



MASTER CATALOG **2018**

VOLUME TWO | **ROTATING TOOLS**



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

➤ High-Performance Solid Carbide Roughing End Mills

Primary Application

High-performance roughers can be applied in a wide range of workplace materials such as steels, stainless steels, cast irons, and in certain cases, hardened materials. Tailored roughing profiles reduce cutting forces to the necessary level or combine roughing and semi-finishing for fewer tool changes.

- High-performance universal tools for almost all cutting materials.
- Lower cutting forces and spindle power consumption.
- Center cutting for plunging, ramping, profiling, high-feed slotting, and side milling.

Features and Benefits

Advanced Technology

- Up to full length of cut for:
 - Slotting
 - Side milling
 - Profiling
 - Semi-finishing
- Various roughing profiles available for the right balance between cutting forces, feed rates, and surface quality.

Tailored Grades

- From proprietary KCPM15™ Beyond™ grade for outstanding wear to uncoated tools suitable for a variety of workpiece materials.
- Universal KC643M™ grade suitable for cutting steel, stainless, and titanium.

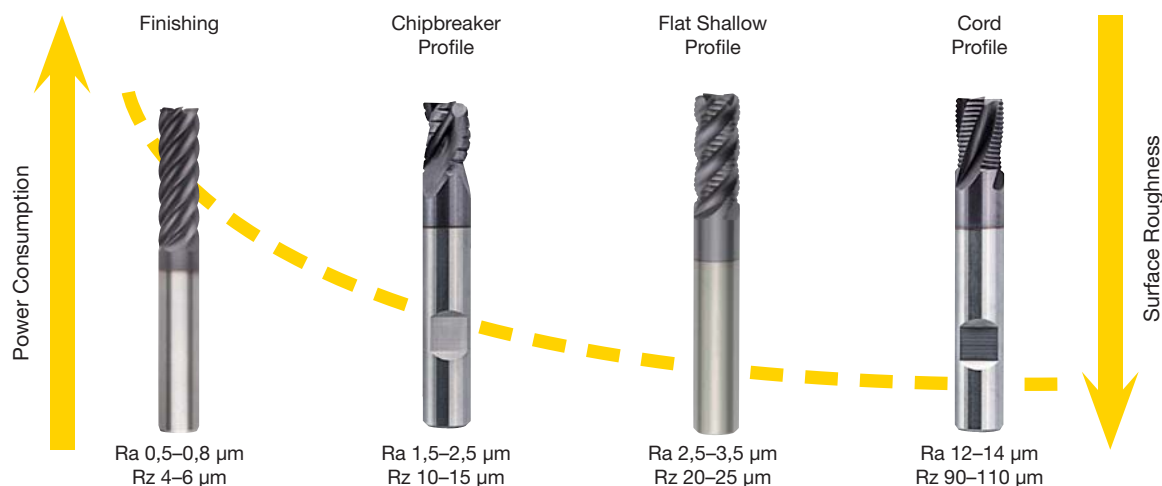
Customization

- Intermediate diameters available.
- Corner radii for near-shape roughing operations available.
- Various shank options, including the Safe-Lock™ system by HAIMER®, and non-standard coatings available.
- Internal coolant for improved chip evacuation and extended tool life.

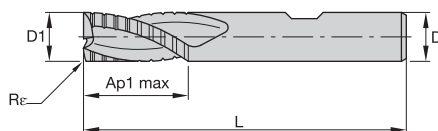
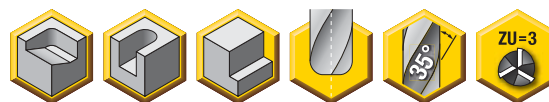
Extensive Standard Offering

- Diameter range 1/4–1".
- Weldon® shank for maximum torque transmission.

Highest metal removal rates — even on unstable machines or workpiece clamping.



- Kennametal standard dimensions.
- Center cutting.
- Chipbreaker profile.

