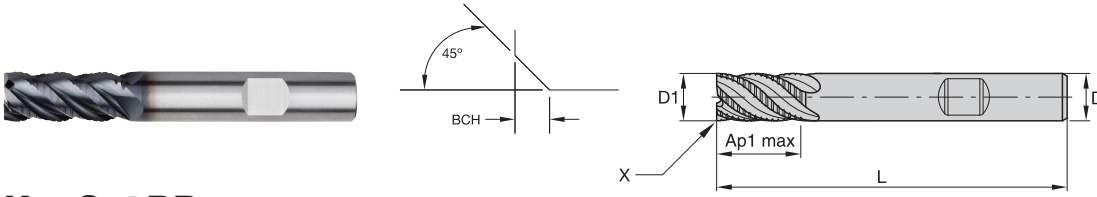
● Primary  
○ Secondary

## KenCut RR

F4BJ-DL • Chamfered • 4 Flutes • Short • Long • Weldon Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	BCH	
4046856	F4BJ0600BDL30	6,00	6,00	13,00	57,00	0,10	●
4046857	F4BJ0800BDL30	8,00	8,00	19,00	63,00	0,20	●
4046858	F4BJ1000BDL30	10,00	10,00	22,00	72,00	0,30	●
4046859	F4BJ1200BDL30	12,00	12,00	26,00	83,00	0,30	●
4046860	F4BJ1400BDL30	14,00	14,00	26,00	83,00	0,30	●
4046861	F4BJ1600BDL30	16,00	16,00	32,00	92,00	0,40	●
4046862	F4BJ1800BDL30	18,00	18,00	32,00	92,00	0,40	●
4047063	F4BJ2000BDL30	20,00	20,00	38,00	104,00	0,40	●

KCPM15



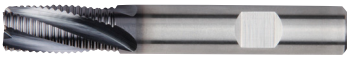
P	●
M	●
K	●
N	○
S	○
H	○

● Primary  
○ Secondary

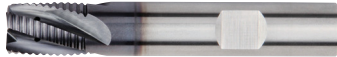
## KenCut RR

F4BJ-F6BJ-DL • Chamfered • 4 Flutes • Long • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	BCH	
4047275	F4BJ0600BDL45	6,00	6,00	13,00	57,00	0,10	●
4047276	F4BJ0800BDL45	8,00	8,00	19,00	63,00	0,20	●
4047277	F4BJ1000BDL45	10,00	10,00	22,00	72,00	0,30	●
4047278	F4BJ1200BDL45	12,00	12,00	26,00	83,00	0,30	●
4047279	F6BJ1600BDL45	16,00	16,00	32,00	92,00	0,40	●
4047280	F6BJ2000BDL45	20,00	20,00	38,00	104,00	0,40	●
4047281	F6BJ2500BDL45	25,00	25,00	45,00	121,00	0,40	●



KenCut RR – F3BH-F4BJ-F5BJ...WS-WM-WL-WX



KenCut RR – F3BH-F4BJ...WS-WM-WL-WX • Internal Coolant

## KenCut RR

F3BH-F4BJ-F5BJ...WS-WM-WL-WX • Application Data

Material Group	A		B		Cutting Speed — vc m/min		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.											
	ap		ae		vc		D1 — Diameter											
	ap	ae	min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0		
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083
M	1	1,5 x D	0,4 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	2	1,5 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
H	3	1,5 x D	0,4 x D	1 x D	110	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	1	1,5 x D	0,3 x D	0,3 x D	80	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.



## KenCut RR

### RUDC • Application Data

Material Group					KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.											
	A		B		Cutting Speed — Vc m/min		D1 — Diameter											
	ap	ae	ap		min	max	mm	4,0	5,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	120	160	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	90	150	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083
M	5	1,5 x D	0,4 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	1	1,5 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
K	2	1,5 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	3	1,5 x D	0,4 x D	0,75 x D	60	70	fz	0,014	0,017	0,021	0,029	0,034	0,040	0,044	0,048	0,052	0,055	0,060
S	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,024	0,031	0,037	0,051	0,061	0,070	0,079	0,086	0,092	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
H	3	1,5 x D	0,4 x D	1 x D	110	130	fz	0,016	0,021	0,025	0,034	0,041	0,048	0,054	0,059	0,064	0,069	0,077
	1	1,5 x D	0,4 x D	0,75 x D	50	90	fz	0,020	0,025	0,031	0,043	0,051	0,060	0,067	0,074	0,080	0,086	0,097
	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,011	0,014	0,017	0,022	0,027	0,032	0,036	0,039	0,043	0,046	0,052
	1	1,5 x D	0,3 x D	0,3 x D	80	140	fz	0,018	0,023	0,028	0,038	0,046	0,053	0,060	0,065	0,070	0,075	0,083

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

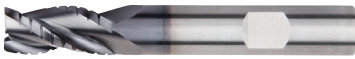


## KenCut RR

### F3BH...DL • Application Data

Material Group					KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.							
	A		B		Cutting Speed — Vc m/min		D1 — Diameter							
	ap	ae	ap		min	max	mm	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	1	1 x D	0,4 x D	0,75 x D	150	200	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	140	190	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
	3	1 x D	0,4 x D	0,75 x D	120	160	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	4	1 x D	0,3 x D	0,3 x D	90	150	fz	0,021	0,033	0,045	0,054	0,062	0,077	0,088
	5	1 x D	0,4 x D	0,75 x D	60	100	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081
	6	1 x D	0,3 x D	0,3 x D	50	75	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065
M	1	1 x D	0,4 x D	0,75 x D	80	100	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	2	1 x D	0,4 x D	0,75 x D	60	80	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081
K	3	1 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,025	0,034	0,040	0,047	0,057	0,065
	1	1 x D	0,4 x D	0,75 x D	120	160	fz	0,028	0,044	0,060	0,072	0,083	0,101	0,114
S	2	1 x D	0,4 x D	0,75 x D	110	140	fz	0,023	0,036	0,050	0,061	0,070	0,087	0,101
	3	1 x D	0,4 x D	0,75 x D	100	130	fz	0,019	0,029	0,040	0,048	0,056	0,070	0,081

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

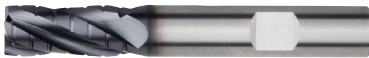


## KenCut RR

### F3BS...DK-DL • Application Data

Material Group					KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.						
	A		B	Cutting Speed — Vc m/min		mm	D1 — Diameter						
	ap	ae	ap	min	max		6,0	8,0	10,0	12,0	16,0	20,0	
P	1	1 x D	0,4 x D	0,75 x D	150	200	fz	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	140	190	fz	0,044	0,060	0,072	0,083	0,101	0,114
	3	1 x D	0,4 x D	0,75 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087	0,101
	4	1 x D	0,3 x D	0,3 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077	0,088
	5	1 x D	0,4 x D	0,75 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070	0,081
	6	1 x D	0,3 x D	0,3 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057	0,065
M	1	1 x D	0,4 x D	0,75 x D	80	100	fz	0,036	0,050	0,061	0,070	0,087	0,101
	2	1 x D	0,4 x D	0,75 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070	0,081
K	1	1 x D	0,4 x D	0,75 x D	120	160	fz	0,044	0,060	0,072	0,083	0,101	0,114
	2	1 x D	0,4 x D	0,75 x D	110	140	fz	0,036	0,050	0,061	0,070	0,087	0,101
H	3	1 x D	0,4 x D	0,75 x D	100	130	fz	0,029	0,040	0,048	0,056	0,070	0,081
H	1	1 x D	0,3 x D	0,3 x D	100	140	fz	0,033	0,045	0,054	0,062	0,077	0,088

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

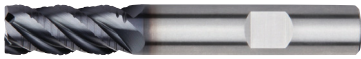


## KenCut RR

### F4BJ...DL • Application Data



Material Group					KCPM15		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.								
	A		B	Cutting Speed — Vc m/min		mm	D1 — Diameter								
	ap	ae	ap	min	max		4,0	5,0	6,0	8,0	10,0	12,0	16,0	20,0	
P	3	0,8 x D	0,5 x D	0,75 x D	160	180	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	4	0,8 x D	0,4 x D	0,5 x D	140	160	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088
	5	0,8 x D	0,5 x D	0,75 x D	60	100	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	6	0,8 x D	0,4 x D	0,5 x D	50	80	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
M	1	0,8 x D	0,5 x D	0,75 x D	80	100	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	2	0,8 x D	0,4 x D	0,75 x D	60	80	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	3	0,8 x D	0,4 x D	0,75 x D	60	80	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
K	1	0,8 x D	0,5 x D	0,75 x D	120	160	fz	0,024	0,031	0,037	0,051	0,061	0,075	0,091	0,114
	2	0,8 x D	0,5 x D	0,75 x D	110	140	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	3	0,8 x D	0,4 x D	0,75 x D	100	130	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
S	1	0,8 x D	0,4 x D	0,75 x D	90	115	fz	0,020	0,025	0,031	0,043	0,051	0,063	0,078	0,101
	2	0,8 x D	0,25 x D	0,3 x D	20	40	fz	0,011	0,014	0,017	0,022	0,027	0,033	0,042	0,054
	3	0,8 x D	0,4 x D	0,75 x D	50	80	fz	0,016	0,021	0,025	0,034	0,041	0,051	0,063	0,081
	4	0,8 x D	0,3 x D	0,5 x D	45	65	fz	0,013	0,018	0,022	0,031	0,038	0,046	0,058	0,074
H	1	0,8 x D	0,5 x D	0,5 x D	120	140	fz	0,018	0,023	0,028	0,038	0,046	0,056	0,069	0,088
	2	0,8 x D	0,2 x D	0,3 x D	80	130	fz	0,014	0,017	0,021	0,029	0,034	0,042	0,051	0,065
	3	0,8 x D	0,15 x D	0,2 x D	70	100	fz	0,011	0,014	0,017	0,023	0,027	0,034	0,041	0,052

NOTE: Toes guidelines may require possible 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.  
For rougher tool with six flutes, use Ap in slotting 60% of table value  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

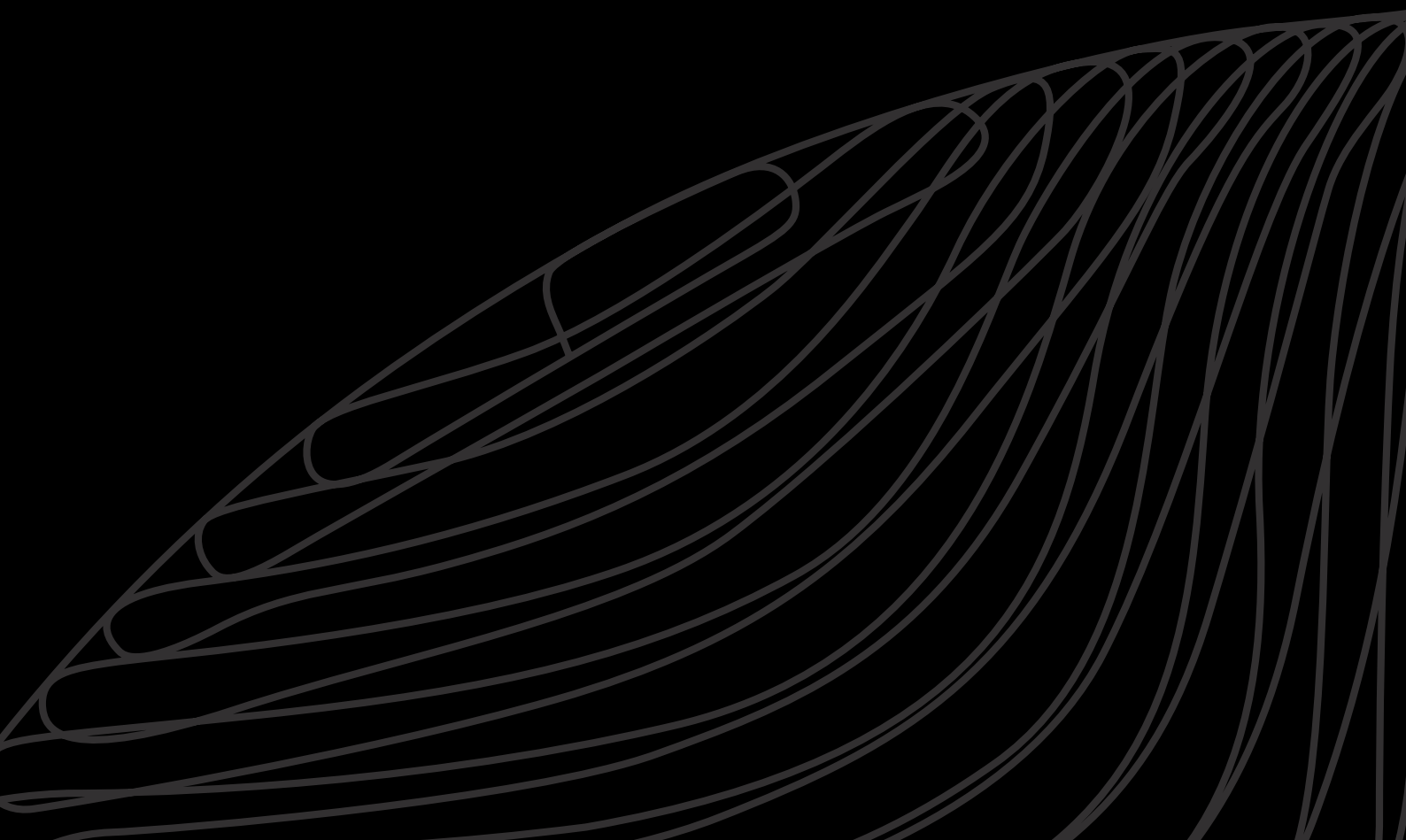


## KenCut RR

### F4BJ-F6BJ...DL • Application Data

Material Group					KCPM15		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.							
	A		B	Cutting Speed — Vc m/min		mm	D1 — Diameter							
	ap	ae	ap	min	max		6,0	8,0	10,0	12,0	16,0	20,0	25,0	
P	3	1,0 x D	0,5 x D	0,75 x D	120	160	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	4	1,0 x D	0,3 x D	0,75 x D	90	150	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	5	1,0 x D	0,5 x D	0,75 x D	60	100	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	6	1,0 x D	0,3 x D	0,3 x D	50	75	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
M	1	1,0 x D	0,5 x D	0,75 x D	80	100	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,0 x D	0,5 x D	0,75 x D	60	80	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
	3	1,0 x D	0,5 x D	0,75 x D	60	80	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
K	1	1,0 x D	0,5 x D	1 x D	120	160	fz	0,044	0,060	0,072	0,083	0,101	0,114	0,124
	2	1,0 x D	0,5 x D	1 x D	110	140	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	3	1,0 x D	0,5 x D	1 x D	100	130	fz	0,029	0,040	0,048	0,056	0,070	0,081	0,091
S	1	1,0 x D	0,3 x D	0,75 x D	50	90	fz	0,036	0,050	0,061	0,070	0,087	0,101	0,114
	2	1,0 x D	0,3 x D	0,75 x D	50	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	3	1,0 x D	0,3 x D	0,75 x D	20	40	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061
	4	1,0 x D	0,4 x D	0,75 x D	45	65	fz	0,026	0,037	0,045	0,052	0,064	0,074	0,084
H	1	1,0 x D	0,3 x D	0,3 x D	80	140	fz	0,033	0,045	0,054	0,062	0,077	0,088	0,098
	2	1,0 x D	0,2 x D	0,2 x D	70	120	fz	0,025	0,034	0,040	0,047	0,057	0,065	0,071
	3	1,0 x D	0,2 x D	0,2 x D	60	90	fz	0,019	0,026	0,032	0,037	0,046	0,054	0,061

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 >12mm diameter. For rougher tool with 6 flutes, use Ap in slotting 60% of table value



# KenCut Micro MEMM

High-Performance End Mills



## Materials

PRIMARY

M S

SECONDARY

P K H

## Industries



Aerospace



Medical

## Applications



Side Milling/Shoulder Milling: Roughing



Pocket Milling



Helical Interpolation



Slotting

KenCut Micro MEMM high-performance end mills are the latest addition to Kennametal's platform of advanced milling solutions. These micro-mills, feature the KCSM10 grade and are ideal for machining bone screws and other instruments made from medical-grade stainless steel and titanium materials. Designed for clean cutting, they leave no burrs behind, making them great for precision applications like side milling, slotting, pocket milling and helical milling.

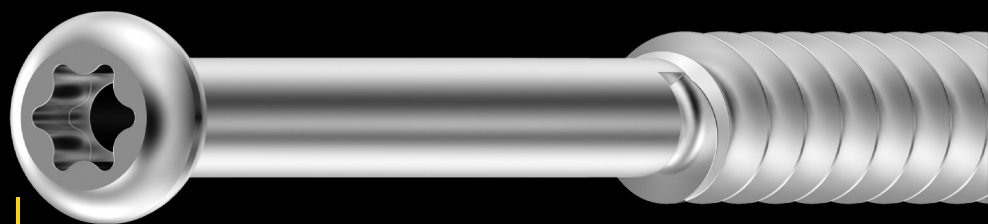
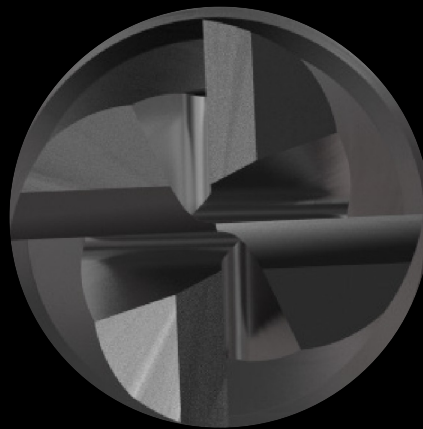
## Kennametal's First Micro End Mill for Small Parts Medical and Aerospace Materials

- Advanced 3 and 4-flute designs for higher metal removal rates
- Optimized carbide grade for increased fracture resistance, stability and reduced deflection
- Gash design with corner protection for extended tool life, preventing chipping
- Extended neck geometry for better reach and stability in smaller spaces
- KCSM10 coating for smooth chip evacuation and tight tolerances
- Standard offering from 0.2mm to 1.0mm, with custom sizes on request

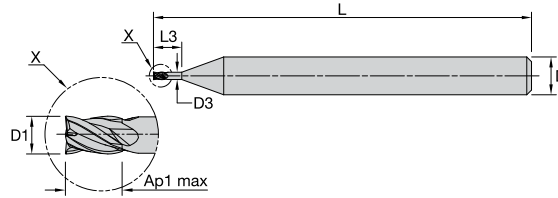
Aerospace Door Latch



Advanced High-Performance Design



Medical Bone Screw



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

● Primary  
○ Secondary

## KenCut • Micro End Mills MEMM Square End • Plain Shank


Order Number	Catalog Number	D1	D	D3	AP1 Max	L	L3	Hexalobe Size	
7291227	MEMM3SE0020B0030HAM	0.2	4	0.18	0.3	40	0.6	T4, T5	●
7291228	MEMM3SE0030B0050HAM	0.3	4	0.28	0.5	40	0.9	T6, T7	●
7291229	MEMM3SE0030C0050HAM	0.3	4	0.28	0.5	40	1.5	T6, T7	●
7291230	MEMM4SE0040B0060HAM	0.4	4	0.37	0.6	40	1	T7, T8, T9, T10	●
7291371	MEMM4SE0040C0060HAM	0.4	4	0.37	0.6	40	1.8	T7, T8, T9, T10	●
7291372	MEMM4SE0050A0070HAM	0.5	4	0.47	0.7	40	1.5	T9, T10, T15	●
7291373	MEMM4SE0050B0070HAM	0.5	4	0.47	0.7	40	2.5	T9, T10, T15	●
7291374	MEMM4SE0050C0070HAM	0.5	4	0.47	0.7	40	3	T9, T10, T15	●
7291375	MEMM4SE0060B0090HAM	0.6	4	0.57	0.9	40	3	T15, T20	●
7291376	MEMM4SE0070B0010HAM	0.7	4	0.67	1	40	3.5	T20	●
7291377	MEMM4SE0080B0012HAM	0.8	4	0.77	1.2	40	2.4	T25, T27	●
7291378	MEMM4SE0080C0012HAM	0.8	4	0.77	1.2	40	3	T25, T27	●
7291379	MEMM4SE0080D0012HAM	0.8	4	0.77	1.2	40	4	T25, T27	●
7291380	MEMM4SE0100B0015HAM	1	4	0.96	1.5	40	5	T27, T30, T40	●

\*KenCut Micro End Mill Recommendation by Hexalobe Size (based on inner radius, Re per ISO10663:2014)

\*\*Required end mill length determined by feature depth


## KenCut Micro End Mills • MEMM Series

### Application Data • Side Milling

Material Group		Cutting Speed Vc		mm	D1 - Diameter								
		MM/MIN			0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	
		Max Depth	Min		Max								
P	P0	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P1	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P2	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P3	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P4	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P5	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
M	M1	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M2	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M3	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
K	K1	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K2	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K3	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
S	S1	0.15 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S2	0.15 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S3	0.15 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S4	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
H	H1	0.15 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	H2	0.15 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082


## KenCut Micro End Mills • MEMM Series

### Application Data • Face Milling

Material Group		Cutting Speed Vc		mm	D1 - Diameter								
		SFM			0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	
		Max Depth	Min		Max								
P	P0	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P1	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P2	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P3	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P4	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P5	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
M	M1	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M2	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M3	0.15 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
K	K1	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K2	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K3	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
S	S1	0.05 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S2	0.05 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S3	0.05 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	S4	0.05 x D1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
H	H1	0.05 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082
	H2	0.05 x D1	10	20	Fz	0.0023	0.0022	0.0035	0.0035	0.0049	0.0055	0.0060	0.0082


## KenCut Micro End Mills • MEMM Series

### Application Data • Slotting

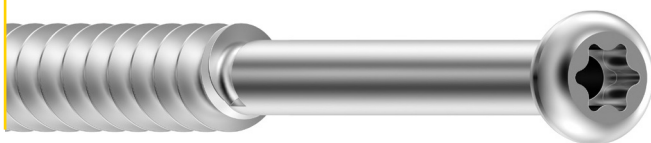
Material Group		Cutting Speed Vc MM/MIN		mm	D1 - Diameter								
		Slotting			0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	
		Max Depth	Min		Max								
P	P0	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	P1	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	P2	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	P3	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	P4	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	P5	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
M	M1	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	M2	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	M3	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
K	K1	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	K2	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
	K3	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
S	S1	0.15 x D1	10	15	Fz	0.0023	0.0024	0.0038	0.0034	0.0050	0.0051	0.0059	0.0079
	S2	0.15 x D1	10	15	Fz	0.0023	0.0024	0.0038	0.0034	0.0050	0.0051	0.0059	0.0079
	S3	0.15 x D1	10	15	Fz	0.0023	0.0024	0.0038	0.0034	0.0050	0.0051	0.0059	0.0079
	S4	0.15 x D1	10	45	Fz	0.0021	0.0021	0.0033	0.0034	0.0050	0.0059	0.0070	0.0105
H	H1	0.15 x D1	10	15	Fz	0.0023	0.0024	0.0038	0.0034	0.0050	0.0051	0.0059	0.0079
	H2	0.15 x D1	10	15	Fz	0.0023	0.0024	0.0038	0.0034	0.0050	0.0051	0.0059	0.0079

## KenCut Micro End Mills • MEMM Series

### Application Data • Helical Interpolation 0.185°

Material Group		Cutting Speed Vc MM/MIN		mm	D1 - Diameter							
		Helical Interpolation 0.185°			0.2	0.3	0.4	0.5	0.6	0.7	0.8	1
		Min	Max									
P	P0	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P2	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P3	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P4	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	P5	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
M	M1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M2	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	M3	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
K	K1	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K2	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
	K3	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105
S	S4	10	60	Fz	0.0023	0.0021	0.0035	0.0036	0.0050	0.0060	0.0070	0.0105

NOTE: Helical interpolation is the recommended approach for bone screw hexalobe milling





# ROCO Burr & Down-Cut Routers

Your High-Performance Routers for Machining Composites



## Materials

PRIMARY

SECONDARY



## Industries



Aerospace



Automotive



General  
Engineering



Medical



Wind &  
Solar

## Applications

PRIMARY



Side  
Milling



Slotting



Pocketing



Ramping

SECONDARY

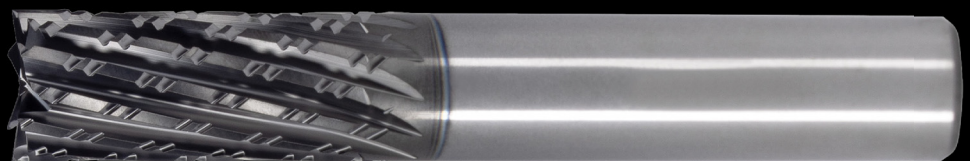


Plunging

**Introducing the ROCO platform, the home for our composite router lineup.** ROCO burr and down-cut routers feature the new and advanced, high-performance KCC05A grade, ensuring a uniform coating thickness along the tool axis for achieving sharper cutting edges and minimal wear without flaking on the coating edge.

## FEATURES & BENEFITS

- Ideal for machining a wide range of composite materials
- Perfect for side milling, slotting, pocketing, trimming and ramping applications
- Burr routers available in sizes 3mm-12mm
- Down-cut routers available in sizes 6mm-12mm
- Both burr and down-cut router geometries are designed to reduce delamination, providing high quality surface finishes



**THE NEWEST  
ROUTERS IN  
COMPOSITE  
MILLING**

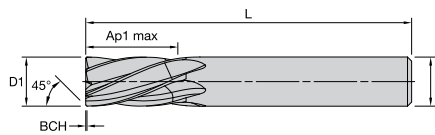


## ROCO BR • Square End • Multi Flute • Plain Shank

- Primary
- Secondary

KCC05A	
P	Blue
M	Yellow
K	Red
N	Green
S	Orange
H	Grey
C	Black

Catalog Number	D1	D	Ap1 Max	[L] Overall Length	Z U	KCC05A
ROBR8SE0300S006HAM	3,00	3,00	6,00	50,00	8	7312435
ROBR8SE0300R009HAM	3,00	3,00	9,00	50,00	8	7312436
ROBR8SE0400L012HAM	4,00	4,00	12,00	50,00	8	7312438
ROBR8SE0500R015HAM	5,00	5,00	15,00	50,00	10	7312439
ROBRMSE0600S006HAM	6,00	6,00	6,00	63,00	10	7312440
ROBRMSE0600R015HAM	6,00	6,00	15,00	50,00	10	7312441
ROBRMSE0600L020HAM	6,00	6,00	20,00	63,00	10	7312442
ROBRMSE0600X026HAM	6,00	6,00	26,00	75,00	10	7312443
ROBRMSE0800R020HAM	8,00	8,00	20,00	63,00	12	7312444
ROBRMSE0800L026HAM	8,00	8,00	26,00	63,00	12	7312445
ROBRMSE1000R015HAM	10,00	10,00	15,00	63,00	12	7312446
ROBRMSE1000L026HAM	10,00	10,00	26,00	63,00	12	7312447
ROBRMSE1000S032HAM	10,00	10,00	32,00	75,00	12	7312448
ROBRMSE1000R035HAM	10,00	10,00	35,00	80,00	12	7312449
ROBRMSE1000L035HAM	10,00	10,00	35,00	100,00	12	7312450
ROBRMSE1200S018HAM	12,00	12,00	18,00	63,00	12	7312451
ROBRMSE1200R026HAM	12,00	12,00	26,00	75,00	12	7312452
ROBRMSE1200L045HAM	12,00	12,00	45,00	100,00	12	7312453



## ROCO DC • Chamfered • 6 Flutes • Plain Shank



- Primary
- Secondary

KCC05A	
P	Blue
M	Yellow
K	Red
N	Green
S	Orange
H	Grey
C	Black

Catalog Number	D1	D	Ap1 Max	[L] Overall Length	[BCH] Corner Chamfer Width	KCC05A
RODC6CH0600R020HAM	6.00	6.00	20.00	63.00	0.25	7312234
RODC6CH0600L026HAM	6.00	6.00	26.00	75.00	0.25	7312233
RODC6CH1000R015HAM	10.00	10.00	15.00	63.00	0.25	7312232
RODC6CH1000L032HAM	10.00	10.00	32.00	75.00	0.25	7312231
RODC6CH1200R026HAM	12.00	12.00	26.00	75.00	0.25	7312220
RODC6CH1200L045HAM	12.00	12.00	45.00	100.00	0.25	7312219





## ROCO BR Application Data

Material Group						KCC05A		Recommended Feed per Rev (Fn=mm/rev) is for Side Milling (A). For Slotting (B) Reduce Fn by 20%.						
		Side Milling		Slotting	Cutting Speed Vc		mm	D1 - Diameter						
		Ap	Ae	Ap	Min	Max		3.0	4.0	5.0	6.0	8.0	10.0	12.0
						m/min								
N	N6	1.0xD	0.2xD	1.0xD	100	150	Fn	0.058	0.077	0.096	0.144	0.230	0.288	0.346
C	C1	1.0xD	0.2xD	1.0xD	100	150	Fn	0.058	0.077	0.096	0.144	0.230	0.288	0.346



## ROCO DC Application Data

Material Group						KCC05A		Recommended Feed per Tooth (Fz=mm/th) is for Side Milling (A). For Slotting (B) Reduce Fz by 20%.						
		Side Milling		Slotting	Cutting Speed Vc		mm	D1 - Diameter						
		Ap	Ae	Ap	Min	Max		3.0	4.0	5.0	6.0	8.0	10.0	12.0
						m/min								
N	N6	1.0xD	0.5xD	1.0xD	100	150	Fz	0.009	0.012	0.015	0.018	0.024	0.030	0.036
C	C1	1.0xD	0.2xD	1.0xD	100	150	Fz	0.009	0.012	0.015	0.018	0.024	0.030	0.036

# TOOL SELECTOR

HIGH PERFORMANCE SOLID CARBIDE END MILLING

ALUMINUM MACHINING						
	MaxiMet			KenCut AL		
Series	MaxiMet ABDF	MaxiMet ABDE	MaxiMet ABDE	F1AA...WS-M	F2AA-ADL45	F2AA-WMLX
Tool type						
Rougher	●	●	●	●	●	●
Finisher	○	○	○	○	○	○
Chamfering						
Main operations						
Workpiece material						
Primary	N	N	N	N	N	N
Secondary						
Corner style						
Corner radius [Re]	—	—	—	—	—	0,50–4,00mm
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutting diameter [D1]	1,5–20mm	3–20mm	6–25mm	2–12mm	4–20mm	6–25mm
Length of cut	1,9–4xD	1,9–4xD	1,5xD	2–5xD	1,6–2xD	1,5xD
Maximum cutting depth [Ap1 max]	6–38mm	12–38mm	9–37,5mm	10–25mm	8–32mm	9–37,5mm
Flute helix angle	45°	38°	38°	30°	45°	45°
Number of flutes [ZU]	2	3	3	1	2	2
Center cutting	✓	✓	✓	✓	✓	✓
Additional operations						
















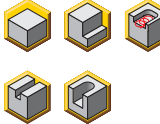


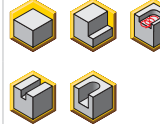
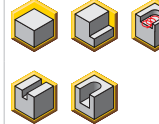
● Primary  
○ Secondary

# TOOL SELECTOR

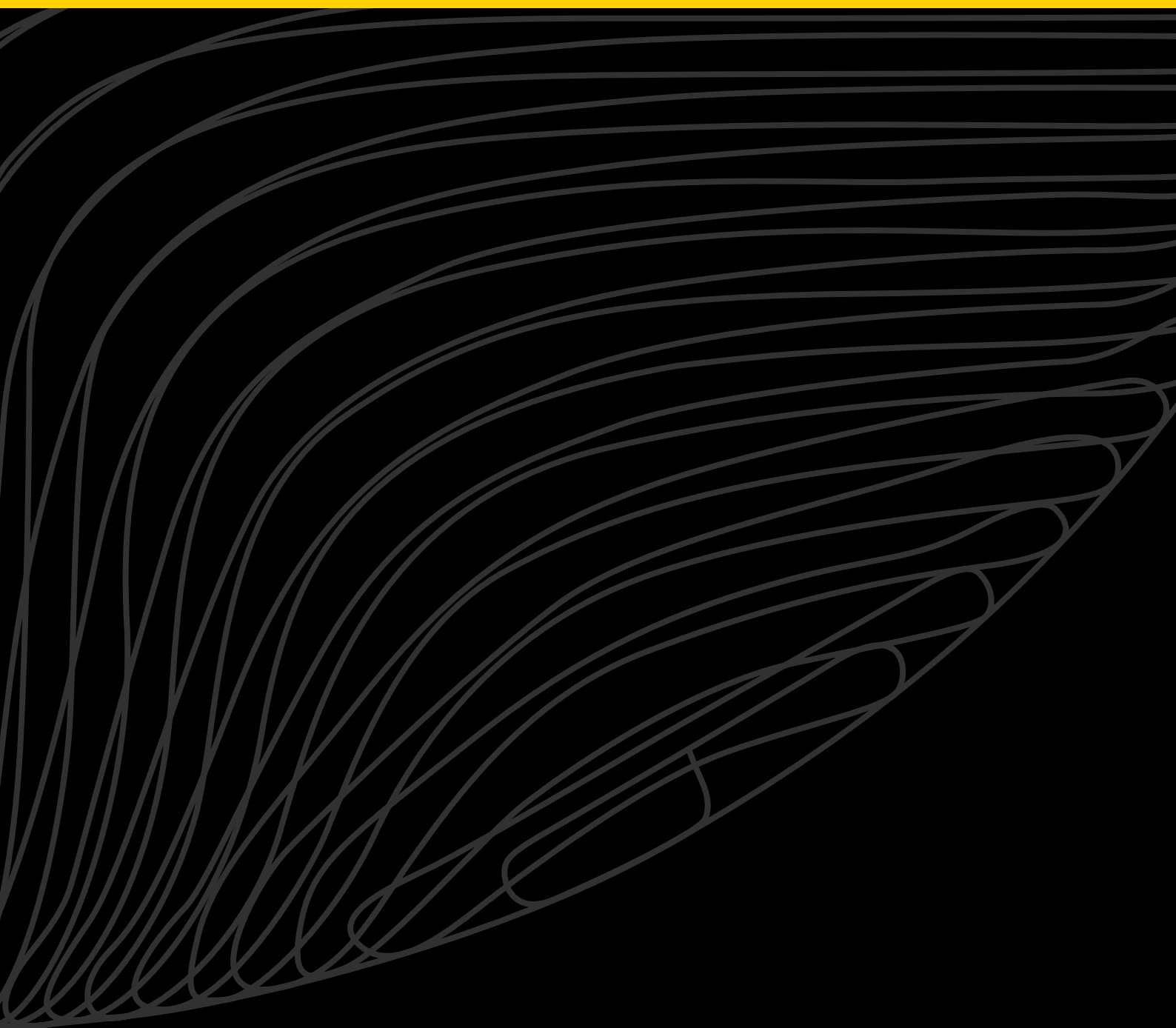
ALUMINUM MACHINING					
	KenCut AL		KenCut ALR		
					
Series	F3AA-AWSL45	F3AA-WSMLX	F3BA-WSMLX	F3BA-WSMLX..C	F3BA-DL
Tool type					
Rougher	●	●	●	●	●
Finisher	○	○			
Chamfering					
Main operations					
Workpiece material					
Primary	N	N	N	N	N
Secondary					
Corner style					
Corner radius [Rε]	—	0,50–4,00mm	0,25–1,50mm	0,25–1,50mm	0,25–1,00mm
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	3–20mm	6–25mm	6–25mm	8–25mm	6–20mm
Length of cut	1,9–4xD	1,5xD	1,8–2,1xD	2xD	1,3
Maximum cutting depth [Ap1 max]	12–38mm	9–37,5mm	13–45mm	16–45mm	8–24mm
Flute helix angle	45°	45°	40°	30°	40°
Number of flutes [ZU]	3	3	3	3	3
Center cutting	✓	✓	✓	✓	✓
Additional operations	 	 	 	 	 
	 	 			

● Primary Available  
○ Secondary Online Only

# TOOL SELECTOR

ALUMINUM MACHINING					
KenCut AQ					
					
Series	ALCB	ALCC	ALCR	ALSB	ALSR
Tool type					
Rougher	●	●	●	●	●
Finisher	○	○	○	○	○
Chamfering					
Main operations					
Workpiece material					
Primary	N	N	N	N	N
Secondary					
Corner style					
Corner radius [Rε]	0,2–0,3mm	0,2–0,3mm	0,3mm	0,4mm	0,4mm
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	12–20mm	6–20mm	12–20mm	25–50mm	25–40mm
Length of cut	1 x D	1,5–2xD	2xD	0,5xD	1 x 1,3xD
Maximum cutting depth [Ap1 max]	6–20mm	10–28mm	24–40mm	15mm	32–50mm
Axial rake angle	3°	3°	9°–12°	6°	6°
Number of flutes [ZU]	2	2	2	4–5	2–3
Center cutting		✓	✓		
Additional operations					

● Primary  
○ Secondary



# MaxiMet and KenCut Aluminum

High-Performance Aluminum  
Roughing and Finishing

## Materials

N

## Industries



## Applications



- Center-cutting design enables plunging, slotting and profiling applications in any type of aluminum workpiece materials.
- Designed to deliver exceptional chip evacuation and generate the highest floor-to-wall straightness.