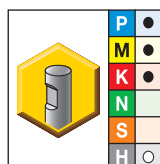


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/- .0031"	<1/8"	+0/- .00024"
1/8-7/32"	-.0012/- .0041"	1/8-7/32"	+0/- .00031"
1/4-3/8"	-.0016/- .0051"	1/4-3/8"	+0/- .00035"
13/32-11/16"	-.002/- .0063"	13/32-11/16"	+0/- .00043"
23/32-1-3/16"	-.0026/- .0077"	23/32-1-3/16"	+0/- .00051"

beyond

■ HPRSS

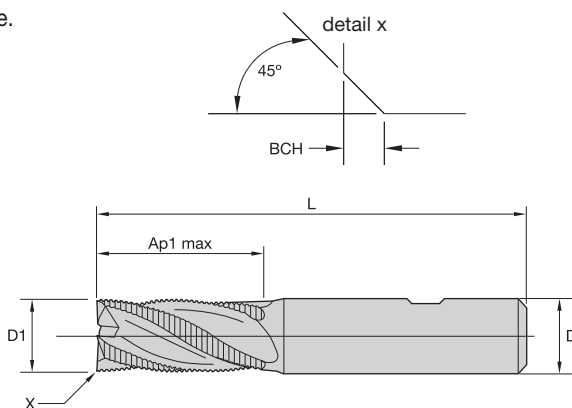


- first choice
- alternate choice

KCPM15	D1	D	Ap1 max	L	Re
HPRSS250S3075	1/4	1/4	3/4	2 1/2	.020
HPRSS375S3100	3/8	3/8	1	2 1/2	.020
HPRSS500S3125	1/2	1/2	1 1/4	3	.030
HPRSS625S3163	5/8	5/8	1 5/8	3 1/2	.030
HPRSS750S3163	3/4	3/4	1 5/8	4	.030

NOTE: For application data, see page P93.

- Kennametal standard dimensions.
- Center cutting.
- Cord profile.

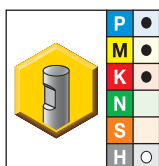


End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/- .0031"	<1/8"	+0/- .00024"
1/8-7/32"	-.0012/- .0041"	1/8-7/32"	+0/- .00031"
1/4-3/8"	-.0016/- .0051"	1/4-3/8"	+0/- .00035"
13/32-11/16"	-.002/- .0063"	13/32-11/16"	+0/- .00043"
23/32-1-3/16"	-.0026/- .0077"	23/32-1-3/16"	+0/- .00051"



■ MDRHEC • Rougher • Beyond™

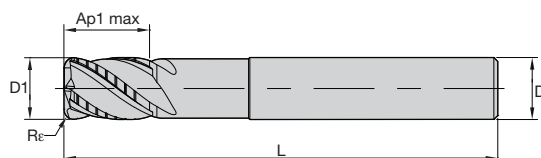


- first choice
- alternate choice

KCPM15	D1	D	Ap1 max	L	BCH	Z U
MDRHEC250S3025	1/4	1/4	3/8	2	.012	3
MDRHEC250S3075	1/4	1/4	3/4	2 1/2	.012	3
MDRHEC250S4025	1/4	1/4	3/8	2	.012	3
MDRHEC250S4075	1/4	1/4	3/4	2 1/2	.012	3
MDRHEC312S4081	5/16	5/16	13/16	2 1/2	.012	4
MDRHEC375S4038	3/8	3/8	1/2	2	.020	4
MDRHEC375S4088	3/8	3/8	7/8	2 1/2	.020	4
MDRHEC500S4050	1/2	1/2	5/8	2 1/2	.020	4
MDRHEC500S4100	1/2	1/2	1	3	.020	4
MDRHEC625S4063	5/8	5/8	3/4	3	.020	4
MDRHEC625S4125	5/8	5/8	1 1/4	3 1/2	.020	4
MDRHEC750S4075	3/4	3/4	7/8	3 1/2	.020	4
MDRHEC750S4150	3/4	3/4	1 1/2	4	.020	4
MDRHEC100S5150	1	1	1 1/2	4	.020	5

NOTE: For application data, see page P94.

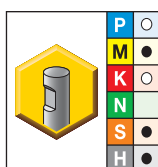
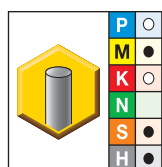
- Kennametal standard dimensions.
- Center cutting.
- Shallow-pitch profile.