## KenCut AL & ALR



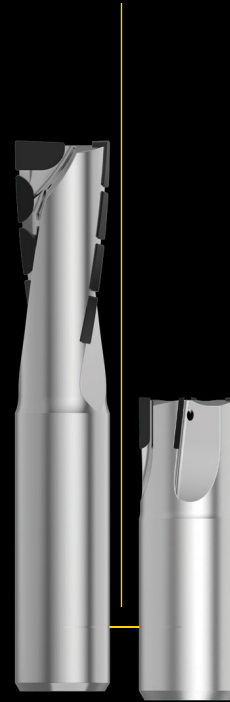
One-, two- and three-fluted roughers and finishers for a variety of aluminum applications.

## MaxiMet



The two- and three-fluted MaxiMet solid end mill series provides exceptional MRR and combines roughing and finishing operations in any aluminum plunging, slotting and profiling application.

## KenCut AQ



PCD tools for high-speed aluminum machining reduce machining time drastically, providing up to 10 times higher productivity compared to solid carbide solutions.

### KenCut AL & ALR

Roughers with cord profile available.  
Multiple corner radii and extended neck configurations available as standard.

### KenCut AQ

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

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

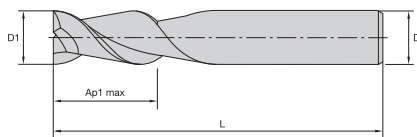
### MaxiMet

Unequal three-flute spacing reduces vibrations and provides chatter-free machining.

1xD slotting capability and side milling capability up to 0,5xD radial and 1,5xD axial engagement result in fewer tool passes and increased productivity.

Suitable for MQL.

Exceptional wall-to-floor perpendicularity in thin-wall applications.



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

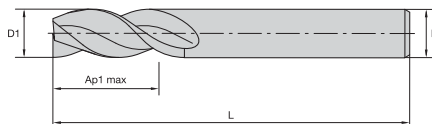
● Primary  
○ Secondary

## MaxiMet

Square End • 2 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
3637552	ABDF0150A2AS	1,50	3,00	6,00	38,00	●
3637553	ABDF0200A2AS	2,00	3,00	8,00	38,00	●
3637554	ABDF0250A2AS	2,50	3,00	9,00	38,00	●
3637555	ABDF0300A2AS	3,00	3,00	12,00	38,00	●
3637556	ABDF0400A2AS	4,00	4,00	12,00	50,00	●
3637557	ABDF0500A2AS	5,00	6,00	14,00	50,00	●
3637558	ABDF0600A2AS	6,00	6,00	16,00	50,00	●
3637559	ABDF0800A2AS	8,00	8,00	20,00	63,00	●
3637560	ABDF1000A2AS	10,00	10,00	22,00	76,00	●
3637561	ABDF1200A2AS	12,00	12,00	25,00	76,00	●
3637562	ABDF1400A2AS	14,00	14,00	32,00	83,00	●
3637563	ABDF1600A2AS	16,00	16,00	32,00	89,00	●
3637564	ABDF1800A2AS	18,00	18,00	38,00	100,00	●
3637565	ABDF2000A2AS	20,00	20,00	38,00	104,00	●

KG00



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

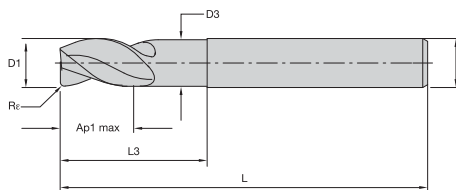
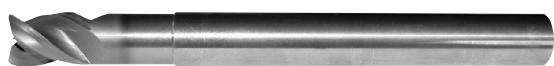
● Primary  
○ Secondary

## MaxiMet

Square End • 3 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
3637429	ABDE0300A3AS	3,00	3,00	12,00	38,00	●
3637430	ABDE0400A3AS	4,00	4,00	12,00	50,00	●
3637431	ABDE0500A3AS	5,00	5,00	14,00	50,00	●
3637432	ABDE0600A3AS	6,00	6,00	16,00	50,00	●
3637463	ABDE0800A3AS	8,00	8,00	20,00	63,00	●
3637464	ABDE1000A3AS	10,00	10,00	22,00	76,00	●
3637465	ABDE1200A3AS	12,00	12,00	25,00	76,00	●
3637466	ABDE1400A3AS	14,00	14,00	32,00	83,00	●
3637467	ABDE1600A3AS	16,00	16,00	32,00	89,00	●
3637468	ABDE1800A3AS	18,00	18,00	38,00	100,00	●
3637469	ABDE2000A3AS	20,00	20,00	38,00	104,00	●

KG00



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

● Primary  
○ Secondary

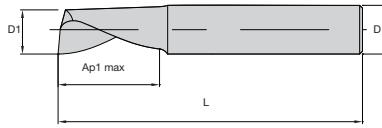
# MaxiMet

Radiused • 3 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
3637389	ABDE0600A3ARA	6,00	6,00	5,40	9,00	18,00	63,00	0,20	•
3637390	ABDE0600A3ARB	6,00	6,00	5,40	9,00	18,00	63,00	0,50	•
3637391	ABDE0600A3ARC	6,00	6,00	5,40	9,00	18,00	63,00	1,00	•
3637392	ABDE0800A3ARA	8,00	8,00	7,20	12,00	24,00	76,00	0,20	•
3637413	ABDE0800A3ARB	8,00	8,00	7,20	12,00	24,00	76,00	0,50	•
3637414	ABDE0800A3ARC	8,00	8,00	7,20	12,00	24,00	76,00	1,00	•
5414455	ABDE1000A3ARG	10,00	10,00	9,50	15,00	30,00	76,00	1,00	•
5414456	ABDE1000A3ARK	10,00	10,00	9,50	15,00	30,00	76,00	2,00	•
5414458	ABDE1000A3ARN	10,00	10,00	9,50	15,00	30,00	76,00	4,00	•
3637415	ABDE1000A3ARA	10,00	10,00	9,00	15,00	30,00	89,00	0,20	•
3637416	ABDE1000A3ARB	10,00	10,00	9,00	15,00	30,00	89,00	0,50	•
3637417	ABDE1000A3ARC	10,00	10,00	9,00	15,00	30,00	89,00	1,50	•
5414459	ABDE1200A3ARG	12,00	12,00	11,50	18,00	36,00	83,00	1,00	•
5414470	ABDE1200A3ARK	12,00	12,00	11,50	18,00	36,00	83,00	2,00	•
5414471	ABDE1200A3ARN	12,00	12,00	11,50	18,00	36,00	83,00	3,00	•
5414473	ABDE1200A3ARA	12,00	12,00	11,50	18,00	36,00	83,00	4,00	•
3637419	ABDE1200A3ARB	12,00	12,00	10,80	18,00	36,00	100,00	0,50	•
6066131	ABDE1200A3ARL	12,00	12,00	11,50	18,00	36,00	100,00	2,50	•
3637420	ABDE1200A3ARC	12,00	12,00	10,80	18,00	36,00	100,00	1,50	•
3637418	ABDE1200A3ARA	12,00	12,00	10,80	18,00	36,00	100,00	0,20	•
5414474	ABDE1600A3ARM	16,00	16,00	15,00	24,00	48,00	100,00	3,00	•
5414475	ABDE1600A3ARN	16,00	16,00	15,00	24,00	48,00	100,00	4,00	•
3637423	ABDE1600A3ARC	16,00	16,00	14,40	24,00	48,00	110,00	1,00	•
3637424	ABDE1600A3ARD	16,00	16,00	14,40	24,00	48,00	110,00	2,00	•
6066132	ABDE1600A3ARL	16,00	16,00	15,00	24,00	48,00	110,00	2,50	•
3637421	ABDE1600A3ARA	16,00	16,00	14,40	24,00	48,00	110,00	0,20	•
3637422	ABDE1600A3ARB	16,00	16,00	14,40	24,00	48,00	110,00	0,50	•
5414477	ABDE2000A3ARK	20,00	20,00	19,00	30,00	60,00	115,00	2,00	•
5414478	ABDE2000A3ARN	20,00	20,00	19,00	30,00	60,00	115,00	3,00	•
3637427	ABDE2000A3ARC	20,00	20,00	18,80	30,00	60,00	125,00	1,50	•
3637428	ABDE2000A3ARD	20,00	20,00	18,80	30,00	60,00	125,00	4,00	•
3637425	ABDE2000A3ARA	20,00	20,00	18,80	30,00	60,00	125,00	0,20	•
3637426	ABDE2000A3ARB	20,00	20,00	18,80	30,00	60,00	125,00	0,50	•
5414479	ABDE2500A3ARE	25,00	25,00	24,00	37,50	75,00	135,00	0,50	•

MG00

HIGH PERFORMANCE SOLID CARBIDE END MILLING



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

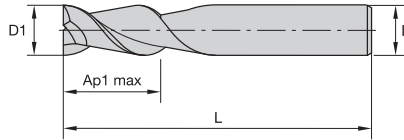
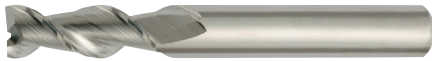
- Primary
- Secondary

## KenCut AL

F1AA-WS-M • Square End • 1 Flute • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
2433330	F1AA0200AWS30	2,00	2,00	10,00	40,00	•
2433331	F1AA0300AWS30	3,00	3,00	10,00	40,00	•
2433332	F1AA0400AWS30	4,00	4,00	14,00	50,00	•
2433343	F1AA0500AWS30	5,00	5,00	16,00	60,00	•
2433344	F1AA0600AWS30	6,00	6,00	20,00	60,00	•
2433345	F1AA0800AWM30	8,00	8,00	25,00	75,00	•
2433346	F1AA1000AWM30	10,00	10,00	25,00	75,00	•
2433347	F1AA1200AWM30	12,00	12,00	25,00	75,00	•

KG00



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

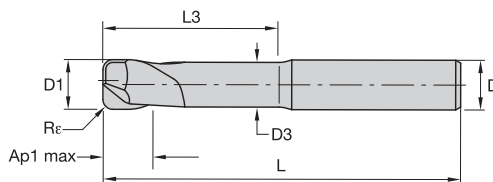
- Primary
- Secondary

## KenCut AL

F2AA-ADL45 • Square End • 2 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
1199807	F2AA0400ADL45	4,00	6,00	8,00	57,00	•
1199808	F2AA0500ADL45	5,00	6,00	10,00	57,00	•
1199811	F2AA0600ADL45	6,00	6,00	10,00	57,00	•
1199812	F2AA0800ADL45	8,00	8,00	16,00	63,00	•
1199815	F2AA1000ADL45	10,00	10,00	19,00	72,00	•
1199816	F2AA1200ADL45	12,00	12,00	22,00	83,00	•
1199819	F2AA1400ADL45	14,00	14,00	22,00	83,00	•
1199820	F2AA1600ADL45	16,00	16,00	26,00	92,00	•
1199824	F2AA2000ADL45	20,00	20,00	32,00	104,00	•

KG00



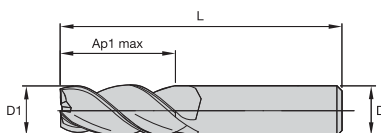
P	■
M	■
K	■
N	■
S	■
H	■

● Primary  
○ Secondary

## KenCut AL

F2AA-WMLX • Square End • 2 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
2445703	F2AA0600AWM45R050	6,00	6,00	5,80	9,00	18,00	63,00	0,50	•
2445704	F2AA0600AWM45R100	6,00	6,00	5,80	9,00	18,00	63,00	1,00	•
2445705	F2AA0800AWM45R050	8,00	8,00	7,80	12,00	24,00	68,00	0,50	•
2430467	F2AA1000AWL45R050	10,00	10,00	9,50	15,00	30,00	76,00	0,50	•
2430507	F2AA1000AWL45R200	10,00	10,00	9,50	15,00	30,00	76,00	2,00	•
2430517	F2AA1000AWL45R300	10,00	10,00	9,50	15,00	30,00	76,00	3,00	•
2430468	F2AA1200AWL45R050	12,00	12,00	11,50	18,00	36,00	84,00	0,50	•
2430518	F2AA1200AWL45R300	12,00	12,00	11,50	18,00	36,00	84,00	3,00	•
2430513	F2AA1200AWL45R400	12,00	12,00	11,50	18,00	36,00	84,00	4,00	•
2430469	F2AA1600AWX45R050	16,00	16,00	15,00	24,00	48,00	100,00	0,50	•
2430509	F2AA1600AWX45R200	16,00	16,00	15,00	24,00	48,00	100,00	2,00	•
2430514	F2AA1600AWX45R400	16,00	16,00	15,00	24,00	48,00	100,00	4,00	•
2430470	F2AA2000AWX45R050	20,00	20,00	19,00	30,00	60,00	115,00	0,50	•
2430515	F2AA2000AWX45R400	20,00	20,00	19,00	30,00	60,00	115,00	4,00	•
2430471	F2AA2500AWX45R050	25,00	25,00	24,00	37,50	75,00	135,00	0,50	•



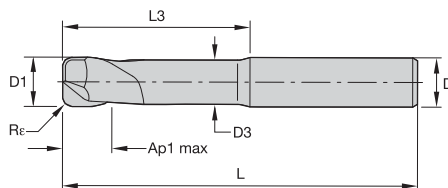
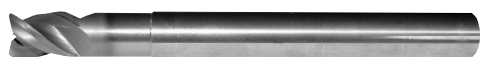
P	■
M	■
K	■
N	■
S	■
H	■

● Primary  
○ Secondary

## KenCut AL

F3AA-AWSL45 • Square End • 3 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
1805750	F3AA0300AWS45	3,00	3,00	12,00	38,00	•
1805929	F3AA0400AWS45	4,00	4,00	12,00	50,00	•
1805930	F3AA0500AWS45	5,00	6,00	14,00	50,00	•
1805931	F3AA0600AWS45	6,00	6,00	16,00	50,00	•
1805932	F3AA0800AWM45	8,00	8,00	20,00	63,00	•
1805983	F3AA1000AWL45	10,00	10,00	22,00	76,00	•
1805984	F3AA1200AWL45	12,00	12,00	25,00	76,00	•
1805985	F3AA1400AWL45	14,00	14,00	32,00	83,00	•
1805986	F3AA1600AWL45	16,00	16,00	32,00	89,00	•
1805987	F3AA1800AWL45	18,00	18,00	38,00	100,00	•
1805988	F3AA2000AWX45	20,00	20,00	38,00	104,00	•



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

● Primary  
○ Secondary

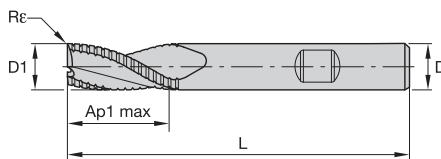
## KenCut AL

F3AA-WSMLX • Radiused • 3 Flutes • Extended Neck • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Re	
2445707	F3AA0600AWM45R050	6,00	6,00	5,80	9,00	18,00	63,00	0,50	•
2445708	F3AA0600AWM45R100	6,00	6,00	5,80	9,00	18,00	63,00	1,00	•
2445709	F3AA0800AWM45R050	8,00	8,00	7,80	12,00	24,00	68,00	0,50	•
2445710	F3AA0800AWM45R100	8,00	8,00	7,80	12,00	24,00	68,00	1,00	•
2404945	F3AA1000AWL45R050	10,00	10,00	9,50	15,00	30,00	76,00	0,50	•
2404950	F3AA1000AWL45R100	10,00	10,00	9,50	15,00	30,00	76,00	1,00	•
2406115	F3AA1000AWL45R200	10,00	10,00	9,50	15,00	30,00	76,00	2,00	•
2429642	F3AA1000AWL45R300	10,00	10,00	9,50	15,00	30,00	76,00	3,00	•
2404951	F3AA1200AWL45R100	12,00	12,00	11,50	18,00	36,00	83,00	1,00	•
2406116	F3AA1200AWL45R200	12,00	12,00	11,50	18,00	36,00	83,00	2,00	•
2429673	F3AA1200AWL45R300	12,00	12,00	11,50	18,00	36,00	83,00	3,00	•
2406121	F3AA1200AWL45R400	12,00	12,00	11,50	18,00	36,00	83,00	4,00	•
2404946	F3AA1200AWL45R050	12,00	12,00	11,50	18,00	36,00	84,00	0,50	•
2404947	F3AA1600AWX45R050	16,00	16,00	15,00	24,00	48,00	100,00	0,50	•
2404952	F3AA1600AWX45R100	16,00	16,00	15,00	24,00	48,00	100,00	1,00	•
2406117	F3AA1600AWX45R200	16,00	16,00	15,00	24,00	48,00	100,00	2,00	•
2429674	F3AA1600AWX45R300	16,00	16,00	15,00	24,00	48,00	100,00	3,00	•
2406122	F3AA1600AWX45R400	16,00	16,00	15,00	24,00	48,00	100,00	4,00	•
2404948	F3AA2000AWX45R050	20,00	20,00	19,00	30,00	60,00	115,00	0,50	•
2406113	F3AA2000AWX45R100	20,00	20,00	19,00	30,00	60,00	115,00	1,00	•
2406118	F3AA2000AWX45R200	20,00	20,00	19,00	30,00	60,00	115,00	2,00	•
2429675	F3AA2000AWX45R300	20,00	20,00	19,00	30,00	60,00	115,00	3,00	•
2404949	F3AA2500AWX45R050	25,00	25,00	24,00	37,50	75,00	135,00	0,50	•
2406114	F3AA2500AWX45R100	25,00	25,00	24,00	37,50	75,00	135,00	1,00	•
2406119	F3AA2500AWX45R200	25,00	25,00	24,00	37,50	75,00	135,00	2,00	•

KG00





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

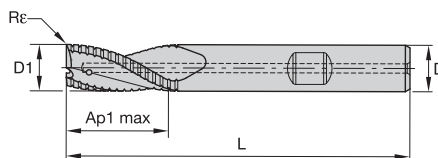
● Primary  
○ Secondary

## KenCut ALR

F3BA-WSMLX • Radiused • 3 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
1805808	F3BA0600BWS40	6,00	6,00	13,00	57,00	0,25	•
1807047	F3BA0800BWM40	8,00	8,00	16,00	63,00	0,25	•
1807048	F3BA1000BWM40	10,00	10,00	22,00	72,00	0,50	•
1807049	F3BA1200BWL40	12,00	12,00	26,00	83,00	0,50	•
1807050	F3BA1600BWL40	16,00	16,00	32,00	92,00	1,00	•
1807051	F3BA2000BWX40	20,00	20,00	38,00	104,00	1,00	•
1807052	F3BA2500BWX40	25,00	25,00	45,00	121,00	1,50	•

KG00



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

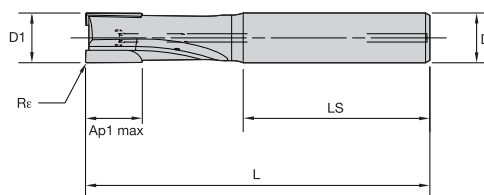
● Primary  
○ Secondary

## KenCut ALR

F3BA-WSMLX..C • Radiused • 3 Flutes • Internal Coolant • Weldon Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
1805825	F3BA0800BWM40C160	8,00	8,00	16,00	63,00	0,25	•
1807346	F3BA1000BWM40C220	10,00	10,00	22,00	72,00	0,50	•
1807347	F3BA1200BWL40C260	12,00	12,00	26,00	83,00	0,50	•
1807348	F3BA1600BWL40C320	16,00	16,00	32,00	92,00	1,00	•
1807349	F3BA2000BWX40C380	20,00	20,00	38,00	104,00	1,00	•
1807350	F3BA2500BWX40C450	25,00	25,00	45,00	121,00	1,50	•

KG00



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

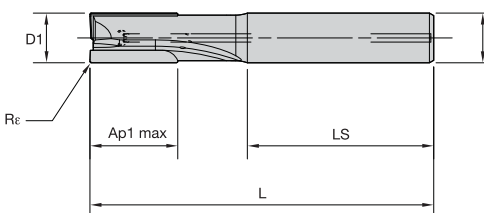
● Primary  
○ Secondary

## KenCut AQ

ALCB • Radiused • 2 Flutes • 1xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Ls	Rε	
6752771	ALCB2RA0600N006HAR020IM	6,00	6,00	6,00	57,00	36,00	0,20	●
6752772	ALCB2RA0800N008HAR020IM	8,00	8,00	8,00	63,00	36,00	0,20	●
6752773	ALCB2RA1000N010HAR020IM	10,00	10,00	10,00	76,00	40,00	0,20	●
6752774	ALCB2RA1200N012HAR030IM	12,00	12,00	12,00	83,00	45,00	0,30	●
6752775	ALCB2RA1600N016HAR030IM	16,00	16,00	16,00	95,00	48,00	0,30	●
6752776	ALCB2RA2000N020HAR030IM	20,00	20,00	20,00	108,00	50,00	0,30	●

KD1410



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

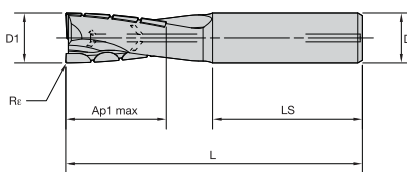
● Primary  
○ Secondary

## KenCut AQ

ALCC • Radiused • 2 Flutes • 1,5xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Ls	Rε	
6752777	ALCC2RA0600N010HAR020IM	6,00	6,00	10,00	57,00	36,00	0,20	●
6752778	ALCC2RA0800N015HAR020IM	8,00	8,00	15,00	63,00	36,00	0,20	●
6752779	ALCC2RA1000N015HAR020IM	10,00	10,00	15,00	76,00	40,00	0,20	●
6752780	ALCC2RA1200N020HAR030IM	12,00	12,00	20,00	83,00	45,00	0,30	●
6752791	ALCC2RA1600N025HAR030IM	16,00	16,00	25,00	95,00	48,00	0,30	●
6752792	ALCC2RA20600N028HAR030IM	20,00	20,00	28,00	108,00	50,00	0,30	●

KD1410



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

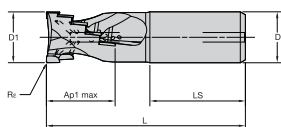
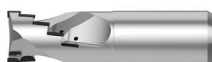
- Primary
- Secondary

## KenCut AQ

ALCR • Radiused • 2 Flutes • 2xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Ls	Rε	
6752793	ALCR2RA1200N024HAR030IM	12,00	12,00	24,00	83,00	45,00	0,30	●
6752794	ALCR2RA1600N032HAR030IM	16,00	16,00	32,00	95,00	48,00	0,30	●
6752795	ALCR2RA2000N040HAR030IM	20,00	20,00	40,00	108,00	50,00	0,30	●

KD1410



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

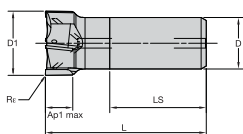
- Primary
- Secondary

## KenCut AQ

ALSR • Radiused • 2–3 Flutes • 1,25xD • Helical • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Ls	Rε	Z U
6752800	ALSR2RA2500N032HAR040IM	25,00	25,00	32,00	115,00	56,00	0,40	2 ●
6752811	ALSR2RA3200N040HAR040IM	32,00	32,00	40,00	125,00	60,00	0,40	2 ●
6752812	ALSR2RA4000N050HAR040IM	40,00	32,00	40,00	125,00	60,00	0,40	3 ●

KD1410



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

● Primary  
○ Secondary

## KenCut AQ

ALSB • Radiused • 4–5 Flutes • 1,25xD • Internal Coolant • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	LS	Rε	Z U
6752796	ALSB4RA2500N015HAR040IM	25,00	25,00	15,00	100,00	56,00	0,40	4 •
6752797	ALSB4RA3200N015HAR040IM	32,00	32,00	15,00	100,00	60,00	0,40	4 •
6752798	ALSB4RA4000N015HAR040IM	40,00	32,00	15,00	100,00	60,00	0,40	4 •
6752799	ALSB5RA5000N015HAR040IM	50,00	32,00	15,00	100,00	60,00	0,40	5 •

KD1410



MaxiMet ABDE

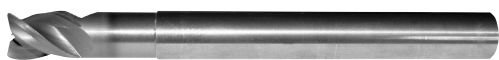


MaxiMet ABDF

## MaxiMet

ABDE-ABDF • Application Data

Material Group					K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.													
	A		B		Cutting Speed — Vc m/min		D1 — Diameter													
	ap	ae	ap		min	max	mm	1,5	2,0	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,014	0,018	0,027	0,036	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180	0,225
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,012	0,016	0,024	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,009	0,013	0,019	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126	0,158
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,009	0,013	0,019	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126	0,158
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,012	0,016	0,024	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203



## MaxiMet

### ABDE • Necked • Application Data

Material Group					K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.						
	A		B		Cutting Speed — Vc m/min		D1 — Diameter						
	ap	ae	ap		min	max	mm	6,0	8,0	10,0	12,0	16,0	20,0
N	1	1 x D	0,5 x D	1,0 x D	500	2000	fz	0,060	0,080	0,100	0,120	0,160	0,200
	2	1 x D	0,5 x D	1,0 x D	500	1500	fz	0,054	0,072	0,090	0,108	0,144	0,180
	3	1 x D	0,5 x D	1,0 x D	500	1500	fz	0,042	0,056	0,070	0,084	0,112	0,140
	4	1 x D	0,5 x D	1,0 x D	400	750	fz	0,042	0,056	0,070	0,084	0,112	0,140
	5	1 x D	0,5 x D	1,0 x D	250	1000	fz	0,054	0,072	0,090	0,108	0,144	0,180

NOTE: Those guidelines may require variations to achieve optimum results. For better surface finish, reduce feed per tooth.  
 For cutting aluminum with high silicon, TiCN coating is recommended.  
 Ap for milling machine with ceramic bearings spindle, multiply by 0,5.  
 Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.  
 For tools with reach >3 x D, reduce Fz by 20%.  
 For tools with reach >5 x D, reduce Fz by 30%.  
 For tools with reach >10 x D, reduce Vc and Fz by 30%.



## KenCut AL

### F1AA...WS-WM • Application Data

Material Group					K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.								
	A		B		Cutting Speed — Vc m/min		D1 — Diameter								
	ap	ae	ap		min	max	mm	2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0
N	1	1,2 x D	0,5 x D	1,0 x D	500	2000	fz	0,014	0,021	0,028	0,035	0,042	0,056	0,070	0,084
	2	1,2 x D	0,5 x D	1,0 x D	500	1500	fz	0,013	0,019	0,025	0,032	0,038	0,050	0,063	0,076
	3	1,2 x D	0,5 x D	1,0 x D	500	1500	fz	0,010	0,015	0,020	0,025	0,029	0,039	0,049	0,059
	4	1,2 x D	0,5 x D	1,0 x D	400	750	fz	0,010	0,015	0,020	0,025	0,029	0,039	0,049	0,059
	5	1,2 x D	0,5 x D	1,0 x D	250	1000	fz	0,013	0,019	0,025	0,032	0,038	0,050	0,063	0,076

NOTE: Ap for milling machine with ceramic bearings spindle, multiply by 0,5. For better surface finish, reduce feed per tooth. Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.



KenCut AL – F2AA..ADL



KenCut AL – F3AA..AWS/L45



KenCut AL – F2AA..WM-WL-WX



KenCut AL – F3AA..WSMLX



KenCut AL – F3BA..WS-WM-WL-WX

## KenCut AL F3BA-F3AA-F2AA • Application Data

Material Group					K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.														
	A		B		Cutting Speed — Vc m/min		D1 — Diameter														
	ap	ae	ap		min	max	mm	1,5	2,0	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0	25,0	
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,014	0,018	0,027	0,036	0,054	0,072	0,090	0,108	0,126	0,144	0,162	0,180	0,225	
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,012	0,016	0,024	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203	
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,009	0,013	0,019	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126	0,158	
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,009	0,013	0,019	0,025	0,038	0,050	0,063	0,076	0,088	0,101	0,113	0,126	0,158	
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,012	0,016	0,024	0,032	0,049	0,065	0,081	0,097	0,113	0,130	0,146	0,162	0,203	



# KenCut ALR

F3BA...BWS/M/L/X40... • Application Data

Material Group					K600		Feed per Tooth — fz information is for side milling (A). For slotting (B), reduce fz by 20%.								
	A		B		Cutting Speed — Vc m/min		D1 — Diameter								
	ap	ae	ap		min	max	mm	6,0	8,0	10,0	12,0	16,0	18,0	20,0	25,0
N	1	1,5 x D	0,5 x D	1,0 x D	500	2000	fz	0,072	0,096	0,120	0,144	0,192	0,216	0,240	0,300
	2	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270
	3	1,5 x D	0,5 x D	1,0 x D	500	1500	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	4	1,5 x D	0,5 x D	1,0 x D	400	750	fz	0,050	0,067	0,084	0,101	0,134	0,151	0,168	0,210
	5	1,5 x D	0,5 x D	1,0 x D	250	1000	fz	0,065	0,086	0,108	0,130	0,173	0,194	0,216	0,270

NOTE: Ap for milling machine with ceramic bearings spindle, multiply by 0,5.  
For better surface finish, reduce feed per tooth.  
Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on >12mm diameter.