End Mill Tolerances

D1	d11	D	tolerance h6
<1/8"	-.0008/-0.0031"	<1/8"	+0/-0.00024"
1/8-7/32"	-.0012/-0.0041"	1/8-7/32"	+0/-0.00031"
1/4-3/8"	-.001/-0.0051"	1/4-3/8"	+0/-0.00035"
13/32-11/16"	-.002/-0.0063"	13/32-11/16"	+0/-0.00043"
23/32-1 3/16"	-.0026/-0.0077"	23/32-1 3/16"	+0/-0.00051"

HPRST





- first choice
- alternate choice

KC643M	KC643M	D1	D	Ap1 max	L	Re	Z U
HPRST250S4038	—	1/4	1/4	3/8	2	.030	3
HPRST250S4075	—	1/4	1/4	3/4	2 1/2	.030	4
HPRST375S4050	—	3/8	3/8	1/2	2	.030	4
HPRST375S4088	—	3/8	3/8	7/8	2 1/2	.030	4
—	HPRST500S4063	1/2	1/2	5/8	2 1/2	.040	4
—	HPRST500S4125	1/2	1/2	1 1/4	3	.040	4
—	HPRST625S4075	5/8	5/8	3/4	3	.040	4
—	HPRST625S4125	5/8	5/8	1 1/4	3 1/2	.040	4
—	HPRST625S6125	5/8	5/8	1 1/4	3 1/2	.040	6
—	HPRST750S4088	3/4	3/4	7/8	3 1/2	.050	4
—	HPRST750S4150	3/4	3/4	1 1/2	4	.050	4
—	HPRST750S6150	3/4	3/4	1 1/2	4	.050	6
—	HPRST1000S4150	1	1	1 1/2	4	.050	4
—	HPRST1000S6150	1	1	1 1/2	4	.050	6

NOTE: For application data, see page P95.

■ HPRSS

Material Group													
		Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.						
							D1 — Diameter						
		A		B	Cutting Speed — vc SFM		frac.						
ap ae		ap	min	max	dec.	1/4	5/16	3/8	1/2	5/8	3/4		
P	1	1 x D	0.5 x D	0.75 x D	500	650	fz	.0018	.0023	.0027	.0035	.0039	.0043
	2	1 x D	0.5 x D	0.75 x D	450	625	fz	.0018	.0023	.0027	.0035	.0039	.0043
	3	1 x D	0.5 x D	0.75 x D	400	525	fz	.0015	.0020	.0023	.0029	.0034	.0038
	4	1 x D	0.4 x D	0.3 x D	350	475	fz	.0014	.0018	.0020	.0026	.0030	.0033
	5	1 x D	0.5 x D	0.75 x D	200	325	fz	.0012	.0016	.0018	.0023	.0027	.0030
	6	1 x D	0.4 x D	0.3 x D	150	225	fz	.0010	.0013	.0015	.0019	.0022	.0024
M	1	1 x D	0.5 x D	0.75 x D	250	325	fz	.0015	.0020	.0023	.0029	.0034	.0038
	2	1 x D	0.5 x D	0.75 x D	190	260	fz	.0012	.0016	.0018	.0023	.0027	.0030
	3	1 x D	0.5 x D	0.75 x D	200	260	fz	.0010	.0013	.0015	.0019	.0022	.0024
K	1	1 x D	0.5 x D	0.75 x D	400	525	fz	.0018	.0023	.0027	.0035	.0039	.0043
	2	1 x D	0.5 x D	0.75 x D	360	460	fz	.0015	.0020	.0023	.0029	.0034	.0038
	3	1 x D	0.5 x D	0.75 x D	330	430	fz	.0012	.0016	.0018	.0023	.0027	.0030
H	1	1 x D	0.4 x D	0.3 x D	300	450	fz	.0014	.0018	.0020	.0026	.0030	.0033

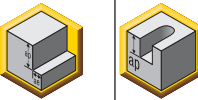

NOTE: These guidelines may require variations to achieve optimum results.