## MaxiMet & KenCut

AL/ALR-Series • Adjustment Factor for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed factor	Kv	2,1—3,6	1,6—3	1,6—2,5	1,6	1,4	1,38	1,3	1,2	1,1	1	0,9
Feed factor	KFz	3,58	2,56	2,3	1,84	1,67	1,54	1,25	1,09	1,02	1	1

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 Kv coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

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

Calculation example:  
Application: D1 = 20mm;  
N2 material group (Maximet ABDE);  
Ae 2,0mm (Ae = 10% of D1)  
Cutting data recommendation: 1500m/min;  
Fz = 0,180mm/z  
Adjustment coefficients: Ae = 2,0mm equals 10%;  
Kv = 1,4; KFz = 1,67

Final cutting data recommendation:  
Vc new = 1500 \* 1,4 = 2100mm/min  
Fz new = 0,180 \* 1,67 = 0,301mm/z



## KenCut AQ

### ALCB • Application Data

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

NOTE: Maximum allowed operation speed 30000 rev./min. Maximum allowed cutting speed 3000 m/min



## KenCut AQ

### ALCC • Application Data

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

NOTE: Maximum allowed operation speed 30000 rev./min. Maximum allowed cutting speed 3000 m/min



## KenCut AQ

### ALCR • Application Data

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

NOTE: Maximum allowed operation speed 30000 rev./min. Maximum allowed cutting speed 3000 m/min



## KenCut AQ

### ALSB • Application Data

Material Group					KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
	A		B	Cutting Speed — Vc m/min			mm	D1 — Diameter				
	ap	ae	ap	min	max	25,0		32,0	40,0	50,0		
N	1	L10	0,25 x D	0,5 x L10	200	—	3000	Fz	0,180	0,200	0,200	0,220
	2	L10	0,25 x D	0,5 x L10	200	—	3000	Fz	0,180	0,200	0,200	0,220
	3	L10	0,25 x D	0,5 x L10	180	—	1400	Fz	0,160	0,180	0,180	0,200
	4	L10	0,25 x D	0,5 x L10	200	—	800	Fz	0,140	0,160	0,160	0,180
	5	L10	0,25 x D	0,5 x L10	200	—	1000	Fz	0,120	0,120	0,120	0,140
	6	L10	0,25 x D	0,5 x L10	150	—	800	Fz	0,100	0,100	0,100	0,120
	7	L10	0,25 x D	0,5 x L10	250	—	500	Fz	0,100	0,100	0,100	0,120

NOTE: Maximum allowed operation speed 30000 rev./min. Maximum allowed cutting speed 3000 m/min






























## KenCut AQ

### ALSR • Application Data

Material Group					KD1410			Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.			
	A		B	Cutting Speed — Vc m/min			mm	D1 — Diameter			
	ap	ae	ap	min	max	25,0		32,0	40,0		
N	1	1,25 x D	0,2 x D	0,25 x D	200	—	3000	Fz	0,180	0,200	0,200
	2	1,25 x D	0,2 x D	0,25 x D	200	—	3000	Fz	0,180	0,200	0,200
	3	1,25 x D	0,2 x D	0,25 x D	180	—	1400	Fz	0,160	0,180	0,180
	4	1,25 x D	0,2 x D	0,25 x D	200	—	800	Fz	0,140	0,160	0,160
	5	1,25 x D	0,2 x D	0,25 x D	200	—	1000	Fz	0,120	0,120	0,120
	6	1,25 x D	0,2 x D	0,25 x D	150	—	800	Fz	0,100	0,100	0,100
	7	1,25 x D	0,2 x D	0,25 x D	250	—	500	Fz	0,100	0,100	0,100

NOTE: Maximum allowed operation speed 30000 rev./min. Maximum allowed cutting speed 3000 m/min

# TOOL SELECTOR

	COMPOSITES MACHINING			HIGH-TEMP ALLOYS MACHINING	
	KenCut CF			KenCut HT	
					
Series	CCNC	CDDC	CBDB	EADE	EADE
Tool type					
Rougher				●	●
Finisher	●	●	●		
Chamfering					
Main operations					
Workpiece material					
Primary	C	C	C	S	S
Secondary					
Corner style					
Corner radius [Rε]	—	—	—	0,50–1,50mm	0,50–1,50mm
Corner chamfer width [BCH]	0,13mm	0,25mm	0,76–1,14mm	—	—
Cutting diameter [D1]	6–12mm	6–12mm	6–12mm	4–12mm	4–12mm
Length of cut	1,8–6xD	1,8–6xD	1,5–6xD	0,75xD	0,75xD
Maximum cutting depth [Ap1 max]	18–36mm	18–36mm	18–36mm	3–9mm	3–9mm
Flute helix angle	25°	25°	15°	40°	40°
Number of flutes [ZU]	3–4	6	12	4	6
Center cutting	✓				
Additional operations		  	 	 	   

● Primary  
○ Secondary





















 Available Online Only

# TOOL SELECTOR

HARD MACHINING					
KenCut HM					
Series	F2AT-WMLX	F4-5AJ-WSMLX	F4AJ-WSLX	F6-8AV-DL	F2AL-WLMX
Tool type					
Rougher					
Finisher	●	●	●	●	●
Chamfering					
Main operations					
Workpiece material					
Primary	P H	P H	P H	P H	P H
Secondary					
Corner style					
Corner radius [Rε]	0,30–4,00mm	0,50–3,00mm	—	0,5–1,5mm	—
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	2–12mm	6–20mm	6–20mm	6–25mm	2–12mm
Length of cut	1xD	1,5xD	1,5xD	1,8–3xD	1xD
Maximum cutting depth [Ap1 max]	2–12mm	9–30mm	9–38mm	13–75mm	2–12mm
Flute helix angle	20°	50°	50°	45°	20°
Number of flutes [ZU]	2	4–5	4	6–8	2
Center cutting	✓	✓	✓	✓	✓
Additional operations					

● Primary Available  
○ Secondary Online Only

# TOOL SELECTOR

HARD MACHINING					
KenCut HM					
					
Series	F2AL-WLM	F2AL-WLMX	F2AB-WLMX	F4AL..WL-WM-WX	F4AT-WSMLX
Tool type					
Rougher					
Finisher	●	●	●	●	●
Chamfering					
Main operations					
Workpiece material					
Primary	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>	<b>P</b> <b>H</b>
Secondary					
Corner style					
Corner radius [Re]	—	—	—	—	0,30–3,00mm
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	1–16mm	6–16mm	2–12mm	3–10mm	4–12mm
Length of cut	1xD	1xD	0,5xD	1,5xD	0,5–1xD
Maximum cutting depth [Ap1 max]	1–16mm	6–16mm	1–6mm	4–15mm	2–12mm
Flute helix angle	30°	30°	30°	30°	20°
Number of flutes [ZU]	2	2	2	4	4
Center cutting	✓	✓	✓	✓	✓
Additional operations					

- Primary
- Secondary

# KenCut HT

High-Performance  
High-Temp Alloys Machining

## Materials

S

## Industries



General  
Engineering



Aerospace

## Applications



Face Milling



Ramping



3D Profiling



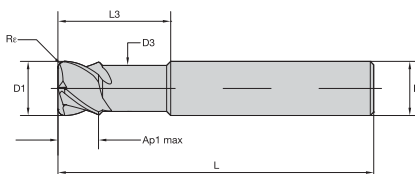
Shoulder Milling



Slotting



- Solid ceramic end mill for high-speed roughing of nickel-based high-temp alloys.
- Solid ceramic end mills offer extremely high tool life even at cutting speeds up to 1000m/min.
- SiAlON solid ceramic grade for exceptionally high MRR in nickel-based high-temp alloy machining.
- Up to five times higher tool life compared to solid carbide end mills, resulting in fewer tool changes and less downtime.
- Highest cutting speed capability for drastically reduced machining time.
- Four-flute version for pocketing and slotting, six-flute version for face milling and profiling.



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

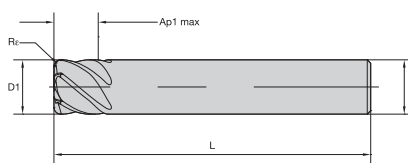
● Primary  
○ Secondary

## KenCut HT

EADE • Radiused • 4 Flutes • Necked • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
5348060	EADE0400A4AQE	4,00	6,00	3,84	3,00	8,00	50,00	0,50	•
5348062	EADE0600A4AQF	6,00	6,00	5,76	4,50	12,00	50,00	0,75	•
5348064	EADE0800A4AQG	8,00	8,00	7,68	6,00	16,00	57,00	1,00	•
5348066	EADE1000A4AQH	10,00	10,00	9,60	7,50	20,00	63,00	1,25	•
5348068	EADE1200A4AQJ	12,00	12,00	11,52	9,00	23,50	70,00	1,50	•

KYS40



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

● Primary  
○ Secondary

## KenCut HT

EADE • Radiused • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Rε	
5348069	EADE0400A6ARE	4,00	6,00	3,00	50,00	0,50	•
5348070	EADE0600A6ARF	6,00	6,00	4,50	50,00	0,75	•
5348071	EADE0800A6ARG	8,00	8,00	6,00	57,00	1,00	•
5348072	EADE1000A6ARH	10,00	10,00	7,50	63,00	1,25	•
5348073	EADE1200A6ARJ	12,00	12,00	9,00	70,00	1,50	•

KYS40



## KenCut HT

EADE • 4 Flutes • Application Data

Material Group					KYS40		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
	A		B		Cutting Speed — Vc m/min		mm	D1 — Diameter				
	ap	ae	ap	ae	min	max		4,0	6,0	8,0	10,0	12,0
S	3	Ap1 max	0,1 x D*	0,5 x D*	250	1000	fz	0,020	0,024	0,028	0,030	0,032

NOTE: For above cutting data, do not exceed an overall ae of 1mm. Use Ap of 0,5mm as starting condition.



## KenCut HT

EADE • 6 Flutes • Application Data

Material Group					KYS40		Recommended feed per tooth (fz = mm/th) for side milling (A).					
	A		B		Cutting Speed — Vc m/min		mm	D1 — Diameter				
	ap	ae	ap	ae	min	max		4,0	6,0	8,0	10,0	12,0
S	3	Ap1 max*	0,1 x D*	0,5 x D*	250	1000	fz	0,020	0,024	0,028	0,030	0,032

NOTE: For above cutting data, do not exceed an overall ae of 1mm. Use Ap of 0,5mm as starting condition.

# KENCUT HT APPLICATION RECOMMENDATION

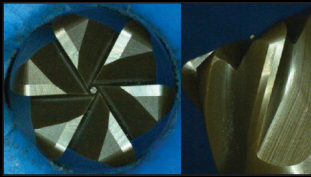


Materials to cut	Cutting speed	Coolant
<ul style="list-style-type: none"> <li>• Nickel-based high-temp alloys.</li> <li>• Cobalt-based alloys after consulting technical assistance.</li> <li>• P6 and M1-3 stainless steels after consulting technical assistance.</li> <li>• Do not apply on iron-based high-temp alloys.</li> </ul>	<ul style="list-style-type: none"> <li>• Maximum RPM machine can provide recommended cutting speed: 1.300–3.300 SFM.</li> <li>• Highly dynamic machines recommended.</li> <li>• Use of spindle speeders applicable (no wet coolant).</li> </ul>	<ul style="list-style-type: none"> <li>• Power cool nozzle preferred to flush chips away.</li> <li>• Pressurized air applicable.</li> <li>• MQL and dry applicable.</li> <li>• No coolant with emulsion or oil due to thermal shock.</li> </ul>

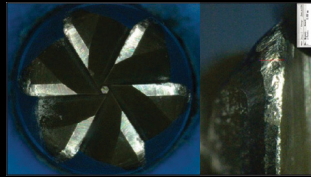
Adaptation	Milling strategy	Reconditioning service
<ul style="list-style-type: none"> <li>• Hydraulic chuck with or without sleeve preferred.</li> <li>• Collet or milling power chucks applicable.</li> <li>• Balancing at 25,000 RPM (2,5G) preferred.</li> </ul>	<ul style="list-style-type: none"> <li>• Conventional milling preferred at lower speeds.</li> <li>• Climb milling preferred at higher speeds.</li> </ul>	<p>Not applicable.</p>

## Wear Indication

New

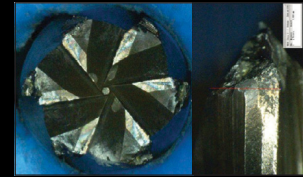


Used



Wear rate 0,48mm.  
Still good to use.

End of Tool Life



Wear rate 1,4mm.  
End of tool life reached.

## Chip Formation

Carbide



Regular curled chips. Shape and length depend on end mill geometry and cutting data.

Ceramic













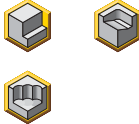
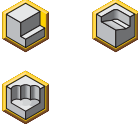




Chips are nearly like dust. Pressurized air coolant recommended to blow away chips.

## KenCut HT Application Recommendation

Problem	Cause	Remedy
Excessive burr formation	<ul style="list-style-type: none"> <li>Softness of material to cut.</li> <li>Excessive wear on radii.</li> </ul>	<ul style="list-style-type: none"> <li>Use undersized end mills that leave stock for finishing operation.</li> <li>Replace tool as end of tool life reached.</li> <li>Check tool runout.</li> </ul>
Sudden breakage	<ul style="list-style-type: none"> <li>Vibration of the workpiece.</li> <li>Unstable tool clamping.</li> <li>Use of 6-flute tooling in slotting.</li> </ul>	<ul style="list-style-type: none"> <li>Check workpiece and tool clamping.</li> <li>Use of 4-flute EADE recommended.</li> </ul>
Chips sticking	<ul style="list-style-type: none"> <li>Lack of cutting speed.</li> </ul>	<ul style="list-style-type: none"> <li>Increase cutting speed.</li> </ul>
Chipping	<ul style="list-style-type: none"> <li>Unstable tool and/or workpiece clamping.</li> <li>Initial cutting speed too high.</li> </ul>	<ul style="list-style-type: none"> <li>Check workpiece and tool clamping.</li> <li>Reduce cutting speed during initial cut and increase as cutting continues.</li> </ul>
Thermal cracks	<ul style="list-style-type: none"> <li>Wet coolant.</li> </ul>	<ul style="list-style-type: none"> <li>Do not use wet coolant.</li> </ul>

# TOOL SELECTOR

	KEY WAY MACHINING		HIGH-FEED MACHINING	
	KenCut KS		KenFeed	
				
Series	F2AU	F3AU	KHDA	KMDA
Tool type				
Rougher				
Finisher	●	●	●	●
Chamfering				
Main operations				
Workpiece material				
Primary	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>H</b>	<b>H</b>
Secondary	<b>H</b>	<b>H</b>		<b>P</b>
Corner style				
Corner radius [Rε]	0,12–0,40mm	0,12–0,40mm	0,38–1,25mm	0,38–1,25mm
Corner chamfer width [BCH]	—	—	—	—
Cutting diameter [D1]	1,8–19,7mm	2,8–19,7mm	6–20mm	6–20mm
Length of cut	1–1,4xD	1–1,4xD	—	—
Maximum cutting depth [Ap1 max]	2–20mm	4–20mm	0,2–0,67mm	0,32–1,05mm
Flute helix angle	38°	38°	20°	20°
Number of flutes [ZU]	2	3	6	6
Center cutting	✓	✓		
Additional operations				

- Primary
- Secondary

# TOOL SELECTOR

SMALL PARTS MACHINING					
Micro Mills					
Series	F2AH-WSM	F2AL-WS	F2AL-WS.L	F2AL-WM	F3AH-WS
Tool type					
Rougher					
Finisher	●	●	●	●	●
Chamfering					
Main operations					
Workpiece material					
Primary	P K H	P M	P H	P H	P M K N
Secondary					
Corner style					
Corner radius [Rε]	—	—	—	—	—
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	0,3–2,5mm	0,6–3mm	0,3–6mm	1,5–4mm	0,5–3mm
Length of cut	1,3–1,5xD	1,5–3xD	1xD	1,6xD	1,3–4xD
Maximum cutting depth [Ap1 max]	0,4–3,7mm	1,5–5mm	0,3–6mm	1,6–6mm	1,5–12mm
Flute helix angle	30°	30°	30°	30°	30°
Number of flutes [ZU]	2	2	2	2	3
Center cutting	✓	✓	✓	✓	✓
Additional operations					

● Primary Available  
○ Secondary Online Only

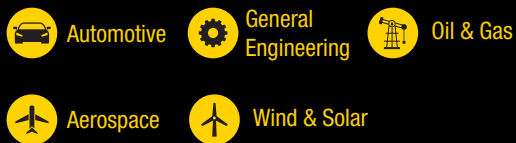
# KENFEED AND KENCUT KS

High-Feed Machining and  
Key Way Machining

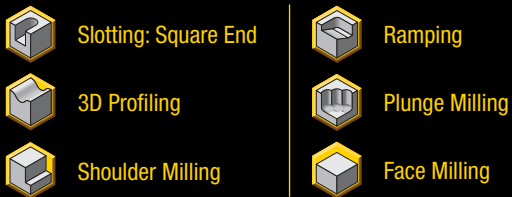
## Materials



## Industries



## Applications



## KenFeed

- The KenFeed solid carbide end mill series is designed for maximum MRR in heat-treated steels up to 67 HRC by taking very shallow depth of cuts at extremely high feed rates.
- During face milling, the proprietary front-end geometry is entirely in contact with the workpiece, providing up to 55% engagement compared to regular ball nose-type tooling with only 5–10%.
- The 3xD neck and the extended-reach design is ideal for multiple applications like ramping, helical interpolation, 3D profiling, face milling and pocketing. Six-flute design for increased MRR and higher productivity.



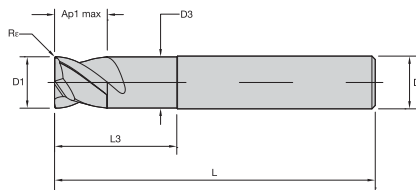
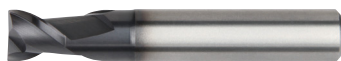
**Six-flute solid carbide end mill for high-feed roughing and finishing of medium and hard steels.**



**Two- and three-fluted end mills providing highest precision when machining slots for a shaft-to-hub connection.**

## **KenCut KS**

- Key slot radii transition between floor and wall increases durability of machined components by preventing cracks through stress peaks.
- True 90° wall straightness due to tapered peripheral edges creating a defined passive force during finishing cut using conventional milling.
- Two-fluted tools for unstable machining conditions.
- Three-fluted tools with unequally spaced flutes for chatter-free machining at high feed rates.



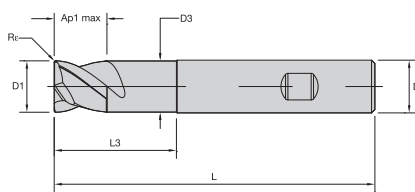
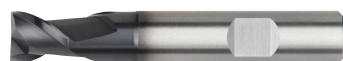
## KenCut KS

F2AU • Radiused • 2 Flutes • Plain Shank

P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
4090779	F2AU0180ADK38	1,80	4,00	1,75	2,00	6,00	38,00	0,12	●
4090780	F2AU0280ADK38	2,80	6,00	2,75	4,00	12,00	50,00	0,12	●
4090781	F2AU0380ADK38	3,80	6,00	3,71	5,00	16,00	54,00	0,12	●
4090782	F2AU0480ADK38	4,80	6,00	4,71	6,00	16,00	54,00	0,20	●
4090783	F2AU0575ADK38	5,75	6,00	5,71	7,00	18,00	54,00	0,20	●
4090784	F2AU0775ADK38	7,75	8,00	7,70	9,00	22,00	58,00	0,20	●
4090785	F2AU0970ADK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33	●
4090786	F2AU1170ADK38	11,70	12,00	11,64	12,00	28,00	73,00	0,33	●
4090787	F2AU1370ADK38	13,70	14,00	13,64	14,00	30,00	75,00	0,33	●
4090788	F2AU1570ADK38	15,70	16,00	15,64	16,00	34,00	82,00	0,33	●
4090789	F2AU1770ADK38	17,70	18,00	17,64	18,00	36,00	84,00	0,40	●
4090790	F2AU1970ADK38	19,70	20,00	19,63	20,00	42,00	92,00	0,40	●



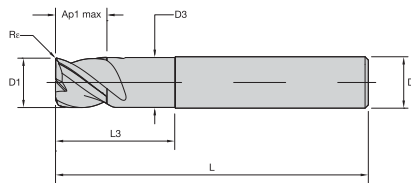
## KenCut KS

F2AU • Radiused • 2 Flutes • Weldon® Shank

P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
4090795	F2AU0775BBDK38	7,75	8,00	7,70	9,00	22,00	58,00	0,20	●
4090796	F2AU0970BBDK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33	●



P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

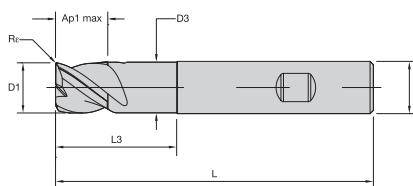
## KenCut KS

F3AU • Radiused • 3 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
4090567	F3AU0280ADK38	2,80	6,00	2,75	4,00	12,00	50,00	0,12	●
4090568	F3AU0380ADK38	3,80	6,00	3,71	5,00	16,00	54,00	0,12	●
4090569	F3AU0480ADK38	4,80	6,00	4,71	6,00	16,00	54,00	0,20	●
4090570	F3AU0575ADK38	5,75	6,00	5,71	7,00	18,00	54,00	0,20	●
4090571	F3AU0775ADK38	7,75	8,00	7,70	9,00	22,00	58,00	0,20	●
4090572	F3AU0970ADK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33	●
4090773	F3AU1170ADK38	11,70	12,00	11,64	12,00	28,00	73,00	0,33	●
4090774	F3AU1370ADK38	13,70	14,00	13,64	14,00	30,00	75,00	0,33	●
4090775	F3AU1570ADK38	15,70	16,00	15,64	16,00	34,00	82,00	0,33	●
4090776	F3AU1770ADK38	17,70	18,00	17,64	18,00	36,00	84,00	0,40	●
4090777	F3AU1970ADK38	19,70	20,00	19,63	20,00	42,00	92,00	0,40	●

KC643M

HIGH PERFORMANCE SOLID CARBIDE END MILLING



P	●
M	●
K	●
N	●
S	●
H	○

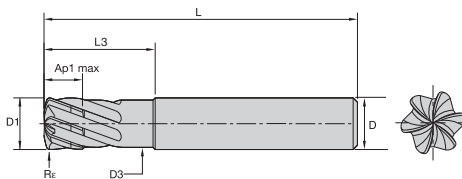
● Primary  
○ Secondary

## KenCut KS

F3AU • Radiused • 3 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
4061085	F3AU0280BDK38	2,80	6,00	2,75	4,00	12,00	50,00	0,12	●
4061086	F3AU0380BDK38	3,80	6,00	3,71	5,00	16,00	54,00	0,12	●
4061087	F3AU0480BDK38	4,80	6,00	4,71	6,00	16,00	54,00	0,20	●
4061091	F3AU0970BDK38	9,70	10,00	9,65	11,00	26,00	66,00	0,33	●

KC643M



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

- Primary
- Secondary

## KenFeed

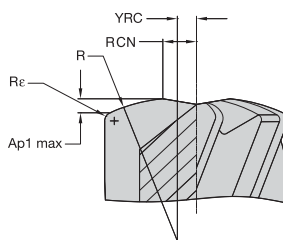
Torus • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Re	
3351707	KHDA0600A6ANA	6,00	6,00	5,00	0,20	18,00	63,00	0,38	•
3351708	KHDA0800A6ANA	8,00	8,00	7,00	0,27	24,00	76,00	0,50	•
3351709	KHDA1000A6ANA	10,00	10,00	9,00	0,33	30,00	89,00	0,63	•
3351710	KHDA1200A6ANA	12,00	12,00	11,00	0,40	36,00	100,00	0,75	•
3351711	KHDA1600A6ANA	16,00	16,00	15,00	0,54	48,00	110,00	1,00	•
3351712	KHDA2000A6ANA	20,00	20,00	19,00	0,67	60,00	125,00	1,25	•

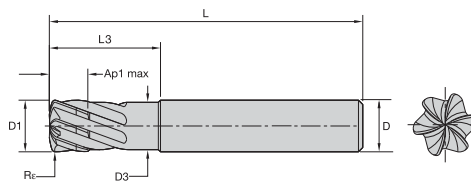
KC639M

## KenFeed

Torus • 6 Flutes • Programming Data



Geometrical Parameters								Ramping Guide For Circular And Linear Ramping					
								Circular Interpolation			Linear Ramping		
								Optimal Range Of Circle Diameter For A Single Pass			Calculated Length Per Ramp Angle		
Catalogue Number	D1	Ap1 Max	R	Re	Yrc	Rcn	Smallest	Largest	1°	2°	3°	4°	5°
KHDA0600A6ANA	6	0,20	9	0,375	0,75	1,26	8,52	12,00	11,458	5,727	3,816	2,860	2,286
KHDA0800A6ANA	8	0,27	12	0,500	1,00	1,68	11,36	16,00	15,468	7,732	5,152	3,861	3,086
KHDA1000A6ANA	10	0,33	15	0,625	1,25	2,10	14,20	20,00	18,906	9,450	6,297	4,719	3,772
KHDA1200A6ANA	12	0,40	18	0,750	1,50	2,52	17,04	24,00	22,916	11,455	7,632	5,720	4,572
KHDA1600A6ANA	16	0,54	24	1,000	2,00	3,36	22,72	32,00	30,937	15,464	10,304	7,722	6,172
KHDA2000A6ANA	20	0,67	30	1,250	2,50	4,20	28,40	40,00	38,384	19,186	12,784	9,581	7,658
Recommended percentage of programmed feed rate to use while ramping									100%	70%	50%	30%	10%



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

- Primary
- Secondary

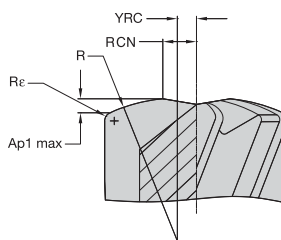
## KenFeed

Torus • 6 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	D3	Ap1 Max	L3	L	Rε	
3352369	KMDA0600A6ANA	6,00	6,00	5,00	0,32	18,00	63,00	0,38	●
3352370	KMDA0800A6ANA	8,00	8,00	7,00	0,42	24,00	76,00	0,50	●
3352371	KMDA1000A6ANA	10,00	10,00	9,00	0,53	30,00	89,00	0,63	●
3352372	KMDA1200A6ANA	12,00	12,00	11,00	0,63	36,00	100,00	0,75	●
3352493	KMDA1600A6ANA	16,00	16,00	15,00	0,84	48,00	110,00	1,00	●
3352494	KMDA2000A6ANA	20,00	20,00	19,00	1,05	60,00	125,00	1,25	●

KC639M

HIGH PERFORMANCE SOLID CARBIDE END MILLING



## KenFeed

Torus • 6 Flutes • Programming Data

Geometrical Parameters								Ramping Guide For Circular And Linear Ramping						
								Circular Interpolation				Linear Ramping		
								Optimal Range Of Circle Diameter For A Single Pass				Calculated Length Per Ramp Angle		
Catalogue Number	D1	Ap1 Max	R	Rε	Yrc	Rcn	Smallest	Largest	1°	2°	3°	4°	5°	
KMDA0600A6ANA	6	0,32	6	0,375	0,75	1,32	8,64	12,00	18,333	9,164	6,106	4,576	3,658	
KMDA0800A6ANA	8	0,42	8	0,500	1,00	1,76	11,52	16,00	24,062	12,027	8,014	6,006	4,801	
KMDA1000A6ANA	10	0,53	10	0,625	1,25	2,20	14,40	20,00	30,364	15,177	10,113	7,579	6,058	
KMDA1200A6ANA	12	0,63	12	0,750	1,50	2,64	17,28	24,00	36,093	18,041	12,021	9,009	7,201	
KMDA1600A6ANA	16	0,84	16	1,000	2,00	3,52	23,04	32,00	48,124	24,054	16,028	12,013	9,601	
KMDA2000A6ANA	20	1,05	20	1,250	2,50	4,40	28,80	40,00	60,154	30,068	20,035	15,016	12,002	
Recommended degree of programmed feed rate to use while ramping									100%	70%	50%	30%	10%	

## KenCut KS Application Data



KenCut KS – F2AU



KenCut KS – F3AU

Material Group					KC643M		Recommended feed per tooth (fz = mm/turn) for side milling (A). For slotting (B), reduce fz by 10%.										
	A		B		Cutting Speed — Vc m/min		mm	D1 — Diameter									
	ap	ae	ap		min	max		2,0	3,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	20,0
P	0	1 x D	0,5 x D	0,75 x D	150	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	1	1 x D	0,5 x D	0,75 x D	150	200	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	140	190	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	3	1 x D	0,5 x D	0,75 x D	120	160	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	4	1 x D	0,5 x D	0,75 x D	90	150	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088
	5	1 x D	0,5 x D	0,75 x D	60	100	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
M	1	1 x D	0,5 x D	0,75 x D	90	115	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,5 x D	0,75 x D	60	80	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
	3	1 x D	0,5 x D	0,75 x D	60	70	fz	0,008	0,012	0,016	0,025	0,034	0,040	0,047	0,052	0,057	0,065
K	1	1 x D	0,5 x D	0,75 x D	120	150	fz	0,014	0,021	0,028	0,044	0,060	0,072	0,083	0,092	0,101	0,114
	2	1 x D	0,5 x D	0,75 x D	110	140	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	3	1 x D	0,5 x D	0,75 x D	110	130	fz	0,009	0,014	0,019	0,029	0,040	0,048	0,056	0,063	0,070	0,081
S	1	1 x D	0,3 x D	0,3 x D	50	90	fz	0,011	0,017	0,023	0,036	0,050	0,061	0,070	0,079	0,087	0,101
	2	1 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	3	1 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,009	0,013	0,019	0,026	0,032	0,037	0,042	0,046	0,054
	4	1 x D	0,5 x D	0,75 x D	50	60	fz	0,007	0,011	0,016	0,026	0,037	0,045	0,052	0,058	0,064	0,074
H	1	1 x D	0,5 x D	0,75 x D	80	140	fz	0,010	0,016	0,021	0,033	0,045	0,054	0,062	0,070	0,077	0,088

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 >12mm diameter.

## KenFeed KHDA • Application Data



Material Group			KC639M		Feed per Tooth — fz information is for side milling (A).							
	A		Cutting Speed — Vc m/min		mm	D1 — Diameter						
	ap	ae	min	max		6,0	8,0	10,0	12,0	16,0	20,0	
H	2	0,03 x D	0,55 x D	100	120	fz	0,200	0,300	0,300	0,400	0,500	0,600
	3	0,03 x D	0,55 x D	80	100	fz	0,200	0,300	0,300	0,400	0,500	0,600
	4	0,03 x D	0,55 x D	50	70	fz	0,150	0,200	0,250	0,300	0,400	0,500

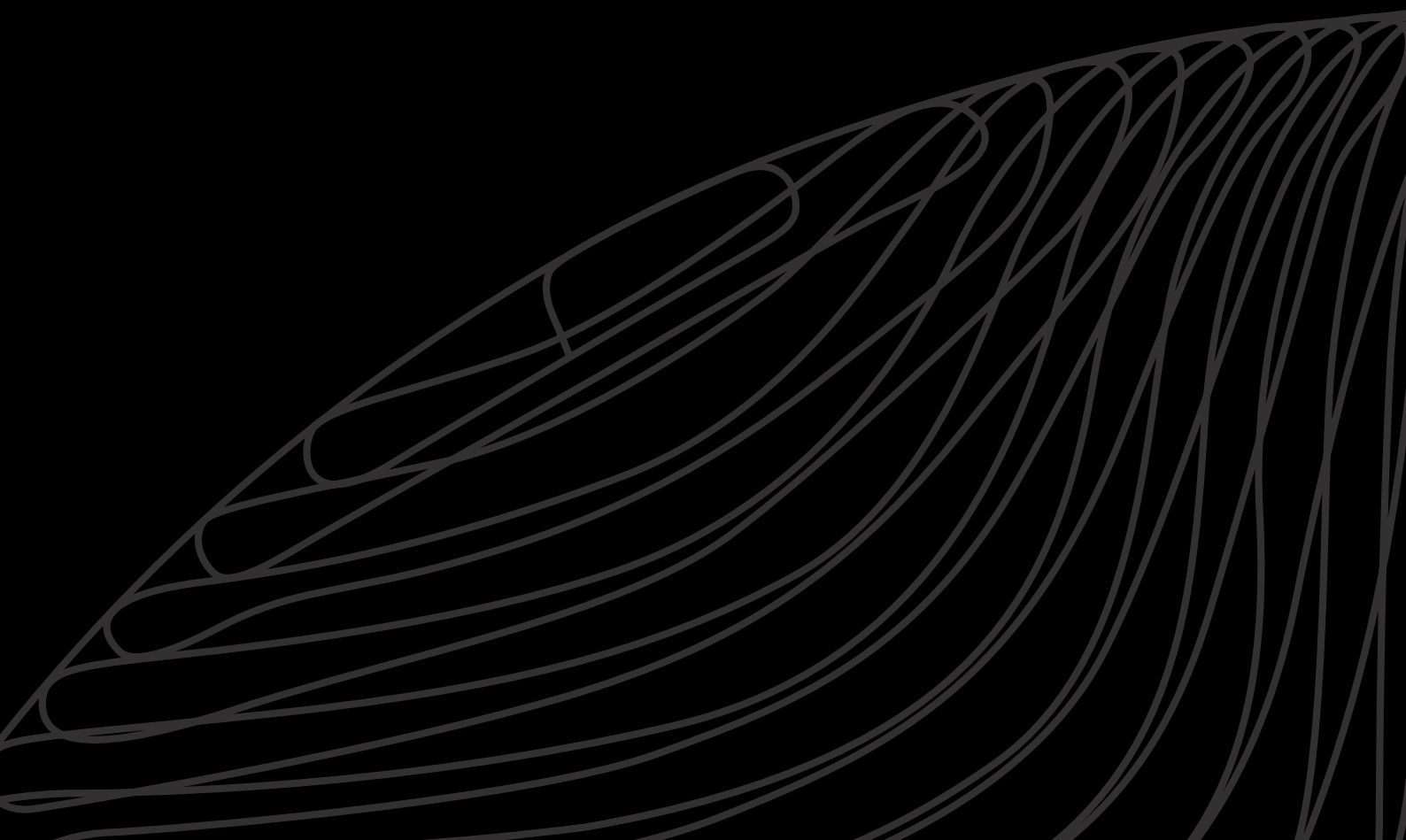
NOTE: These guidelines may require possible variations to achieve optimum results.

## KenFeed KMDA • Application Data



Material Group			KC639M		Feed per Tooth — fz information is for side milling (A).							
	A		Cutting Speed — Vc m/min		mm	D1 — Diameter						
	ap	ae	min	max		6,0	8,0	10,0	12,0	16,0	20,0	
P	4	0,05 x D	0,55 x D	160	180	fz	0,300	0,500	0,500	0,500	0,600	0,700
H	1	0,05 x D	0,55 x D	140	160	fz	0,300	0,500	0,500	0,500	0,600	0,700
	2	0,05 x D	0,55 x D	100	120	fz	0,200	0,300	0,300	0,400	0,500	0,600

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





# ECONOMY & GENERAL-PURPOSE APPLICATIONS



# TOOL SELECTOR

GENERAL PURPOSE ROUGHING AND FINISHING							
G0mill GP							
Series	G0mill GP 2CH..DK-DL	G0mill GP 2CH..DD	2CH..MR-ML-MX	2BN..DK-DL	2BN..DD	2BN..MR-ML-MX	3CH..DK-DL
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○	○	○
Chamfering							
Main operations							
Workpiece material							
Primary	P M K	P M K	P M K	P M K	P M K	P M K	P M K
Secondary	N	N	N	N	N	N	N
Corner style							
Corner radius [Rε]	—	—	—	—	—	—	—
Corner chamfer width [BCH]	0,1–0,3mm	0,1–0,3mm	0,1–0,3mm	—	—	—	0,1–0,3mm
Cutting diameter [D1]	2–20mm	3–20mm	3–20mm	2–20mm	2–20mm	1–20mm	2–20mm
Length of cut	1–2,3xD	1,4–2,7xD	1,9–8,3xD	1–3xD	1,6–3,5xD	1,9–6,3xD	1–3xD
Maximum cutting depth [Ap1 max]	3–32mm	8–32mm	6,3–75mm	6–32mm	7–32mm	4–75mm	3–32mm
Flute helix angle	30°	30°	30°	30°	30°	30°	30°
Number of flutes [ZU]	2	2	2	2	2	2	3
Center cutting	✓	✓	✓	✓	✓	✓	✓
Additional operations	 	 	 	 	 	 	 

● Primary  
○ Secondary

Available Online Only

# TOOL SELECTOR

GENERAL PURPOSE ROUGHING AND FINISHING							
G0mill GP							
Series	3CH..MS-MX	4CH..DK-DL	4CH..DD	4CH..MR-ML-MX	4BN..DK-DL	4BN..DD	4BN..MR-ML
Tool type							
Rougher	●	●	●	●	●	●	●
Finisher	○	○	○	○	○	○	○
Chamfering							
Main operations							
Workpiece material							
Primary	P M K	P M K	P M K	P M K	P M K	P M K	P M K
Secondary	N	N	N	N	N	N	N
Corner style							
Corner radius [Rε]	—	—	—	—	—	—	—
Corner chamfer width [BCH]	0,1–0,3mm	0,1–0,3mm	0,1–0,3mm	0,1–0,3mm	—	—	—
Cutting diameter [D1]	1–20mm	2–20mm	4–20mm	2–20mm	3–20mm	4–20mm	3–20mm
Length of cut	2–6,3xD	1,3–3,2xD	1,8–2,8xD	1,9–8,3xD	1,8–2,8xD	1,8–2,8xD	2–6,7xD
Maximum cutting depth [Ap1 max]	4–64mm	4–38mm	11–38mm	6,3–75mm	8–38mm	11–38mm	20–56mm
Flute helix angle	30°	30°	30°	30°	30°	30°	30°
Number of flutes [ZU]	3	4	4	4	4	4	4
Center cutting	✓	✓	✓	✓	✓	✓	✓
Additional operations							

● Primary Available  
○ Secondary Online Only

ECONOMY & GENERAL-PURPOSE APPLICATIONS

# TOOL SELECTOR

ECONOMIC ROUGHING AND FINISHING				
G0mill				
				
Series	G0mill UEBC 2FL	G0mill UEDE 3FL	G0mill UEBE 3FL	G0mill UEDE 4FL
Tool type				
Rougher	●	●	●	●
Finisher	○	○	○	○
Chamfering				
Main operations				
Workpiece material				
Primary	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b>
Secondary	H	H	H	H
Corner style				
Corner radius [Rc]	—	—	—	—
Corner chamfer width [BCH]	—	—	—	0,4–0,5mm
Cutting diameter [D1]	2–12mm	2–12mm	2–12mm	4–12mm
Length of cut	1,3–2xD	1,3–2xD	1,3–2xD	1,3–1,8 xD
Maximum cutting depth [Ap1 max]	4–15mm	4–15mm	4–15mm	7–15mm
Flute helix angle	30°	38°	38°	38°
Number of flutes [ZU]	2	3	3	4
Center cutting	✓	✓	✓	✓
Additional operations	 	  	 	  

● Primary  
○ Secondary

# TOOL SELECTOR

ECONOMIC ROUGHING AND FINISHING				
G0mill PRO				
Series	GOPR4CH...	GOPR4RA...	GOPR4SE...	GOPR4BN...
Tool type				
Rougher	●	●	●	●
Finisher	○	○	○	○
Chamfering				
Main operations				
Workpiece material				
Primary	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>
Secondary	<b>S</b> <b>H</b>	<b>S</b> <b>H</b>	<b>S</b> <b>H</b>	<b>S</b> <b>H</b>
Corner style				
Corner radius [Rε]	—	0,2–4,0mm	—	—
Corner chamfer width [BCH]	0,15–0,35mm	—	—	—
Cutting diameter [D1]	2–25mm	3–25mm	2–20mm	5–20mm
Length of cut	1,8–5xD	1,2–5xD	1,9–3xD	2–2,6 xD
Maximum cutting depth [Ap1 max]	6–57mm	7–52mm	6–38mm	13–38mm
Flute helix angle	37°/39°	37°/39°	37°/39°	38°
Number of flutes [ZU]	4	4	4	4
Center cutting	✓	✓	✓	✓
Additional operations				

- Primary
- Secondary

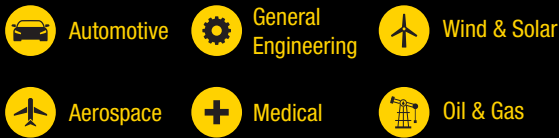
# GOmill

## Economic Roughing and Finishing

### Materials



### Industries

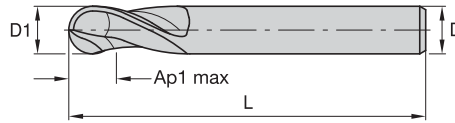


### Applications



Short length-of-cut end mills

- Economic, short length-of-cut solid carbide end mills for roughing and finishing in multiple materials.
- The GOmill solid carbide end mill series provides extremely stable cutting conditions.
- Short overall length and a soft cutting geometry makes this line also a perfect fit for mill-turn machines and driven units in lathes. Works with any adapter. Clamping sleeve in hydraulic chucks are recommended.
- Unequally spaced three- and four-flute versions minimize vibrations and provide high tool life and superior surface quality.
- Economic solution due to shorter than regular shanks, reducing overall tooling cost.
- Short length and high-performance geometry enable chatter-free, 1xD full slot machining in multiple materials.
- Center cutting for plunging and ramping.



P	●
M	●
K	●
N	●
S	●
H	○

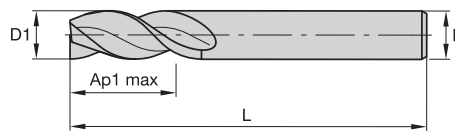
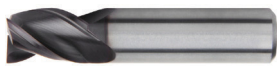
● Primary  
○ Secondary

## GOmill

Ball Nose • 2 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
4152204	UEBC0200A2A	2,00	6,00	4,00	38,00	●
4152205	UEBC0300A2A	3,00	6,00	5,00	38,00	●
4152206	UEBC0400A2A	4,00	6,00	7,00	38,00	●
4152207	UEBC0500A2A	5,00	6,00	8,00	38,00	●
4152208	UEBC0600A2A	6,00	6,00	8,00	38,00	●
4152209	UEBC0800A2A	8,00	8,00	11,00	43,00	●
4152210	UEBC1000A2A	10,00	10,00	13,00	50,00	●
4152211	UEBC1200A2A	12,00	12,00	15,00	73,00	●

KC643M



P	●
M	●
K	●
N	●
S	●
H	○

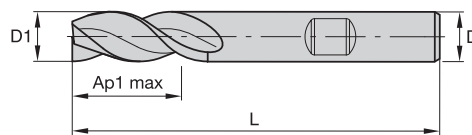
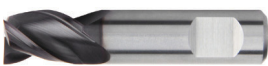
● Primary  
○ Secondary

## GOmill

Square End • 3 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
4032783	UEDE0200A3AS	2,00	6,00	4,00	38,00	●
4032784	UEDE0300A3AS	3,00	6,00	5,00	38,00	●
4032785	UEDE0400A3AS	4,00	6,00	7,00	38,00	●
4032786	UEDE0500A3AS	5,00	6,00	8,00	38,00	●
4032787	UEDE0600A3AS	6,00	6,00	8,00	38,00	●
4032788	UEDE0800A3AS	8,00	8,00	11,00	43,00	●
4032789	UEDE1000A3AS	10,00	10,00	13,00	50,00	●
4032790	UEDE1200A3AS	12,00	12,00	15,00	55,00	●

KC643M



P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

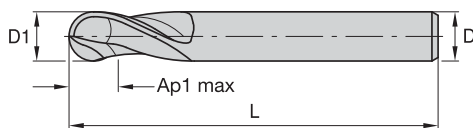
## GOmill

Square End • 3 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
4032791	UEDE0200B3AS	2,00	6,00	4,00	38,00	●
4032792	UEDE0300B3AS	3,00	6,00	5,00	38,00	●
4032793	UEDE0400B3AS	4,00	6,00	7,00	38,00	●
4032794	UEDE0500B3AS	5,00	6,00	8,00	38,00	●
4032795	UEDE0600B3AS	6,00	6,00	8,00	38,00	●
4032796	UEDE0800B3AS	8,00	8,00	11,00	43,00	●
4032797	UEDE1000B3AS	10,00	10,00	13,00	50,00	●
4032798	UEDE1200B3AS	12,00	12,00	15,00	55,00	●

KC643M

ECONOMY & GENERAL-PURPOSE APPLICATIONS



P	●
M	●
K	●
N	●
S	●
H	○

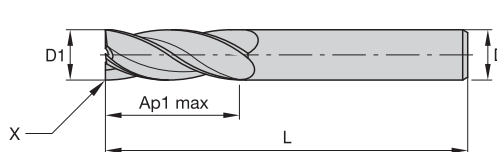
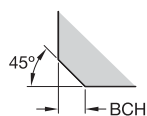
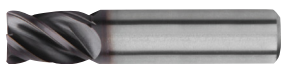
● Primary  
○ Secondary

## GOmill

Ball Nose • 3 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	
4032304	UEBE0200A3A	2,00	6,00	4,00	38,00	●
4032305	UEBE0300A3A	3,00	6,00	5,00	38,00	●
4032306	UEBE0400A3A	4,00	6,00	7,00	38,00	●
4032307	UEBE0500A3A	5,00	6,00	8,00	38,00	●
4032308	UEBE0600A3A	6,00	6,00	8,00	38,00	●
4032309	UEBE0800A3A	8,00	8,00	11,00	43,00	●
4032310	UEBE1000A3A	10,00	10,00	13,00	50,00	●
4032311	UEBE1200A3A	12,00	12,00	15,00	55,00	●

KC643M



P	●
M	●
K	●
N	●
S	●
H	○

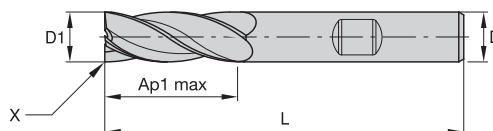
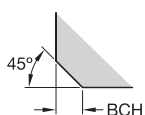
● Primary  
○ Secondary

## GOmill

Chamfered • 4 Flutes • Plain Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Bch
4032802	UEDE0400A4AH	4,00	6,00	7,00	38,00	0,40
4032813	UEDE0600A4AH	6,00	6,00	8,00	38,00	0,40
4032814	UEDE0800A4AH	8,00	8,00	11,00	43,00	0,40
4032815	UEDE1000A4AH	10,00	10,00	13,00	50,00	0,50
4032816	UEDE1200A4AH	12,00	12,00	15,00	55,00	0,50

KC643M



P	●
M	●
K	●
N	●
S	●
H	○

● Primary  
○ Secondary

## GOmill

Chamfered • 4 Flutes • Weldon® Shank

Order Number	Catalogue Number	D1	D	Ap1 Max	L	Bch
4032817	UEDE0400B4AH	4,00	6,00	7,00	38,00	0,40
4032820	UEDE0600B4AH	6,00	6,00	8,00	38,00	0,40
4032821	UEDE0800B4AH	8,00	8,00	11,00	43,00	0,40
4032822	UEDE1000B4AH	10,00	10,00	13,00	50,00	0,50
4032823	UEDE1200B4AH	12,00	12,00	15,00	55,00	0,50

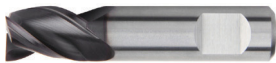
KC643M



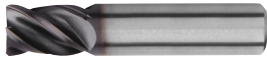
G0mill – 2 Flutes – UEBC



G0mill – 3 Flutes – UEBE



G0mill – 3 Flutes – UEDE



G0mill – 4 Flutes – UEDE

## G0mill

### UEBC, UEBE, & UEDE • Application Data

Material Group					KC643M		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 10%.								
	A		B	Cutting Speed — Vc m/min		mm	D1 — Diameter								
	ap	ae	ae	min	max		2,0	3,0	4,0	5,0	6,0	8,0	10,0	12,0	
P	0	1,5 x D	0,5 x D	1 x D	150	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	1	1,5 x D	0,5 x D	1 x D	150	200	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	140	190	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	3	1,5 x D	0,5 x D	1 x D	120	160	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	4	1,5 x D	0,5 x D	0,75 x D	90	150	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062
	5	1,5 x D	0,5 x D	1 x D	60	100	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
M	1	1,5 x D	0,5 x D	1 x D	90	115	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,5 x D	1 x D	60	80	fz	0,010	0,015	0,019	0,024	0,029	0,040	0,048	0,056
K	1	1,5 x D	0,5 x D	1 x D	120	150	fz	0,014	0,022	0,028	0,036	0,044	0,060	0,072	0,083
	2	1,5 x D	0,5 x D	1 x D	110	140	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
S	1	1,5 x D	0,3 x D	0,3 x D	50	90	fz	0,012	0,018	0,023	0,030	0,036	0,050	0,061	0,070
	2	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
H	3	1,5 x D	0,3 x D	0,3 x D	25	40	fz	0,006	0,010	0,013	0,016	0,019	0,026	0,032	0,037
	4	1,5 x D	0,5 x D	1 x D	50	60	fz	0,008	0,013	0,016	0,021	0,026	0,037	0,045	0,052
	1	1,5 x D	0,5 x D	0,75 x D	80	140	fz	0,011	0,016	0,021	0,027	0,033	0,045	0,054	0,062

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

## G0mill Series

### Adjustment Factor for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed factor	Kv	2,1—3,6	1,6—3	1,6—2,5	1,6	1,4	1,38	1,3	1,2	1,1	1	0,9
Feed factor	KFz	3,58	2,56	2,3	1,84	1,67	1,54	1,25	1,09	1,02	1	1

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 Kv coefficient table to the right for adaptation of cutting speed and KFz for feed respectively.

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

Calculation example:  
Application: D1 = 12mm;  
P4 material group;  
Ae 1,2mm (Ae = 10% of D1)  
Cutting data recommendation: 150m/min;  
Fz = 0,062mm/z  
Adjustment coefficients: Ae = 1,2mm equals 10%;  
Kv = 1,4; KFz = 1,67

Final cutting data recommendation:  
Vc new = 150 \* 1,4 = 210mm/min  
Fz new = 0,062 \* 1,67 = 0,103mm/z

# GOMill PRO

Versatile 4-Flute End Mills With  
Multilayer TiN/TiALN Coating

## Materials



## Industries



## Applications



- An asymmetric divided flute for better vibration control and tool life and smoother cutting
- A variable helix angle for better vibration control and tool life
- A tapered core for better chip evacuation and tool strength
- Multilayer TiN/TiALN coating for high performance at medium-high cutting on steels, stainless steels and cast iron
- Special relief design for higher edge strength, better vibration control and workpiece material flexibility

CHAMFERED



RADIUSED



SQUARE END



BALL NOSE  
WITH NECK



RADIUSED  
WITH NECK

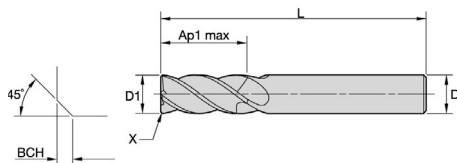


ASYMMETRIC  
DIVIDED FLUTE

VARIABLE  
HELIX ANGLE

TAPERED CORE

Ideal for shops working in the general engineering, transportation, energy and medical industries, GOMILL PRO serves as a do-it-all end mill where price, performance and versatility meet for next level operations.



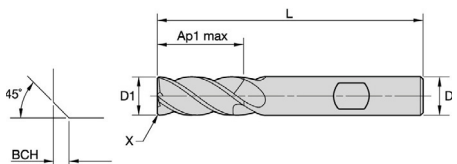
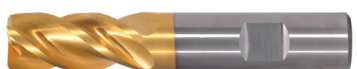
**GOmill PRO**  
Chamfered • 4 Flutes • Plain Shank

P	●	●
M	●	●
K	●	●
N	●	●
S	○	○
H	○	○

● Primary  
○ Secondary

KCU20

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7231597	GOPR4CH0300R008HAM	3.00	6.00	8.00	57.00	0.15	●
7231599	GOPR4CH0400R011HAM	4.00	6.00	11.00	57.00	0.15	●
7231601	GOPR4CH0500R013HAM	5.00	6.00	13.00	57.00	0.15	●
7231603	GOPR4CH0600R013HAM	6.00	6.00	13.00	57.00	0.15	●
7231605	GOPR4CH0600X032HAM	6.00	6.00	32.00	76.00	0.15	●
7231606	GOPR4CH0700R019HAM	7.00	8.00	19.00	63.00	0.15	●
7231678	GOPR4CH0800L032HAM	8.00	8.00	32.00	87.00	0.20	●
7231676	GOPR4CH0800R019HAM	8.00	8.00	19.00	63.00	0.20	●
7231679	GOPR4CH0900R022HAM	9.00	10.00	22.00	72.00	0.20	●
7231680	GOPR4CH1000R022HAM	10.00	10.00	22.00	72.00	0.20	●
7231712	GOPR4CH1000L038HAM	10.00	10.00	38.00	89.00	0.20	●
7231715	GOPR4CH1200L051HAM	12.00	12.00	51.00	100.00	0.20	●
7231713	GOPR4CH1200R026HAM	12.00	12.00	26.00	83.00	0.20	●
7231716	GOPR4CH1400S026HAM	14.00	14.00	26.00	83.00	0.35	●
7231718	GOPR4CH1600R032HAM	16.00	16.00	32.00	92.00	0.35	●
7231721	GOPR4CH1600L057HAM	16.00	16.00	57.00	125.00	0.35	●
7231724	GOPR4CH2000R057HAM	20.00	20.00	57.00	125.00	0.35	●
7231722	GOPR4CH2000S038HAM	20.00	20.00	38.00	104.00	0.35	●
7231726	GOPR4CH2500S045HAM	25.00	25.00	45.00	121.00	0.35	●



**GOmill PRO**  
Chamfered • 4 Flutes • Weldon Shank

P	●	●
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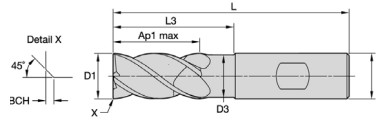
● Primary  
○ Secondary

KCU20

Order Number	Catalog Number	D1	D	AP1 Max	L	BCH	
7231598	GOPR4CH0300R008HBM	3.00	6.00	8.00	57.00	0.15	●
7231600	GOPR4CH0400R011HBM	4.00	6.00	11.00	57.00	0.15	●
7231602	GOPR4CH0500R013HBM	5.00	6.00	13.00	57.00	0.15	●
7231604	GOPR4CH0600R013HBM	6.00	6.00	13.00	57.00	0.15	●
7231677	GOPR4CH0800R019HBM	8.00	8.00	19.00	63.00	0.20	●
7231711	GOPR4CH1000R022HBM	10.00	10.00	22.00	72.00	0.20	●
7231714	GOPR4CH1200R026HBM	12.00	12.00	26.00	83.00	0.20	●
7231717	GOPR4CH1400S026HBM	14.00	14.00	26.00	83.00	0.35	●
7231719	GOPR4CH1600R032HBM	16.00	16.00	32.00	92.00	0.35	●
7231723	GOPR4CH2000S038HBM	20.00	20.00	38.00	104.00	0.35	●

ECONOMY & GENERAL-PURPOSE APPLICATIONS





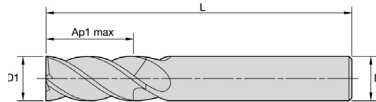
P	●
M	●
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N	●
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H	○

● Primary  
○ Secondary

# GOmill PRO

Chamfered • 4 Flutes • Necked • Weldon Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L	L3	BCH	
7230995	GOPR4CH0200N006HBM	2.00	6.00	1.88	4.00	57.00	8.00	0.15	●
7231184	GOPR4CH0300N008HBM	3.00	6.00	2.82	8.00	57.00	15.00	0.15	●
7231185	GOPR4CH0400N011HBM	4.00	6.00	3.76	11.00	57.00	16.00	0.15	●
7231186	GOPR4CH0500N013HBM	5.00	6.00	4.70	13.00	57.00	18.00	0.15	●
7231187	GOPR4CH0600N013HBM	6.00	6.00	5.64	13.00	57.00	21.00	0.15	●
7231188	GOPR4CH0800N019HBM	8.00	8.00	7.52	19.00	63.00	27.00	0.20	●
7231189	GOPR4CH1000N022HBM	10.00	10.00	9.40	22.00	72.00	32.00	0.20	●
7231190	GOPR4CH1200N026HBM	12.00	12.00	11.28	26.00	83.00	38.00	0.20	●
7231191	GOPR4CH1600N032HBM	16.00	16.00	15.04	32.00	92.00	44.00	0.35	●
7231192	GOPR4CH2000N038HBM	20.00	20.00	18.80	38.00	104.00	53.00	0.35	●
7231725	GOPR4CH2500N045HBM	25.00	25.00	23.50	45.00	121.00	65.00	0.35	●



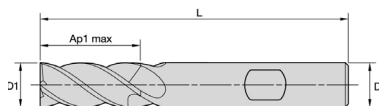
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H	○

● Primary  
○ Secondary

# GOmill PRO

Square End • 4 Flutes • Plain Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	
7230994	GOPR4SE0200R006HAM	2.00	6.00	6.00	57.00	●
7231062	GOPR4SE0300R008HAM	3.00	6.00	8.00	57.00	●
7231064	GOPR4SE0400R011HAM	4.00	6.00	11.00	57.00	●
7231066	GOPR4SE0500R013HAM	5.00	6.00	13.00	57.00	●
7231068	GOPR4SE0600R013HAM	6.00	6.00	13.00	57.00	●
7231070	GOPR4SE0800R019HAM	8.00	8.00	19.00	63.00	●
7231132	GOPR4SE1000R022HAM	10.00	10.00	22.00	72.00	●
7231133	GOPR4SE1000R025HAM	10.00	10.00	25.00	72.00	●
7231135	GOPR4SE1200R026HAM	12.00	12.00	26.00	83.00	●
7231137	GOPR4SE1200R030HAM	12.00	12.00	30.00	83.00	●
7231578	GOPR4SE1400S026HAM	14.00	14.00	26.00	83.00	●
7231139	GOPR4SE1600R032HAM	16.00	16.00	32.00	92.00	●
7231151	GOPR4SE2000S038HAM	20.00	20.00	38.00	104.00	●



P	●	●
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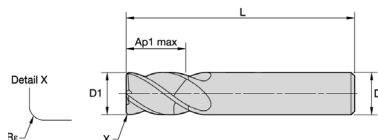
● Primary  
○ Secondary

## GOmill PRO

Square End • 4 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	
7231063	GOPR4SE0300R008HBM	3.00	6.00	8.00	57.00	●
7231065	GOPR4SE0400R011HBM	4.00	6.00	11.00	57.00	●
7231067	GOPR4SE0500R013HBM	5.00	6.00	13.00	57.00	●
7231069	GOPR4SE0600R013HBM	6.00	6.00	13.00	57.00	●
7231131	GOPR4SE0800R019HBM	8.00	8.00	19.00	63.00	●
7231134	GOPR4SE1000R022HBM	10.00	10.00	22.00	72.00	●
7231136	GOPR4SE1200R026HBM	12.00	12.00	26.00	83.00	●
7231140	GOPR4SE1600R032HBM	16.00	16.00	32.00	92.00	●
7231152	GOPR4SE2000S038HBM	20.00	20.00	38.00	104.00	●

KCU20



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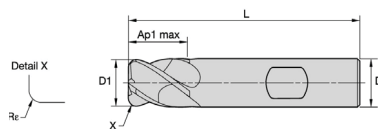
● Primary  
○ Secondary

## GOmill PRO

Radiused • 4 Flutes • Plain Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	Re	
7231579	GOPR4RA0600S007HAR040M	6.00	6.00	7.00	50.00	0.40	●
7231641	GOPR4RA0800S010HAR040M	8.00	8.00	10.00	50.00	0.40	●
7231643	GOPR4RA1000S012HAR040M	10.00	10.00	12.00	66.00	0.40	●
7231646	GOPR4RA1200S015HAR050M	12.00	12.00	15.00	73.00	0.50	●
7231662	GOPR4RA1600R035HAR050M	16.00	16.00	35.00	92.00	0.50	●
7231664	GOPR4RA1600S020HAR050M	16.00	16.00	20.00	82.00	0.50	●
7231668	GOPR4RA2000R042HAR050M	20.00	20.00	42.00	104.00	0.50	●
7231670	GOPR4RA2000S025HAR050M	20.00	20.00	25.00	92.00	0.50	●
7231674	GOPR4RA2500R052HAR050M	25.00	25.00	52.00	121.00	0.50	●

KCU20



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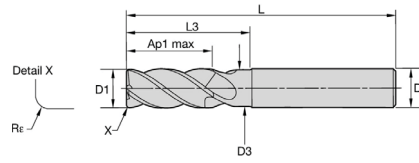
● Primary  
○ Secondary

## GOmill PRO

Radiused • 4 Flutes • Weldon Shank

Order Number	Catalog Number	D1	D	AP1 Max	L	Re	
7231580	GOPR4RA0600S007HBR040M	6.00	6.00	7.00	50.00	0.40	●
7231642	GOPR4RA0800S010HBR040M	8.00	8.00	10.00	50.00	0.40	●
7231644	GOPR4RA1000S012HBR040M	10.00	10.00	12.00	66.00	0.40	●
7231647	GOPR4RA1200S015HBR050M	12.00	12.00	15.00	73.00	0.50	●
7231665	GOPR4RA1600S020HBR050M	16.00	16.00	20.00	82.00	0.50	●
7231663	GOPR4RA1600R035HBR050M	16.00	16.00	35.00	92.00	0.50	●
7231671	GOPR4RA2000S025HBR050M	20.00	20.00	25.00	92.00	0.50	●
7231669	GOPR4RA2000R042HBR050M	20.00	20.00	42.00	104.00	0.50	●
7231675	GOPR4RA2500R052HBR050M	25.00	25.00	52.00	121.00	0.50	●

KCU20



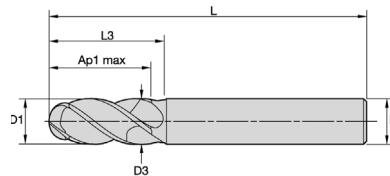
P	●
M	●
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N	●
S	○
H	○

● Primary  
○ Secondary

## GOmill PRO

Radiused • 4 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L	L3	Rε	
7231153	GOPR4RA0300N008HAR020M	3.00	6.00	2.82	8.00	57.00	15.00	0.20	●
7231155	GOPR4RA0400N011HAR050M	4.00	6.00	3.76	11.00	57.00	16.00	0.50	●
7231154	GOPR4RA0400N011HAR020M	4.00	6.00	3.76	11.00	57.00	16.00	0.20	●
7231157	GOPR4RA0500N013HAR050M	5.00	6.00	4.70	13.00	57.00	18.00	0.50	●
7231158	GOPR4RA0500N013HAR100M	5.00	6.00	4.70	13.00	57.00	18.00	1.00	●
7231156	GOPR4RA0500N013HAR020M	5.00	6.00	4.70	13.00	57.00	18.00	0.20	●
7231161	GOPR4RA0600N013HAR150M	6.00	6.00	5.64	13.00	57.00	21.00	1.50	●
7231159	GOPR4RA0600N013HAR050M	6.00	6.00	5.64	13.00	57.00	21.00	0.50	●
7231160	GOPR4RA0600N013HAR100M	6.00	6.00	5.64	13.00	57.00	21.00	1.00	●
7231165	GOPR4RA0800N019HAR150M	8.00	8.00	7.52	19.00	63.00	27.00	1.50	●
7231166	GOPR4RA0800N019HAR200M	8.00	8.00	7.52	19.00	63.00	27.00	2.00	●
7231163	GOPR4RA0800N019HAR050M	8.00	8.00	7.52	19.00	63.00	27.00	0.50	●
7231164	GOPR4RA0800N019HAR100M	8.00	8.00	7.52	19.00	63.00	27.00	1.00	●
7231170	GOPR4RA1000N022HAR200M	10.00	10.00	9.40	22.00	72.00	32.00	2.00	●
7231168	GOPR4RA1000N022HAR100M	10.00	10.00	9.40	22.00	72.00	32.00	1.00	●
7231169	GOPR4RA1000N022HAR150M	10.00	10.00	9.40	22.00	72.00	32.00	1.50	●
7231167	GOPR4RA1000N022HAR050M	10.00	10.00	9.40	22.00	72.00	32.00	0.50	●
7231645	GOPR4RA1000N022HAR250M	10.00	10.00	9.40	22.00	72.00	32.00	2.50	●
7231171	GOPR4RA1200N026HAR050M	12.00	12.00	11.28	26.00	83.00	38.00	0.50	●
7231172	GOPR4RA1200N026HAR100M	12.00	12.00	11.28	26.00	83.00	38.00	1.00	●
7231173	GOPR4RA1200N026HAR150M	12.00	12.00	11.28	26.00	83.00	38.00	1.50	●
7231174	GOPR4RA1200N026HAR200M	12.00	12.00	11.28	26.00	83.00	38.00	2.00	●
7231175	GOPR4RA1200N026HAR400M	12.00	12.00	11.28	26.00	83.00	38.00	4.00	●
7231649	GOPR4RA1200N026HAR300M	12.00	12.00	11.28	26.00	83.00	38.00	3.00	●
7231648	GOPR4RA1200N026HAR250M	12.00	12.00	11.28	26.00	83.00	38.00	2.50	●
7231650	GOPR4RA1400N026HAR050M	14.00	14.00	13.16	26.00	89.00	40.00	0.50	●
7231661	GOPR4RA1400N026HAR100M	14.00	14.00	13.16	26.00	89.00	40.00	1.00	●
7231178	GOPR4RA1600N032HAR300M	16.00	16.00	15.04	32.00	92.00	44.00	3.00	●
7231177	GOPR4RA1600N032HAR200M	16.00	16.00	15.04	32.00	92.00	44.00	2.00	●
7231176	GOPR4RA1600N032HAR100M	16.00	16.00	15.04	32.00	92.00	44.00	1.00	●
7231179	GOPR4RA1600N032HAR400M	16.00	16.00	15.04	32.00	92.00	44.00	4.00	●
7231667	GOPR4RA1600N032HAR250M	16.00	16.00	15.04	32.00	92.00	44.00	2.50	●
7231666	GOPR4RA1600N032HAR050M	16.00	16.00	15.04	32.00	92.00	44.00	0.50	●
7231180	GOPR4RA2000N038HAR100M	20.00	20.00	18.80	38.00	104.00	53.00	1.00	●
7231181	GOPR4RA2000N038HAR200M	20.00	20.00	18.80	38.00	104.00	53.00	2.00	●
7231182	GOPR4RA2000N038HAR300M	20.00	20.00	18.80	38.00	104.00	53.00	3.00	●
7231183	GOPR4RA2000N038HAR400M	20.00	20.00	18.80	38.00	104.00	53.00	4.00	●
7231673	GOPR4RA2000N038HAR250M	20.00	20.00	18.8	38.00	104.00	53.00	2.50	●
7231672	GOPR4RA2000N038HAR050M	20.00	20.00	18.80	38.00	104.00	53.00	0.50	●