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

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

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

MDRHEC

Material Group														
	Side Milling (A) and Slotting (B)			KCPM15		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.								
	A		B	Cutting Speed — vc SFM			D1 — Diameter							
	ap	ae	ap	min	max	frac.	1/4	5/16	3/8	1/2	5/8	3/4	1	
						dec.	.250	.313	.375	.500	.625	.750	1.000	
P	0	1.0 x D	0.5 x D	0.5 x D	490	660	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	1	1.0 x D	0.5 x D	0.5 x D	490	660	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	2	1.0 x D	0.4 x D	0.5 x D	460	620	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	3	1.0 x D	0.4 x D	0.5 x D	390	520	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	4	1.0 x D	0.3 x D	0.4 x D	300	490	IPT	.0012	.0015	.0017	.0022	.0026	.0029	.0033
M	5	1.0 x D	0.4 x D	0.5 x D	200	330	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
	1	1.0 x D	0.4 x D	0.5 x D	300	380	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
	2	1.0 x D	0.4 x D	0.5 x D	200	260	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
K	3	1.0 x D	0.4 x D	0.5 x D	200	230	IPT	.0009	.0011	.0013	.0016	.0019	.0021	.0024
	1	1.0 x D	0.5 x D	0.5 x D	390	490	IPT	.0016	.0020	.0023	.0029	.0034	.0037	.0042
	2	1.0 x D	0.4 x D	0.5 x D	360	460	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
S	3	1.0 x D	0.4 x D	0.5 x D	360	430	IPT	.0010	.0013	.0016	.0020	.0023	.0026	.0031
	1	1.0 x D	0.4 x D	0.5 x D	—	—	IPT	.0013	.0017	.0019	.0025	.0029	.0033	.0038
H	2	1.0 x D	0.4 x D	0.5 x D	—	—	IPT	.0007	.0009	.0010	.0013	.0015	.0018	.0021
	1	1.0 x D	0.3 x D	0.4 x D	260	460	IPT	.0012	.0015	.0017	.0022	.0026	.0029	.0033

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

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

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

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

■ HPRST

Material Group														
		Side Milling (A) and Slotting (B)			KC643M		Recommended feed per tooth (IPT = inch/th) for side milling (A). For slotting (B), reduce IPT by 20%.							
		A		B	Cutting Speed – vc SFM		D1 – Diameter							
		ap	ae	ap	min	max	frac.	1/4	5/16	3/8	1/2	5/8	3/4	1
P	3	1.0 x D	0.5 x D	0.75 x D	390	520	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	4	1.0 x D	0.3 x D	0.75 x D	300	490	IPT	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	5	1.0 x D	0.5 x D	0.75 x D	200	330	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	6	1.0 x D	0.3 x D	0.3 x D	160	250	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
M	1	1.0 x D	0.5 x D	0.75 x D	300	380	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.0 x D	0.5 x D	0.75 x D	200	260	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
	3	1.0 x D	0.5 x D	0.75 x D	200	230	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
K	1	1.0 x D	0.5 x D	1 x D	390	490	IPT	.0018	.0023	.0027	.0034	.0039	.0044	.0049
	2	1.0 x D	0.5 x D	1 x D	360	460	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	3	1.0 x D	0.5 x D	1 x D	360	430	IPT	.0012	.0016	.0018	.0023	.0027	.0031	.0036
S	1	1.0 x D	0.3 x D	0.75 x D	160	300	IPT	.0015	.0020	.0023	.0029	.0034	.0039	.0045
	2	1.0 x D	0.3 x D	0.75 x D	80	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	3	1.0 x D	0.3 x D	0.75 x D	80	130	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024
	4	1.0 x D	0.4 x D	0.75 x D	160	200	IPT	.0011	.0014	.0017	.0021	.0025	.0028	.0033
H	1	1.0 x D	0.3 x D	0.3 x D	260	460	IPT	.0014	.0017	.0020	.0026	.0030	.0034	.0039
	2	1.0 x D	0.2 x D	0.2 x D	230	390	IPT	.0010	.0013	.0015	.0019	.0022	.0025	.0028
	3	1.0 x D	0.2 x D	0.2 x D	200	300	IPT	.0008	.0010	.0012	.0015	.0018	.0021	.0024

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

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

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

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

➤ RSM II

Multi-Flute End Mills

Primary Application

RSM II offers the highest productivity in machining aerospace structural components in titanium and titanium alloys. The RSM II is designed to utilise high-speed peel milling strategies with secure chip formation and evacuation in deep cavities. RSM II is available with the Safe-Lock™ system by HAIMER®.

- Excellent metal removal rates.
- Highest surface quality.
- Unmatched tool life and wear resistance using grade KC643M™.
- Highest process security.