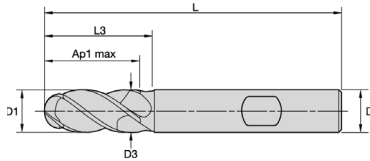
P	●
M	●
K	●
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S	○
H	○

● Primary  
○ Secondary

## GOmill PRO

Ball Nose • 4 Flutes • Necked • Plain Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L	L3	
7231264	GOPR4BN0500R013HAM	5.00	6.00	4.70	13.00	57.00	18.00	●
7231266	GOPR4BN0600R013HAM	6.00	6.00	5.64	13.00	57.00	21.00	●
7231268	GOPR4BN0800R019HAM	8.00	8.00	7.52	19.00	63.00	27.00	●
7231270	GOPR4BN1000R022HAM	10.00	10.00	9.40	22.00	72.00	32.00	●
7231272	GOPR4BN1200R026HAM	12.00	12.00	11.28	26.00	83.00	30.00	●
7231274	GOPR4BN1600R032HAM	16.00	16.00	15.04	32.00	92.00	38.00	●
7231276	GOPR4BN2000S038HAM	20.00	20.00	18.80	38.00	104.00	50.00	●



P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

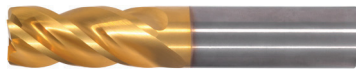
# GOmill PRO

Ball Nose • 4 Flutes • Necked • Weldon Shank

Order Number	Catalog Number	D1	D	D3	AP1 Max	L	L3	
7231265	GOPR4BN0500R013HBM	5.00	6.00	4.70	13.00	57.00	18.00	●
7231267	GOPR4BN0600R013HBM	6.00	6.00	5.64	13.00	57.00	21.00	●
7231269	GOPR4BN0800R019HBM	8.00	8.00	7.52	19.00	63.00	27.00	●
7231271	GOPR4BN1000R022HBM	10.00	10.00	9.40	22.00	72.00	32.00	●
7231273	GOPR4BN1200R026HBM	12.00	12.00	11.28	26.00	83.00	30.00	●
7231275	GOPR4BN1600R032HBM	16.00	16.00	15.04	32.00	92.00	38.00	●
7231277	GOPR4BN2000S038HBM	20.00	20.00	18.80	38.00	104.00	50.00	●



GOmill PRO - Ball Nose



GOmill PRO - Square End

# GOmill PRO

## Application Data

Material Group	Side Milling	Slotting	m/min	Recommended Feed per Tooth (Fz=mm/th) is for Side Milling (A). For Slotting (B) Reduce Fz by 20%															
				D1 - Diameter															
				ap	ae	ap	Min	Max	mm	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0
P	P0	Ap1Max 0.4xD	1xD	150	200	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.101	0.108	0.114	0.124
	P1	Ap1Max 0.4xD	1xD	150	200	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.101	0.108	0.114	0.124
	P2	Ap1Max 0.4xD	1xD	140	190	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.101	0.108	0.114	0.124
	P3	Ap1Max 0.4xD	1xD	120	160	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.087	0.095	0.101	0.114
	P4	Ap1Max 0.4xD	0.75xD	90	150	Fz	0.010	0.016	0.021	0.027	0.033	0.045	0.054	0.062	0.070	0.077	0.083	0.088	0.098
	P5	Ap1Max 0.4xD	1xD	60	100	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.070	0.076	0.081	0.091
P6	Ap1Max 0.4xD	0.75xD	50	75	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.057	0.061	0.065	0.071	
M	M1	Ap1Max 0.4xD	1xD	90	115	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.087	0.095	0.101	0.114
	M2	Ap1Max 0.4xD	1xD	60	80	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.070	0.076	0.081	0.091
	M3	Ap1Max 0.4xD	1xD	60	70	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.057	0.061	0.065	0.071
K	K1	Ap1Max 0.4xD	1xD	120	150	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.101	0.108	0.114	0.124
	K2	Ap1Max 0.4xD	1xD	110	140	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.087	0.095	0.101	0.114
	K3	Ap1Max 0.4xD	1xD	110	130	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.070	0.076	0.081	0.091
S	S1	Ap1Max 0.4xD	0.3xD	50	90	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.087	0.095	0.101	0.114
	S2	Ap1Max 0.4xD	0.3xD	25	50	Fz	0.006	0.009	0.013	0.016	0.019	0.026	0.032	0.037	0.042	0.046	0.050	0.054	0.061
	S3	Ap1Max 0.4xD	1xD	25	40	Fz	0.006	0.009	0.013	0.016	0.019	0.026	0.032	0.037	0.042	0.046	0.050	0.054	0.061
	S4	Ap1Max 0.4xD	1xD	50	60	Fz	0.007	0.011	0.016	0.021	0.026	0.037	0.045	0.052	0.058	0.064	0.069	0.074	0.084
H	H1	Ap1Max 0.4xD	0.75xD	80	140	Fz	0.010	0.016	0.021	0.027	0.033	0.045	0.054	0.062	0.070	0.077	0.083	0.088	0.098
	H2	Ap1Max 0.4xD	0.5xD	70	120	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.057	0.061	0.065	0.071

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 diameters greater than 12mm.  
 For better surface finish reduce feed per tooth.  
 Side milling applications - for longest reach (L3) tools, reduce Ae by 30%.  
 Slot milling applications - for longest reach (L3) tools, reduce Ae by 30%.  
 Sharp corner tools do not recommended for slotting application.



# GOmill PRO

## Adjustment Factor Table for Feed and Speed Calculation

	Ae/D	2%	4%	5%	8%	10%	12%	20%	30%	40%	50%	100%
Speed Factor	Kv	2.1 - 3.6	1.6 - 3	1.6 - 2.5	1.6	1.4	1.38	1.3	1.2	1.1	1	1
Feed Factor	KFz	3.58	2.56	2.3	1.84	1.67	1.54	1.25	1.09	1.02	1	0.9
phi [°]		16.26	23.07	25.84	32.86	36.87	40.54	53.13	66.42	78.46	90.00	180.00

NOTE: 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.  
 For an Ae/D ration of 5% or less there is 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 machinability of the material, from difficult to free cutting.

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

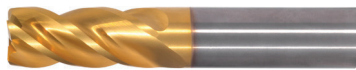
Vc new = Vc \* Kv  
 Fz new = Fz \* KFz

Calculation example:  
 Application: D1 = 14.0mm;  
 P5 material group;  
 Ae = 20% of D  
 Cutting data recommendation: Vc = 80 m/min;  
 Fz = 0.063 mm/th  
 Adjustment coefficients: ;kv = 1.30; KFz = 1.25

Final cutting data recommendation:  
 Vc new = 80 \* 1.30 = 104 m/min  
 Fz new = 0.06328 \* 1.25 = 0.0791 mm/th



GOmill PRO - Ball Nose



GOmill PRO - Square End

# GOmill PRO

## Long • Application Data

Material Group	Side Milling	ap	ae	Cutting Speed Vc		mm	Recommended Feed per Tooth (Fz=mm/th) is for Side Milling (A). No Slotting operations recommended.											
				m/min			D1 - Diameter											
				Min	Max		2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	18.0	20.0	25.0
P	P0	Ap1Max	0.2xD	150	200	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.108	0.114	0.124
	P1	Ap1Max	0.2xD	150	200	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.108	0.114	0.124
	P2	Ap1Max	0.2xD	140	190	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.108	0.114	0.124
	P3	Ap1Max	0.2xD	120	160	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.095	0.101	0.114
	P4	Ap1Max	0.2xD	90	150	Fz	0.010	0.016	0.021	0.027	0.033	0.045	0.054	0.062	0.070	0.083	0.088	0.098
	P5	Ap1Max	0.2xD	60	100	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.076	0.081	0.091
M	P6	Ap1Max	0.15xD	50	75	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.061	0.065	0.071
	M1	Ap1Max	0.2xD	90	115	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.095	0.101	0.114
	M2	Ap1Max	0.2xD	60	80	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.076	0.081	0.091
K	M3	Ap1Max	0.2xD	60	70	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.061	0.065	0.071
	K1	Ap1Max	0.2xD	120	150	Fz	0.014	0.021	0.028	0.036	0.044	0.060	0.072	0.083	0.092	0.108	0.114	0.124
	K2	Ap1Max	0.2xD	110	140	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.095	0.101	0.114
S	K3	Ap1Max	0.2xD	110	130	Fz	0.009	0.014	0.019	0.024	0.029	0.040	0.048	0.056	0.063	0.076	0.081	0.091
	S1	Ap1Max	0.1xD	50	90	Fz	0.011	0.017	0.023	0.030	0.036	0.050	0.061	0.070	0.079	0.095	0.101	0.114
	S2	Ap1Max	0.1xD	25	50	Fz	0.006	0.009	0.013	0.016	0.019	0.026	0.032	0.037	0.042	0.050	0.054	0.061
	S3	Ap1Max	0.1xD	25	40	Fz	0.006	0.009	0.013	0.016	0.019	0.026	0.032	0.037	0.042	0.050	0.054	0.061
H	S4	Ap1Max	0.15xD	50	60	Fz	0.007	0.011	0.016	0.021	0.026	0.037	0.045	0.052	0.058	0.069	0.074	0.084
	H1	Ap1Max	0.15xD	80	140	Fz	0.010	0.016	0.021	0.027	0.033	0.045	0.054	0.062	0.070	0.083	0.088	0.098
	H2	Ap1Max	0.15xD	70	120	Fz	0.008	0.012	0.016	0.020	0.025	0.034	0.040	0.047	0.052	0.061	0.065	0.071

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.  
 For better surface finish reduce feed per tooth.

# HARVI • KOR • PCD • Catalog Numbering System

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

H1TE4SE1200S016HAM									
H1TE	4	SE	1200	S	016	HA			M
Series	Number of Flutes	Front End Style	Cutting Diameter D1	Flute Section Style	Length of Cut Ap1 Max	Shank Style	Radius	Specific Features	Standard
H1TE = HARVI I TE HA2L = HARVI II Long HA3R = HARVI III HA3A = HARVI III Aero RSMF = RSM II	1 = 1-Flute 2 = 2-Flute 3 = 3-Flute 4 = 4-Flute 5 = 5-Flute 6 = 6-Flute 7 = 7-Flute 8 = 8-Flute 9 = 9-Flute M = Multi-flute	SE = Sharp Edge CH = Chamfer RA = Radius BN = Ball Nose TB = Taper Ball Nose TO = Torroid	Metric = D1 in mm Inch = D1 in decimal inch	N = Neck E = Extended Neck S = Short Without Neck R = Regular Without Neck L = Long Without Neck X = Extra Long Without Neck	Metric = Ap1 Max in mm Inch = Ap1 Max in decimal inch	HA = Plain HB = Weldon® SL = SAFE-LOCK DL = DUO-LOCK		C = Chip Splitter I = Internal Coolant O = Coolant Grooves in Shank P = Polished Flutes	M = Metric Blank = Inch
KOR = KOR									
ALCB = Basic PCD end mill with carbide body									
ALCC = Complex PCD end mill carbide body									
ALCR = Roughing PCD end mill with carbide body									
ALSB = Basic PCD end mill with steel body									
ALSR = Basic PCD end mill with steel body									

ECONOMY & GENERAL-PURPOSE APPLICATIONS



# Catalog Numbering System

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

UDDE1000A5ARA								
UD	D	E	1000	A	5	A	R	A
Series	Front End Style	Helix Angle	Cutting Diameter D1	Shank Style	Number of Flutes	Length of Cut AP1 Max	Specific Features	Radius
AA = Aluminum	B = Ballnose	A = 0-10	Metric =	Metric	1	A = Regular	B = HARVI III Aero	Metric
AB = MaxiMet	RH	B = 11-20	D1 in mm	A = Plain	2	B = Long	C = Coolant	A = 0,20
CB = CFRP Burr	D = Square	C = 21-30	Inch =	B = Weldon®	3	C = Extra Long	H = Chamfer	B = 0,25
CC = CFRP	End RH	D = 31-35	D1 in decimal inch	C = Whistle Notch	4	D = XX Long	K = Extended	C = 0,30
CD = CFRP		E = 36-40		D = Weldon & Whistle	5		Reach + Neck	D = 0,40
CE = CFRP		F = 41-45		Notch	6		+ Radius	E = 0,50
CF = CFRP		G = 46-60		E = Plain &	7		L = Extended	F = 0,75
CG = CFRP		V = Variable Helix		Safe-Lock	8		Reach + Neck	G = 1,00
CH = CFRP				X = DUO-LOCK	9		+ Chamfer	H = 1,25
CI = CFRP							M = Extended	J = 1,50
CM = General				Inch	A = 10		Reach +	K = 2,00
CP = Application				J = Plain	B = 11		Neck + Sharp	L = 2,50
CQ = KenFeed				K = Weldon	C = 12		Edge	M = 3,00
CR = KenFeed				N = Safe-Lock	D = 13		N = Necked	N = 4,00
CS = KenFeed				Y = DUO-LOCK	E = 14		P = Tapered	P = 6,00
CT = KenFeed					F = 15		Q = Necked	Q = 5,00
CU = KenFeed					G = 16		+Radius	S = Sharp Edge
CV = KenFeed					H = 17		R = Radius	X = Custom
CA = Rougher					I = 18		S = Square	Inch
CB = Rougher					J = 19		(Sharp Edge)	A = .015
CC = Rougher					M = multi		T = Toroid	B = .030
CD = Rougher							U = Necked +	C = .060
CE = Rougher							Sharp Edge	D = .090
CF = Rougher							V = Necked +	E = .120
CG = Rougher							Chamfer	F = .250
CH = Rougher							Y = Necked +	H = .190
CI = Rougher							Radius +	J = .375
CM = Rougher							Coolant	K = .500
CU = Rougher								
CV = Rougher								
CA = G0mill								
CB = Ceramic End								
CC = Ceramic End								
CD = Ceramic End								
CE = Ceramic End								
CF = Ceramic End								
CG = Ceramic End								
CH = Ceramic End								
CI = Ceramic End								
CM = Ceramic End								
CU = Ceramic End								
CV = Ceramic End								
CA = Nickel-Based Alloys								
CB = Nickel-Based Alloys								
CC = Nickel-Based Alloys								
CD = Nickel-Based Alloys								
CE = Nickel-Based Alloys								
CF = Nickel-Based Alloys								
CG = Nickel-Based Alloys								
CH = Nickel-Based Alloys								
CI = Nickel-Based Alloys								
CM = Nickel-Based Alloys								
CU = Nickel-Based Alloys								
CV = Nickel-Based Alloys								

ECONOMY & GENERAL-PURPOSE APPLICATIONS



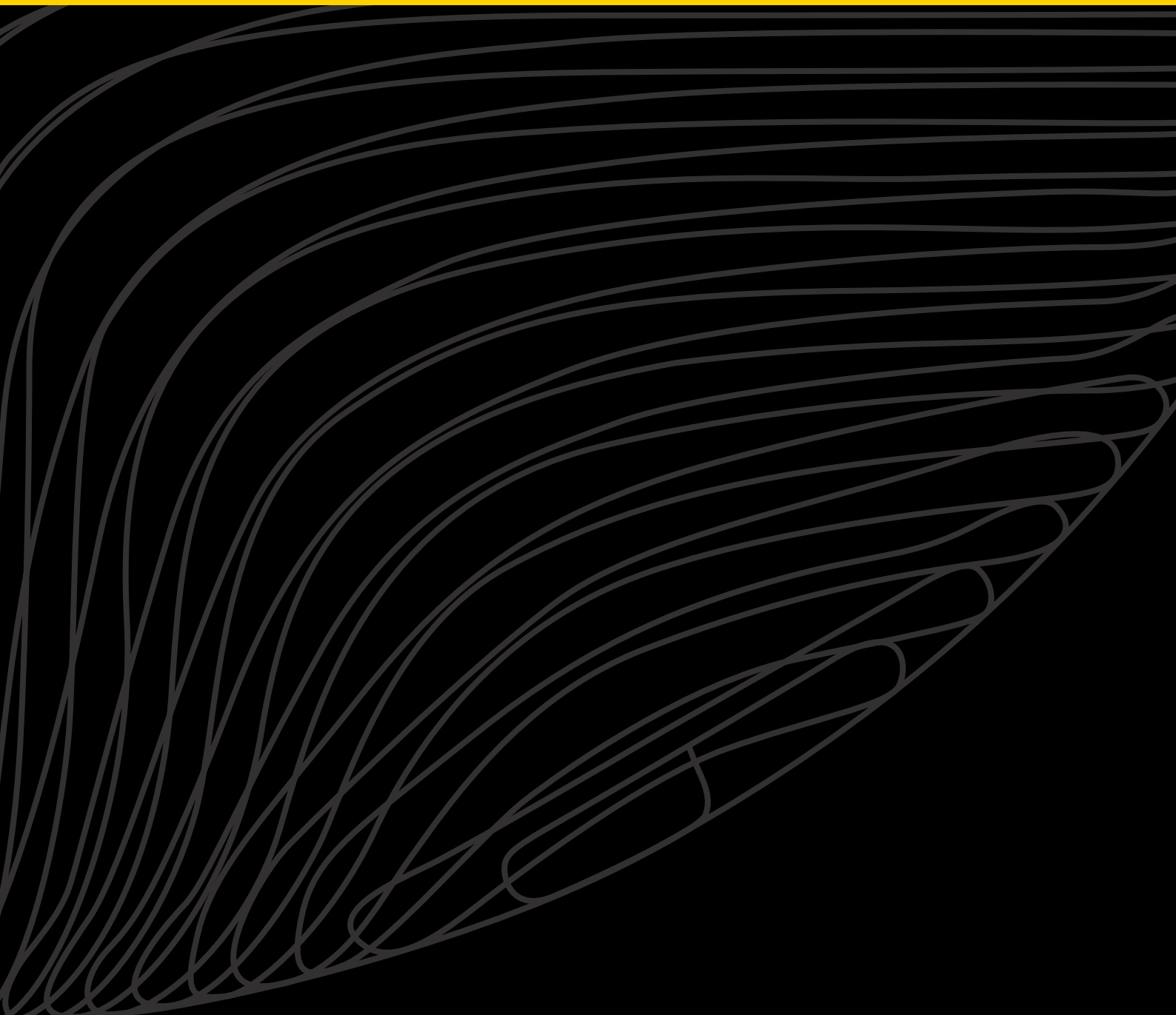
# Catalog Numbering System

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

F4AA0200AWS30								
F	4	AA	0200	A	WS	30		
Tool Type	Number of Flutes	Series	Cutting Diameter D1	Shank Style	Tool Length	Helix Angle	Specific Features	Radii
F = Solid Carbide End Mill MetricBased Alloys)	1 2 3 4 5 6 7 8 9 10 11 15 19	AA = Aluminum Rough/ Finish AB = MaxiMet for Aluminum AL = Ball Nose for Hardened Material AS = DIN Standard End Mills AT = Toroidal End Mill for Hardened Material AU = Key Way End Mill AV = Multiflute End Mills for Hardened Material AW = HARVI I Ball Nose and Taper Ball Nose BA = Rougher Cord Style for Aluminum BH = 3FL Rougher Cord Style DIN 6527 BJ = 4-6FL Rougher Cord Style DIN 6527 BS = Rougher Chipbreaker Profile	Metric = D1 in mm Inch = D1 in decimal inch	A = Plain B = Weldon® E = SAFE-LOCK	DK = DIN6527 Short DL = DIN6527 Long WS = Factory Standard Short WM = Factory Standard Medium WL = Factory Standard Long WX = Factory Standard Xtra Long	Blank = Not defined	Blank = Non coolant C = Internal Coolant	_100 = Length of Cut Ap1 Max in mm/10 E100 = Neck Length in mm/10 L100 = Length of Cut Ap1 Max in mm/10 R100 = Radius in mm/10

ECONOMY & GENERAL-PURPOSE APPLICATIONS




























# HIGH PERFORMANCE MODULAR END MILLING































# TOOL SELECTOR

HIGH-PERFORMANCE ROUGHING & FINISHING			
HARVI I TE			
			
Series	H1TE4CH..R	H1TE4RA..R	H1TE4BN..R
Tool type			
Rougher	●	●	●
Finisher	○	○	○
Chamfering			
Main operations			
Workpiece material			
Primary	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b>	<b>P</b> <b>M</b> <b>K</b>
Secondary	<b>S</b> <b>H</b>	<b>H</b>	<b>S</b> <b>H</b>
Corner style			
Corner radius [Rε]	—	0,5–3,0mm	0,5–3,0mm
Corner chamfer width [BCH]	0,15–0,48mm	—	—
Cutting diameter [D1]	10–32mm	10–20mm	10–25mm
Length of cut	1,5xD	1,5xD	1,5xD
Maximum cutting depth [Ap1 max]	15–37,5mm	15–30mm	15–37,5mm
Flute helix angle	36°/39°	36°/39°	36°/39°
Number of flutes [ZU]	4	4	4
Center cutting	✓	✓	✓
Additional operations	 	 	 
	 	 	 

● Primary  
○ Secondary

HIGH PERFORMANCE MODULAR END MILLING
























# TOOL SELECTOR

	HIGH-PERFORMANCE ROUGHING & FINISHING		HIGH-PERFORMANCE ROUGHING & FINISHING		ROUGHER	
	HARVI II		HARVI III		KenCut RR	
						
Series	UCDV	UDDV	UJDV	UJBV	RQDB	RKDF
Tool type						
Rougher	○	○			●	●
Finisher	●	●	●	●		
Chamfering						
Main operations						
Workpiece material						
Primary	P M	S	S	P M	P M	S
Secondary	K S H	P H	P M H	K S H	K S H	P M K H
Corner style						
Corner radius [Re]	—	0,5–5mm	0,5–4mm	—	—	0,5–0,75mm
Corner chamfer width [BCH]	0,5mm	—	—	—	0,5mm	—
Cutting diameter [D1]	10–32mm	10–32mm	10–32mm	10–25mm	10–25mm	10–25mm
Length of cut	1,5xD	1,5xD	1,5xD	1,5xD	1,5xD	1,5xD
Maximum cutting depth [Ap1 max]	15–48mm	15–48mm	15–48mm	15–37,5mm	15–37,5mm	15–37,5mm
Flute helix angle	37°/39°	37°/39°	37°/39°	37°/39°	20°	45°
Number of flutes [ZU]	5	5	6	6	4 & 5	4 & 6
Center cutting	—	—	✓	✓	—	✓
Additional operations	 	 			 	 

● Primary  
○ Secondary

HIGH PERFORMANCE MODULAR END MILLING















# TOOL SELECTOR

	FINISHER		ALUMINUM MACHINING		
	KenCut FF	RSM II	MaxiMet		
					
Series	F MDF	FS DE	AB DF	AB DE	AB BE
Tool type					
Rougher			●	●	●
Finisher	●	●	○	●	●
Chamfering					
Main operations					
Workpiece material					
Primary	<b>P</b> <b>M</b>	<b>S</b>	<b>N</b>	<b>N</b>	<b>N</b>
Secondary	<b>K</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>H</b>			
Corner style					
Corner radius [R <sub>c</sub> ]	0,5–0,75mm	0,5–4mm	—	0,5–4mm	—
Corner chamfer width [BCH]	—	—	—	—	—
Cutting diameter [D1]	10–25mm	10–25mm	10–20mm	10–25mm	10–25mm
Length of cut	1,5xD	1,5xD	1,5xD	1,5xD	1,5xD
Maximum cutting depth [A <sub>p1</sub> max]	15–37,5mm	15–37,5mm	15–30mm	15–37,5mm	15–37,5mm
Flute helix angle	45°	36°	45°	38°	38°
Number of flutes [ZU]	6	9, 11, 15, & 19	2	3	3
Center cutting	✓	—	✓	✓	✓
Additional operations			 	 	 
					

● Primary  
○ Secondary

HIGH PERFORMANCE MODULAR END MILLING

# TOOL SELECTOR

	HIGH-FEED		DRIVEN TOOLING		CORNER MACHINING	
	KenFeed		KenCut RR	KenCut FF	KenCut CM	
						
Series	KMDA	KSDB	RFDD	FGDF	XADA	XRDA
Tool type						
Rougher	●	●	●	○		
Finisher	●	●		●		
Chamfering					●	●
Main operations						
Workpiece material						
Primary	H	S	P M	P M	P M	P M
Secondary	P	P M	K H	K S H	K N S H	K N S H
Corner style					—	—
Corner radius [R <sub>c</sub> ]	0,36–1,25mm	0,36–1,25mm	0,4mm	0,33–0,4mm	—	—
Corner chamfer width [BCH]	—	—	—	—	—	—
Cutting diameter [D <sub>1</sub> ]	10–20mm	10–20mm	10–20mm	10–20mm	10–16mm	10–16mm
Length of cut	—	—	0,75xD	0,75xD	2–4mm	1,5–4mm
Maximum cutting depth [A <sub>p1</sub> max]	0,33–0,67mm	0,33–0,67mm	7,5–15mm	7,5–15mm	2–4mm	1,5–4mm
Flute helix angle	20°	20°	35°	42°/45°/48°	0°	0°
Number of flutes [ZU]	6	6	3	3	4, 5, & 6	4, 5, & 6
Center cutting	—	—	✓	✓	—	—
Additional operations			 	 		

- Primary
- Secondary

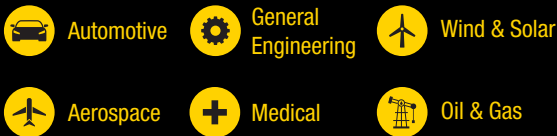
# DUO-LOCK

## Modular End Milling

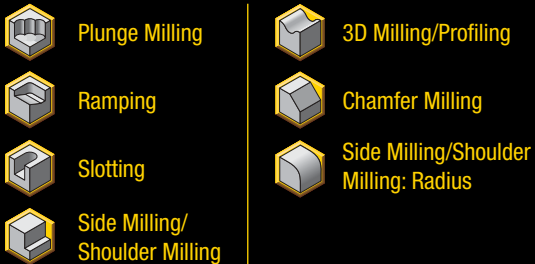
### Materials



### Industries



### Applications



DUO-LOCK is a revolutionary coupling for modular end milling applications. This replaceable head design combines a high accuracy in runout and length repeatability with maximum stability, making it a precise and virtually unbreakable interface.

**The ONLY modular system with the performance of a solid carbide end mill.**

To adapt DUO-LOCK perfectly to your spindle, a vast array of adapters and extensions is available.

- Standard-length extensions with SAFE-LOCK, cylindrical and conical
- Cut-to-size extensions, cylindrical and conical
- Integral adapters with HSK, PSC, DV and BT back ends
- Steel sealed ER collets offer industry standard grip and runout while being compatible with standard adapters

Intermediate diameters are available upon request as custom solutions.

Reconditioning will maximize tool life and your investment.

Double cone eliminates expensive presetting processes by providing an axial 10µm repeatability. Length repeatability from insert tip-to-tip within 50µm.

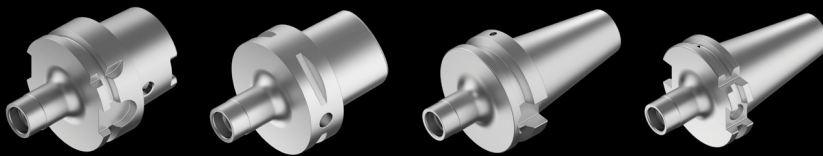
Third contact surface delivers high stiffness and highest accuracy below 5µm runout.

Vast array of roughing, finishing, profiling and chamfering tools, and blanks available, covering all end milling applications.

Intelligent thread ensures stress level to remain below critical values, allowing >25% higher transmittable torque.

With a DUO-LOCK wrench, the tool change becomes easy and can be done in a few seconds.

## Adapters



**HSK**

**PSC**

**BT**

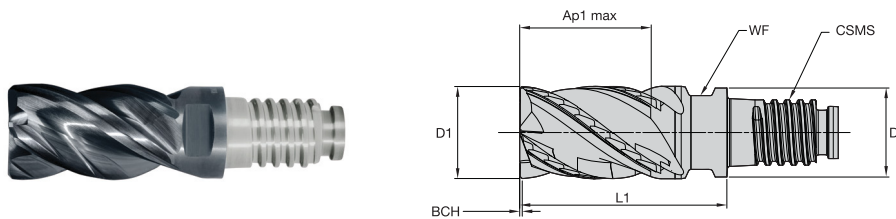
**DV**

## Extensions



**SAFE-LOCK**

**Cut-to-length**



## DUO-LOCK • HARVI I TE

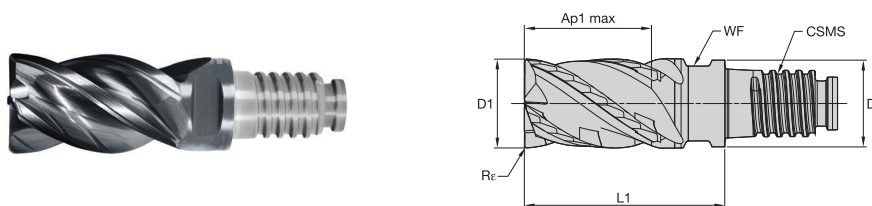
### H1TE • Chamfered • 4 Flutes

● Primary  
○ Secondary



KCPM15

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Bch	
6953204	H1TE4CH1000R015DLM	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6953205	H1TE4CH1200R018DLM	12,00	11,50	18,00	27,00	DL12	9,50	0,50	●
6953206	H1TE4CH1600R024DLM	16,00	15,50	24,00	36,00	DL16	13,00	0,50	●
6953207	H1TE4CH2000R030DLM	20,00	19,30	30,00	45,00	DL20	16,00	0,50	●
6953208	H1TE4CH2500R038DLM	25,00	24,00	37,50	56,50	DL25	21,00	0,50	●
6953209	H1TE4CH3200R048DLM	32,00	31,00	48,00	72,00	DL32	28,00	0,50	●



## DUO-LOCK • HARVI I TE

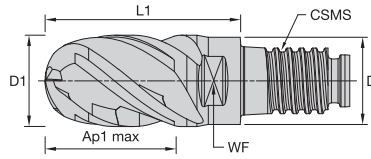
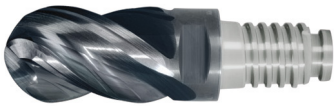
### H1TE • Radiused • 4 Flutes

● Primary  
○ Secondary



KGSM15

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Rε	
6953210	H1TE4RA1000R015DLR050M	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6953261	H1TE4RA1200R018DLR050M	12,00	11,50	18,00	27,00	DL12	9,50	0,50	●
6953262	H1TE4RA1200R018DLR100M	12,00	11,50	18,00	27,00	DL12	9,50	1,00	●
7136482	H1TE4RA1200R018DLR150M	12,00	11,50	18,00	27,00	DL12	9,50	1,50	●
6953263	H1TE4RA1600R024DLR100M	16,00	15,50	24,00	36,00	DL16	13,00	1,00	●
7136484	H1TE4RA1600R024DLR150M	16,00	15,50	24,00	36,00	DL16	13,00	1,50	●
7136483	H1TE4RA1600R024DLR250M	16,00	15,50	24,00	36,00	DL16	13,00	2,50	●
6953264	H1TE4RA1600R024DLR300M	16,00	15,50	24,00	36,00	DL16	13,00	3,00	●
7136488	H1TE4RA2000R030DLR100M	20,00	19,30	30,00	45,00	DL20	16,00	1,00	●
7136485	H1TE4RA2000R030DLR200M	20,00	19,30	30,00	45,00	DL20	16,00	2,00	●
7136487	H1TE4RA2000R030DLR250M	20,00	19,30	30,00	45,00	DL20	16,00	2,50	●
6953265	H1TE4RA2000R030DLR300M	20,00	19,30	30,00	45,00	DL20	16,00	3,00	●
7136489	H1TE4RA2500R038DLR100M	25,00	24,00	37,50	56,50	DL25	21,00	1,00	●
7136490	H1TE4RA2500R038DLR250M	25,00	24,00	37,50	56,50	DL25	21,00	2,50	●
7136491	H1TE4RA2500R038DLR400M	25,00	24,00	37,50	56,50	DL25	21,00	4,00	●
7136492	H1TE4RA3200R048DLR100M	32,00	31,00	48,00	72,00	DL32	28,00	1,00	●
7136493	H1TE4RA3200R048DLR250M	32,00	31,00	48,00	72,00	DL32	28,00	2,50	●



P	●
M	●
K	●
N	●
S	○
H	○

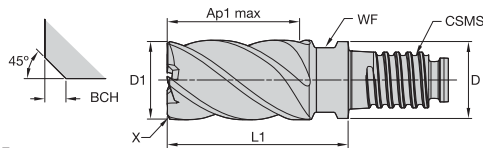
● Primary  
○ Secondary

## DUO-LOCK • HARVI I TE

H1TE • Ball Nose • 4 Flutes

Order Number	Catalog Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	
7136718	H1TE4BN1000R015DLM	10,00	9,60	15,00	22,50	DL10	8,00	●
7136719	H1TE4BN1200R018DLM	12,00	11,50	18,00	27,00	DL12	9,50	●
7136720	H1TE4BN1600R024DLM	16,00	15,50	24,00	36,00	DL16	13,00	●
7136731	H1TE4BN2000R030DLM	20,00	19,30	30,00	45,00	DL20	16,00	●
7136732	H1TE4BN2500R038DLM	25,00	24,00	37,50	56,50	DL25	21,00	●

KGPM15



P	●
M	●
K	●
N	●
S	○
H	○

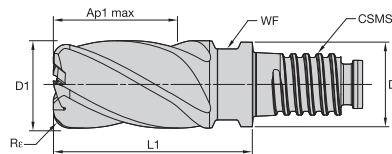
● Primary  
○ Secondary

## DUO-LOCK • HARVI II

UC DV • Chamfered • 5 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Bch	
6072481	UCDV1000X5CV	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6072482	UCDV1200X5CV	12,00	11,50	18,00	27,00	DL12	9,50	0,50	●
6072483	UCDV1600X5CV	16,00	15,50	24,00	36,00	DL16	13,00	0,50	●
6072484	UCDV2000X5CV	20,00	19,30	30,00	45,00	DL20	16,00	0,50	●
6072485	UCDV2500X5CV	25,00	24,00	37,50	56,50	DL25	21,00	0,50	●
6072486	UCDV3200X5CV	32,00	31,00	48,00	71,70	DL32	28,00	0,50	●

KCPM15



P	●
M	●
K	●
N	●
S	○
H	○

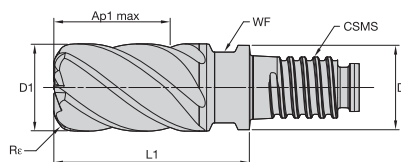
● Primary  
○ Secondary

## DUO-LOCK • HARVI II

UDDV • Radiused • 5 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Re	
6072487	UDDV1000X5CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6072488	UDDV1000X5CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00	●
6072489	UDDV1000X5CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50	●
6072491	UDDV1200X5CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50	●
6072492	UDDV1200X5CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00	●
6072494	UDDV1200X5CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50	●
6072495	UDDV1600X5CQE	16,00	15,50	24,00	36,00	DL16	13,00	1,00	●
6072496	UDDV1600X5CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50	●
6072497	UDDV1600X5CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00	●
6072498	UDDV1600X5CQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50	●
6072499	UDDV1600X5CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00	●
6408050	UDDV1600X5CQN	16,00	15,50	24,00	36,00	DL16	13,00	4,00	●
6408071	UDDV1600X5CQP	16,00	15,50	24,00	36,00	DL16	13,00	6,00	●
6072500	UDDV2000X5CQE	20,00	19,30	30,00	45,00	DL20	16,00	1,00	●
6072501	UDDV2000X5CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00	●
6072502	UDDV2000X5CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50	●
6072503	UDDV2000X5CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00	●
6072504	UDDV2000X5CQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00	●
6408072	UDDV2000X5CQJ	20,00	19,30	30,00	45,00	DL20	16,00	5,00	●
6408073	UDDV2500X5CQE	25,00	24,00	37,50	56,50	DL25	21,00	1,00	●
6072505	UDDV2500X5CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50	●
6072506	UDDV2500X5CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00	●
6408074	UDDV2500X5CQJ	25,00	24,00	37,50	56,50	DL25	21,00	5,00	●
6408075	UDDV3200X5CQE	32,00	31,00	48,00	71,70	DL32	28,00	1,00	●
6072507	UDDV3200X5CQL	32,00	31,00	48,00	71,70	DL32	28,00	2,50	●
6072508	UDDV3200X5CQN	32,00	31,00	48,00	71,70	DL32	28,00	4,00	●
6408076	UDDV3200X5CQJ	32,00	31,00	48,00	71,70	DL32	28,00	5,00	●

KCP43M



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

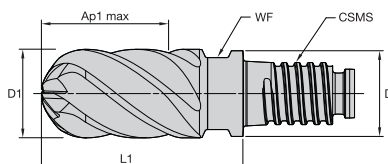
● Primary  
○ Secondary

## DUO-LOCK • HARVI III

UJDV • Radiused • 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Rε	
6072442	UJDV1000X6CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6072443	UJDV1000X6CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00	●
6072444	UJDV1000X6CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50	●
6072445	UJDV1200X6CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50	●
6072447	UJDV1200X6CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50	●
6072448	UJDV1200X6CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50	●
6072449	UJDV1600X6CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00	●
6072450	UJDV1600X6CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50	●
6072561	UJDV1600X6CQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00	●
6072562	UJDV1600X6CQL	16,00	15,50	24,00	36,00	DL16	13,00	2,50	●
6072563	UJDV1600X6CQM	16,00	15,50	24,00	36,00	DL16	13,00	3,00	●
6408077	UJDV1600X6CQN	16,00	15,50	24,00	36,00	DL16	13,00	4,00	●
6408078	UJDV1600X6CQP	16,00	15,50	24,00	36,00	DL16	13,00	6,00	●
6072564	UJDV2000X6CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00	●
6072565	UJDV2000X6CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00	●
6072567	UJDV2000X6CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00	●
6072568	UJDV2000X6CQN	20,00	19,30	30,00	45,00	DL20	16,00	4,00	●
6408079	UJDV2000X6CQQ	20,00	19,30	30,00	45,00	DL20	16,00	5,00	●
6408080	UJDV2500X6CQG	25,00	24,00	37,50	56,50	DL25	21,00	1,00	●
6072569	UJDV2500X6CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50	●
6072570	UJDV2500X6CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00	●
6408081	UJDV2500X6CQQ	25,00	24,00	37,50	56,50	DL25	21,00	5,00	●
6408083	UJDV3200X6CQG	32,00	31,00	48,00	71,70	DL32	28,00	1,00	●
6072572	UJDV3200X6CQN	32,00	31,00	48,00	71,70	DL32	28,00	4,00	●

KCSM15



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

● Primary  
○ Secondary

## DUO-LOCK • HARVI III

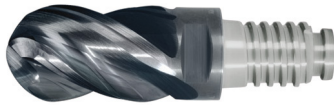
UJBV • Ball Nose • 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	
6072386	UJBV1000X6CN	10,00	9,60	15,00	22,50	DL10	8,00	●
6072387	UJBV1200X6CN	12,00	11,50	18,00	27,00	DL12	9,50	●
6072388	UJBV1600X6CN	16,00	15,50	24,00	36,00	DL16	13,00	●
6072389	UJBV2000X6CN	20,00	19,30	30,00	45,00	DL20	16,00	●
6072390	UJBV2500X6CN	25,00	24,00	37,50	56,50	DL25	21,00	●

KCSM15



HARVI I TE



HARVI I TE Ball Nose

## DUO-LOCK • HARVI I TE

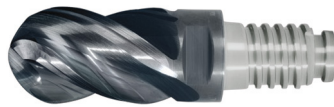
### H1TE • Side Milling/Slotting • Application Data

Material Group					Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.							
	A		B		adapter reach						D1 — Diameter							
					KCPM15		KCPM15		KCPM15									
	ap	ae	ap		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	18,0	20,0	25,0	32,0
P	0	1,5 x D	0,5 x D	1 x D	150	200	135	180	135	180	fz	0,072	0,083	0,101	0,108	0,114	0,124	0,125
	1	1,5 x D	0,5 x D	1 x D	150	200	135	180	135	180	fz	0,072	0,083	0,101	0,108	0,114	0,124	0,125
	2	1,5 x D	0,5 x D	1 x D	140	190	126	171	126	171	fz	0,072	0,083	0,101	0,108	0,114	0,124	0,125
	3	1,5 x D	0,5 x D	1 x D	120	160	108	144	108	144	fz	0,061	0,070	0,087	0,095	0,101	0,114	0,123
	4	1,5 x D	0,5 x D	0,75 x D	90	150	81	135	81	135	fz	0,054	0,062	0,077	0,083	0,088	0,098	0,102
	5	1,5 x D	0,5 x D	1 x D	60	100	51	85	48	80	fz	0,048	0,056	0,070	0,076	0,081	0,091	0,099
M	1	1,5 x D	0,5 x D	1 x D	50	75	43	64	40	60	fz	0,040	0,047	0,057	0,061	0,065	0,071	0,073
	2	1,5 x D	0,5 x D	1 x D	90	115	72	92	63	81	fz	0,061	0,070	0,087	0,095	0,101	0,114	0,123
	3	1,5 x D	0,5 x D	1 x D	60	80	48	64	42	56	fz	0,048	0,056	0,070	0,076	0,081	0,091	0,099
K	1	1,5 x D	0,5 x D	1 x D	60	70	48	56	42	49	fz	0,040	0,047	0,057	0,061	0,065	0,071	0,073
	2	1,5 x D	0,5 x D	1 x D	120	150	108	135	108	135	fz	0,072	0,083	0,101	0,108	0,114	0,124	0,125
	3	1,5 x D	0,5 x D	1 x D	110	140	99	126	99	126	fz	0,061	0,070	0,087	0,095	0,101	0,114	0,123
S	1	1,5 x D	0,3 x D	0,3 x D	110	130	99	117	99	117	fz	0,048	0,056	0,070	0,076	0,081	0,091	0,099
	2	1,5 x D	0,3 x D	0,3 x D	50	90	40	72	30	54	fz	0,061	0,070	0,087	0,095	0,101	0,114	0,123
	3	1,5 x D	0,3 x D	0,3 x D	50	80	40	64	30	48	fz	0,048	0,056	0,070	0,076	0,081	0,091	0,099
	4	1,5 x D	0,3 x D	0,3 x D	50	80	40	64	30	48	fz	0,032	0,037	0,046	0,050	0,054	0,061	0,067
H	1	1,5 x D	0,5 x D	1 x D	50	60	40	48	30	36	fz	0,045	0,052	0,064	0,069	0,074	0,084	0,090
	2	1,5 x D	0,2 x D	0,5 x D	80	140	64	112	48	84	fz	0,054	0,062	0,077	0,083	0,088	0,098	0,102
		1,5 x D	0,5 x D	0,5 x D	70	120	56	96	42	72	fz	0,040	0,047	0,057	0,061	0,065	0,071	0,073

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters greater than 12mm. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



HARVI I TE



HARVI I TE Ball Nose

## DUO-LOCK • HARVI I TE

H1TE • Ramping 0°-15° • Application Data

Material Group	Max Depth			Recommended feed per tooth (fz = mm/z) for Helical Interpolation and Ramping — z <sub>eff</sub> = 2							
		KCPM15–KCSM15		Diameter – D1 [Ømin–Ømax] for helical interpolation							
		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0	32,0	
		min	max								
P	0	1 x D	125	175	fz	0,055	0,065	0,075	0,087	0,095	0,105
	1	1 x D	125	175	fz	0,055	0,065	0,075	0,087	0,095	0,105
	2	1 x D	125	175	fz	0,055	0,065	0,075	0,087	0,095	0,105
	3	1 x D	110	150	fz	0,047	0,054	0,067	0,078	0,088	0,095
	4	1 x D	75	140	fz	0,041	0,048	0,059	0,068	0,075	0,080
	5	0,75 x D	50	90	fz	0,037	0,043	0,054	0,062	0,070	0,075
M	6	0,75 x D	40	70	fz	0,031	0,036	0,044	0,050	0,055	0,060
	1	0,75 x D	75	105	fz	0,047	0,054	0,067	0,078	0,088	0,095
	2	0,75 x D	45	70	fz	0,037	0,043	0,054	0,062	0,070	0,075
K	3	0,5 x D	40	65	fz	0,031	0,036	0,044	0,050	0,055	0,060
	1	1 x D	110	140	fz	0,055	0,065	0,075	0,087	0,095	0,105
	2	1 x D	100	130	fz	0,047	0,054	0,067	0,078	0,088	0,095
S	3	0,75 x D	90	120	fz	0,037	0,043	0,054	0,062	0,070	0,075
	1	0,5 x D	40	80	fz	0,047	0,054	0,067	0,078	0,088	0,095
	2	0,5 x D	40	70	fz	0,037	0,043	0,054	0,062	0,070	0,075
	3	0,3 x D	20	35	fz	0,024	0,029	0,036	0,041	0,047	0,050
H	4	0,75 x D	40	50	fz	0,034	0,040	0,050	0,057	0,064	0,070
	1	0,75 x D	70	120	fz	0,041	0,048	0,059	0,068	0,075	0,080
	2	0,75 x D	60	110	fz	0,029	0,034	0,041	0,048	0,053	0,056

NOTE: Ø min and Ø max to be calculated with formula for helical ramping above.



## DUO-LOCK • HARVI I TE

### H1TE • Plunging/Drilling • Application Data

Material Group				KCPM15–KCSM15		Recommended feed per revolution (fn =mm/rev) for plunging and drilling							
	Max Depth	Applicable	Coolant	Cutting Speed — Vc m/min		D1 — Diameter							
				min	max	mm	10,0	12,0	16,0	20,0	25,0	32,0	
P	0	1 x D	●	Preferred	110	150	fn	0,056	0,067	0,084	0,112	0,126	0,150
	1	1 x D	●	Required	110	150	fn	0,056	0,067	0,084	0,112	0,126	0,150
	2	1 x D	●	Required	110	150	fn	0,056	0,067	0,084	0,112	0,126	0,150
	3	1 x D	●	Required	100	120	fn	0,042	0,049	0,075	0,088	0,105	0,135
	4	1 x D	●	Required	70	100	fn	0,042	0,049	0,075	0,088	0,105	0,135
	5	0,75 x D	○	Required	45	65	fn	0,028	0,035	0,046	0,060	0,070	0,076
M	6	0,75 x D	○	Required	40	60	fn	0,028	0,035	0,046	0,060	0,070	0,076
	1	0,75 x D	●	Required	60	80	fn	0,042	0,049	0,075	0,088	0,105	0,135
	2	0,75 x D	○	Required	40	60	fn	0,028	0,035	0,046	0,060	0,070	0,076
K	3	0,5xD	○	Required	35	50	fn	0,028	0,035	0,046	0,060	0,070	0,076
	1	1 x D	●	Preferred	100	120	fn	0,056	0,067	0,084	0,112	0,126	0,150
	2	1 x D	●	Required	90	110	fn	0,042	0,049	0,075	0,088	0,105	0,135
S	3	0,75 x D	○	Required	75	100	fn	0,042	0,049	0,075	0,088	0,105	0,135
	1	0,5 x D	○	Required	35	55	fn	0,042	0,049	0,075	0,088	0,105	0,135
	2	0,5 x D	○	Required	30	45	fn	0,028	0,035	0,046	0,060	0,070	0,076
	3	0,3 x D	○	Required	15	28	fn	0,019	0,023	0,031	0,042	0,049	0,058
H	4	0,75 x D	○	Required	30	40	fn	0,031	0,035	0,045	0,058	0,070	0,076
	1	0,75 x D	○	Required	60	80	fn	0,042	0,049	0,075	0,088	0,105	0,135
	2	0,75 x D	○	Required	50	70	fn	0,029	0,034	0,053	0,062	0,074	0,095

NOTE: Other available diameters are not recommended for plunging applications.



UCDV



UDDV

## DUO-LOCK • HARVI II

### UCDV & UDDV • Application Data

Material Group							Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.					
			A		B		adapter reach						D1 — Diameter					
							KCPM15		KCPM15		KCPM15							
							Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min							
	UCDV	UDDV	ap	ae	ap	min	max	min	max	min	max	mm	10,0	12,0	16,0	20,0	25,0	32,0
P	0	—	1,5 x D	0,5 x D	1 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	1	—	1,5 x D	0,5 x D	1 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	—	1,5 x D	0,5 x D	1 x D	140	190	126	171	126	171	fz	0,061	0,070	0,086	0,097	0,105	0,106
	3	—	1,5 x D	0,5 x D	1 x D	120	160	108	144	108	144	fz	0,051	0,060	0,074	0,086	0,097	0,105
	4	—	1,5 x D	0,4 x D	0,75 x D	90	150	81	135	81	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	5	1,5 x D	0,4 x D	1 x D	60	100	51	85	48	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	6	6	1,5 x D	0,4 x D	0,75 x D	50	75	42,5	63,75	40	60	fz	0,034	0,040	0,048	0,055	0,060	0,062
	1	—	1,5 x D	0,4 x D	1 x D	90	115	72	92	63	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	—	1,5 x D	0,4 x D	1 x D	60	80	48	64	42	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
K	3	—	1,5 x D	0,4 x D	1 x D	60	70	48	56	42	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
	1	—	1,5 x D	0,5 x D	1 x D	120	150	108	135	108	135	fz	0,061	0,070	0,086	0,097	0,105	0,106
	2	—	1,5 x D	0,5 x D	1 x D	110	140	99	126	99	126	fz	0,051	0,060	0,074	0,086	0,097	0,105
S	3	—	1,5 x D	0,5 x D	1 x D	110	130	99	117	99	117	fz	0,041	0,048	0,059	0,069	0,077	0,084
	1	1	1,5 x D	0,3 x D	0,3 x D	50	90	40	72	30	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	2	1,5 x D	0,3 x D	0,3 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	3	1,5 x D	0,3 x D	0,3 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
H	4	4	1,5 x D	0,4 x D	1 x D	50	60	40	48	30	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
	1	1	1,5 x D	0,4 x D	0,75 x D	80	140	64	112	48	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	2	1,5 x D	0,2 x D	0,5 x D	70	120	56	96	42	72	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



## DUO-LOCK • HARVI III

UJDV • Roughing • Application Data

Material Group			Short		Medium		Long		Roughing — Recommended feed per tooth ( $f_z = \text{mm/th}$ ) for side milling (A).							
			Adapter Reach		Adapter Reach		Adapter Reach		D1 — Diameter							
	A		KCSM15		KCSM15		KCSM15									
	ap	ae	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0	32,0	
P	4	Ap max	0,4 x D	90	150	81	135	81	135	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	Ap max	0,4 x D	60	100	51	85	48	80	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	1	Ap max	0,4 x D	90	115	72	92	63	80,5	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,4 x D	60	80	48	64	42	56	fz	0,041	0,048	0,059	0,069	0,077	0,084
S	3	Ap max	0,4 x D	60	70	48	56	42	49	fz	0,034	0,040	0,048	0,055	0,060	0,062
	1	Ap max	0,4 x D	50	90	40	72	30	54	fz	0,051	0,060	0,074	0,086	0,097	0,105
H	2	Ap max	0,4 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	Ap max	0,4 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052	0,057
H	4	Ap max	0,4 x D	50	60	40	48	30	36	fz	0,038	0,044	0,055	0,063	0,071	0,077
	1	Ap max	0,4 x D	80	140	64	112	48	84	fz	0,046	0,053	0,065	0,075	0,083	0,087
H	2	Ap max	0,4 x D	70	120	56	96	42	72	fz	0,034	0,040	0,048	0,055	0,060	0,062



**DUO-LOCK • HARVI III**  
 UJDV • Finishing • Application Data

Material Group			Short		Medium		Long		Finishing — Recommended feed per tooth (fz = mm/th) for side milling (A).							
			Adapter Reach						KCSM15 Cutting Speed — Vc m/min		D1 — Diameter					
	A		KCSM15 Cutting Speed — Vc m/min		KCSM15 Cutting Speed — Vc m/min		KCSM15 Cutting Speed — Vc m/min									
	ap	ae	min	max	min	max	min	max	mm	10,0	12,0	16,0	20,0	25,0	32,0	
P	4	Ap max	0,06 x D	171	285	153,9	256,5	153,9	256,5	fz	0,046	0,053	0,065	0,075	0,083	0,087
	5	Ap max	0,06 x D	114	190	96,9	161,5	91,2	152	fz	0,041	0,048	0,059	0,069	0,077	0,084
M	1	Ap max	0,06 x D	171	218,5	136,8	174,8	119,2	152,95	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,06 x D	114	152	91,2	121,6	79,8	106,4	fz	0,041	0,048	0,059	0,069	0,077	0,084
	3	Ap max	0,06 x D	114	133	91,2	106,4	79,8	93,1	fz	0,034	0,040	0,048	0,055	0,060	0,062
S	1	Ap max	0,06 x D	95	171	76	136,8	57	102,6	fz	0,051	0,060	0,074	0,086	0,097	0,105
	2	Ap max	0,06 x D	47,5	76	38	60,8	28,5	45,6	fz	0,027	0,032	0,039	0,046	0,052	0,057
	3	Ap max	0,06 x D	47,5	76	38	60,8	28,5	45,6	fz	0,027	0,032	0,039	0,046	0,052	0,057
	4	Ap max	0,06 x D	95	114	76	91,2	57	68,4	fz	0,038	0,044	0,055	0,063	0,071	0,077
H	1	Ap max	0,06 x D	152	266	121,8	212,8	91,2	159,6	fz	0,046	0,053	0,065	0,075	0,083	0,087
	2	Ap max	0,06 x D	133	228	106,4	182,4	79,8	136,8	fz	0,034	0,040	0,048	0,055	0,060	0,062

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



## DUO-LOCK • HARVI III

UJBV • Roughing • Ball Nose • Application Data

Material Group			Short		Medium		Long		Roughing — Recommended feed per tooth (fz = mm/th) for side milling (A).						
			Adapter Reach		Adapter Reach		Adapter Reach		D1 — Diameter						
	A		KCSM15		KCSM15		KCSM15							mm	10,0
	ap	ae	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min								
			min	max	min	max	min	max							
P	0	Ap max	0,4 x D	150	200	135	180	135	180	fz	0,052	0,060	0,073	0,082	0,089
	1	Ap max	0,4 x D	150	200	135	180	135	180	fz	0,052	0,060	0,073	0,082	0,089
	2	Ap max	0,4 x D	140	190	126	171	126	171	fz	0,052	0,060	0,073	0,082	0,089
	3	Ap max	0,4 x D	120	160	108	144	108	144	fz	0,044	0,051	0,063	0,073	0,082
	4	Ap max	0,4 x D	90	150	81	135	81	135	fz	0,039	0,045	0,055	0,064	0,070
	5	Ap max	0,4 x D	60	100	51	85	48	80	fz	0,035	0,041	0,050	0,058	0,066
6	Ap max	0,4 x D	50	75	42,5	63,75	40	60	fz	0,029	0,034	0,041	0,047	0,051	
M	1	Ap max	0,4 x D	90	115	72	92	63	80,5	fz	0,044	0,051	0,063	0,073	0,082
	2	Ap max	0,4 x D	60	80	48	64	42	56	fz	0,035	0,041	0,050	0,058	0,066
	3	Ap max	0,4 x D	60	70	48	56	42	49	fz	0,029	0,034	0,041	0,047	0,051
K	1	Ap max	0,4 x D	120	150	108	135	108	135	fz	0,052	0,060	0,073	0,082	0,089
	2	Ap max	0,4 x D	110	140	99	126	99	126	fz	0,044	0,051	0,063	0,073	0,082
	3	Ap max	0,4 x D	110	130	99	117	99	117	fz	0,035	0,041	0,050	0,058	0,066
S	1	Ap max	0,4 x D	50	90	40	72	30	54	fz	0,044	0,051	0,063	0,073	0,082
	2	Ap max	0,4 x D	25	40	20	32	15	24	fz	0,023	0,027	0,034	0,039	0,044
	3	Ap max	0,4 x D	25	40	20	32	15	24	fz	0,023	0,027	0,034	0,039	0,044
	4	Ap max	0,4 x D	50	60	40	48	30	36	fz	0,032	0,037	0,046	0,054	0,060
H	1	Ap max	0,4 x D	80	140	64	112	48	84	fz	0,039	0,045	0,055	0,064	0,070
	2	Ap max	0,4 x D	70	120	56	96	42	72	fz	0,029	0,034	0,041	0,047	0,051

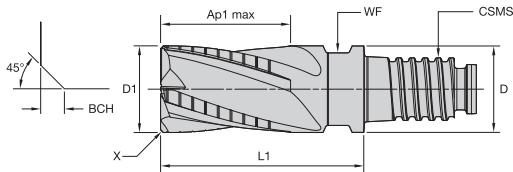


## DUO-LOCK • HARVI III

UJBV • Finishing • Ball Nose • Application Data

Material Group			Short		Medium		Long		Finishing — Recommended feed per tooth (fz = mm/th) for side milling (A).						
			KCSM15		KCSM15		KCSM15		D1 — Diameter						
	A		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0	
	ap	ae	min	max	min	max	min	max							
P	0	Ap max	0,06 x D	285	380	257	342	257	342	fz	0,061	0,070	0,086	0,097	0,105
	1	Ap max	0,06 x D	285	380	257	342	257	342	fz	0,061	0,070	0,086	0,097	0,105
	2	Ap max	0,06 x D	266	361	239	325	239	325	fz	0,061	0,070	0,086	0,097	0,105
	3	Ap max	0,06 x D	228	304	205	274	205	274	fz	0,051	0,060	0,074	0,086	0,097
	4	Ap max	0,06 x D	171	285	154	257	154	257	fz	0,046	0,053	0,065	0,075	0,083
	5	Ap max	0,06 x D	114	190	97	162	91	152	fz	0,041	0,048	0,059	0,069	0,077
M	6	Ap max	0,06 x D	95	143	81	121	76	114	fz	0,034	0,040	0,048	0,055	0,060
	1	Ap max	0,06 x D	171	219	137	175	120	153	fz	0,051	0,060	0,074	0,086	0,097
	2	Ap max	0,06 x D	114	152	91	122	80	106	fz	0,041	0,048	0,059	0,069	0,077
K	3	Ap max	0,06 x D	114	133	91	106	80	93	fz	0,034	0,040	0,048	0,055	0,060
	1	Ap max	0,06 x D	228	285	205	257	205	257	fz	0,061	0,070	0,086	0,097	0,105
	2	Ap max	0,06 x D	209	266	188	239	188	239	fz	0,051	0,060	0,074	0,086	0,097
S	3	Ap max	0,06 x D	209	247	188	222	188	222	fz	0,041	0,048	0,059	0,069	0,077
	1	Ap max	0,06 x D	95	171	76	137	57	103	fz	0,051	0,060	0,074	0,086	0,097
	2	Ap max	0,06 x D	48	76	38	61	29	46	fz	0,027	0,032	0,039	0,046	0,052
	3	Ap max	0,06 x D	48	76	38	61	29	46	fz	0,027	0,032	0,039	0,046	0,052
H	4	Ap max	0,06 x D	95	114	76	91	57	68	fz	0,038	0,044	0,055	0,063	0,071
	1	Ap max	0,06 x D	152	266	122	213	91	160	fz	0,046	0,053	0,065	0,075	0,083
	2	Ap max	0,06 x D	133	228	106	182	80	137	fz	0,034	0,040	0,048	0,055	0,060

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



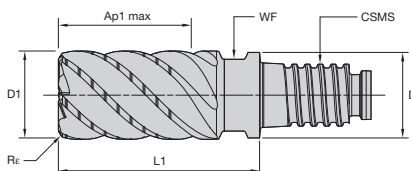
P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

● Primary  
○ Secondary

## DUO-LOCK • KenCut RR

RQDB • Chamfered • 4 & 5 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Bch	Z U	KCPM15
6127286	RQDB1000X4CV	10,00	9,60	15,00	22,50	DL10	8,00	0,50	4	●
6127287	RQDB1200X4CV	12,00	11,50	18,00	27,00	DL12	9,50	0,50	4	●
6127288	RQDB1600X4CV	16,00	15,50	24,00	36,00	DL16	13,00	0,50	4	●
6127289	RQDB2000X4CV	20,00	19,30	30,00	45,00	DL20	16,00	0,50	4	●
6127290	RQDB2500X5CV	25,00	24,00	37,50	56,50	DL25	21,00	0,50	5	●



P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	○	○

● Primary  
○ Secondary

## DUO-LOCK • KenCut RR

RKDF • Radiused • 4 & 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Re	Z U	KCSM15
6126912	RKDF1000X4CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	4	●
6126913	RKDF1200X4CQF	12,00	11,50	18,00	27,00	DL12	9,50	0,75	4	●
6126914	RKDF1600X6CQF	16,00	15,50	24,00	36,00	DL16	13,00	0,75	6	●
6126915	RKDF2000X6CQF	20,00	19,30	30,00	45,00	DL20	16,00	0,75	6	●
6126916	RKDF2500X6CQF	25,00	24,00	37,50	56,50	DL25	21,00	0,75	6	●



**DUO-LOCK • KenCut RR**  
RQDB • Application Data

Material Group					Short	Medium	Long	Recommended feed per tooth (fz = mm/ft for side milling (A). For slotting (B), reduce fz by 20%.)								
	A		B					KCPM15		Adapter Reach KCPM15		KCPM15		D1 — Diameter		
	ap	ae	ap	ap	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0
					min	max	min	max	min	max						
P	0	1,5 x D	0,5 x D	1 x D	120	160	108	144	108	144	fz	0,061	0,070	0,086	0,097	0,105
	1	1,5 x D	0,5 x D	1 x D	120	160	108	144	108	144	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,5 x D	1 x D	112	152	100,8	136,8	100,8	136,8	fz	0,061	0,070	0,086	0,097	0,105
	3	1,5 x D	0,4 x D	0,75 x D	96	128	86,4	115,2	86,4	115,2	fz	0,051	0,060	0,074	0,086	0,097
	4	1,5 x D	0,3 x D	0,3 x D	72	120	64,8	108	64,8	108	fz	0,046	0,053	0,065	0,075	0,083
M	5	1,5 x D	0,4 x D	0,75 x D	48	80	40,8	68	38,4	64	fz	0,041	0,048	0,059	0,069	0,077
	1	1,5 x D	0,4 x D	0,75 x D	72	92	57,6	73,6	50,4	64,4	fz	0,051	0,060	0,074	0,086	0,097
	2	1,5 x D	0,4 x D	0,75 x D	48	64	38,4	51,2	33,6	44,8	fz	0,041	0,048	0,059	0,069	0,077
K	3	1,5 x D	0,4 x D	0,75 x D	48	56	38,4	44,8	33,6	39,2	fz	0,034	0,040	0,048	0,055	0,060
	1	1,5 x D	0,5 x D	1 x D	96	120	86,4	108	86,4	108	fz	0,061	0,070	0,086	0,097	0,105
	2	1,5 x D	0,4 x D	1 x D	88	112	79,2	100,8	79,2	100,8	fz	0,051	0,060	0,074	0,086	0,097
S	3	1,5 x D	0,4 x D	1 x D	88	104	79,2	93,6	79,2	93,6	fz	0,041	0,048	0,059	0,069	0,077
	1	1,5 x D	0,4 x D	0,75 x D	40	72	32	57,6	24	43,2	fz	0,051	0,060	0,074	0,086	0,097
	3	1,5 x D	0,4 x D	0,75 x D	20	32	16	25,6	12	19,2	fz	0,027	0,032	0,039	0,046	0,052
H	1	1,5 x D	0,3 x D	0,3 x D	64	112	51,2	89,6	38,4	67,2	fz	0,046	0,053	0,065	0,075	0,083

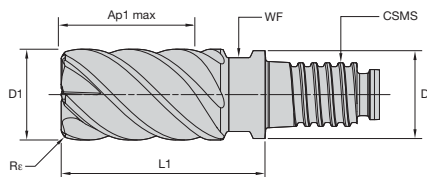
NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



**DUO-LOCK • KenCut RR**  
RKDF • Application Data

Material Group					Short	Medium	Long	Recommended feed per tooth (fz = mm/ft for side milling (A). For slotting (B), reduce fz by 20%.)								
	A		B					KCSM15		Adapter Reach KCSM15		KCSM15		D1 — Diameter		
	ap	ae	ap	ap	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0
					min	max	min	max	min	max						
P	3	1,0 x D	0,5 x D	0,75 x D	120	160	108	144	108	144	fz	0,051	0,060	0,074	0,086	0,097
	4	1,0 x D	0,3 x D	0,75 x D	90	150	81	135	81	135	fz	0,046	0,053	0,065	0,075	0,083
	5	1,0 x D	0,4 x D	0,75 x D	60	100	51	85	48	80	fz	0,041	0,048	0,059	0,069	0,077
	6	1,0 x D	0,3 x D	0,3 x D	50	75	42,5	63,75	40	60	fz	0,034	0,040	0,048	0,055	0,060
M	1	1,0 x D	0,4 x D	0,75 x D	90	115	72	92	63	80,5	fz	0,051	0,060	0,074	0,086	0,097
	2	1,0 x D	0,4 x D	0,75 x D	60	80	48	64	42	56	fz	0,041	0,048	0,059	0,069	0,077
	3	1,0 x D	0,4 x D	0,75 x D	60	70	48	56	42	49	fz	0,034	0,040	0,048	0,055	0,060
K	1	1,0 x D	0,5 x D	1 x D	120	150	108	135	108	135	fz	0,061	0,070	0,086	0,097	0,105
	2	1,0 x D	0,5 x D	1 x D	110	140	99	126	99	126	fz	0,051	0,060	0,074	0,086	0,097
	3	1,0 x D	0,5 x D	1 x D	110	130	99	117	99	117	fz	0,041	0,048	0,059	0,069	0,077
S	1	1,0 x D	0,3 x D	0,75 x D	50	90	40	72	30	54	fz	0,051	0,060	0,074	0,086	0,097
	2	1,0 x D	0,3 x D	0,75 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052
	3	1,0 x D	0,3 x D	0,75 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046	0,052
	4	1,0 x D	0,4 x D	0,75 x D	50	60	40	48	30	36	fz	0,038	0,044	0,055	0,063	0,071
H	1	1,0 x D	0,3 x D	0,3 x D	80	140	64	112	48	84	fz	0,046	0,053	0,065	0,075	0,083
	2	1,0 x D	0,2 x D	0,2 x D	70	120	56	96	42	72	fz	0,034	0,040	0,048	0,055	0,060
	3	1,0 x D	0,2 x D	0,2 x D	60	90	48	72	36	54	fz	0,027	0,032	0,039	0,046	0,052

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap bigger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

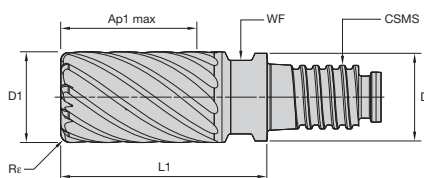
● Primary  
○ Secondary

## DUO-LOCK • KenCut FF

F MDF • Radiused • 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Re	
6127198	F MDF1000X6CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	●
6127199	F MDF1200X6CQF	12,00	11,50	18,00	27,00	DL12	9,50	0,75	●
6127200	F MDF1600X6CQF	16,00	15,50	24,00	36,00	DL16	13,00	0,75	●
6127311	F MDF2000X6CQF	20,00	19,30	30,00	45,00	DL20	16,00	0,75	●
6127312	F MDF2500X6CQF	25,00	24,00	37,50	56,50	DL25	21,00	0,75	●

KCPM15



P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

● Primary  
○ Secondary

## DUO-LOCK • RSM II

F SDE • Radiused • Multi-Flute

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Re	Z U
6127040	F SDE1000X9CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50	9 ●
6127072	F SDE1000X9CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50	9 ●
6127073	F SDE1200X9CQE	12,00	11,50	18,00	27,00	DL12	9,50	0,50	9 ●
6127074	F SDE1200X9CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00	9 ●
6127077	F SDE1600XBCQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00	11 ●
6127079	F SDE1600XBCQK	16,00	15,50	24,00	36,00	DL16	13,00	2,00	11 ●
6408046	F SDE1600XBCQN	16,00	15,50	24,00	36,00	DL16	13,00	4,00	11 ●
6127082	F SDE2000XFCQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00	15 ●
6127087	F SDE2500XJCQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50	19 ●
6127088	F SDE2500XJCQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00	19 ●
6408049	F SDE2500XJCQQ	25,00	24,00	37,50	56,50	DL25	21,00	5,00	19 ●

KG643M

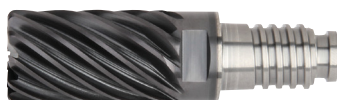


## DUO-LOCK • KenCut FF

### FMDF • Application Data

Material Group			Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A).						
			Adapter Reach						D1 — Diameter						
	A		KCPM15		KCPM15		KCPM15								
	ap	ae	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0	
P	0	1,5 x D	0,1 x D	150	200	135	180	135	180	fz	0,072	0,083	0,101	0,114	0,124
	1	1,5 x D	0,1 x D	150	200	135	180	135	180	fz	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,1 x D	140	190	126	171	126	171	fz	0,072	0,083	0,101	0,114	0,124
	3	1,5 x D	0,1 x D	120	160	108	144	108	144	fz	0,061	0,070	0,087	0,101	0,114
	4	1,5 x D	0,1 x D	90	150	81	135	81	135	fz	0,054	0,062	0,077	0,088	0,098
	5	1,5 x D	0,1 x D	60	100	51	85	48	80	fz	0,048	0,056	0,070	0,081	0,091
M	6	1,5 x D	0,1 x D	50	75	42,5	63,75	40	60	fz	0,040	0,047	0,057	0,065	0,071
	1	1,5 x D	0,1 x D	90	115	72	92	63	80,5	fz	0,061	0,070	0,087	0,101	0,114
K	2	1,5 x D	0,1 x D	60	80	48	64	42	56	fz	0,048	0,056	0,070	0,081	0,091
	3	1,5 x D	0,1 x D	60	70	48	56	42	49	fz	0,040	0,047	0,057	0,065	0,071
S	1	1,5 x D	0,1 x D	120	150	108	135	108	135	fz	0,072	0,083	0,101	0,114	0,124
	2	1,5 x D	0,1 x D	110	140	99	126	99	126	fz	0,061	0,070	0,087	0,101	0,114
H	3	1,5 x D	0,1 x D	110	130	99	117	99	117	fz	0,048	0,056	0,070	0,081	0,091
	1	1,5 x D	0,1 x D	50	90	40	72	30	54	fz	0,061	0,070	0,087	0,101	0,114
	2	1,5 x D	0,1 x D	25	40	20	32	15	24	fz	0,032	0,037	0,046	0,054	0,061
	3	1,5 x D	0,1 x D	25	40	20	32	15	24	fz	0,032	0,037	0,046	0,054	0,061
H	4	1,5 x D	0,15 x D	50	60	40	48	30	36	fz	0,045	0,052	0,064	0,074	0,084
	1	1,5 x D	0,1 x D	80	140	64	112	48	84	fz	0,054	0,062	0,077	0,088	0,098
H	2	1,5 x D	0,1 x D	70	120	56	96	42	72	fz	0,040	0,047	0,057	0,065	0,071

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group. Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.