Features and Benefits

Advanced Technology

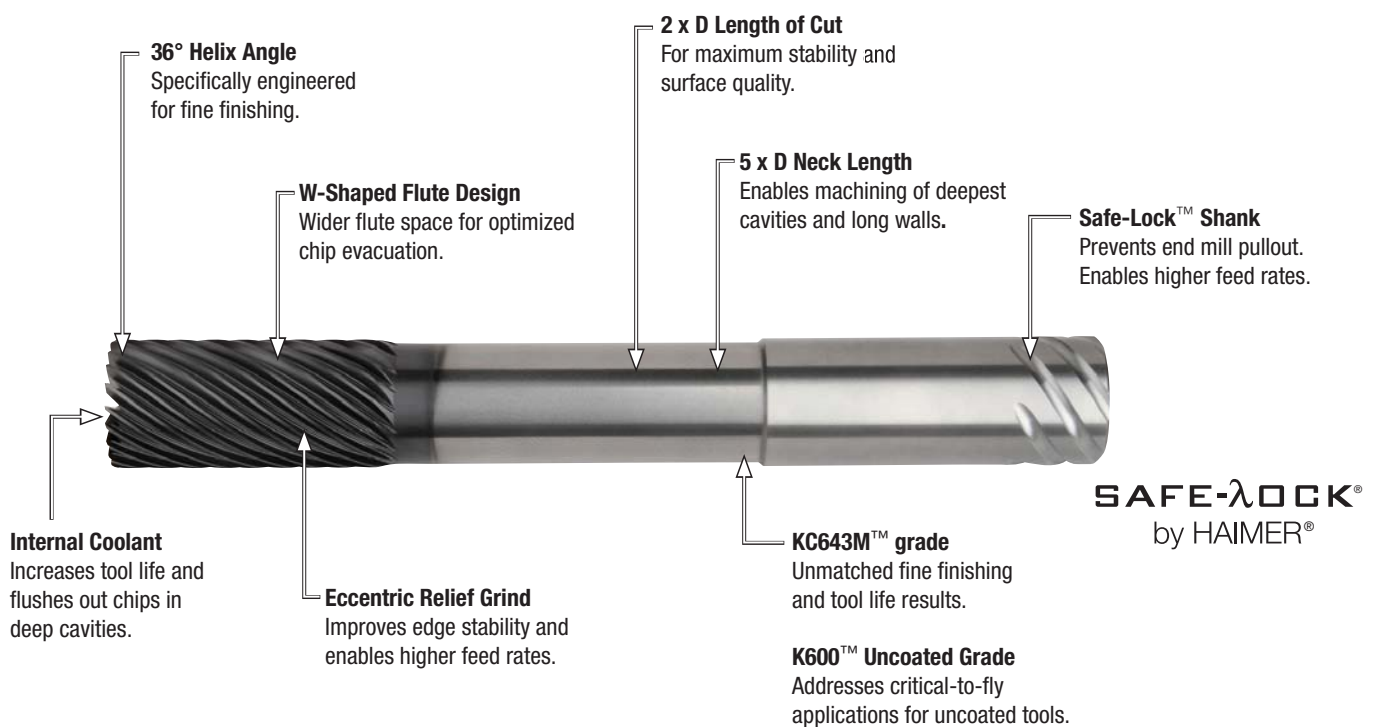
- Maximum number of flutes for increased feed rates and less vibration tendency.
- Proprietary W-shaped flute form improves chip formation and reduces cutting forces.
- Unequal flute spacing increases tool life and surface quality.
- Proprietary AlTiN KC643M grade for increased tool life.

Customization

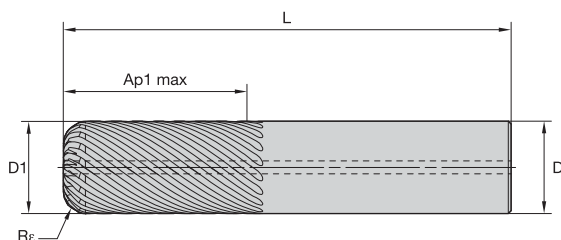
- Custom overall length and length of cut.
- Different radii per diameter.
- Custom shank styles.
- Tapered versions available.
- Uncoated K600 grade for milling critical-to-fly components.

Extensive Standard Offering

- Each diameter has an optimized number of flutes for constant edge-to-flute space ratio.
- Different radii per diameter.
- Safe-Lock™ and round shank.



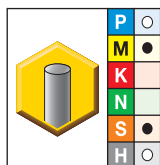
- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.



End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
< 1/8"	+0/-0.002	< 1/8"	0/.00024
1/8-7/32"	+0/-0.002	1/8-7/32"	0/.00031
1/4-3/8"	+0/-0.002	1/4-3/8"	0/.00035
13/32-11/16"	+0/-0.002	13/32-11/16"	0/.00043
23/32-1-3/16"	+0/-0.002	23/32-1-3/16"	0/.00051

FSDE.. • Multi-Flute • Short • Inch



- first choice
- alternate choice

KC643M	D1	D	Ap1 max	L	Re	Z U
FSDE0375J9BCA	3/8	3/8	3/4	2	.015	9
FSDE0375J9BCB	3/8	3/8	3/4	2	.030	9
FSDE0500J9BCA	1/2	1/2	1	2 1/2	.015	9
FSDE0500J9BCB	1/2	1/2	1	2 1/2	.030	9
FSDE0500J9BCC	1/2	1/2	1	2 1/2	.060	9
FSDE0625JBBCB	5/8	5/8	1 1/4	3	.030	11
FSDE0750JFBCA	3/4	3/4	1 1/2	3 1/2	.015	15
FSDE0750JFBCB	3/4	3/4	1 1/2	3 1/2	.030	15
FSDE0750JFBCC	3/4	3/4	1 1/2	3 1/2	.060	15
FSDE0750JFBCE	3/4	3/4	1 1/2	3 1/2	.120	15
FSDE1000JBBCA	1	1	2	4	.015	19
FSDE1000JBBCB	1	1	2	4	.030	19
FSDE1000JJBCC	1	1	2	4	.060	19
FSDE1000JBCE	1	1	2	4	.120	19

NOTE: For application data, please see page P99.

■ FSDE.. • Multi-Flute • Short • Inch • Roughing

Material Group													
		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
		ap	ae	min		max	in	1/4	3/8	1/2	5/8	3/4	1
P	4	Ap max	0.03–0.045	440	–	740	IPT	.0032	.0034	.0040	.0043	.0049	.0058
	5	Ap max	0.03–0.045	300	–	490	IPT	.0028	.0030	.0036	.0039	.0045	.0054
M	1	Ap max	0.03–0.045	440	–	570	IPT	.0035	.0038	.0045	.0049	.0056	.0068
	2	Ap max	0.03–0.045	300	–	390	IPT	.0028	.0030	.0036	.0039	.0045	.0054
	3	Ap max	0.03–0.045	300	–	340	IPT	.0024	.0025	.0030	.0032	.0036	.0042
S	1	Ap max	0.03–0.045	250	–	440	IPT	.0035	.0038	.0045	.0049	.0056	.0068
	2	Ap max	0.03–0.045	120	–	200	IPT	.0019	.0020	.0024	.0026	.0030	.0036
	3	Ap max	0.03–0.045	120	–	200	IPT	.0019	.0020	.0024	.0026	.0030	.0036
	4	Ap max	0.03–0.045	250	–	300	IPT	.0025	.0028	.0033	.0036	.0041	.0050
H	1	Ap max	0.03–0.045	390	–	690	IPT	.0032	.0034	.0040	.0043	.0049	.0058
	2	Ap max	0.03–0.045	340	–	590	IPT	.0024	.0025	.0030	.0032	.0036	.0042

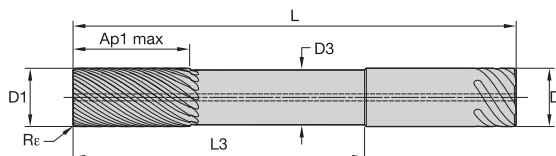
NOTE: For better surface finish, reduce feed per tooth.

■ FSDE.. • Multi-Flute • Highest Surface Quality • Finishing

Material Group													
		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM				D1 — Diameter					
		ap	ae	min		max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1
P	4	Ap max	.008–.012	445	–	1628	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	5	Ap max	.008–.012	295	–	1078	IPT	.0038	.0040	.0048	.0052	.0056	.0061
M	1	Ap max	.008–.012	445	–	1243	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	.008–.012	295	–	869	IPT	.0038	.0040	.0048	.0052	.0056	.0061
	3	Ap max	.008–.012	295	–	759	IPT	.0032	.0033	.0040	.0043	.0045	.0048
S	1	Ap max	.008–.012	245	–	979	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	.008–.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	3	Ap max	.008–.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	4	Ap max	.008–.012	245	–	649	IPT	.0033	.0037	.0044	.0048	.0051	.0056
H	1	Ap max	.008–.012	395	–	1518	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	2	Ap max	.008–.012	345	–	1298	IPT	.0032	.0033	.0040	.0043	.0045	.0048

NOTE: For better surface finish, reduce feed per tooth.

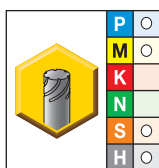
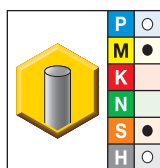
- Kennametal standard dimensions.
- Non-center cutting.
- Optimized geometry for titanium machining.
- Unequal flute spacing minimizes chatter for smoother machining.
- Reach optimized for machining deep cavities.