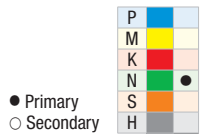
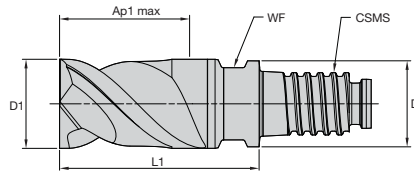


## DUO-LOCK • RSM II

### FSDE • Application Data

Material Group			Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A).						
			Adapter Reach						D1 — Diameter						
	A		KC643M		KC643M		KC643M								
	ap	ae	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	25,0	
P	4	1,5 x D	0,2–0,3mm	135	495	122	446	122	446	fz	0,120	0,129	0,149	0,163	0,166
	5	1,5 x D	0,2–0,3mm	90	330	77	281	72	264	fz	0,108	0,116	0,135	0,150	0,155
M	1	1,5 x D	0,2–0,3mm	135	379,5	108	304	95	266	fz	0,135	0,145	0,169	0,187	0,193
	2	1,5 x D	0,2–0,3mm	90	264	72	211	63	185	fz	0,108	0,116	0,135	0,150	0,155
S	3	1,5 x D	0,2–0,3mm	90	231	72	185	63	162	fz	0,090	0,096	0,110	0,120	0,121
	1	1,5 x D	0,2–0,3mm	75	297	60	238	45	178	fz	0,135	0,145	0,169	0,187	0,193
H	2	1,5 x D	0,2–0,3mm	37,5	132	30	106	23	79	fz	0,071	0,077	0,090	0,100	0,104
	3	1,5 x D	0,2–0,3mm	37,5	132	30	106	23	79	fz	0,071	0,077	0,090	0,100	0,104
H	4	1,5 x D	0,2–0,3mm	75	198	60	158	45	119	fz	0,099	0,107	0,124	0,138	0,142
	1	1,5 x D	0,2–0,3mm	120	462	96	370	72	277	fz	0,120	0,129	0,149	0,163	0,166
H	2	1,5 x D	0,2–0,3mm	105	396	84	317	63	238	fz	0,090	0,096	0,110	0,120	0,121

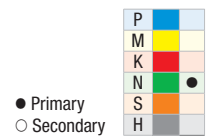
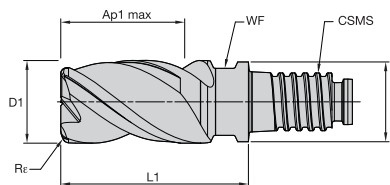
NOTE: For better surface finish, reduce feed per tooth. For side milling with Ap larger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.



## DUO-LOCK • MaxiMet

ABDF • Square End • 2 Flutes

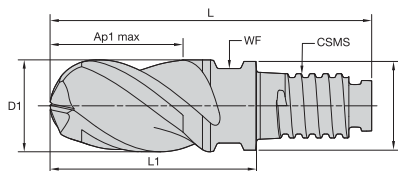
Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	
6151062	ABDF1000X2CU	10,00	9,60	15,00	22,50	DL10	8,00	•
6151063	ABDF1200X2CU	12,00	11,50	18,00	27,00	DL12	9,50	•
6151064	ABDF1600X2CU	16,00	15,50	24,00	36,00	DL16	13,00	•
6151066	ABDF2000X2CU	20,00	19,30	30,00	45,00	DL20	16,00	•



## DUO-LOCK • MaxiMet

ABDE • Radiused • 3 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Rε
6151025	ABDE1000X3CQE	10,00	9,60	15,00	22,50	DL10	8,00	0,50
6151026	ABDE1000X3CQG	10,00	9,60	15,00	22,50	DL10	8,00	1,00
6151027	ABDE1000X3CQJ	10,00	9,60	15,00	22,50	DL10	8,00	1,50
6151028	ABDE1200X3CQE	12,00	11,50	17,50	27,00	DL12	9,50	0,50
6151029	ABDE1200X3CQG	12,00	11,50	18,00	27,00	DL12	9,50	1,00
6151030	ABDE1200X3CQJ	12,00	11,50	18,00	27,00	DL12	9,50	1,50
6151031	ABDE1200X3CQL	12,00	11,50	18,00	27,00	DL12	9,50	2,50
6151034	ABDE1600X3CQK	15,97	15,50	24,00	36,00	DL16	13,00	2,00
6151035	ABDE1600X3CQL	15,97	15,50	24,00	36,00	DL16	13,00	2,50
6151036	ABDE1600X3CQM	15,97	15,50	24,00	36,00	DL16	13,00	3,00
6151032	ABDE1600X3CQG	16,00	15,50	24,00	36,00	DL16	13,00	1,00
6151033	ABDE1600X3CQJ	16,00	15,50	24,00	36,00	DL16	13,00	1,50
6408042	ABDE1600X3CQN	16,00	15,50	24,00	36,00	DL16	13,00	4,00
6151037	ABDE2000X3CQG	20,00	19,30	30,00	45,00	DL20	16,00	1,00
6151038	ABDE2000X3CQK	20,00	19,30	30,00	45,00	DL20	16,00	2,00
6151039	ABDE2000X3CQL	20,00	19,30	30,00	45,00	DL20	16,00	2,50
6151040	ABDE2000X3CQM	20,00	19,30	30,00	45,00	DL20	16,00	3,00
6408044	ABDE2000X3CQQ	20,00	19,30	30,00	45,00	DL20	16,00	5,00
6151043	ABDE2500X3CQL	25,00	24,00	37,50	56,50	DL25	21,00	2,50
6151044	ABDE2500X3CQN	25,00	24,00	37,50	56,50	DL25	21,00	4,00



● Primary  
○ Secondary

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

K600

## DUO-LOCK • MaxiMet ABBE • Ball Nose • 3 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L	L1	Csms	Wf	
6626771	ABBE1000X3CN	10,00	9,60	15,00	35,00	22,50	DL10	8,00	●
6626772	ABBE1200X3CN	12,00	11,50	18,00	42,00	27,00	DL12	9,50	●
6626773	ABBE1600X3CN	16,00	15,50	24,00	56,00	36,00	DL16	13,00	●
6626774	ABBE2000X3CN	20,00	19,30	30,00	68,90	45,00	DL20	16,00	●





MaxiMet ABDF



MaxiMet ABDE

## DUO-LOCK • MaxiMet ABDF & ABDE • Application Data

Material Group	 		Short	Medium	Long	Recommended feed per tooth (fz = mm/oth) for side milling (A). For slotting (B), reduce fz by 20%.									
	A					B	Adapter Reach			D1 — Diameter					
							K600		K600		K600				
	ap	ae				ap	Cutting Speed — vc m/min		Cutting Speed — vc m/min		Cutting Speed — vc m/min		mm	10,0	12,0
N	1	1,5 x D	0,3 x D	1,0 x D	500	2000	400	1200	300	1200	fz	0,077	0,092	0,122	0,153
	2	1,5 x D	0,3 x D	1,0 x D	500	1500	400	900	300	900	fz	0,069	0,083	0,110	0,138
	3	1,5 x D	0,3 x D	1,0 x D	500	1500	400	900	300	900	fz	0,054	0,064	0,086	0,107
	4	1,5 x D	0,3 x D	1,0 x D	400	750	320	450	240	450	fz	0,054	0,064	0,086	0,107
	5	1,5 x D	0,3 x D	1,0 x D	250	1000	200	600	150	600	fz	0,069	0,083	0,110	0,138

NOTE: Ap for spindle with ceramic bearings multiply by 0,5. For better surface finish, reduce feed per tooth. Above parameters are based on ideal conditions. Please adjust parameters according to system stability. For side milling with Ap bigger than 1 x D, reduce Fz by 20%. Cylindrical shanks not recommended for full slotting.

HIGH PERFORMANCE MODULAR END MILLING

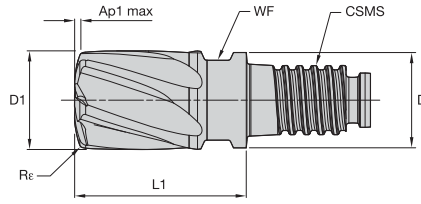


## DUO-LOCK • MaxiMet

### ABBE • Application Data

Material Group					Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
	A		B		Adapter Reach						D1 — Diameter				
					K600		K600		K600						
					Cutting Speed — vc m/min		Cutting Speed — vc m/min		Cutting Speed — vc m/min						
	ap	ae	ap		min	max	min	max	min	max	mm	10,0	12,0	16,0	20,0
N	1	1,0 x D	0,5 x D	1,0 x D	500	2000	400	1600	300	1200	fz	0,075	0,090	0,120	0,150
	2	1,0 x D	0,5 x D	1,0 x D	500	1500	400	1200	300	900	fz	0,068	0,081	0,108	0,135
	3	1,0 x D	0,5 x D	1,0 x D	500	1500	400	1200	300	900	fz	0,053	0,063	0,084	0,105
	4	1,0 x D	0,5 x D	1,0 x D	400	750	320	600	240	450	fz	0,053	0,063	0,084	0,105
	5	1,0 x D	0,5 x D	1,0 x D	250	1000	200	800	150	600	fz	0,068	0,081	0,108	0,135
	6	1,0 x D	0,5 x D	1,0 x D	100	750	80	600	60	450	fz	0,075	0,090	0,120	0,150
	7	1,0 x D	0,5 x D	1,0 x D	100	750	80	600	60	450	fz	0,053	0,063	0,084	0,105

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 diameters greater than 12mm. For better surface finish, reduce feed per tooth.



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

● Primary  
○ Secondary

## DUO-LOCK • KenFeed

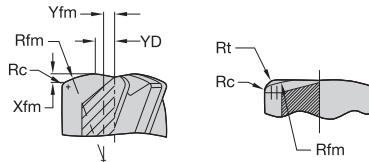
### KMDA • Radiused • 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms	Wf	Re	
6197625	KMDA1000X6BQX	10,00	9,60	0,53	17,50	DL10	8,00	0,63	●
6197626	KMDA1200X6BQF	12,00	11,50	0,63	21,00	DL12	9,50	0,75	●
6197627	KMDA1600X6BQG	16,00	15,50	0,84	28,00	DL16	13,00	1,00	●
6197628	KMDA2000X6BQH	20,00	19,30	1,05	35,00	DL20	16,00	1,25	●

KC639M

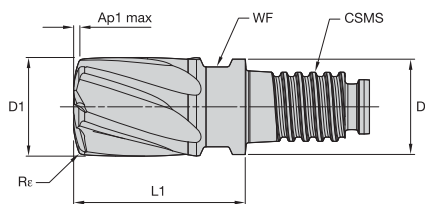
## DUO-LOCK • KenFeed

### KMDA • 6 Flutes • Programming Data



Geometrical Parameters							Ramping Guide For Circular And Linear Ramping						
							Circular Interpolation				Linear Ramping		
							Optimal Range Of Circle Diameter For A Single Pass				Calculated Length Per Ramp Angle		
Catalogue Number	D1	Ap1 Max	R	Re	Yrc	Rcn	Smallest	Largest	1°	2°	3°	4°	5°
KMDA1000X6BQX	10	0,53	10	0,625	1,25	2,20	14,40	20,00	30,20	15,09	10,06	7,54	6,02
KMDA1200X6BQF	12	0,63	12	0,750	1,50	2,64	17,28	24,00	36,24	18,11	12,07	9,05	7,23
KMDA1600X6BQG	16	0,84	16	1,000	2,00	3,52	23,04	32,00	48,31	24,15	16,09	12,06	9,64
KMDA2000X6BQH	20	1,05	20	1,250	2,50	4,40	28,80	40,00	60,39	30,19	20,11	15,08	12,05
Recommended Degree Of Programmed Feed Rate To Use While Ramping									100%	70%	50%	30%	10%

NOTE: YRC = distance from centerline to the crown of the R radius.  
 RCN = distance from centerline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.  
 R = the head radius size.  
 Rc = the shoulder radius or radius at the corner of the cutter.



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

● Primary  
○ Secondary

## DUO-LOCK • KenFeed

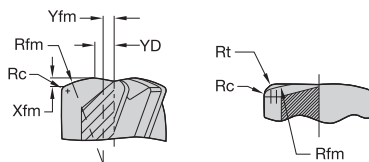
KSDB • Radiused • 6 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms	Wf	Rε	
6625741	KSDB1000X6BQX	10,00	9,60	0,53	17,50	DL10	8,00	0,63	●
6625742	KSDB1200X6BQX	12,00	11,50	0,63	21,00	DL12	9,50	0,75	●
6625743	KSDB1600X6BQX	16,00	15,50	0,84	28,00	DL16	13,00	1,00	●
6625744	KSDB2000X6BQX	20,00	19,30	1,05	35,00	DL20	16,00	1,25	●

K643M

## DUO-LOCK • KenFeed

KSDB • 6 Flutes • Programming Data



Geometrical Parameters										Ramping Guide For Circular And Linear Interpolation						
										Circular Interpolation		Linear Interpolation				
										Allowed Range Of Hole Diameter		Calculated Length Per Ramp Angle				
Catalogue Number	D1	Ap1 Max	Rfm	Rt	Rc	Xfm	Yfm	Yd	Number Of Flutes	Smallest	Largest	1°	2°	3°	4°	5°
KSDB1000X6BQX	10,00	0,53	10,00	1,04	0,625	0,53	1,25	2,20	6	14,40	20,00	30,20	15,09	10,06	7,54	6,02
KSDB1200X6BQX	12,00	0,63	12,00	1,24	0,750	0,63	1,50	2,64	6	17,28	24,00	36,24	18,11	12,07	9,05	7,23
KSDB1600X6BQX	16,00	0,84	16,00	1,66	1,000	0,84	2,00	3,52	6	23,04	32,00	48,31	24,15	16,09	12,06	9,64
KSDB2000X6BQX	20,00	1,05	20,00	2,07	1,250	1,05	2,50	4,40	6	28,80	40,00	60,39	30,19	20,11	15,08	12,05
recommended degree of programmed feed rate to use while ramping												100%	70%	50%	30%	10%

NOTE: YRC = distance from centerline to the crown of the R radius.  
 RCN = distance from centerline to the start of the cutting edge. This dimension can also help determine the minimum circle size when helical ramping.  
 R = the head radius size.  
 Rc = the shoulder radius or radius at the corner of the cutter.


HIGH PERFORMANCE MODULAR END MILLING





## DUO-LOCK • KenFeed

### KMDA • Application Data

Material Group	 A		Straight Short		Conical Medium		Conical Long		Recommended feed per tooth (fz = mm/th) for side milling (A).					
			KC639M		KC639M		KC639M		D1 — Diameter					
	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	
	ap	ae	min	max	min	max	min	max						
P	3	0,05 x D	0,55 x D	120	160	108	144	108	144	fz	0,424	0,491	0,610	0,707
	4	0,05 x D	0,55 x D	90	150	81	135	81	135	fz	0,378	0,437	0,538	0,616
H	1	0,05 x D	0,55 x D	80	140	64	112	48	84	fz	0,378	0,437	0,538	0,616
	2	0,05 x D	0,55 x D	70	120	56	96	42	72	fz	0,283	0,326	0,399	0,454

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 diameters >12mm.

For better surface finish, reduce feed per tooth.

For tools with reach > 3 x D, reduce Fz by 20%.


For tools with reach >5 x D, reduce Fz by 30%.

For tools with reach >10 x D, reduce Vc and Fz by 30%.



## DUO-LOCK • KenFeed

### KSDB • Application Data

Material Group	 A		Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A).					
			KC643M		KC643M		KC643M		D1 — Diameter					
	Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	20,0	
	ap	ae	min	max	min	max	min	max						
P	5	0,05 x D	0,55 x D	60	100	51	85	48	80	fz	0,290	0,337	0,419	0,485
	6	0,05 x D	0,55 x D	50	75	43	64	40	60	fz	0,242	0,279	0,342	0,389
M	1	0,05 x D	0,55 x D	90	115	72	92	63	81	fz	0,363	0,421	0,523	0,606
	2	0,05 x D	0,55 x D	60	80	48	64	42	56	fz	0,290	0,337	0,419	0,485
S	3	0,05 x D	0,55 x D	60	70	48	56	42	49	fz	0,242	0,279	0,342	0,389
	1	0,05 x D	0,55 x D	50	90	40	72	30	54	fz	0,363	0,421	0,523	0,606
	2	0,05 x D	0,55 x D	25	40	20	32	15	24	fz	0,192	0,223	0,278	0,324
	3	0,05 x D	0,55 x D	25	40	20	32	15	24	fz	0,192	0,223	0,278	0,324
	4	0,05 x D	0,55 x D	50	60	40	48	30	36	fz	0,267	0,310	0,385	0,445

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 diameters greater than 12mm.

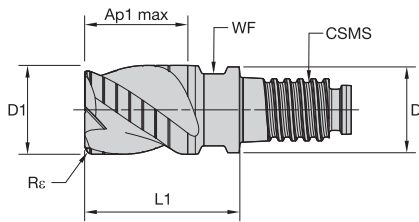
For cutting aluminum with high silicon TiCN coating is recommended.

For better surface finish reduce feed per tooth.

For tools with reach >3 x D, reduce Fz by 20%.

For tools with reach >5 x D, reduce Fz by 30%.

For tools with reach >10 x D, reduce Vc and Fz by 30%.



P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

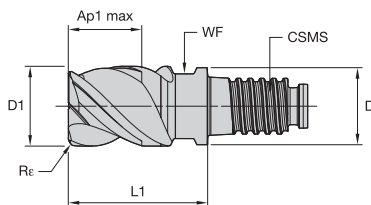
● Primary  
○ Secondary

## DUO-LOCK • KenCut RR

RFDD • Radiused • 3 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms	Wf	Re	
6441047	RFDD1000X3AQD	10,00	9,60	7,50	17,50	DL10	8,00	0,40	●
6441048	RFDD1200X3AQD	12,00	11,50	9,00	21,00	DL12	9,50	0,40	●
6441049	RFDD1600X3AQD	16,00	15,50	12,00	28,00	DL16	13,00	0,40	●
6441050	RFDD2000X3AQD	20,00	19,30	15,00	35,00	DL20	16,00	0,40	●

KCPM15



P	●	●
M	●	●
K	●	●
N	●	●
S	●	●
H	○	○

● Primary  
○ Secondary

## DUO-LOCK • KenCut FF

FGDF • Radiused • 3 Flutes

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms	Wf	Re	
6441043	FGDF0970X3AQX	9,70	9,60	7,50	17,50	DL10	8,00	0,33	●
6441029	FGDF1000X3AQD	10,00	9,60	7,50	17,50	DL10	8,00	0,40	●
6441044	FGDF1170X3AQX	11,70	11,50	9,00	21,00	DL12	9,50	0,33	●
6441030	FGDF1200X3AQD	12,00	11,50	9,00	21,00	DL12	9,50	0,40	●
6441045	FGDF1570X3AQX	15,70	15,50	12,00	28,00	DL16	13,00	0,33	●
6441041	FGDF1600X3AQD	16,00	15,50	12,00	28,00	DL16	13,00	0,40	●
6441046	FGDF1970X3AQD	19,70	19,30	15,00	35,00	DL20	16,00	0,40	●
6441042	FGDF2000X3AQD	20,00	19,30	15,00	35,00	DL20	16,00	0,40	●

KCPM15



## DUO-LOCK • KenCut RR

### RFDD • Application Data

Material Group					Straight Short		Conical Medium		Conical Long		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
	A		B		KCPM15 Cutting Speed — Vc m/min		KCPM15 Cutting Speed — Vc m/min		KCPM15 Cutting Speed — Vc m/min		D1 — Diameter				
	ap	ae	ap		min	max	min	max	min	max	mm	10,0	12,0	16,0	20,0
P	0	0,75 x D	0,5 x D	0,5 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097
	1	0,75 x D	0,5 x D	0,5 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	140	190	126	171	126	171	fz	0,061	0,070	0,086	0,097
	3	0,75 x D	0,5 x D	0,5 x D	120	160	108	144	108	144	fz	0,051	0,060	0,074	0,086
	4	0,75 x D	0,4 x D	0,5 x D	90	150	81	135	81	135	fz	0,046	0,053	0,065	0,075
	5	0,75 x D	0,5 x D	0,5 x D	60	100	51	85	48	80	fz	0,041	0,048	0,059	0,069
M	6	0,75 x D	0,4 x D	0,5 x D	50	75	43	64	40	60	fz	0,034	0,040	0,048	0,055
	1	0,75 x D	0,4 x D	0,5 x D	90	115	72	92	63	81	fz	0,051	0,060	0,074	0,086
	2	0,75 x D	0,4 x D	0,5 x D	60	80	48	64	42	56	fz	0,041	0,048	0,059	0,069
K	3	0,75 x D	0,4 x D	0,5 x D	60	70	48	56	42	49	fz	0,034	0,040	0,048	0,055
	1	0,75 x D	0,5 x D	0,5 x D	120	150	108	135	108	135	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	110	140	99	126	99	126	fz	0,051	0,060	0,074	0,086
H	3	0,75 x D	0,4 x D	0,5 x D	110	130	99	117	99	117	fz	0,041	0,048	0,059	0,069
	1	0,75 x D	0,2 x D	0,3 x D	80	140	64	112	48	84	fz	0,046	0,053	0,065	0,075

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 diameters >12mm. For tools with reach > 3 x D, reduce fz by 20%. For tools with reach >5 x D, reduce fz by 30%. For tools with reach >10 x D, reduce Vc and fz by 30%.

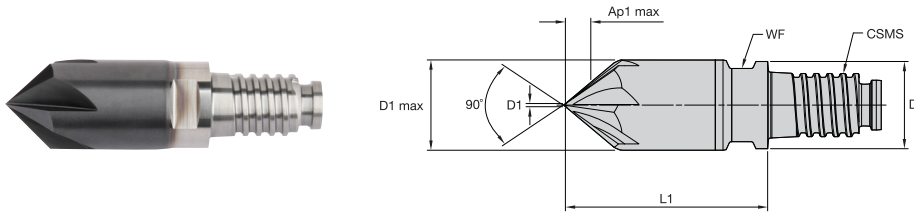


## DUO-LOCK • KenCut FF

### FGDF • Application Data

Material Group					Straight Short		Conical Medium		Conical Long		Recommended feed per tooth (fz = mm/th) for side milling (A). For slotting (B), reduce fz by 20%.				
	A		B		KCPM15 Cutting Speed — Vc m/min		KCPM15 Cutting Speed — Vc m/min		KCPM15 Cutting Speed — Vc m/min		D1 — Diameter				
	ap	ae	ap		min	max	min	max	min	max	mm	10,0	12,0	16,0	20,0
P	0	0,75 x D	0,5 x D	0,5 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097
	1	0,75 x D	0,5 x D	0,5 x D	150	200	135	180	135	180	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	140	190	126	171	126	171	fz	0,061	0,070	0,086	0,097
	3	0,75 x D	0,4 x D	0,5 x D	120	160	108	144	108	144	fz	0,051	0,060	0,074	0,086
	4	0,75 x D	0,3 x D	0,5 x D	90	150	81	135	81	135	fz	0,046	0,053	0,065	0,075
	5	0,75 x D	0,4 x D	0,5 x D	60	100	51	85	48	80	fz	0,041	0,048	0,059	0,069
M	6	0,75 x D	0,3 x D	0,5 x D	50	75	43	64	40	60	fz	0,034	0,040	0,048	0,055
	1	0,75 x D	0,4 x D	0,5 x D	90	115	72	92	63	81	fz	0,051	0,060	0,074	0,086
	2	0,75 x D	0,4 x D	0,5 x D	60	80	48	64	42	56	fz	0,041	0,048	0,059	0,069
K	3	0,75 x D	0,4 x D	0,5 x D	60	70	48	56	42	49	fz	0,034	0,040	0,048	0,055
	1	0,75 x D	0,5 x D	0,5 x D	120	150	108	135	108	135	fz	0,061	0,070	0,086	0,097
	2	0,75 x D	0,5 x D	0,5 x D	110	140	99	126	99	126	fz	0,051	0,060	0,074	0,086
S	3	0,75 x D	0,4 x D	0,5 x D	110	130	99	117	99	117	fz	0,041	0,048	0,059	0,069
	1	0,3 x D	0,3 x D	0,5 x D	50	90	40	72	30	54	fz	0,051	0,060	0,074	0,086
	2	0,3 x D	0,3 x D	0,5 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046
H	3	0,75 x D	0,3 x D	0,5 x D	25	40	20	32	15	24	fz	0,027	0,032	0,039	0,046
	4	0,75 x D	0,3 x D	0,5 x D	50	60	40	48	30	36	fz	0,038	0,044	0,055	0,063
	1	0,75 x D	0,2 x D	0,3 x D	80	140	64	112	48	84	fz	0,046	0,053	0,065	0,075

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 diameters >12mm. For tools with reach > 3 x D, reduce Fz by 20%. For tools with reach >5 x D, reduce Fz by 30%. For tools with reach >10 x D, reduce Vc and Fz by 30%.

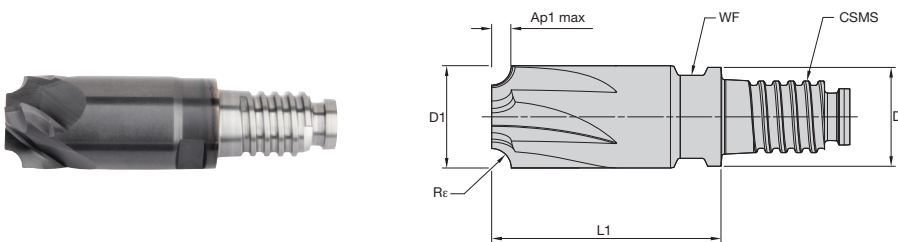


## DUO-LOCK • KenCut CM XADA • Multi-Flute

P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

Order Number	Catalogue Number	D1 Max	D1	D	Ap1 Max	L1	Csms System Size	Wf	Z U	KCPM15
6127404	XADA1000X4CH45	10,00	0,50	9,60	2,00	22,60	DL10	8,00	4	●
6408009	XADA1000X4CH60	10,00	0,50	9,60	2,00	22,60	DL10	8,00	4	●
6127405	XADA1200X5CH45	12,00	0,50	11,50	3,00	27,20	DL12	9,50	5	●
6408010	XADA1200X5CH60	12,00	0,50	11,50	3,00	27,20	DL12	9,50	5	●
6127406	XADA1600X6CH45	16,00	0,50	15,50	4,00	36,25	DL16	13,00	6	●
6408041	XADA1600X6CH60	16,00	0,50	15,50	4,00	36,00	DL16	13,00	6	●



## DUO-LOCK KenCut CM XRDA • Multi-Flute

P	●
M	●
K	●
N	●
S	○
H	○

● Primary  
○ Secondary

Order Number	Catalogue Number	D1	D	Ap1 Max	L1	Csms System Size	Wf	Re	Z U	KCPM15
6127382	XRDA1000X4CHJ	10,00	9,60	1,50	22,50	DL10	8,00	1,50	4	●
6127383	XRDA1000X4CRM	10,00	9,60	3,00	22,70	DL10	8,00	3,00	4	●
6127384	XRDA1200X5CRG	12,00	11,50	1,00	27,20	DL12	9,50	1,00	5	●
6127385	XRDA1200X5CRK	12,00	11,50	2,00	27,20	DL12	9,50	2,00	5	●
6127386	XRDA1200X5CRM	12,00	11,50	3,00	27,20	DL12	9,50	3,00	5	●
6127387	XRDA1600X6CRK	16,00	15,50	2,00	36,10	DL16	13,00	2,00	6	●
6127388	XRDA1600X6CRM	16,00	15,50	3,00	36,00	DL16	13,00	3,00	6	●
6127389	XRDA1600X6CRN	16,00	15,50	4,00	35,95	DL16	13,00	4,00	6	●



KenCut CM – XADA



KenCut CM – XRDA

## DUO-LOCK

### XADA & XRDA • Application Data

Material Group	A		Short		Medium		Long		Recommended feed per tooth (fz = mm/th) for side milling (A).				
	A		KCPM15		Adapter Reach KCPM15		KCPM15		D1 — Diameter				
	A		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		Cutting Speed — Vc m/min		mm	10,0	12,0	16,0	
	ap	ae	min	max	min	max	min	max					
P	0	0,35 x D	0,35 x D	150	200	135	180	135	180	fz	0,058	0,066	0,081
	1	0,35 x D	0,35 x D	150	200	135	180	135	180	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	140	190	126	171	126	171	fz	0,058	0,066	0,081
	3	0,35 x D	0,35 x D	120	160	108	144	108	144	fz	0,048	0,056	0,070
	4	0,35 x D	0,35 x D	90	150	81	135	81	135	fz	0,043	0,050	0,061
	5	0,35 x D	0,35 x D	60	100	51	85	48	80	fz	0,039	0,045	0,056
M	6	0,35 x D	0,35 x D	50	75	42,5	63,75	40	60	fz	0,032	0,037	0,046
	1	0,35 x D	0,35 x D	90	115	72	92	63	80,5	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	60	80	48	64	42	56	fz	0,039	0,045	0,056
K	3	0,35 x D	0,35 x D	60	70	48	56	42	49	fz	0,032	0,037	0,046
	1	0,35 x D	0,35 x D	120	150	108	135	108	135	fz	0,058	0,066	0,081
	2	0,35 x D	0,35 x D	110	140	99	126	99	126	fz	0,048	0,056	0,070
N	3	0,35 x D	0,35 x D	110	130	99	117	99	117	fz	0,039	0,045	0,056
	1	0,35 x D	0,35 x D	500	2000	400	1600	300	1200	fz	0,080	0,096	0,128
	2	0,35 x D	0,35 x D	500	1500	400	1200	300	900	fz	0,072	0,086	0,115
	3	0,35 x D	0,35 x D	500	1500	400	1200	300	900	fz	0,056	0,067	0,090
	4	0,35 x D	0,35 x D	400	750	320	600	240	450	fz	0,056	0,067	0,090
	5	0,35 x D	0,35 x D	250	1000	200	800	150	600	fz	0,072	0,086	0,115
	6	0,35 x D	0,35 x D	100	750	80	600	60	450	fz	0,080	0,096	0,128
S	7	0,35 x D	0,35 x D	100	750	80	600	60	450	fz	0,056	0,067	0,090
	1	0,35 x D	0,35 x D	50	90	40	72	30	54	fz	0,048	0,056	0,070
	2	0,35 x D	0,35 x D	25	40	20	32	15	24	fz	0,026	0,030	0,037
	3	0,35 x D	0,35 x D	25	40	20	32	15	24	fz	0,026	0,030	0,037
H	4	0,35 x D	0,35 x D	50	60	40	48	30	36	fz	0,036	0,041	0,051
	1	0,35 x D	0,35 x D	80	140	64	112	48	84	fz	0,043	0,050	0,061

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

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

Above parameters are based on ideal conditions. For smaller taper machining centers, please adjust parameters accordingly on diameters >12mm.