End Mill Tolerances

D1	tolerance e8	D	tolerance h6 + / -
< 1/8"	+0/- .002	< 1/8"	0/.00024
1/8-7/32"	+0/- .002	1/8-7/32"	0/.00031
1/4-3/8"	+0/- .002	1/4-3/8"	0/.00035
13/32-11/16"	+0/- .002	13/32-11/16"	0/.00043
23/32-1-3/16"	+0/- .002	23/32-1-3/16"	0/.00051

FSDE.. • Multi-Flute with Neck • Inch






- first choice
- alternate choice

KC643M	KC643M	D1	D	D3	Ap1 max	L3	L	Re	Z U
FSDE0250J7DYA	-	1/4	1/4	.235	1/2	1.250	3	.015	7
FSDE0375J9DYA	-	3/8	3/8	.353	3/4	1.875	4	.015	9
FSDE0375J9DYB	-	3/8	3/8	.353	3/4	1.875	4	.030	9
-	FSDE0500N9DYA	1/2	1/2	.470	1	2.500	5	.015	9
-	FSDE0500N9DYB	1/2	1/2	.470	1	2.500	5	.030	9
-	FSDE0500N9DYC	1/2	1/2	.470	1	2.500	5	.060	9
-	FSDE0625NBDYB	5/8	5/8	.588	1 1/4	3.125	5 1/4	.030	11
-	FSDE0750NFDYA	3/4	3/4	.705	1 1/2	3.750	6	.015	15
-	FSDE0750NFDYB	3/4	3/4	.705	1 1/2	3.750	6	.030	15
-	FSDE0750NFDYC	3/4	3/4	.705	1 1/2	3.750	6	.060	15
-	FSDE0750NFDYE	3/4	3/4	.705	1 1/2	3.750	6	.120	15
-	FSDE1000NJDYA	1	1	.940	2	5.000	7 1/2	.015	19
-	FSDE1000NJDYB	1	1	.940	2	5.000	7 1/2	.030	19
-	FSDE1000NJDYC	1	1	.940	2	5.000	7 1/2	.060	19
-	FSDE1000NJDYE	1	1	.940	2	5.000	7 1/2	.120	19

NOTE: For application data, please see page P101.

FSDE.. • Multi-Flute with Neck • Inch

Material Group													
		Side Milling (A)		KC643M			Recommended feed per tooth (IPT = inch/th) for side milling (A).						
		A		Cutting Speed — vc SFM			D1 — Diameter						
		ap	ae	min		max	frac. dec.	1/4	3/8	1/2	5/8	3/4	1
P	4	Ap max	0.008–0.012	445	–	1628	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	5	Ap max	0.008–0.012	295	–	1078	IPT	.0038	.0040	.0048	.0052	.0056	.0061
M	1	Ap max	0.008–0.012	445	–	1243	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012	295	–	869	IPT	.0038	.0040	.0048	.0052	.0056	.0061
	3	Ap max	0.008–0.012	295	–	759	IPT	.0032	.0033	.0040	.0043	.0045	.0048
S	1	Ap max	0.008–0.012	245	–	979	IPT	.0047	.0050	.0060	.0066	.0070	.0077
	2	Ap max	0.008–0.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	3	Ap max	0.008–0.012	125	–	429	IPT	.0025	.0026	.0032	.0035	.0037	.0041
	4	Ap max	0.008–0.012	245	–	649	IPT	.0033	.0037	.0044	.0048	.0051	.0056
H	1	Ap max	0.008–0.012	395	–	1518	IPT	.0042	.0045	.0053	.0058	.0061	.0066
	2	Ap max	0.008–0.012	345	–	1298	IPT	.0032	.0033	.0040	.0043	.0045	.0048

NOTE: Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.
 Above parameters are based on ideal conditions.
 For smaller taper machining centers, please adjust parameters accordingly on >1/2" diameter.





FSDE 15-Flute End Mill

FSDE 11-Flute End Mill

CHALLENGE

- Finishing contour milling on aerospace part with interrupted cut.
- Depth of cut: 1.575" (40mm).
- Titanium alloy R56400.
- External emulsion.

CHALLENGE

- Finishing long channel on aerospace frame part.
- Depth of cut: 1.535" (39mm).
- Titanium alloy.
- External emulsion.