For side milling with Ap larger than 1 x D, reduce Fz by 20%.

# DUO-LOCK INTELLIGENT THREAD

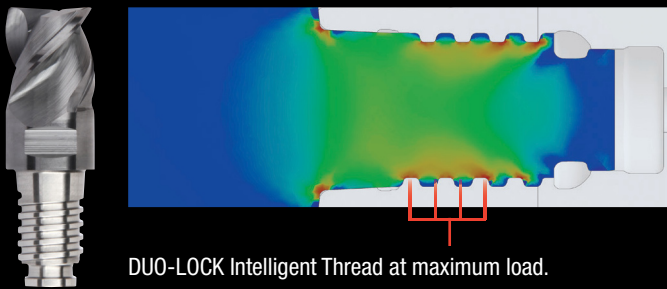
The DUO-LOCK Intelligent Thread eliminates the force peaks all regular threads have in the first groove.

## 3 GOLDEN RULES TO SUCCESS:

1. Clean both sides of the coupling. Thread needs to be free of any lubricant, such as oil, anti seize, grease, etc.
2. Apply recommended torque values.
3. When using DUO-LOCK cylindrical extensions, never clamp on the coupling.

## Finite Element Analysis (FEA)

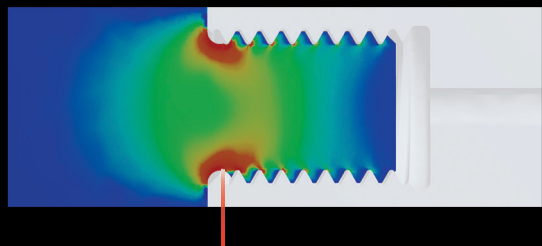
### DUO-LOCK Intelligent Thread



DUO-LOCK Intelligent Thread at maximum load.

The DUO-LOCK Intelligent Thread evenly distributes the forces across the entire length of the thread. This allows a greater than 25% torque transmission than known competitors.

### Regular threads



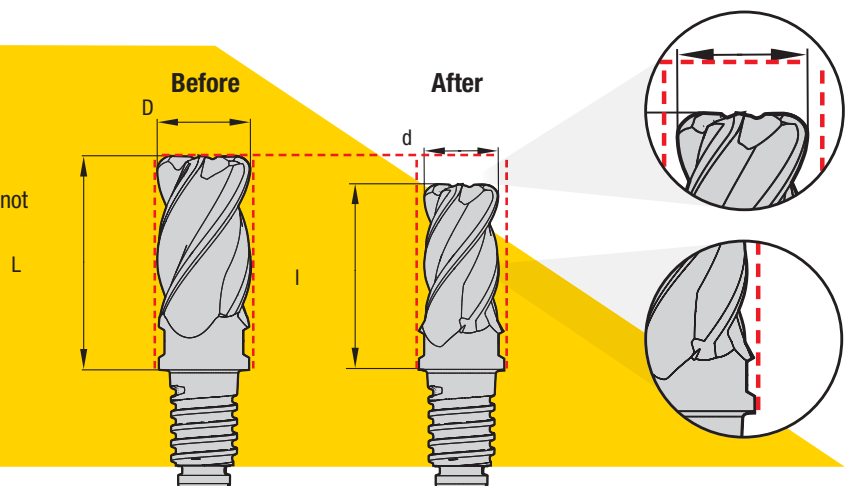
Typical for any regular thread at maximum load.

High force peak in the first groove, limiting the performance of the connection.

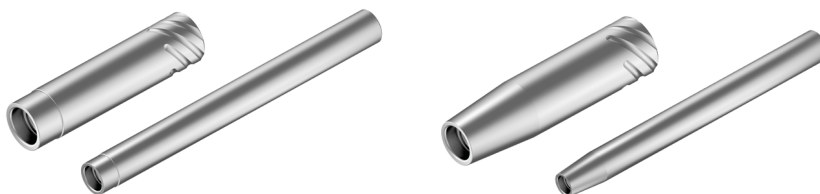
# DUO-LOCK RECONDITIONING

Wear and/or chipping determines to what extent and how often DUO-LOCK tips can be reconditioned. To ensure integrity of the wrench flats, the neck portion cannot be modified.

**NOTE:** The cutting diameter of reconditioned DUO-LOCK tips might be smaller than the neck diameter, and therefore may not have a clearance anymore. To prevent collisions, precautions need to be taken.



# DUO-LOCK Tool Clamping



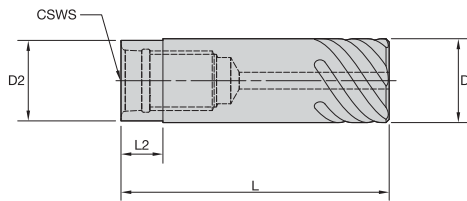
DUO-LOCK Extension Shank Diameter [D2]		Cylindrical Extension (Steel and Heavy Metal)						Conical Extension (Steel)						
		10	12	16	20	25	32	12	16	20	25	32	40	50
HydroForce™		—	—	—	●●	—	●	—	—	●	—	●	—	●
HydroForce with Sleeve		●●	●●	●●	●●	●	—	●	●	●	●	—	●	—
HydroForce with Safe-Lock Sleeve *		—	●	●	●	●	—	●	●	●	●	—	—	—
Shrink Fit		●●	●●	●●	●●	●	●	●	●	●	●	—	—	—
Safe-Lock Shrink Fit *		—	●	●	●	●	●	●	●	●	●	●	●	●
Milling Chuck		—	—	—	●●	—	●	—	—	●	—	●	—	—
Milling Chuck with Sleeve		●●	●●	●●	●●	●	—	●	●	●	●	—	—	—
ER Collet Chuck		■	■	○	○	○	—	■	■	○	○	—	—	—
TG Collet Chuck		■	■	■	○	○	—	■	■	■	○	—	—	—

\* Features SAFE-LOCK pullout protection

● Recommended (Steel)   ■ Suitable with limitations (Steel)   ○ Not recommended (Steel)   — Not available

● Recommended (HM)   ■ Suitable with limitations (HM)   ○ Not recommended (HM)

NOTE: DUO-LOCK steel extensions require high power shrinking units greater than 10kW. All SAFE-LOCK extensions can be clamped in a cylindrical shank adapter.

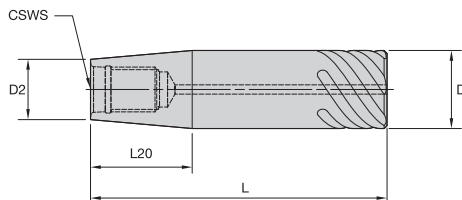


## DUO-LOCK

Steel Extension • Cylindrical • SAFE-LOCK

Order Number	Catalogue Number	Csws	D	D2	L	L2	Kg
6134889	SS10SLDL10055M	DL10	10	9,58	55	6	0,03
6135043	SS12SLDL12065M	DL12	12	11,50	65	7	0,05
6135049	SS16SLDL16070M	DL16	16	15,50	70	9	0,09
6135057	SS20SLDL20080M	DL20	20	19,30	80	11	0,16
6135063	SS25SLDL25090M	DL25	25	24,00	90	13	0,27
6135067	SS32SLDL32105M	DL32	32	31,00	105	17	0,52

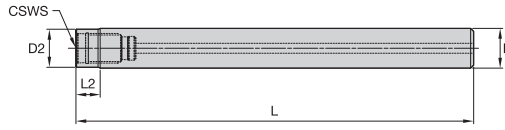
NOTE: Cylindrical shanks not recommended for full slotting.



## DUO-LOCK

Steel Extension • Conical • SAFE-LOCK

Order Number	Catalogue Number	Csws	D	D2	L	L20	Kg
6135041	SS12SLDL10065M	DL10	12	9,58	65	14	0,05
6135045	SS16SLDL10090M	DL10	16	9,58	90	37	0,11
6135051	SS20SLDL10115M	DL10	20	9,58	115	59	0,21
6135047	SS16SLDL12080M	DL12	16	11,50	80	26	0,11
6135053	SS20SLDL12105M	DL12	20	11,50	105	49	0,20
6135055	SS20SLDL16080M	DL16	20	15,50	80	26	0,16
6135059	SS25SLDL16115M	DL16	25	15,50	115	54	0,35
6135061	SS25SLDL20095M	DL20	25	19,30	95	33	0,30
6135065	SS32SLDL25105M	DL25	32	24,00	105	46	0,52
6135069	SS40SLDL32140M	DL32	40	31,00	140	51	1,13
6135081	SS50SLDL32200M	DL32	50	31,00	200	109	2,35

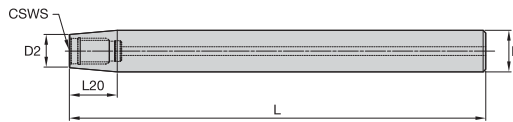
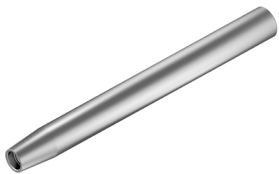


## DUO-LOCK

Steel Extension • Cylindrical • Straight Shank

Order Number	Catalogue Number	CsWS	D	D2	L	L2	Kg
6134890	SS10DL10100M	DL10	10	9,58	100	5	0,05
6135044	SS12DL12120M	DL12	12	11,50	120	6	0,09
6135050	SS16DL16160M	DL16	16	15,50	160	8	0,23
6135058	SS20DL20200M	DL20	20	19,30	200	10	0,45
6135064	SS25DL25250M	DL25	25	24,00	250	13	0,86
6135068	SS32DL32250M	DL32	32	31,00	250	16	1,41

NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.

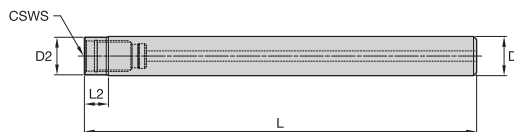


## DUO-LOCK

Steel Extension • Conical • Straight Shank

Order Number	Catalogue Number	CsWS	D	D2	L	L20	Kg
6135042	SS12DL10120M	DL10	12	9,58	120	14	0,10
6135046	SS16DL10160M	DL10	16	9,58	160	37	0,22
6135052	SS20DL10200M	DL10	20	9,58	200	59	0,42
6135048	SS16DL12160M	DL12	16	11,50	160	26	0,23
6135054	SS20DL12200M	DL12	20	11,50	200	48	0,43
6135056	SS20DL16200M	DL16	20	15,50	200	26	0,45
6135060	SS25DL16250M	DL16	25	15,50	250	54	0,86
6135062	SS25DL20250M	DL20	25	19,30	250	32	0,89
6135066	SS32DL25250M	DL25	32	24,00	250	45	1,42
6135070	SS40DL32250M	DL32	40	31,00	250	51	2,20
6135082	SS50DL32250M	DL32	50	31,00	250	108	3,14

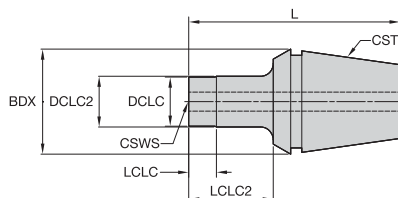
NOTE: Standard catalog cutting data does not apply. Consult tooling application expert before use.



## DUO-LOCK

Heavy Metal Extension • Cylindrical • Straight Shank

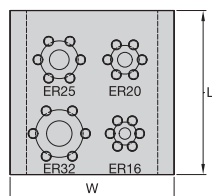
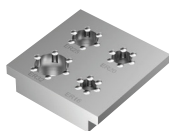
Order Number	Catalogue Number	CsWS	D	D2	L	L2	Kg
6933541	HS10DL10N020070M	DL10	10	9,58	70	20	0,08
6933545	HS10DL10N040090M	DL10	10	9,58	90	40	0,10
6933542	HS12DL12N023080M	DL12	12	11,50	80	23	0,13
6933546	HS12DL12N047100M	DL12	12	11,50	100	47	0,17
6933543	HS16DL16N030090M	DL16	16	15,50	90	30	0,26
6933547	HS16DL16N062120M	DL16	16	15,50	120	62	0,16
6933544	HS20DL20N037100M	DL20	20	19,30	100	37	0,46
6933548	HS20DL20N077140M	DL20	20	19,30	140	77	0,65



## DUO-LOCK

ER Solid Collets

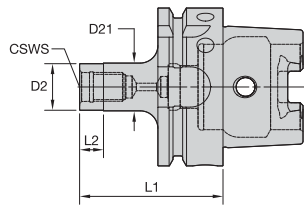
Order Number	Catalogue Number	Cst	CsWS	Bdx	L	DclC	DclC2	LclC	LclC2	Kg
6612283	16ERDL10	ER16	DL10	17	32,8	9,6	—	5,3	—	0,03
6612284	20ERDL10	ER20	DL10	21	37,0	9,6	—	5,5	—	0,06
6612285	20ERDL12	ER20	DL12	21	38,0	11,5	—	6,5	—	0,06
6612286	25ERDL10	ER25	DL10	26	39,5	9,6	—	5,5	—	0,10
6612287	25ERDL12	ER25	DL12	26	40,5	11,5	—	6,5	—	0,10
6612288	25ERDL16	ER25	DL16	26	39,5	15,5	—	5,5	—	0,10
6612289	32ERDL10	ER32	DL10	33	66,5	9,6	10	5,0	26,5	0,21
6612290	32ERDL12	ER32	DL12	33	67,5	11,5	12	6,0	27,5	0,21
6612331	32ERDL16	ER32	DL16	33	66,5	15,5	16	8,0	26,5	0,22
6612332	32ERDL20	ER32	DL20	33	66,5	19,3	20	10,0	26,5	0,23



## DUO-LOCK

ER Solid Collet Mounting Plate

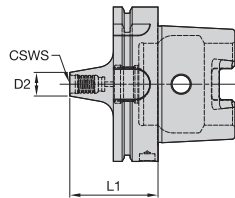
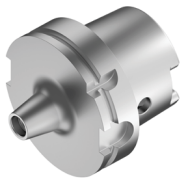
Order Number	Catalogue Number	L	W	Kg
6612333	DLCCDER	100	100	0,57



## DUO-LOCK

Adapter • HSK63 Form A

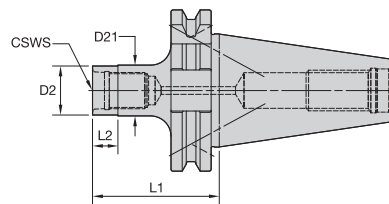
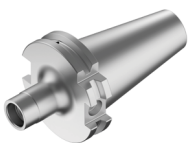
Order Number	Catalogue Number	Csws	D2	D21	L1	L2	Kg
6136949	HSK63ADL10048M	DL10	10	10	48	5	0,69
6136950	HSK63ADL12052M	DL12	12	12	52	6	0,69
6136951	HSK63ADL16057M	DL16	16	16	57	8	0,70
6136952	HSK63ADL20057M	DL20	19	20	57	10	0,72
6136953	HSK63ADL25061M	DL25	24	25	61	12	0,74
6136954	HSK63ADL32072M	DL32	31	32	72	16	0,83



## DUO-LOCK

Adapter • HSK100 Form A

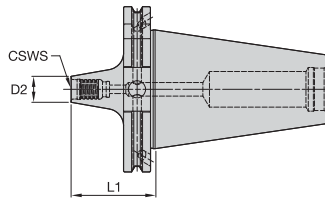
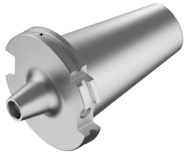
Order Number	Catalogue Number	Csws	D2	L1	Kg
6452503	HSK100ADL16060M	DL16	16	60	2,08
6452504	HSK100ADL20060M	DL20	19	60	2,12
6452505	HSK100ADL25065M	DL25	24	65	2,18
6452506	HSK100ADL32075M	DL32	31	75	2,40



## DUO-LOCK

Adapter • DV40

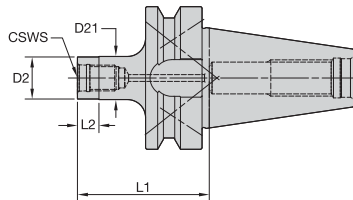
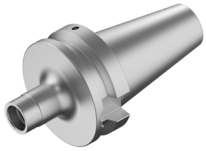
Order Number	Catalogue Number	Csws	D2	D21	L1	L2	Kg
6136993	DV40BDL10041M	DL10	10	10	41	5	0,82
6136994	DV40BDL12041M	DL12	12	12	41	6	0,81
6136995	DV40BDL16050M	DL16	16	16	50	8	0,83
6136996	DV40BDL20050M	DL20	19	20	50	10	0,84



## DUO-LOCK

Adapter • DV50

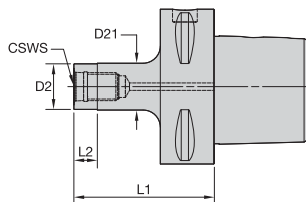
Order Number	Catalogue Number	Csws	D2	L1	Kg
6452419	DV50BDL16050M	DL16	16	50	2,68
6452420	DV50BDL20050M	DL20	19	50	2,73
6452501	DV50BDL25056M	DL25	24	56	2,79
6452502	DV50BDL32065M	DL32	31	65	3,01



## DUO-LOCK

Adapter • BT40

Order Number	Catalogue Number	Csws	D2	D21	L1	L2	Kg
6136977	BT40BDL10049M	DL10	10	10	49	5	0,98
6136978	BT40BDL12049M	DL12	12	12	49	6	0,97
6136979	BT40BDL16058M	DL16	16	16	58	8	1,00
6136980	BT40BDL20058M	DL20	19	20	58	10	1,00
6136991	BT40BDL25060M	DL25	24	25	60	12	1,02



## DUO-LOCK

Adapter • PSC63

Order Number	Catalogue Number	Csws	D2	D21	L1	L2	Kg
6136956	PSC63DL12050M	DL12	12	12	50	6	0,77
6136958	PSC63DL20055M	DL20	19	20	55	10	0,80
6136959	PSC63DL25060M	DL25	24	25	60	12	0,83
6136960	PSC63DL32068M	DL32	31	32	68	16	0,91

# DUO-LOCK

## Double-Handed Torque Wrench



Order Number	Catalogue Number	Description	Torque (steel shank)	Torque (heavy metal shank)
6135413	TWDLTM	BASIC DUO LOCK WRENCH		
6135414	TWTMINSERTDL10	TORQUE WRENCH INSERT DL10	20	15
6135415	TWTMINSERTDL12	TORQUE WRENCH INSERT DL12	30	25
6135416	TWTMINSERTDL16	TORQUE WRENCH INSERT DL16	60	40
6135417	TWTMINSERTDL20	TORQUE WRENCH INSERT DL20	80	60
6135418	TWTMINSERTDL25	TORQUE WRENCH INSERT DL25	100	90
6135419	TWTMINSERTDL32	TORQUE WRENCH INSERT DL32	130	130
6135422	TWTMEXT	TORQUE WRENCH EXTENSION HANDLE		
6135423	TWTMBC	TORQUE WRENCH BOLT SET		

# DUO-LOCK

## Torque Wrench Double-Handed Kit

1 ERICKSON™ Torque Master Wrench

2 Insert

3 Extension Handle



Order Number	Catalogue Number	Kit Description	Duo-Lock Size	Torque (Nm)	Heavy Metal Shank
6342967	TWDL10TM	D-L WRENCH WITH DL10 INSERT AND HANDLES	DL 10	20	15
6342968	TWDL12TM	D-L WRENCH WITH DL12 INSERT AND HANDLES	DL 12	30	25
6342969	TWDL16TM	D-L WRENCH WITH DL16 INSERT AND HANDLES	DL 16	60	40
6342970	TWDL20TM	D-L WRENCH WITH DL20 INSERT AND HANDLES	DL 20	80	60
6343061	TWDL25TM	D-L WRENCH WITH DL25 INSERT AND HANDLES	DL 25	100	90
6343062	TWDL32TM	D-L WRENCH WITH DL32 INSERT AND HANDLES	DL 32	130	130

1+2+3

## DUO-LOCK Single-Handed Torque Wrench



Order Number	Catalogue Number	Description	Duo-Lock Size	Torque (Nm)	Torque (heavy metal shank)
6411155	TWDL9X12	D-L SINGLE HAND TORQUE WRENCH	—	—	—
6410950	TWSH9X12INSERTDL10	D-L TORQUE WRENCH SH INSERT	DL10	20	15
6411151	TWSH9X12INSERTDL12	D-L TORQUE WRENCH SH INSERT	DL12	30	25
6411152	TWSH9X12INSERTDL16	D-L TORQUE WRENCH SH INSERT	DL16	60	40
6411153	TWSH9X12INSERTDL20	D-L TORQUE WRENCH SH INSERT	DL20	80	60
6411154	TWDL9X12CA14X18	D-L ADAPTER 9X12 TO 14X18	—	—	—

## HARVI I TE DUO-LOCK • Catalog Numbering System

Each character in our catalog number signifies a specific trait of that product. Use the following key columns 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	Standard
H1TE = HARVI I TE	4 = 4-Flute	SE = Sharp Edge CH = Chamfer RA = Radius	Metric = D1 in mm Inch = D1 in decimal inch	R = Regular Without Neck	Metric = Ap1 Max in mm Inch = Ap1 Max in decimal inch	DL = DUO-LOCK		M = Metric Blank = Inch

## DUO-LOCK • Catalog Numbering System

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

ABBE1000X3CN								
AB	B	E	1000	X	3	C	N	
Series	End Mill Shape	Helix Angle	Diameter	Shank Style	Number of Flutes	Length of Cut	Shape/Features	Coner Configuration
AB = MaxiMet – Non-ferrous metals	B = Ball Nose D = Square End	A = 0–10 B = 11–20 D = 31–35 E = 36–40 F = 41–45 V = 37/39° variable		X = Metric – DUO-LOCK Y = Inch – DUO-LOCK	2 3 4 5 6 9 B = 11 F = 15 J = 19	A = 0,75 x D B = 1,0 x D C = 1,5 x D	H = Chamfer N = Necked Q = Necked & Radius R = Radius U = Necked + Sharp V = Necked + Chamfer	Metric D = Metric – 0,4mm E = Metric – 0,5mm F = Metric – 0,75mm H = Metric – 1,25mm J = Metric – 1,5mm N = Metric – 4,0mm S = Sharp X = Custom  Inch A = Inch – .015" B = Inch – .030" C = Inch – .060" D = Inch – .090" E = Inch – .120" F = Inch – .250" S = Sharp X = Custom
FG = Finisher general applications – Steels								
FM = Finisher multi-flute – Steels								
FS = RSM II multi-flute – High-temperature alloys								
KM = KenFeed – Medium steels								
RF = Rougher – Chipbreaker design								
RK = Rougher – Fine-pitch profile design								
RQ = Rougher – Coarse-pitch profile design								
UC = HARVI II – Stainless steels								
UD = HARVI II – High-temperature alloys								
UJ = HARVI III center cut & eccentric cut – High-temperature alloys								
UK = HARVI I asymmetric fluting – Stainless steels								
UL = HARVI I asymmetric fluting – High-temperature alloys								
XA = Chamfering tool								
XR = Corner rounding tool								

## DUO-LOCK • Extensions • Catalog Numbering System

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

SS10SLDL10055M					
SS	10	SL	DL10	055	M
Connection Style Machine Side (CSMS)	Shank Diameter	Shank Style	Connection Style Workpiece Side (CSWS) System Size	Tool Length A	Value
SS = Straight Shank	Metric = D in mm Inch = D in decimal inch	SL = Z™ Blank = Plain	DL10 = DUO-LOCK size 10	Metric = L in mm Inch = L in decimal inch	Metric

## DUO-LOCK • Extensions • Catalog Numbering System

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

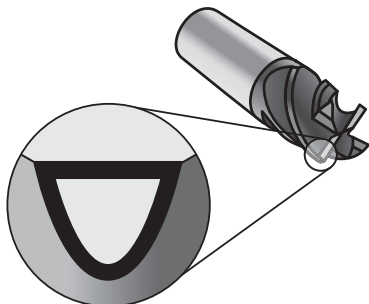
32ERDL16		
32	ER	DL16
Collet Size	Collet Type	DUO-LOCK Coupling Size
16 = ER16 20 = ER 20 25 = ER 25 32 = ER 32	ER	16 = ER16 20 = ER 20 25 = ER 25 32 = ER 32

## DUO-LOCK• Adapters • Catalog Numbering System

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

HSK63ADL10048M						
HSK	63	A	DL	100	48	M
Connection Style Machine Side (CSMS)	Connection Size	System Flange Form	Hydraulic Chuck Type	Clamping Diameter	Tool Length	Value
KM™	30	A = Form A	HCTHT = HydroForce™	50 = 50mm	150 = 150mm	M = Metric
KM4X™	32	C = Form C	HCSL = Slim Line	075 = 3/4"	413 = 4.13"	Blank = Inch
HSK	40	B = Coolant	HCSLT = Slim Line T			
DV	50		HC = High Performance			
CV	63		DL = DUO-LOCK			
BT	80					
PSC	100					
	125					

# Grades and Grade Descriptions



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

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

Wear Resistance ← → Toughness

Grade	Coating	Grade Description	Performance										
			05	10	15	20	25	30	35	40	45		
KG00		<b>Composition:</b> Uncoated, highly wear-resistant submicron grain carbide. <b>Application:</b> Very high toughness ensures a controlled wear rate. The micrograin structure enables extremely sharp edges. First choice for milling of non-ferrous materials.											
			N										
KC633M		<b>Composition:</b> Multilayered PVD TiN/TiAlN-coated submicron grain carbide. <b>Application:</b> This multi-purpose grade offers highest versatility and best reliability across recommended material groups at intermediate cutting conditions.	P										
			M										
			K										
			S										
KC639M		<b>Composition:</b> Monolayer PVD AlTiN-coated, ultra-fine grain carbide. <b>Application:</b> First choice for hardened steels > 55 HRC.											
			H										
KC643M		<b>Composition:</b> Monolayer PVD AlTiN-coated submicron grain carbide. <b>Application:</b> This grade offers high hardness and excellent wear resistance for general application in steel, stainless steel, cast iron, and high-temp alloys.	P										
			M										
			K										
			S										
KCPM15		<b>Composition:</b> Monolayer PVD AlTiN-coated submicron grain carbide with smooth coating surface. <b>Application:</b> Proprietary coating with best-in-class tool life as well as performance consistency optimized for applications in steel, stainless steel, cast iron, and hard materials.	P										
			M										
			K										
			H										

Grade	Coating	Grade Description	Wear Resistance ← → Toughness																					
			05	10	15	20	25	30	35	40	45													
KCSM15		<b>Composition:</b> Monolayer PVD AlTiN-coated submicron grain carbide with smooth coating surface. <b>Application:</b> Proprietary coating with best-in-class tool life as well as performance consistency optimized for application in stainless steel and high-temp alloys.	M																					
			S																					
KCSM15A		<b>Composition:</b> PVD AlCrN/TiSiN coated submicron grain carbide. <b>Application:</b> First choice for high-temp 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.	M																					
			S																					
KCN05		<b>Composition:</b> CVD diamond-coated, fine-grain carbide. <b>Application:</b> First choice for machining carbon-fiber reinforced polymers (CFRP). The crystalline diamond-coated grade offers the highest degree of abrasive wear resistance.																						
KD1410		<b>Composition:</b> A polycrystalline diamond (PCD) tip brazed onto a carbide substrate. <b>Application:</b> Engineered for good abrasion resistance combined with excellent edge strength for demanding applications. An ideal choice for aluminum with high silicon content as well as CFRP.																						
KYS40		<b>Composition:</b> SiAlON solid ceramic. <b>Application:</b> SiAlON ceramic end mills take dry machining of nickel-based high-temp alloys to a new level. The increased heat resistance of SiAlON ceramics enables cutting at highest velocities leading to best metal removal rates and productivity.																						
KCU20		<b>Composition:</b> Multilayered PVD TiN-TiAlN coated submicron grain carbide with a gold TiN Toplayer for better wear identification. <b>Application:</b> This multi-purpose grade offers highest versatility and best reliability across recommended material groups at intermediate cutting conditions.	P																					
			M																					
			K																					
KCPM15A		<b>Composition:</b> PVD AlCrN/TiSiN coated submicron grain carbide. <b>Application:</b> Excellent choice for steel, stainless steel, cast iron and hard materials. High metal removal rates and reliable tool life can be achieved due to proprietary coating technology with improved thickness control. Non-black coating color allows for easy wear identification.	P																					
			M																					
			K																					

# KEY TO PRODUCT TABLE COLUMN HEADINGS

Short-Name Code	Full Text Description
Ap1 max	Maximum Cutting Depth
BCH	Corner Chamfer Width
BDX	Maximum Body Diameter
CSMS	Connection Style Machine Side
CST	Collet Series
CSWS	Connection Style Workpiece Side
D	Adapter/Shank Diameter
D1	Milling: Cutter Diameter
D2	Body Diameter 1 Workpiece Side
D21	Body Diameter 2 Workpiece Side
D3	Neck Diameter
DCLC	Boss Diameter
DCLC2	Boss Diameter 2
E	Profile Angle
ft. lbs.	Torque Foot Pounds
kg	Weight Kilograms
KRA	Lead Angle
L	Overall Length
L1	Milling: Gage Length
L1	Toolholder: Gage Length
L2	Milling: Head Length
L20	Beta Taper End Length
L3	Milling: Maximum Depth
lbs	Weight Pounds
LCLC	Boss Length
LCLC2	Boss Length 2
LS	Shank Length
Nm	Torque Newton Meters
R	Profile or Ball Nose Radii
Re	Corner Radius
W	Overall Width
WF	Milling: Width of Flat
Z U	Number of Flutes

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

Material Group	Description	Content	Tensile Strength Rm (Mpa)*	Hardness (Hb)	Hardness (Hrc)	Material Number
P0	Low-Carbon Steels, Long Chipping	C <0,25%	<530	<125	–	–
P1	Low-Carbon Steels, Short Chipping, Free Machining	C <0,25%	<530	<125	–	C15, Ck22, ST37-2, S235JR, 9SMnPb28, GS38
P2	Medium- and High-Carbon Steels	C >0,25%	>530	<220	<25	ST52, S355JR, C35, GS60, Cf53
P3	Alloy Steels and Tool Steels	C >0,25%	600–850	<330	<35	16MnCr5, Ck45, 21CrMoV5-7, 38SMn28
P4	Alloy Steels and Tool Steels	C >0,25%	850–1400	340–450	35–48	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P5	Ferritic, Martensitic, and PH Stainless Steels	–	600–900	<330	<35	100Cr6, 30CrNiMo8, 42CrMo4, C70W2, S6525, X120Mn12
P6	High-Strength Ferritic, Martensitic, and PH Stainless Steels	–	900–1350	350–450	35–48	X102CrMo17, G-X120Cr29
M1	Austenitic Stainless Steel	–	<600	130–200	–	X5CrNi 18 10, X2CrNiMo 17 13 2, G-X25CrNiSi18 9, X15CrNiSi 20 12
M2	High-Strength Austenitic Stainless and Cast Stainless Steels	–	600–800	150–230	<25	X2CrNiMo 13 4, X5NiCr 32 21, X5CrNiNb 18 10, G-X15CrNi 25-20
M3	Duplex Stainless Steel	–	<800	135–275	<30	X8CrNiMo27 5, X2CrNiMoN22 5 3, X20CrNiSi25 4, G-X40CrNiSi27 4
K1	Grey Cast Iron	–	125–500	120–290	<32	GG15, GG25, GG30, GG40, GTW40
K2	Low- and Medium-Strength Ductile Irons (Nodular Irons) and Compacted Graphite Irons (CGI)	–	<600	130–260	<28	GGG40, GTS35
K3	High-Strength Ductile Irons and Austempered Ductile Iron (ADI)	–	>600	180–350	<43	GGG60, GTW55, GTS65
N1	Wrought 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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