SOLUTION

- RSM II multi-flute cutter with KC643M™.
- Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) radius.

SOLUTION

- RSM II multi-flute cutter with KC643M.
- Ø .625" (15.875mm) with 11 effective cutting edges and .003" (0.762mm) radius.

CUTTING DATA

- vc 230 SFM
- fz .0030 IPT
- ap 1.569"
- ae .001"

CUTTING DATA

- vc 425 SFM
- fz .0021 IPT
- ap 1.55"
- ae .001"

RESULT

- 3.75 times longer tool life compared to competitor solution.

RESULT

- 2.5 times higher feed rates compared to initial solution.

BENEFIT

- Machining time reduction of 46%.
- Metal removal rate increase of 87%.

BENEFIT

- Machining time reduction of 60%.
- Metal removal rate increase of 150%.

(continued)

(continued)



FSDE 15-Flute End Mill

- CHALLENGE**
- Finishing external profile.
 - Depth of cut: .787" (20mm).
 - Titanium alloy 6Al4V.
 - External emulsion.

- SOLUTION**
- RSM II multi-flute cutter with KC643M™.
 - Ø .787" (20mm) with 15 effective cutting edges and .158" (4mm) corner radius.

- CUTTING DATA**
- vc 492 SFM
 - fz .0020 IPT
 - ap .784"
 - ae .0024"

- RESULT**
- 50% tool life increase.
 - 3x cutting speed.
 - Nearly 8x the feed rates.

- BENEFIT**
- Machining time reduction of 81% from 43.1–8.4 min vs competitor solution.
 - Metal removal rate increase of 360% vs competitor solution.

FSDE 19-Flute End Mill

- CHALLENGE**
- Finishing external profile.
 - Depth of cut: .787" (20mm).
 - Titanium alloy 6Al4V.
 - External emulsion.

- SOLUTION**
- RSM II multi-flute cutter with KC643M.
 - Ø .984" (25mm) with 19 effective cutting edges and .039" (1mm) corner radius.

- CUTTING DATA**
- vc 492 SFM
 - fz .0020 IPT
 - ap .784"
 - ae .0024"

- RESULT**
- 50% tool life increase.
 - 3x cutting speed.
 - Nearly 8x the feed rates.

- BENEFIT**
- Machining time reduction of 81% from 43.1–8.3 min vs competitor solution.
 - Metal removal rate increase of 366% vs competitor solution.

Materials to Cut	<ul style="list-style-type: none"> • Titanium and titanium alloys. • Nickel-based alloys. • Cobalt-based alloys. • Steels (P4–P5). • Stainless steels (M2–M3). • Hardened steels (H1).
Cutting Speed	<ul style="list-style-type: none"> • Refer to application data recommendation. • Highly dynamic machines recommended.
Feed Rate	<ul style="list-style-type: none"> • Refer to application data recommendation. • Highly dynamic machines recommended. • High-speed peel milling strategies require control of adequate feed rates.
Depth of Cut	<ul style="list-style-type: none"> • High-speed peel milling requires small depth of cut (approximately 5% of diameter) not exceeding 0.0393" (1mm).
Coolant	<ul style="list-style-type: none"> • Internal coolant for machining cavities. • External coolant for peripheral milling.
Adaptation	<ul style="list-style-type: none"> • Shrink Fit adaptation is preferred as alternate recommendation. • High-Performance Milling Chucks (HPMC) are applicable. • Collect chucks are not recommended due to high runout.
Roughing Application	<ul style="list-style-type: none"> • Not recommended.
Finishing Application	<ul style="list-style-type: none"> • Finishing and semi-finishing.
Milling Strategy	<ul style="list-style-type: none"> • Peel milling strategies are recommended. • Trochoidal milling is not recommended for this tool.
Applications	<ul style="list-style-type: none"> • Shoulder milling. • Shoulder milling and fine finishing. • Peel milling and HPC techniques. • Non-center cutting. • No ramping and helical interpolation.
Corner Machining	<ul style="list-style-type: none"> • Pre-mill corner pocket to leave appropriate depth-of-cut for finishing application. • Use RSM with depth-of-cut at approximately 5% of diameter and below 0.0393" (1mm). • RSM II tool radius shall be smaller than final corner radius.
Engineered Solutions	<ul style="list-style-type: none"> • Available upon request.
Reconditioning Service	<ul style="list-style-type: none"> • Available with standard Kennametal reconditioning procedures. • Check services under Kennametal website for detailed information.